## JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

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#### QUESTIONS AND COMMENTS INVITED FROM READERS

University and college teachers and students of Economics, Political Science and Sociology/Social Anthropology are invited to send to us questions of wider interest on the subjects of their study. We shall endeavour to publish in subsequent issues of the journal answers to selected questions received by us. This will form a separate section of the journal. The authors of the selected questions shall receive complimentary copies of one year's issues of the journal, as a token of our appreciation.

#### **OVER TO THE NEW EDITOR**

With the publication of this issue of the Journal, I am passing the mantle of the editorship of this journal to my colleague, Dr. S. Sriraman, who is also currently the President of the Indian School of Political Economy.

The School started bringing out the Journal from 1989 with the object of disseminating studies on Indian economy, polity and society. Thus, it is an inter-disciplinary research journal covering publications in the areas of economics. political science and sociology with a focus on developmental issues or with a developmental perspective in the context of India. From 1989 to 2003, the Journal was edited first by Prof. V. M. Dandekar, and subsequently by Prof. A. S. Nadkarni and Prof. N. Rath. I have been editing the journal since April 2004. Since 2012. Prof. Sriraman has already been associated with the Journal as Joint Editor. I greatly benefited from the guidance and support of the Editorial Advisory Committee of the journal and the Executive Council of the School through all these years. I am thankful to all the members of these bodies for the same.

The Journal is a refereed journal with a double blind referee system. The guidance of the members of the Editorial Advisory Committee in suggesting expert referees in difficult cases is deeply appreciated. I am indebted to the referees for ably carrying out the thankless and onerous responsibility of evaluating the papers and offering constructive comments and suggestions to the authors of the papers. Apart from raising substantive queries, sometimes not raised by the referees, the editor often had to raise a number of clarificatory points about the concepts, reasoning behind the claims made, methodology and data used in the paper, sometimes suggest necessary additions and footnotes, with a view to making it easily comprehensible to the general reader, including possibly sometimes potential readers from other disciplines. Since a number of current subscribers are libraries of mofussil colleges and Universities, apart from some better known social science research institutes, and also a number of authors were from among young researchers, this kind of editing was considered essential. It probably served an important educational purpose as well. Papers thus finalised were perused by a member of the Editorial Advisory Committee of the Journal for any necessary additional points. I am grateful to the authors of the published papers for bearing with this process. However, we trust that through this rigorous process we were able to maintain a reasonably high quality of material published.

During the period from 2004 to 2018, we have published 128 research papers and 40 book reviews. Papers in economics take a lion's share of the published research papers, while those in Political Science and Sociology are relatively much smaller. Other than that, the subjects covered by the research papers published in the journal have been fairly diverse: Agriculture. Rural Economy, Water Resources and Cooperation-11; Food Economy, food Policy-2; Industry, Corporate Investment, Corporate Governance-6; Labour and Employment, Wages and Earning-9: Regional Development-8: Transport, Communication, Electricity, etc-1; Foreign Trade and Balance of Payments-6; Macroeconomics-3: National Money and Income-20: Banking and Finance-13: Public Finance and Fiscal Issues-6; Education-9; Health-3; Environment-1; Population, Migration, Urbanisation-3; Planning and Economic Development-9: Politics. Law and Constitution-12: Social Issues-5: Women's Studies-1.

Some of the notable volumes devoted to Special Issues and related Documentation and/or Statistical Supplements during the period under report were:

1. Papers on **Basel-II** with Documentation on Basel Committee on Banking Supervision, International Convergence of Capital Measurement and Capital Standards, A Revised Framework, June 2004; various other documents on Basel II

- Cases filed by India and those filed against India under Trade Dispute Settlement in WTO with Documentation on The Text of the General Agreement on Tariffs and Trade, Geneva, July 1986;World Trade Agreement, 1994
- 3. Papers on Child Labour in India with Documentation on Committee on Child Labour, 1979; Child Labour (Prohibition and Regulation) Act, 1986; M.C. Mehta Versus State of Tamil Nadu: Judgement of the Supreme Court of India, 1991; United Nations Convention on the Rights of the Child, 1989; Investing in Every Child: An Economic Study of the Costs and Benefits of Eliminating Child Labour;
- Paper on Caste Dynamics and Political Process in Bihar with Documentation on Economic Survey 2009-10, Government of Bihar and Statistical Supplement relating to Elections in India, (updating Tables for all States published in the Journal of Indian School of Political Economy, Vol. 15)
- 5. Papers from the Seminar on "Is There a Case for Reorganisation of States?" and Documentation on Report of The States Reorganisation Commission. Government of India in the Ministry of Home Affairs, December, 1953; Ambedkar, B.R., "Thoughts on Linguistic States", 1955; Nagpur Agreement; Constitutional Provision with respect to the States of Maharashtra and Gujarat for Development Boards; Report of Fact Finding Team on Vidarbha, Regional Disparities and Rural Distress in Maharashtra, Government of India, Planning Commission; Annual Reports of the Statutory Boards for Vidarbha, Marathwada and the Rest of Maharashtra for a recent year
- 6. Documentation on East India (Deccan Riots Commission, Report of the Commission Appointed in India (The Causes of

the Riots which took place in the year 1875, in the Poona and Ahmednagar Districts of the Bombay Presidency.)

- 7. Paper on Water Rates for Water Supplied from the Reservoirs on the Rivers and Streams in Maharashtra (for 2012-15) Suggestions with Documentation on The Maharashtra Water Resources Regulatory Authority Act, 2005; An Ordinance to Amend the Maharashtra Water Resources Regulatory Authority Act, 2005, Maharashtra Ordinance No. II of 2011; Economics of Irrigation in Water-Scarce Regions: Study of Maharashtra; Maharashtra Water & Irrigation Commission Report, Volume I- Approach
- 8. Papers on **Urbanisation** with Documentation on Report of the National Commission on Urbanisation August 1988
- 9. Paper on Hindu-Muslim Rural Household Comparisons with Documentation on Social Economic and Educational Status of the Muslim Community of India, Prime Minister's High Level Committee (Sachar Committee) and Statistical Supplement on NSS 66th Round, Report No. 552: Employment and Unemployment Situation among Major Religious Groups in India
- 10. Papers on **Safeguarding Financial Stability** with Documentation on Report of International Monetary Fund, Global Financial Stability Report, April 2015; RBI Financial Stability Report, June 2015 and Statistical Tables and Figures on variables relevant for assessing financial stability situation world-wide and in selected countries, including India
- 11. Study of Primary Schools Conducted by PMC with Documentation on the writings on primary education/education by Jotiba Phule, Justice M.G. Ranade, Sayaji Rao III, Maharaja of Baroda, Gopal Krishna Gokhale (including his Elementary Education Bill), M.K. Gandhi, Karmaveer

Bhaurao Patil; The Right of Children to free and Compulsory Education Act, 2009; Sarva Shiksha Abhiyan Interventional Strategies for Special Training; Committee for National Policy on Education 2016

12. Papers on **India's New Series National** Accounts Statistics with Documentation on The Poverty and Un-British Rule in India, by Dadabhai Naoroji; System of National Accounts 2008; C.S.O., Changes in Methodology and Data Sources in the New Series of National Accounts: Base Year 2011-12; "Government Product and National Income" by Simon Kuznets.

The present volume puts together the final revised versions of the papers presented and discussed in the seminar on Gross State Domestic Product into a combined issue for the last two quarters of 2018. This would place in public debate several questions of vital importance to regional accounts and federal finance of the country. I shall be failing in my duty if I do not express my deep sense of gratitude to Prof. Nilakantha Rath who helped me in every possible way and certainly beyond the call of duty in pursuing our single-minded shared objective of enhancing the quality of the journal. I also thank Mrs. Shaila Konlade, DTP Editor, for her painstaking and careful work in preparing the press copy of each journal issue and attending to the office work and correspondence of the journal.

Above all a final word of most earnest thanks is due to the readers of the Journal. It is hoped that they found the material published in it useful. It was only in that hope that I expended my time and efforts in the editing work. I am sure that the Journal will climb even greater heights in the future under the new editor.

> Vikas Chitre Editor

#### **BACKGROUND TO THE JOURNAL ISSUE**

The Indian School of Political Economy organised on January 11-12, 2018, a two-day Seminar on "**India's New GDP Series- Implications for the Estimation of GSDP".** This was the Annual Seminar of the School for the year 2017-18 in Memory of Professor V. M. Dandekar, the Founder-Director of the School.

We were extremely fortunate to be able to get as participants for the Seminar eminent economists and statisticians, very knowledgeable about India's national accounts system, some of whom had in fact played an active role in the exercise leading to the construction of the new 2011-12 based series of national accounts statistics.

It was a privilege that Dr. TCA Anant, Chief Statistician of India, who was the Chief Guest at the Seminar, chaired the proceedings of the Seminar and offered his in-depth observations throughout the Seminar. He also made valuable Opening Remarks at the Seminar on Regional Accounts and also provided his Closing Remarks at the end of the Seminar.

Professor Ravindra Dholakia, then Professor, IIM, Ahmedabad, currently Member, Monetary Policy Committee, and Chairman of the very important, second Committee on Regional Accounts, appointed soon after the Seminar, and Shri Manish B. Pandya, Jt. Director, Directorate of Economics & Statistics, Government of Gujarat, presented their up-dated comments on their paper, submitted in the previous year's Symposium on GDP and actively participated in the discussions in the Seminar.

Shri S. V. Ramana Murthy, Deputy Director General, CSO, Smt. T. Rajeswari, the Deputy Director General, National Accounts Division, Central Statistics Office, wrote concept notes on the CSO methodology and data sources of the GDP and GSDP series based on the 2011-12 base year. Smt. Rajeswari also presented a paper commenting on the Dholakia- Pandya paper. Dr. G. C. Manna, former Director General, Central Statistics Office, prepared and presented a paper, examining the methodology of the blow-up factor adopted by the CSO in the estimation of the GDP and the GSDP for the base year 2011-12, and suggested directions for revisiting the methodology in future.

Dr. S.L. Shetty, Advisor, EPW Research Foundation, and Member, Sub-Committee on Private Corporate Sector including PPPs (constituted for the new series), Dr. Dennis Rajakumar, Director, EPW Research Foundation, Shri R.R. Shinge, Shri J.V. Chaudhari, and Smt. Mangal P. Deshpande, of Directorate of Economics & Statistics, Government of Maharashtra, especially prepared a paper critiquing several points made in the Dholakia-Pandya paper, and evaluating various aspects of the theme in the context of Maharashtra state, which was presented in the Seminar.

Dr. Om Prakash Bairwa and Rajeev Kumar Srivastava of DES Rajasthan. Shri Pradeep Chauhan and Dr. Vinod Kumar Rana of DES Himachal Pradesh and Shri K. Narasimha Phani of DES Karnataka, presented papers comparing the GSDP series for their respective states for the 2011-12 base year with that for the 2004-05 base year, and also outlined the progress made in strengthening the statistical systems in their states. Their presentations also brought out the tensions experienced by the state level economic statisticians while explaining to the political leadership in the states the outcomes of the process of reconciling the estimates of state income prepared by them with the comparable estimates for the same generated by the CSO while at the same time emphasising the learning achieved by them through their interactions with the CSO.

Apart from the finalised papers, we have included in the journal issue the Discussions among the participants of the seminar during or at the end of presentations of the authors of the papers. These Discussions have been based on their recording in the seminar. The edited transcripts of the Discussions were sent to the participants in the seminar for finalisation, when it was possible to identify the speakers. However, not all of them may have found sufficient time to check their individual observations and make necessary corrections. In a few rare instances, we have supplied in square brackets what could have been the missing words required to complete an incomplete or unclear sentence. With this background, it has to be emphasised that **the observations made by the participants are made in their personal capacity and do not reflect the opinions of the organisations to which they belong.** 

All the above mentioned participants have carefully revised their papers for publication in the present journal issue in spite of their extremely busy schedules. We are extremely grateful to all of them for their contributions.

The Seminar was funded in part out of a private donation received by Indian School of Political Economy in memory of a well wisher of the School, and a keen researcher in the areas of India's macroeconomic and financial issues Dr. Gangadhar Darbha, former Executive Director, Nomura Securites and Advisor, Reserve Bank of India.

We are extremely happy to release this issue of the *Journal*. We are hopeful that it will help clarify a number of issues underlying the debate about the implications of the new series of India's national accounts for GSDP and also stimulate more discussion and work leading to further improvements in our national and regional accounts in particular and our statistical system in general.

#### **OPENING REMARKS AT GSDP SEMINAR**

#### Vikas Chitre

The School organised on January 21, 2017, a Symposium on the Recent Changes in the Methodology of Estimation of India's GDP. Many of those present at the GSDP seminar also participated in that Symposium. We have also published the revised versions of the papers presented in that Symposium in the *Journal of Indian School of Political Economy (Vol. XXIX, Nos. 1&2, January-June 2017)*. Many of the participants of the current seminar or the readers may have seen that issue as well.

In the last year's Symposium, Prof. Ravindra Dholakia and Shri Manish Pandya (of Directorate of Economics and Statistics, Government of Gujarat) presented a paper in which they examined the implications of the new methodology for estimating GDP for states, in the context of the state of Gujarat. A revised version of the paper, titled "Critique of Recent Revisions with Base Year Change for Estimation of State Income in India", was published in the above-mentioned issue of the *Journal of Indian School of Political Economy* (Pp.131-144).

As the new methodology of estimation of GDP marked a shift to the enterprise level data sources, particularly in the Mining & Quarrying and the Manufacturing sectors, from the earlier largely establishment level sources, it has resulted in a great increase in the number, the proportion and the value of allocations of estimated All India aggregates, stipulated to be made in the estimation of the state income, using a number of physical indicators, uniformly applied to all states to ensure interstate comparability. In fact, in earlier exercises of re-basing of GDP estimation and accompanying changes in methodology, effort was made to reduce the proportion of GSDP estimated through such allocations. In the latest revision of 2011-12, however, this proportion has substantially gone up in the case of GSDP of Gujarat to about 74.4% from about 30% of that in the previous revision with base of 2004-05. For some sectors, the changes in the said proportions were drastically larger. For example, for the GSDP in the Mining & Quarrying and in the Manufacturing sectors, the said proportion went up to 100 per cent from 0 per cent in the previous base year series. And in the Trade, Repair Services and Hotels & Restaurants sector it went up from 27.7 per cent in the 2004-05 series to 99.1 per cent in the 2011-12 series, and in the Real estate, Ownership of Dwelling & Professional Services sector it increased from 19.7 per cent to 99.7 per cent.

Even in the case of Maharashtra GSDP, as shown by the paper painstakingly prepared for the present seminar by EPW Research Foundation and DES, Maharashtra, the percentage of GSDP allocated by CSO is seen to have gone up from 25% for the 2004-05 series to 76% in the 2011-12 series. For the Mining & Quarrying sector, the percentage of allocated GSDP has gone up from 0% in the old series to 96% in the new series and for the Manufacturing sector, the said percentage has gone up from 0% to 100%.

The Dholakia-Pandya paper draws attention to a number of other issues as well for the estimation of GSDP emanating from the revised methodology of compiling the various national aggregates. Some of the important points made in that paper are:

- the greatly increased proportion of allocations made in the estimation of GSDP, mentioned earlier;
- vitiated state-wise and sector-wise estimates of outputs because the MCA 21 database gives one CIN number regardless of the geographical spread and the product mix of the company's production activities;

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- 3. absurd estimates of production growth rates because of increased dependence on allocations in the estimation of GSDP which necessitated first computing the current price magnitudes to be deflated by the price indices or indicators thereof to obtain the constant price estimates, for example, of constant price income in Road Transport sector in Gujarat.
- 4. unintended and unjustified structural changes in the state economy and its sectors-(Dholakia and Pandya illustrate this with education and trade sectors; T. Rajeswari's paper in the present seminar, giving comments on Dholakia-Pandya paper, carefully examines this question, as also the paper by EPW research Foundation and DES, Maharashtra);
- 5. inadequate coverage of some sectors-Dholakia-Pandya paper refers to omission of several important minerals for Gujarat in the new data sources; (This question is discussed further in depth by the paper by EPW research Foundation and DES, Maharashtra.)
- aggregation of existing sub-sectors instead of providing further disaggregation as we move to a later base year, for example, the present series, in fact, clubs together the 11 subsectors of the 'the other services sector into only four broader sectors;
- inappropriate re-grouping of some sectors in the New series, for example, the sewage and disposal activities, which belong to the Services or the Tertiary sectors, are included with Secondary Sector sub-sector of electricity, gas and water supply as Remediation Services;

- problems involved in extending the 8 effective labour input method to state level estimates- Dholakia-Pandva rightly criticise the allocations of effective labour inputs with differential productivity weights of working owner, hired workers and family helper worked out at the national level: the difficulty seems to be the inadequate sample size at the state level for estimating the weights at the level of the states, as pointed out by T. Rajeswari in her Comments: not using differential weights to different kinds of labour inputs. of course, implies arbitrarily assigning them equal weights;
- potential difficulties in preparing comparable back series for the aggregate and particularly the sectoral GSVAs at basic prices - the paper by EPW research Foundation and DES, Maharashtra, however, apparently rebuts this claim, so more on that when that paper is discussed; and
- 10. further increase in the difficulties for estimation of District Domestic Product because of the increased proportions of allocations in the estimation of GSVAcuriously, the Dholakia-Pandya paper points out that even the trend growth rates of agricultural inputs used in the food grain production used for updating GVA in agriculture are allocated among the states by the CSO. That is certainly likely to vitiate the movement of estimated DDP over years.

The critical importance of having a reasonably accurate estimate of GSDP can hardly be overemphasised. This measure provides a basis for assessing the state's performance for a number policy purposes, including, for example, the devolution of funds by the Finance Commissions. Crucial fiscal ratios for the states to be maintained as per the Fiscal Responsibility and Budget Management Act also critically depend upon the estimates of GSDP of the states. Estimates of per capita state and district incomes are also crucial inputs in the computation of the Human Development Indices at the state and district levels. Also, as we know, the GSDP data across states and over time have been extensively used in researches and policy discussions related to the questions of inter-state income inequalities. And GSDP growth rates have been used in studies on the questions of convergence of them over time. But surprisingly, there is hardly any debate about the quality of the GSDP data and about the data and the methods used in estimating them. For all these purposes CSO prepares comparable state level series, which can diverge from state level estimates prepared by using ground level data, and perhaps, from ground level reality. Hopefully, we shall get more clarity on this issue as well in the seminar.

The state level estimation of domestic product aggregates for states other than Gujarat (and Maharashtra) mentioned above may also be saddled with some of these serious issues. There may be some other serious problems which may have come to the notice of other economic statisticians participating in this seminar. It is extremely necessary to bring out all these issues arising in the compilation of state and district level domestic product and income and their components, debate and discuss them and place the same in public arena for further discussion and consideration.

A couple of years ago, NSSO, in the 74th Round, conducted a survey of service sector enterprises. This is expected to be a prelude to an Annual Survey of Services Sector. Developing a comprehensive database for the services sector will help greatly improve the estimation of GVA in services sector at the national and the state levels. One would like to know more about these developments. The launch of GST is expected to provide a rich and systematic database on the taxes on goods and services. As the GST is a destination based tax, one would expect the data generated by the GST Network to improve the estimation of the expenditure side of the national and the state accounts. It will also improve the estimation of GDP and GSDP at market prices, hopefully avoiding the repeated revisions in the estimates of GDP and GSDP at market prices due to frequent revisions of net indirect taxes. Dr. Anant has commented upon this in the media and one would like to hear more about how, sometime in the future, this data base is likely to help improve national and state income accounts.

I am very glad that we are able to organise this seminar on the estimation of GSDP, which as stated above, is a key indicator for understanding the emerging changes in our federal polity. We have a number of papers examining the various issues involved, which are included here. With Dr. TCA Anant chairing the proceedings of the seminar, and a number of distinguished scholars working in the area of national accounts, and with senior officers participating from the CSO and from several DESs (although we tried to seek, and would have liked to have participation of DESs of more states, we have senior officers from five states, namely, Gujarat, Himachal Pradesh, Karnataka, Maharashtra and Rajasthan, attending this seminar), we hope to get greater clarity on the nitty gritties of the datasets and the methods used in computation of GSDP, many of the issues involved in these computations, and better understand the steps necessary for improving the estimation of GSDP in future.

Estimation of state domestic product or district domestic product is a part of the exercise of developing systematic regional accounts, which is of necessity beset with the problems associated with reliable allocation of the contribution to the outputs of sub-regional units, of a large number of multi-regional organisations and supraregional entities like the railways, supra -regional activities like communications, and operations of the central government, banks and other financial corporations, etc. The question here is, how representative are the indicators used for allocating the outputs of these organisations and these activities to the state levels.<sup>1</sup>

As the system of regional accounts forms the backdrop of all such discussions, Dr. TCA Anant has suggested that he would want to start the proceedings of the seminar with opening remarks on regional accounts.

It is my pleasure to request Dr. TCA Anant to make his opening remarks.

<sup>1</sup> For example, in his introductory remarks (not included here), Dr. Sriraman briefly referred to the need for compiling the accounts of the Indian Railways at least at the Division level.

### INDIA'S NEW GDP SERIES: IMPLICATIONS FOR THE ESTIMATION OF GSDP

#### TCA Anant\*

Good morning everybody. First of all let me start by thanking Prof. Chitre, Prof Sriraman and Indian School of Political Economy for having organised this workshop on State Domestic Product Estimation in India. It is particularly appropriate because way back in the late 50s or early 60s when CSO was then examining this issue under the working group on state incomes, the Gokhale Institute made a major contribution in this exercise and was, in fact, one of the pioneers in this area. So, I think it is appropriate that we have this discussion in Pune.

There are some excellent histories of National Income Accounting in India see for instance "The National Income of India in the Twentieth Century by S. Sivasubramonian, OUP, 2000". Early estimates of state Domestic Product were done in Maharashtra, Bombay Presidency, Bihar, UP, West Bengal. In fact, much of this work preceded the work of the National Income Committee. However, even though the work on computing state level domestic product had started quite earlier on, its impact had remained limited. The major development, in this area, come with the report of the national income committee and the establishment of the National Accounts Division of CSO. The National Income Division was originally in Finance Ministry and later shifted to CSO. The National Income Committee, and the conference of state and central statistical organisations in 1956 had recommended that states should also prepare state domestic product (SDP) estimates on lines of the recommendation of the national income committee. As a consequence of these recommendations CSO set up a working group on state income in 1957. The recommendations of this group let to a more systematic compilation of state accounts.

However, this early work was not very satisfactory. We find this dissatisfaction reflected in the Report of the Fourth Finance Commission in 1965. The commission discussing the issue of allocations, had noted that many states had requested that the allocations be linked to state incomes. As a consequence the Finance Commission made an effort to assess the quality and comparability state income estimates and concluded, "We examined the available data on state income and found that they are not comparable from state to state and therefore not useful for the purpose. We urge that the process of building up reliable and comparable estimates of state incomes should be accelerated." The 5th Finance Commission clearly documents that CSO had supplied them with a set of comparable state income estimates, so from the 5th Finance Commission, which was in 1969, every Finance Commission has been producing data on comparable estimates, which CSO has given them. This allows us to pin down, when CSO started the practice of generating comparable estimates. The Planning Commission introduced the Gadgil formula, around this time, for making Planning Commission's allocations which also used the CSO series of comparable estimates. We need to, however, distinguish between CSO's comparable estimates and the efforts made by state governments in estimating GSDP.

The CSO's comparable estimates are fundamentally an allocation exercise. An early example of comparable estimates was by Uma Dutta Roy Chaudhari in 1949/50 who generated a set of comparable estimates for the National Income Committee. In contrast to estimates being generated from an allocation rule from an All India estimate, States were producing their estimates as per need of the state government using state level

<sup>\*</sup> Dr. TCA Anant is then Chief Statistician of India and Secretary, Ministry of Statistics and Programme Implementation, Government of India.

data broadly following the approach dictated by the National Income Committee. These different approaches, however, were not standardised.

The next major development happens in 1972 when the Committee on Regional Accounts was set up. The Committee was chaired by Prof Moni Mukherjee and it had many distinguished participants from the state governments and academics; the member secretary of the committee was Dr. Uma Dutta Roy Choudhary from the National Accounts Division of CSO. The reports of this committee provide a very careful discussion on the major issues and data challenges in regional accounting in India. The Committee also made a number of recommendations on data, and compilation of state accounts.

This report is the basis on which CSO and the state governments have subsequently been doing their work. For Economic Historians, the report is particularly instructive because it highlights data limitations and provides a rationale for much of the later work by CSO, NSS and the state governments to meet these challenges. For example, in the first report the committee talked about the fact that labour force estimates are not standardised and reliable. This can be correlated with the work of Prof. Dantwala and the NSS which standardised the estimates of labour force characteristics. Similarly, the introduction and regular production of Annual Survey of Industries data by the CSO all can also be linked to the recommendations made by the committee of regional accounts.

In recent years, we have not had any similar structured discussion on regional accounts; which is why I am particularly glad that this discussion is taking place today. Since CSO will soon revise the base year for National Accounts and each such revision is path-breaking in its own way be, this would a good time for us to take stock of the work that we have achieved in the area of the regional accounts and what needs to be done.

Till recently, regional accounts were produced, used by the state governments and academics for their own purposes. They were also used by the Finance Commissions and the Planning Commission, along with the CSO comparable estimates. The scenario for regional accounts changed after the passage of the various FRBM acts by the Centre and State Governments and the recommendations of the 12th Finance Commission. The 12th Finance Commission examined the issue of fiscal sustainability and borrowing by states. They made a number of key recommendations of which two recommendations are critical for our discussion: First, the fiscal deficit to GDP ratio targets for centre and states to be fixed at 3% of GDP each: in other words, each one of them should aim for a 3% fiscal deficit ratio and second, the states should adopt fiscal responsibility legislation, which many of the states have now done. The 12th Finance Commission also talked in terms of devolution down to regional bodies and they recommended that the states should prepare District Domestic Product estimates as well.

The State Statistical Bureaus faced severe capacity and resource constraints in this latter mandate. To help mitigate this the central government made efforts to augment the states' resources through programmes for strengthening the statistical system and the 13th Finance Commission, also made an explicit grant for strengthening state statistical system. These have played a major role in removing some of the data challenges confronting compilation of Regional Accounts.

The 14th Finance Commission recognised the value of all these efforts; in fact, it recommended and endorsed strengthening of the requirement of fiscal responsibility, emphasis on borrowing limits based on GSDP, but ironically took a very strong position on sector specific grants which essentially came from an ideological position that the Finance Commission should not get into

micro-managing state actions. The Commission increased devolution to the states and eliminated most sector specific allocations. The central government too, in parallel, reduced emphasis on sector specific grants and schemes.

So, we now face a double challenge. The importance of state domestic product, the importance of making estimates on a common methodology the requirements of comparability are all accepted but the assurance of funding is reduced. This dilemma is particularly perverse because the FRBM mandates have increased the strategic interdependence of central and state estimates.

I will now turn to some theoretical considerations. I think it is important to appreciate that the System of National Accounts (SNA) formally does not have any guidance on regional accounts. The SNA in its origin and till recently has been primarily focussed on National Accounts and has not been focussed on sub-regional accounts. However, SNA 2008 for the first time uses language in various places which makes regional accounts now a methodological possibility and has also clarified the statistical challenges which lie ahead.

To elaborate this development it is important to examine the emphasis on the use of establishment as a basis for compiling national accounts and the recent changes in the scope of this concept. In SNA 1993, the concept of establishment was somewhat confused and limited. In SNA 1993, only local units which have some market output were treated as establishments. Pure Ancillaries were not treated as establishments, and were treated as parts of the enterprises of which they are ancillaries, since their entire output was being sold to principal establishment. So, local units that produce ancillary services such as headquarter services, warehousing, transport, etc., were not establishments since they were not producing output. These ancillary establishments were aggregated to the principal establishment. This made generating establishment-based accounts inherently problematic, especially with a view to compiling regional accounts. Consider when you have a local unit in one region but the contribution of that unit is being captured as part of the principal establishment in another region. Thus you were in effect allocating that entire value added at the location of the principal establishment was located. These issues were resolved in SNA 2008, where for the first time establishment is defined as a purely locationbased characteristic, ancillary units were also to be treated as establishments, output of ancillary units is supposed to be measured at cost, and so on and so forth. Now, given these changes in SNA 2008, regional accounts become theoretically feasible. I am using the word theoretically. because there is still an issue on the availability of data. For these reasons, the SNA 2008 document has annexure titled future research agenda, which discusses issues related to these concerns in a section related to "statistical units". The problem is that official Data is principally available as a by-product of legal requirements and typically the legal entity in most settings is an enterprise. Usually establishments are not legal entities. It is therefore important to examine the legal basis for establishments as against the statistical requirement. In India for instance, the legal bases for enterprises are the Companies Act, Acts governing Trusts, Societies, Cooperatives, etc. These laws also mandate the maintenance of accounts. In so far as establishments are concerned, the legal mandates flow out of the factories act in the case of manufacturing and the Shops and Establishments Acts in all other sectors. The Factories Act does prescribe as part of its mandate of labour welfare an elaborate structure of accounts required to be maintained by the establishment. However, the requirements in case of the Shops and Establishments were less onerous. Thus in Indian National accounts, until recently, we worked with a mixed approach, using Factories Act establishment data collected by the Annual Survey of Industries, with Enterprise data in other sectors of organised activity collected from company accounts. This mixture of establishment and enterprise level data created loopholes which I had referred to last year.

Since establishment level data is not readily available, often for the purposes of national accounts the best data source is from the enterprise level data. The divergence between the SNA ideal type and practical considerations of data availability has led to formation of a working group set up specifically by United Nations Statistical Division to examine these issues and recommend solutions for the future.

Given the importance of accurate sub-regional accounts, as articulated by Prof. Chitre in his opening remarks, the requirements of the Finance Commission and the FRBM Act require reliable state level and local accounts. There is a need for establishment level data. But how do we get ground level data from establishments when the principal reporting obligations of the data compilation efforts militate against this? In fact, technology has made that task much harder, because very often, data is now managed in centralised databases and servers, so local establishments themselves very often do not have access to the database. The database itself is available on corporate servers. Getting access to them, seeing whether they are able to give you establishment level data, etc., is a challenge which needs to be examined. So far, In the Annual Survey of Industries (ASI), Our approach has been to look at data available with the establishments and construct our schedules accordingly. As an aside it may be worth noting, this is why the ASI would often turn down requests to include modules on corporate practices as such data would not be available with the establishment. I referred to this because some years ago the Standing Committee of Industrial Statistics received a request from an eminent group of economists who wanted an additional schedule to be included in the Annual Survey of Industries, to look at certain management practices. The reference they gave was to the US Census of Manufacturing which includes a survey on management practices, and it has allowed a very rich and useful database to be built up. We discussed this in the standing committee, and realised that it would not be possible for us to administer this survey, because the respondent for the management practices survey may not always be located at the place where the investigator of the Annual Survey of Industries canvasses the data. ASI captures the data from the factory shop floor -data which are required to be maintained at the factory shop floor by the Factories Act. That was principally the reason why the Annual Survey of Industries said that this will not be feasible, given the survey design. In addition to these issues, the establishment in ASI is also required to meet the size criterion of the Factories Act. For this and other reasons the coverage of the factories act has been criticised elsewhere and has often been noted as one of the limitations of the ASI database.

In addition to the data availability problem, regional accounts also suffer from conceptual issues with regard to dealing with multiple establishment firms partly because of what I said earlier about where the data is located. The Committee on Regional Accounts had noted that for Supra regional entities we will need to allocate value added.

We face the problem of lack of suitable statistical frames both for allocating value added for supra regional entities, and to obtain establishment level data by sample surveys. National Sample Survey partly resolves the problem by taking recourse to using Economic Census data for stratification and selection of the Primary sampling Units, which are then canvassed in an area based approach, where a detailed listing is undertaken prior to selection of the Ultimate Stage Units. These surveys then become the principal basis from which we compute estimates in the regional level. But even here, we have not made an assessment as to how easy it is to get reliable data from branch offices and local establishments. There is a need to review NSS establishment survey data from the point of view of data availability in branch offices/ local establishments of multi establishment units.

This assessment is necessary before we conclude that NSS type sample surveys are the best solution to getting establishment level data. My personal perception is that branch offices may be reasonably good in giving you employment data; they may be able to give you some idea of turnover and some intermediate costs which are incurred locally. They may not be in a position to tell you about the costing of inputs supplied by the head office or even the eventual pricing of the product. Thus they may not be in good position to give you value added figures at the branch office. To appreciate the problem consider the difficulty faced by an NSS surveyor going to a branch office of, say, the State Bank of India, and gauge value added of the establishment. Similarly, consider a branch office of a logistics firm, it is not even clear what information would be capturable, employment, yes, and some idea of volume of business originating in that branch. But value added and related data may be a problem. I am pointing this out because, we have typically not thought about these questions. We have tended to think of each establishment as complete in itself with all data relevant to it available to it. This is not the case. What data an establishment keeps is determined by how the enterprise is managed and that is an issue which you need to look at carefully.

We are left with the question, can we get better establishment level data from the Head Office? This was a possibility which Dr. Manna had suggested last year during his presentation in the seminar here and I think that is something which needs to be looked at very carefully and a separate approach will need to be formulated for this. This is close to the approach followed in the US by the Census Bureau. To sum up, in order to get proper establishment data these are many questions which we will need to be resolved on location of data, ownership of data, Access to data, commercial and business confidentiality, etc. These have become important because modern corporate businesses have evolved into complex enterprises with establishments located across multiple legal jurisdictions.

Now, I would like to turn to some discussions, which may take place in the present seminar to make some initial observations. In any discussion on regional accounts, the discussion turns to the merits of allocation versus state level compilation. On this, I think we need to be very clear, Neither is allocation per se undesirable nor is state level compilation, automatically better. The relevant question to ask is what it is that is being allocated and how it is estimated. If any CSO estimate is built up entirely from sources like NSS or ASI where the data is collected by the centre at the state level, allocation is not an issue in itself. The challenge here is in the size of the sample collected for all India estimates. It has been argued that this sample is inadequate for purposes of regional or sub-regional, (i.e., District level or lower) accounts. The original structure of NSS work as visualised by Prof. Dantwala, who led the restructuring of the NSS, partly in response to the work of the committee on Regional Accounts, provided for state and central samples which could be pooled. A similar restructuring of the ASI was done recently, to permit state participation in ASI data collection. The National Statistics Commission has also issued guidelines on polling and NSS has supplemented them with a detailed methodological manual. The challenge here is that the states' ability to process state sample data remains extremely weak. Some states have been doing it regularly on time for some years but the progress has been slow. Differences continue to arise as state agencies collect the same data but on different time schedules or sometimes merely on account of sampling variations. The pooling methodology referred to earlier helps determine comparability, and when comparable, ideally we can pool data from state and central samples and use such pooled data for both All India and state level estimates. But in view of the fact that only a few states generate poolable data, comparability of state level estimates remains an issue.

There is a different class of issues when data is exclusively collected by state agencies, as in agriculture. Here data used in state and central accounts are sometimes from different vintages in the same reporting cycle like revised vs final, or sometimes subject to independent but different validation protocols. These issues are usually resolved at the stage of discussion but that happens only after final estimates are obtained.

The issue of mining is a little more complex. Mining data is collected both by state and central agencies. For major minerals (we must note classifications have changed recently) the data is reported by the Indian Bureau of Mines (IBM). IBM would receive data from both state agencies and Public and Private enterprises. They would generate state level estimates by doing their own allocations. In case of corporate entities, this procedure would create similar gaps in value added as noted earlier for manufacturing. For this reason, CSO in order to ensure completeness of coverage has decided to use corporate data for all mining through corporate entities. This has given an impression that the extent of allocation in the new series has increased. That is, in fact, not quite true as IBM too would allocate corporate mining estimates to states. The problem here with corporate data is that we do not have a clear understanding of mining and non-mining gross value added in the corporate sector. This may be something CSO and IBM need to work on to resolve.

There is another issue on the Allocate versus Compile debate. In compiling national accounts in India contemporaneous data is not always Therefore, in such cases we use available. benchmark estimates from baseline survey or type studies. These baseline estimates are then moved by indicators. Now here there are two challenges: First, is the baseline data available at the state level? Where baseline data is from NSS surveys, the answer yes, but issues related to use of state sample, pooling, etc., are as before. If however, type studies, are done then are they representative at the state level? The answer here is complicated. In some cases, especially in agriculture related sectors, or in the case of local bodies and autonomous institutions the studies are often done by state directorates. But not all states participate. In other cases, studies are done by specialised agencies, for example, in construction. In such cases, the coverage of states is limited. In all such cases, for non-participating states necessary is to generate some form of allocation. The effort here has to be to improve state coverage in base line studies. This was a major item in both the Statistical Strengthening Schemes and the 13th Finance Commission Allocation, an issue on which I will have some more comments a little later. The Benchmark is then projected in later years with indicators. The question that arises is: are these indicators available at state level? And if so, is it appropriate to use the state level indicators in the same way as their use at the all India level. This is not always the case. Let us consider an example. For value added in transport in the household sector, base line estimates are computed from NSS surveys. For subsequent years, CSO used an indicator derived from the size of transportation sector, measured from the stock of working vehicles, calculated through a perpetual inventory method. This approach has been in use for some time. But, what about the state level? Stock of Vehicles are certainly available at the state level. But is this appropriate to use at the state level? I think you will realise that there is a problem, because a vehicle can be registered in Gujarat and operated throughout its entire life in, say, Maharashtra or Rajasthan, Notice, however, All India is not a problem, because vehicles on the whole do not cross national boundaries, but within state boundaries is it a reasonable indicator? Mechanically, many states have been using this indicator and we keep getting problems, which need adjustment at the reconciliation stage. In the earlier base years, for value added in Trade we used an indicator called Gross Trading Income or GTI. This indicator was essentially derived from the aggregate of output in Agriculture, Mining (both capable of being allocated because they were based on state data) and manufacturing net of exports derived in part from the Index of Industrial production. This indicator, unfortunately, is not so easy to allocate. Recently, we moved to using an indicator based on tax collection, which is more capable of being disaggregated to the state level. The discussion suggests that for better regional accounts we should ideally have both bench marks and indicators which can be disaggregated to states or even sub-regions.

The above discussion has made it clear that better allocation or compilation of state level estimates needs significant enhancements in state statistical capacity. This covers both improved and effective participation in National Surveys, participation in development of suitable bench marks, state level indicators and so on. Many of these are areas where CSO has been working closely with state directorates. The major issue has been the availability of resources. In this connection, the last base revision represented a major change from the past due to two related efforts. The first was the World Bank supported State Statistical Strengthening Project implemented initially as a centrally sponsored scheme and the Sector Specific Grant of the 13th Finance Commission grant. These efforts led to significant improvements in the estimates of local bodies, the number of state level type studies undertaken and the improvement in survey capacity in states. However, recent developments have created challenges. This is on account of two related developments both having their roots in similar ideological predilections. The first was a move to reduce the number of centrally sponsored schemes, and the second was to eliminate sectoral grants under the Finance Commission. I used the phrase ideological advisedly, because behind both measures there is an assumption that these allocations have an element of paternalism and the states must be free to choose their own requirements. While there may be merit in the general principle, there is an issue when it comes to, what is essentially a governance related public good, namely statistics. The benefit to any given state from statistical capacity development is less than the value to the collective. In such a circumstance, this ideological position leads to under investment in statistics. I think, in general, economists have undervalued the importance of Governance and Governance related Public Goods in their discourse. I hope this issue can be explained once again to the new Finance Commission.

This has been a long and somewhat rambling introduction, so I should close with some concluding observations. I think the debate on Allocation versus Compilation has been overdone, what is important is the need for comparability. But we must keep in mind that states are extremely heterogeneous - and this is an argument which many of you have made in the past - there is a need to recognise state specific characteristics. There may be things which are being done in a particular state which do not have an all India flavour and add value in that state. Should we exclude them in our quest for comparability? Should we include them? This is the question to which we never had a good answer. This is not a new problem but has been discussed in the committee on regional accounts. However, the domain and magnitude of such divergences must be quantified and robustly justified. There is a need for both comparable estimates and representative estimates. The question is where should we use which estimate? The logic of the Finance Commission to insist on comparability is that you want to be able to treat everybody preferably on par because you are allocating a common resource. But when is this true in other uses of state estimates? Say for instance, fiscal responsibility, is that insistence on comparable estimates, the best possible way to proceed? I think, we need better theoretical guidance on this issue. The expert committees on Fiscal responsibility and prudential governance have not dwelled on this issue. I think we need to look at it. Further, as we evolve better representative

regional estimates, how should they be used in adjusting aggregate estimates? We may find in the future that we need to scale up our aggregate estimate if all these state level idiosyncratic sources of value are properly accounted. In light of my observations, I think, it is time that we revisit the committee on regional accounts. Much water has flown down the bridge and I am hoping that at the end of this discussion we can persuade CSO to relook at these issues. The new work on base revision has started. The national accounts committee can be asked to set up another committee on regional accounts. I think many of us will be benefited for many years to come. Thank you!

#### **DISCUSSION ON DR. ANANT'S OPENING REMARKS**

#### Prof. Dholakia

I would like to supplement some of your remarks about historical background. As per my knowledge, the first estimates of district income, by states were made by NCAER for the year 1956. They were for the old set of major states. It was in a hard copy form. And the first set of comparable estimates of state income were for four years, 60-61, 61-62, 63-64, 64-65, prepared by CSO for the Finance Commission, as you are rightly saying. Then the next Finance Commission insisted on the comparability of the estimates not only from the point of view of the regular comparability of data sources and methodology. but also from something which I think now CSO is looking for. That is, having the uniform prices. You have state prices, and you have national prices, i.e., Indian prices. So you have two series. And if you look at the report of the Sixth Finance Commission, they report these two types of estimates at the state prices and at Indian prices by taking three yearly average for the years -1967-68, 1968-69 and 1969-70. I have used those two sets of estimates in my book published in 1985. The CSO, thereafter, started publishing the 'comparable' estimates of net state income at state prices from 1975-76 onwards; and continued it right up to, I think, '82-'83. So you have a comparable series, every year coming out till about '85, if I don't make a mistake. Thereafter, all of a sudden it was stopped. And I don't know, why it was stopped!

#### **Dr. TCA Anant**

It's not stopped. It's produced but it's not published.

#### Prof. Dholakia

Ok. But regarding the 12th Finance Commission, I remember that I had argued with all

members and with Dr. Rangarajan as the Chairman, that all their fiscal deficit calculations and all their targets, etc., at the state level, would be absolutely off the mark, because they were using as the denominator, GSDP at factor cost, which [in aggregate] is about 9-10% less compared to the denominator at the national level, that is, the GDP at market prices. So, I was saving that vou need to have GSDP at market prices. The states and even the CSO were preparing the estimates of GSDP only at Factor Cost. Now when you have GSDP at market prices, it is not necessary that the difference remains the same a 10-12% difference that would exist for all the states together - for each state, because the states' indirect taxes and the subsidies work out very differently across the states. Several progressive states may have a much wider difference: some of the other states may have narrower differences. So, it is possible, that the differences, between the factor cost and market price estimates might vary significantly from say 5-6% in one case to something like 17-18% in another case. Now, the moment you make that adjustment, your fiscal deficit concerns of 3% and other things will go completely havwires. Now, what is happening is that the CSO has emerged with the new base series, and now the states have also emerged with the estimates of GSDP at market prices. Now the point I would like to make is that, the 12th Finance Commission at my behest and suggestion had asked the CSO to prepare the estimates of GSDP at market prices, but I was told that the CSO had raised their hands, saying that they could not do it. Then It was argued that there was an effort made by Ravindra Dholakia for Gujarat state to prepare GSDP at market prices and so, it could be prepared for other states as well. However, the CSO argued that there were some heroic assumptions that Dholakia made which the CSO should not make, and as a result, there was no way they could come up with the estimates of GSDP at market prices. However, within no time they

are now coming up with those estimates not only for all major states but even for Lakshadweep!! On the other hand, Prof. Deepak Sethia has made a very detailed and elaborate estimate of GSDP at market prices in his Ph.D. Thesis at IIMA. And as expected, there are some issues about how to allocate the indirect taxes etc., but apart from it, he has some first estimates. I doubt and I am not sure whether the new estimates of GSDP at market prices prepared by states or the CSO will make any sense because they are derived by allocating the national estimates. It is not a wrong perception that the 12th, 13th and 14th Finance Commissions have made this entire thing a mockery. Because now they are giving the fiscal responsibility target of 3% to every state irrespective of anything and everything. Why should that be the case? I mean this 3% - what is the sacrosanct thing about that? Is it a magic number? Certainly not. But perhaps the same magic band has now been given to the CSO which now prepares the estimates by allocating everything that is found difficult to estimate at the state level. Thus, the 3% target set by the Finance Commission gets allocated across states by both the denominator and the numerator separately!! Sir, that seems to be the main reason and justification for using the methodology of allocating national aggregates to derive state level estimates and yet sound practically useful and relevant!

#### **Prof. Rath**

I can only talk on the basis of memories rather than actual work at the moment. But I want to highlight two or three things arising out of your presentation, Mr. Chairman. In the first place, you didn't mention this, but as your general presentation suggested there are different sources of data which inevitably, the CSO, even the states statistical bureaus trying to bring together in order to prepare estimate. I'm afraid there is one source where you have unit level employment data of various fairly detailed division of industry allocation which is available once in 5-6 or 7 years in Economic Census and I have, over the past couple of years in various discussions, been surprised that nobody, nobody, I underline the word nobody heavily, ever even mentions it. I was shocked when a scholar who was working on this was asked to make a presentation in the then Planning Commission the last couple of years of its existence where senior administrators who had additional secretaries in the Planning Commission when presented with state level, district level data arising out of Economic Census, what is this Economic Census? They haven't even heard of this. Such is the level of negligence about this and this has been going on, this survey has been going. Economic Census has been going on since the early 70s. Sir, I remember, I was a member of an advisory group in the beginning of the Economic Census. And in the Gokhale institute we had a small group which was working on our division of resources the Leontief type of business, you see, so they wanted that for each economic unit, the labor and the material purchases from various resources should be collected. I said, since you are going there, and you are asking some small or large, these should be available and should be collected. And the people in CSO who are responsible for this were willing to consider this. But after the first round, they came to the conclusion that this makes the survey impossible. As a result, only employment data are what are collected but the type of enterprise is mentioned in great details. If you are trying to use NSS data, which is a sample of survey, all said and done, you can use some data of the type which is not available in the Economic Census, its averages and the labor and the unit data from Economic Census with appropriate trends and so on, in order to make an estimate. The complete negligence of the Economic Census data is something which

beats my imagination. I just don't understand why this is not being considered at all. Second, sir. if vou know this, your estimates, both at the central level aggregate as well as at the state level or even at the domestic district level, we considerably improved. But this brings me to the second point where I think you as the Chief of the CSO, will be able to help. At least that's what I think. As it the state statistical bureaus in the 50s, 60s till about the middle of the 80s, were mand by people at a more respectable level who were good trained statisticians or economic statistics. At least, two three of such people being there, it gives character to the work of the state statistical bureaus. We have here, from 5-6 states representative getting from the bureau and with due apologies to them, my impression is, from whatever I have seen in a few states which I shall not mention here, there are nobody today who have any understanding of anything. I shall not mention but the government has been giving, central government has been giving to some of these old states which don't have proper agricultural statistics, a 20% sample of every plot of land surveyed in the state, in the district and so on, in order to get seasonal and annual records of the crops and their outputs and so on. Can you imagine, their reports produced year to year do not even show what is happening over time? Nobody has an understanding of how to write a report, how to make the total presentation, and when I accidentally met some of them, I said, what's the matter? He said, whatever the secretary says is done. Now the secretary is secretary and the bureau people are bureau people. I'm mentioning this to you sir, this is a deficiency, which you at the centre on the chief of the statistical services of the country can try in your own way to press upon state governments that this sort of thing is leading to disaster. Sheer waste of public funds. You must have people who

have basic understanding of these things in order to be able to work. I don't want to take more time. I shall have occasion on other matters.

#### **Dr. Shetty**

I want to make 3 observations. One of them is. I entirely agree with what you said here today about the damage that the 14th Finance Commission has done with regard to the financial allocations. It is not only with regard to statistics, but also with regard to a number of other areas. We have been doing studies on social sectors. The allocations for the social sectors at the state level has suffered very badly because there aren't many of these schemes, the centrally sponsored schemes are given up, and what have you. Therefore, there are serious problems with regard to this kind of blanket allocation without understanding the dynamics of the political situation and the ground level reality at the state level. This is a serious issue: I entirely agree with you on that. The second thing is, I thought we must, I must make this point, I have been saying this often, that with regards to improving the statistical base of this country, we need to attract a number of other institutions, not only the CSO and the NSSO, or the MOSPI. We also want to involve, to give an example, SEBI and the Reserve Bank of India. They have a bigger role with regard to the financial system. One thing I would suggest with regard to unit level collection of data, with regards to income and expenditure of banks in states -now, this one responsibility we must give to the Reserve Bank. Similarly, with regards to other financial institutions would come under SEBI because there will always be conflict between SEBI and Reserve Bank with regard to control over institutions, and therefore capital market institutions by SEBI and other institutions by the Reserve Bank of India. It is necessary because I was aghast at the way they took a lackadaisical

view of AIDIS. They had the RBI sample. They gave it up. And they gave up the responsibility with regard to even producing it. And therefore there is a severe damage and that has not been We have done some resolved even today. grassroot level work with regard to say distribution of debt at the state level. It's totally totally incorrect when you deal with the grassroot level data from banks and other financial institutions. So there was serious problem with regard to that. Therefore, the involvement of Reserve Bank with regard to some of these, including financial unit level data requirements of states, has to be with the Reserve Bank of India. This is my suggestion. I thought I must share this with you. I have been making this point, and I want to do it in presence of my colleague from Reserve Bank. The third point is with regards to DESs, the manning of district economics and statistics boards. We have done some work on district level incomes and we want to publish district level data - we have taken on the responsibility. We have written to all 33 DESs. And I have been in touch with many of them. And this time, because I wanted to involve more people in this paper, I tried my best to contact as many as possible. One thing I noticed is that heads of the institutions are no more statisticians, as Prof. Rath is saving. They are bureaucrats, they are brought in, and when you approach them, they say, sir, sir, that man has been posted but he has no interest here, he is doing something else. And then it will be extremely difficult for us to get his approval and this has happened with regard to 3-4 states, not one. And I failed to involve other states. Fortunately, Maharashtra was very forthcoming. We have involved them in this paper. So, it is slightly better. But, by and large, the point that Prof. Rath made is very significant, and I think, something has to be done at the national level. It has to be improved; if you want to improve the database, you have to improve the manning processes at the state level. Otherwise, you will not get it. So that is the other point. There are a few other issues with regard to allocation etc. that will be a part of our debate and therefore I shall take that up later.

#### **Prof. Rath**

Sir, the old man may be excused for having forgotten. This allocation survey reminds me, this is one thing that I wanted to mention. This is not your task in the CSO but this is a very unfortunate development, particularly I suggest the national Finance Commission. The first Finance Commission thought of allocations other than the general allocations of taxes which have to be involved so by saying that there are some states which on certain matters appear to be laggards compared to the others. And as an example, the first Finance Commission took primary education. And then they try to make special allocations for Finance Commission for devolving funds to these laggard states for coming up in order to be on the par with the higher ones. And they said in their reports that what we are doing is something which has to be done with regard to various sectors in the subsequent commissions. But by the time the subsequent commission time came the Planning Commission had been established and there was a conflict of responsibility, viz., who will do this business, the Planning Commission or the Finance Commission? And with Pandit Nehru as Prime Minister and so on, some discussion took place and finally it was decided that this will be given to the Planning Commission. And so the Finance Commission lost interest in this. It's only during the last 10 years, that two three Finance Commissions have begun talking about allocations for various purposes. But the approach is not that of the first Finance Commission. The approach is in terms of GDP. See, what is this business of, what is the government's function in this country? Not anything and

everything. Government has 10-20-30 subjects on which it makes specific allocations. So, if in these specific matter where does the state stand? How will you finance them? Like the first finance said for primary education, health, higher education, secondary education, roads, whatever it is, there are large number of items that this state does in our country. You take each one of them and decide what is to be given to which state and in what manner? What is this giving lumpsums of money by comparing their GDP and making allocations? To my mind, sir, this is a meaningless approach. I remember, when Dr. Kelkar was the chairman of the Finance Commission. I sent a proposal about district administration. His first reaction to me in his letter was, you raised some important questions I will share it with my colleagues. And then, my proposal was completely ignored, in the report, there is not even a mention of it. Here in Pune, there was subsequently seminar in which he was making a presentation about the Finance Commission. And I was there so I told him you didn't even recognize, he said, "Rath, this is not constitutionally feasible." There was no time to discuss. I was aghast that the chairman says this! I had quoted the first Finance Commission in my communication to him. They didn't think, nobody thought this was constitutionally improper. Sir, my reason for saying this is, there is unnecessary beating around the bush on the basis of allocations, on the basis of state GDP. The allocations have to be subject specific, state by state. And then the problems that you are continuously being battled for, namely, what sort of state estimates you have, you will be free from. The state estimates have their reasonable place otherwise, but not in regards to these allocations.

#### Dr. Anant

Since a new Finance Commission has been constituted I think, many of you have, in the past,

have given memorandums to the Finance Commissions and I think it's important that I am not, there are many issues which are involved in this, I think, it will be important that if we do send at various levels at Indian School of Political Economy, certainly should I think, independently think about it because it is an issue which they will be discussing at least for one and a half years. Many of these issues will be, you may find ways to communicate your own concerns to them.

#### **Prof. Chitre**

Thank you very much. In fact, let me share with you, I tried to get Dr. Ashok Lahiri for this seminar. Unfortunately, he could not come because of some bereavement in his family. And I also on behalf of our School say what the thinking of our President is on this that we want to have another small one day session seminar devoted to the Finance Commission. So we are going to have that. Unfortunately, he could not link the two as Prof. Rath has linked the two but we could not link the two in our mental exercise. But anyway, thank you very much Dr. Anant, for your opening remarks and thanks also to Prof. Rath and Dr. Shetty and Dr. Dholakia for their very illuminating comments on what you said. I know, that there are many other people who would have liked to share their thoughts at this time but we are really short of time. And that cuts into other people's presentations.

So, I would say now that we end the first session and we are going to the next session. Basically we thought that before discussing the Dholakia Pandya paper, we should have the CSO presentation about the methodology, about what their concerns have been, what their thinking has one paper by T. Rajeswari, Deputy Director and another paper by Shri S. V. Ramanamurthy, related issues subsequently.

been. There were two papers received from the Deputy Director General, CSO. Since the first CSO. I'm thankful to the CSO for that, we have named paper is a concept note on state domestic product, we thought we may schedule it first, and General of National Accounts Division in CSO take up the paper on the base change and the

## STATE DOMESTIC PRODUCT - CONCEPTUAL FRAMEWORK AND METHODOLOGY

#### T. Rajeswari

Regional accounts are of special importance when there are disparities in economic development of the various regions of a country. Regional accounts are based on transactions of units that are resident in a regional territory. For calculation of macroeconomic indicators at the regional level, sufficient data are not available for institutional units (legal entities), which are normally used in the compilation of national accounts. Therefore, estimates at the regional level are compiled using limited information. Generally, data is available only at the enterprise level. Therefore, data for multiregional enterprises have to be allocated to regions according to economic indicators such as labour input, compensation of employees or other data that have some relationship with the value added of these establishments. This paper presents the conceptual frame work and methodology used by CSO for compilation of GDSP.

#### Introduction

Regional accounts are a regional specification of the corresponding accounts of the nation. Thus, regional accounts make use of the concepts used for national accounts. The total economy is defined in terms of institutional units and sectors. It consists of all the institutional units which have a centre of predominant economic interest ("that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year", [SNA, 2008]) within the economic territory of a country. Regional accounts are based on the transactions of units that are resident in a regional territory. "The residence of each institutional unit is the economic territory with which it has the strongest connection, in other words, its centre of predominant economic interest." [SNA, 2008]. SNA 2000 does not provide the definition of the regional economy. But, according to SNA 2008, three types of institutional units have to be considered in the context of regional accounts. These are regional units which have centre of predominant economic interest in one region and most of their activities take place in that region, multiregional units which have their centre of predominant economic interest in more than one region and units which are supra-regional like railways, central government, whose centres of predominant economic interest are not located geographically even in the sense of multiregional location. General principle for regional accounts is that transactions should be allocated to the region where the production unit is resident. The residence principle implies that value added of enterprises with establishments in more than one region will be allocated to the regions where the establishments are located. Regional accounts require comparability among regions and over time. Regional accounts aggregates will be comparable only if all the States use the same principles, definitions and same indicators for specific industries, and methods which are consistent over time.

In India, the work on compilation of official estimates of state income started as early as in 1948-49 in the states of Bihar, Uttar Pradesh and West Bengal. In January, 1950, first estimates on state income for the year 1948-49 were published for the erstwhile Bombay State. On the recommendations of National Income Committee (NIC) in early 'fifties, a few other states also came out with their first estimates on State income. The estimates of GSDP were prepared broadly following the standard methodologies recommended by the Working Group on State Income (WGSI), which was set up by the CSO in 1957.

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Further, as a follow-up of the recommendations of the First and Second Conference of Central and State Statistical Organisations (COCSSO), the Government of India in May 1972 set up a Committee on Regional Accounts (RAC) with the following terms of reference:

\* to consider and advise on the levels (state, district or other regions) at which accounts should be prepared;

\* to devise a system of regional accounts and standard supporting and supplementary tables for adoption by all the states;

\* to suggest measures for building up regional accounts in the country taking into consideration the availability of data and requirements of Central and State Governments; and

\* to examine the concepts, definitions, and classifications for preparation of regional accounts and to lay down guidelines.

The CSO has been coordinating the work on preparation and improvement of state income and regional accounts. Due to limitations in data, regional accounts in India are limited to recording production activities or estimation of Gross State value added (GSVA) and Gross State Domestic Product (GSDP). For the use of policy purpose by the erstwhile Planning Commission and the Finance Commissions, CSO has been preparing a series of comparable estimates of SDP at current prices. While comparable estimates for individual years are comparable over states, the comparability may not extend over time. The comparable estimates prepared for the period/year on the basis of latest available data at the time of preparation are not revised even though fresh data might have become available in the course of time as these estimates have already served the intended purposes. The comparable estimates prepared by the CSO are not published or put on the public domain. They are mainly prepared for the reconciliation exercise with the state DESs. The estimates compiled by the State DESs are discussed every year during the months of April-May and differences between the CSO comparable estimates and State DES estimates are reconciled.<sup>1,2</sup>

The Finance Commissions have recommended using the GSDP estimates to determine the borrowing limits of States. As per the recommendation of Fourteenth Finance Commission, for the purpose of assigning statespecific borrowing limits as a percentage of GSDP for a given fiscal year (t), GSDP is to be estimated on the basis of the annual average growth rate of the actual GSDP observed during the previous three years or the average growth rate of GSDP observed during the previous three years for which actual GSDP data are available. This growth rate is applied on the GSDP of the year t - 2. Specifically, GSDP for the year (t-1) and the given fiscal year (t) is estimated by applying the annual average growth rate of GSDP in t - 2, t -3 and t - 4 years to the base GSDP (at current prices) of t - 2.

#### **Compilation Approach**

#### Compilation at the National level

GDP at the national level is estimated from production side as well as expenditure side. GDP is estimated from the production side by summing the value added of all different kinds of activities. Value added (GVA) can be estimated by production approach as Value of Outputs - Value of Material inputs and by Income approach as Compensation of employees + operating surplus + Depreciation. GDP can then be estimated using the production approach as GVA at Basic prices + Net taxes on Products. The expenditure approach GDP depicts the final use (demand) of the output and comprises (i) Government Final Consumption Expenditure (GFCE) (ii) Private Final Consumption Expenditure (PFCE) (iii) Gross Fixed Capital Formation (GFCF), (iv) Change in Stocks (CIS), and (v) Net Export of Goods & Services. In the National Accounts Statistics, the production approach GDP is considered to be the firmer estimate; and the NAS presents the discrepancy with the expenditure approach GDP explicitly.

Gross value added at basic prices is defined as output valued at basic prices less intermediate consumption valued at purchasers' prices. [Francois Lequiller and Derek Blades, 2006] From the point of view of the producer, purchasers' prices for inputs and basic prices for outputs represent the prices actually paid and received. Their use leads to a measure of gross value added which is particularly relevant for the producer. Basic price, which excludes product taxes net of product subsidies, (i.e., taxes/subsidies which are paid/received per unit of output or sale) from market prices, is the natural price of the producer as taxes or subsidies on production, (i.e., taxes/subsidies which are charged/provided regardless of output or transaction size) cannot be eliminated from the output prices.

Gross value added at factor cost used in the 2004-05 series is not a concept used explicitly in the SNA. There is a conceptual difficulty with gross value added at factor cost, as by definition, "other taxes or subsidies on production", [i.e., taxes or subsidies] are included in the price considered by the producer for deciding the price of the product. Thus, gross value added at factor cost estimated in the 2004-05 series is not strictly a measure of value added devoid of all taxes or subsidies on production.

#### Compilation at the Regional level

For calculation of macroeconomic indicators at the regional level, sufficient data are not available for institutional units (legal entities), which are normally used in the compilation of national accounts. Therefore, estimates at the regional level are compiled using limited information. Generally, data at the enterprise level is only available. Therefore, data for multiregional enterprises have to be allocated to regions according to economic indicators such as labour input, compensation of employees or other data that have some relationship with the value added of these establishments. According to manual on regional accounts (Regional accounts methods -Eurostat, 1995), referred to in SNA 2008, as well as Eurostat 2013 regional estimates can be compiled by using the following methods: (a) bottom-up methods (b) top-down methods or (c) a mixture of bottom-up and top-down methods. The bottom-up or ascending method of estimating a regional aggregate consists of collecting data directly for resident units, and compiling regional estimates by aggregation. This is the most appropriate method. In the top down approach national level estimates are allocated by using different indicators, such as the labour input, compensation of employees, etc., which have a close relation with the value added of the establishments. The method is named top-down because the aggregate is allocated to a region and not to a local establishment or local unit. The top down approach is categorised into following groups: [Eurostat, 1995; Eurostat, 2013]

- (a) Top-down output methods for industries where comprehensive regional data on produced goods and their prices and intermediate consumption are available.
- (b) Top-down methods, based on the residence of the local kind of activity (KAU) units or establishment and indicators which are closely related.

The UK statistical office adopts a 'top down' approach to calculate regional figures, whereby the national control aggregate for a component of GVA is allocated to regions using the most appropriate measure of regional activity. The

regional or industrial estimates must sum to the national total. The US Bureau of Economic analysis compiles regional GVA by using state level information and scales it up to the national estimates of GVA. [Bureau of Economic Analysis, Year?] This is done for the bench mark year as data used for compiling state income come from the economic censuses which are conducted once in every five years. For other years, estimates are compiled by interpolation/ extrapolation techniques using indicators that mirror the movement of GVA of the state that is being estimated.

At present, all the States and UTs, with the exception of Dadra and Nagar Haveli, Daman and Diu and Lakshadweep, are preparing the estimates of GSDP and NSDP at current and constant prices. However, some States (Harvana, Tamil Nadu) have been compiling estimates of GFCF also. The main issue here has been the estimation of capital formation by the private sector, though many states have been publishing the public sector capital formation. But the private sector capital formation at the state level is still an issue. Conceptually, the estimates of State domestic product can be prepared by adopting two approaches, namely, income originating and income accruing. In the income originating approach, the measurement corresponds to income originating to the factors of production physically located within the geographical boundaries of the State and represents gross/net value of goods and services produced within the State. On the other hand, the income accruing approach relates to the income accruing to the normal residents of a state. However, for compiling GSDP by income accruing approach one needs data on flows of factor incomes to/from the boundaries of state, i.e., on inter-State flows as well as flows to/from abroad. Due to lack of availability of these data, presently, the estimates of SDP are compiled following the income originating approach. For estimation of GSDP in India, regions have been considered as coterminous with the geographical boundaries of the States and sub-regions as districts. Thus, the current concept of compiling the GSDP/NSDP is similar to that of compiling the GDP/NDP of the entire economy, i.e., measuring in monetary terms, the total value of goods and services produced within the geographical boundary of the State. [Central Statistical Organisation, 2012]

# Methodology adopted in the new series (2011-12 base).

With the gradual improvement in the availability of basic data over the years, a comprehensive review of methodology for national accounts statistics has constantly been undertaken by the CSO with a view to updating the data base and shifting the base year to a more recent year. The reason for changing the base year of the national accounts periodically is to take into account the structural changes which have been taking place in the economy and to depict a true picture of the economy from the most current perspective. The base year of national accounts were revised in the following chronological order:

- i. From 1948-49 to 1960-61 in August 1967;
- ii. From 1960-61 to 1970-71 in January 1978;
- iii. From 1970-71 to 1980-81 in February 1988;
- iv. From 1980-81 to 1993-94 in February 1999;
- v. From 1993-94 to 1999-2000 in January 2006:
- vi. From 1999-2000 to 2004-05 in January 2010; and
- vii. From 2004-05 to 2011-12 on January 30, 2015.

The first year mentioned in the sub-periods referred to was the base year in each case.

Features of the new series on National Accounts Statistics that was introduced in January 2015 with 2011-12 base are

- incorporation of latest available data from surveys and Censuses
- expansion of coverage of activities,
- adoption of International Guidelines
- System of National Accounts, 2008 wherever feasible
- use of, MCA21 database, which is a database of the annual financial reports of Companies registered under Companies Act.
- use of current indicators like sales tax
- use of 'Enterprise Approach' in lieu of 'Establishment approach' in the case of mining and manufacturing enterprises.
- labour Input method revised to account for different productivities in different categories of labour in manufacturing and selected services.
- presentation of macroeconomic aggregates for different institutional sectors
  - \* General Government
  - \* Non-financial corporations
  - \* Financial corporations
  - \* Households including Non-Profit Institutions Serving Households

The general methodology for compiling the estimates of GSDP is to first compile the estimates at disaggregated level for each economic activity for the whole region/State and then aggregating them. The estimates for commodity producing sectors like agriculture, forestry, fishing are prepared using the production approach at the state level, i.e., measuring the value of output and deducting therefrom the cost of material inputs used in the process of production. State level production data and prices are used. Even the inputs data that are used are at the state level. For example, the CSO uses the data from the Cost of Cultivation Studies, which are available statewise. This information is discussed with the states when they come for reconciliation. So, for these sectors, in fact, the estimates are prepared at the state level and then aggregated to arrive at the national totals. In the case of mining and manufacturing sectors, State level estimates are compiled using top-down method. Here, estimates are compiled by type of institutions. In the case of public corporations, all-India estimates of compensation of employees at the national level are allocated on the basis of State-wise number of employees and the operating surplus is allocated on the basis of value of assets, from the public sector enterprise survey. Estimates of private corporate sector are allocated using establishment level information from ASI in the case of manufacturing sector and State-wise output data in the case of mining. The indicators used for allocation in the case of other sectors are location of the enterprise (for departmental enterprises), State-wise compensation employees, value of assets, electricity generated, State-wise gas sold, labour input, sales tax, tourist arrivals (for the hotels and restaurants), index of registered vehicles, cargo handled, (all this information are available state-wise), state-wise information on central government employees. The household sector estimates of services (including quasi corporate sector) and manufacturing sector are prepared for the base year by multiplying the value added per worker by labour input and extrapolating these benchmark estimates with suitable indicators for other years. The State level estimates are aggregated and adjusted to the national estimates.

In the preparation of State level estimates, certain activities cut across State boundaries, and thus their economic contribution cannot be assigned to any one State directly. Such activities are Railways, Communications, Financial corporations sector and Central Government Administration, and are known as the Supra-regional sectors of the economy. The estimates for these supra regional activities are compiled for the economy as a whole and allocated to the States on the basis of relevant indicators. In the case of railways, the indicators are based on the track length and passenger/goods carried whereas in other supra regional sectors it is the number of employees in the State, State wise deposits, credits and premiums. As recommended by the RAC, the estimates of these sectors are prepared by CSO and are adopted by the State Governments for preparation of their State Income estimates.

Major changes in the new series are: (a) use of MCA data base for compiling All India estimates of private corporate sector. The MCA data was available for over 5 lakh companies in 2011-12. In the 2004-05 series, the All-India private corporate estimates were compiled using the RBI studies on company finance and allocated to States on the basis of Labour Input (LI) proportions. The RBI results were based on a small sample of around 2000 companies. The all India estimates are obtained by blowing up the results on the basis of ratio of Paid up Capital (PUC) of all registered companies to PUC of the companies used in compilation. The blowing up factors used in the 2011-12 series are based on a relatively large number of companies and the difference in blowing up factors used in the 2004-05 series and 2011-12 series have resulted in large variations in the estimates. Since the blowing up factor for the 2011-12 series is much smaller compared to that for the 2004-05 series, this has resulted in many states getting a much lower estimate in the new series compared to the old series. The unorganised sector estimates in the new series were compiled using effective LI in the base year (2011-12) based LI directly available from the 68th round (2011-12) (Employment and Unemployment Survey (EUS)) which were extrapolated to other years using suitable indicators. In the 2004-05 series. GVA estimates of the unorganised sector for 2011-12, were compiled using LI estimates based on extrapolated values from the 1999-2000 and 2004-05 surveys of NSS 55th and NSS 61st Round survey results, which gave very high values of LI in 2011-12. Therefore, it was found that the Labour Input (LI) growth rates used in the 2004-05 series had overestimated the value added by a very large margin at both the national and the state levels.

#### **Estimation of GSDP**

Gross Domestic Product (GDP) is compiled by adding Net Product Taxes, (i.e., Product Taxes minus Product Subsidies) and the aggregate Gross Value Added (GVA) at basic prices. The same analogy is also applied at the State level. For this, State-wise estimates of net product taxes are added to Gross State Value Added (GSVA) at basic prices, to estimate the Gross State Domestic Product (GSDP). For arriving at these State-wise estimates of product taxes and product subsidies, apart from the taxes and subsidies on products recorded in the budgets of the State Government, taxes and subsidies pertaining to the Union Government need to be allocated to the States. Central or supra-regional product taxes and subsidies in 2011-12 series have been allocated (the methodology for this was based on the Report of a Committee appointed by the CSO for the purpose, and the methodology of the allocation was circulated to all the states, so the states can also do it independently) using the information on jurisdiction of respective commissionerates and GSVA of sectors that are subject to taxes. Product subsidy is allocated on the basis of indicators like State-wise off-take of rice and wheat and Minimum Support Price, State-wise consumption of fertilisers for each nutrient type, State-wise sale of petroleum and products by PSUs and where the specific information is not available, on the basis of GSVA.

#### Conclusion

For compilation of macroeconomic indicators at the regional level, sufficient data are not available for institutional units (legal entities), which are normally used in the compilation of national level estimates. Therefore, estimates at the regional level are compiled using limited information. If complete and reliable micro data is available at the level of local KAUs or establishments, regional values that correspond in concept with the national values can be estimated by the bottom-up method. Some of the major data gaps are absence of certain key datasets at the State level. These are given below.

- (1) Wholesale Price Index at the State level
- (2) Index of Industrial Production: CSO has been providing technical guidance to the States for compiling State level IIP. As of now, around 13 states are compiling IIP. All other states also need to compile IIP which can be used to prepare the Advance and Quick Estimates of SDP because Quick estimates /Advance estimates are based on IIP not on ASI.
- Corporate Sector Statistics: The limita-(3) tions of MCA data set is that, at present, State level information is not available. Therefore, regional estimates of private corporate sector are compiled by allocation method using relevant regional indicators like work force, sales tax, tourist arrivals (for the hotels and restaurants), index of registered vehicles, cargo handled, etc. The accuracy of these estimates depends largely on whether the regional indicators used reflect the regional phenomenon to be measured. It has been reported by MCA, that Cost Audit Report can be used for extracting auxiliary information from MCA data. Information on location of factory, details of products, etc., are available in this report. This information can be used for compiling regional accounts. In this regard, the DESs may coordinate with Field Operations Divisions in the States and use the list of companies generated from MCA to find out location and operational details of these companies. This exercise can be carried

out at least once in five years. This list could be used as a frame for collecting financial data of these enterprises at the State level.

(4)Benchmark Surveys of Enterprises: Benchmark sample surveys of enterprises are conducted once in five years by National Sample Survey Organisation (NSSO). The NSS 74th round (prelude to Annual Survey of services sector) is an enterprise focussed survey on services sector. This is a first survey of its kind covering large business establishments of services sector using list frame. In future this survey would enable States to compile estimates of private corporate sector. This survey can provide estimates of private corporate sector of services at the state level as against the present method of allocating the all India estimates of private corporate sector using different indicators to obtain state level estimates In order to improve the robustness of results generated by NSSO at the State/industry group at the State level, the Central and State samples could be pooled and analysed by the States. At present all the states are not compiling pooled estimates because of various issues like manpower, etc. This would bring about a significant improvement in the quality of the SDP estimates that are based on these surveys.

> Indicators to extrapolate the estimates based on five-yearly benchmark surveys: Currently, for the purpose of preparing National Gross Domestic Product and State Domestic Product estimates of services sectors, various physical indicators of activity are used to extrapolate the benchmark estimates. However, it is essential to have a reliable set of proxy indicators which are available at quarterly/annual frequency. Bench mark surveys (retail trade surveys, etc.,) are of course

desirable but initially there is a need to firm up indicators that are available for use in quarterly and annual estimates

- (5) Capital Formation, Capital Stock and Consumption of Fixed Capital (CFC): The State Directorate of Economics and Statistics should start compiling the estimates of Gross Fixed Capital Formation (GFCF), on the basis of the guidelines provided by the Central Statistical Organisation (CSO) from time to time. Once the States start compiling the GFCF estimates, a database on this could be developed, which in the long run, would be used for compiling the estimates of capital stock and CFC. State DESs may examine the guidelines in consultation with CSO for the compilation of capital formation, capital stock and CFC. At present none of the states are compiling CFC and capital stock.
- Local Bodies: One of the recommenda-(6)tions of 13th Finance Commission was to prepare accounts for local bodies by collecting the data on receipts and payments for strengthening the district income estimates. To achieve this milestone and to collect comprehensive data on local bodies. CSO had circulated a simple schedule consisting of sections regarding the current and capital receipts as well as current and capital expenditure at aggregate level for each local body and a separate section to enter the information of funds available with the local body. Out of 21 states, which have provided estimates at the time of base year revision, around 10 States and UTs are providing estimates for the local bodies on regular basis. For the remaining States and UTs, we are preparing the local body estimates by blowing up on the basis of grants. More states should start compiling the accounts of local bodies on a regular basis. There is also a scope for improvement in the data received from the States. The main focus of the States has

been to prepare the NVA estimates and capital formation estimates to some extent. Purpose Classification of Functions of Government (COFOG), income outlay accounts, borrowing accounts are not being compiled by all the States. Complete information regarding the types of taxes levied, transfers, financial assets and liabilities, etc., are also to be compiled for preparation of sequence of accounts.<sup>3</sup>

#### NOTES

1. Editor's Note: In response to an observation made from the floor (by Professor Dholakia) that the estimates of GSDP appearing in the Economic Survey are from the State Bureaus and not the CSO comparable estimates, it was reiterated that they were indeed from the State Bureaus. On a question, in continuation, (by Dr. Sethia), as to whether the CSO provides the GSDP estimates to the Finance Commission and whether the GSDP estimates appearing in the Finance Commission Reports are the comparable estimates prepared by the CSO, it was explained (by Ms. Rajeswari) that the CSO uploads GSDP estimates twice in the year, once on August 1 and then on March 1 every year. After the reconciliation exercise with the states in April-May, the finalized reconciled estimates of GSDP, which are accepted by the States, are up-loaded on the CSO web site in August every year. The (reconciled) estimates up-loaded on the CSO website are available with the Finance Commission/Finance Ministry for fixing the borrowing limits of the states, etc. CSO prepares the comparable estimates only for two years. They are used only for the purposes of the reconciliation exercise with the states. They are discussed. The comparable estimates do not undergo any revisions subsequently afterwards as their purpose is served. But the states revise their estimates as new data becomes available, and provide CSO the complete series, and that is up-loaded. Ms. Rajeswari further clarified that, in the recent years, the CSO has not been forwarding any GSDP estimates to the Finance Commissions. But the reconciled GSDP estimates on the CSO web site are available to them. It was further clarified that the GSDP figures appearing in the Finance Commissions' Reports involve projections and CSO does not make any projections. Prof. Dholakia pointed out that the Finance Commission makes the projections beyond the three years by applying the growth rates for the three years. Ms. Rajeswari pointed out that some of the states have now been preparing Advance Estimates. The CSO has been urging the state bureaus to prepare Advance estimates. Advance estimates have an implication for the borrowing limits. Advance estimates would give three years' data for basing the projections on the average growth rate of three years. However, since all the states are uniformly not preparing Advance estimates,
only two years' data are available for any one making projections. These projections are available for use for fixing the borrowing limits.

2. Editor's Note: Shri Vinod Kumar Rana pointed out that the data for GSDP to be used by the Central Ministry of Finance in the Economic Survey for 2017-18 are supplied by the states, and these are the figures reconciled with the CSO. There is a difference of about 1.5 -3.00 per cent between the figures prepared by the states and the comparable estimates prepared by the CSO. There are certain issues which are resolved between the state DESs and the CSO to minimize the difference. But certain issues still remain which will come up in this seminar. On this Dr. Anant observed that the reason the CSO has not been publishing the comparable estimates prepared by it because there is a risk that if the CSO starts publishing them, it may undermine the autonomy of the efforts put out by the states. So, they are used in the dialogue with the states and only the reconciled estimates, accepted by the states, are published. And the differences are, by and large, small. However, the CSO's comparable estimates are available for the internal use; they are available to the Ministry of Finance for its use. They are used in the dialogue with the states. These discussions are very productive and fruitful. When the Committee on Regional Accounts does its work, it may take the history of these dialogues into account - as the

records are there - for making its recommendations. But if the CSO starts putting out its independent estimates, two estimates for the same thing may create problems for each other.

3. A template has been circulated among the states on a suggestion of a committee chaired by Prof. Dholakia to collect the information on the local bodies. As of only Himachal Pradesh has provided the requisite information.

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# **BASE CHANGE 2011-12 AND IMPLICATIONS ON GSVA**

S V Ramana Murthy\*

This paper tries to identify the likely impact on the Gross State Value added (GSVA) due to base changes in the context of coverage of the sectors of the economy; changes in institutional sectors; availability of more detailed datasets such as the MCA21 at the National level but weaknesses at the state level; the issue of increased share of allocation of All India GSVA estimates to, instead of adopting, the state level estimates.

The CSO in January 2015 brought out the revised series of national accounts statistics with 2011-12 as the new base. The new series is a marked departure on estimating the GDP from the old series. The series is different in terms of definitions, methodology, coverage and data sources. The series has implications for the subnational estimates also. The following sections present these aspects in the new series.

**Definitions:** the valuation of macro aggregates such as GVA, NVA, etc., are valued at basic prices instead of factor cost as in the previous years. The basic prices are invariant to changes in production.

Choice of base year: Base years of National accounts were changed to capture the structural changes in the economy. Earlier, since the workforce estimates were estimated from the censuses, the base year was the census year such as 1960-61, 1970-71 or 1980-81. With the NSSO conducting employment unemployment surveys usually after a every five yearly intervals, the base years were also changed to 1993-94, 1999-2000, 2004-05 and 2011-12. There is an UNSD recommendation to rebase national accounts every five years. Although in the year 2009-10 employment unemployment survey was conducted, since it was a drought year the NSS was tasked with redoing the survey in 2011-12. Also, whenever we change the base year we are required to carry out for the year a number of large-scale surveys such as the employment unemployment survey, non-agricultural enterprise survey, the consumer expenditure survey, etc., the data from which provide the inputs required for estimating the value added for our very large informal sector and a number of indicators have to be benchmarked to the accepted base year. Hence, it was decided to prepare GDP estimates for the base year 2011-12.

The same base year needs to be adopted for the states also as different base year at states will lead to estimates which would be difficult to compare.

#### Improvements in coverage

Corporate Sector - In the old 2004-05 series, the Private Corporate Sector estimates was covered using the RBI Study on Company Finances, wherein estimates were compiled on the basis of financial results of around 2500-3000 companies. Of these, we were using the data from only 1500 service sector companies, because for the manufacturing sector the ASI results were directly used. Also, the ASI data on manufacturing units had missed a number of units of some important PSUs, for example, of BHEL. While we have been analysing the data from the annual reports of some 300 non-departmental commercial undertakings (NDCUs), which covered nearly 70 per cent of the GVA of NDCU of the manufacturing sector, still we were not using the same in national accounts as we used the ASI data. Even then, we wanted to enhance the coverage of the NDCUs. (Larger coverage does not mean larger estimate for GVA as we have discovered in the 2011-12 series). States were asked to supply the lists of their NDCUs, so the number of NDCUs for which we have the annual financial statements

<sup>\*</sup> S V Ramana Murthy is Deputy Director General, Ministry of Statistics and Programme Implementation, Government of India. The views are personal and do not belong to the organisation.

has gone up to more than 1700. A number of past committees, for example, the High Level Committee on Saving and Investment, had suggested using the corporate (balance sheet and profit and loss account) data, which we have not been able to utilise. Thanks to the e-governance initiative taken by the Ministry of Corporate Affairs- the Ministry of Corporate Affairs has set up what is known as Corporate Data Management Unit, which has taken up some very focused studies. The main concern of the MCA is the compliance under the Companies Act.

Because of these developments, in the new series, comprehensive coverage of Corporate Sector has been ensured in mining, manufacturing and services by incorporation of annual accounts of companies as filed with the Ministry of Corporate Affairs (MCA) under their e-governance initiative, MCA21. Comparing the coverage of companies (we are talking about the coverage of number of companies, not value added) under the MCA and the ASI data sets, in 2011-12 we could obtain the data on some 1,38,802 manufacturing companies (including listed and unlisted) from the MCA data whereas the ASI covered only some 66-67000 units. A company, in turn, could have multiple units. In manufacturing, the formal sector now contributes some 74 per cent of GVA whereas the informal sector contributes some 26 per cent. Thus, a better coverage of the corporate sector would improve the estimates for the manufacturing sector. Accounts of about 5.5 lakh companies (covering both the manufacturing, mining and services sectors) have been analysed and incorporated in the estimation of national accounts series for the above mentioned sectors whereas there are some 11 lakh active companies. Company law provides a wide number of rules under which a company need not file returns or can remain inactive legally. A company may not file its return by its own choice for two or three years, or its books may be under seizure by the Income Tax Department, or it may have ceased production. The estimates based on the available data were blown up to cover all companies using the active population and the ratio of Paid-upcapital for them. A common company growth based on over three lakh companies was used when the data on the whole complement of 5.5 lakh companies were not available. Earlier also we were using the small RBI sample of companies, blowing up the estimates on the basis of the Paid up Capital.

There are issues regarding the NIC classification of these companies into further disaggregation of 2 digit NIC. Because of this reason, compilation category wise estimates of manufacturing are not being compiled from the MCA data and instead ASI structure is being used to build up those compilation category-wise estimates. The reflection of ASI is also seen on these MCA based estimates, which are equally volatile. And this gets accentuated when we come to the states. ASI estimates are volatile at the compilation category levels and the same gets reflected in the CC wise MCA estimates also.

NIC classification of large XBRL companies has been corrected manually using other data from website, etc., to correct the misclassification.

MCA data is based on the company identification codes which is a 21 digit code, CIN (corporate identification number) code consisting of information relating to whether the company is listed or unlisted, 5 digit NIC activity it is involved in, whether it is government of India or, state government company, public or private limited company and in which state the company is registered and its allotted serial number of the state. Along with the CIN code the company has to file its revenue and expenses parameters and also append the profit and loss accounts statements. Using the business accounting to National accounting codes one is able to assess the GVA of the company.

If the states identify those companies from the MCA database which are exclusively located in the states and forward this information to the CSO, then the CSO can allocate the GVA of those companies directly to those states. For instance, while preparing the estimates for the electricity sector, we reduce the for all-India GVA estimate for electricity by the GVA for the three companies which are distributing electricity only to Delhi. Odisha has also been analysing the accounts of electricity companies. The states can also identify electricity companies which generate, transmit and distribute electricity only to them, so that the CSO can allocate their GVA only to those states. But electricity companies are few in number. So this is possible.

*Financial Corporations* - Financial corporations in the private sector, other than banking and insurance, in the earlier series were limited to a few mutual funds and estimates for the Non-Government Non-Banking Finance Companies as compiled by RBI. In the new series, the coverage of financial sector has been expanded by including stock brokers, stock exchanges, asset management companies, mutual funds and pension funds, as well as the regulatory bodies, SEBI, PFRDA and IRDA. Also, from the NSS surveys, we are able to capture the activities of the money lenders.

Local bodies and autonomous institutions -Earlier, estimates for local bodies and autonomous institutions were prepared on the basis of information received for seven autonomous institutions and local bodies of four States - Delhi, Himachal Pradesh, Meghalaya and Uttar Pradesh. In the new series, there has been an improved coverage of local bodies and autonomous institutions, covering around 60% of the grants/transfers provided to these institutions. The estimates based on the local bodies and autonomous institutions for which data are available are blown up using the ratio of grants. The coverage of the local bodies and autonomous institutions has expanded because of the 13th Finance Commission's recommendation to provide grants to the states for conducting these surveys. Now that grant has come to an end. But still it would be in the interest of the states to expand the coverage of the local bodies and autonomous institutions by continuing the surveys on them given their need for increasing the market borrowing, as this would obviously increase their GSDP and increase their borrowing limits.

Use of results of recent surveys and censuses and type studies: In the new series, efforts have been made to make use of as much current data as possible. Further, the results of the latest available surveys have also been made use of. Some of the important sources of data, which have been used in the new series, are as follows:

- (i) NSS 68th round (2011-12) Survey on employment and unemployment and consumer expenditure;
- (ii) NSS 67th round (2010-11) Survey on Unincorporated Non-agricultural Enterprises (Excluding Construction);
- (iii) All India Livestock Census, 2012;
- (iv) NSS 70th round (2013) All India Debt and Investment Survey and Situation Assessment Survey; and
- (v) Population Census, 2011.
- (vi) Study on yield rates of meat products & by-products of different livestock species conducted by National Research Centre on Meat, Hyderabad.
- (vii) Study on the inputs in the Construction sector by Central Building Research Institute (CBRI), Roorkee
- (viii) Study on 'Harvest and Post-harvest losses of major crops and livestock products in India' conducted by Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana.

*Consultation with Expert Bodies:* The Advisory Committee on National Accounts Statistics

(ACNAS) constituted the following subcommittees to look into the issues in the compilation of national accounts and make necessary recommendations for the new series of national accounts:

- a) Sub-Committee on Unorganised Manufacturing & Services Sectors
- b) Sub-Committee on Agriculture and Allied Sectors
- c) Sub-Committee on Private Corporate Sector including PPPs
- d) Sub-Committee on System of Indian National Accounts
- e) Committee on Private Final Consumption Expenditure

*Implementation of 2008 SNA:* While revising the base year, efforts have also been made to implement the recommendations of the System of National Accounts (SNA), 2008, to the extent data permit. Some of the recommendations, which presently form part of the new series, are:

- i. Valuation of various GVA, NVA and related aggregates at basic prices and GDP at market prices instead of factor cost.
- ii. Estimates of the institutional sectors -Non-financial and financial Corporations, General Government and households are shown separately, in view of their 'intrinsic difference in their economic objectives, functions and behaviour'.
- iii. Distinction between General Government and public corporations has been made and units have been allocated to institutional sectors so that general government and other public sector units can be identified separately.
- iv. Unincorporated enterprises belonging to households, which have complete sets of accounts, tend to behave in the same way as corporations. Therefore, as recommended by SNA 2008, such enterprises have been treated as quasi-corporations. Some examples of quasi-corporations in

the Indian context are proprietorship and partnership enterprises, maintaining accounts.

- The head office has been allocated to the v. non-financial corporations sector unless all or most of its subsidiaries are financial corporations, in which case it is treated as a financial auxiliary in the financial corporations sector. For example, Tata Sons is treated as financial auxiliary because its subsidiaries are also financial in the context of allocation of its head office activities In the 2004-05 series the recommendation had been adopted for service sector wherein GVA estimates were compiled from enterprises in this sector. In the new series, this approach has been adopted for the mining and organised manufacturing sectors also.
- vi. Sub-sectoring of Non-Profit Institutions (NPIs) in the corporate and government sectors has been done in respect of autonomous bodies and Section 25 companies.
- vii. Expenditure on Research & Development (R&D) has been capitalized, in Government, Public Corporations and Private Corporations and hence has become part of capital formation.
- viii. Output of Financial Intermediation Services Indirectly Measured (FISIM) has been calculated using a reference rate for the financial sector, except in the case of the central bank (Reserve Bank of India).
- ix. Output of the central bank (RBI) is treated as non-market and measured at cost.
- x. Non-financial assets in the earlier series were classified as 'construction' and 'machinery'. In the new series, as recommended by SNA2008, non-financial assets have been classified as 'dwellings, other buildings and structures', 'machinery and equipment', 'cultivated biological resources' and 'intellectual property products'.

- xi. Consumption of fixed capital has been measured at the average prices of the period with respect to a constant-quality price index of the asset concerned.
- xii. Harmonisation between SNA and Balance of Payments Manual (BPM) in respect of the external sector transactions has been achieved since RBI has adopted BPM6 in its compilation.

The net result of this base change was a reduction in the level of GVA for the year 2011-12 to the tune of 3.4% compared to the old series.

Implications of use of MCA data for GSVA: As has been described earlier, the MCA data does not capture state level information. In other words, the code does not permit one to allocate the gross value added and other parameters collected across states. None of the information so collected in the MCA specific forms collect any state specific information such as employment. etc. This leaves us with no alternative but to allocate the national level estimates using some alternative methods, for instance in Manufacturing, using ASI structure of states, and in regard to services, sales tax in case of trade, tourist arrivals for hotels, passengers in case of air sector, health, education base year shares of labour input, etc., which may be questioned.

**Implications of using modified labour input method:** The past method of estimating the GVA of the informal sector was the labour input method. The GVA is the product of the gross value added per worker and the labour input for that sector. This method has its own set of critics as the method assumed that the productivity of all types of workers was equal, i.e., employers, unpaid family workers and the hired workers, which was not legitimate. The CSO in the new series modified the method by relating the productivity of employers and unpaid workers to the hired workers using production functions. These were developed for a group of similar activities because of constraints of the sample size. The sample size also does not allow the same to be replicated at the state level. For some services sectors, such as trade, etc., we assessed that the productivity differences were not significant, so we used the standard GVA per worker multiplied by the labour input. Further, another criticism of the earlier method was that we were multiplying GVA by labour input in each state, oblivious of what is happening at the all-India level.

The states have also been asking why their service sectors GVAs have gone down in the new series. I can illustrate with numbers. In 1999-2000, the overall labour input was 397 mn., in 2004-05 it was 457 mn. and in 20011-12 it was only 472 mn. Thus, in the first five years it increased by 60 mn, whereas in the next seven vear period, it increased only by 15 mn. This means that assuming that employment in the formal sector remained 6 percent throughout these years, the growth rate projected for the informal sector for 2011-12 in the old series on the basis of the first five years was almost 4-5 times (taking a simple average) the actual growth rate for the next seven years. So, the projected figure for 2011-12 in the old series was much too high, and then GVA per worker multiplied by labour input had no relation with the actual, and was corrected downwards in the new series. But now if one is using an indicator, whether it is the number of tourists, or some other similar indicator, it will have a bearing with the current situation. And in some of the services sectors, the behaviour of the corporate sector and the informal sector is assumed to be similar in the absence of reliable indicators, for instance, real estate sector.

**Implications of compiling GVA by institutional sectors:** The new series, following the SNA 2008 recommendations, estimated the GVA not only by industry but also by institutional sectors. The major institutional sectors are the public sector, private corporate sector, household or the informal sector. The major sources for data are the general government budgets, annual reports of the non-departmental enterprises, the MCA 21 data and the NSS surveys for the informal sector. While presenting the data industry wise and by institution it may not always be possible to obtain the same industry classifications for all the institutional sectors. Some of the sectors had to be aggregated to arrive at the industry level aggregates. For instance, the MCA data does not allow enough disaggregation compared to the informal sector surveys. Hence, there is a reduction in the number of activities presented in the new series. The aggregation of legal and accounting as part of the professional services is one such example.

A quasi-corporation is an unincorporated enterprise which is maintaining accounts. There again this depends upon how the information is provided to the 67th Round of NSS. The Survey asks - Do you have accounts? If they say yes, then they are part of the survey. There again, the respondents are given an option to provide information orally or actually looking at the records. If it is purely on the basis of records, then it is a quasi-corporation anyway. If the information is provided orally, then it is an unincorporated enterprise. However, In either cases these are treated as quasi corporations, i.e., with records but giving data orally or on the basis of records.

Implications of revision of annual national estimates on state estimates. The national level annual estimates of GVA are revised on the basis of a laid down calendar which is put up on the web site of the Ministry in advance. The annual estimates are prepared as 1st advance, 2nd advance, provisional, 1st revised, 2nd revised and 3rd revised. So technically the annual estimates are revised 7 times by the time the estimates are frozen, which is necessitated due to the receipt of data at different points of time. The first advance estimate is brought up before two months of the end of the year say t, the second advance is on the last day of February. The provisional estimate is brought out on the last day of May. The first three estimates are indicator based. After 10 months of the completion of the year, 1st revised estimates are released which are based on a comprehensive set of data in the month of January.

The state level comparable discussions are for two years every year and are held in April-May to compare and to confront the state level estimates with the National level estimates, i.e., with 1stRE and 2nd RE of the previous year. While the state estimates are not discussed again but the all India estimates undergo revision. Though the state estimates especially the agriculture and General Government estimates along with local and autonomous bodies are revised due to the receipt of the latest information from the states. or, when the Annual Reports of some NDCUs are received late, the same are not discussed with the states. If there is some change in the available information, for example, on CPI or WPI, it will go through further revisions as well. For instance, even if the estimates for 2011-12, 2012-13, 20013-14, are already finalised after discussion with the states, when the revised data on WPI or CPI data becomes available after the discussion with the states, the CSO will revise the data but these changes will not be discussed with the states. It is not possible for the CSO to keep on discussing these numbers as and when it changes them. So, there will always be some difference between the states' comparable estimates and the estimates up-loaded by the CSO. Further, ASI data becomes available after a two year lag, so, when we do not have the ASI data, we have to use the IIP data. So, there will be a change when the ASI data becomes available. Similarly, first of all only the data for a sub set of companies under MCA is available; the full complement of the MCA data becomes available only after one year. That gets incorporated only after a year.

**Way Forward:** We have already mentioned the possibilities and efforts towards state-wise identification of the units of MCA companies. The

Annual Survey of Services Sector is expected to capture the non-financial service sector companies. In addition, the state wise employment of the company is also to be captured and NIC classification from the field survey would also be made available. The ASI for 2015-16 tried to capture wherever possible the Corporate Identification Numbers of the companies to which the establishment units surveyed belonged. Using this information, we can also do a mapping of the units and their companies based on the CINs collected in the ASI for 2015-16, and improve the allocation of the GVA to the states. There is also a proposal for conducting annual surveys of unincorporated enterprises on a regular basis, which will make annual data on unincorporated enterprises available. Then, the periodic labour force surveys are already being conducted. This will provide state-wise annual estimates of employment, along with quarterly changes in urban employment.

A committee for sub National Accounts has been constituted under the chairmanship of Prof Dholakia, on 26th August, 2018 with the following terms of reference:

\* To review concepts, definitions, classifications, data conventions, data sources and data requirements for preparation of State Domestic Product (SDP) and District Domestic Product (DDP) and to lay down revised guidelines

- \* To suggest measures for improving SDP and DDP in country taking into consideration availability of data and requirements of Centre and States/ Union Territories.
- \* To suggest State level annual/ benchmark surveys keeping in view needs of System of National Accounts especially in view of the next base year revision

Issues and conclusions: Ministry of Planning and Programme Implementation (MOSPI) has undertaken a comprehensive base change with base year 2011-12 incorporating new definitions. methodologies and sources of data. Some of the data sources are not available at the state level. For instance, the MCA data is not available at state level. Indicators have been used to allocate the same across states which are leading to debates. In the old series, state wise ASI was used for the organised manufacturing obtained from the survey along with IIP. In the new series since data for the manufacturing sector is obtained by institutions, i.e., by Departmental enterprises, Non departmental enterprises, corporate (MCA 21) and by informal sector, the same are allocated state wise using ASI results for the MCA and corporate sector, by employment and gross block for the non-departmental enterprises and by indicators for the departmental enterprises. The share of allocation to states has gone up because of these reasons.

# PRESENTATION OF DHOLAKIA-PANDYA PAPER BY SHRI MANISH PANDYA:\*

# Shri Pandya:

Respected Anant Sir, Dr. Manna Sir, Distinguished Economists, Ramana Murthy Sir, Rajeswari Madam and colleagues from the state DSEs.

Sir, just I wanted to make a few basic clarifications that at the state level, we are simply the compilers of the state GDP in our states and very honestly, whatever we have learnt, and we are gaining at the instance of CSO NAD, we have been very grateful to Murthy Sir, Rajeswari Madam, who have provided constant learning. And we have learnt a lot and we are improving on that basis. Our paper has already been published in the latest issue of the *Journal of Indian School of Political Economy* (January-June 2017) and therefore I will be presenting only some additional points or clarifications or responses to some comments on our paper.

In the context of the use of the new series particularly, I would like to say that we in the state have our own publications - like in Gujarat, we do have the 'Socio-Economic Review of Gujarat State' (SER) which is a budget publication and one of the authentic sources considered for the figures and facts for the state.

Let us take an example of the mining sector in particular. In the mining sector, for the year 2015-16, the value of output as reported in our publication is Rs.15,000 crore. Now for the same year, the GVA provided from the CSO is Rs.30,000 crore. Previous year, 2014-15, the SER publication gives it as Rs. 19,000 crore. So, it has come down from Rs.19000 crore to Rs.15000 crore. As per CSO estimates, what we have received for the state is - it has gone up from Rs.20000 crore to Rs.30000 crore. So, now the point is that, because each and every figure has some meaning; figures do speak. So, in state context, we have some core group meetings and discussions and deliberations and we have been asked to provide some estimates and analysis. Sometimes the bureaucrats and politicians or MLAs ask for growth of the mining sector output during the budget discussion. Our SER will give negative growth from Rs. 20,000 to 15,000 crore, but growth of GVA, given by CSO shows a high positive growth from Rs.20 to 30 thousand crore. So, just the point is that, since we are simply compilers at the state level, we have our own figures available from state units, and the question is: in such cases, how should we go about? These sort of things in the state context - what we have experienced - is something we have to look at.

Another point is about the transport sector. In transport sector particularly in road transport, there are three distinct categories: freight transport, buses, and taxis. We used to have separate value-added per worker data. That was earlier and we were able to know value added per worker for the segments and the structure of the sub-sector and we had a bit of understanding on that. Now this is clubbed, and we agree and understand that if we cannot give real picture, we should club it. Now, again, what has happened, from the 2011-12 onwards, as per the new methodology for constant price estimates, is that we have to apply the index of vehicle population. As per that index, the growth is around 7 to 8% in the vehicle index in Gujarat. Now, particularly for the year 2013-14, I have got the detailed sheets with me for Dr. Shetty sir's reference. In that particular year the current price growth has just been 3% to 3.5%. The base year figure for road transport at current price was Rs.14,494 crore, and it went up to over Rs.16000 crore in 2012-13. Then it was at Rs.17240 in 2013-14. So, now the growth of the current price figure is 3.21%. Now if we use the index of vehicles to move the constant price estimate, that is 7.9% then 7.2% and so on. So, conceptually, there is quantum rise and some

<sup>\*</sup> Please see the paper by Ravindra Dholakia and Manish Pandya, titled "Critique of Recent Revisions with Base Year Change for Estimation of State Income in India", *Journal of Indian School of Political Economy*, Vol. XXIX, Nos. 1&2, January-June 2017, Pp. 131-144. For a brief summary of the same, see the "Opening Remarks at the GSDP Seminar", by Vikas Chitre, in this *issue*.

price rise. So, if we go by the index of vehicles to carry the base year number, the growth of constant price estimate will be higher than the growth of current price estimates. That is what we have observed in Gujarat.

# Smt. Rajeswari:

Let me tell you one thing here. If we are adopting the CSO allocated vehicles, that figure has been compiled by using stock of vehicles. So, obviously that stock is lower than the actuals observed directly.

#### Shri Pandya:

Yes, madam. You are right. It is difficult to get the stock of vehicle at state level. That is there, but the point is that the numbers obtained from the states are also stocks in a sense.

# **Prof. Dholakia:**

What is the figure that you are quoting? It is the vehicles on road, right?

#### Shri Pandya:

Index of number of vehicles ....

#### **Prof. Dholakia:**

Vehicles registered, right?

#### Shri Pandya:

Registered vehicles ....

#### **Prof. Dholakia:**

So registered vehicles? That is also a stock.

# Smt. Rajeswari:

No no, we are using all India figure. The all India figure was based on the stock.

# Dr. Anant:

What he is saying is, the figure was for all India stock of registered vehicles. He is taking the same thing. So why is there a difference?

#### Smt. Rajeswari:

No no, what he is doing is that he is moving the number of registered vehicles by its growth over the previous year in the state, because this is growth in registered vehicles in the state.

# Prof. Dholakia:

But the registered vehicles is the same thing.

# **Prof. Sriraman:**

No Sir. I pointed out last year. The stock is one thing and use is another thing. So that is a major problem.

# Dr. Anant:

That is a separate point. I am first trying to understand what Rajeswari is saying. What Prof. Dholakia is saying is, you are looking at the growth in number of registered vehicles. And he is also looking at the growth in number of registered vehicles.

#### Smt. Rajeswari:

But it is just the number, is it not? We are adjusting it for depreciation also.

#### Dr. Anant:

So, in effect, what you are saying is, you are looking at the addition to registered vehicles less a number which is based on the lifecycle adjustment through a perpetual inventory method.

#### Smt. Rajeswari:

Based on 15-year life ...

# Dr. Anant:

So, if you just look at the growth in the stock, you get a different figure.

#### Smt. Rajeswari:

That is the difference.

#### Dr. Anant:

That may be worth checking; if you use a similar perpetual inventory method for the state,

what do you get?

#### Shri Pandya:

Sir, we get the data from Transport Commissionerate and that also we provide to the CSO.

# Shri Ramana Murthy:

No, no. We also use your data only.

# Shri Pandya:

Yes, we provide that. We provide the same data, sir.

# **Prof. Dholakia:**

Manish, first let us understand, what is being talked. What she says is that they are also getting the number of registered vehicles at the central level. But then they adjust it for the depreciation and the vehicles which are out of use.

# Shri Pandya:

That we do not know.

# **Prof. Dholakia:**

That you do not know, but it should be in the records of RTO and automobile companies. Why it is not compiled?

#### Dr. Pradeep Chauhan:

All the state bureaus are providing these data sets. They are coming from the states.

#### **Prof. Dholakia:**

What the bureaus are saying is that every state bureau is sending this kind of figure. Basically you know, you have a series at the national level, based on which you are getting a depreciation figure. But this depreciation and this figure for discarded vehicles will be different for different states, depending on how fast the vehicle growth has taken place.

# **Dr. Shetty:**

It should be the same technique. There is no denying.

# **Dr. Anant:**

Rajeswari, what Prof. Dholakia has been asking is, you are taking the all India figure of registered vehicles and you adjust it through a perpetual inventory method; you take new vehicles less old vehicles, depreciation.

#### Smt. Rajeswari:

At all India figure, when we allocate across the states, we give you one figure for a particular state. But what he is doing is that, he is using the state figures of registered vehicles without adjusting for depreciation.

# Dr. Anant:

No no, he is asking a different question. How do you allocate across states? You can build it in two ways. You can build it up state-wise. That is, for each state you do a perpetual inventory adjustment.

#### Smt. Rajeswari:

No no no... All India figure is adjusted by the perpetual inventory method. And that is what we allocate to the states.

#### **Dr. Anant:**

But how do you allocate it, allocate on what basis?

#### Smt. Rajeswari:

On the basis of index of registered vehicles, but then all India figure is adjusted. So the level will be registered vehicles adjusted at state level.

# Dr. Anant:

Does it necessarily follow that the two are different? What you are doing is you are reading the stock adjusted by All India Perpetual Inventory and distributing it in proportion to the registered vehicles.

#### Shri Ramana Murthy:

No no, each state will compile the index of

registered vehicles, so you move your benchmark. Once you do this, then your All-India figure is adjusted.

# Dr. Anant:

But it is possible that the difference could be reconciled if a perpetual inventory calculation is checked by the state.

# Prof. Dholakia:

But if the method is very clear, then what is the discard rate can also be checked. Then it would be possible to reconcile. It is not irreconcilable.

# **Prof. Sriraman:**

Sir, the problem is, there is no way by which even the Ministry of Road Transport knows what is being discarded. What you are using is an arbitrary figure.

# Dr. Anant:

Of course, that is another matter.

#### **Prof. Sriraman:**

That is a problem there.

# Shri Pandya:

Sir, now next. One more issue, this is on mining. The comparable worksheet which we are provided with, in that worksheet, the total GVA figure is there and some seven eight minerals are there. I have got that comparable worksheet. Only limited value figures are taken in that, and then it is aggregated. Now in the minutes, there are around 8 to 9 values. Apart from that, in overall, IBM has also reported that there are 18 to 20 minerals in the state. So, what we do not understand that very few minerals have been taken into consideration for allocation of the total for the state.

# Shri Pradeep Chauhan:

Are the data sets of the geology-mining department or the industry department not provided to you?

#### Shri Pandya:

No no, now let me elaborate. Let us go back also. We have three types of minerals, fuel minerals, major minerals and minor minerals. Still, the data for minor minerals we are providing to CSO. For major minerals, earlier there was debate on the discrepancies of quantity and value between IBM and geology - mining. We observe that in previous years, there are certain cases for which the state values were a bit on the higher side. In IBM data also, some minerals are on the higher side, but in most of the cases state values are on the higher side. So, during the meetings for comparative estimates, we had a debate that it was better that for the state whichever the higher figure that should be adopted because it is the production approach. The values are there, so they should be adopted. Now, in this new approach, based on enterprises, that Shetty sir has corrected that. So now, in that the minutes which we are getting, in that limited 8 to 10 minerals are there. So what we have understood that the allocation of state mining sector, is based on 7 to 8 minerals only. So, we felt that some other minerals are lacking in that, and because of that the value might be bit higher than that. That was our understanding. So, that is more or less clarified. But that was the case, sir.

#### **Prof. Dholakia:**

In case it is not getting completely clear, I think, we need to understand what was really shown and what is actually practiced, because we are not talking about what is written. What is written could be different from what is being practiced. Now that is a very important matter. Forget about that part. Once if you see what is being practiced, then there are the minutes of meetings. Then, one sees that the actual mining GVA is being allocated to the state based on so many minerals only. This becomes a kind of indicator. That indicator for Gujarat is only ten out of whatever the list. So, what happens is, suppose some states have a major mineral which is left out, then automatically, it will get a much lower allocation So, this means that the indicator that you are using is not appropriate.

# Shri Ramana Murthy:

See, at the all India level, first we allocate mineral-wise. Then we see in what state this mineral is contributing. So accordingly, we allocate that particular value addition of that particular mineral across states.

# Prof. Dholakia:

Exactly, but then only 10 minerals get allocated to Gujarat.

# Dr. Anant:

What he is saying is that, in the minutes which he got, the allocation of major minerals GVA for the Gujarat was on account of 10 minerals only. Now, he said that this, as far as the state is concerned, they know that they have more than 10.

# **Prof. Dholakia:**

And what is more relevant is that Gujarat is politically a very vibrant state, for various reasons. I think, Maharashtra is also politically a very very vibrant state. So, I am not saying that Gujarat is extraordinary. But under such circumstances, if you are mentioning the thing in your Socio-Economic Review where you are listing up all the minerals for the time series data, and then as far as the GSDP estimation is concerned, it goes by what CSO allocates, then that is an issue. That is raised as a question in the parliament or the state assembly, and it is this fellow who has to defend.

#### Shri Pradeep Chauhan:

The Economic Review is presented in the Assembly. Similar is the case with all, nearly 20-22 states. Economic Survey is presented in the Assembly with the authentic figures, if there is some mismatch of the figures then you are liable to be fired. The DES Directors have to answer these questions. But I want to make a point over here that relates to sectors like mining and quarrying about which a specific question being a raised over here, that DES Gujarat is having data for only 10 minerals for their mining sector whereas they have 27 minerals. Then the question again arises when there are 27 minerals, major minerals, why these major minerals are not being reported by the industry department or the geological department to the IBM, when they are reporting these to the DES Gujarat?

#### Shri Pandya:

We have visited the geology-mining department, for understanding the discrepancy in the value of the two sets of the estimates, IBM and the geology-mining. What they have said that the miners send the returns to geology-mining department as well as IBM. It is not that the geology-mining department is compiling and sending to IBM. It is that sort of mechanism what we have understood from that. Now the point is that till the previous base years, we used to go with detailed set of estimates mineral-wise, everything was there. It is also in IBM's report; there were 17-18 odd minerals. Just here in this particular case, the allocations of mining sector GVA is worked out based on some limited number of minerals. This is what we have understood, that only these minerals are being considered. But it is not the case. Apart from that, enterprise estimates are separately prepared, and these minerals are used just as the proxy indicators. That is the case.

#### Smt. Rajeswari:

They (CSO) are using IBM data. The IBM is not communicating to them.

#### Dr. Anant:

It will be useful to probe why IBM is not using a set of data supplied from Gujarat mines in this, now, they may have good reasons. I am not willing to speculate. I missed Bairwa sitting here, facing a very similar problem in a very different area,

away from national accounts. There is a somewhat obscure programme called 20-point programme where one of the schemes which indicators which we monitor is house construction. Now, till recently states used to compile house construction, everybody had their own norms. They used to follow it. Recently central government introduced some norms, last vear. And basically, the element of the norm was whether the toilet is included in the house or not. if it is not included they did not treat it as a house to be part of the housing programme. They said you must provide every house with toilets. If you are building houses without toilets, you are not getting the benefit of that counting. Now, is that a reasonable classification? That is a different matter; it can be, it cannot be; you can have arguments on this. I am not an expert on housing. I am not getting into it, but it is a classification. Now what happens is, state government continues to produce numbers as per their older mechanism. Central Government agencies refuse to accept it. They only take the numbers which meet their prescribed norms, and the disconnect can be explained. It may be; I do not know. And if an issue is raised, it is possible there is an issue, it may be useful to go with geological department and IBM to understand what is the rationale. otherwise, the discrepancy will keep repeating.

#### **Prof. Dholakia:**

You (that is, Dr. Shetty and others in their paper) are saying that while we are saying that the IBM is reporting only 211 whereas actually it is 427 whatever. On their website, it was 211. From the following year, i.e., thereafter, it is 225. That is all. So, I do not know.

# Unidentified voice

Sir, we have discussed this IBM issue last year in our meeting [with CSO] and they told that in case of the companies which do not file the return with IBM, they take the production without that company. If the companies fail to file their return on such and such date, [their production is not included].

# Shri Pandya:

And that is why there is discrepancy. It is always higher, it is there. But in previous base years we had this issue; now it is now enterprise, so, the thing is now clear.

#### Dr. Shetty:

We should understand the process or the particular arrangement which is made for this data set. IBM is the source, and companies have to file returns with them. But if companies do not file ...

# Dr. Anant:

Dr. Shetty, in mining, there was a severe governance problem, in fact. Some of their discrepancies are showing up. We are looking at it purely as statistics and numbers. There was actually a very severe governance problem. There was activity taking place which was not being reported. In fact, this has been the case, and the Supreme Court had stepped in. A lot of mines had been shut down. There are many issues here; sometimes discrepancies and data seem very innocent. Actually, they are reflection of much deeper structural problems. Fortunately, this is one set of people who are very transparent in their methods. Each one tells you what they are doing. DESs say, they take it from geological department. CSO tells us, they take it from IBM. Both of them are absolutely correct in what they are doing. It is no point in CSO going versus the state DES. The issue is to try to figure out what is happening between the two regulators, because these two are now at the level of regulators. And you may find that the story gets much more interesting therein.

# Prof. Nagaraj:

I think, we also ought to keep in mind that the problem was not occurring in the older series, it is happening in the new series. Some change has happened that is what Shri Pandya is pointing out, which I think we are missing, am I right?

#### Shri Pandya:

Yes sir.

# Prof. Nagaraj:

Why that is missing? Earlier they were considering 24, and today they are considering 10, something like that. So, why this change seem to be causing this?

# Dr. Anant:

There is a reason for that. And that is something worth pointing out. You may want to recall. You see, now we are using corporate data also on mining. All of these are filing corporate returns as well. So what we are doing is wherever corporate mining is taking place, we are taking corporate GVA, and the disconnect between what companies are filing in their returns, what they are filing with IBM, what they are filing with the state geological department does need to be reconciled. I am not saying it does not need to be reconciled but I think it is important to flag the disconnect.

# Shri Phani:

In 2016, almost 32 minerals were transferred to states as minor minerals. That has impacted those data...

# Dr. Anant:

That is separate. That is a different issue.

#### Shri Pandya:

Sir, next, it is already discussed the GDP issue. I missed just like what Madam Rajeswari mentioned about the supra-regional sectors. We feel that there is more allocation, so there is more discrepancy. It is all well-known. Sir, one more point we have flagged over here. It is that we did observe some structural changes. Particularly in education, it was a bit distinct. What we have observed is that private and public sector shares of education in Gujarat. It may not be the case in other states. As in Maharashtra, it was there, but not to this gravity But in Gujarat, what we have understood is that the share of the private education sector has substantially declined, and that of public education has gone up. In earlier base it was around 48 or 50%. So this is it.

#### Dr. Anant:

I think this is important. Let us try to understand why this has happened. Look at students' allocation, look at the total. Yes, alright?

Yes sir, the total is Rs.14561 crore in the old series and it has come down to Rs. 9426 crore in the new series. Correct? Now the logic for this was explained by Rajeswari when she said what happened between old and new series. You see, in the old series, public was accounts based, there was no issue, you were getting government data, you were using it, no issues, we were using it, no issues. For the private it was survey based. We were using the survey of unincorporated enterprises to get value added estimates for the enterprises. And worker estimates you were projecting from the NSS employment-unemployment survey. Now, the method by which that was done, it turned out that we were earlier just projecting aggregate worker numbers between two previous NSS rounds., and used to carry the estimates forward. So, this was alright until NSS survey of 2004-5. What was noticed after the NSS survey for 2004-5 is that the labor force participation rate did not change very much. In fact, the total employment growth, Shri Ramana Murthy pointed out, in the seven years, between 2004-05 and 2011-12, in aggregate labor force was only about 12 million, which had led to a spate of articles at that time; many of you would recall those articles talking about jobless growth. What we noticed and this the National Accounts Committee - and many of you were present there - noticed that even though the aggregate labor force had not changed, the composition of the labor force had changed. Hence this whole approach of trying to measure effective labor and so was developed. But the fact is that all this effective labor does not compensate for overprojection which you did. The GVA comes down. Most of the come-down has to be in the private sector because in public sector you were doing accounts based estimation. So, naturally the share has to go down.

#### **Prof. Dholakia:**

That is the reason why, as far as this part is concerned, we supplemented it with some basic intuition driven evidence. Say, for instance, we will say that, in that case, really the private corporate sector must be really 5% in the whole education sector. Sir, in that case, let me just know whether 5% of the education sector employs almost 48% of the teachers? Total teachers? If you take the composition, then the composition of the teachers turns out to be something like 45 to 48% in the private sector. Then how come, it is that its share in the GSDP turns out to be only 5%? Sir, I am unable explain this. So therefore, I thought that let me flag this issue.

# Shri Ramana Murthy:

This private corporate education will be inclusive of the teaching institutes.

#### Dr. Rajakumar:

Sir, let us understand, when any particular entity does more than one job or more than one activity, we classify it into the relevant sector only by their principal activity. So, for the teachers in the tutorial classes, teaching may not be their principal activity.

#### Dr. Manna:

The difference in the shares is alarming. There may be an easy way to cross check it. In the 68th Round of NSS Employment Unemployment Survey for 2011-12, it shows the distribution of employment by the type of organisation. So, just look at the proportions of employment by private and public corporate sectors for education in Gujarat, and cross check and cross-validate.

#### **Prof. Dholakia:**

The workers in this case will be largely teachers.

# Shri Ramana Murthy:

You cannot run a private corporate educational institution by a trust or anything like that. These private corporate educational institutions will be largely these teaching institutes.

#### **Prof. Dholakia:**

Sir, any entity doing more than one activity will be classified into its relevant sector on the basis of its principal activity. So, let us not beat around the bush. It is difficult for me to justify.

# Dr. Anant:

Murthy, I am not even talking about the corporate. Essentially, think about how were you doing private education, including coaching earlier? You took the NSS survey and applied to it a worker ratio which you got from the EUS. From the unincorporated survey, you have done exactly the same this time, alright? What Manna is saying is absolutely right. It is a simple matter to go back and take a look at the survey data. Look at what happens to people showing themselves as working in the education sector in 1999-2000, in 2004-5 and 2011-12. Look at those numbers and their trajectories. Look at what is being said under NSS Establishment Surveys and the value added in these segments. Value added would have grown on a certain rate, you can take it as it is, no issue. The numbers honestly, NSS survey's education will reflect in my judgement. In overall trend which you saw in the labor-force participation rate in the aggregate NSS survey across between 1999-2000, 2004-05 and 2011-12. What is the exact sectoral thing, you can take a look it's there in the NSS reports. Somebody needs to sit down and work it out. The answer will be there.

# Prof. Dholakia:

Let us hope that there will be some answer.

#### **Dr. Anant:**

So, what we had done in the old series last year. We had significantly over-estimated, the services growth...

# Prof. Dholakia:

Sir, I am not disputing that at all. I am only saying that as of today, if that is the kind of a significant number, which drops from 48% to 5%, how do I justify that?

# Dr. Anant:

Actually speaking, the answer is, that 48% was wrong, go back one more step.

# Dr. Anant:

Sir, but if the 48% figure was wrong, then how come that I get the proportion of private versus private plus public teachers which is 48 % practically?

#### **Dr. Anant:**

That is true, because we were overestimating the private sector figures. The public sector data is record-based. Government accounts are there; the teachers are working or not working is not in the value added. They are getting salary, so they are taking it. So, that is being recorded.

#### Shri Pradeep Chauhan:

Again, there comes Prof. Rath's point sir, why not use the Economic Census data? Himachal Pradesh has a same peculiar situation, but we have taken the Economic Census data for the schools, for private sector.

#### Dr. Anant:

See, there is a separate discrepancy, with Economic Census numbers. In fact, I have sat in discussions with labor economists who have argued between the Economic Census numbers and the NSS numbers.

# **Prof. Dholakia:**

Sir, but as far as education sector is concerned, there is a different data source, which talks about the classification of the schools, the public, private and publicly funded; there are some five categories of schools. They give you the enrollment; they give you the number of teachers; they give you the training levels; they give you everything. And there is a page, which gives you every detail. This is on a regular basis. It is not a sample, or Economic Census - based.

# **Unidentified Voice:**

No, that is the administrative data.

# Dr. Shetty:

Apart from that, Prof. Dholakia, on this issue, in our paper, we have given exactly this data regarding the number of schools in Gujarat. And the number of schools has declined in Gujarat and the number of private schools has declined in Gujarat. That justifies their data. But we will come back to that.

#### Shri Pradeep Chauhan:

It is alarming, sir, that private schools in Gujarat have declined!

# Dr. Anant:

I am glad that this discussion is taking place because a lot of data has come up; we need people to sit down and when you start looking at why they differ, you get very interesting answers. Not all of it has to do with statistics, and some of it has to do with governance.

#### Shri Pandya:

Next point we have raised here is the allocation with the labour-input method. In fact, we are very much used to working with the data on workforce and value added per worker. In all the earlier base years, we did that. So, a basic question was why not the value added per worker component? Which was also one of the parts of this GVA estimations for allocation. So, I also want to be clear that labor input means only labor part, not the value added per worker part is used...

#### **Dr. Anant:**

Value added per effective worker...

#### Shri Pandya:

Ok. So. both are being considered. Labor input means labor workforce into value added per worker.

# Dr. Anant:

We are not talking about workforce anymore. What we are talking about is the notion of effective labor input.

#### **Prof. Dholakia:**

It is, what we say in economics the quality adjusted labour force...-

# Dr. Anant:

And the value added is also for quality adjusted labor force.

#### Shri Pandya:

So, in that the basic question of mine is that is there a care is taken to compile value added for a particular sector prevailing in a state and that of the,

#### Dr. Anant:

no no, the question to ask is, at the moment, they have estimated value added per effective labor unit by doing the all India regression. They have taken the value added data sectorally; in each segment they have looked at several categories of workers, which they have considered, and then done a regression. Can this be done state-wise? Now, Murthy will be in a better position to answer, but my sense is it is a question of sample size.

#### Shri Ramana Murthy:

Yes, the issue of sample size, so we have to use those ratios and rework for each state.

# **Prof. Dholakia:**

No, let me clarify, because this is exactly what I have said in my recent V.P. Singh memorial lecture on the labour quality index in India. You are adjusting the labor quality according to Ricardian principles. This is exactly what you have done whether it is your equation or whatever other nomenclature you give. Now, what you have done is to put all the things together. Basically you are capturing the differences in the quality of labor. Assume there are quality A, B, C - you are talking about the owner-worker, the family-worker and the casual-worker. These are the three qualities you consider. You are assuming that each of them contributes substantially differently from each other. And that is how you are saying, you are somehow combining the quality and quantity and, therefore, preparing the index of effective labor input, which you claim is a better way of looking at the things. This is better, if and only if the composition across the three qualities keeps changing. If it is the same, it really doesn't matter.

#### Dr. Anant:

Absolutely, the composition has changed.

# **Prof. Dholakia:**

I am not saying that it does not change, but the question is different. One method is that you consider the quality change and you consider the national level averages for the productivity for each of them. Then combine them and apply the observed different structure within these three categories and arrive at the total. The other thing is that you change the productivity across the states and do not consider the change in qualitycomposition. These are two different methods. One is new and the other was old.

# Dr. Anant:

What was being done earlier? Let us take what was being done earlier. We had value added estimates, we had workforce estimates, we generated ratios and that became the value added per worker estimates, which was generated at proper NSS unincorporated survey. Yes, it was generated at state level: there was no issue. And then you took a labour input from the labour-force survey. Now what have you done? You have value added data which is coming from the states. Right? The unincorporated survey is the same. What you have done is, you have run a common regression on it. So, the common regression is taking value added per worker and the categories of workers which you have got, and for those you are getting, in a sense, coefficients from that regression. Those coefficients you are converting into a weighting diagram. And then, using that weighting diagram, you are generating an effective labour input. That effective labour input is what is being used to deflate the state level value added. There the value added figures are different from state to state. But for the weighting of labor input, - your question is, and the point which is correct is, that the weights are all-India. We are taking three types of labour; the three types of labour are exactly what you said. They are being aggregated into a unit of effective labour, instead of simply adding them up, now we are adding them up to that ratio. That is giving us effective labour. Effective labour is combined state-wise. The value-added figure which was there in the unincorporated -survey data, the ratio value added per effective labour, is constructed from this estimate. Now, the problem which you are saying is that earlier we were using for all states, that all labour is equivalent to everybody where all category labour was getting a weight of 1. It was uniform across states and across types of labour.

Now, we are saying, we will give different types of labour different weights, but the weights will be uniform across states. You are quite correct in saying that this is an assumption. Why can you not do weights separately across states? The answer is, it could be done if we had more appropriate sample sizes. Otherwise, you will get estimates which are not reliable. That is the problem.

#### Dr. Shetty:

But even there one should make a clarification; the labour input by compilation categories is state-wise. Of course, only the weighting diagram is all-India. Therefore, labour-input is statespecific.

#### **Prof. Dholakia:**

In the earlier case, we were assuming that the composition of the workers in the three categories was the same across the states. Changes in this composition over time are automatically captured because we are estimating income at different points of time. So long as the composition of the workers, say, X Y Z, is the same across the states, it does not matter.

#### Dr. Anant:

As long as it was so, we were not bothered about it, it is fair enough.

#### Prof. Dholakia:

Across the states, that used to be your assumption and you say, it is questionable; now you are assuming that the weights, in which they are combined, are the same across states. It is also equally challengeable here; both assumptions are challengeable.

#### Dr. Anant:

We are deflecting, we can argue this. But let us suppose we did not use the weighting structure. We used old labour-force calculation. All that could have happened is that the GDP as well as GSDP, in services, would have been lower by another factor of much larger amount. Right now, it is reduced by about 20%; it would have been reduced by about 40 to 50%. The question is, does that look reasonable? The public sector number would have been same, so if I am now saying, [private sector] is 4% in education field.

#### **Prof. Dholakia:**

No, it will not make any difference. You know, what is happening is - it is only distributional allocation.

# Dr. Anant:

No, it is not state-wise, the aggregate has come down. Whatever you do, the aggregate has come down.

#### **Prof. Dholakia:**

Even if it is so, what I'm saying is that basically this change in method itself doesn't contribute anything. Because, in one place you are using it as a denominator, in other place you are multiplying. So, then it cancels out.

#### **Dr. Shetty:**

It has concretely come out, there is reduction all around in all informal sectors, there is a sharp reduction.

#### **Prof. Dholakia:**

Because the quantum of labour itself has reduced.

#### Dr. Shetty:

Correct, but ..

# **Prof. Dholakia:**

It has nothing to do with the composition.

# **Dr. Anant:**

The consequence of this is the following. Had we not done this, the quantum of reduction would have been much more. The implication of what you say, that this assumption of the labour of different types is different, which CSO is doing, is wrong, would be that all labour is equally productive, which is not acceptable. We are simply saying, we are agreeing that there is one level of approximation. The level of approximation here is that the productivity of different types of labour is the same across states. It may not be. It may well be that hired workers are more productive in Gujarat and less productive in some other state; that is entirely possible. But in order to do a productivity by type of worker *and* state, which is the higher level of disaggregation, our sample size requirement would be much larger.

# Prof. Dholakia:

I would say that so long as that is done, one method does not become superior to another method on *a priori* grounds; that is all that I am arguing.

# Dr. Sethia:

Are we presuming that one type of worker is having the same productivity across states?

# Dr. Anant:

Correct! There are three types of workers, owners, unpaid family labor and hired ones. Earlier, we were assuming that all three types of labors will be equally productive, and this was true across states and all India. You are adding up the three categories equally in every state. So, the worker numbers are the same.

#### Dr. Sethia:

But VAPW per worker was different across the states.

#### **Dr. Anant:**

Here also value added per effective worker for different states is different. It is not that the value-added figures do not differ across states. The value added per worker differs across states. There is no issue on that. The issue is how do you treat workers. Previously, we were treating unpaid labor, owners, hired workers the same everywhere. We have made one improvement. We are saying that we treat them differently. But, the manner in which we treat them differently is the same in all the states. Now you can ask whether that is true. Fair enough. I think that the statement that- the workers are different is more correct than that the workers are not different. The statement that workers are different across the states is even more correct than that the workers are not different. But to say that since you cannot do the best, therefore, stay with the worst is a logical fallacy.

#### Dr. Nishita Raje:

Sir, do we not have, for the last five years, employment-unemployment surveys by the Labour Bureau, which give detailed tables [on these aspects].

#### **Dr.Anant:**

About Labour Bureau surveys, I will urge, there are issues of comparability. Please be very careful. If you wish to work with Labor Bureau data. I will advise a method. Ask for the unit level data. I hope the Labour Bureau gives state of collection of surveys. Then normalise it because Labour Bureau did the surveys over about four months' period in different intervals over the last 3-4 years. Sometimes it did it in July to October-November, in other cases it did it from November to March-April, depending upon when the approvals came through. Now, if you look at the NSS data which is collected over the whole year, you will find labour force participation rates vary from sub-round to sub-round. If you make the necessary correction, then the Labour Bureau data would become...

# Dr. Nishita Raje:

We continue using the same data. I am just talking about the weights, whether it will help in drawing the weights for the state level. That is my small question.

#### **Dr.Anant:**

No no, everyone has the base year data for the states. If the states would pool their NSS samples, then they can do a better job. That is true.

# **Prof. Rath:**

Sir, may I ask you a question? Government schools' and government aided schools' salaries are available for every state. How many teachers and what is the total amount being paid...

# Dr. Anant:

I will tell you one thing about education data since it has been repeatedly brought up in the discussion. Most of education is funded in local bodies. Now, what is the amount of money which is spent on education is possible to assess only from an analysis of the local body accounts. Raieswari told vou that, in the base year, we were able to get 21 states, which had compiled local body accounts for us. Currently, we are getting only ten states to compile local body accounts. For the rest, we are looking at the overall transfers to the local body and estimating what the [expenditures are]. When we went from 6-7 states doing local body accounts to 21, the overall estimate of education came down, because when we were projecting using transfers, we actually overestimated local body expenditure. So, one of the reasons why the estimates have come down, a large part is labour force; a small part is local body accounts.

#### Smt. Rajeswari:

Even autonomous institutions ...

# Dr. Anant:

Yes, a large part is due to local bodies, [data on] autonomous institutions are still a black hole.

#### Shri Pandya:

Thank you very much, sir. For me it has been very enlightening and great learning. So, thanks a lot.

# COMMENTS/CLARIFICATIONS ON THE ISSUES RAISED IN THE RAVINDRA DHOLAKIA AND MANISH PANDYA'S PAPER\*

T. Rajeswari, Central Statistics Office

#### (a) Aggregation of some services categories

In the new series many services has been clubbed, as the sample size at the State level for individual services were low and not adequate to obtain robust estimates at the State level. When the exercise of pooling of Central and State sample is completed by all the States, robust estimates of all categories of services at the State level may be arrived at.

# (b) Increased use of allocation at the State level

With regard to allocation of GVA across States, with the availability of enterprise level data, as recommended by SNA and ESA, 2013, data for multiregional enterprises have been allocated to regions according to economic indicators such as labour input, compensation of employees or other limited establishment level information that is available from ASI.

(c) Issues raised regarding estimation of GVA from sectors like Road Transport, Financial services and agriculture sector etc.,

In the 2011-12 series, All India estimates of Road Transport are compiled separately for private corporate sector and unorganised sector by the CSO. The private corporate sector estimates are compiled using MCA data base at all India level. All India estimates are allocated across States using effective LI in the base year and for subsequent years, estimates are compiled Statewise based on information on growth in registered vehicles. The unorganised sector estimates are compiled using the effective LI method at all India

level, and allocated to States using GVA compiled State wise in the base year and for subsequent years estimates are compiled using State-wise information on registered vehicles. Indicator for compiling constant price estimates at the national level is stock of vehicles on road. If at all. State level constant price estimates are to be compiled, stock of vehicles on road need to be estimated. In the case of financial services, both deposit and credit growth at the regional level should be considered for estimating value added from this sector. Inputs in the Agriculture sector are compiled using State level information available from CCS and other sources. During the period 2012-13 to 2015-16, the input output ratio was between 18.5 to 20 percent. It can be concluded that general trend in the structural ratios of agriculture industry was observed during the year 2014-15 also.

# *(d) Structural Changes - Case of education and Trade sector*

(i) In the new series the All India estimates of private corporate education sector is estimated using the MCA data base and is allocated across States using effective LI The unorganised sector proportions. estimates are compiled using effective LI in the base year (2011-12) and inter survey growth in State level consumption expenditure is used to project the estimates for subsequent years. In the 2004-05 series, GVA estimates of the private organised and unorganised sector were compiled as а product of GVAPW (Gross Value added per worker) worked out from of NSS 63rd round

<sup>\*</sup> Ravindra H. Dholakia and Manish B. Pandya, "Critique of recent revisions with base year change for estimation of State Income in India", *Journal of Indian School of Political Economy*, Volume XXIX, Nos 1&2, Pp. 131-143.

Enterprise Survey, 2006-07 and LI estimates based on NSS. Employment- Unemployment Survey (EUS), 2004-05 of the 61st Round. GVA estimates were first compiled for the base year. For subsequent years, the estimates of LI were compiled using the inter survey average compound growth rate of quinquennial Employment & Unemployment surveys as observed between 1999-2000 and 2004-05 of NSS 55th and NSS 61st Round survey results. It may be noted that Labour input (LI) based on 1999-2000 and 2004-05 surveys of NSS 55th and NSS 61st Round survey results, while the effective LI is based on 68th round (2011-12) EUS. Also the Labour input (LI) growth rates used in the 2004-05 series had over-estimated the value added by a very large margin. Therefore, differences in data base and methodology used in the old series and new series have resulted in wide variations in the estimates. This trend has been observed at the all India level as well.

(ii) In the 2004-05 series, the All-India private corporate estimates of Trade sector were compiled using the RBI studies on company finance and allocated to States on the basis of Labour Input (LI) proportions. The RBI results were based on a small sample of around 472 trading companies. Therefore, all India estimates were obtained by blowing up the sample results on the basis of ratio of Paid up Capital (PUC) of all registered companies to PUC of the sample companies. In the 2011-12 series, the private corporate sector estimates are compiled by CSO using the MCA data at all India level. The base year estimates of MCA are allocated on the basis of LI proportions and estimates for the other years are compiled using sales tax as an indicator. The MCA data was available for

70537 trading companies in 2011-12 and blowing up factors based on ratio of Paid up Capital (PUC) of all registered companies to PUC of the sample companies are used to arrive at all India estimate. The blowing up factors used in the 2011-12 series are based on a relatively large number of companies and the difference in blowing up factors used in the 2004-05 series and 2011-12 series have resulted in large variations in the estimates. Also for 2011-12, LI in the trade sector for Gujarat was 2.7 million, while for Maharashtra the same was 4.9 million. This explains the difference in levels of base year estimates between these two States.

# (e) Issues of Data bases not capturing the whole sector-mining sector

In so far as mining sector is concerned, allocation of major minerals is done on the basis of mineral-wise data on production obtained from IBM and minor minerals are allocated on the basis of information obtained from State geological departments. In the case of coal, crude petroleum and Natural Gas the indicators used are State-wise coal production in the private sector, State-wide production of crude oil, State-wise number of employees and value of assets in the public corporations. Hence, the allocation is as per guidelines on compiling regional estimates.

#### (f) Limitations of MCA data set

The residence principle adopted in national accounts implies that value added of enterprises with establishments in more than one region will be allocated to the regions where the establishments are located. Accordingly the estimates of corporate sector derived from MCA data base is allocated on the basis of establishment level information available from ASI. Further, MCA provides information on standalone companies and in case of multi-product companies; they are classified as per the share of turnover in a particular activity.

#### (g) Limitations of effective labour Input

In so far as the adoption of effective labour input is concerned, different weights have been used for different sectors in the national level estimates. Due to the lack of adequate sample size for State level estimation, all India weights were used so that estimates compiled across States are comparable. However, if pooling of Central and State sample is done by all the States, weights can be estimated at State level also.

# (h) Regrouping of Sectors

In the new series, adoption of NIC 2008 classification has resulted in regrouping of sectors. Hence NIC 35, 36, 37 and 39 are under one category, Electricity, Gas, water supply sewerage, waste management and remediation activities.

# DISCUSSION ON SMT. T. RAJESWARI'S COMMENTS/ CLARIFICATIONS ON DHOLAKIA-PANDYA PAPER

# Smt. T. Rajeswari:

Regarding the increase in the apportionment in the new series, in future also we can expect only more and more use of enterprise level data. So, with that unless we get the, corporate statistics at the state level, unless the state level work relating to identifying the corporates at the state level is done, the apportionment will continue. This is not only in India, this is what is happening in many countries across the world. That is why I mentioned that it is not allocated to the establishments; it is allocated to the region. The apportionment is on the basis of the different indicators.

Now, regarding the first issue that was raised in the paper, namely aggregation of some service categories, in the new series, many services have been clubbed basically because the sample size of the different specific individual services were very low so it was to get robust - estimates at the state level, and also limited establishment level information that is on ASI. Now, regarding the issues raised in sectors like road transport, services, agriculture sectors, etc., actually the estimates for road transport, at the all India level, we have a stock of vehicles. That indicator is adjusted for obsolescence and depreciation. This lowers the levels of the stocks of vehicles at the state level, and they may not be exactly equal to the stock of vehicles which has been worked out at state level, for example, registered vehicles. So to that extent, the growth rates also get affected.

# **Unidentified Voice:**

But the states' total will not match the central figure?

# Smt. T. Rajeswari:

Number of vehicles?

# **Unidentified Voice:**

No no... the states' transport sector GSDP, summed over all states?

#### Shri Ramana Murthy:

No, no. We are forcing the totals.

# Smt. T. Rajeswari:

Sum of all states will match up to the all-states figure because the national totals will be maintained. That is why it is called allocation.

#### Shri Ramana Murthy:

I told you why we are forced to do that.

# Prof. Dholakia:

He has used the correct word, though not in the correct spirit - 'forced'! I am saying it in a lighter vein.

# Dr. Anant:

No no, you know, we have a second problem. The trouble is, many of you will appreciate this. We have a problem if a state comes up with an idiosyncratic number which does not add up when you add up across states it does not add up to the national total. We have a problem in trying to decipher whether s it makes sense. This becomes difficult because supposing they have used-they can do it in one or two ways. Either there is an error, they have used a same indicator as you, but you have processed it differently, in which case you can say that is an error. Supposing they used a different indicator, which sometimes happens. They say we want to use this. Now what do you do? It is not that it is logically incorrect. It may be logically correct. And this is a hard question, I think we need to think about it. Because this state can use this number, because, that is available to them. Others don't! Should they use it? What do we do? I don't have an answer to that question. But I think it is a question which needs to be reflected upon, because, this arises in the following way, some states are doing pooling. Should we take those which do pooling? And for the rest, only use the central sample? I am not sure what the answer is, because it may induce a bias in a particular direction. *May*! Because it does not necessarily mean that just because they have pooled, the number is different and it does not mean that it will go in the direction to only increase their share. It could also reduce their share.

#### **Dr. Shetty:**

I have an example of reduction.

#### Dr. Anant:

No, I'm saying, it does not necessarily mean that it will increase. But should we do it statistically? I think that is the question which somebody should do some careful thinking about and give us an answer, because this will come up. Many states have improved their statistical systems; they are doing pooling; they are saying-why can our information not be used? We need guidance on that. And it is something on which a good analytical study needs to be done.

#### **Prof. Rath:**

For those who are doing pooling, you use that, and for the rest, use the un-pooled sample.

#### Dr. Anant:

I need to know about it. This is what I said; I need guidance on this, because this is the demand which is coming up. You may be right. I am not saying you are wrong. I just would like this to be opened up and somebody to give us a more careful answer about whether to use it or not, because in a sense, when I take central samples, roughly all estimates are on the same basis. Now I take some state indicators which are pooled and therefore have a very different statistical property. Is it a good idea to merge them? Maybe, it is. I don't know, I just would like something to be stated on it, because this demand is coming up.

# Smt. T. Rajeswari:

Yes, actually we found out for one of the states, I don't want to single out the state. For it, he pooled estimates were much higher than even the national level estimates. That sort of issues are also there; that has to be checked.

# Dr. Anant:

What happens is there is a selectivity issue, because the state can choose between using the pooled one or not pooled one. So that is also a separate question, guidance will have to be...

# **Dr. Shetty:**

There is a serious political question. It cannot be just an *ad hoc* exercise. Better to establish some kind of sound logical method. All should be done; otherwise it cannot be done.

#### Shri Pradeep Chauhan:

Exactly, States are very fond of GSDP numbers, because there is a cap of a 3 percent of GSDP on fiscal deficit.

# Dr. Anant:

In fact, the pressure is on the state statistical bureau, because they are very clever people who will say if you use this number, you will get a slightly higher number, so why are you not using this? And we cannot do this idiosyncratically. It must be done, as he said, through a structured well-defined logical process. Otherwise, one year, you did that; another year you did not do. That will not do. But the pressures are precisely of that kind. The linking of fiscal deficits with GSDP numbers has made our task very difficult.

## Shri Pradeep Chauhan:

Very difficult and more reliable sir! As a part of a state government, I am writing the budget speech of CM and also doing these state GDP numbers of the Economic and Statistics Bureau. So, I have to balance these two things. Our state is a revenue deficit state. Number one! Number two; we have a total long-term debt that is Rs. 50,000 crore. We still have to go for our salary and wages and repayment of interest by taking loans from the open markets. Now the cap is 3%. If our state GDP number is not ok, the CM says, no my friend, we need to borrow so much, so please raise the state GDP. When we go to CSO they say - where is your this number matching? Then where do we go?

# **Dr. Amey Sapre:**

The CSO has released calendar which already has dates for advance estimates, and so on, so the aggregate of states corresponds to GDP of which one of these dates? None of them or any one of them? So, when you start apportioning, what is the aggregate that you start to apportion? Is it the first revised estimate, the second revised estimate..?

# Smt. Rajeswari:

No no, now we will be discussing 2015-16 estimates. So when we do the comparable estimates we will do them for that year.

#### Dr. Amey Sapre:

But by that time, you would have your first revised estimates...

#### Smt. Rajeswari:

We do not do after that, the advance estimates are not reconciled.

#### **Dr. Amey Sapre:**

So, it is the first revised estimates which are reconciled. Is this done at current prices or constant prices?

#### Smt. Rajeswari:

We are basically doing the current price estimates, to assist the finance ministry for setting the borrowing limits. So, they are only the current price estimates.

#### Dr. Amey Sapre:

So when we get the constant price estimates of GSDP, are those deflated separately by each state?

#### Smt. Rajeswari:

Yes, yes.

#### Mr. Manish Pandya:

There is guidance provided, there are guidelines provided to the states.

# Dr. Anant:

Rajeswari, in this year you do the reconciliation, you will do what?

#### Mr. Phani:

2015-16 fully, and 2016-17 partially.

#### Dr. Anant:

2015-16 fully, and 2016-17 partially. So for 2015-16 there will be the second revised estimates being used and for 2016-17, the first revised estimates.

#### **Dr. Amey Sapre:**

So, the second revised estimates are the final ones. I just wanted to know for my understanding.

#### **Prof. Rath:**

Which one is actually used?

# Prof. Dholakia:

You know, by and large, the fiscal deficits and everything else is stipulated in terms of the advanced estimates. And these are not the advance estimates in the CSO sense, but the forecasted or the projected estimates.

#### Smt. Rajeswari:

Yes, we do not provide the projected estimates. They take the average of three years.

# Shri Pradeep Chauhan:

Exactly, on the projected estimates of the GDP, the fiscal borrowing is taken. When the revised estimate comes, it may be upwards or downwards. Then you need not to worry, sir.

# **Prof. Dholakia:**

Then the whole issue is that when you are doing the advanced estimates or the --- forecast estimates-, at that time, there is no calibration by the states- at all.

# Dr. Anant:

No, Dholakiya saab, that is not quite true, because they project the advance estimate using the calibrated estimate. And, yes, they have a measure of latitude and the degree of projection they make, but given that, that itself is scrutinised by the Finance Ministry, it is very difficult for them to project too much outside of it. Finance Ministry has its own calculations of how much they will allow them to grow.

#### **Prof. Dholakia:**

You mean the State Finance Ministry?

# Dr. Anant:

No no, the Central Finance Ministry. Borrowing

limit is authorised by the Centre. Remember, the state government, when it borrows, in effect, it is borrowing from the Centre.

#### **Prof. Dholakia:**

No, no... now, no longer!

# Dr. Anant:

In effect, because when the state borrows, where does it borrow from?

# **Prof. Dholakia:**

It borrows from the market directly.

#### Dr. Anant:

I do not think, their bond will ...

## **Unidentified Voice:**

What about the approval from the Central Finance Ministry?

# **Prof. Dholakia:**

An approval if you are trying to borrow more than 3 percent of the GSDP.

# Dr. Anant:

No, that is not the point. How much you are allowed to borrow, is fixed in this. If you try to borrow more than that, the market will not price your bonds.

#### **Prof. Dholakia:**

Then they will have to seek the approval of the Centre.

# Dr. Anant:

That's what I'm saying, but the limit is agreed by the Centre based on- they are also seeing what the projected growth is and that is completely controlled by the Fourteenth Finance Commission formula. They do not have much latitude in that.

# **Prof. Dholakia:**

No no no... I want to understand. Does it mean that the states are not expected to grow beyond the Fourteenth Finance Commission recommendation? They are setting your deal. You cannot project any progress beyond such and such number. Suppose last 3 years' growth was 10%, then you cannot project more than 11%.

# Dr. Anant:

That is what the Finance Commission recommendation is that your borrowing limit will be based on the growth rate which is calculated on the estimates for t-1, t-2, whatever. That is your limit. Now the fact is, that is the recommendation.

## **Prof. Dholakia:**

No no, in that case, there is an effective divergence, because, you know, suppose my state's past three years' overall growth is...

# **Dr. Anant:**

That gets calibrated for the three years, as was said.

# **Prof. Dholakia:**

That has been calibrated. Suppose my state has been completely in the red, in the sense that my overall growth has been only 8%. Then I am supposed to take only 8%. Now my economy has revived; everything is done. I have taken enough reform measures, everything. My economy is moving. So, in a correct fashion, I would say, my economy should grow at 16%. But then my borrowing is kept only at 8%. Is it correct?

# Shri Bairwa:

That 16% will get reflected in the next year.

#### **Prof. Dholakia:**

I am talking about this year, my target (borrowing cap) has been fixed at 8%, is it not, in the example that I gave.

#### Dr. Anant:

If that was your growth rate for the past three years, then that would fix your cap. But that is not our doing. That is the Finance Commission's recommendation.

# **Prof. Dholakia:**

I am not criticising you. I want to understand.

#### Dr. Anant:

Yes, that is a recommendation. That is what they follow.

# 7Prof. Dholakia:

Exactly, then the market borrowing cap and the fiscal deficit of the state have no relation.

# Dr. Anant:

No no, that is more problematic than that. Sorry, Dholakia saab, it is more complicated than that. This is based on the reconciled number they projected; they borrow whatever within that cap. In fact, this is true not just for the states, but also for the Centre. In fact, Centre has a measure of latitude because in the Centre's case, their borrowing limit is determined by the Central government alone.

#### **Prof. Dholakia:**

Therefore, it is based on the advanced estimate and other things.

# Dr. Anant:

It is not. Last year, if you noticed that, they had used their own number. And about their borrowing limit they said was not based on our advance estimate of the current year. They make a projection for the growth next year which is beyond our advance estimate. They borrow on that basis.

# Prof. Dholakia:

Exactly.

# Dr. Anant:

Ultimately, what you need is something that is beyond GDP. It is not to look at fiscal deficit ratio but look at debt to GDP ratios. That is a recommendation I have made in one group of secretaries which is, that the fiscal deficit ratio is rubbish. If you are concerned about it, look for the debt to GDP ratio, and keep that in some bounds. That can of worms nobody wants to open!

#### **Prof. Dholakia:**

No no no, that is what the N.K. Singh committee report recommended.

# Dr. Anant:

Yes, they also said. I said that there also. But they have not moved to it. They are not doing it.

# **Dr. Shetty:**

But the recommendation is there.

# Dr. Anant:

N.K. Singh may do it in the next Finance Commission.

# **Prof. Dholakia:**

But the flexibility that the Centre has, the states do not have.

# Dr. Anant:

But the debt to GDP ratio will give the same to the states also. That will apply to both.

# **Prof. Dholakia:**

Sir, even there the question will be - which GDP?

#### Dr. Anant:

No, debt is a stock as of a given year. The debt stock will be as of a particular date, so that will always be a number with a lag. It will not be influenced by the current budget; it will be with some lag. So, you will have a measure of latitude as long as you do not breach the ceiling.

# Dr. Shetty:

This is an evolving number.

# Prof. Dholakia:

I understand, but generally you have the debt as on the starting of the year, say, for example, 31st March. But the GDP is during that year, like, for example, the debt is as of 31st March 2018, and the GDP would be for 2018-19. The GDP has got to be for 2018-19 in this case! Otherwise, the debt dynamics equation does not work out.

# Dr. Anant:

Anyway, I think, this lag is there. And the problem which it puts on the states' capacity to borrow has been articulated by the state governments at a political level many times. They have objected to this, but the fact is, this is a consequence of the...

# **Prof. Dholakia:**

No, in that context, why do we discuss this? Because, in my opinion, in that context, a major concern of the state is [left] outside. See, the question is that, right now, what should be the GSDP estimation? The GSDP estimation is [required] to the extent to which it is affecting the fiscal deficit and the borrowing, or has something to do with the borrowing limits, etc. In that case, it is the past matter, [related to] the last year or the current year, etc. As far as the prediction is concerned, it has nothing to do with the GSDP estimation problem.

# Dr. Anant:

No, but, in any case, none of the statistical establishments are doing predictions.

# Prof. Dholakia:

Sir, please. When the Finance Minister presents the budget, he does talk about what is the fiscal deficit, as a requirement in the FRBM, for next three years...

# Dr. Anant:

No, no, Dholakiya saab, the thing is, what we contribute to is, the fiscal deficit which will come out in the last year for which he is now presenting revised estimates or final estimates, for which we say this is what we have achieved. That part the Statistics Ministry does. The forecasts in the Centre and in the states are not done through [CSO or] the DESs. The forecast of what the scenario is going to come out over the next three years is done by the Finance Ministry. And you can track the forecast *vis à vis* the realisation and you will find that the forecast both in the Centre and the states has always exceeded the realisation.

## Shri Pradeep Chauhan:

It is on the higher side, always.

# Dr. Anant:

You can do it. That is there in the public domain. Every single year, the forecast has exceeded the actual. In fact, previously it used to happen with advance estimates. That is why CSO was asked to prepare advance estimate. Because.

Even state level they are preparing advanced estimate.

# Dr. Anant:

So now, advance estimates we are reasonably balanced but As far as the estimates which relate

to the future, they are made by the other agencies (i.e., the Ministry of Finance or the Finance Commissions).

#### Mr. Bairwa:

They do not consider the advance estimates for setting the borrowing limit. That is why they go to (t-1) to arrive at the forecasts for this purpose.

# **Prof. Rath:**

Sir, may I come back to reality, ground level? These forecasts are a pie in the sky types. I have a simple question about this wider Ministry of Commerce data that CSO has now begun using. In this, do they have the listing of their establishments in different states?

# Dr. Anant:

Yes, some do...

# Prof. Rath:

I will complete my query, so that you can clarify. If they do, would it not be convenient if the states are told about which the establishments in these respective states are. And then, the states can begin seeing which establishment is not covered by the ASI, for example. Then they can try their way of finding out how to get into the information, because you will not be able to provide them with information about the state level establishments. And second, for establishments in different sectors which are not covered by this, because this is about manufacturing and trade, no about services, big services. You will seek the extra information that the states may have for the other sectors, item wise, in whatever manner. What are you using? And this two-way traffic might help improve both your as well as their [exercise] and lead to a coordinated development.

# Dr. Anant:

I will answer some, and I will leave it to Rajeswari to answer the others. First, Rajeswari has mentioned, we understand, we have not vet examined it very carefully, that MCA, amongst the larger companies, XBRL companies, has one of the reporting forms that does require them to report establishments in different states. We are seeing what information is contained in that, it may give us some more guidance. That is possible. If that happens, of course, the states will also have access to it. The second point which you made was whether that is possible to improve this to improve ASI frame, yes, in fact, in one case, I think Gujarat had done this. Gujarat had a serious problem with their ASI frame. There were major exclusions. And then an effort was made to actually track out using all these alternate databases and to improve the ASI frame; that happened. There we are probably going to be benefitted by the GSTN. because for the GSTN, the government has taken major efforts to register enterprises with location data. It may be possible because GSTN can be mapped to the company database because it has the permanent account number and MCA is also seeded the permanent account number into the MCA database.

#### **Prof. Rath:**

One interruption, please! Today I read that the GST Council has said that instead of state-wise, there will be one single number for GST companies, which have multiple state units.

# Dr. Anant:

There will be a trouble. I do not know how they will do that because as of now, the GSTN number which is there has the following structure. It gives the state identifier, gives the PAN, and it also gives the region identifier, because GSTN is an origin-destination exercise. So, for their E-Way bill, they need to have all this information about where the bill originates. Since I have not seen the newspaper story, I do not know, but the GSTN numbers as they are currently given out, have the PAN which is an all-India number, which identifies only company with its registered office. It has its state location because this is also what they use to allocate the GST money. So, all of that is there.

# **Prof. Rath:**

For each state, will there be a different

#### Dr. Anant:

Yes. That's right.

# **Prof. Rath:**

But that will not be required now.

# **Dr. Shetty:**

But that will be difficult, because otherwise they will not be able to make the allocation. They will not be able to run the system.

#### **Prof. Rath:**

They are not thinking about the statistical system.

# Dr. Anant:

No no, I do not think so. Prof Rath, I will really say one thing. One of the problems with reading up on this, it is a good idea, not to react to a single newspaper story. I have realised this. It is a very good idea to wait to see what clarification emerges. Because these are so complex, most journalists end up making a mess in what they report. But the structure of the GSTN number, as of now, opens up a possibility that we can map companies onto their GSTN numbers and, therefore, get a better allocation. But that will be going ahead; we will need to look at that data more carefully. Your third question was ...
# **Prof. Rath:**

It was about other sources of information.

#### **Dr. Anant:**

Now, actually, this does happen. The reconciliation exercise which Rajeswari is talking about is not a one-way street. Many of the things which the states had pointed out as state specific- idiosyncratic factors were adopted by CSO as a part of their estimation profile when the revision happened. Some of it had to do with nonrenewable energy; some of it had to do with certain other things. They have been doing that. That depends, if they can make a case, because the dialogue does not take place in the isolation. Usually it is 5-6 states together. The final, because what happens is, we do it in our second revised estimate. You are asking about the revision calendar, we generate a third revised estimate; that third revision incorporates the changes which are made in the CSO estimate on account of the state discussion also. So, it is not a one-way street. It is a dialogue and the consequence of the reconciliation is we are able to keep the difference between the aggregate of state estimates and the central estimate within a band. We are not getting exact matching.

### Mr. Pandya:

During the last couple of years, we approached the state commodity tax commissioner's office. They had the data on some 2 lakh enterprises. They had the data on output sales, output services, etc. We came to the CSO with that data. The CSO examined it, we discussed with them and this improved that data. So, there is a healthy dialogue.

### **Prof. Rath:**

No, my reason for this is, there are, there may be, state-specific items, which are not common for more states, but, that is not getting reflected in your central [estimate].

### Dr. Anant:

But that is, there is a separate issue. Supposing there is something which is specific to a given state. How do I incorporate that in estimation? And the analogy I took was, supposing one state is doing a very good job of pooling NSS data, so they have improved estimates of labour force corporate value added, unincorporated value added. Should I make use of them? That requires some degree of analytical thinking because consequences of a mixed thing when some estimates are better quality than the others will need to be figured out. It is not that it cannot be done, it can.

#### Smt. Rajeswari:

Sir, I am mentioning about normally prices of some of the sectors, of agriculture or even construction, those prices we normally take with the states at the time of discussion only. And after analysis, comparative estimates are adjusted for those prices, because they are not sent well in advance. So, the current price estimates change accordingly.

### Mr. Pandya:

It is very correct and it is from the states. Last year, we had a small problem, and we contacted Rajeswari Madam. The gross sown area in Gujarat had declined by 22 %. And the data which we have on consumption of fertilisers, that shows the growth of quantity, not value. The increase in quantity of consumption of fertilisers was 7.5%. In effect, the area went downwards; we have that data also with our Directorate. Compared to CSO, we have two sets of estimates. From the Ministry of Fertilisers, we also have the estimates-at the state level-. And therefore we examined these data and found that in respect of those crops for which area under the crop had gone down, such as cotton and a few other crops, which are fertiliser intensive, there also the area had gone down. Hence, we wanted to discuss the inputs, especially,

fertiliser input data. There were no crops as such on certain lands. One more dimension which we had was the following. In Gujarat, some of the urea is consumed by the industries. So, the high consumption of fertilisers may not be confined to agriculture. [Speech unclear, please correct this para]

### Prof. Dholakia:

The issue was, that if you are allocating or giving kind of agricultural inputs costs from the Centre or whatever, that figure and that actual ground reality of the state, are [different/,inconsistent].

### Dr. Anant:

Dholakia saab, there are two types of allocations. One is, in these things, in agriculture, in fertilisers, we are taking the data from a central ministry which, in turn, has also compiled it from the states. The allocation issue here is of something of a different nature. What happens is that there is the reporting channel, which goes from agriculture to Agriculture Ministry and agriculture to DES, then coming to us, and what we do find is that there are some discrepancies. This happens partly because of the time of the different reports and that is not on an issue in allocation. You can treat it as an allocated estimate, but it is not an issue in allocation because these are simply compiling state level data at different points of time. Allocation happens when the source data is not compiled from state level estimates. That is a very different class of issues. The examples he is talking about are all where, in fact, the data has been sent from the state to the Centre and then a different number coming to them. The same thing is happening with us with IBM. That mining data is the same issue. Mining corporate data is different. But IBM data is the problem arising what the geology department has done, what it tells IBM. Or, what is told to IBM.

#### Smt. Rajeswari:

The other issue was raised about the financial sector. It was mentioned that credit growth was less than the allocations [to this sector]. Allocating to the financial sector, which is a supraregional estimate, is based not only on credit growth, because for insurance we use premiums, and in some other cases we use [???] advance. So. all that [allocation/estimate] is made individually for every state, state-wise. So, ultimately the figures may not match exactly. That is sure. That is one thing. And what has been stated about agriculture what we got on for that are input output ratios [rather than the actual quantities of inputs]. Now, the next issue was regarding the structural changes in education and trade. That we have already discussed in the morning so, I do not think we need to repeat. There was one issue raised that [GSVA for] the trade sector for Gujarat was lower compared to that in Maharashtra. There we found out that the labour input for the trade sector for Guiarat was 2.7 million while for Maharashtra it was 4.9 million.

### Dr. Sethia:

Ma'am, just a query on financial sector - Earlier, the banking sector GVA at the national level was based on number of employees, is it not?

#### Smt. Rajeswari:

Yes yes, still it is based on the number of employees.

### Dr. Sethia:

Yes, the number of employees, so, here I have a query. The state level or national level losses of PSUs are taken as implicit subsidy. But here let us say the branch which does not have much business, but there are employees, now, we will count that as a part of GVA ...

### Smt. Rajeswari:

But are paying the employees...

### Dr. Sethia:

Yes, but at the factor cost it is GVA, but at market price it is a subsidy as well, but when you are calculating the subsidy, you do not take these kind of implicit subsidies which are given from one branch to another branch.

### Smt. Rajeswari:

No no, only those subsidies which are explicitly involved in the budget.

### Dr. Sethia:

Yes, only those subsidies are there, so the implicit subsidy within the corporate sector that does go into the GVA at market price. Let us say the entire banking sector in the state makes losses but we do not count that as [subsidy].

### Dr. Anant:

Well, Rajeswari, he is talking about implicit losses. You are talking about subsidies which are funded. That is a different thing. This is a conceptual issue; it is not about your computation.

### Smt. Rajeswari:

OK, then regarding the mining sector, we have already discussed, the MCA data, also we have discussed the labour input. I think, we have covered most of these issues now. Now regarding the regrouping, regrouping had been done as per the NIC 2008 classification. So, by adopting the NIC 2008, some NIC codes say, 35-36 all are under one category, electricity, gas and water supply. So, that is why this regrouping has been done.

### **Prof. Dholakia:**

Now, this creates an issue, because earlier this kind of groups was available separately, whereas now, it is loosely grouped.

#### Dr. Anant:

Yes, but you know, the trouble is when NIC is adopted, the source data starts coming as per the new NIC classification. It is not possible, at that stage, to undo this. Now, to go into this a little further; why did NIC get revised like this? NIC revision was linked to the larger isic [?] revision.

### Prof. Dholakia:

No no, I am not questioning NIC at all. All I am questioning is that based on this we were reporting and we were estimating the state domestic product by sub-sub-sub-sub-sectors. Ok? Now, those sub-sectors are grouped together because you are saying that enough data points are not available.

### Dr. Anant:

No, we do not even get the data. In some cases, the sources from which we get, will report only in the concerned NIC code.

#### **Prof. Dholakia:**

Yes, sir! Now, there is a real issue, probably you are looking at only from the point of view of regrouping and grouping etc. which we have raised. But if you read my last two lines on that particular section, I am very categorically saying that this has created, this regrouping has created the problem that you can't compare the GSDP classification with the employment classification because employment classification has not gone accordingly. So what are you going to do?

#### **Dr. Ramana Murthy:**

It will be the same no? They also have to follow NIC classification.

# Dr. Anant:

I am not sure. Because 2011-12 we were following NIC 2008 as----

# Prof. Dholakia:

In that case, the earlier one was wrong?

#### Dr. Anant:

No, it would be different, not wrong. You see, NIC is being revised two or three times...

### **Prof. Dholakia:**

True. 2008 is ...

## Dr. Anant:

Is now, what is being adopted. But I don't know when 2011-12 survey was there, they must have adopted 2008 because how would they compile it? No, but it may be possible that 2004-05 was based on NIC 2004, that's possible.

#### **Prof. Dholakia:**

No, that must be the case, but the point is that therefore the 2011-12 estimate according to 2004-05 series would be wrong in that case.

### **Prof. Chitre:**

Not wrong, they are not directly comparable.

#### **Dr. Raman Murthy:**

When you are comparing 2004-05 and 2011-12, they are made comparable. You see our reports,

# Dr. Anant:

You know, there is a concordance between what they would do is, they will map the 2004-05 data using the concordance to 2008. And then see what the comparable numbers are. That is not an issue. The concordance is there. I think, Rath saab has been trying to raise a question.

# **Prof. Rath:**

I want to change this under discussion - again a question. I am a cow dung economist, so my interests are there. I have two questions. You are using wholesale prices for agriculture. Now, there are states, many states in which there is a wholesaler of course somewhere. But there are no regulated markets. Today, regulated markets are not obligatory. You can go and sell elsewhere, etc; the new laws have come into existence. But where there is a regulated market, there is what we far economists call the farm harvest price! This is what it is called. I would have preferred, you are using the farm harvest price for estimating rather than the wholesale price.

### Dr. Anant:

In agriculture, whatever prices and stuff are used is whatever they [DESs] use. So, let them tell what they use.

### Shri Pradeep Chauhan:

What we are using at the state level, we are providing those prices to the national accounts. These are in the agriculture sector. The question, what I have understood is, what are the farm harvest prices being collected? As you are saying, the wholesale prices are being used.no, sir.

# Prof. Rath:

I am quoting from the paper.

#### Shri Pradeep Chauhan:

No sir. No sir, this is the document. From the mandis sir, mandis and peak period prices, two things, from the mandis in the streets and the peak period prices for that particular commodity, like wheat.

### Shri Bairwa:

And these are online and also real time! And the mandi prices are also available online.

# **Prof. Rath:**

I know it. I am making a very [?] You must look at it. Here is the Chief Statistician.

## Dr. Anant:

The Chief Statistician, no no, sir! I will tell you one thing, in this group, the Chief Statistician's position is very ambivalent, and I will tell you why. Those people over there actually know the data better than the Chief Statistician does. It is a fact. No chief statistician will know the data as well as these people.

### **Prof. Rath:**

I am not talking about you as knowledgeable about everything they know. That is not my point. My point is the authority which represents the country, and the country consists of such different variety of states. There are states in which there is no regulated market, worth the name. Where do rice producers in states with no regulated market, get farm harvest price then from? -From the rice millers.

### Shri Pradeep Chauhan:

No sir, no. That is not the case.

### **Prof. Rath:**

You are from Himachal Pradesh, sir.

### Shri Pradeep Chauhan:

No, I am also a member in the SNA 2008. I also represent the national accounts also sir. Not as a state, I'm also representing these guys. I'm also a part of the chief certification order of secretary, MOSPI, also. So, like in rice producing states or wheat producing state, there are mandis. And mandi prices are being taken, as this is the methodology.

### **Prof. Rath:**

Just a minute, just a minute! I am talking about states in which there are no regular mandis; there are no regulated markets worth the name.

#### Dr. Bairwa:

Sir, which is the state in which there are no mandis?

#### Shri Pradeep Chauhan:

All the states have mandis.

### Prof. Rath:

State of Odisha, does it have a mandi? There are no mandis.

### Shri Pradeep Chauhan:

Sir, wherever they sell their produce, that area is mandi.

# Prof. Rath:

They are sold at the doorstep, or they are taken to Chhattisgarh. What are you telling me?

### Shri Pradeep Chauhan:

Sir, Odisha is a rice producing state. Wherever they are selling whatever quantity of rice, that area is a mandi.

# **Prof. Rath:**

Listen to me, the place where paddy is sold, not rice, is a milling station. That is not a mandi. It is the rice miller who will tell you what the farm harvest price is, because that is his price.

#### Shri Pradeep Chauhan:

Sir, in every state, APMCs are there. Agriculture produce marketing committees are there.

### Prof. Rath:

I am telling you. You are quoting some textbooks.

#### Shri Pradeep Chauhan:

No sir, we are the practical practitioner statisticians.

# **Prof. Rath:**

No, there are no regulated markets in the state of Odisha. I will give you a number of states in which they are not there. So, what I am saying sir is, that these are prices which you will have to specify, and not this wholesale price business. Number one. But number two, my most serious point is, in regard to inputs, the thing you are taking into account, I see from the write-ups ... But the cost of production surveys have been going on since 1974, every year. And the cost of these surveys is as much as the National Sample Survey Organisation and the great Statistical Commission has only one page on this whole programme of the government, one page in its multi-volume report. It is a shame. Anyway, what I am saying is, every year, in every state, a major crop is surveyed, a major crop, for which there is a sample design. But if you look at the schedule, for every crop that a farmer grows data is collected in great detail, data on inputs- material inputs, labour, water, electricity, animal application, etc. The only thing that is not available at the farm level is the output. The output is estimated by crop cutting survey. Now, what the government of India, i.e., the Ministry of Agriculture, does is, it asks the agriculture universities, which are in charge of these surveys, to make a summary statement of the material inputs for the major crop, for which the survey is done. As regards all the data for all the other crops that the farmers the sample farmers produce, nothing is ever done in the last so many years- from 1974 to today. You see, it is amazing! Such variety of information this country has been collecting at great cost and trouble. And nobody, not even an ordinary student of the agricultural university, has ever taken the trouble of putting this down and trying to

understand what it is. It is a standing shame, I say. Anyway, my point is sir, you should ask the Ministry of Agriculture that from every round for every crop, minor, major, whatever of the sample farmer, the input data should be summarised and computerised and commented upon. See, as for the other minor crops, they are not samples, but you get something rather than nothing to go on. This is something, which is extremely important for a variety of reasons and purposes into which I do not want to go here because that is not relevant. But this is matter of information which. to my mind, is vital for making state-wise estimates. Our friend from Gujarat just said that Urea is being used for non-agricultural purposes. Everybody knows this is being used. But you get an estimate of total urea consumption with the help of this, by careful estimation, say, inflation of the data, etc., etc., and there are crop areas, so one can do something about it in order to check and verify. This is extremely important.

#### Dr. Anant:

Sir, can I? I think, what you are saying about the cost of cultivation surveys is important. We have been trying persuading them. But there are two sorts of issues, sir. We have partially addressed one, and other we will have to keep working on it. Sir, you do not achieve everything every time. There are, one is the issue that a lot of data is canvased in the cost of cultivation surveys but not all of it is tabulated. That is the point which you made and that is correct. We would like everything to be tabulated and made use of, but that is a separate exercise. Earlier, the problem was that whatever was tabulated was also not being used, except in a very aggregative, coarse manner for the APC to do its work. in fact, the national accounts were not making use of it. One of the things which we were able to do, in this base revision, is to make use of what they are tabulating. That is there in Mahendra Dev's report and

last year when Mahendra Dev made his presentation and pointed out. The larger issue that the agricultural cost of cultivation surveys need to be more modernised is something which needs to be taken up. I am not disagreeing with you. But it will have to be done through the Agriculture Ministry and the state governments which implement it.

#### **Prof. Rath:**

No no, one minute, I am not talking about modernisation.

### Dr. Anant:

No no, sir, the reason why I am saying modernisation because as long as you are going to work with these old-style paper schedules, which they were canvasing, you are not going to get complete tabulation. You will get complete tabulation only if you make them, in fact, do what technology permits you to do. Take the device to the field, and enter the numbers there itself, or in its first entry in he fills it up, fills it. If the entire data is tabulated, then the rest of what you are saying will be followed. But if they bring the schedules, and only one part of it is put on to a database, the rest sits around for some researcher to go and dig through the things which are there, then nothing will happen.

#### **Prof. Rath:**

No, just a minute, just a minute, sir. I know that it costs. Today, what they do is, every schedule that comes, they will take out for the main crop, plot by plot, believe it, and every information is plot by plot, not farm by farm.

### Dr. Anant:

Sir, it is a very rich thing, I agree, but it is not the point I am making is push we need to make,

Ya it's more matter of merely tabulation. Instead of tabulating for the input for this, you tabulate for every crop of the every sample farmer that's all.

Sir, it is not merely tabulation

What else?

But yes, it does need, it can be done but then the effort will be need to be made to make sure that they capture all of it in a recordable manner. The current method of doing it, if you say that tabulate everything, they will immediately raise 100 difficult objections. There are issues there, sir. But it needs to be done.

### **Prof. Chitre:**

I think, we should close this session. This has already over-spilled the time alloted for it.

# A STUDY ON THE LIKELY MAGNITUDE OF BIAS IN THE ESTIMATES OF GROSS STATE DOMESTIC PRODUCT FOR THE PRIVATE CORPORATE SEGMENT OF MANUFACTURING SECTOR AS PER THE NEW METHODOLOGY

### G.C. Manna

The article highlights the official methodology for deriving state-wise estimates of gross value added for the private corporate segment of manufacturing sector. By utilising data of Annual Survey of Industries 2014-15, the article comments upon the likely magnitude of bias in the state-wise estimates of gross value added so obtained as per the official methodology and suggests some way forward for bringing in improvements in future.

#### **1. Introduction**

Manufacturing sector is an important segment of the Indian economy both in terms of its share in overall employment and gross value added (GVA). As per NSS 68th Round [2011-12], about 12.6% of the Indian workforce were engaged in manufacturing activity during the year, considering both *principal and subsidiary statuses* together. During the financial year 2017-18, manufacturing sector had a share of about 16.6% in the overall GVA at basic price by contributing Rs. 2512008 crore at current prices in terms of GVA to the national economy as per the Second Advanced Estimates of National Income, 2017-18 released by Central Statistics Office (CSO) on 28th February, 2018.

If we look at the break-up of GVA by institutional sector, private corporations have a dominant share in the overall GVA. This is particularly so in the case of manufacturing sector. During the year 2015-16, the private corporate segment, (i.e., private companies and private 'quasi-corporations' taken together) accounted for about 81% of total manufacturing GVA at current price.<sup>1</sup>

Given the importance of private corporate sector<sup>2</sup> in the gross value addition, this study focuses on the method of estimation of state level

GVA for the private corporate segment of manufacturing sector (PCS, in short). The article is organized as follows: section 2 after this introductory section briefly summarizes the new methodology adopted by CSO for deriving the state-wise estimates of GVA pertaining to PCS; section 3 highlights the findings of our study on the likely magnitude of bias in the state-wise estimates of gross value added for the PCS as per the adopted methodology, if compared with those based on an alternative approach which is likely to be more realistic; and finally, section 4 suggests some way forward to bring in improvements in the method of estimation in future.

# 2. Methodology Adopted for State-wise Estimates of Gross Value Added

As per the new methodology that is in vogue since launching of the new series of national accounts statistics (NAS) with 2011-12 as the base year, for state-wise allocation of GVA by private corporations, all-India total GVA of private corporations considering both MCA21 database (for private companies) and ASI (for private quasi corporations under the coverage of ASI) is allocated over state X compilation category (CC)<sup>3</sup> in proportion to the respective combination's share in "total" GVA as per the latest survey results based on ASI considering GVA of private corporations and also GVA of other establishments as per the entire coverage of

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ASI irrespective of the type of organization of the units covered in the survey. In this context, it may be noted that ASI covers not only private corporations but also other units, e.g., government departmental enterprises, public corporations, khadi and village industry, handloom industry and cooperative society.<sup>4</sup> Further, based on ASI that adopts establishment approach of data collection with each sample establishment, i.e., factory as the responding unit, it is possible to generate estimates of manufacturing GVA by state/UT with further break-up for each state/UT by CC X type of organization,<sup>5</sup> since information on industry code and type of organization to which the factory belongs is available for each sample factory.

#### 3. Magnitude of Bias in the Estimates

In our view, it would have been more appropriate to allocate all-India GVA of private companies as per MCA21 database over state/UT x CC based on the respective combination's share in the total all-India GVA of private companies as per ASI. Similarly, for private quasi corporations, their total GVA at all-India level as per ASI should be allocated over state/UT x CC exactly as per the state/UT x CC-wise distribution available from ASI. Finally, these two estimates at the state/UT x CC level should be added to derive total GVA of private corporations at the level of state/UT x CC. It is of interest to mention that this method (say, Method 1) is followed in the NAS while allocating all-India GVA of private corporations over CC at the all-India level but the method of allocation of all-India GVA of private corporations over state/UT x CC is different (say, Method 2) as described in section 2. Obviously, at the level of CC, state/UT level estimates as per Method 2 if added over all the states/UTs would result in the national level GVA for a given CC that would not match with the one derived based on Method 1 - and thus creating a mismatch - which is not desirable.

It would be of interest to see how the estimates at the level of CC/state/UT as per the two different methods behave. Since CC-wise estimates were not readily available with us, we have done this analysis at the NIC (National Industrial Classification) 2-digit level in place of CC (there are 24 NIC 2-digit codes as against 30 CCs for manufacturing activity). However, the broad findings are not likely to change much even if the analysis is carried out at the level of CC. For the purpose of the study we have considered data as per ASI 2014-15.

In **Statement 1** we present all-India estimates of GVA of private corporations by NIC 2-digit as per the two alternative methods discussed above. Corresponding state-wise alternative estimates of GVA are presented in **Statement 2**. States/UTs are arranged in the descending order of extent of bias in **Statement 3**.

It may be seen that at the NIC 2-digit level, the extent of absolute divergence between the two alternative estimates of GVA varies between 0.10% (NIC 17) and 4.56% (NIC 16). But it is disturbing to note that at the state/UT level, the variation in the absolute magnitude of bias is much larger (between 0.00% and 61.65%). The extent of bias is found to be more than 5% in respect of eight states/UTs, namely, Andaman & Nicobar Islands (61.65%), Arunachal Pradesh (23.79%), Tripura (18.80%), Kerala (15.72%), Odisha (15.54%), Manipur (15.23%), Madhya Pradesh (10.26%) and Bihar (9.70%). In all these cases except Andaman & Nicobar Islands, allocated GVA as per the official methodology is found to be higher.

NIC 2-Digit	GVA (Rs. Lal Companies & Qu per alternative n adjusting total G	kh) by Private asi Corporates as nethods without VA based on ASI	Bias* (%) Adjusted GVA (Rs. Lakh) by Private Companies & Quasi Corporates**		. (Rs. Lakh) by mpanies & porates**	Bias* (%)
	Method 1	Method 2		Method 1	Method 1	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
10	7590133	7500638	-1.18	9270280	9662128	4.23
11	1557993	1545437	-0.81	2034800	1990792	-2.16
12	1551999	1531566	-1.32	1970788	1972924	0.11
13	5941514	5869563	-1.21	7601870	7561020	-0.54
14	2441656	2409614	-1.31	2979048	3104002	4.19
15	910094	898268	-1.30	1108015	1157125	4.43
16	365851	362002	-1.05	445968	466322	4.56
17	1467624	1454822	-0.87	1872212	1874064	0.10
18	1160842	1146387	-1.25	1460035	1476746	1.14
19	14351784	14787920	3.04	18929114	19049417	0.64
20	9321777	9403698	0.88	11978287	12113601	1.13
21	8091554	8005236	-1.07	10543473	10312138	-2.19
22	4525163	4466627	-1.29	5829045	5753793	-1.29
23	5856921	5797793	-1.01	7492473	7468567	-0.32
24	12201487	12394466	1.58	16001617	15966231	-0.22
25	3613814	3570054	-1.21	4529247	4598852	1.54
26	2341751	2330215	-0.49	3065620	3001723	-2.08
27	3921111	3987779	1.70	5070662	5136954	1.31
28	6596041	6518969	-1.17	8552163	8397568	-1.81
29	8598860	8485647	-1.32	11267496	10930992	-2.99
30	2833568	2802566	-1 09	3632236	3610193	-0.61
31	332230	328930	-0.99	420671	423719	0.72
32	2005628	1981031	-1 18	2521980	2553072	1.23
33	276912	276181	-0.26	360612	355770	-1.34
Mfg	107856307	107856307	0.00	138937713	138937714	0.00

Statement 1. GVA as per Alternative Methods by NIC 2-Digit for All-India, 2014-15

Mfg stands for Manufacturing. For description of NIC codes, see national Industrial Classification 2008.

\* Obtained as 100\* [(Method 2) - (Method 1)] / (Method 1).

\*\* Adjusted GVA derived after adjusting GVA of private companies as per ASI by the adjustment factor 'f' where f = (GVA by private companies as per NAS) / (GVA by private companies as per ASI), with NAS 2016 as the corresponding source. Quasi-corporate part of GVA has been taken as it is as per ASI.

State / UT	GVA (Rs. La Companies & Q as per alternativ out adjusting to on .	kh) by Private Quasi Corporates e methods with- otal GVA based ASI	Bias* (%)	Adjusted GVA Private Co Quasi Cor	Bias* (%)	
	Private Companies & Quasi Corporates as per alternative methods without adjusting total GVA based on ASI       B         Method 1       Method 2       Method 2         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         1)       (2)       (3)       (4)         10       (2)       (3)       (4)         11       (2)       (3)       (4)         11       (4)       (4)       (4)         11       (4)       (4)       (4)         11       (5)       (5)       (4)         11       (5)       (5)       (4)         11       (5)       (5)       (5)         12       (5)       (5)       (5)		Method 1	Method 1		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Jammu & Kashmir	552564	547054	-1.00	714567	704701	-1.38
Himachal Pradesh	3049197	3010466	-1.27	3889791	3878005	-0.30
Punjab	2448040	2443968	-0.17	3067110	3148257	2.65
Chandigarh	41638	41091	-1.31	51571	52932	2.64
Uttarakhand	4390660	4342991	-1.09	5699308	5594529	-1.84
Haryana	5711962	5648115	-1.12	7412595	7275757	-1.85
Delhi	653511	649444	-0.62	820560	836597	1.95
Rajasthan	3626696	3592818	-0.93	4672337	4628175	-0.95
Uttar Pradesh	4913449	4844555	-1.40	6232431	6240631	0.13
Bihar	570599	618233	8.35	725976	796391	9.70
Sikkim	455533	449592	-1.30	568980	579152	1.79
Arunachal Pr.	36353	35698	-1.80	37147	45985	23.79
Nagaland	12078	11919	-1.32	14749	15354	4.10
Manipur	7859	7755	-1.33	8669	9989	15.23
Tripura	45617	45608	-0.02	49455	58750	18.80
Meghalaya	95024	93771	-1.32	124957	120793	-3.33
Assam	960060	949565	-1.09	1216004	1223205	0.59
West Bengal	2315588	2304147	-0.49	3005808	2968142	-1.25
Jharkhand	2350821	2415283	2.74	3083419	3111305	0.90
Odisha	2056267	2372283	15.37	2644821	3055913	15.54
Chhattisgarh	2078745	2058249	-0.99	2714692	2651384	-2.33
Madhya Pradesh	2102693	2333754	10.99	2726428	3006281	10.26
Gujarat	18830128	18582211	-1.32	24443535	23937125	-2.07
Daman & Diu	659435	650751	-1.32	831013	838280	0.87
Dadra & Nagar Haveli	1545108	1526404	-1.21	2022537	1966274	-2.78
Maharashtra	22215774	22277360	0.28	28754509	28697121	-0.20
Andhra Pradesh	3098255	3080384	-0.58	3968222	3968072	0.00
Karnataka	6524455	6453437	-1.09	8380759	8313151	-0.81
Goa	1454861	1435704	-1.32	1907594	1849437	-3.05
Kerala	1157376	1281666	10.74	1426765	1651010	15.72
Famil Nadu	10395534	10287752	-1.04	13192274	13252416	0.46
Puducherry	342206	338811	-0.99	441998	436447	-1.26
A & N. Islands	660	235	-64.41	789	303	-61.65
Felangana	3157562	3125234	-1.02	4086347	4025846	-1.48
All India	107856308	107856307	0.00	138937714	138937714	0.00

### Statement 2. GVA as per Alternative Methods by State/UT, 2014-15

\* Obtained as 100 x [(Method 2) - (Method 1)] / (Method 1). \*\* Adjusted GVA derived after adjusting GVA of private companies as per ASI by the adjustment factor 'f' where f = (GVA by private companies as per NAS)/(GVA by private companies as per ASI), with NAS 2016 as the corresponding source. Quasi-corporate part of GVA has been taken as it is as per ASI.

State/UT	Adjusted GV	A (Rs. Crore)	Bias* (%)	Bias in Absolute	
	Method 1	Method 2		Terms (%)	
(1)	(2)	(3)	(4)	(5)	
A & N Islands	8	3	-61.65	61.65	
Arunachal Pradesh	371	460	23.79	23.79	
Tripura	495	588	18.80	18.80	
Kerala	14268	16510	15.72	15.72	
Odisha	26448	30559	15.54	15.54	
Manipur	87	100	15.23	15.23	
Madhya Pradesh	27264	30063	10.26	10.26	
Bihar	7260	7964	9.70	9.70	
Nagaland	147	154	4.10	4.10	
Meghalaya	1250	1208	-3.33	3.33	
Goa	19076	18494	-3.05	3.05	
Dadra & Nagar Haveli	20225	19663	-2.78	2.78	
Punjab	30671	31483	2.65	2.65	
Chandigarh	516	529	2.64	2.64	
Chhattisgarh	27147	26514	-2.33	2.33	
Gujarat	244435	239371	-2.07	2.07	
Delhi	8206	8366	1.95	1.95	
Haryana	74126	72758	-1.85	1.85	
Uttarakhand	56993	55945	-1.84	1.84	
Sikkim	5690	5792	1.79	1.79	
Telangana	40863	40258	-1.48	1.48	
Jammu & Kashmir	7146	7047	-1.38	1.38	
Puducherry	4420	4364	-1.26	1.26	
West Bengal	30058	29681	-1.25	1.25	
Rajasthan	46723	46282	-0.95	0.95	
Jharkhand	30834	31113	0.90	0.90	
Daman & Diu	8310	8383	0.87	0.87	
Karnataka	83808	83132	-0.81	0.81	
Assam	12160	12232	0.59	0.59	
Tamil Nadu	131923	132524	0.46	0.46	
Himachal Pradesh	38898	38780	-0.30	0.30	
Maharashtra	287545	286971	-0.20	0.20	
Uttar Pradesh	62324	62406	0.13	0.13	
Andhra Pradesh	39682	39681	0.00	0.00	
All India	1389377	1389377	0.00	0.00	

# Statement 3. Extent of Bias at State/UT Level in Descending Order of Extent of Bias

\* Obtained as 100 x [(Method 2) - (Method 1)] / (Method 1); Figures of bias presented here are based on GVA figures in Rupees Lakh presented in Statement 2 and hence they may not exactly tally if these are computed as per entries in columns 2 and 3 of this statement.

### 4. Way Forward

We have noted that as per the adopted methodology, the starting point in deriving estimated GVA for various compilation categories (CC)/States/UTs in respect of PCS segment is proceeding with the all-India GVA figure of private companies as per MCA21 database. For the allocation over CC at the national level, the said GVA is allocated over the CCs using proportionate share of various CCs in the all India GVA for the private companies based on ASI. Alternatively, instead of doing such allocation based on ASI results, one could very well accept the CC-wise distribution of national GVA figure of private companies as per the MCA21. There is a need for deeper investigation as to which of the two approaches may be considered as more appropriate.

Another area that needs serious attention is addressing the issue of mismatch in coverage of the two frames of private companies emerging from two data sets, namely MCA21 and ASI, both in terms of number of units and GVA. The extent of divergence in the estimates of GVA of the private companies between the NAS (that uses MCA21 database) and ASI is really disturbing (see Statement 4). The GVA as per the latter source is only about 81% of the GVA based on the former. We can visualise three possible reasons for the said divergence: one, sampling error associated with the ASI-based estimates; two, inadequacy of the ASI frame by way of noninclusion of eligible units belonging to private companies; and three, the problem with the frame/data on GVA arising out of MCA21. In our

view, the first reason cannot explain the said divergence. This is because ASI-based estimates of overall GVA are found to be quite robust in terms of relative standard errors of the estimates and more importantly, the annual estimates over time seem to be consistent in trend and the observed mismatch is found to be uni-directional in the sense that ASI-based estimates are consistently lower than those based on MCA21. Regarding the second reason about incompleteness of the ASI frame. limited exercises carried out in the past by tapping data sources like NSSO Establishment Surveys on unregistered manufacturing sector and the list of units as per the Business Registers developed for some of the states/UTs, we have come across instances of omission of certain eligible units belonging to private companies which are missing from the ASI frame. But in our view such cases not many to explain about 20% are under-coverage of GVA as per ASI when compared with the GVA as per MCA21 database. Thus we are of the view that a major reason behind the mismatch in GVA of private companies between ASI and MCA21 is due to probable inclusion of the contribution of likely nonmanufacturing activities pursued by the companies together with their manufacturing activities in the overall GVA reported by them. It would be useful to take up some studies in this regard so that necessary corrective measures are put in place.

Finally, in our view, the existing method of allocation of all-India GVA over states/UTs as described in section 2 may be revisited for suitable modifications.

Year	All-India Manufacturing GVA Crore) as per alt	All-India Manufacturing GVA for the private companies (Rs. Crore) as per alternative sources			
	NAS*	ASI**			
(1)	(2)	(3)	(4)		
2011-12	918076	747638	81.4%		
2012-13	1030077	841104	81.7%		
2013-14	1121442	916468	81.7%		
2014-15	1282380	1033848	80.6%		

#### Statement 4. Mismatch in Manufacturing GVA for the Private Companies

\* Source: NAS 2016; Courtesy: Central Statistics Office

\*\* Source: ASI Results, Table 7: Principal Characteristics by Type of Organisation (www.mospi.gov.in). ASI includes non-manufacturing part also within the coverage of ASI.

#### NOTES

1. Source: National Accounts Statistics 2017, Central Statistics Office.

2. Henceforth the term private corporate sector/segment (or equivalently private corporations) would mean private companies and private quasi-corporations taken together.

3. Compilation category is a combination of National Industrial Classification (NIC) codes - 30 in number in case of manufacturing activity.

4. For details, see the survey instruments under "AN-NUAL SURVEY OF INDUSTRIES" available in the link www.mospi.gov.in.

5. Classification followed for type of organization is as follows: Individual Proprietorship, Partnership, Limited Liability Partnership, Government Company - Public, Government Company - Private, Non-Government Company -Public, Non-Government Company - Private, Cooperative Society, Others.

#### REFERENCES

1. Methodology for Compilation of State Estimates of Gross Value Added, Central Statistics Office, Government of India

2. Second Advanced Estimates of National Income, 2017-18 released by Central Statistics Office on 28th February, 2018

3. National Accounts Statistics 2016, Central Statistics Office

4. National Accounts Statistics 2017, Central Statistics Office

# **DISCUSSION ON DR. MANNA'S PAPER**

# Dr. Anant:

Manna saab, you have also done another thing. In fact, the study can be done in two ways. In the ASI survey which was picked up in 2015-16, we had canvased the CIN number.

#### Dr. Manna:

Yes, sir. We have collected CIN number.

#### **Dr. Anant:**

It may be possible for us to estimate the GVA from those SIM numbers.

### Dr. Manna:

Yes, those SIM numbers are state-wise and match with the MCA data.

#### Dr. Anant:

That will also give us the measure of diversions. See, the diversion partly is on account of the ASI frame. And that is well-known. The diversion is on account of the fact that what is classified as manufacturing has a certain amount of nonmanufacturing value added is there. And we have never said that it is not there. In fact, in the other discussion when we said that non-manufacturing part of value added by enterprises which are in the ASI segment, was earlier not being covered at all, was in fact an explicit assertion that we should accept what is happening. Ideally speaking, we should allocate them separately because under SNA, head office value added should be treated as financial services. It should not be treated as manufacturing. Provided, and this is an important proviso, provided, you can separate out establishment level value added from the manufacturing GVA, determine what the head office value added is, stick the head office value added into the financial services in appropriate category. This level of classification or matching, we are not being able to do. And this is really where the major research needs to be done. If we can get either through this route a better tracking of this that's one possibility; that we are trying, because that is what is in our control at the moment. The other option is also to approach the MCA registered office to give us their value-added allocation by establishments. That will depend upon whether companies are (a) in the position to give it and (b) are willing to give it. Both of which will have to be explored.

### Dr. Manna:

Need to explore!

#### **Pro. Rath:**

That you can do under ASI also; this question was asked.

# Dr. Anant:

In ASI we have already introduced the question in the survey which was done. I think, the results will now be coming out. We captured the CIN number as part of the ASI schedule. So, we can do that compilation. It may help us. Until we do it and look at the numbers, I am not going to say whether we can do it. The other route is to go to the companies and get it documented because my feeling is multi-establishment firms - Tata motors is a very good example - Tata motors actually has establishments of the following types, not all of which are in ASI. Their main plants in 3 or 4 places are in ASI. Then they have a head office, which is not in ASI, and it should be treated as a financial service. They have an R&D establishment located, I believe, in Pune, which needs to be classified separately. Then they have sales and service centres all over the country, which are also part of Tata Motors. Those should be taken in trade and the repair services. Unfortunately, in the absence of being able to separate these out, in Tata Motors all of this is taken, at the moment, in manufacturing. That is a consequence of MCA. And that is a consequence which you cannot shy away from. But how do we make this happen? We will need all of these separately. Now, the

trouble is, the ASI will help you aggregate the ASI total, and I know what is the rest for Tata motors, say the financial services group. The services survey will help you get some of these establishments, not all. I need a complete frame where all the establishments are tagged, only the company can give me, which in one way or, they are hoping, the GSTN will give us, because GSTN requires every place where transaction takes place, for Tata motors, for example, all its sales outlets will have a GSTN number because they will have to bill at the point of sale. So, that may be a route which we can take. These are areas where more research is needed, and it will certainly help us improve the distribution data.

### Dr. Toprani:

Sir, I just want to add; In 74th round we have asked this question for multi-establishment firms. Can you provide us separately establishment-wise data?

### Dr. Manna:

Yes, we have collected data for multiestablishment firms. Let's see how much we get in that... At least, we experimented it in the 74th round. That could be a lesson.

### **Dr. Shetty:**

Fantastic, Dr. Manna, it is really very helpful, very insightful. There is no doubt about it. But I want just to point to what Dr. Anant is saying. I think we will have to take a close look at the definition of manufacturing. It is undergoing, in terms of literature when one looks at it, one finds that, for example, IT services rendered by manufacturing units. There is a series of problems of that nature. And therefore, I don't know whether we will be able to really separate out the data in that manner. Tata Motors is a clear example, in which you have a distinct set of units, but you will not get that in a number of other cases, and therefore you will

find it extremely difficult to do that kind of very clear-cut differentiation. What we have done in our study, last time, from ASI, we looked at the corporate sector data only - corporate entities- and the MCA data. We found some problems. In one year, ASI data for the corporates was 40% of the MCA data; in the following year, it was15.5% - in aggregate.

#### Dr. Manna:

I am showing it to be 70%. I have stated some four years' figures. ASI figure for the corporate sector was 70% of the MCA figure, as per published documents.

### **Dr. Shetty:**

No, I'm talking about something else. Sorry, these 40% and 15% are attributed to the Head Office.

## Dr. Anant:

You have taken this difference and attributed it to the head office?

### Dr. Shetty:

Yes.

### Dr. Manna:

Ok, head office, that's different... I have talked only about the private corporate sector, ASI figure *vis à vis* the MCA figure.

### Dr. Anant:

Dr. Shetty, you have taken the difference between the ASI and the MCA figures and attributed it to head office. Alright, that is it.... Ramamurthy is wanting to say something.

### **Dr. Ramanamurthy:**

Actually, we did this exercise initially. We compared ASI corporate sector data with that for the MCA corporate sector. But then we found that for some of the compilation categories, the MCA

shares were lower than ASI, for many of the states. So, we added the non-corporate sector data to the corporate sector data.

### Dr. Manna:

What is the share that you are talking about? What is that share?

#### **Dr. Ramanamurthy:**

The share that you get when you tabulate as per ASI and that when you tabulate as per MCA.

### Dr. Anant:

But you took the ASI private corporate sector data?

### **Dr. Ramanamurthy:**

Yes.

# Dr. Anant:

If you use ASI, private corporate, what do you mean by saying it did not look matching the MCA data? I can understand, in spite of process of adding it out, and private corporate you add from the bench mark estimate, the total estimate which you are getting for the state is less than what you are getting from ASI, then you would have a problem.

### Dr. Manna:

I think then we can have a further dialogue on this, but I really fail to understand.

#### Dr. Anant:

Dr. Manna, what he's saying is they did the exercise. And let me try to explain what I understand. They worked out the funding that comes to each state? That amount for some states, because the rest was as per the quasi- corporate allocation as per the benchmark approach and so on and so forth, the allocation which they were getting for the state in question, turned out to be

less than what the state was getting under the ASI figure. So they felt that that will create a problem because the states when they come for discussion would say how can you give us less than what you are getting in ASI already? So, they resorted to this which allowed them to make sure that no state got less than what ASI allots.

### **Prof. Dholakia:**

That means, we are overestimating the whole thing at the national level.

#### **Dr. Anant:**

No... national number is fixed.

### **Prof. Dholakia:**

No but then how can that happen?

### Dr. Anant:

What Ramanamurthy is saying is that if you distribute the MCA estimate strictly according to ASI corporate shares, you will get one part for the states. Then the non-MCA part of the national estimate which is for the quasi-corporate and others will be distributed and generated as per benchmark estimates. However, when you add up and generate state-level estimates as a consequence, they found that for some states the resultant estimate, - there may be a calculation error or maybe an adding up problem or something - for some states the resultant estimate was less than what they were supposed to get under ASI.

### Dr. Rajeswari:

Compilation categories are not there in some of the states.

#### Dr. Sethia:

No, let's see, suppose there is Pepsi and there is Siemens factory. So Pepsi has lot of marketing expense which is overheads and Siemens doesn't have that much value as marketing expenditure. But we are presuming that both the factories have the same marketing expense or overhead expenses.

#### **Dr. Anant:**

No no, they are distributing supposing their compilation category. But when you aggregate the --- the states overall GVA in manufacturing if you find by doing this exercise that you end up with a number which is less than what that state got from the ASI calculation, the state will throw up the blue prints saying, how will you give us less?

#### Dr. Manna:

Sir, should I respond? Only one thing, what I fail to understand. How did we start? We started with some number for value added as per MCA, all India one number. That is the benchmark in present methodology, Rs. X. ASI said extra. ASI figure is extra. It is 70% of X, isn't it? The ratio is more than 1. That part is ok? All India? Now what has been done? We have got X1, X2, ...,Xk, compilation category-wise in proportion to ASI distributions. So here, what is the meaning? Since we have applied ASI proportions X1, X2, ..., Xk in the value added, you see, as per ASI whatever be the value of X1, you are allocating with a little higher figure now. Because your blown-up factor is constant.

#### Dr. Anant:

That is at the aggregate level.

#### Dr. Manna:

Blown-up factor at the aggregate level is constant. It gets distributed over all the compilation categories. Now, you have got the numbers, the revised numbers X1, X2, ... Xk. What are these revised numbers? Each one is much larger than the ASI figure, much larger than the ASI figure everywhere. Again X1, as per ASI you are getting some cell value. And how can these [add to] lower than state ASI? I am really unable to understand!!

An unidentified voice: He has a point!

#### Dr. Sriraman:

Sir, I have only one question. What do you mean by unorganized corporate?

#### Dr. Manna:

No, let me clarify. In the 62nd round of unorganized manufacturing survey -or that was also in the 56th round - the procedure was like this. ASI covers organized, that is, 10 or more workers using power or 20 or more not using power as per Factories Act. Whatever is remaining, all manufacturing units, irrespective of type of ownership, whether it is unincorporated or not. If there is some factory unit with 10 or more workers [but not using power] suppose it was under the corporate a limited company. But such units are not covered in ASI. But they are covered in NSSO unorganized manufacturing survey. We included them in the 56th round and the 62nd round. Entire universe was getting covered, one is ASI and the other is non-ASI.

#### Dr. Dennis Rajakumar:

Unorganized corporate ..?

#### Dr. Anant:

I know what you are thinking. Unfortunately, our terminology needs a comment. The old series has many such conundrums. Actually, we do not use 'organized - unorganized'. The correct phrase which was used in national accounts documentation is registered - unregistered. Registered was ASI, unregistered was everybody else. An unregistered enterprise could be corporate. Unfortunately, in manufacturing it was registered unregistered. Everywhere else it was organizedunorganized. That was totted up and you brought up something which we were then told that this is the formal sector, this is the informal sector. The terminology was thoroughly confused. If anything, people should be grateful to us we are actually giving a clearer definition. Everything is clearly defined. Account keeping, though as Manna said, there is an issue there with NSS survey with realm it maintains account, the data is shifting from the unit or not. But if it keeps accounts it is called quasi-corporate, if it doesn't keep accounts it is household. This is a very clear definition.

#### **Prof. Dholakia:**

So now, you have organized informal sector, and unorganized formal sector.

# Dr. Shetty:

Even SNA has done that!

### Dr. Sethia:

I have two small questions. Would you agree that on EVP ASI there is not ---- establishment on enterprise? ASI level, the factory level, the only --- in production that will take place whereas looking at MCA to allocate using the ASI proportion, sir, actually I'm putting the larger value than manufacturing and I am including services, trading, income...

#### Dr. Manna:

I have said that.

#### Dr. Sethia:

And that is getting distributed using ASI proportions. That does not even represent---Yes, yes.

### Dr. Anant:

Wait wait. This is not, this is only for MCA companies which are classified by major activity. Yes, the pointer may be this, that a company which includes to in manufacturing databases, non-manufacturing value added. But until we get reasonable estimates of where else they are shown to say that your national account should exclude them is wrong. Right? Now the question is give me a method of apportioning that something segment that can only happen if I get additional input from either the company or from a matching of ASI and company data.

Segregate in proportion...

Yes.

#### Prof. Rath:

Sir, when you said wrong, I suggest that is not the right word. It cannot be done.

### Dr. Anant:

Sir, if you are supposed to give the complete account of value added and I demonstrate to you through just this picture of Dr. Manna's that in the older series, 30% of GVA or thereabouts was not being included in national accounts compilation, then what would you call it?

### **Prof. Rath:**

No no. I am not talking about this. That you can't separate manufacturing from others...

# Dr. Anant:

That is a problem. So, our manufacturing estimate is imprecise because we are allocating GVA to manufacturing segment on the basis of major activity. Ideally, and that is what SNA says, I should get activity-wise breakup of all GVA generated. But, which is what I said when I was making my Opening Remarks, unfortunately, neither in India nor anywhere in the world is the ideal data available. So, it is not that we are the only country showing non-manufacturing GVA as manufacturing. Everybody is. And Shetty saab is absolutely right. Companies are now providing a multiplicity of services, not all of which are possible to separate out on the basis of establishment level characteristics. You have modern manufacturing which is doing things by taking orders over internet where you can design your product for the company and they will deliver it to you. How much of it is the manufacturing value added, how much of it is services value added, how do you know?

#### Dr. Shetty:

There was an interesting article in Reserve Bank Bulletin 7-8 years ago emphasizing how the notion of manufacturing is undergoing rapid changes. And they talked about this.

#### **Prof. Rath:**

That merely throws us back to his earlier remark or yours that we should think of defining manufacturing in an appropriate manner.

#### Dr. Shetty:

Meaning, for us is very clear. Yes, but I'm saying

if you are to go beyond that, it is difficult today to characterize them so clearly. There are complications in doing that. I mean, the impression we get that we could do that. Tata Motors is a good example. Why not separate them, they have different wings?

#### **Prof. Rath:**

That is much easier...

### Dr. Shetty:

But that doesn't appear to me to be that clear-cut.

## **Prof. Rath:**

But now we have electric cars, 3D printing, where do you put it?

# Dr. Anant:

Industry Four is going to create problems for you in national accounts classifications. NIC is going to become an even bigger mess.

### **Prof. Chitre:**

Ok, thank you very much Dr. Manna; thank you very much participants for the questions, comments.

# ESTIMATION OF GSDP BASED ON THE NEW (2011-12) GDP SERIES -AN EVALUATION OF CRITICAL COMMENTS AND A FEW SUGGESTIONS

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This paper makes an attempt to have a detailed state-wise, sector-wise assessment of the changes that have occurred in the Gross State Value Added (GSVA or formerly known as Gross State Domestic Product, GSDP) estimations as per the 2011-12 series over the 2004-05 series. This paper finds that, at the aggregate level, the differences are 10% or less except for three major states, namely, Karnataka, Telengana and Uttarakhand wherein such differences have ranged from 10% to 21%. Sector-wise assessment reveals that major changes occurred in the relative share of several sectors, as in mining and quarrying, manufacturing, trade, etc., across states reflect the all-India picture, as the all-India estimates have been allocated to states based on certain chosen indicators.

Substantive part of the paper has, however, been devoted to closely examine Dholakia-Pandya (2017) critique on the GSVA revision and offer comments on each of them. Not only many of the criticisms offered by these authors fail to stand the test of empirical scrutiny, but the abandonment of 2011-12 GSVA base series will create serious differences between the national level estimates and the state level aggregates. On a balanced consideration, this paper argues that it is neither advisable nor is it necessary to abandon the 2011-12 series of GSDP evolved on the basis of the national level revision at this stage. Some of the limitations noticed in the GSVA estimation procedures can be easily corrected by the Central Statistics Office (CSO). This has been borne out by the analysis using data compiled from Bureau of Economic and Statistics of Government of Maharashtra.

Apart from these proposals, this paper present a fresh list of suggestions for improving the 2011-12 GSDP series and expanding the coverage of state-level estimates. Amongst them that has immediate relevance include: the CSO should adopt state specific indicators wherever indicators are used either for deflation purposes or for allocation devices or for carrying forward the benchmark estimates; and, whenever CSO prepares comparable GSVA estimates, its sources and actual numbers should be transparent and open to scrutiny at the state level so that the State Directorates get a sense of involvement and participation in their own estimates.

#### I. INTRODUCTION

Even as we were committed to preparing a paper for this seminar planned by the Indian School of Political Economy on the subject, we were nevertheless overwhelmed by the critical article subitted by Ravindra Dholakia and Manish Pandya at the earlier Symposium on the new GDP series organised by the same School and now published in the January-June 2017 issue of the School<sup>A</sup>Rs Journal [Dholakia and Pandya, 2017]. The article offered a critique of the revisions introduced in the estimation of Gross State Value Added (GSVA) uniformly for all the states with the base year revision to 2011-12 following the same national level revision. We consider that, that article is a very comprehensive one and hence it can form the basis for initiating any debate on

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the implications of the new GDP series for the estimation of GSVA series and GSDP series.<sup>1</sup>

However, the Dholakia-Pandya study makes a radical suggestion, to the effect that the recent revisions in GSDP based on the new 2011-12 series should be abandoned and that the old base of 2004-05 should continue "till further revision of the base year takes place".

In this respect, we have a different perspective. According to us, it is neither advisable nor is it necessary to abandon the 2011-12 series of GSDP evolved on the basis of the national level revision. We agree with some of the critical observations made in the Dholakia-Pandya article, but perceive that some of those lacunae can be easily corrected by the Central Statistics Office (CSO) straight away without abandoning the new series. Apart from these proposals, we have a few other suggestions as well so as to improve the overall GSVA/GSDP estimates for all states and expand their scope and coverage.

#### **II. PRESENTATION SCHEME**

Accordingly, this paper is divided into four sections. First, we make a detailed state-wise, sector-wise assessment of the changes that have occurred in the GSVA estimations as per the 2011-12 series over the 2004-05 series and bring out their possible implications for the use of GSVA/GSDP data for various policy purposes at the level of the Niti Aayog or the Finance Commission. Second, we analyse the Dholakia-Pandya critique and offer comments on them. These constitute substantive issues of our observations on their paper and it is because of this assessment of ours, that we contend that the new series need not be abandoned. Third, we present a fresh list of our suggestions for improving the 2011-12 GSDP series and expanding the coverage of state-level estimates. Finally, we sum up the overall picture of our paper.

#### III. GENERAL OBSERVATIONS; SOME COMMENTS

Before dealing with specific issues for review, we take up a few general observations made by Dholakia and Pandya which call for some comments. First, on their radical suggestion to abandon the new 2011-12 series, we have already expressed our disagreement. As we presently show, many of the criticisms offered fail to stand the test of empirical scrutiny. The abandonment will create serious differences between the national level estimates and the state level aggregates.

Second, while dealing with base year choices, Dholakia-Pandya paper writes, "if there were problems of abnormal and non-representative years such as 1990-91 and 2009-10 at the national level for their selection as the new base year, the same logic should apply for selecting the base year at the state level". Continuing the same strand of thought, they conclude thus: "Hence, revising the base year uniformly for all states would most likely introduce an element of an unknown error, bias and interstate non-comparability." A question could be asked: do the authors imply then that there could be different base years for states and for India for estimating GSVA and GDP? It is hoped that they do not mean that, but the article does not say so. Here, we clarify that when there are differences in matters of "normality" of the base year as between the national and any specific state level, the concerned state may construct an independent picture of GSVA and its growth for its own purposes for panel level or any other comparison. But, the national statistical system should not adopt divergent base levels for statelevel GSVA and national GDP numbers. It is not unusual that when the statistical scenario is disaggregated, divergent results are found in any statistical series.

Finally, the Dholakia-Pandya paper has raised, on the face of it, a pertinent question on the difference between the estimation of GSVA at basic prices and that of GSDP at factor cost. It is known that the earlier estimates were GSDP at factor cost and the same in the new series are labelled as GSVA at basic prices. In this respect, we wish to emphasise that a grave error has occurred at all levels, at the level of the national level statistical system as well as we academicians and other users and commentators dealing with national income data, that they never noticed that there is no difference whatsoever in the estimation procedure as between GSDP at factor cost earlier estimated and GSVA at basic prices now introduced. The same sets of numbers were produced earlier when they were called GSDP at factor cost and the same sets of numbers are now produced when they are termed as GSVA at basic prices. This is because production taxes supposedly charged on production, irrespective of the volume of production, are nowhere visible in any of the values of individual items produced or sold. Amounts of such production taxes get subsumed in the basic values of total output; they are not separately available in the individual production values reported. Instead, they are located in Government budgets as part of revenue receipts under respective tax heads. Same is also the case with production subsidies received on factors of production or inputs. They are not even considered as intermediate costs; they are paid out of gross turnover irrespective of whether there is positive operational surplus or not. This is true of all reported production taxes such as land revenue, profession taxes, stamp duties, court fees and vehicles tax; these are all, to emphasise again, charged irrespective of the size of production or sale transactions. Such taxes were all embedded in the figures of GSDP at factor cost reported earlier and hence they are equivalent conceptually to the now published figures of the GSVA at basic prices; there is no difference between them and they are comparable. Thus, in crude linkages of aggregate numbers of GSDP and GSVA in the

two successive series, there cannot be any difficulty in linking the old and new series by the splicing method and thus studying the trends in GSDP over the overlapping periods. But, if the back series have to be constructed by more systematic method by independently estimating back series of sectoral data similar to say, the MCA 21 data used for the private corporate sector in the new series in as many as 17 sectors, it would be an extremely tricky question and there is no ready answer for it as yet.

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However, before we conclude this point, we should clarify that in the case of the national level estimation by the CSO under its *National Accounts Statistics* (NAS), the figures of production taxes net of production subsidies are independently collated from the Budget Papers and are published in the NAS annual documents. These are used to make adjustments to GVA at basic prices, which will help to derive GVA at factor cost. This method of deriving the GVA at factor cost is clearly spelt out in the United Nations' *System of National Accounts 1993 (page 154)*:

"Gross value added at factor cost is not a concept used explicitly in the system. Nevertheless, it can be easily derived from either of the measure of gross value added presented above by subtracting the value of any taxes less subsidies on production payable out of gross value added as defined. For example, the only taxes on production remain to be paid out of gross value added at basic prices consist of 'other taxes on production'\_1/ These consist mostly of current taxes(or subsidies)on the labour or capital employed in the enterprise, such as payroll taxes or current taxes on vehicles or buildings. Gross value added at factor cost can, therefore, be derived from gross value added at basic prices by subtracting 'other taxes less subsidies on production'"(Emphasis added.)

These factor cost figures of national-level GVA were initially, after the start of the new series, published once or twice, but totally discontinued thereafter. But, to repeat, this does not apply to state-level data. After the new series, GSDP estimates at that level are christened as GSVA at basic prices; the same GSDP estimates in the 2004-05 series were labelled as GSDP at factor cost, without making any adjustment for "production taxes net of production subsidies" that were embedded in the factor cost numbers. Just to make the position abundantly clear as we understand, we have attached a note in Appendix A on the subject of "production taxes net of production subsidies and the associated estimates of GVA at factor cost and GVA at basic prices."

#### IV. STATE-WISE, SECTOR-WISE ASSESSMENT OF GSDP CHANGES IN 2011-12 SERIES OVER 2004-05 SERIES

In Appendix B, we make a comparison of GSVA estimates of 2011-12 with GSDP estimates as per 2004-05 series (both for 2011-12) industry-wise and in the aggregate, state-wise. As may be seen therein, at the aggregate level, the differences are miniscule except for three major states, namely, Karnataka, Telengana and Uttarakhand. Such small differences are found to be 10% or less, though in the case of these three states the differences have ranged from 10% to 21%. Thus overall, it can be said that the relative positions of states in terms of per capita GSDP/GSVA would not be altered over the periods of two series of state incomes. Besides, it is necessary to concede that whatever changes have occurred in the 2011-12 series compared with the 2004-05 series, they stand justified based as they are on better data sets and improved methodology than those used in the past though they are not necessarily perfect. We will have an occasion to deal with these newer data sets and revised methodology rather extensively in a separate section below. For the present, suffice it to say that broadly two contrary trends are noticed in the sectoral results. First, in sectors where organised enterprises are dominating as in manufacturing, electricity and mining, the application of MCA 21 data has considerably expanded the data base and tended to correct the earlier underestimation of output. This confirms the well-perceived assessment that the data base for even the organised sector was not only weak but also it had underestimated its role in the national economy. Secondly, insofar as the sectors where the informal enterprises are dominating as in trade, the results of the fresh sample surveys and the new methodology have tended to correct the estimations in those sectors. These broad trends appear to be distinctly discernible in the sectorwise, state-wise net percentage changes in the 2011-12 GVA over the 2004-05 data presented in Appendix B. Interestingly, these contrary trends seem to cancel each other out which is reflected in the miniscule differences in the aggregate GVA as between 2011-12 and 2004-05 series.

Just to reinforce the comparative results posited above, we present in Table 1 state-wise, sector-wise and aggregate percentage variations referred to above for a few states and a few sectors, from Appendix B.

State	Mining and Quarrying	Manu-factur ing	Electri- city, Gas Water Supply	Constru- ction	Trade, Hotels & Restaurant	Transport and Other Means	Aggregate 2011-12 over 2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)
Andhra Pradesh	33.9	28.6	39.1	13.1	(-)47.4	10.5	4.7
Bihar	70.9	35.6	44.1	(-)15.7	(-)24.5	44.2	1.6
Gujarat	54.4	2.4	20.9	1.4	(-)34.9	(-)22.8	2.8
Karnataka	12.4	38.8	8.6	11.5	(-)2.1	(-)4.7	33.1
Maharashtra	804.5	7.8	52.7	(-)0.8	(-)38.3	(-)4.3	9.0
Tamil Nadu	(-)22.2	23.7	180.6	29.5	(-)28.3	(-)4.9	12.6
Uttar Pradesh	(-)0.5	9.7	133.8	48.2	(-)19.1	(-)45.9	5.6

Table 1. State-wise and Sector-wise Percentage Variations in 2011-12 GSVA over 2004-05 GSDP

Source: See Appendix B

As is evident from Table 1, there are sizeable increases in the GVA of mining, manufacturing and electricity sectors accompanied by a significant amount of fall under the trade sector. The increases in the first three sectors are obviously attributable to the MCA 21 data used for the private corporate sector (more on it in a subsequent section). The organised and unorganised dichotomy is getting proven in the GVA results for the manufacturing itself. As shown in Table 2, the CSO had estimated an increase of 35% in organised manufacturing and a fall of 20% in unorganised manufacturing. Similarly, in the trade sector there was a 40% reduction as between the two series which is attributable to improved data base and the reported correction of the earlier over-estimation. This is the all-India picture which has got reflected in the state-wise data shown above as the all-India estimates have been allocated to states based on certain chosen indicators.

 Table 2. Results of the Reported Improvement in Data Base: GVA for Manufacturing and Trade Sectors (2011-12)

 (Rupees, crore)

	Organised Manufacturing	Unorganised Manufacturing	Trade and Repair Services
(1)	(2)	(3)	(4)
2004-05 Series	939,825	353864	1,330,489
2011-12 Series	1,265,797	283957	792,996
Percentage Difference	(+)34.7	(-)19.8	(-)40.4

Source: CSO June 2015:76, 78 and 88

#### V. TEN MAJOR SPECIFIC QUESTIONS POSED BY DHOLAKIA AND PANDYA: OUR COMMENTS

We have already commented on the few general observations contained in the Dholakia-Pandya paper. But, their substantive critique of the GSVA/GSDP revision exercise is to be found in the list of ten limitations of the exercise advanced by them. We find that their questions and illuminations of sectoral examples highlighted under them, appear to be a mixture of those, some of which appeal to us but some others on which we hold different perspectives. Even under those questions which appeal to us, we find that there can be valid issues which tend to contradict the position taken by the authors. What we do is, in a spirit of enquiry and healthy debate, examine each one of the ten questions, juxtapose their illuminations of Gujarat experiences against the illuminations from the Maharashtra experiences based on data provided by that state Directorate, and provide our perspectives on them. We proceed thus seriatim.

#### (i). From Disaggregation to Aggregation

The Dholakia-Pandya paper has raised here two issues: first, it has found that the 11 subsectors prevailed earlier under the 'other services' sector have been curtailed to four sub-sectors; and second, some of the sub-sectors so clubbed have faced serious downward revisions of their GSVA.

In the NAS literature, we find that the clubbing has some rationale. Before we come to that, we wish to clarify that the downward revision in the GSVA of the clubbed sub-sectors cannot be attributable to the matter of such clubbing. The GSVA for the sub-sectors clubbed together have separate estimates and they are added together to derive the GSVA for the clubbed group. If there are downward revisions in the GSVA for such clubbed groups, it is to be found in the reduced GSVA estimation for the sub-groups themselves in the 2011-12 series compared with the estimates for 2011-12 as per the 2004-05 series. The emphatic point we have sought to convey is that separate estimates are made for sub-sectors and then they are clubbed together. In this respect, we find such a phenomenon in the Maharashtra state data too (Table 3). As shown therein, there has been a 37.3% decline in the GVA of such 'Remaining Services' in respect of Maharashtra. Incidentally, as shown therein, such declines have

occurred under *all* sub-groups of 'Other Services'. As shown in Appendix B, Gujarat had a 30.5% decline over "Other Services" However, this point is only incidental; even if it was not true of Gujarat the substantive point emphasised above is not disputed.

		2011-12	2 Series	2004-0	5 Series	% Difference	Remark
		1) Education	on includin	g Coaching			
Public GVA (CSO)		1299169	(54.0)	1079609	(34.6)	20.3	1) In new series the
Private - i) organised		322586	(13.4)			-84.2	private cor-
ii) unorganised		785338	(32.6)				has been covered using the
Private (Total GVA)		1107924	(46.0)	2041320	(65.4)		MCA 21 database. For
Total GVA - Current Price	ces*	2407093	(100.0)	3120929	(100.0)	-29.7	private un-
	2) Human l	Health Activ	ities + Care	e Activities			enterprises
Public GVA (CSO)	,	410242	(28.0)	379760	(21.8)	7.4	the estimates
Private (Total GVA)		1054264	(72.0)	1362394	(78.2)	-29.2	of all
Total GVA - Current Price	ces*	1464506	(100.0)	1742154	(100.0)	-19	categories
		3) Remainin	g Services				vate HHs
Public (CSO)		436	(0.02)				with
Private (	orporate (CSO)	1023575	(42.2)				persons have
1	Unincorporated	1401578	(57.8)				been
	Total	2425153	(99.98)				using
Total GVA - Current Price	ces*	2425589	(100.0)	3866302		-37.3	LI method for the new series
	4) Private H	ouseholds wit	th employe	d persons			the new series
GVA -Private Unincorpo (CSO)	orated - Current	498503	<u>F</u> 5 <b>5</b> C	239317		108.3	
Aggregate GVA at Currer 4)	ent Prices (1 to	6795691		8968704		-24.2	

### Table 3. GSVA of components of 'Other Services' For 2011-12 (Based on 2004-05 and 2011-12 Series)

Note: Figures within brackets represent percentage shares to Total GVA - Current Prices\* Source: Directorate of Economics and Statistics, Government of Maharashtra

As it is known, in the new series, the private corporate sector has been covered under the MCA 21 data base, while for all categories of private unincorporated enterprises (except private households with employed persons), the GVA estimation has been compiled using effective labour input (LI) method. In the previous series, for both the categories, value added was compiled based on the simple labour input method. In the new series, the allocation to the states has been made using the effective labour input method. These have resulted in declines in the GSVA of "Other Services". Data presented in Appendix B show that GSVA estimates for "Other Services" have declined for 2011-12 series compared with 2004-05 series for almost every state. And as shown in Table 4 from the Maharashtra case, the decline has occurred under both the organised and unorganised sectors, which implies that they were earlier overestimated.

Table 4. GVA	of "Other	Services":	Maharashtra	Case	(2011-12)	)
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			(Rupees Crore)
	2004-05 Series	2011-12 Series	Percentage Difference
(1)	(2)	(3)	(4)
1. Non-financial Private Corporate Sector	143,796	74,001	(-) 48.5
2. Household Sector (Unincorporated Enterprises)	274,148	126,796	(-) 53.7

Source: CSO June 2015: 34 & 44

Coming to the question of clubbing, it has been explained by the CSO (June 2015:94) that of the 11 sub-groups, the one, namely, extra territorial organisations and bodies have been excluded as they "are not a part of GDP" and the second, 'sewerage and refuse disposal' has been removed from this group and classified as part of utility services under the 'Electricity' group. This reclassification is justified because they involved "recycling, remediation sewerage and waste management services". Hence, the change was effected in NIC. There are four other groups, namely, washing & cleaning of Textiles (9601), hair dressing and other beauty treatment (9602) custom tailoring (14105) and other personal service activities (9609, 9603) - are all 4 or 5 digit level NIC groups and hence they seem to have got clubbed.

By the above logic, we concede that the exclusion of two NIC groups at two-digit levels, namely, 'Recreational, cultural and Sporting Activities' (90, 91, 92 & 93) and 'Activities of Membership Organisations' (94), ought not to have been clubbed with the miscellaneous category. Even the CSO has provided national-level

GVA for six NIC groups including these two items and not four other items, not the four mentioned in the previous paragraph, but the following four, namely, (i) Education including Coaching, (ii) Human health activities & Care activities, (iii) Personal Services including washing, hair dressing, custom tailoring and other personal service activities, and (iv) Private HHs with employed persons] (see Table 30 on page 95 of CSO June 2015). Item (iii) here is the same as "hair dressing and other beauty treatment (9602) custom tailoring (14105) and other personal service activities (9609, 9603)" in the previous paragraph.

### *(ii). Increased Use of the Method of Allocation of National Aggregates*

The questions raised under this head are serious ones. First, as per Gujarat data, the proportions of allocations made at the secondary, tertiary and the aggregate levels have jumped from a range of about 20% to 41% in 2004-05 to 78% to 86-89% in the 2011-12 series. Second, the objective of reducing the proportion of allocated GVA has been nullified; instead the proportion

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has radically gone up. Third, the allocation to reconstruct them. method has weakened the state estimates as it does not give a realistic picture of the state economy. They allege that sometimes, the indicators like the effective labour inputs are confined to base year surveys only, hence the results would fail to

capture variations within a state over time.

Finally, the whole system of allocation has a very

damaging effect on the state statistical machinery

as they do not have much work now; once they become dysfunctional, it would take a long time

We have also constructed a picture of the incidence of allocation exercise on the GSDP/GSVA estimation sector-wise in Maharashtra (Table 5). We find that the proportions are by and large the same as those of Gujarat. Undoubtedly, the proportions of allocations have likewise jumped in the secondary, tertiary and aggregate levels in the new series.

Table	5. Incidenc	e of CSO A	llocations:	GSDP for	2004-05 Series
	and GSVA	for 2011-12	Series: Es	timates for	2011-12

Unadjust	ted for FISIM						
Sr. No.	Sector		BY 2004-05		]	BY 2011-12	
		Total GSDP (lakhs)	GSDP (lakhs) Allo- cated by CSO	%	Total GSDP (lakhs)	GSDP (lakhs) Allocated by CSO	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Agriculture	11400407	0	0	11552514	0	0
2	Forestry & Logging	2276930	0	0	1662908	0	0
3	Fishing & Aquaculture	294121	0	0	293934	0	0
4	Mining & Quarrying	657149	0	0	5579223	5357495	96
A:	Sub-total: Primary	14,628,607	0	0	19088579	5357495	28.1
5	Manufacturing	24016191		0	25727465	25727465	100
6	Electricity, Gas, Water Supply & Other Utility Services	1836442	436724	23.8	2946020	1712349	58.1
7	Construction	8340811	1034974	12.4	8131363	5508293	67.7
B:	Sub-total: Secondary	34193444	1471698	4.3	36804848	32948107	89.5
8	Trade, Repair, Hotels & Restaurants	14010241	4473885	31.9	10901095	10833053	99.4
9.1	Railways	610559	610559	100	598786	598786	100
9.2	Transport by means other than Rail- ways	6435744	1065492	16.6	4231763	4231763	100
9.3	Storage	61382	53049	86.4	92981	84505	90.9
9.4	Communication & Services related to Broadcasting	1678088	910416	54.3	1631457	1631457	100
10	Financial Services	12639106	12639106	100	11783628	11783628	100
11	Real Estate, Ownership of Dwellings & Professional Services	19240774	6547885	34	19215716	14187586	73.8
12	Public Administration	5042249	1134225	22.5	3906953	720591	18.4
13	Other Services	8968704	958060	10.7	6795691	5291467	77.9
C:	Sub-total : Tertiary	68686847	28392677	41.3	59158070	49362836	83.4
14	Total GSVA (A+B+C)	117508898	29864375	25.4	115051497	87668438	76.2

Source: Directorate of Economics and Statistics, Government of Maharashtra.

				(Dubtu th			, series)		(Amour	nt in Rupe	es, Crore)
		20	011-12 Seri	es	20	04-05 Serie	es	Share of	Gujarat	Sha Mahar	re of ashtra\$
Sr.No.	Industry	Gujarat	Maha- rashtra	India	Gujarat	Maha- rashtra	India	2011-1 2 Series	2004-0 5 Series	2011-1 2 Series	2004-0 5 Series
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Agriculture, Forestry and Fishing	107364	147526	1501816	121058	134068	1499098	7.1	8.1	9.8	8.9
1.1	Crops	79510	99429	982026	110947	108358	1300569	7.5	8.5	9.8	8.3
1.2	Livestock	18505	28557	327301							
1.3	Forestry and Logging	6113	16601	124461	6874	22769	131667	4.9	5.2	13.3	17.3
1.4	Fishing and aquaculture	3236	2939	68027	3236	2941	66862	4.8	4.8	4.3	4.4
2	Mining and Quarrying	18506	56493	261035	11983	6246	222716	7.1	5.4	21.6	2.8
3	Manufacturing	156819	246032	1409986	153202	228267	1236182	11.1	12.4	17.4	18.5
4	Electricity, Gas, Water Supply and Other Utility	21905	26806	186668	18115	17552	135670	11.7	13.4	14.4	12.9
5	Construction	44693	78630	777363	44068	79277	689798	57	64	10.1	11.5
6	Trade, repair, hotels & Restaurants	66464	105609	883582	102166	171281	1457565	7.5	7	12	11.8
7	Transport, Storage, Communication & Services related to broadcasting	32532	64500	529535	36550	84640	614707	6.1	5.9	12.2	13.8
7.1	Railways	3288	5988	61150	3315	6106	62710	5.4	5.3	9.8	9.7
7.2	Transport by means other than Railways	21263	41696	337347	27557	61170	456754	6.3	6	12.4	13.4
7.3	Storage	362	925	5108	199	583	5496	7.1	3.6	18.1	10.6
7.4	Communication and services related to Broadcasting	7619	15892	125930	5479	16781	89747	6.1	6.1	12.6	18.7
8	Financial Services	29427	117836	480226	27903	126391	481495	6.1	5.8	24.5	26.2
9	Real Estate, Owner- ship of dwellings and Professional Services	34814	190870	1050465	37385	186731	900029	3.3	4.2	18.2	20.7
10	Public Administra- tion	19173	39070	491155	17247	50422	498346	3.9	3.5	8	10.1
11	Other Services	20223	66625	534827	29109	85245	656085	3.8	4.4	12.5	13
12	GSVA	551921	1139997	8106656	598786	1170121	8391691	6.8	7.1	14.1	13.9
13	GSDP	615606	1275948	8736039							

Table 6. (	GSDP S	hares	of Gu	jarat a	nd M	lahara	shtra	in Ind	ia's S	Sectoral	GVA/	GDP
	fe	or 201	1-12 (	Based	on 20	011-12	and 2	2004-0	5 Ser	ies)		

\$ Editor's Note: The share of Mining and Quarrying in Maharashtra as a percentage of the whole country's GDP from this sector is now as high as 21.64 (and that of a significantly increased GVA of this sector at the national level). At this stage, we cannot get a valid answer to the question as to what this large change is due to. However, the authors point out that Maharashtra accounts for 4.5% of the total (All India) mineral production in 2013-14 in value terms. It is thus intriguing. This may possibly be, to a substantial extent, due to concentration of many head offices of mining and quarrying companies in Mumbai and possibly Nagpur. The same may be the case in regard to Manufacturing too. Source: (i) Directorate of Economics and Statistics, Government of Maharashtra and (ii) MOSPI website for GSVA/GSDP.

In response to the other aspects of the issues raised by the Gujarat team, under this section, the staff of Maharashtra Directorate take a somewhat holistic view, with which the other members of this study team agree. Collectively, they do not subscribe to the view that the allocation method does not provide a realistic picture of the state economy; there is no empirical reason to believe so. In this respect, we present a table (Table 6) depicting the share of Gujarat and Maharashtra in India's GVA/GDP for 2011-12 based on 2011-12 and 2004-05 series. We would avoid making any

assessment of the Gujarat scenario except to say that the changes have been by and large fractional. The GVA share of Maharashtra has been placed at 14.1% in the new series which is a shade higher than that of 2004-05 at 13.9% (both for 2011-12). The states' manufacturing share has slipped down, because of unorganised manufacturing (Table 7) but there have been sharp increases in the states share in electricity and mining - all of these on expected lines. Another activity which has seen a significant rise is storage (Table 8) which seems to be the case in Gujarat too.

Table 7.	GVA	of Manu	facturing	for	2011-12	(Based on	2004-05	& 2011-1	2 Series)
						(			

				(Rupees, Lakh)
		201	1-12	
		2011-12 Series	2004-05 Series	% Difference
(1)	(2)	(3)	(4)	(5)
GVA-Current	Organised	233022,83	176599,47	31.9
	Unorganised	24251,81	63562,44	-61.8
	Total	257274,65	240161,91	7.1
FISIM		11242,90	11617,55	-3.2
TOTAL (Adjusted	l)	246031,75	228544,37	7.7

#### Remark

1) In the new series, there have been changes in the estimates due to adoption of NIC 2008, enterprise approach for organised manufacturing and effective labour input method for unincorporated manufacturing enterprises.

 One of the major changes is Recycling and Publishing of books, periodicals and other publishing activities were included in manufacturing sector which in the new series would be the part Remediation Activities in Other Utility Services a
 In the new series, estimates of organised manufacturing sector have been derived using the annual accounts of NDE, private corporate sector from the MCA database and quasi-corporations as covered by ASI, apart from the DEs, like railway Source: As in Table 6

Table 8. GVA of Storage & Warehousing For 2011-12 (By 2004-05 & 2011-12 Series)

		BY 2011-12	BY 2004-05	% Difference	Remark
(1)	(2)	(3)	(4)	(5)	(6)
Public	State Warehousing Corp (MSWC) Central Warehousing Corp (CWC)	8476 10901	8333 6693	1.7 62.9	1)In the new series, the estimates of private
	Total Public	19377	15026	29	corporate part (earlier
Private	Cold Storage - (Private Corporate) CSO	52318	13996	273.8	series ASI data
	Total Organised - Public +Private	71695	29022	147	used) have been compiled
	Storage (n.e.c.) - Unorganised. CSO	21286	32360	-34.2	using MCA 21 database.
	Total GVA Current	92981	61382	51.5	2) The estimates of unorganised sector have been prepared using the effective LI method.
FISIM		502	3040	-83.5	
TOTAL		92479	58342	58.5	

Note: n.e.c stands for not elsewhere classified

This brings us to the question of the merit of applying allocation on a higher scale in the new series. This has come about because of the introduction of two key reforms in the methodology of estimation and the widening of the data base. These relate to first, the adoption of MCA 21 data for the corporate sector which has produced double advantages; it has expanded the data base to a phenomenally high level (a near census size sample of 5.25 lakh companies against 2,500 to 3,000 companies in the RBI sample); and it has facilitated a shift from Establishment approach to Enterprise approach. The most noteworthy result from corporate accounting has been the replacement of ASI data, that is, from factories as Establishments to companies as corporate enterprises. This shift from ASI to corporate data for manufacturing has been long overdue. This was strongly recommended by the National Statistical Commission [August, 2001] and the Rangarajan High Level Committee on Saving and Investment [March, 2009], but it has never been implemented, though it had a strong case.

First, as pointed out in a detailed study by Dholakia, Pandva and Pataria [November, 2014]. the state-level ASI frame is outdated. In Gujarat alone, 1.118 units remain uncovered even amongst the census units. Thus, ASI estimates seriously underreport the NVA from the registered manufacturing sector. Secondly, as has been pointed out by many intellectuals including the RBI [Annual Report, 2001-02 p.33] that service intensity was found to be high for Indian manufacturing industries, including the contribution of information technology. Thirdly, an ASI establishment can be one amongst the multiple establishments owned by an enterprise - a manufacturing enterprise has also been rendering services such as trading, sales and marketing, R & D and others. These head office services were not captured in the ASI accounts. Hence, the ASI establishments were sizeably underestimating GVA in the industrial sector, which the MCA data has tended to correct.

The second reform relates to the adoption of the effective labour input method that has corrected the earlier treatment of workers in the unorganised enterprises as a single homogenous group; it was unweighted but now weights have been assigned to owners, hired workers and helpers based on the weights derived from a traditional Cobb-Douglas production function. This has been a novel and welcome change. The earlier assumption of equal contribution from all categories of workers was indefensible (more on it later).In another sense, the application of corporate data for state GSVA estimation, as said above, has been long overdue. The National Statistical Commission [2001] had made the following pertinent recommendation.

"Corporate Sector Statistics: For most services sectors, the GDP estimates are derived separately for the corporate sector, on the basis of the RBI's company finance statistics. The same source is also used for generating domestic product estimates for the corporate sector segment at the State level. However, the size of the sample is considered too small even at the National level to give reliable estimates at industry-group level. At the State level, the estimates are not considered scientific even at the aggregate level, much less at the sectoral level. If States manage to compile corporate statistics (the number of corporations may not be many in a single State) on the basis of the frame available with the Regional Registrars of Companies, even once in five years, the quality of SDP estimates will considerably improve" (p. 419).

The results of these statistical reforms are indeed mindboggling. As shown in Table 9, massive underestimation earlier of GVA at the national level has been found in key non-farm commodity-producing sectors, namely, mining, manufacturing and electricity. On the other hand, fresh sample surveys and the use of effective

(Rs crore)

labour input method has resulted in huge reductions in GVA of unorganised sector generally and of the trade sector in particular. The Committee on Regional Accounts Final Report [September. 1976] had assumed away that such sectors will have regular data collected on annual basis or so and hence there was no question of allocation. The extent of corrections that the changes have introduced in the inter-sectoral distribution of GVA - significant increases in the relative shares of commodity-producing sectors, industry in particular and declines in the shares of services sectors - are welcome changes. Little would they or even the National Statistical Commission have imagined of such overestimations or under estimations from the existing methodologies as has happened in respect of manufacturing, mining and trading sectors. When such is the case and when the national level revisions in estimations are due to UN SNA guidelines, could they have been postponed because there are no adequate preparations at the states level? Clinging to such a view, in our perspective, would have been inadvisable. Once the CSO decided to go ahead with the revisions on the chosen lines, allocation is the only option left for the system. If, in the interim, we let the old base of 2004-05 with its methodology to continue at the states level, the series of large corrections introduced in the sectoral data would not have got reflected in the state-level GSVA: there would have been considerable distortions between central and state economic scenario. Hence we think it is inadvisable to abandon the implementation of the new base of 2011-12 series. These represent foundational changes and cannot be ignored as emphasised by the Committee on Regional Accounts Final Report [September, 1976] "from the point of view of uniformity of concepts as well as representative uses of the data used at the state level" [ibid, p. 74].

				(10. 01010)
Sr.No.	Industry	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)	(5)
1	Agriculture, forestry & fishing	35591	8878	-75.1
2	Mining & quarrying	23001	39159	70.2
3	Manufacturing	761593	980452	28.7
4	Electricity, gas, water supply and other utility services	19658	52252	165.8
5	Construction	101355	138242	36.4
6	Trade, repair, hotels & restaurants	274582	100578	-63.4
7	Transport, storage, communication & services related to broadcasting	91705	155495	69.6
9	Real estate, ownership of dwellings and professional services	321750	397932	23.7
11	Other Services	143796	74001	-48.5
Fotal Non-	financial Corporations	1773031	1946989	9.8

 Table 9. GVA for Non-financial Private Corporate Sector Excluding

 Quasi-Corporate Sector in 2011-12 Derived from MCA 21 Database

Note: Financial Services (Sl.No.8) and Public Administration (Sl.No.10) are not shown in the table since they do not belong to the 'Non-financial Corporations' Sector.

This shows the comparison between estimated gross value added (GVA) for non-financial private corporate sector (excluding quasi-corporations) derived from MCA 21 database and LLP database for new series (2011-12 base year) and estimated GVA for non-financial private corporate sector in old series (2004-05 base year) for the year 2011-12. Source: CSO, June 2015a: p. 34

As for the indicators like the effective labour input method being confined to the base year surveys in the new series, we perceive that this has always been the case; base year estimates were moved with some chosen indicators in the past too. Thus, the dynamic changes taking place in a state economy have always been captured only crudely with the help of some indicators. For instance, in the case of manufacturing (unregistered), benchmark industry-wise estimates were moved with relevant IIP and the WPI at compilation category levels.

Finally, as for the reductions in the workload of the state statistical bureaus, the only major area where additionally cent per cent allocation is taking place now in the new series is in the organised manufacturing sector. But, in essence, the change is insignificant, for in the 2004-05 series, the state-wise value added in manufacturing was directly used from ASI, whereas in the new series MCA 21 results at the national level are allocated on the basis of the same state-wise value added in manufacturing as per the latest available ASI. Even so, it must be admitted that the State Directorate's overall dependence on the CSO has no doubt increased.

Here, we wish to be candid and state that the Maharashtra Directorate staff are somewhat unhappy that in matters of allocation, they are just being informed of the amounts of allocation and not how they are arrived at; they are not being taken into confidence as to the nature of indicators used. No doubt, there are regional conferences held (so far at: Guwahati; Bangalore, Goa and Chennai), where educative lectures are held on the new methodology, but these are not enough. Indicators are of general applicability; even so the regional conferences are not sufficient to convey the methodology nuances. The Maharashtra Directorate staff are conscious of the fact that the reforms were inevitable. Besides, the revision of 2011-12 were inspired by the adoption of the UN SNA 1993 and 2008 methodologies which were long overdue and with which the State Bureaus have not been entirely familiar; it is a new and superior method requiring considerable superior statistical skills. Hence, the CSO has been forced to spoon-feed the State Bureaus. The system has now to take it up as a challenge and get the statistical gaps filled at the state level, for which we believe there is enough scope and for which we have presented a list of recommendations at the end of this note.

Admittedly, this summing up does not take into account the inherent limitations of the allocation method: The MCA data, while much, much larger, and including the head office value added, does not provide basis for the different units and a head office at a different place than the main production centre(s). This is a problem about which many states have legitimate complaints. What is needed is a basis of isolating regionally differently located manufacturing units and the head office from the MCI data. Similarly, for the unorganised sector the NSS's state level samples should be tabulated to give a better sample basis.

# *(iii). Absurdity in Estimation of Production Growth with Allocation Method*

First, under this question, it is argued that conceptually and in practice constant price estimates are prepared first and current price estimates are then derived using suitable indicators, but, for following the allocation method, this process is reversed. This contention is not largely correct; it is so neither in the CSO's national-level estimates nor in the state estimates. As we survey the CSO's 'Sources and Methods' literature, we find that for a large number of sectors (except agriculture), it has been the practice to estimate GVA/GSVA at current prices and deflate them by some chosen price indicators. The list is large (see Appendix F for details) and hence we draw attention to the relevant literature from which we cite just three important examples to buttress our point:

Sector	Estimation Method	Constant Price Estimate	Source
1. Manufacturing - Registered	GVO/GVA are from the ASI results which are at current prices	Constant price estimates are deflated with the relevant WPI	CSO (2008): Manual on Esti- mation of State and District Income 2008
2. Mechanised Road Transport - Private unorganised	GVA = Workforce X Value added per worker	Base year GVA is moved with the index number of registered vehicles	- do -
3. Financial Services: Deposit-taking Corporations	GVA at current prices are estimated by the production approach	Index of deflated credits & deposits	CSO Jun 2015: 170/171
This method is same as what	was described in CSO's Source	s and Methods 2012:158-1691	

Second, it is contended that as a result of the above alleged method of estimation, paradoxical trends are obtained at sub-sector levels. Citing the example of road transport, the Dholakia-Pandya paper contends that as per the data provided by the CSO on allocation, "the state income in Road transport in Gujarat grew at a higher rate at constant prices than at current prices during 2013-14 to 2014-15"; this implies a negative inflation in the sector, "which is absurd", they assert.

But, in our understanding, the methodology adopted by the CSO should not give the kind of results the Gujarat paper has talked about. As per this methodology for constant price estimates of "land transport", for instance, the base year estimates are moved, for subsequent years, using the growth in the number of registered vehicles. And these constant price estimates are inflated using the combined (rural and urban) CPI (transport and communication). By this process, the Maharashtra results show no such "absurdity" (see Table 10). As the methodology is the same for all states including the application of combined CPI for 'transport and communication', the critical comments made by the authors are unlikely to stand the necessary empirical scrutiny. The chances are that some computational error has occurred in the data cited by the authors.<sup>3</sup>

Tuble IVI Human ability a boot the standborr of the standborr and the standborr a	Table	10.	Mahara	shtra's	s GV	'A in	Trans	port Bv	Means	Other	than	Railways
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Year	GVA for	Deflators [(2) / (3) *100	
	At Current Prices	At Constant Prices	-
(1)	(2)	(3)	(4)
2011-12	41,696	41,696	100
2012-13	49,331	45,868	107.5 (+7.5)
2013-14	54,225	47,639	113.8 (+5.8)
2014-15	62,170	51,620	120.4 (+5.8)
2015-16			

Note: Figures within brackets are percentage increases in deflators year-on-year. Source: As in Table 6.
			CPI Bas Transport & CPI (Ru	e 2012=100 Communication ural+Urban)		
	All	India	Gu	ijarat	Maha	arashtra
Weights	[8.	59%]	[9.52%]		[9.]	38%]
Year	Annual average	Annual percentage variations	Annual average	Annual percentage variations	Annual average	Annual percentage variations
(!)	(2)	(3)	(4)	(5)	(6)	(7)
2011-12	95.6		94.4		94.1	
2012-13	101.7	-6.4	101.7	-7.7	102	-8.4
2013-14	108.4	-6.6	108.9	-7.1	108.8	-6.7
2014-15	111.1	-2.5	109.7	-0.7	112.3	-3.2
2015-16	111.5	-0.4	109.6	(-0.1)	111.1	(-1.1)
2016-17	114.9	-3	113.7	-3.7	114.4	-3

Table 11, CPI for All India and for Guiarat and Maharashtra

Source: EPWRFITS Online Database Series compiled from MOSPI site.

Table 11 shows the indices for CPI for the past few years; they show that CPI increase at the all-India level of 6.6% in 2013-14 dipped to 2.5% in 2014-15. Even for Gujarat, the CPI showed a similar trend, though our understanding is that the CSO has suggested the use of central CPI.

The same holds true in respect of the 'Financial Services'. The estimation procedure for current price estimates is allocated to states based on state-specific indications, using information like state-wise salaries, deposits, premiums and the number of employees. The chances are that either these indicators have shown a relatively lower share for Gujarat or there has been some computational error. As per the data presented in Table 6 earlier, the relative share of Gujarat in 'Financial Services' has risen from 5.8% in the 2004-05 series to 6.1% in the 2011-12 series.

In respect of agricultural inputs, no allocation method is used. Crop cutting survey (CCS) results and the area under the crop as provided by the State Directorates, Seeds (improved or otherwise), electricity, chemical fertilisers, diesel oil, irrigation charges, etc., are all based on state-level data; there is no allocation involved.

## *(iv)* Limitations for the Estimation of District Domestic Product

The philosophy of bottom-up approach is an ideal approach to be attained when there is an ideal database at the bottom level. *The Manual on Estimation of State and District Income 2008* had examined the recommendations of various Committees, Groups and Workshops in this respect and had recommended that for commodity-producing sectors, most of the data are available at the district level and should be estimated as such. "For other sectors/activities, they have recommended to allocate the state-level estimates amongst districts using relevant indicators."

No doubt, amongst the commodity-producing sectors, the new 2011-12 series has used the MCA 21 data for manufacturing and mining sectors and therefore the method of allocation of nationallevel estimate to states has become important. Hence, this would impose an additional burden on the State Directorates to tabulate district-level

data on company registrations as well as work force estimates as recommended by the National Statistical Commission. Even the district statistical bureaus have to be involved in the estimations as they are getting strengthened, based on thirteenth the Finance Commission recommendations and better financial allocations. We thus see no serious hurdle for estimating District Domestic Product except that there would be the need for the State Directorates and the district statistical machinery to put in efforts to collate the required data so that proper indicators are evolved and the relative inter-district posi-

tions are appropriately measured.

# (v) Unintended and Unjustified Structural Changes

Under this head, the paper under comment points out that the allocation method has introduced unintended and unjustified structural changes against the private sector; this is so in sectors such as Education, Trade & Repair, Transport and Construction. Just to cross check the relative position in these respects, we have tabulated the corresponding data for Maharashtra (Table 12).

Table 12. GVA of a Few Components of	Other Services for 2011-12
(Based on 2004-05 and 2011-12):	Maharashtra State

	(	i) Education		
Sector		2011-12		% Difference
	2011-12 Series	2004-05 S	eries	
(1)	(2)	(3)		(4)
Public	1299169	107960	19	20.3
	(54.0)	(34.6)	1	
(i) Organised	322586	-		-
(ii) Unorganised	785338			
Total Private	1107924	204132	1	-84.2
	(46.0)	(65.4)	1	
Total GVA - Current Prices	2407093	312093	0	-29.7
	(100.0)	(100.0)	)	
Note: - Not Available				
	(ii) Trade	e & Repair Services		
			2011-12	
Sector		2011-12 Series	2004-05 Series	% Difference
(1)	(2)	(3)	(4)	(5)
Public DCU		790		

Public	DCU	790		
	NDCU	64560		
	Total Public current	65350	56904	14.8
		(0.7)	(0.4)	
Private	Organised (CSO)	1711407	4416981	-61.3
		(17.6)	(31.5)	
	Unincorporated (CSO)	7954628	9536356	-16.6
		(81.7)	-68.1	
	Total Private. Organised + Unincorporated	9666035	13953337	-30.7
		(99.3.)	(99.6.)	
	Total Trade GVA - Current prices	9731385 (100.0)	14010241 (100.0)	-30.5

	Table	12. (Concld.)		
	(iii) Ro	oad Transport		
Sector		2011-12		
		2011-12 Series	2004-05 Series	% Difference
(1)	(2)	(3)	(4)	(5)
Public	Total Public (taken from CSO)-	529500	389173	36.1
	Current	(16.7)	(9.7)	
Private	Corporate + Cooperative (CSO)	354461	3607111	-26.8
		(13.4)	(90.3)	
	Unincorporated (CSO)	2285050		
		(86.6)		
	Total Private	2639511		
		(83.3)		
Total R	oad Transport - Current Prices	3169011	3996284	-20.7
		(100.0)	(100.0)	

	(iv) (	Construction		
Sector		2011-12 Series	2004-05 Series	% Difference
(1)	(2)	(3)	(4)	(5)
Public	Total Public sector - Current	605261 (44.7)	2067092 (164.8)	-70.7
	Residual (CSO) Private - Organised	1354247 (100.0)	1254517 (100.0)	7.9
Private				
Unorganised Sector (Household Sector)	Rural Residential Buildings	1032153 (16.7)	314123 (6.3)	228.6
	Urban Residential Buildings	1120581 (18.2)	637540 (12.7)	75.8
	NRB & OCW	243860 (4.0)	192016 (3.8)	27.0
	Other Household (CSO)	3768139 (61.1)	3847350 (76.7)	-2.1
	Plantation (Household only) (CSO)	7122 (0.1)	28173 (0.6)	-74.7
Total Household Sec	ctor - Current Prices	6171855 (100.0)	5019202 (100.0)	23.0

Note: Figures within brackets represent percentage share to Total GVA at Current Prices Source: As in Table 6.

For the Education sector, as per the paper under discussion, there has been a distinct decline in GVA in Gujarat, which is so even in Maharashtra. But, in Gujarat, there has been a drastic fall in the share of private educational services which, as per the paper, is contrary to the impressionistic

judgement on the enormous increases in private educational services in the state. The decline has been much steeper in the private organised sector which is based on the MCA 21 data. The private unorganised sector has also shown a fall but not so steep. In fact, more than 93% of the educational services in the state belong to the unorganised sector. We have no way of further scrutinising these data except that in the EPWRF online database (EPWRF India Time Series), there is some information on the distribution of the number of schools by public and private managements (Table 13). These data show that in Gujarat, the number of private schools has declined from 19,403 (or 38.6% of the total) to 17,630 (or 34.3% of the total) which corroborates the GVA figures cited in their paper.<sup>4</sup> We must confess that similar corroboration is not found in the schools' data in respect of Maharashtra and therefore, there is a question mark on the appropriateness of these data for this scrutiny.<sup>5</sup>

Tabl	e 13.	. Numl	ber of	Sc	hools	s by	Μ	lanagement
------	-------	--------	--------	----	-------	------	---	------------

		2004-05			2011-12	
	All	Public	Private	All	Public	Private
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gujarat	50,215	30,812	19,403	51,357	33727	17,630
	(0.0)		(38.6)	(100.0)		(34.3)
Maharashtra	138,941	107,593	31,348	157,067	116,679	40,388
	(100.0)		(22.6)	(100.0)		(25.7)

Source: www.epwrfits.in (Educational Statistics)

The question essentially boils down to the acceptability of the results obtained from the two methodological changes - MCA 21 data for corporate enterprises and the effective labour method for the unorganised sector.

Taking up the trade sector, it is now accepted that there was a significant amount of overestimation in the trade sector [Anant, 2016].<sup>6</sup> The new series has been able to correct it because of the fresh NSSO surveys on unincorporated enterprises which account for the large part of the trade sector. As a result, in the trade sector, GVA in the 'trade and repair services' had declined by 40% from Rs 1330,489 crore in the 2004-05 series to Rs 792,996 crore in the 2011-12 at the all-India level which has been cited earlier (CSO June 2015:88) and which has got reflected in statelevel estimates. In the case of Maharashtra, the decline has worked out to (-) 30.7% and for Gujarat, it is much larger at (-) 43.6%. Both the states are said to be dynamic and commercially active and advanced. It is possible that the NSSO 67th Round and the NSSO 68th Round have not fully captured the trading activities of these states. Such aberrations, if exist, cannot be arbitrarily corrected by the statistical system.<sup>7</sup>

# (vi) Issue of New Data Not Capturing the Whole Sector

Giving the example of mining data. Dholakia and Pandva have made the following observations: First, the CSO has shifted the data base for mining from state Geology and Mining Department to the Indian Bureau of Mines (IBM) for estimating GSDP. They aver that till 2004-05, the states used data from the above state Department. Second, as per the cited, IBM website provides data on the production and values of only 10 minerals, in the list of which "several minerals that play important role in different state economies are missing". Third, because of the above reason, the production and value of most of the minerals are understated on the IBM website. Fourth, the number of reported mines in Gujarat at IBM website is 211, whereas it is 410 as per the state Geology and Mining Department.

Finally, the authors are surprised that despite such under-reporting in the source and the shifting of Lignite to the electricity sector, there is a substantial revision in the GVA from mining sector from Rs. 12,214 crore in the 2004-05 series to Rs. 18,622 crore in the 2011-12 series.

The entire edifice described in their paper of mineral GVA data is based on utterly incorrect information base. First, the data source for all major minerals has been the IBM from 1960s onwards. It has been getting the monthly and annual statutory returns as per the Mineral Conservation and Development Rules (MCDR), 1958. The IBM has reported a list of 58 major minerals including fuel minerals, metallic minerals and non-metallic minerals. IBM has always been the source for data required for national-level GDP as well as state-level GSDP estimations for these 58 minerals. State-wise data on minor minerals, as they are outside the MCDR, are collated by the state geological and mining departments. The mineral law is tight and clear: the mines producing major minerals have to submit monthly and annual returns to the IBM. Under the MCDR Act, 1957, the central government has the power to designate any mineral as a minor mineral and place it outside the MCDR and outside the IBM responsibility. All of these details, germane to the compilation of GDP/GSDP, were displayed at length in the CSO's National Accounts Statistics: Sources and Methods, 2012 [Pp. 121-124]. Therefore, there cannot be any ambiguity with regard to the source of data and the nature of data covered for the mineral sector in the state of Gujarat.

In view of the above, we are unable to understand how the authors of the Gujarat paper should be complaining about the "serious underestimation due to revision in the data source without taking due care". The numbers hit on our face. The IBM has reported the number of mines as 441, 487, 490 and 413 during the past four years 2011-12 to 2014-15. [But they write: IBM website as having 211 mines, whereas the state geology and mining department places it at 410]. The EPWRF regularly tracks IBM data which produces regular *Indian Minerals Yearbook* 2015; the data quoted here are presented in Table 14 from the IBM's recent *year book*. The mining sector is fairly strictly regulated and the mining statistics are quite up-to-date.

Coming to the complaint that in the new base 2011-12 series, the CSO directly provides allocated data on GVA from minerals to the states for adoption, "limiting any scope of independent estimation of GVA from mining sector by the State", it should be noted that the data base for the new series has not shifted from the state geology and mining department to IBM as alleged, rather it has shifted from IBM to the annual financial statements of the Departmental and Non-Departmental Enterprises and to the MCA 21 data for private non-financial corporations in the mining sector. This enterprise approach covering corporate balance sheet is found to be more comprehensive and as quoted in Table 9 earlier, there has been a 70% increase in the GSVA of mining and quarrying sector in the 2011-12 series compared with GSDP in the 2004-05 series, at the all-India level. This answers the question of 'surprisingly substantially upward revision' in the mining sector GVA of Gujarat.

Similar data for the Maharashtra mining sector too shows a huge rise in the 2011-012 series as shown in Table 15.

MIDERAL	Unit		2011-12			2012-13			2013-14			2014-15(P	-
		No. Of mines	Quantity	Value	No. Of mines	Quantity	Value	No. Of mines	Quantity	Value	No. Of mines	Quantity	Value
(1)	(2)	(3)	(4)	(2)	(9)	(7)	(8)	(6)	(10)	(11)	(12)	(13)	(14)
All Minerals		441		260895535	487		229520813	490		187363387	413		183648296
Lignite	,000t	7	14779	15249900	7	14500	14990900	7	11600	12547100	10	12300	17914600
Natural Gas (utilised)	mcm	ī	2173	15631080	ı	2032	16804900	ı	1657	13703602	ı	1526	12620215
Petroleum (crude)	,000t	ı	5780	105010768	ı	5331	96895046	ı	5061	91987587	ı	4653	84571872
Bauxite	t	<i>4</i>	847382	460722	80	3429903	1632905	95	7309743	2726039	71	5507566	2091034
Manganese Ore	t	1	40556	23928	1	ı	ı	1	,		1	,	,
Agate #	t	-	476	238	1	493	247	1	100	50			
Ball Clay #	t	3	13527	1488	2	10900	1853	2	8600	1462		,	
Chalk #	t	128	178736	70458	114	175516	88301	109	142696	72900	91	94467	49974
Clay (others) #	t	16	877579	85588	27	1928419	256099	29	1612566	253614	26	1515449	253461
Dolomite #	t	20	334600	61149	24	499122	103159	13	526355	110781	18	388173	87242
Fireclay #	t	10	120266	9338	6	86316	6602	6	154301	14316	5	173357	14765
Fluorite	t	1	1920	576	1	ı	ı	1	ı	·	,		ı
Gypsum #	t	1	20	9	ю	38	4	3	20	ю			ı
Kaolin #	t	35	1517504	278365	54	2656099	496079	57	3074737	613017	44	2456977	490988
Laterite #	t	2	207998	17153	3	117880	12746	2	19050	3554	2	61174	10400
Limestone	,000t	106	24098	2918566	119	26071	3393162	120	23373	3159255	115	25729	3381545
Marl	t		3901296	245294		4240183	250348	,	3216915	270164		2177450	255663
Ochre #	t	2	5525	608	2	4690	<i>L</i> 6 <i>L</i>	1	5050	859	1	6300	1071
Quartz #	t	12	156248	27785	19	164462	24330	20	156379	28370	17	102885	19565
Silica Sand #	t	16	1959203	154387	19	869926	72208	18	844988	73943	12	873200	89601
Moulding Sand	t			ı	1	200	06	1	150	68			ı
Talc/soapstone/steatite #	t	1	2981	426	1	2626	783	1	1301	403			ı
Sulphur \$	t		65923	ı		74697	ı		76088	·		96006	ı
Minor Minerals@		ı	ı	120647712	ı	ı	94490254	ı	,	61796300	ı	,	61796300

Table 14. Mineral Production in Gujarat, 2011-12 to 2014-15 (Excluding Atomic Minerals)

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				(Rupees, Crore)
	Minerals	2011-12 Series	2004-05 Series	% Difference
(1)	(2)	(3)	(4)	(5)
(a)	Fuel Minerals	43499	5004	769.3
	(i) Coal	3712	5004	(-) 25.8
	(ii) Petroleum and Natural Gas	39787@	-	-
(b)	Metallic Minerals	510	504	1.3
(c)	Non-Metallic minerals	132	137	(-) 3.4
Α	Total Major Minerals	44141	5644	682
В	Minor Minerals	12704	927	1270
	Aggregate (A+B)	56846	6571	765

Table 15. GSVA of Minerals in Maharashtra

@For some reason this was not included in the 2004-05 series; it was obviously a lapse; we have no evidence of it having been included elsewhere in Maharashtra GSVA.

Source: As in Table 14.

#### (vii) Limitations of MCA 21 Data Set

This section raises pertinent questions regarding the use of MCA 21 database for state level GSVA estimation and also estimation at the compilation categories. Many of the issues were examined in the Final Report of the Sub-Committee on Private Corporate Sector including PPS [CSO, 2015]. The sub-Committee did recognise the problems associated with CIN, the possibilities of misclassification across industries and the failure on the part of AC/ACA companies to report appropriate product codes for top three revenue generating products. "In case of form 23 ACA and 23 AC data, it has been observed that for 97% of the companies (429213 companies out of total 443824 companies in 2011-12) the code is not reported. As a result, the industrial classification in case of form 23 AC/ACA companies depends on the industry code derived from CIN" [Pp. 15-16]. Yet, because the "MCA 21 data is current and from a much higher share of active companies than the sample study of RBI", the Sub-Committee recommended to the CSO to use MCA 21 database for the estimates of GVA, savings and GFCF for non-financial private corporate sector.

Even so, as the authors point out, there is no information on proper geographical location of companies, particularly for the multi-product companies.

As emphasised earlier, the use of MCA 21database is a gigantic reform in the estimation of national-level and industry-wise GVA, and combined with the use of effective labour input method, it has helped to correct gross underestimation in many commodity producing sectors and overestimations in trade and other service areas (see earlier Table 8). Therefore, the question before the statistical system is: whether to defer the deployment of such a reform and wait for the time when methods of state-wise GVA with enlarged database become available, or straightaway apply the expanded database at the national level and use reasonable indicators to allocate the aggregate GVA state-wise. If the latter method is adopted, what degree of error it would introduce in the state-wise results? The chosen indicator is the ASI database, and despite its drawbacks, it provides a reasonable distribution of manufacturing GVA by state and the compilation categories. Estimates suggest that ASI's GVA for the manufacturing sector would not be less than 70% of the aggregate GVA including head office

contributions through trading and other services based on the enterprise approach (see Shetty and Rajakumar 2017).<sup>8</sup> It would thus constitute a large sample base to distribute the national-level GVA estimation derived through MCA 21 database amongst states, in the absence of any other better indicators at this stage.

No doubt, eventually the ASI would be replaced by such improved indicators. There are possibilities in sight: (i) GST data after appropriate state-wise and industry-wise compilation; (iii) state-wise/district-wise distribution of the companies sector based on the Business Register under preparation; and (iii) the use of the impending results of the Annual Survey of Services for the services sector. In our view, such reforms are an on-going process and the major revisions should not be held up for want of the final results of such reforms.

# (viii) Limitations of Effective Labour Input Method

The question raised under this head seems to us to be misplaced. The paper argues that while the new method addresses differential labour productivity issue by assigning weights to different categories of workers engaged in an economic activity, that is the employer, a casual worker, and a family worker at the national level, it does not take into account the productivity differentials of such workers in the given economic activity at the state level. The authors say that the national-level estimates of productivity are assumed to remain constant for each state and the inter-state variations are ignored.

This appears to us to be factually incorrect. According to our understanding, the CSO is using state-specific labour inputs by the categories of workers (working owner, hired workers and family helper) to derive the effective labour input the each of the economic activities at the state level. The Directorate of Economics and Statistics, Government of Maharashtra, had an occasion to get this confirmed from the concerned CSO officials. They said that the methodology used, for instance, for private unincorporated enterprises, under Manufacturing is:

"GVA at the national level for the year 2011-12 allocated using state-wise benchmark estimates of GVA compiled using value added per effective worker from NSS 67th Round and number of effective workers from NSS 68th Round".

The weights for arriving at the effective labour inputs at the state level are the national level estimates of differential labour productivities, no doubt because of limitations of the sample size at the state level. The only possible biases are because of the failure to use the emoluments levels for different categories of labour.

One important drawback in the estimation of GVA per unit of effective labour input, which we have noticed, is that in the estimation procedure, only proper weights are assigned for labour inputs but no such weights are assigned to the differences in emoluments received by the three categories of labour. Surely such a combination of double weights-number of workers by categories and the average emoluments received by each category would have provided a better estimation of GVA per unit of worker. We have confirmed that under the 67th Round of Enterprises Survey, the schedule provides for emoluments by categories of workers which is compiled for each state. We have confirmed that under the 67th Round of Enterprises Survey, the Schedule provides for emoluments by categories of workers which is compiled for each state.

#### (ix) Inappropriate Regrouping of Sectors

Very strong critical comments are offered under this head citing one example of regroupings in these words: "Such illogical and inappropriate regroupings of activities would promote misleading conclusions when we study the structural shifts of the Secondary and Tertiary or Services sectors in the economy. Moreover, it can create problems to get exact corresponding data on workforce to match the sectoral income classification. This is particularly of relevance to state economies because the focus of development studies at the state level is now increasingly on the 'structural changes' in production and employment".

Grouping of industries are based on National Industrial Classification (NIC). "Electricity, Gas and Water Supply" was part of Section E in NIC 2004 while NIC 2008, Section E in NIC 2008 consists of "Water Supply, Sewerage, Waste Management and Remediation Activities". For decades, the group adopted had been "Electricity, Gas and Water Supply" and this practice has been continued even in the latest 2011-12 classification, with the inclusion Sewerage Management, etc.

There is merit in the argument that sewage and disposal of wastage, and even water supply look to be service-oriented activities. Therefore, we were also intrigued to find that the internationally-inspired NIC classifications have been responsible for this inclusion of serviceoriented activities along with industrial production activities. We thus perceived that it is unlikely to be totally illogical and tried to scrutinise it somewhat closely. We found that the descriptions given in different sections of NIC 2008 provide some more insightful clue for the wisdom of the authors of NICs. To cite some example, sewerage covers treatment of waste water or sewer by means of physical, chemical and biological processes (thus involving advanced processes). Waste collection involves collection of recoverable materials, recyclable materials, etc. Collection of hazardous waste entails identification, treatment, packaging and labelling of waste for the purposes of transport. This section also covers 'Materials Recovery', which includes recovery from garbage of materials such as paper, plastics, used beverage cans and metals, into distinct categories, also includes the processing of metal and non-metal waste and scrap and other articles into secondary raw materials.

To emphasise again, what appears as a pure service activity in the form of sewage and waste disposal, water collection, treatment and supply, as also remediation and waste management, has overtime emerged as comprising substantial processing activities involving physical, chemical and biological processes: it has further involved collection of recoverable materials and processing and conversion of them into secondary raw materials. Therefore, we should give credit to the authors of the NICs for anticipating the emergence of complex issues embracing a combination of service and processing activities which are essentially inseparable. In our view, therefore, such groupings are not as illogical as it is made out.

# (x) The Issue of Preparing Comparable Back Series

There are three issues that are raised under this section. First, the old system of estimating GDP at factor cost has been discontinued in the new series. Second, in the new series, the states have prepared the estimates of GSDP at basic prices with the same methodology used for estimation of GSDP at factor cost, "which is now termed as GSDP at basic prices!" [Dholakia and Pandya, 2017]. Third, while this may not have any impact on the aggregate GSDP, there could be an unknown margin of error at the sectoral distribution of GSDP at basic prices as the same are taken from the distribution at factor cost. Finally, with the GSDP estimates representing a curious mix of basic prices and factor costs in the new series, the states would be handicapped in their erstwhile practice of linking the new basic series with the previous base series to study trends in real terms over time.

As this represented in our view a substantive issue but exhibited considerable misconception regarding the so-called GSDP estimation at basic prices and that at factor cost, we have already addressed the issue to some extent in an initial paragraph in this note. Nevertheless, we wish to explain our understanding of the issues posed above and set them right in the interest of a clearer picture of income estimation at the states level.

Before, we address the above four issues seriatim, it is necessary to clarify a conceptual issue to which we referred in a footnote in the initial part of this note. That is, in conformity with the nomenclatures adopted at the central level, namely. GVA at basic prices for sectors and also in the aggregate, there is a separate but only an aggregate estimate of GDP at market prices which alone, after the new series, "will be referred to as GDP"9. It was asserted thus: "Users are requested to note that Gross Domestic Product (GDP) at factor cost will no longer be discussed in the press releases. As is the practice internationally, industry-wise estimates will be presented as Gross Value Added (GVA) at basic prices, while 'GDP at market prices' will henceforth be referred to as GDP" [CSO, 2015]. Correspondingly, at the state level, we now have GSVA at basic prices at the sectoral level, as well as in the aggregate. And corresponding to GDP at market prices at the central level (with no separate estimation of sectoral GDP), we now have, in the new series, GSDP at market prices at the state level with no sectoral distribution of it. Thus, conceptually, at the state level, we now have a GSVA at basic prices sectorally and in the aggregate both at constant and current prices, and a GSDP only at the aggregate state level at current and constant market prices. In the 2004-05 series, it was GSDP at factor cost current and constant prices as also GSDP at market prices current and constant. We have thought it necessary to offer this brief clarification because we have found the use of these terms rather loosely done in literature. Now, coming to the issues raised ---

First, on the factor cost estimation, the authors are right, that, as referred to above, the CSO has discontinued putting out separate regular independent estimates of GVA at factor cost. Incidentally, as brought out by us elsewhere [Shetty and Rajakumar, 2017], though the CSO does not provide the aggregate annual series of GVA at factor cost, their dissemination of sector-wise as well as aggregate figures of production taxes net of production subsidies, has made it possible to estimate GVA at factor cost (see EPWRF's online database: www.epwrfits.in). The second observation, that the states have prepared the GVA at basic prices with the same methodology used for the estimation erstwhile of GDP at factor cost. is also correct. But, their third and fourth observations have contradicted the above second valid statement. If the methodology adopted is the same and if there is no impact on the aggregate GVA, there cannot be any margin of error at the sectoral distribution either. What is allocated of the national level estimation is essentially GVA at basic prices. Thus, there is no curious mix, as alleged, of GVA estimates at basic prices and at factor cost. Therefore, in crude linkages of aggregate numbers of earlier GSDP and the new GVA in the two successive series, there cannot be any difficulty as both are based on identical data sets; the trends are derived and thus comparable. The confusion seems to have arisen because it is not realised that in the earlier estimates of GSDP at factor cost, the elements constituting production taxes net of production subsidies were embedded and hence there is no difference between GSDP at factor cost earlier estimated and the GVA at basic prices now put out in the new series.

## VI. OUR SUGGESTIONS FOR IMPROVING THE GVA ESTIMATIONS AT THE STATES LEVEL

We clarify that our critical comments made above on many of the observations contained in the Dholakia-Pandva paper do not imply that we reject them all. Our comments have been primarily inspired by our perception that many of their observations have been by and large negative and factually incorrect: they have failed to appreciate the enormous amount of efforts put in by the statistical system to build a reasonably logical statistical edifice for the states consistent with the national-level statistical framework. from out of a very complex and decidedly weak empirical structure. The national-level statistical framework is also inspired by the need for implementing the international guidelines enumerated in the United Nations System of National Accounts (UN SNA) 1993 and 2008, to which India is a signatory; exceptions in applying them can only be rare.

Having said this, we accept that undoubtedly the database for the estimation of GVA at the states level leaves much to be desired. We also accept that there is merit in the proposition made by Dholakia and Pandya that more and more grass-roots level granular data deserve to be used for estimating the states' GVA and GSDP. But, we contend that such a goal cannot be sacrosanct when there are other over-riding considerations playing a role in expanding the database at the national level which have implications for state level estimation. Two key methodological changes and the associated improvements in data coverage at the national level partly in conformity with the UN SNA 2008 have been highlighted earlier. The weakest area of India's data base concerned the informal sectors and therefore. such improvements in the use of the data should be most welcome.

Our critical observations on the Dholakia-Pandya paper arises also from the fact that except for the negative proposal for abandoning the 2011-12 series at the state and district-levels and persisting with the old 2004-05 base methodology "at the state level till further revision of the base year takes place", there are no positive suggestions for improving the state level estimates for any of the sectors or at the aggregate level.

In fact, to emphasise again, undoubtedly there are serious gaps in the estimations of aggregate income both at the national as well as state levels. Eminent academicians have been repeatedly pointing this out [Srinivasan, 1994 and 2003; Vidwans, 2002; and Nagaraj and Srinivasan, 2016]. A major national level Commission examined the various issues and made a massive set of recommendations, but the improvement has been slow and gradual. Some of us who are associated with the Indian statistical system concede that improvements can only be incremental in character. For applying 2011-12 series to the states, if we wait until the next base revision. there is no assurance that a still better methodology would come forth. When opportunities strike, the system should grab such opportunities and keep improving the statistical base both at the national and state levels. In this spirit, we attempt to advance a few suggestions to improve the estimations of GVA/GSDP at the state level. which is the theme of the seminar.

We divide these suggestions into two parts: first, those that can be implemented immediately along with the current 2011-12 series; and second, those that are to be implemented if possible at the time of the next base revision or over time.

# A. Suggestions for Implementing Changes in the Current Estimates.

In the course of this exercise, along with hands on experience in the compilation of GSVA and GSDP for the state of Maharashtra and having intensive interactions with the CSO officials over a long period, we have noticed that there is scope for immediate implementation of a few changes in the methodology and data base for the states to improve the estimates. We enumerate them rather briefly.

### i) Use of State-Specific Indicators

In principle, it is necessary for the CSO to adopt state specific indicators wherever indicators are used either for deflation purposes or for allocation devices or for carrying forward the benchmark estimates. We have identified the following cases where there is scope for adopting state-specific indicators:

### a) Price Indices

The Use of Consumer Price Index (CPI)

\* The state-specific CPI are available for the states in the aggregates or at compilation categories.

\* Similarly, the use of sectoral CPIs agricultural labourers, rural labourers and industrial workers- which are available for the state centres could be considered as more appropriate for certain compilation categories, based on available CPI data.

b) Industrial output Indices Some of the state governments are constructing Indices of Industrial Production. These could be used instead of the all-India index.

c) The recent 5th (2005) and 6th (2013) Economic Censuses have generated data on the organised and unorganised establishments on the state level by compilation categories and by type of ownership. The inter-state distribution may prove beneficial to use in certain cases, particularly if their results are combined with Enterprise Survey or EUS results, particularly for self-employment categories. d) Use of Pooled data for Survey Results These show that the GSVA results could be somewhat higher than the present official estimates in a number of sectors. Appendices C and D show that the estimate of GVSA from the pooled sample could be lower for some sectors too. The critical point is for which sectors the size of central sample was much too small and where the size of the pooled sample is somewhat adequate. It would be useful to spot such sectors, say, in the case of Maharashtra. Such an exercise can be carried out independently in a separate paper.

At this stage, we wish to enter a degree of caution here in regard to the application of the pooled data for GSVA estimates in respect of some states and not others which do not make any attempt to estimate them. This should be applied only in respect of the sectors for which state specific estimates are used and those where national level estimates are allocated to states.

# *ii) Transparency in Indicators used by the CSO for GSVA Estimates*

We are aware that for some important policy purposes like for the work of Central Finance Commission, the State-level estimates are not accepted for want of comparable estimates. The Fourteenth Finance Commission (2015-16 to 2019-20), for instance, had obtained from the CSO comparable GSDP estimates for the use of Finance Commission.<sup>10</sup> It is necessary to aim at comparable estimates for the states put out for public consumption as well as for such policy purposes such as the work of the Finance Commission. While on the subject of indicators, we wish to reiterate that the CSO's sources and actual numbers should be transparent and open to scrutiny at the state level so that the State Directorates get a scene of involvement and participation in their own estimates.

**B. Long-term Programme for Improving and** Expanding the State-level Estimates

There are a large number of suggestions and recommendations in store having emanated as they did from well-known Committees & Commissions such as the Committee on Regional Accounts (September, 1976), the National Statistical Commission (August, 2005) and the High Level Committee on Estimation of Saving and Investment (March, 2009).

As a sequel to the NSC recommendations specifically for the improvement of State Statistical Systems, a centrally-sponsored scheme called India Statistical Strengthening Project (ISSP) was initiated with the assistance of the World Bank in 2010. By 2012-13, all the states (except Goa and Chandigarh) were participating in the Project. Amongst the 20 key statistical activities and indicators to be covered under the ISSP, those concerning directly or indirectly the estimations of State Domestic Product were: ASI. IIP, WPI, CPI, NSS surveys, Labour and Employment Statistics, and capital formation and savings. But, we have not been able to discern any clear picture of the number of states which have made concrete progress in implementing the programme of carrying out all or any of the above statistical compilations at the states level except in respect of Maharashtra for which a note has been appended to this Note (See Appendix E).

As for the implementation of individual statistical programmes at the states level, as stated above, we have not compiled any state-wise information except in the case of Maharashtra. We are aware that some of the State Directorates are implementing such programmes as the construction of IIP and supplementing central samples with state samples in respect of nation-wide surveys such as the Annual Survey of Industries (ASI), Enterprise Surveys and Employments-Unemployment Survey and pool the results. This is what is expected of the states as per the special grants-in-aide extended by the 13th Finance Commission. For the present, we have the case study of Maharashtra in this respect as cited above (Appendix E).

A stage has come where the authorities should take stock of the recommendations of these Committees and Commissions, screen them for their relevance for the current state of knowledge and information, and prioritise various steps in implementation. We make a brief list of such priorities based on the current needs of policy imperatives and macro-economic analyses.

# *i) Use of Remote Sensing Satellite Imagery for Cross-checking Area and Yield Estimates of Principal Crops*

The Prof A. Vaidyanathan Expert Committee on Agricultural Statistics had recommended the use of satellite imagery for cross checking the estimates of area under current cultivation and vield of principal crops. There are studies which indicate that additional crop cutting methods have been weakened rather considerably due to bureaucratic apathy. Now, the advancement in India's space science makes it possible to use Satellite Imagery for cross-checking of the ground-level data churned out by the village Talathis. But, he had emphasised that satellite imagery cannot generate primary estimates; instead, Remote sensing should be reviewed as a complementary system and not as a substitute for conventional methods of collecting data for some time to come.

*ii)* Insistence on producing state samples for key national level field surveys and combining them to pool the data. In this respect, the following surveys are the key candidates:

- a) Annual Survey of Industries (ASI)
- b) Enterprise Surveys; and
- c) Employment and Unemployment Surveys

The CSO and MOSPI should use their powers under the triple - S statistical programmes, that is, State Strategic Statistical Plans (SSSPs), and that for strengthening similar district level statistical systems recommended by the 13th Finance Commission.

#### iii) Insistence on States Constructing their IIPs.

Indices of Industrial Production (IIPs) can be a very useful input for policy formulation. All India IIP is not enough for this purpose. Each state should have an IIP of its own to reflect the changing industrial structure and growth scenario.

### iv) Completion of the Business Register

We are aware that all States are now engaged in undertaking Comprehensive Business Registers for their states. This would constitute a useful source material for facilitating field surveys and primarily the basis for sampling of enterprises and establishments. The programme was initiated about five years ago and its completion is yet to be reached.

## v) Capital Formation and Savings

The Committee on Regional Accounts had recommended a set of three consolidated accounts for each region (a region co-terminus with state): a) production; b) income and outlay account; and e) capital finance. In terms of policy priorities and feasibility of data generation, the Capital Finance Account comprising gross fixed capital formation, changes in stock and savings appear important. Some scholars have made attempts to give a lead in establishing methodology for estimating GFCF (see Rajeswari, Reena Singh, and Rammohan Singh, 2015). That apart, considering the nature of data requirements and their availability (through AIDIS, banks and financial institutions, etc.), the states can be persuaded to give some priority for this set of statistical progress.

#### FOOT NOTES

1. For the sake of consistency, we consider appropriate to use the nomenclatures of GSVA at basic prices and GSDP at market prices for states and GVA at basic prices and GDP at market prices for the all-India estimates. For details, see Sub-Section 5(x) of this paper

There are principal indirect taxes which are much more on products and which are generally charged per unit of output unlike these production taxes.

3. Editor's Note: If the basic data relate to number of registered vehicles, can the procedure not be followed at the state level and the sectoral aggregate for the states give the national figure? This will take care of different CPIs for the states.

4. Editor's Note: Prof. Anant pointed out that one way to corroborate whether the number of private schools in Gujarat has dropped is to see the NSS surveys on Employment and Unemployment for the years 2004-05 and 2011-12 and to check whether the number of workers categorised as teachers shown in these surveys shows a decline.

5. Editor's Note: Table 3 of the paper presented in the seminar(shown here as Table 3) led to considerable discussion in the seminar. It showed a break-up of the other services among (i) Education including Coaching, (ii) Human Health Activities + Care Activities (iii) Remaining Services and (iv) Private Households with employed persons. While it showed that the estimate of the share of Private (Total GVA) in Education for 2011-12 declined from about 65.4 per cent in the 2004-05 series to 46 per cent of the GVA of the total Education sector, the corresponding percentages for Gujarat according to the Dhalakia-Pandya paper showed a steep decline from 45 per cent to 4 per cent. This evoked considerable discussion from the floor, beginning with sharp intervention from Prof. Dholakia. He emphasised that from the point of view of the state bureaucrat, such estimates are not simply an outcome of some "consistent" exercise, but they are used for political purposes, for pushing certain agenda or for not pushing certain agenda. How does a bureaucrat explain such huge decline in the estimate to the state politicians? The question of why the data from Educational Statistics are not used for the purpose was raised. While it is true that the Educational Statistics provide only the numbers on schools, enrolment, etc., such data could be used as indicators. Prof. Dholakia strongly asserted the need for using the available state level indicators. He drew attention to the complex issues arising in a sub-continent such as India, with states at different levels of statistical development, different levels of competencies, different types data sources, local level reflections, and argued that the states have to be granted flexibility of having their own state level series for use for the purposes of policy making at the state level; otherwise we would be killing

in one stroke the democratic diversity for the sake of consistency. Responding to this point, Prof. Anant observed that in European Union the Eurostat has legal powers to mandate how the member countries will do their compilations. In our country, we work in a system of dialogue; the states have the autonomy of doing whatever they like in this regard. But where hard practical political issues like allocations which the Finance Commission makes or the levels at which their borrowing limits are set, come in, the issue of autonomy versus comparability becomes a serious challenge. He further pointed out that the whole purpose of setting up the Regional Accounts Committee was to anchor the state compilations in a framework which is acceptable to all and allow comparability to be built up. The methodological convergence that is needed at the state level cannot be left to idiosyncratic choices of the states. If we take the line that the states can choose their own base year or use their own idiosyncratic indicators, we shall run into serious difficulty.

6. To quote Anant [2016b], "When we did the base revision exercise, we computed the GVA in trade and showed it to be substantially less than what had been computed in the old series. Why? The estimate of trade is most robust in the base year because for the base year we have available an NSS survey in non-incorporated establishments. Large part of the trade does happen in the unincorporated segment. These surveys are done infrequently. The last one was done in 2010-11. The next one is just getting completed. The previous survey of trade was from 1999-2000. There was a ten-year gap between the two. We found that we had overestimated trade by a very significant amount".

7. A member of the Editorial Advisory Committee of this Journal has raised an issue as to whether the complete counts in the Economic census be used to estimate under- or overestimation and raised a further question as to why there appears a persistent ignoring of the Economic Census.

8. We do not mean to suggest that the results of this study were available to the authorities before deciding on applying the net database for state-level estimation. That the ASI results would constitute a large sample base to apply the same and allocate GVA to states was indeed obvious.

9. It is to be noted that GDP at market prices isspread across its expenditure components.

10. The Fourteenth Finance Commission wrote thus: "GSDP figures computed by States available as State series of GSDP for CSO are not comparable. Comparable GSDP data was obtained from the CSO for the use of the Commission". Footnote on page 79 of the Report of the Fourteenth Finance Commission, Vol I, Government of India, December 2014.

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## Appendix A

## Size of Production Taxes Net of Production Subsidies Associated with the Estimation of GVA at Basic Prices and GVA at Factor Cost: :All-India Series (All at Current Prices)

(Rupees, Crore)

Stage 1: Under the old 2004-05 Series

GDP at Factor Cost Production Taxes, Net of Production Subsides Current Prices (Rupees, Crore)

2009-10	61,08,903	These details were unknown then, but obviously they
2010-11	72,48,860	were embedded in the GDP at Factor Cost
2011-12	83,91,681	
2012-13	93,88,876	

#### Stage 2: Under the First Press Release for the New 2011-12 Series

GVA at H	Basic Prices	GDP at Factor Cost	Production Taxes Net of Production Subsides**
2011-12	82,06,398	82,17,250	-10,852
2012-13	92,63,138	92,74,225	-11,087
2013-14	1,04,87,074	1,04,97,008	-9,934

\*\* Production Taxes were defined at that stage as land revenues, stamps and registration fees, and taxes on professions; and Production Subsidies as subsidies to Railways, input subsidies to farmers, subsidies to village and small industries, administrative subsidies to corporations and cooperatives

### Stage 3: Under the New 2011-12 Series

GVA at I	Basic Prices	GDP at Factor Cost*	Production Taxes Net of Production Subsides**
2011-12	81,06,946	81,00,497	6,449
2012-13	92,02,692	91,88,458	14,234
2013-14	1,03,63,153	1,03,72,686	-9,533
2014-15	1,15,04,279	1,15,31,743	-27,464
2015-16	1,25,66,646	1,25,87,552	-20,906
2016-17	1,38,41,591	1,38,75,988	-34,397

\* Derived by us; \*\* The definition was considerably expanded hereafter (see CSO June 2015a) Source: CSO's *National Accounts Statistics 2018* 

				2011-12 Sei	ries - GSDI	P (Current P	rices)				2004-05 Ser	ies - GSDP ((	Current Price	(S5	
	Year				2011-20	012						2011-2012			
Sr. No.	State/Industry	A & N Islands	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Chandi- garh	Chhattis- garh	A & N Islands	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Chandi- garh	Chhattis- garh
Ξ	(2)	(3)	(4)	(5)	(9)	(7)	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
-	Agriculture and Allied Activities	597	94008	4555	28481	62067	126	26860	531	95254	4763	30246	64978	103	29145
-:	Agriculture	266	52041	2558	20615	42608	12	17983	349	79273	3209	25366	57981	92	22470
	Livestock Forestry and	137 40	27588 2503	297 1655	1593 2314	12028 4187	109 3	2267 4262	27	4101	1509	2252	3753	6	4326
-1 -1	Logging Fishing Mining and	155 29	11877 14162	45 230	3959 14650	3244 199	00	2348 19703	155 16	11879 10579	45 312	2628 8160	3244 116	0 0	2348 1 <i>6</i> 742
ω4	Quarrying Manufacturing Electricity, Gas and	63 159	50706 10765	129 691	15403 1919	14666 3659	1017 239	24350 7100	46 125	39435 7738	195 483	10615 1310	10818 2539	1261 243	17387 7570
5 0	Water supply Construction Trade, Hotels and	537 339	37026 26736	1045 599	11887 20457	27017 43904	1138 6141	19013 9326	1161 329	32729 50794	1771 414	12075 17568	32049 58163	1573 6813	19722 12122
٢	Transport Storage and	465	32514	234	8101	17545	937	5837	879	29224	235	8831	11711	1113	7375
7.	Communication Railways Transport by other means	0 420	2643 24262	0 125	1583 4363	2751 9377	8 576	1215 2817	0 742	2723 21964	0 193	1647 4727	2844 6503	9 595	1240 5191
7. 7. 8	Storage Communication Banking and	0 45 128	207 5402 14256	0 109 209	66 2089 4271	74 5342 8839	7 346 2856	102 1703 5377	2 134 133	0 4537 12918	1 41 235	72 2385 4536	194 2169 7672	3 506 3054	187 756 4833
6	Insurance Real Estate, Ownership of Dwellings and	323	28338	383	11125	28023	3930	17552	311	36200	176	3136	14922	5172	9964
10	Public Administration	748	13938	1354	8217	13587	1276	5494	726	12078	1218	7860	13598	1718	5430
11 12	Other Services TOTAL GSVA at	649 4038	27304 349753	1425 10855	10779 135290	22193 241699	1068 18731	7818 148430	738	35297	972	21567	26704	1775	14092
13	Vasic prices State Domestic Product (SDP)	3979	379402	11063	143175	247144	18768	158074	4994	362245	10775	125903	243269	22826	144382
															(Contd.)

Appendix B: Comparision of GSDP/GDP Estimates of 2011-12 with respect to Base Year (BY) 2011-12 & BY 2004-05 (Industry wise)

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				-	Percentage changes	(%)		
	Year				2011-2012			
Sr. Vo.	State/Industry	A & N Islands	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar	Chandigarh	Chhattisgarh
1)	(2)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
-	Agriculture and Allied Activities	12.6	-1.3	-4.4	-5.8	-4.5	22.5	-7.8
Ι.	Agriculture	-24.0	-34.4	-20.3	-18.7	-26.5	-86.7	-20.0
Ι.	Livestock							
Ι.	Forestry and Logging	51.6	-39.0	7.6	2.7	11.6	-66.4	-1.5
Τ.	Fishing	0.0	0.0	0.2	50.7	0.0	9.8	0.0
7	Mining and Quarrying	79.5	33.9	-26.2	79.5	70.7		17.7
ю	Manufacturing	37.8	28.6	-33.8	45.1	35.6	-19.3	40.0
4	Electricity, Gas and Water supply	27.8	39.1	43.1	46.5	44.1	-1.6	-6.2
5	Construction	-53.7	13.1	-41.0	-1.6	-15.7	-27.6	-3.6
9	Trade, Hotels and Restaurants	3.1	-47.4	44.7	16.4	-24.5	6.9-	-23.1
٢	Transport Storage and Communication	-47.1	11.3	-0.5	-8.3	49.8	-15.8	-20.9
7.	Railways	ı	-2.9	42.9	-3.8	-3.3	-4.8	-2.0
7.	Transport by other means	-43.5	10.5	-35.6	T.T-	44.2	-3.2	-45.7
7.	Storage	-89.8	·	-100.0	-8.8	-61.9	139.4	-45.4
7.	Communication	-66.5	19.1	165.5	-12.4	146.3	-31.7	125.2
×	Banking and Insurance	-4.0	10.4	-11.1	-5.9	15.2	-6.5	11.3
6	Real Estate, Ownership of Dwellings and Business Services	3.9	-21.7	117.1	254.8	87.8	-24.0	76.2
10	Public Administration	3.0	15.4	11.1	4.5	-0.1	-25.7	1.2
11	Other Services	-12.1	-22.6	46.6	-50.0	-16.9	-39.8	-44.5
12	TOTAL GSVA at basic prices							
13	State Domestic	-20.3	4.7	2.7	13.7	1.6	-17.8	9.5

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(Contd.)

				2011-12 S€	eries - GSD	P (Current Pr	ices)				2004-05 Sei	ries - GSDP (	(Current Prices	s)	
	Year				2011-2	012						2011-2012	2		
Sr. No.	State/Industry	Delhi	Goa	Gujarat	Haryana	Himachal Pradesh	J&K	Jharkhand	Delhi	Goa	Gujarat	Haryana	Himachal Pradesh	J&K	Jharkhand
Ξ	(2)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
-	Agriculture and	2855	2043	107364	64539	11626	13063	22335	2764	2274	121058	63113	12152	14403	24497
1.1	Agriculture	658	1024	79510	40887	6734	7953	13421	2666	1257	110947	59074	8816	12184	19288
1.2	Livestock	2179	235	18505	18898	1153	3441	4776							
1.3	Forestry and	10	118	6113	3895	3687	1345	3576	89	352	6874	3180	3285	1895	4646
1.4	Fishing	8	666	3236	858	52	323	563	8	666	3236	859	52	324	563
2	Mining and	7729	6436	18506	119	286	329	16204	0	6373	11983	100	176	148	14910
~ ~ ~	Quarrying Manufacturino	1 8907	16293	156819	53286	17998	7976	30166	15976	13733	153202	52128	10201	4643	CLCPC
0 4 . [	Electricity, Gas and	4105	959	21905	3446	6024	6162	2412	2191	1161	18115	2750	5769	5119	1270
	Water supply														
ŝ	Construction	16669	1358	44693	29760	6382	6529	14395	20320	2462	44068	27252	7759	8759	11882
9	Trade, Hotels and Restaurants	42121	2596	66464	33107	4568	6671	11521	48999	4574	102166	62435	7401	5030	15353
L	Transport Storage and	39295	1560	32532	17277	3008	4717	9760	20617	5151	36550	24895	2502	2480	8954
-	Communication														
7.1	Railways	1907	122	3288	2689	17	123	2979	1945	125	3315	2807	20	129	3056
7.2	Transport by other	31324	1165	21263	11437	1715	3526	4819	13633	4670	27557	19781	1676	1633	4937
- C - L	means Storing	, I C	ç	367	120	ç	0	~	170	~	100	000	ç	10	30
	Communication	5851	71 170	7619	3031	1775	1069	1957	4860	351	5479	2108	2 PU4	201	66
.∞	Banking and	53883	1729	29427	11657	2873	2261	4144	52355	1824	27903	10953	2472	2455	4066
	Insurance				00007		0010							0100	0027
, , , , , , , , , , , , , , , , , , ,	Near Estate, Ownership of Dwellings and	00471	/007	4104C	07604	0/49	0046	71011	0000/	0177	COC/C	01007	7607	0400	6000
. –	Business Services														
10	Public Administration	19572	2505	19173	7298	3759	11275	9818	17887	1447	17247	6886	3723	11906	11532
Ξ	Other Services	25587	1240	20223	12658	6128	6294	7363	32362	1979	29109	19560	7592	9403	12191
12	TOTAL GSVA at basic prices	303202	39406	551921	274075	69403	74761	139130							
13	State Domestic Product (SDP)	343767	42367	615606	297539	72720	78256	150918	287107	43255	598786	298688	64957	68185	135618
															(Contd.)

Appendix B: Comparision of GSDP/GDP Estimates of 2011-12 with respect to Base Year (BY) 2011-12 & BY 2004-05 (Industry wise)

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					Percentage chang	ges (%)		
	Year —				2011-2012			
	State/Industry	Delhi	Goa	Gujarat	Haryana	Himachal Pradesh	J&K	Jharkhand
	(2)	(38)	(39)	(40)	(41)	(42)	(43)	(44)
	Agriculture and Allied Activities	3.3	-10.2	-11.3	2.3	-4.3	-9.3	-8.8
1	Agriculture	-75.3	-18.5	-28.3	-30.8	-23.6	-34.7	-30.4
2	Livestock							
	Forestry and Logging	-88.7	-66.4	-11.1	22.5	12.3	-29.0	-23.0
4	Fishing	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-	Mining and Quarrying		1.0	54.4	18.6	62.7	122.3	8.7
-	Manufacturing	18.3	18.6	2.4	2.2	41.5	71.8	24.3
_	Electricity,Gas and Water supply	87.4	-17.4	20.9	25.3	4.4	20.4	89.9
-	Construction	-18.0	-44.8	1.4	9.2	-17.7	-25.5	21.1
	Trade, Hotels and Restaurants	-14.0	-43.2	-34.9	-47.0	-38.3	32.6	-25.0
	Transport Storage and Communication	90.6	-69.7	-11.0	-30.6	20.3	90.3	9.0
_	Railways	-2.0	-2.6	-0.8	-4.2	-12.6	-4.3	-2.5
2	Transport by other means	129.8	-75.1	-22.8	-42.2	2.3	116.0	-2.4
~	Storage	18.9	-56.1	82.1	-40.2	2.5	-100.0	-90.3
4	Communication	20.4	-22.8	39.1	43.8	58.5	50.9	112.3
_	Banking and Insurance	2.9	-5.2	5.5	6.4	16.2	-7.9	1.9
	Real Estate,Ownership of Dwellings and Business Services	-1.6	18.0	-6.9	43.0	150.7	147.0	64.6
_	Public Administration	9.4	73.1	11.2	6.0	0.9	-5.3	-14.9
_	Other Services	-20.9	-37.4	-30.5	-35.3	-19.3	-33.1	-39.6
2	TOTAL GSVA at basic prices							
~	State Domestic Product (SDP)	19.7	-2.1	2.8	-0.4	11.9	14.8	11.3

Appendix B: Percentage Changes in 2011-12 Series Over 2004-05 Series (GSDP - Current Prices) (Contd.)

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				2011-12 Sei	ries - GSDP	(Current Pr	ices)				2004-05 Seri	ies - GSDP (4	Current Pric	es)	
	Yea	r			2011-201	12						2011-2012			
Sr. No.	State/Industry	Karnataka	Kerala	Madhya Pradesh	Maha- ] rashtra	Manipur N	Aeghalaya	Mizoram	Karnataka	Kerala	Madhya Pradesh	Maha- rashtra	Manipur	Meghalaya	Mizoram
Ξ	(2)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)
-	Agriculture and	75549	48376	91072	147526	2516	2829	1495	73349	48169	79044	134068	2409	2683	1380
1.1	Agriculture	53395	29046	73334	99429	1378	1631	759	61985	40379	71320	108358	1844	2041	1020
1.3	Livestock Forestry and	13497 5935	4303 4303	8976 8113	10991	422 422	561 561	303 384	8640	4015	7075	22769	374	601	311
2.4 7	Logging Fishing Mining and	2723 4503	3774 2725	649 11712	2939 56493	191 0	41 1394	49 51	2724 4005	3774 2332	649 10256	2941 6246	191 0	41 1152	49 23
ω4	Quarrying Manufacturing Electricity, Gas	97139 10829	34204 4679	38286 9031	246032 26806	410 543	4646 456	66 510	7000 9969	22429 4035	33769 8185	228267 17552	526 429	1144 157	77 220
1	and Water sup- ply														
o v	Construction Trade, Hotels	50331 60444	53088 53217	34954 33789	78630 105609	1007 1565	1136 2581	893 765	45128 61754	40013 58045	33563 36833	79277 171281	1854 807	3318 1782	965 610
٢	and Restaurants Transport Stor-	33510	27980	18310	64500	704	956	319	32038	30878	16232	84640	396	1176	164
, t	age and Communication			000		c	c	c					c	c	c
7.1 7.2	Railways Transport by	2021 23072	981 21182	3189 9794	58512 58512	0 474	0 706	0 221	2044 24198	1003 23989	324610640	6106 61170	0 247	0 985	0 133
7.3	other means Storage	276	33	185	925	0	3	0	94	166	0	583	4	4	2
7.4 8	Communication Banking and	8140 28794	5783 14308	5142 15937	15892 117836	230 234	248 558	98 201	5702 26639	5719 15737	2346 14671	16781 126391	145 267	187 549	29 191
6	Insurance Real Estate, Ownershin of	143668	42209	16393	190870	1348	1154	415	78845	40395	27312	186731	449	1115	1093
	Dwellings and Business Ser-														
10	vices Public	14888	15856	16291	39070	2318	1779	1393	14688	14502	15662	50422	2153	2232	1227
11	Administration Other Services TOTAL GSVA	32561 552214	39651 336293	17911 303688	66625 1139997	2084 12729	1432 18922	1323 7430	38787	36142	29631	85245	1793	1890	940
13	at basic prices State Domestic Product (SDP)	606010	364048	315561	1275948	12915	319918	3 7259	455212	312677	305158	1170121	11084	17199	6890
															(Contd.)

Appendix B: Comparision of GSDP/GDP Estimates of 2011-12 with respect to Base Year (BY) 2011-12 & BY 2004-05 (Industry wise) (Contd.)

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Year2011:20122011:2012Start futuresKancha ferKarrationKancha ferMarcularMarcularMarcularMarcular10 $-20$ $20$ $60$ $60$ $60$ $60$ $60$ $60$ $60$ $60$ 11Apriculture and Alleld Activities $30$ $00$ $60$ $60$ $60$ $60$ $60$ $60$ 11Apriculture and Alleld Activities $30$ $00$ $00$ $60$ $60$ $60$ $60$ $60$ 12Liverscork $1.3$ $2.3$ $1.3$ $2.3$ $1.3$ $2.3$ <th></th> <th></th> <th></th> <th></th> <th></th> <th>ercentage changes</th> <th>(%)</th> <th></th> <th></th>						ercentage changes	(%)		
St.StateInductyKantaktyKentaktyMaturaktivaManusktyManu		Year				2011-2012			
	Sr. No.	- State/Industry	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur	Meghalaya	Mizoram
1     Agriculture and Allied Activities     30     0.4     15.2     100     45     5.4     83       1.1     Agriculture and Allied Activities     -13.9     -28.1     2.8     -8.2     -25.3     2.01     25.6     8.3       1.2     Iverscock     -13.9     -28.1     2.8     -28.1     2.4     8.3     -25.6     2.01     25.6     2.01     25.6     2.5     2.01     25.6     2.5     2.01     2.5     2.5     2.5     2.5     2.5     2.5     2.5     2.5     2.5     2.6     2.6     2.6     0     0     0     0     0     0     0     1.4     2.5     2.6     1.4     2.5     2.6     1.4     1.4     2.6     1.4     1	E	(2)	(59)	(09)	(61)	(62)	(63)	(64)	(65)
1.1     Agriculture     -1.3     -2.8.1     2.8     -8.2     -2.5.3     -2.0.1     -2.5.6       1.2     Irvestock     -	1	Agriculture and Allied Activities	3.0	0.4	15.2	10.0	4.5	5.4	8.3
11     Livetock     231     232     231     231     231     231     236     23	1.1	Agriculture	-13.9	-28.1	2.8	-8.2	-25.3	-20.1	-25.6
1.3Foretry and Loging $-31.3$ $7.2$ $14.7$ $-27.1$ $12.9$ $-6.7$ $23.6$ 1.4Fishing0.00.00.00.00.00.00.00.02Minig and Quarrying12.416.814.2 $84.5$ $-$ 21.0117.63Manifacturing12.416.814.2 $84.5$ $-$ 21.00.00.05Manifacturing38.852.513.47.8 $-$ 21.0117.65Construction11.532.74.1 $ -$ 26.591.0123.26Tansport Storage and Communication4.6 $      -$ 7.1Rainwys $         -$ 7.1Rainwys $        -$ 7.1Rainwys $        -$ 7.1Rainwys $   -$	1.2	Livestock							
14Fishing0.00.00.00.00.00.00.02Mining and Quarying12.416.814.2804.5-2.1011763Manifacturing12.416.814.2804.5-2.1011764Electricity,Gas and Water supply8.616.00.35.272.5591013225Construction11.53.2.74.10.84576.65747Trangeh Grammaticion4.641.132.39.387.382.547.1Raiways1.12.21.71.90.002.317.1Raiways1.12.21.71.90.002.317.1Raiways1.12.21.7-1.90.002.317.2Transport by other means-1.12.2-1.17-1.90.002.317.3Storge-1.1-2.2-1.17-1.90.002.310.007.3Storge-1.11-2.2-1.17-1.90.002.310.007.3Storge-1.11-2.2-1.17-1.90.002.310.007.4Communication-1.17-7.9-1.90.002.310.007.4Communication-1.17-1.90.002.310.007.	1.3	Forestry and Logging	-31.3	7.2	14.7	-27.1	12.9	-6.7	23.6
	1.4	Fishing	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
3Manufacturing3852.513.47.8-2.2030.0-1494Electricity.Gas and Water supply8.616.010.3 $5.7$ $26.5$ 191.0132.25Construction11.5 $3.2.7$ $4.1$ $0.8$ $-45.7$ $65.8$ $7.4$ 6Trade.Hotels and Water supply8.616.010.3 $5.2.7$ $26.5$ 191.0132.27Transport Storage and Communication $4.6$ $-9.4$ $1.2$ $-3.3.3$ $9.3.8$ $7.8$ $4.48$ $25.4$ 7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $-1.9$ $-2.3.8$ $-7.4$ $-2.3.1$ 7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $-2.3.8$ $-2.3.8$ $-2.3.8$ $-2.3.8$ 7.2Transport by other means $-1.1$ $-2.2$ $-1.7$ $-1.9$ $-1.9$ $-2.3.8$ $-2.3.4$ $-2.3.4$ 7.3Storage $-1.1$ $-2.2$ $-1.7$ $-1.9$ $-1.9$ $-2.3.8$ $-2.3.4$ $-2.3.4$ 7.3Storage $-1.1$ $-2.2$ $-1.7$ $-1.9$ $-2.3.4$ $-2.3.4$ $-2.3.4$ 7.4Communication $-1.1$ $-2.2$ $-1.9$ $-1.9$ $-2.3.4$ $-2.3.4$ 7.3StorageBalking other means $-1.1$ $-1.9$ $-2.3$ $-2.3.4$ $-2.3.4$ 7.4Communication $-2.2$ $-2.1$ $-1.2$ $-2.2.4$ $-2.3.4$ $-2.3.4$ 7Balking and Inst	7	Mining and Quarrying	12.4	16.8	14.2	804.5		21.0	117.6
4Electricity.Gas and Water supply $8.6$ $16.0$ $10.3$ $5.7$ $26.5$ $191.0$ $132.2$ 5Construction $11.5$ $32.7$ $4.1$ $0.8$ $-45.7$ $65.8$ $7.4$ 7Trake.Holes and Restaurants $-2.1$ $-8.3$ $-8.3$ $-38.3$ $93.8$ $44.8$ $25.4$ 7Transport Storage and Communication $4.6$ $-9.4$ $12.8$ $-23.8$ $77.8$ $-18.7$ $65.7$ 7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $100.0$ $ -33.1$ 7.2Transport Storage and Communication $4.7$ $-11.7$ $-7.9$ $-18.7$ $65.7$ 7.3Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $100.0$ $ -33.16$ 7.3Storage $194.2$ $-80.0$ $-7.9$ $-4.3$ $91.5$ $-2.84$ $66.7$ 7.3Storage $1.1$ $11.7$ $-7.9$ $-4.3$ $91.5$ $-2.84$ $66.7$ 7.4Communication $4.2$ $-11.7$ $-7.9$ $-2.84$ $66.7$ 7.3Storage $11.1$ $119.2$ $-5.3$ $59.0$ $-2.00.1$ $-0.00$ 7.4Communication $8.1$ $-9.1$ $8.6$ $-6.8$ $-12.5$ $-17.6$ $-2.01$ 7.4Communication $8.2$ $-1.1$ $-19.2$ $-10.0$ $-2.2.4$ $-10.0$ 7.4Communication $1.4$ $-9.1$ $-12.5$ $-12.5$ $-12.5$ $-12.6$ 8 <td>б</td> <td>Manufacturing</td> <td>38.8</td> <td>52.5</td> <td>13.4</td> <td>7.8</td> <td>-22.0</td> <td>306.0</td> <td>-14.9</td>	б	Manufacturing	38.8	52.5	13.4	7.8	-22.0	306.0	-14.9
5Construction11.532.74.1-0.8-45.765.8-7.47Trade.Hotes and Restaurants-2.1 $8.3$ $8.3$ $38.3$ $93.8$ $44.8$ $25.4$ 7.1Transport Storage and Communication $4.6$ $-9.4$ $12.8$ $-33.3$ $93.8$ $44.8$ $25.4$ 7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $100.0$ $ -33.1$ 7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $100.0$ $ -33.1$ 7.2Transport by other means $-1.1$ $-2.2$ $-1.7$ $-1.9$ $00.0$ $ -33.6$ 7.3Storage $-1.1$ $-2.2$ $-1.17$ $-7.9$ $-4.3$ $91.5$ $-28.4$ $66.7$ 7.3Storage $194.2$ $-80.0$ $-7.9$ $-4.3$ $91.5$ $-28.4$ $66.7$ 7.3Storage $1.1$ $119.2$ $-7.9$ $-4.3$ $91.5$ $-28.4$ $66.7$ 7.4Communication $42.8$ $1.1$ $119.2$ $55.7$ $-28.4$ $66.7$ 8Barking and Insurance $8.1$ $-9.1$ $86$ $-6.8$ $-12.5$ $1.7$ $4.8$ 9Real Estate-Ownership of Dwellings and $82.2$ $4.5$ $-40.0$ $2.2$ $200.1$ $3.5$ $-62.1$ 10Ohti Sterices $1.4$ $9.7$ $-9.16$ $-9.16$ $-9.23.5$ $-20.3$ $4.07$ 11Ohte Sterices $-16.1$ $9.7$ $-39.6$ <td< td=""><td>4</td><td>Electricity, Gas and Water supply</td><td>8.6</td><td>16.0</td><td>10.3</td><td>52.7</td><td>26.5</td><td>191.0</td><td>132.2</td></td<>	4	Electricity, Gas and Water supply	8.6	16.0	10.3	52.7	26.5	191.0	132.2
6     Trade,Hotels and Restaurants     -2.1     -8.3     -8.3     -38.3     93.8     44.8     25.4       7     Transport Storage and Communication     4.6     -9.4     12.8     -3.3.8     77.8     -18.7     95.1       7.1     Rainways     -1.1     -2.2     -1.7     -1.9     100.0     -     -23.1       7.2     Transport by other means     -1.1     -2.2     -1.17     -1.9     100.0     -     -30.6     -100.0       7.3     Storage     -1.1     -7.9     -7.9     -4.3     91.5     -2.84     66.7       7.3     Storage     -1.1     -2.2     -1.1     11.9     -1.00.0     -     -     -30.6     -100.0       7.4     Communication     4.2     1.1     119.2     5.3     59.0     32.5     -5.94     66.7       7.3     Storage     1.1     119.2     5.3     59.0     32.5     -6.21     16.0       8     Banking and Insurance     8.1     119.2     -1.25 <td>5</td> <td>Construction</td> <td>11.5</td> <td>32.7</td> <td>4.1</td> <td>-0.8</td> <td>-45.7</td> <td>-65.8</td> <td>-7.4</td>	5	Construction	11.5	32.7	4.1	-0.8	-45.7	-65.8	-7.4
7Transport Storage and Communication $4.6$ $-9.4$ $12.8$ $-23.8$ $77.8$ $-18.7$ $95.1$ 7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $100.0$ $ -23.1$ 7.2Transport by other means $-1.1$ $-2.2$ $-1.7$ $-1.9$ $100.0$ $ -23.1$ 7.3Storage $-1.1$ $-2.2$ $-1.7$ $-1.9$ $91.5$ $-28.4$ $66.7$ 7.3Storage $194.2$ $-80.0$ $ 58.5$ $-100.0$ $-30.6$ $-100.0$ 7.4Communication $42.8$ $1.11$ $119.2$ $58.5$ $-100.0$ $-30.6$ $-100.0$ 7.4Communication $8.1$ $-9.1$ $8.0$ $-6.1$ $-6.7$ $-23.4$ $-6.7$ 8Banking and Insurance $8.1$ $-9.1$ $8.6$ $-6.8$ $-10.0$ $3.5.5$ $-100.0$ $-10.0$ 9Real Estace/Ownership of Dwellings and $8.2.2$ $4.5$ $-40.0$ $2.2.2$ $200.1$ $3.5$ $-62.1$ 10Public Administration $1.4$ $9.3$ $-40.0$ $-22.5$ $7.6$ $-24.2$ $-62.1$ 11Other Services $1.4$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $-62.1$ 11Other Services $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $-62.1$ 12Toth Correstorices $-16.1$ $9.7$ $-91.6$ $-22.5$ $-24.2$ $-62.1$ 13State Domestic	9	Trade, Hotels and Restaurants	-2.1	-8.3	-8.3	-38.3	93.8	44.8	25.4
7.1Railways $-1.1$ $-2.2$ $-1.7$ $-1.9$ $1000$ $ -3.31$ 7.2Transport by other means $4.7$ $-11.7$ $-7.9$ $-4.3$ $91.5$ $-28.4$ $66.7$ 7.3Storage $194.2$ $-80.0$ $ -5.85$ $-100.0$ $-30.6$ $-100.0$ 7.4Communication $42.8$ $1.1$ $119.2$ $58.5$ $-100.0$ $-30.6$ $-100.0$ 7.4Communication $42.8$ $1.1$ $119.2$ $58.5$ $-100.0$ $32.5$ $239.4$ 8Banking and Insurance $8.1$ $-9.1$ $8.6$ $-6.8$ $-12.5$ $1.7$ $4.8$ 9Real Estate,Ownership of Dwellings and $82.2$ $4.5$ $-40.0$ $2.2$ $200.1$ $3.5$ $-62.1$ 10Public Administration $1.4$ $9.3$ $40$ $-22.5$ $7.6$ $-20.3$ $13.5$ 11Other Services $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $40.7$ 12TOTAL GSV at basic prices $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $40.7$ 13State Domestic Product (SDP) $33.1$ $16.4$ $3.4$ $9.0$ $16.5$ $15.8$ $5.4$	٢	Transport Storage and Communication	4.6	-9.4	12.8	-23.8	77.8	-18.7	95.1
7.2Tanspot by other means $4.7$ $-11.7$ $-7.9$ $4.3$ $91.5$ $-28.4$ $66.7$ 7.3Storage $194.2$ $80.0$ $ 58.5$ $-100.0$ $-30.6$ $-100.0$ 7.4Communication $194.2$ $80.0$ $ 58.5$ $-100.0$ $-30.6$ $-100.0$ 7.4Communication $42.8$ $1.1$ $119.2$ $55.0$ $59.0$ $32.5$ $239.4$ 8Banking and Insurance $8.1$ $-9.1$ $8.6$ $-6.8$ $-12.5$ $1.7$ $4.8$ 9Real Estate,Ownership of Dwellings and $8.2$ $4.5$ $-40.0$ $2.2$ $200.1$ $3.5$ $-62.1$ 10Public Administration $1.4$ $9.3$ $4.0$ $-22.5$ $7.6$ $-20.3$ $13.5$ $-62.1$ 11Other Services $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-20.3$ $40.7$ 12Public Administration $1.4$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $40.7$ 12TOTAL GSV at basic prices $-16.1$ $9.7$ $-39.6$ $-21.8$ $-24.2$ $-24.2$ $40.7$ 13State Domestic Product (SDP) $33.1$ $16.4$ $3.4$ $9.0$ $16.5$ $15.8$ $5.4$	7.1	Railways	-1.1	-2.2	-1.7	-1.9	100.0	·	-23.1
7.3Storage $194.2$ $80.0$ $ 58.5$ $-100.0$ $-30.6$ $-100.0$ 7.4Commuication $42.8$ $1.1$ $119.2$ $5.3$ $59.0$ $32.5$ $239.4$ 8Banking and Insurance $8.1$ $-9.1$ $8.6$ $-6.8$ $-12.5$ $1.7$ $4.8$ 9Real Estate, Ownership of Dwellings and $8.22$ $4.5$ $-40.0$ $2.2$ $200.1$ $3.5$ $-62.1$ 10Public Administration $1.4$ $9.3$ $4.0$ $-22.5$ $7.6$ $-20.3$ $13.5$ 11Other Services $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-30.5$ $-40.7$ 11Other Services $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-30.3$ $40.7$ 12TOTAL GSVA at basic prices $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $40.7$ 12TOTAL GSVA at basic prices $-16.1$ $9.7$ $-39.6$ $-21.8$ $16.2$ $-24.2$ $40.7$ 13State Domestic Product (SDP) $33.1$ $16.4$ $3.4$ $9.0$ $16.5$ $15.8$ $5.4$	7.2	Transport by other means	-4.7	-11.7	-7.9	-4.3	91.5	-28.4	66.7
7.4   Communication   42.8   1.1   119.2   5.3   59.0   32.5   239.4     8   Banking and Insurance   8.1   -9.1   8.6   -6.8   -12.5   1.7   4.8     9   Real Estate,Ownership of Dwellings and   82.2   4.5   -40.0   2.2   200.1   3.5   -62.1     10   Public Administration   1.4   9.3   4.0   -22.5   7.6   -20.3   13.5     11   Other Services   -16.1   9.7   -39.6   -21.8   16.2   -20.3   13.5     12   TOTAL GSVA at basic prices   -16.1   9.7   -39.6   -21.8   16.2   40.7     12   TOTAL GSVA at basic prices   -16.1   9.7   -39.6   -21.8   16.2   24.2   40.7     13   State Domestic Product (SDP)   33.1   16.4   3.4   9.0   16.5   15.8   5.4	7.3	Storage	194.2	-80.0		58.5	-100.0	-30.6	-100.0
8     Banking and Insurance     8.1     -9.1     8.6     -6.8     -12.5     1.7     4.8       9     Real Estate,Ownership of Dwellings and     8.2.2     4.5     -40.0     2.2     200.1     3.5     -62.1       10     Public Administration     1.4     9.3     4.0     -22.5     7.6     -20.3     13.5       11     Other Services     -16.1     9.7     -39.6     -21.8     16.2     -20.3     13.5       12     TOTAL GSVA at basic prices     -16.1     9.7     -39.6     -21.8     16.2     -24.2     40.7       13     State Domestic Product (SDP)     33.1     16.4     3.4     9.0     16.5     15.8     5.4	7.4	Communication	42.8	1.1	119.2	-5.3	59.0	32.5	239.4
9     Real Estate,Ownership of Dwellings and     82.2     4.5     -40.0     2.2     200.1     3.5     -62.1       Business Services     1.4     9.3     4.0     -22.5     7.6     -20.3     13.5       10     Public Administration     1.4     9.3     4.0     -22.5     7.6     -20.3     13.5       11     Other Services     -16.1     9.7     -39.6     -21.8     16.2     -24.2     40.7       12     TOTAL GSVA at basic prices     33.1     16.4     3.4     9.0     16.5     15.8     5.4	8	Banking and Insurance	8.1	-9.1	8.6	-6.8	-12.5	1.7	4.8
10     Public Administration     1.4     9.3     4.0     -22.5     7.6     -20.3     13.5       11     Other Services     -16.1     9.7     -39.6     -21.8     16.2     -24.2     40.7       12     TOTAL GSVA at basic prices     -     -33.1     16.4     3.4     9.0     16.5     15.8     5.4	6	Real Estate,Ownership of Dwellings and Business Services	82.2	4.5	-40.0	2.2	200.1	3.5	-62.1
11     Other Services     -16.1     9.7     -39.6     -21.8     16.2     -24.2     40.7       12     TOTAL GSVA at basic prices         40.7       13     State Domestic Product (SDP)     33.1     16.4     3.4     9.0     16.5     15.8     5.4	10	Public Administration	1.4	9.3	4.0	-22.5	7.6	-20.3	13.5
12     TOTAL GSVA at basic prices       13     State Domestic Product (SDP)     33.1     16.4     3.4     9.0     16.5     15.8     5.4	11	Other Services	-16.1	9.7	-39.6	-21.8	16.2	-24.2	40.7
13     State Domestic Product (SDP)     33.1     16.4     3.4     9.0     16.5     15.8     5.4	12	TOTAL GSVA at basic prices							
	13	State Domestic Product (SDP)	33.1	16.4	3.4	9.0	16.5	15.8	5.4

Appendix B: Percentage Changes in 2011-12 Series Over 2004-05 Series (GSDP - Current Prices) (Contd.)

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Appendix B: Comparision of GSDP/GDP Estime

			2011-12 Sei	ries - GSD	P (Current P	rices)				2004-05 Ser	ies - GSDP (	(Current Price	s)	
Yea				2011-20	012						2011-201	2		
Sr. State/Industry No.	Nagaland	Odisha	Puducherry	Punjab	Rajasthan	Sikkim	Tamil Nadu	Nagaland	Odisha	Puducherry	Punjab	Rajasthan	Sikkim	Tamil Nadu
(1) (2)	(99)	(67)	(68)	(69)	(10)	(71)	(72)	(73)	(74)	(75)	(26)	(17)	(78)	(62)
1 Agriculture and Allied Activities	3734	38998	754	78168	119103	901	87732	3540	38362	800	75290	120749	1001	88578
1.1 Agriculture	2043	25086	205	50079	73469	782	53756	2802	31057	461	70193	106183	941	77786
1.2 Livestock 1.3 Forestry and	831 796	5846 5846	322 33	20346 7157	51152 14170	9/ 9/	3555	678	4661	146	4511	14235	57	6550
Loggung 1.4 Fishing 2 Mining and	63 57	2680 26487	194 254	586 37	331 18415	с »	4241 3268	60 15	2643 26099	194 2	586 19	331 17707	3 13	4242 4199
Quarrying 3 Manufacturing	151	41164	4278	37507	<u>66666</u>	4306	151768	259	27227	4738	42078	56082	3526	122719
4 Electricity, Gas and Water sumply	1 295	4990	227	7149	7633	1866	7956	258	4135	222	4844	6845	873	2835
5 Construction 6 Trade, Hotels and	1051 1052	20596 20359	2441 1475	19784 25325	43592 43746	671 314	92472 79302	1472 543	24318 28488	1477 2475	17447 30717	39458 60291	1003 275	71411 110576
Restaurants 7 Transport Storage and	578	13475	674	13213	22882	284	53380	1076	18770	539	14147	18996	198	51012
Communication														
7.1 Railways 7.2 Transport by other	4 343	1795 8194	2 459	1904 6597	2410 14372	0 214	3161 37985	8 886	1854 14888	2 271	1992 8809	2465 13016	$^{0}_{133}$	3229 39951
means 7.3 Storage	1	140	-	480	101	0	270	4	278	ŝ	684	145	2	268
7.4 Communication	230	3347	213	4232	6000	70	11964	179	1749	263	2661	3370	62	7563
8 Banking and	477	7963	592	14643	13640	165	40196	284	8202	565	15306	13628	159	38920
9 Real Estate, Ownership of Duvallings and	1293	17071	1449	22747	41337	584	102534	2826	13718	1688	14584	31404	435	87284
Business Services 10 Public Administra-	1822	8631	803	12695	14679	740	25984	2314	8635	670	12779	12800	751	24151
tion 11 Other Services 12 TOTAL GSVA at	1557 12067	17382 217117	1866 14812	22506 253774	24819 416513	1052 10892	48430 693022	1272	22635	1487	29163	36221	675	65517
Daste prices 13 State Domestic Product (SDP)	12177	227872	16818	266628	434366	11165	751486	13859	220589	14661	256374	414179	8907	667202
														(Contd.)

			4	ercentage change	s (%)		
Year				2011-2012			
r. State/Industry Vo.	Nagaland	Odisha	Puducherry	Punjab	Rajasthan	Sikkim	Tamil Nadu
1) (2)	(80)	(81)	(82)	(83)	(84)	(85)	(86)
1 Agriculture and Allied Activities	5.5	1.7	-5.8	3.8	-1.4	6.9-	-1.0
1.1 Agriculture	-27.1	-19.2	-55.6	-28.7	-30.8	-16.9	-30.9
1.2 Livestock							
1.3 Forestry and Logging	17.3	25.4	-77.2	58.7	-0.5	-29.1	-45.7
1.4 Fishing	5.9	1.4	0.0	0.0	0.0	0.0	0.0
2 Mining and Quarrying	283.7	1.5	14228.8	91.7	4.0	-37.5	-22.2
3 Manufacturing	-41.6	51.2	7.6-	-10.9	18.9	22.1	23.7
4 Electricity, Gas and Water supply	14.5	20.7	2.3	47.6	11.5	113.8	180.6
5 Construction	-28.6	-15.3	65.3	13.4	10.5	-33.1	29.5
6 Trade, Hotels and Restaurants	93.8	-28.5	-40.4	-17.6	-27.4	14.5	-28.3
7 Transport Storage and Communication	-46.3	-28.2	25.2	-6.6	20.5	43.4	4.6
7.1 Railways	-53.7	-3.2	-2.9	-4.4	-2.2	ı	-2.1
7.2 Transport by other means	-61.3	-45.0	69.3	-25.1	10.4	60.1	4.9
7.3 Storage	-82.4	-49.8	-80.5	-29.8	-30.0	-100.0	0.7
7.4 Communication	29.0	91.3	-19.0	59.0	78.0	12.3	58.2
8 Banking and Insurance	67.9	-2.9	4.7	-4.3	0.1	3.6	3.3
9 Real Estate, Ownership of Dwellings and Business Services	-54.2	24.4	-14.2	56.0	31.6	34.4	17.5
10 Public Administration	-21.3	0.0	19.9	-0.7	14.7	-1.4	7.6
11 Other Services	22.4	-23.2	25.5	-22.8	-31.5	55.8	-26.1
12 TOTAL GSVA at basic prices							
13 State Domestic Product (SDP)	-12.1	3.3	14.7	4.0	4.9	25.4	12.6

Appendix B: Percentage Changes in 2011-12 Series Over 2004-05 Series (GSDP - Current Prices) (Contd.)

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		2011-12 S	eries - GSDP (Curr	rent Prices)			2004-05 S	eries - GSDP (Cur	rent Prices)	
Year			2011-2012					2011-2012		
Sr. State/Industry No.	Telangana	Tripura	Uttar Pradesh	Uttarakhand	West Bengal	Telangana	Tripura	Uttar Pradesh	Uttarakhand	West Bengal
(1) (2)	(87)	(88)	(68)	(06)	(91)	(92)	(93)	(94)	(95)	(96)
1 Agriculture and Allied Activities	54615	5112	183252	13302		56866	4536	197622	14042	118067
1.1 Agriculture	32368	3190	124154	7640		52355	3197	180258	10358	94462
1.2 Livestock	18848	337	43832	2878						
1.3 Forestry and Logging	1917	1098	12495	2748		3110	851	14593	3649	6396
1.4 Fishing	1481	488	2771	36		1400	488	2772	36	17210
2 Mining and Quarrying	11061	1181	6535	1861		12273	457	6568	927	7558
3 Manufacturing	62152	727	87636	43651		42799	594	79890	23051	48673
4 Electricity, Gas and Water	7835	443	9268	3981		8228	326	3964	3144	10095
5 Construction	22791	1483	84877	8838		26249	3138	57274	8357	31116
6 Trade, Hotels and	37478	2268	69466	11929		40120	2667	85816	23755	84984
Restaurants										
7 Transport Storage and Communication	25318	843	40475	6918		22370	866	57476	5996	42421
7.1 Railways	1614	2	10654	141		1662	2	10918	147	8167
7.2 Transport by other means	18563	467	19959	2191		16301	688	36921	5091	27480
7.3 Storage	175	2	1110	9		0	8	846	47	1044
7.4 Communication	4965	373	8752	4580		4406	168	8792	712	5730
8 Banking and Insurance	21265	571	25182	2933		19269	571	27565	3007	33957
9 Real Estate, Ownership of Dwellings and Business Services	55514	1196	97454	5888		41493	1152	62927	4434	47073
10 Public Administration	11313	2417	42348	4043		11073	2403	40530	4951	27124
11 Other Services	26709	2554	35401	4989		24884	3264	65863	6193	77250
12 TOTAL GSVA at basic	336050	18796	681895	108333						
13 State Domestic Product (SDP)	359434	19208	724050	115328		305622	19974	685496	97858	528316
										(Contd.)

Appendix B: Comparision of GSDP/GDP Estimates of 2011-12 with respect to Base Year (BY) 2011-12 & BY 2004-05 (Industry wise) (Contd.)

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			H	ercentage changes (%	()		117.12 at 14.	
	Year			2011-2012			weights (P	or various ercentage)
Sr. No.	- State/Industry	Telangana	Tripura	Uttar Pradesh	Uttarakhand	West Bengal	2004-05 Series	2011-12 Series
(E)	(2)	(67)	(86)	(66)	(100)	(101)	(102)	(103)
-	Agriculture and Allied Activities	-4.0	12.7	-7.3	-5.3		17.9	18.4
1.1	Agriculture	-38.2	-0.2	-31.1	-26.2		11.4	12.0
1.2	Livestock						4.1	4.0
1.3	Forestry and Logging	-38.4	29.0	-14.4	-24.7		1.6	1.6
1.4	Fishing	5.8	0.0	0.0	0.0		0.8	0.8
7	Mining and Quarrying	-9.9	158.6	-0.5	100.7		2.7	3.2
б	Manufacturing	45.2	22.4	9.7	89.4		14.7	18.1
4	Electricity, Gas and Water supply	-4.8	35.9	133.8	26.6		1.6	2.4
S	Construction	-13.2	-52.7	48.2	5.8		8.2	9.4
9	Trade, Hotels and Restaurants	-6.6	-14.9	-19.1	-49.8		17.4	10.8
٢	Transport Storage and Communication	13.2	-2.6	-29.6	15.4		7.3	6.5
7.1	Railways	-2.9	0.0	-2.4	-3.9		0.7	0.7
7.2	Transport by other means	13.9	-32.1	-45.9	-57.0		5.4	4.1
7.3	Storage		-80.9	31.3	-87.6		0.1	0.1
7.4	Communication	12.7	121.7	-0.5	543.5		1.1	1.6
8	Banking and Insurance	10.4	0.0	-8.6	-2.5		5.7	5.9
6	Real Estate, Ownership of Dwellings and	33.8	3.8	54.9	32.8		10.7	12.9
	Business Services							
10	Public Administration	2.2	0.6	4.5	-18.3		5.9	6.0
11	Other Services	7.3	-21.7	-46.3	-19.5		7.8	6.5
12	TOTAL GSVA at basic prices						100.0	100.0
13	State Domestic Product (SDP)	17.6	-3.8	5.6	17.9			

Appendix B: Percentage Changes in 2011-12 Series Over 2004-05 Series (GSDP - Current Prices) (Concld.)

Source: EPWRFITS Online Data Series

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	al % Diffe- rence	) (18)	388 -4.5	11 -31.2	0 153.2	6 14.0	94 - 39.9	02 33.4		15 -31.5	57 -49.1	03 0.7	03 28.1
Total	d Centr	(17)	07 21839(	3 2770	1 4437	8 6408	5 1028	5 2260	8 1295.	5 3478.	5 7663	8 1021(	0 5151(
	Poolec	(16)	1 208638	19048	11233	13078	61815	30145	10620	3 23811	39006	5 10283	65974
Helper )	1 % Diffe rence	(15)	4 -15.4		234.9	-50.0	-35.7		-18.8	-33.3		-12.6	-34.3
er Worker/ (code 21	Centra	(14)	) 690743	0	7479	1965	29368	0	13685	33764	0	1258	22069
Othe	Pooled	(13)	584516(	0	25045	983	18871	3242	11117	22505	0	1099	14496
Vorker	% Diffe- rence	(12)	3 -0.3	-41.2	85.1	-52.2	-17.1		-53.1	-49.6	-20.7	111.0	-23.6
nal Hired V (code 51)	Central	(11)	8923333	8252	8666	10979	4143	0	25515	53285	1452	12979	42744
Inforr	Pooled	(10)	8898779	4851	18510	5250	3435	0	11956	26873	1151	27381	32675
orker	% Diffe- rence	(6)	10.3	-33.3		-28.0	-38.7	8.8	-20.0	-25.1	-49.6	-23.6	45.0
al Hired W (code 31)	Central	(8)	113587	19157	0	49086	17955	21870	36705	191633	74574	40425	386078
Form	Pooled	(1)	125231	12782	11044	35336	11007	23792	29362	143577	37550	30881	559853
ier 2)	% Diffe- rence	(9)	1.7	384.6	114.7	1432.5	-44.6	325.0	0.3	-34.7	-50.1	-8.4	-17.9
orking Owr ode 11 & 1	Central	(2)	5894734	292	26893	2056	51428	732	53607	69133	611	47441	64212
W <sub>(</sub> (cc	Pooled	(4)	5994637	1415	57732	31509	28502	3111	53773	45160	305	43477	52716
NIC 2008		(3)	1	2	ŝ	.00, '06', '06', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09', '09	,101', ,102', ,103', ,104'	105	,10 <i>6</i> ',	107	11	12	13' and '01632'
Compilation cate- gory		(2)	Crops & Livestock	Forestry	Fishing & aquaculture	Mining & quarrying	Production, process- ing and preservation of meat, fish, fruit, vegetables, oils and fats	Manufacture of dairy products	Manufacture of grain mill products, etc. and animal feeds	Manufacture of other food products	Manufacture of beverages	Manufacture of tobacco products	Manufacture of textiels + cotton ginning
Sr.no.		(E)	1.1	1.2	1.3	7	3.1.1	3.1.2	3.1.3	3.1.4	3.1.5	3.1.6	3.2.1

Appendix C: Comparative Statement N.S.S. 68th ROUND SCHEDULE 10 of Central and Pooled Sample

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	% Diffe- rence	(18)	-42.3	60.7	17.2	-31.9	5.3	-0.1	<b>5</b> .	19.1	Contd.)
Total	Central	(17)	32194	5152	5492	193414	143089	369795	184217	39252	)
	Pooled	(16)	18592	8279	6438	131809	150705	369324	194085	46759	
lper	% Diffe- rence	(15)				-49.9	-50.0		-7.6	-45.9	
Worker/He (code 21)	Central	(14)	0	0	0	435	9469	0	47225	10863	
Other	Pooled	(13)	0	0	0	218	4735	2756	43630	5878	
orker	% Diffe- rence	(12)					90.9	266.1	33.2	58.2	
al Hired W. (code 51)	Central	(11)	0	0	0	0	438	5805	22026	4007	
Inform	Pooled	(10)	0	0	0	0	836	21251	29334	6339	
rker	% Diffe- rence	(6)	-38.5	60.7	8.4	-31.2	12.5	-3.7	-13.0	66.8	
l Hired Wo (code 31)	Central	(8)	27894	5152	5492	170843	120927	343982	23432	18413	
Forma	Pooled	(7)	17159	8279	5951	117612	136012	331280	20380	30711	
, r	% Diffe- rence	(9)	-66.7			-36.8	-25.6	-29.8	10.1	-35.8	
rking Owne de 11 & 12	Central	(5)	4300	0	0	22136	12255	20008	91534	5969	
Wo (co	Pooled	(4)	1433	0	487	13979	9122	14037	100741	3831	
NIC 2008	1	(3)	"262"	"263"	"265", "266", "267"	"27"	"28"	"29", "30"	.91.	"17"	
Compilation cate- gory		(2)	Manufacture of coputer and peripheral equipment	Manufacture of communication equipment	Manufacture of optical and electron- ics products n.e.c	Manufacture of Electrical equipment	Manufacture of machinery and equipment n.e.c	Manufacture of Transport	Manufacture of wood and of products of wood and cork, except furmiture; manufacture of articles of straw and plaiting material	Manufacture of paper and paper products	
Sr.no.		(1)	3.4.2	3.4.3	3.4.4	3.4.5	3.4.6	3.4.7	3.5.1	3.5.2	

(Contd.)
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Appendix

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	% Diffe- rence	(18)	30.8	-19.8	- 14.7	-28.0	-30.4	-8.7	14.5
Total	Central	(17)	88466	39166	207135	112863	255060	332069	202579
	Pooled	(16)	115729	31400	176782	81232	177549	303334	231882
elper	% Diffe- rence	(15)	-59.3		-50.0		-36.5	-19.3	20.4
Worker/He (code 21)	Central	(14)	10510	0	11400	0	14205	38645	13335
Other	Pooled	(13)	4278	0	5700	0	9027	31168	16052
orker	% Diffe- rence	(12)	-50.0	-50.0	-52.4		-36.7	-15.4	-12.0
al Hired W (code 51)	Central	(11)	2019	7701	12355	0	9250	163225	26798
Inform	Pooled	(10)	1010	3851	5882	0	5856	138047	23573
rker	% Diffe- rence	(6)	68.5	-12.4	-5.7	-27.1	-30.8	-14.3	75.3
1 Hired Wc (code 31)	Central	(8)	51658	31465	164951	109422	204417	86107	43851
Forma	Pooled	(7)	87066	27549	155563	79775	141422	73807	76889
r.	% Diffe- rence	(9)	-3.7		-47.7	-57.7	-21.9	36.8	-2.7
rking Owne de 11 & 12	Central	(5)	24279	0	18429	3441	27188	44092	118595
Woi (co	Pooled	(4)	23375	0	9637	1457	21244	60312	115368
NIC 2008		(3)	"18"	"19"	"20"	"21"	"22"	"23"	"31"
Compilation cate- gory		(2)	Painting and repro- duction of recorded media except publishing	Manufacture of coke and refined petroleum products	Manufacture of chemical and chem- ical products except pharmaceuticals, medicinal and botanical products	Manufacture of pharmaceutical; medicinal chemical and botanical prod- ucts	Manufacture of rubber & plastic products	Manufacture of other non-metallic mineral products	Manufacture of furniture
Sr.no.		(1)	3.5.3	3.5.4	3.5.5	3.5.6	3.5.7	3.5.8	3.5.9

	% Diffe- rence	(18)	-22.1	-14.0	-38.2	19.4	-51.8	-36.0	0.2	-16.5	-18.4	(Contd.)
Total	Central	(17)	420044	102692	110600	11008	16426	67845	2676158	461208	667209	0
	Pooled	(16)	327424	88342	68310	13139	7917	43389	2681766	385263	544690	
lper	% Diffe- rence	(15)	-18.9	-50.0				-47.9	-12.6	-38.4	-28.0	
Worker/He code 21)	Central	(14)	51861	8411	0	0	0	10590	64630	45495	104298	
Other )	Pooled	(13)	42057	4208	0	0	0	5516	56455	28022	75144	
orker	% Diffe- rence	(12)	-32.3	-21.1				-12.8	3.0	-38.7	16.2	
d Hired Wo code 51)	Central	(11)	12485	3814	0	0	0	5503	1709940	39742	51708	
Inform: (	Pooled	(10)	8448	3011	0	0	0	4799	1761488	24362	60068	
ker	% Diffe- rence	(6)	-23.3	-17.8	-38.2	19.4	-51.8	-33.3	-4.9	0.6	-15.2	
Hired Wor code 31)	Central	(8)	179926	44854	110600	11008	16426	21326	532698	177033	200169	
Formai (	Pooled	(7)	137976	36885	68310	13139	7917	14231	506713	178123	169715	
	% Diffe- rence	(9)	-21.0	-3.0				-38.1	-3.2	-22.2	-22.9	
king Owne de 11 & 12)	Central	(5)	175772	45613	0	0	0	30426	368890	198938	311034	
Woi (coi	Pooled	(4)	138943	44238	0	0	0	18843	357110	154756	239763	
NIC 2008		(3)	"32"	"33"	"351"	"352", "353"	"36"	"37", "38", "39"	"41", "42", "43"	"45" and "473"	"46" and "92001"	
Compilation cate- gory		(2)	Other manufacturing	Repair and installa- tion of machinery and equipment	Electricity	Gas-Manufacture & distribution	Water Supply	Sewerage, waste management and remediation activities	Construction	Trade and repair of motor vehicles (in- cluding motor cycles) and retail sale of automotive fule	Wholesale trade except of motor vehicles and motor cycles + Wholesale of lottery tickets	
Sr.no.		(1)	3.5.10	3.5.11	4.1	4.2	4.3	4. 4.	S	6.1.1	6.1.2	

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otal	central % Diffe-	(17) (18)	1.6 -1.6	50756 -13.3	71391 3.6	91993 -29.6	31438 0.2	17929 1.5	53508 -37.8	8828 8.5	34473 19.3	15370 -28.6	12991 26.6	100 225
T	Pooled C	(16)	3089218 31	217467 2:	798913 7	135157 19	1635365 16	1602100 15	33266 5	42112 3	41114 3	82369 1	54438 4	35209 4
per	% Diffe- rence	(15)	-3.9	1885.4	21.7		-49.4	-49.4						
Worker/Hel code 21)	Central	(14)	562120	609	63525	0	37956	37956	0	0	0	0	0	C
Other 1 (	Pooled	(13)	539933	12091	77315	0	19193	19193	0	0	0	0	0	0
rker	% Diffe- rence	(12)	-1.1	-30.5	-32.7	-12.8	32.1	40.3	-44.6			-31.3	-6.1	
il Hired Wc code 51)	Central	(11)	60683	4122	72869	3205	92480	83588	8892	0	0	49417	10947	0
Informa (	Pooled	(10)	60040	2863	49035	2796	122165	117237	4929	0	0	33972	10277	c
ker	% Diffe- rence	(6)	-3.6	-41.2	-5.2	-30.0	-4.9	-5.8	628.9	8.5	19.3	-26.7	21.2	-20.0
Hired Wor code 31)	Central	(8)	663764	90233	452974	184827	651255	650383	871	38828	34473	51735	32044	41417
Formai (	Pooled	(7)	640186	53080	429256	129314	619244	612895	6349	42112	41114	37920	38850	33150
	% Diffe- rence	(9)	-0.2	-4.1	33.7	-23.1	2.9	8	-49.7			-26.3		-50.0
king Owne de 11 & 12)	Central	(5)	1852088	155792	182023	3961	849747	806002	43745	0	0	14218	0	4118
Wor (coc	Pooled	(4)	1849059	149433	243307	3047	874763	852775	21988	0	0	10477	5311	2059
NIC 2008	'	(3)	"47" and "92002" ("473" (exclu- ded))	"95"	"55", "56"	"491"	"492"	"492" and ("49226" and "49232" (exclu- ded))	"49226", "49232"	"50"	"51"	"522"	"521"	"531"
Compilation cate- gory		(2)	Retail trade except of motor vehicles and motor cycles + retail sale of lottery tickets	Repair of coputers and personal and household goods	Hotels & Restaurants	Transport via Railways	Road transport	Mechanized Road Transport	Non-mechanised Road Transport	Water Transport	Air Transport	Services incidental to transport	Storage	<b>Postal activities</b>
Sr.no.		Ē	6.1.3	6.1.4	6.2	7.1.1	7.1.2	7.1.2.1	7.1.2.2	7.1.3	7.1.4	7.1.5	7.2	731

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oled     Central price     % price     Pooled     Central price     % price       7     (8)     (9)     (10)     (11)     (12)     (12)     (14)     (15)     (17)     (18)       842     5703     389     0     0     1     (12)     (13)     (14)     (15)     (16)     (16)       841     1987     389     0     0     0     0     25064     29877     (16)       941     543     139     0     0     1     137     0     14927     15340     840     116       2367     633706     81     17162     14563     173     37536     81     116     16       31     44794     533     5471     14977     15461     16     16       31     11936     149     149	Compilation cate- NIC 2008 gory	- NIC 2008	~ '	Wo (co	rking Owne de 11 & 12)	ar (	Forma (	l Hired Wor code 31)	ker	Inform	al Hired Wo (code 51)	orker	Other	Worker/He (code 21)	lper		Total	
7)     (8)     (9)     (10)     (11)     (12)     (13)     (14)     (15)     (17)     (18)       982     67033     -389     0     0     0     0     0     45382     69867     -55.0       344     19874     -32.9     431     1294     -66.7     1190     0     25064     29871     -16.1       3713     116497     -5.8     837     0     0     0     0     14927     125410     -8.4       9713     116497     -5.8     837     0     0     0     114927     125410     -8.4       9713     1159     0     0     137     0     24520     48840     11.6       969     -4137     13.9     0     0     137     0     712203     775336     -8.1       961     -4194     -53.3     5747     11495     5961     -5961     -69       913     21934     -481     0     0     0     12203	Pooled Central % Diffe- rence	Pooled Central % Diffe-	Pooled Central % Diffe-	Central % Diffe- rence	% Diffe- rence		Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence
982     67033     -384     0     0     1     4532     69867     -3530       344     19874     -32.9     431     1294     -66.7     1190     0     25064     29877     -161       773     116497     -5.8     837     0     -6     1390     0     -5     9874     -5410     -844     -161       773     116497     -5.8     837     0     0     0     0     -55064     25870     63870     -844     -161       2901     44137     13.9     0     0     137     0     0     -1434     -5430     48840     1166       266     -8.1     17162     14563     178     310     0     -12203     75336     -5453     -54536     -54536     -54536     -54536     -54536     -54536     -54536     -54536     -54547     -54536     -54547     -55536     -54547     -54547     -54547     -54547     -54547     -54547     -54547     -54547 <td>(2) (3) (4) (5) (6)</td> <td>(3) (4) (5) (6)</td> <td>(4) (5) (6)</td> <td>(5) (6)</td> <td>(9)</td> <td></td> <td>(7)</td> <td>(8)</td> <td>(6)</td> <td>(10)</td> <td>(11)</td> <td>(12)</td> <td>(13)</td> <td>(14)</td> <td>(15)</td> <td>(16)</td> <td>(17)</td> <td>(18)</td>	(2) (3) (4) (5) (6)	(3) (4) (5) (6)	(4) (5) (6)	(5) (6)	(9)		(7)	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
344     19874     -32.9     431     1294     -66.7     1190     0     25064     29877     -16.1       7773     116497     -5.8     837     0     0     0     114927     123410     -8.4       290     44137     13.9     0     0     0     0     14927     123410     -8.4       291     44137     13.9     0     0     0     71203     775336     -8.1       2936     633706     -8.1     17162     14563     17.8     310     0     71203     775336     -8.1       204     44794     -53.3     5747     11495     5901     3519     694     143947     154671     6.9       301     21934     -48.1     0     0     5961     3519     694     149610     -1.3       301     21934     -48.1     10     0     5951     5951     6954     -9173     154671     6.9       301     21934     5141	Courier activities "532" 4400 2834 55.3	"532" 4400 2834 55.3	4400 2834 55.3	2834 55.3	55.3		40982	67033	-38.9	0	0		0	0		45382	69867	-35.0
7773     116497     -5.8     837     0     0     0     114927     125410     -8.4       290     41137     13.9     0     0     137     0     54520     48840     11.6       290     41137     13.9     0     0     1     137     0     5453     48840     11.6       367     633706     -8.1     17162     14563     13.0     0     7     712203     775336     8.1       913     44794     -53.3     5747     11495     -50.0     5961     3519     694     14947     154671     -69       391     21934     -48.1     0     0     519     694     143047     154671     -69       391     21934     -48.1     0     0     519     694     94973     105060     -96       32359     -583     5747     11495     500     0     -48975     49610     -1.3       32338     337201     -4.3     0 <td>Activities of cable "61103" 10099 8709 16.0 operators</td> <td>"61103" 10099 8709 16.0</td> <td>10099 8709 16.0</td> <td>8709 16.0</td> <td>16.0</td> <td></td> <td>13344</td> <td>19874</td> <td>-32.9</td> <td>431</td> <td>1294</td> <td>-66.7</td> <td>1190</td> <td>0</td> <td></td> <td>25064</td> <td>29877</td> <td>-16.1</td>	Activities of cable "61103" 10099 8709 16.0 operators	"61103" 10099 8709 16.0	10099 8709 16.0	8709 16.0	16.0		13344	19874	-32.9	431	1294	-66.7	1190	0		25064	29877	-16.1
290     44137     13.9     0     0     137     0     54520     48840     11.6       2367     633706     -8.1     17162     14563     17.8     310     0     71203     75336     -8.1       313     44794     -53.3     5747     11495     -50.0     5961     3519     69.4     143947     154671     -6.9       311     21934     -48.1     0     0     5961     3519     69.4     143947     154671     -6.9       311     21934     -48.1     0     0     5961     3519     69.4     94973     105060     9.6       321     21934     -48.1     0     0     0     0     -6.9       321     2193     -48.1     11495     -50.0     0     0     48975     49610     -1.3       2288     337201     -4.3     0     0     0     0     -48975     365320     -6.3	Telecommunication "61" and 4317 8913 -51.6 1 "61103" (exclu- ded)	n "61" and 4317 8913 -51.6 1 "61103" (exclu- ded)	4317 8913 -51.6 1	8913 -51.6 1	-51.6 1	-	09773	116497	-5.8	837	0		0	0		114927	125410	-8.4
2367     633706     -8.1     17162     14563     17.8     310     0     712203     775336     -8.1       913     44794     -53.3     5747     11495     -50.0     5961     3519     69.4     143947     154671     -6.9       391     21934     -48.1     0     0     5961     3519     69.4     143977     154671     -6.9       391     21934     -48.1     0     0     7     5961     3519     69.4     94973     15606     -9.6       392     21934     -48.1     0     0     0     1499     -6.0     -9.6       522     22859     -58.3     5747     11495     -50.0     0     0     -48975     49610     -1.3       2538     337201     -4.3     0     0     0     0     342338     365320     -6.3	Recording, "58", 4093 4703 -13.0 5 Publishing and "59", "60" Broadcasting services	"58", 4093 4703 -13.0 5 "59","60"	4093 4703 -13.0 5	4703 -13.0 5	-13.0 5	ŝ	0290	44137	13.9	0	0		137	0		54520	48840	11.6
913 44794 -53.3 5747 11495 -50.0 5961 3519 69.4 143947 154671 -6.9   391 21934 -48.1 0 0 5961 3519 69.4 94973 105060 -9.6   322 22859 -58.3 5747 11495 -50.0 0 0 48975 49610 -1.3   538 337201 -4.3 0 0 0 0 342338 365320 -6.3	Financial Services "64", 112364 127067 -11.6 58 "65", "66"	"64", 112364 127067 -11.6 58 "65","66"	112364 127067 -11.6 58	127067 -11.6 58	-11.6 58	58	2367	633706	-8.1	17162	14563	17.8	310	0		712203	775336	-8.1
391     21934     -48.1     0     0     5961     3519     69.4     94973     105060     -9.6       522     22859     -58.3     5747     11495     -50.0     0     0     48975     49610     -1.3       5538     337201     -4.3     0     0     0     0     342338     365320     -6.3	Real estate and "68" 111326 94863 17.4 2 ownership of dwellings	"68" 111326 94863 17.4 2	111326 94863 17.4 2	94863 17.4 2	17.4 2	0	0913	44794	-53.3	5747	11495	-50.0	5961	3519	69.4	143947	154671	-6.9
522 22859 -58.3 5747 11495 -50.0 0 0 48975 49610 -1.3   2538 337201 -4.3 0 0 0 342338 365320 -6.3	Real estate activities "68" and 77621 79607 -2.5 1 "681" (ex cluded)	ss "68" and 77621 79607 -2.5 1 "681" (ex cluded)	77621 79607 -2.5 1	79607 -2.5 1	-2.5 1	-	1391	21934	-48.1	0	0		5961	3519	69.4	94973	105060	9.6-
2538 337201 -4.3 0 0 0 0 342338 365320 -6.3	Ownership of "681" 33706 15256 120.9 9 dwellings	"681" 33706 15256 120.9 9	33706 15256 120.9 9	15256 120.9 9	120.9 9	6	522	22859	-58.3	5747	11495	-50.0	0	0		48975	49610	-1.3
	Computer and "62", "63" 19800 28119 -29.6 32 information related services	"62","63" 19800 28119 -29.6 32	19800 28119 -29.6 32	28119 -29.6 32	-29.6 32	32	2538	337201	4.3	0	0		0	0		342338	365320	-6.3

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Sr.no.	Compilation cate- gory	NIC 2008	Wor (cot	king Owner de 11 & 12)		Formal	Hired Worl code 31)	(er	Informa. (6	l Hired Wc code 51)	rker	Other <sup>1</sup>	Worker/Hel code 21)	per		Total	
		1	Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence	Pooled	Central	% Diffe- rence
(E)	(2)	(3)	(4)	(5)	(9)	(2)	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
9.2.2	Professional, scientific and technical activities (including R & D)	"70", "71", "72", "73", "74", "75"	98017	88904	10.3	94521	160/26	-2.6	3522	3040	15.9	7689	12948	-23.6	205957	201983	2.0
9.2.3.1	Legal activities	"691"	51809	53023	-2.3	57766	8792	557.0	0	0		0	0		109575	61815	77.3
9.2.3.2	Accounting & book keeping activities	"692"	37951	31991	18.6	44525	46711	-4.7	0	0		4777	2528	89.0	87253	81230	7.4
9.2.3.3	Rental and leasing services	"77"	20830	16346	27.4	2339	0		6871	12792	-46.3	4805	0		34845	29138	19.6
9.2.3.4	Administrative and support services excluding rental and leasing services	"78", "79", "80", "81", "82"	46002	47560	ώ	312272	335216	-6.8	1685	2464	-31.6	2761	6239	-55.7	362720	391479	-7.3
10	Public Adminis- tration and defence	"84"	933	0		1054876	873935	20.7	11922	13612	-12.4	0	0		1067731	887547	20.3
11.1	Education (incl- uding coaching and tution)	"85"	83782	106118	-21.0	1198339	1332799	-10.1	3084	853	261.5	2412	4419	-45.4	1287617	144189	-10.8
11.2	Human health activities and care services with/ with- out accommodation	"86", "87", "88"	138056	166810	-17.2	346673	322447	7.5	2731	3432	-20.4	12270	7423	65.3	499730	500112	-0.1

(Contd.)

	% Diffe- rence	(18)	-21.8	8.9	-3.9	-1.0	-4.3	-2.5	-27.5	-4.3
Total	Central	(17)	107406	70991	105970	256096	615302	309765	806756	46288478
	Pooled	(16)	83987	77308	101855	253533	588783	302085	584663	44304778
lper	% Diffe- rence	(15)	-59.1	-51.6	-11.1	-4.7	-22.6	-50.0		-14.9
Worker/He (code 21)	Central	(14)	4024	6259	27075	23227	51848	14484	0	8383363
Other	Pooled	(13)	1644	3029	24081	22130	40131	7242	0	7136787
orker	% Diffe- rence	(12)	-6.1			-24.7	-12.8	-39.5	-5.3	-0.5
al Hired Wc (code 51)	Central	(11)	13764	0	0	15701	11540	82112	68603	11855259
Informs (	Pooled	(10)	12924	6233	400	11826	10066	49687	64969	11791017
ker	% Diffe- rence	(6)	-47.6	-28.9		-35.3	-29.4	71.7	-29.8	-5.2
l Hired Wor (code 31)	Central	(8)	60226	40976	0	49644	112143	105354	738153	12516957
Forma	Pooled	(7)	31581	29123	1458	32123	79149	180855	517991	11861705
-	% Diffe- rence	(9)	28.7	63.8	-3.8	11.9	4.5	-40.4		-0.1
rking Owne de 11 & 12)	Central	(5)	29392	23756	78895	167524	439771	107815	0	13532899
Woi (coi	Pooled	(4)	37838	38923	75916	187454	459437	64301	1703	13515269
NIC 2008		(3)	"90", "91", "92", "93" and ("92001" and "92002" (exclu- ded))	"94"	"9601"	"9602"	"14105"	"9609", "9603"	"76"	
Compilation cate- gory		(2)	Recreational, cultural and sporting activities	Activities of membership organisation	Washing & cleaning of textiles and fur products	Hair dressing and other beauty treatment	Custom tailoring	Other personal service activities	Private households with employed persons	All compilation categories
Sr.no.		(1)	11.3	11.4	11.5.1	11.5.2	11.5.3	11.5.4	11.6	

[% Difference represents Pooled minus Central]
(Rs Lakhs)	% Difference	(11)	-2.3			-96.1	354.5	52.7	-29.6	3.5	22.6	-19.6	10.0 ( <i>Contd.</i> )
	Central	(10)	14831			769	62985	80576	138713	536932	125555	32399	744462
,	Pooled	(6)	14497			30	286269	123003	97722	555786	153953	26064	670124
	NIC 2008	(8)	01 ('01632'ex- cluded)	2	3	05','06','07','08','0 9'	101','102','103','10 4'	105	106','108'	107	11	12	13' and '01632'
	Compilation Category	(1)	Crops & Livestock	Forestry	Fishing & aquaculture	Mining & quarrying	Production, processing and preservation of meat, fish, fruit, vegetables, oils and fats	Manufacture of dairy products	Manufacture of grain mill products, etc. and animal feeds	Manufacture of other food products	Manufacture of beverages	Manufacture of tobacco products	Manufacture of textiels + cotton ginning
	srl_no	(9)	1.1	1.2	1.3	5	3.1.1	3.1.2	3.1.3	3.1.4	3.1.5	3.1.6	3.2.1
	Sub-Group name	(5)	Agriculture, forestry & fishing	Agriculture, forestry & fishing	Agriculture, forestry & fishing	Mining & quarrying	Manufacturing of food products, beverages and tobacco	Manufacturing of food products, beverages and tobacco	Manufacturing of food products, beverages and tobacco	Manufacturing of food products, beverages and tobacco	Manufacturing of food products, beverages and tobacco	Manufacturing of food products, beverages and tobacco	Manufacturing of textiles, apparel & leather prod- ucts
	Sub- group code	(4)	1	1	1	7	3.1	3.1	3.1	3.1	3.1	3.1	3.2
н.	Group name	(3)	Agriculture, forestry & fishing	Agriculture, forestry & fishing	Agriculture, forestry $\&$ fishing	Mining & quarrying	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing
	group code	(2)	-	-	1	7	ε	б	ε	ε	ε	ω	ε
	Sr.srt	(1)	-	7	б	4	S	9	L	×	6	10	=

Appendix D: Annual Survey of Industries: Industry Groupwise Estimation of GVA of Central and Pooled Samples

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% Difference	(11)	16.1	-34.1	-60.4	-62.8	-10.8	12.6	-12.4	-0.4	34.8	166.1	-9.3
Central	(10)	181202	17678	1007627	141976	1089694	264963	10768	26080	72978	869858	1513898
Pooled	(6)	210289	11647	398636	52829	971838	298475	9433	25975	98395	2315105	1373648
NIC 2008	(8)	14' ('14105'ex- cluded)	15'	241' and '2431'	242' and '2432'	25'	261','264','268'	262 '	263 '	265','266','267 '	27 °	28 '
Compilation Category	(2)	Manufacture of wearing apparel, except custom tailoring	Manufacture of leather and related products	Manufacture of Basic Iron and Steel + Casting of iron and steel	Manufacture of basic precious and non- ferrous metals + Casting of non-ferrous metals	Manufacture of fabricated metal prod- ucts, except machinery and equpment	Manufacture of electronic component, consumer electronics, magnetic and optical media	Manufacture of coputer and peripheral equipment	Manufacture of communication equip- ment	Manufacture of optical and electronics products n.e.c	Manufacture of Electrical equipment	Manufacture of machinery and equip- ment n.e.c
srl_no	(9)	3.2.2	3.2.3	3.3.1	3.3.2	3.3.3	3.4.1	3.4.2	3.4.3	3.4.4	3.4.5	3.4.6
Sub-Group name	(5)	Manufacturing of textiles, apparel & leather prod- ucts	Manufacturing of textiles, apparel & leather prod- ucts	Manufacturing of metal products	Manufacturing of metal products	Manufacturing of metal products	Manufacturing of machinery and equipment	Manufacturing of machinery and equipment	Manufacturing of machinery and equipment	Manufacturing of machinery and equipment	Manufacturing of machinery and equipment	Manufacturing of machinery and equipment
Sub- group code	(4)	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4
Group name	(3)	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing
group code	(2)	ŝ	б	ε	ω	ε	ω	ε	б	б	б	б
Sr.srt	E	12	13	14	15	16	17	18	19	20	21	22

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(Rs Lakhs)	% Difference	(11)	6.0-	71.8	-16.5	-11.2	0.8	12.9	13.4	-26.4	19.6	-12.9	6.8
	Central	(10)	1536564	17896	151736	264340	3541132	1419596	78899	1042661	273093	126466	295427
	Pooled	(6)	152254	30738	126717	234695	3571206	1603063	894305	767640	326646	110184	315431
	NIC 2008	(8)	29','30 '	16 '	. 11	18,	19,	20 '	21、	22、	23,	31,	32 '
	Compilation Category	(2)	Manufacture of Transport	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting material	Manufacture of paper and paper prod- ucts	Painting and reproduction of recorded media except publishing	Manufacture of coke and refined petro- leum products	Manufacture of chemical and chemical products except pharmaceuticals, medicinal and botanical products	Manufacture of pharmaceutical; medici- nal chemical and botanical products	Manufacture of rubber & plastic prod-ucts	Manufacture of other non-metallic min- eral products	Manufacture of furniture	Other manufacturing
	srl_no	(9)	3.4.7	3.5.1	3.5.2	3.5.3	3.5.4	3.5.5	3.5.6	3.5.7	3.5.8	3.5.9	3.5.10
	Sub-Group name	(5)	Manufacturing of machinery and equipment	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods	Manufacturing of other goods
	Sub- group code	(4)	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	Group name	(3)	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing
	group code	(2)	ŝ	ŝ	ŝ	ŝ	ε	ε	ŝ	ŝ	ŝ	ŝ	3
	Sr.srt	(1)	23	24	25	26	27	28	29	30	31	32	33

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(Rs Lakhs)	% Difference	(11)	-31.3	-7.1	2.5		-16.0		44.2			2.0	(Contd.)
	Central	(10)	49943	144383	51279		9327		144171			6622	
	Pooled	(6)	34312	134117	52580	66	7837	1125	207957	28	32	6756	
	NIC 2008	(8)	33 '	351 '	352','353 '	36 '	37','38','39'	41','42','43'	45° and °473°	46' and'92001'	47' and' 92002' ('473' excluded))	95 '	
	Compilation Category	(7)	Repair and installation of machinery and equipment	Electricity	Gas-Manufacture & distribution	Water Supply	Sewerage, waste management and remediation activities	Construction	Trade and repair of motor vehicles (in- cluding motor cycles) and retail sale of automotive fule	Wholesale trade except of motor vehicles and motor cycles + Wholesale of lottery tickets	Retail trade except of motor vehicles and motor cycles + retail sale of lottery tickets	Repair of coputers and personal and household goods	
	srl_no	(9)	3.5.11	4.1	4.2	4.3	4.4	5	6.1.1	6.1.2	6.1.3	6.1.4	
	Sub-Group name	(5)	Manufacturing of other goods	Electricity, gas, water supply and other utility services	Construction	Trade & repair services	Trade & repair services	Trade & repair services	Trade & repair services				
	Sub- group code	(4)	3.5	4	4	4	4	5	6.1	6.1	6.1	6.1	
	Group name	(3)	Manufacturing	Electricity, gas, water supply and other utility services	Construction	Trade, repair, hotels & restaurants	Trade, repair, hotels & restaurants	Trade, repair, hotels & restaurants	Trade, repair, hotels & restaurants				
	group code	(2)	ю	4	4	4	4	5	9	9	9	9	
	Sr.srt	(1)	34	35	36	37	38	39	40	41	42	43	

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(Rs Lakhs)	% Difference	(11)									204.8	(Contd.)
	Central	(10)									10608	
	Pooled	(6)						1111			32333	
	NIC 2008	(8)	55','56'	491 '	492 '	492 ' and ('49226' and'49232' excluded))	49226','49232'	50 '	51 '	522 '	521 *	
	Compilation Category	(1)	Hotels & Restaurants	Transport via Railways	Road transport	Mechanized Road Transport	Non-mechanised Road Transport	Water Transport	Air Transport	Services incidental to transport	Storage	
	srl_no	(9)	6.2	7.1.1	7.1.2	7.1.2.1	7.1.2.2	7.1.3	7.1.4	7.1.5	7.2	
	Sub-Group name	(5)	Hotels & Restaurants	Transport	Storage							
	Sub- group code	(4)	6.2	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.2	
	Group name	(3)	Trade, repair, hotels & restaurants	Transport, storage, com- munication & services related to broadcasting								
	group code	(2)	9	٢	٢	٢	٢	٢	٢	٢	٢	
	Sr.srt	(1)	44	45	46	47	48	49	50	51	52	

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(KS Lakiis)	% Dufference	(11)					-24.1				
	Central	(10)					35723				
	Pooled	(6)					27100				
	NIC 2008	(8)	531 '	532 '	61103 '	61 ' ('61103 ' excluded)	58', 59', 60 '	64`,`65`,`66`	68 '	(68'and '681' excluded)	681 '
	Compilation Category	(1)	Postal activities	Courier activities	Activities of cable operators	Telecommunication	Recording, Publishing and Broadcasting services	Financial Services	Real estate and ownership of dwellings	Real estate activities	Ownership of dwellings
-	srl_no	(9)	7.3.1	7.3.2	7.3.3	7.3.4	7.3.5	~	1.0	9.1.1	9.1.2
	Sub-Group name	(5)	Communication & ser- vices related to broadcas- ting	Financial Services	Real estate and ownership 9 of dwellings	Real estate and ownership of dwellings	Real estate and ownership of dwellings				
1-10 0	Sub- group code	(4)	7.3	7.3	7.3	7.3	7.3	8	9.1	9.1	9.1
	Group name	(3)	Transport, storage, com- munication & services related to broadcasting	Financial Services	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services				
	group code	(2)	٢	٢	٢	٢	٢	8	6	6	6
	Sr.srt	(1)	53	54	55	56	57	58	59	60	61

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(Rs Lakhs)	% Difference	(11)		52134.4				-24.6			(Contd.)
	Central	(10)		32				2115			
	Pooled	(6)	144	16715				1595			
	NIC 2008	(8)	62','63 '	70°, 71°, 72°, 73°, 7 4°, 75°	. 169	· 592 ·	. 11	78','79','80','81','8 2'	84 ' 85 '	86','87','88'	
	Compilation Category	(7)	Computer and information related ser- vices	Professional, scientific and technical activities (including R & D)	Legal activities	Accounting & book keeping activities	Rental and leasing services	Administrative and support services excluding rental and leasing services	Public Administration and defence Education (including coaching and intion)	Human health activities and care services with/without accommodation	
	srl_no	(9)	9.2.1	9.2.2	9.2.3.1	9.2.3.2	9.2.3.3	9.2.3.4	01	11.2	
	Sub-Group name	(5)	Professional services	Professional services	Administrative & support service activities and other professional activi- ties	Public Administration and defence Other services	Other services				
	Sub- group code	(4)	9.2	9.2	9.2.3	9.2.3	9.2.3	9.2.3	10	Ξ	
	Group name	(3)	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services	Real estate, ownership of dwellings and proffes- sional services	Public Administration and defence Other services	Other services	
	group code	(2)	6	6	6	6	6	6	10 11	11	
	Sr.srt	(1)	62	63	64	65	66	67	68 69	70	

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(Rs Lakhs)	% Difference	(11)			175.3					5.2
	Central	(10)			793					16846750
	Pooled	(6)			2183		1988			17724576
	NIC 2008	(8)	90', '91', '92', '93' ('92001' and '92002' excluded))	. 76	9601 '	9602 '	14105 '	9609','9603'	. 16	
	Compilation Category	(7)	Recreational, cultural and sporting acti- vities	Activities of membership organisation	Washing & cleaning of textiles and fur products	Hair dressing and other beauty treat- ment	Custom tailoring	Other personal service activities	Private households with employed per- sons	Total (sr. 1 to 77)
	srl_no	(9)	11.3	11.4	11.5.1	11.5.2	11.5.3	11.5.4	11.6	
	Sub-Group name	(5)	Other services	Other services	Personal Services & Other Services, n.e.c	Personal Services & Other Services, n.e.c	Personal Services & Other Services, n.e.c	Personal Services & Other Services, n.e.c	Private households with employed persons	
	Sub- group code	(4)	11	11	11.5	11.5	11.5	11.5	11.6	
	Group name	(3)	Other services	Other services	Other services	Other services	Other services	Other services	Other services	
	group code	(2)	11	11	Π	11	11	11	11	
	Sr.srt	(1)	71	72	73	74	75	76	77	

#### Appendix E

#### Implementation of the 13th Finance Commission Recommendations and SSSP<sup>1</sup> in the State of Maharashtra With a View to Improving its GSDP Estimates

#### 13th Finance Commission (FC)

The 13th FC has made recommendations to improve State and District Statistical Systems so as to get more reliable estimates of various economic aggregates including District Domestic Product (DDP), with a provision of grant-in-aid of Rs. one crore for each district in five instalments. The main objectives of the programme were to enhance the quality of data, empowering and strengthening the statistical framework and systems to provide comprehensive and standardized economic and social data to support policy and decision making and to build capacity of personnel compiling the statistical information to sustain the activity. The recommendations were (i) Measurement of GSDP across states should be standardised; and (ii) all states should generate district income statistics in accordance with the guidelines of the Central Statistics Office (CSO), Government of India. To achieve these, CSO decided on five milestones, viz., (i) Preparation and maintenance of Business Register (BR) at District level, (ii) Preparation of Local Bodies' accounts, (iii) Improvement of data in respect of Farm Activities, (iv) Pooling of Central & State sample data for generating district level parameters, and (v) Providing network connectivity amongst districts with State headquarters.

#### Action taken by the State

The Directorate of Economics and Statistics (DES), Government of Maharashtra, received two instalments of the grants-in-aid under the 13th FC scheme for 'Strengthening of State and District Statistical Systems'. Under this scheme, DES, with limited timeline and limited resources, has strived to achieve at least three milestones, namely, Providing network connectivity at State level and District level offices, Pooling of State and Central data for NSS: 66th Round schedule 1.0 and 10, 67th Round schedule 2.34 and 68th Round Schedule 1.0 and 10 are completed and reports published. Likewise, pooling of ASI: 2006-07 to 2010-11 completed and reports published.

Compilation of Local Bodies accounts has been completed for 2010-11, 2011-12 & 2012-13, while the same are in progress for 2013-14 to 2015-16. For compilation of online data of local bodies accounts, software has been developed and accordingly instructions along with username and password have been given to concerned local bodies. Based on data collected so far, accounts are being prepared.

Under the milestone 'Preparation and Maintenance of Business Register', listing of enterprises (around 49.5 lakh) registered under seven acts (Companies Act 1956, Factories Act 1948, Shops and Commercial Establishments Act, Societies Registration Act, Cooperative Societies Act, Khadi and Village Industries Board, Directorate of Industries (District Industries Centre) through the authorities specified by CSO (Registrar of Companies, Chief Inspector of Factories, Labour Commissioner, Registrar of Societies, Khadi and Village Industries Board, General Manager or Deputy Commissioner) has been completed for all the districts of the State except for four districts, viz. Thane, Pune, Raigad and Jalna. Listing of remaining enterprises in these four districts (Thane, Pune, Raigad and Jalna) is in progress. Verification of the establishments listed has been initiated in 11 districts.

Studies to estimate area, production, peak arrival period of 10 major crops, rates & ratios of some horticulture crops and some of the condiments and spices, inputs, etc., have also been initiated by outsourcing to the empanelled agencies to improve the estimates of GVA of Crop sector at district level.

<sup>1</sup> Triple S Plan: State Strategic Statistical Plan (SSSP).

#### India Statistical Strengthening Project (ISSP)

The Central Statistics Office (CSO), Government of India (GoI), has implemented the India Statistical Strengthening Project (ISSP) formulated with the assistance from the World Bank for the strengthening of Indian Statistical System as a follow-up of the some of the measures suggested by the National Statistical Commission for improving the statistical system with primary focus on strengthening of State Statistical Systems. In August 2016, GoI issued operational guidelines for the preparation of "State Strategic Statistical Plan (SSSP)" to the participating States. SSS is now a Central Sector scheme with 100% funding from the Centre, its implementation period being 2017-18 and 2018-19.

Funds sanctioned for the State under SSSP are Rs. 38.56 crore. CSO has specified 20 key activities which include estimation of State and District Domestic Product, Capital Formation and Savings, estimation of the contribution of Local bodies, compilation of Data on Major Fiscal Variables, compilation of IIP/ WPI/ CPI, estimation of Crop Area and Production Statistics along with collection and compilation of Health, Morbidity, Mortality & Family Welfare Statistics, Education and Literacy Statistics, Labour & Employment Statistics, Housing Statistics, Birth and Death Registration Statistics & Population, Electricity Production & Distribution Statistics, Environment and Forestry Statistics, Forestry Statistics, Water Supply and Sanitation Statistics, Transport Statistics, Statistics for Local Area Planning and Participation in the Surveys of NSSO & ASI.

#### The State's Progress on SSSP

The activities of estimation of GSDP, DDP, and compilation of data of local bodies are done regularly by Maharashtra DES. However, to improve the estimates of a few sectors like Construction & Trade, studies are proposed under SSSP (details given below). Account Analysis of various Non-Departmental Commercial Undertakings (NDCUs), and Autonomous institutions which are required in the process of compilation of GSDP, are proposed to be outsourced. Various departments have been approached for collection of statistics specified in the 20 key activities.

Sr.No.	Name of Survey	Description
(1)	(2)	(3)
1	Cement use as input in other industries	Percentage of total consumption
2	Iron & Steel use in construction	Percentage of total consumption
3	Timber used for construction	Percentage of total production
4	Bricks & Tiles used for construction	Percentage of total value of construction
5	Value of other material used in construction	Percentage of total value of construction
6	Transport & Trade Margin for a) Agricultural Production	
	<ul><li>b) Timber &amp; Round wood</li><li>c) Mining Production</li></ul>	Percentage to output
7	Construction & Repairs & Maintenance of Rural Road and Buildings (RRB)	Percentage of total value of construction
8	Construction & Repairs & Maintenance of Urban Road and Buildings (URB)	Percentage of total value of construction

However, Memorandum of Understanding (MoU) for the State still remains to be signed with CSO. The following surveys are proposed under SSSP for improving the estimates of GSDP:

Source: Directorate of Economics and Statistics, Government of Maharashtra, Mumbai. [As per a Note prepared on April 12, 2018]

Item	Method of estimation							
	At current prices	At constant (2011-12) prices						
(1)	(2)	(3)						
1. Agriculture (crop)								
1.1. Irrigation System								
Operation of Govt. Irrigation system	Estimates of GVA at current prices esti- mated using production approach.	Base year estimates are moved with the index of area irrigated through government canals						
2. Livestock Products								
(a) Outputs -Livestock								
(1) Meat (Products and by- products) (includes fats, edible offals & glands, hides & skins, heads & legs of slaugh- tered animals)	Animal-wise Meat (Product and by- product) estimated as % of Value of Meat at current price	Animal-wise Meat (Product and by- product) estimated as % of Value of Meat at base year price						
(b) Inputs -Livestock								
(1) Repair and maintenance for live- stock and operational costs	Benchmark estimates (as derived from AIDIS, 2013) moved with the estimates of capital stock of farm business at cur- rent prices + Value of Operational Cost at current prices	Benchmark estimates (as derived from AIDIS, 2013) moved with the estimates of capital stock of farm business at con- stant prices + Value of Operational Cost at constant prices						
3. Forestry	-	-						
(a) value of output								
(1) Non Timber Forest Products								
(i) Minor forest products	Value of output estimates are directly furnished by the State DESs	Value of output at current prices deflated by the relevant WPI						
(ii) Fodder from forest	Value of Roughages (as estimated for the input - feed of livestock in crops & livestock sectors) at current year price* Percentage of Livestock dependent on forest for fodder	Value of Roughages at base year pri- ce*Percentage of Livestock dependent on forest for fodder						
(b) Inputs of forestry	16.2% of total value of output at current price	16.2% of total value of output at base year price						
4. Mining & Quarrying								
(1) coal	Estimates of GVA at current prices are estimated by the production approach and allocated to States. Compensation of Employees (CE) is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while Operat- ing Surplus (OS = GVA - CE) is dis- tributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Current year estimates are deflated using relevant WPI						

# Appendix F: GROSS VALUE ADDED AT BASIC PRICES

Item	Method of estimation						
	At current prices	At constant (2011-12) prices					
(1)	(2)	(3)					
	Estimates of GVA at current prices are estimated by the production approach and allocated to States on the basis of the state-wise production of coal in pri- vate sector						
(2) crude petroleum and natural gas	<ul> <li>Estimates of GVA at current prices are estimated by the production approach and allocated to States. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while Operating Surplus (OS = GVA - CE) is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.</li> <li>Estimates of GVA at current prices are estimated by the production approach and allocated to States on the basis of State-wise production of crude oil in the private corporate sector</li> </ul>	Current year estimates are deflated using relevant WPI					
(3) other major minerals	private corporate sector						
Major minerals other than salt	Estimates of GVA at current prices are estimated by the production approach allocated to the States using State- wise mineral-wise production	Constant price estimates are derived using deflators compiled from the IBM data on production, prices and input rates.					
Salt	Estimate of state-wise value of output in the case of salt production is obtained from Salt Commissioner's Office. For estimating value added, input rates as observed in the case of Hindustan Salt Limited are used.	Constant price estimates are derived using deflators of non- metallic miner- als compiled from the IBM data on pro- duction, prices and input rates.					
(4) minor minerals except sand	Value of output estimates are directly available at current year price Input rates of non-metallic minerals as avail- able from IBM are used.	Constant price estimates are derived using deflators of non- metallic miner- als compiled from the IBM data on pro- duction, prices and input rates.					
(5) Sand	"Value of output = 7.21% of value of material inputs in construction, adjusted for TTM Intermediate consumption and Value Added derived using the input rate obtained from IBM GVA allocated to States on the basis of value of pro- duction of sand received from the States	Constant price estimates are derived using deflators of non- metallic miner- als compiled from the IBM data on pro- duction, prices and input rates.					

Item	Method of estimation						
	At current prices	At constant (2011-12) prices					
(1)	(2)	(3)					
5. Manufacturing							
Public corporations: Railway Work- shops & Production Units	<ol> <li>Estimates of GVA compiled using production approach and allocated to the States on the basis of sanctioned strength of employees in the case of Railway</li> <li>Workshops &amp; state-wise salaries in the case of production units.</li> </ol>	Current price estimates are deflated with the relevant WPI.					
Public corporations: Other Departmen- tal Enterprises (DEs)	<ol> <li>Estimates of GVA compiled using production approach.</li> <li>GVA of central DEs are allocated to the States on the basis of the location of the DE.</li> </ol>	Current price estimates are deflated with the relevant WPI.					
Public corporations: Non- Departmental Enterprises (NDEs)	Estimates of GVA at current prices are estimated by the production approach and allocated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State- wise employment in that NDE, while OS is distributed in proportion to the State- wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated with the relevant WPI.					
Private Corporations							
Private Companies	1. Estimates of GVA are compiled using production for the Private Sector Companies using MCA21 database and allocated to States (by compilation cate- gory) on the basis of state-wise value added in manufacturing (total, not institution- wise) as per last available ASI.	Current price estimates are deflated with the relevant WPI.					
Private Quasi- corporations	1. State-wise estimates of GVA, by compilation category, obtained from ASI for the quasi-corporations (Facto- ries covered under ASI but not regis- tered under Companies Act). 2. Till ASI becomes available, estimates of the preceding year are extrapolated using IIP and WPI.	Current price estimates are deflated with the relevant WPI.					

Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Private Unincorporated Enterprises	<ol> <li>GVA at the national level for the year 2011-12 allocated using state-wise benchmark estimates of GVA compiled using value added per effective worker from NSS 67th Round and number of effective workers from NSS 68th Round.</li> <li>The benchmark state-wise estimates are moved to subsequent years using the state's growth rate of GVA- manufac- turing as estimated by ASI to get the state-level estimate.</li> </ol>	Current price estimates are deflated with the relevant WPI.
	<ol> <li>Compilation category-wise estimates are compiled by allocating the state's estimate using base year structure of the state's GVA by compilation category.</li> <li>For the year when ASI is not avail- able, the preceding year estimates are moved using IIP and WPI.</li> </ol>	
6. Electricity, gas, water supply and other utility services		
(1) electricity Public corporations: Departmental Enterprises (DEs)	<ol> <li>Estimates of GVA compiled using production approach</li> <li>GVA of central DEs are allocated to the States on the basis of the location of the DE.</li> </ol>	Base year estimate moved with the index of quantum sales of electricity
Public corporations: Central Non- Departmental Enterprises Electricity generating companies (DVC, NEEPCL, NHPC,NLC,NPCIL, NTPC)	Estimates of GVA compiled using pro- duction approach of these multi- state companies is allocated on the basis of state-wise electricity generated	Base year estimate moved with the index of quantum sales of electricity
Public corporations: Central Non- Departmental Enterprises Power Grid Companies	Estimates of GVA at current prices are estimated by the production approach and allocated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State- wise employment in that NDE, while OS is distributed in proportion to the State- wise gross block (Value of Assets) of that NDE.	Base year estimate moved with the index of quantum sales of electricity

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Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Private Corporations	Estimates of GVA compiled using pro- duction approach and allocated on the basis of sum of number of units of electricity generated and number of units of electricity sold by private com- panies	Base year estimate moved with the index of quantum sales of electricity
(2) Gas		
<b>Public Corporations: Central Non- Departmental Enterprises (NDEs)</b> Gas generating companies (GAIL India Ltd.)	<ol> <li>Estimates of GVA compiled using production approach</li> <li>NDE-wise GVA is allocated among States based on state-wise gas sold by the NDE</li> </ol>	Base year estimate moved with the index of quantum sales of gas.
Public Corporations: Other Non- Departmental Enterprises (NDEs)	Estimates of GVA at current prices are estimated by the production approach and allocated to States. CE is distrib- uted on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Base year estimate moved with the index of quantum sales of gas.
Private Corporations	Estimates of GVA compiled using pro- duction approach and allocated on the basis of state-wise revenue of the Companies	Base year estimate moved with the index of quantum sales of gas.
Private Unincorporated Enterprises: gobar gas	State-wise GVA is calculated as the value of production at current prices. This is duly adjusted for share of KVIC in total biogas plants installed up to current year.	Base year estimate moved with the index of no. of bio gas plants
(3) water supply		
General Government: State Adminis- trative Departments	Estimates of GVA is compiled using production approach	Current price estimates are deflated with the CPI (General)
Public corporations: Non- Depart- mental Enterprises	Estimates of GVA is compiled using production approach	Current price estimates are deflated with the CPI (General)

Item	Item Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Private Corporations	Estimates of GVA compiled using pro- duction approach and allocated to the States on the basis of State-wise annual wages of workers in the industry as per NSS 68th Round.	Current price estimates are deflated with the CPI (General)
Private Unincorporated Enterprises	<ol> <li>For the base year, the estimate of GVA is calculated as Wage per day * Number of working days and allocated to the States on the basis of State-wise annual wages in the activity as per NSS 68th Round</li> <li>For the subsequent years, the growth rate of GVA at current prices of Private Corporate Sector at the national level in this category is used and allocated according to the base year proportions.</li> </ol>	Current price estimates are deflated with the CPI (General)
(4) remediation (recycling)		
Public & Private Corporations	<ol> <li>State-wise GVA are obtained from the results of ASI.</li> <li>For the year when ASI is not avail- able, the previous year's estimates are moved using IIP and WPI.</li> </ol>	Current price estimates are deflated with the relevant WPI.
Private Unincorporated Enterprises	<ol> <li>National estimates of GVA have been allocated to the States on the basis of state-wise GVA as per NSS 67th Round</li> <li>The estimates for unorganised recycl- ing are moved to subsequent years using IIP and WPI and are replaced by ASI when its results become available</li> </ol>	Current price estimates are deflated with the relevant WPI.
(5) remediation (sewerage & sanita- tion)		
General Government: State Adminis- trative Departments	Estimates of GVA is compiled using production approach	Current price estimates are deflated with the CPI (General)

Item	n Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Private Corporations	Estimates of GVA compiled using pro- duction approach in the case of Private Sector Companies and allocated on the basis of base GVA obtained from NSS 68th Round	Current price estimates are deflated with the CPI (General)
Private Unincorporated Enterprises	<ol> <li>National estimates of GVA have been allocated to the States on the basis of state-wise GVA as per NSS 67th Round</li> <li>For the subsequent years, the growth rate of GVA at current prices of Private Corporate Sector at the national level in this category is used and allocated according to the base year proportions.</li> </ol>	Current price estimates are deflated with the CPI (General)
7. Construction		
General Government: Administrative Departments	<ul> <li>(i) NVA of State Government in Construction is taken from State Government budget documents</li> <li>(ii) NVA of Central Government in Construction is allocated to States based on the information in the "works annexure" of the budget documents.</li> <li>(iii) CFC of GG is allocated on the basis of NVA as derived above and GVA is calculated as sum of NVA and CFC.</li> </ul>	Current price estimates are deflated by General Pucca Construction Index
Public Corporations: Departmental Enterprises	<ol> <li>Estimates of GVA are compiled using production approach in the indus- try.</li> <li>Estimates of central DEs are allocated to the States using state-wise outlay on construction.</li> </ol>	Current price estimates are deflated by General Pucca Construction Index
Public Corporations: Non- Depart- mental Enterprises	<ol> <li>Estimates of GVA at current prices are estimated by the production approach and allocated to States in the case of multi-state NDEs.</li> <li>In the case of NHAI, GVA is allo- cated using state-wise length of high- ways awarded under PPP and EPC projects in the year.</li> </ol>	Current price estimates are deflated by General Pucca Construction Index

Item	Method of	Method of estimation	
	At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	
	3. In the case of other NDEs, CE is distributed on the basis of the number of employees in each State in propor- tion to State-wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.		
Household sector			
Rural/Urban residential buildings (RRB) - new construction outlays plus repair & maintenance	The state wise estimates of new con- struction and repairs & maintenance in respect of rural and urban residential buildings of AIDIS are moved to later years with the help of inter-censal growth rate in the number of dwellings. Price changes are imposed with the help of Rural/Urban Cost of Construction Index (CCI).	Current price estimates are deflated by Cost of Construction Index for Rural/Urban Housing	
Rural / Urban - non- residential build- ings and other construction works (new construction plus repairs & maintenance)	The state wise estimates of new con- struction and repairs & maintenance in respect of rural and urban non-residential buildings of AIDIS are moved to later years with the help of combined index of value of output from Agriculture sector and manufacturing sector.	Current price estimates are deflated by General Pucca Construction Index	
Plantations in the household sector	All India estimates of GVO of construc- tion in plantations in the household sec- tor are distributed to the States using State-wise information on increment in area under cultivation of the plantation crops.	Current price estimates are deflated by CPI(R)	
Other households	Obtained as residual through the com- modity flow method of the household sector and allocated on the basis of a composite indicator using State-wise consumption of cement and iron & steel. (same as residual sector)	Current price estimates are deflated by General Pucca Construction Index	

Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Residual Sector	Estimate allocated on the basis of a composite indicator using State-wise consumption of cement (weight: 19.66%) and iron & steel (weight: 80.34%).	Same as above
8. Trade & repair services		
Public Corporations: Departmental Enterprises	Estimates of GVA compiled using pro- duction approach. GVA of central DEs are allocated to the States on the basis of the location of the DE.	Current price estimates are deflated using CPI (General)
Public Corporations: Non- Depart- mental Enterprises	Estimates of GVA at current prices are estimated by the production approach and allocated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS (OS = GVA - CE) is distributed in pro- portion to the State-wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated using CPI (General)
Private Corporations		
Private Companies	Estimates of GVA at current prices compiled using production approach and allocated on the basis of GVA esti- mated using GVAPW from NSS 67th Round and labour input from NSS 68th Round.	Current price estimates are deflated using CPI (General)
Co-operatives	Estimates of GVA at current prices allo- cated on the basis of LI in the sector from NSS 68th Round. For subsequent years, GVA at current prices are obtained by extrapolation using index of sales tax.	Current price estimates are deflated using CPI (General)
Private Unincorporated Enterprises	Base year State-wise GVA allocated using GVAPW from NSS 67th Round and labour input from NSS 68th Round.	Current price estimates are deflated by CPI (General)

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Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
	For subsequent years, GVA at current prices are obtained by extrapolation using index of sales tax.	
9. Hotels and Restaurants		
Public Corporations: Non- Depart- mental Enterprises (NDEs)	Estimates of GVA at current prices are estimated by the production approach and allocated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS (OS = GVA - CE) is distributed in pro- portion to the State-wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated using CPI (General)
Private Corporations	Estimates of GVA at current prices compiled using production approach and allocated on the basis of tourist arrivals (domestic + international tou- rists)	Current price estimates are deflated using CPI (General)
Private Unincorporated Enterprises	Base year State-wise GVA compiled using GVAPW from NSS 67th Round and labour input from NSS 68th Round. For subsequent years, current prices estimates are obtained by using growth in the corporate sector	Current price estimates are deflated by CPI (General)
10. Railways		
Railways	Estimates of GVA are allocated on the basis of indicators like section-wise passenger and freight earnings, state- wise number of employees and the capital-at-charge in each zone.	Constant price estimates at the national level are estimated using the Implicit Price Deflator at the national level.

# GROSS VALUE ADDED AT BASIC PRICES (Contd.)

Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
11. Transport other than Railways and storage		
Public Corporations (Departmental	& Non-Departmental Enterprises - DEs	& NDEs)
(i) Land Transport	Estimates of GVA compiled using pro- duction approach. GVA of central DEs are allocated to the States on the basis	Base year estimates are moved using index of registered vehicles
(ii) Water Transport	of the location of the DE. In the case of Central NDEs, except in the case of air transport, estimates of GVA at current	Current price estimates are deflated by CPI(transport & communication)
(iii) Services incidental to transport	prices are estimated by the production approach and allocated to States. CE is distributed on the basis of the number of employees in each State in propor- tion to State-wise employment in that	Previous year's estimate extrapolated with the combined growth of GVA of water+air+land transport at constant prices
(iv) Storage & warehousing	NDE, while OS (OS = $GVA - CE$ ) is distributed in proportion to the State- wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated by CPI(misc)
Private Corporations		
All categories given below Estimates of estimated using GVAPW from NSS 67	f GVA compiled using production approac th Round and labour input from NSS 68th	h and allocated on the basis of GVA Round.
(i) Land Transport	Constant price estimates of GVA are inflated using CPI(transport & commu- nication)	Base year estimates are moved using index of registered vehicles
(ii) Water Transport	GVA at the national level is allocated using share of cargo handled and length of navigable rivers.	Current price estimates are deflated by CPI(transport & communication)
(iii) Services incidental to transport	Previous year's estimate extrapolated using combined growth of (water+air+ land transport) at current prices	Previous year's estimate extrapolated using combined growth of (water- +air+land transport) at constant prices
(iv) Storage & warehousing	GVA at the national level is allocated using base year proportions as given above	Current price estimates are deflated by CPI(Miscellaneous)

Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Air transport (Public and Private Corporations)	Estimates of GVA compiled using pro- duction approach. GVA at the national level is allocated to states on the basis of passengers handled by the airports in the state during the year	Current price estimates are deflated by CPI(transport & communication)
Private Unincorporated Enterprises		
(i) Land Transport	Constant price estimates are inflated using CPI (Transport & communica- tion).	Base year state-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, these are moved using growth in registered vehicles.
(ii) Water Transport	Base year state-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, GVA at national level allocated using index of navigable length plus cargo handled.	GVA at current prices deflated using CPI (transport & communication).
(iii) Air Transport	No industry in private unincorporated	
(iv) Storage & warehousing	Base year state-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round; these are used as proportions to allocate the national level GVA at current prices.	Current price estimates are deflated using CPI(Miscellaneous).
(v) Services incidental to transport	Base year state-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, combined growth of (water+land transport) at current prices used to extrapolate the base year estimates.	Base year state-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, combined growth of (water+land transport) at constant prices used to extrapolate the base year estimates.
12. Communication & Services related to broadcasting		
Public corporations	Estimates of GVA compiled using pro- duction approach.	Current prices estimates are deflated using CPI (transport and communica- tion)

Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
	Estimates of GVA allocated in the case of Deptt of Posts and Central NDEs of communication on the basis of indica- tors like receipts, rent, interest, etc. In case of broadcasting (Prasar Bharati), it has been allocated on the basis of sanc- tioned strength.	
Private Corporations		
Courier activities, Cable operators, Telecommunication and Recording, publishing & Broadcasting services	Estimates of GVA compiled using pro- duction approach. GVA from courier activities has been allocated on the basis of GVA of Posts. GVA of Cable operators, Recording, publishing & Broadcasting services has been allocated on the basis of popula- tion having television in Census 2011. GVA of Telecommunication in the base year has been allocated on the basis of average number of subscribers in the base year. This has been extrapolated using growth in subscribers and CPI(transport & communication) for the subsequent years.	Current prices estimates are deflated using CPI (transport and communica- tion)
Private Unincornerated Enterprises		
Courier activities, Cable operators, Telecommunication and Recording, publishing & Broadcasting services	Base year GVA as compiled using GVA from NSS 67th Round and LI from NSS 68th Round has been allo- cated on the same criteria as used in the Private Corporate Sector.	Current prices estimates are deflated using CPI (transport and communica- tion)
13. Real estate, Ownership of Dwellings and Professional Services		
Public Corporations: Non- Depart- mental Enterprises Real estate and Professional Services	Estimates of GVA at current prices are estimated by the production approach. In the case of multi-state NDEs, it is allocated to the States. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS (OS = GVA - CE) is distrib- uted in proportion to the State-wise gross block (Value of Assets) of that NDE.	Current year estimates are deflated using CPI(Miscellaneous)

# GROSS VALUE ADDED AT BASIC PRICES (Contd.)

Item	Method of estimation	
_	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
Private Corporations		
Real Estate and Professional Services	Estimates of GVA compiled using pro- duction approach has been allocated on the basis of Base year GVA as compiled using GVA from NSS 67th Round and LI from NSS 68th Round.	Estimates at current prices are deflated using CPI (Miscellaneous)
Computer and Information related Services	Estimates of GVA compiled using pro- duction approach have been allocated on the basis of information on State-wise software exports made by units registered under STPI.	Estimates at current prices are deflated using CPI (Miscellaneous)
Private Unincorporated Enterprises		
Real Estate, Professional Services and Computer and Information related Ser- vices	Base year GVA has been allocated on the basis of GVA as compiled using enterprise information from NSS 67th Round and LI from NSS 68th Round. For the subsequent years estimates are moved using Corporate Growth (same as in organised sector)	Estimates at current prices are deflated using CPI (Miscellaneous)
Ownership of dwellings		
Urban dwellings	Gross rental=no. of census houses (ur- ban) * rent per household as obtained from CES for the base year. For years subsequent to the base year, Rent per household as in the base year is extrap- olated using the index of house rent (ur- ban areas) and the number of dwellings is extrapolated using the inter- censal growth rate of urban dwellings.	Estimates of Urban GVA are obtained by moving the base year estimate with inter censal growth rate of dwellings.
Rural dwellings	Gross rental at the national level is esti- mated through user cost approach, using the capital stock of rural residential buildings. The national level estimates are allocated to States using state-wise stock of rural dwellings as estimated from AIDIS, duly extrapolated for the reference year using growth in the num- ber of dwellings and CPI(R).	Estimates of Rural GVA are obtained by deflating the current price estimates using CPI(R)

Item	Method of estimation	
	At current prices	At constant (2011-12) prices
(1)	(2)	(3)
14. Financial Services		
Financial Services	Estimates of GVA are split into CE, Rent, Profit, etc. and are allocated by CSO at the enterprise level using the information like state-wise salaries, deposits, premiums and number of employees	Current price estimates are deflated by the implicit price deflator for financial services as derived at the national level.
15. Public administration and defence		
Central Government	Estimates of GVA at current prices are allocated on the basis of number of cen- tral government employees across States	Current price estimates deflated by the CPI (General)
State Governments & Local Bodies	Estimates of GVA at current prices compiled using production approach	Current price estimates deflated by the CPI (General)
Autonomous Institutions	Estimates of GVA are compiled using production approach for the sample autonomous institutions for the base year and these benchmark estimates have been projected at the national level with the help of total grants given to all autonomous institutions. These are allo- cated to the States on the basis of indi- cators like location of these institutions and state wise public sector LI proportions as per NSS 68th Round. the respective states. Estimates of GVA are compiled using production approach for the State autonomous institutions and allocated to the respective states.	Current price estimates deflated by the CPI (General)
18. Other Services		
Public Sector (General Government a	and Public Corporations, i.e., DEs & ND	Es)
General Government: Administrative Departments and Public Corpora- tions in Education, Health and Recreation	E Estimates of GVA at current prices are estimated by the production approach. In the case of Central NDEs, GVA is allocated to States. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS	Current price estimates are deflated using CPI for Education and Health in the case of GVA of Education & Health Services and CPI (Miscellaneous) in the case of GVA of Recreation

(OS = GVA - CE) is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.

### GROSS VALUE ADDED AT BASIC PRICES (Contd.)

Item	Method of estimation		
	At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	
General Government: Autonomous Institutions in Education & health	Estimates of GVA are compiled using production approach for the sample autonomous institutions for the base year and these benchmark estimates have been projected at the national level with the help of total grants given to all autonomous institutions. These are allo- cated to the States on the basis of indi- cators like location of these institutions and state wise public sector LI proportions as per NSS 68th Round. Estimates of GVA are compiled using production approach for the State autonomous institutions.	Current price estimates deflated by the CPI (General)	
Private Corporations			
Coaching centres + Activities of the individuals providing tuition + Educa- tion excluding Coaching	Estimates of GVA compiled using pro- duction approach and allocated for the base year on the basis of LI from NSS 68th Round. For subsequent years, pre- vious year's estimate moved using state-wise inter- survey growth, between NSS 64th and NSS 71st Rounds, in the expenditure on educa- tion.	Current price estimates deflated using CPI (education)	
Human health activities+ care services	Estimates of GVA compiled using pro- duction approach and allocated for the base year on the basis of LI from NSS 68th Round. For subsequent years, previous year's estimate is moved using state-wise inter- survey growth, between NSS 64th and NSS 71st Rounds, in the expendi- ture on health.	Current price estimates deflated using CPI (health)	
Remaining social & personal services	Estimates of GVA compiled using pro- duction approach and allocated on the basis of LI from NSS 68th Round.	Current price estimates deflated using CPI (Miscellaneous)	

Item	Method of estimation		
	At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	
Private Unincorporated Enterprises			
Coaching centres + Activities of the individuals providing tuition + Educa- tion excluding Coaching	Base year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, previous year's estimate moved using state-wise inter- survey growth, between NSS 64th and NSS 71st Rounds, in the expenditure on education.	Current price estimates deflated using CPI (education)	
Human health activities+ care services	Base year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th Round. survey growth, between NSS 61th and NSS For subsequent years, previous year's estimate moved using state-wise inter- 68th Rounds, in the consumer expendi- ture on health.	Current price estimates deflated using CPI (health)	
Remaining social & personal services	Base year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, previous year's estimate moved using inter-survey growth in consumer expenditure in non- food items(excluding education and health)	Current price estimates deflated using CPI (misc. services)	
Private Households with employed per- sons	Base year GVA has been allocated on the basis of LI from NSS 68th Round. For subsequent years, previous year's estimate moved using inter-survey growth of LI (between NSS 61st Round and NSS 68th Round) and CPI (Gen- eral).	Previous year's estimate moved using inter-survey LI growth.	

FOR ACRONYMS/ ABBREVIATIONS (See Documentation SDP Tables (2011-12))

### **GROSS STATE DOMESTIC PRODUCT OF KARNATAKA**

K. Narasimha Phani\*

In this article, I have tried to explain the changes in methodology and sources of data made during the recent new base year revision from 2004-05 to 2011-12. Due to changes in institutional sectors, increased coverage of private corporate data base (Ministry of Corporate Affairs MCA -21 database) and shifting to enterprise approach from Establishment approach in Annual Survey of Industries (ASI) surveys, the GSDP of Karnataka increased substantially by 25% over the old series. This article also depicts the share of GSDP worked out by Central Statistics Office (CSO) and that worked out by the State DES. It shows that a significant share of 75% is estimated by the CSO and the rest by the DES. Sector wise changes in methodology and data sources leading to increase / decrease in GSVA are also covered in the article. Due to changes in methodology and data sources to old series, in the old series, the other services sector was shown into 11 different sub sectors compared to the new series, wherein only 4 sub-sectors are considered. Some suggestions are made which may be considered in the coming base year revision, so that the limitations of the 2011-12 base year revision can be minimised.

#### The Background:

The State Income Accounts can be defined as a set of systematic statistical statements which reflect the value of the total output produced in the various sectors of the state economy such as agriculture, forestry, fishing, industry, transport, trade, banking, other services, etc., together with details of distribution of factor incomes among different groups and final expenditure of the state economy. From production of goods and services to their final disposal, innumerable transactions take place. State Income Accounts help one to understand, in a nut shell, how these various transactions are inter-related and give an idea of the working of the state economy.

Development of official estimates of State Income and related aggregates to meet the requirements for planning and policy purposes acquired importance after reorganisation of states in India, in November 1956. Recognising the need for providing estimates of State Income on a regular basis, a section for the computation / compilation of State Income Estimates was created in the headquarters of the Directorate of Economics and Statistics (DES), Government of Karnataka in 1960. At the state level, the State Income Estimates were computed for the first time in 1960-61 for the years 1956-57 onwards with 1956-57 as base, for comparison at constant prices. Till introduction of 1980-81 series, the DES used to compute the Net State Domestic Product and from 1980-81 series, the DES compiles both Gross State Domestic Product and Net State Domestic Product estimates and publishes them every year. Further, the base year is shifted as and when the Central Statistical Office (CSO), Government of India, shifts the base year for National Income Accounts.

#### **Objectives:**

In the context of planned development of any economy, estimates of State Domestic Product (SDP) as well as Per Capita State Income play a vital role in formulating policies of the Government. It is one of the important indicators for measuring the regional disparity among states as well as the overall impact of various developmental programmes within the state. If these estimates are reliable and sufficiently detailed. they give a true picture of the economic structure of a state. These estimates, when studied over a period of time, would reveal real growth in the level of development of economy of a state. This would facilitate policy makers, administrators and planners for proper formulation and appraisal of plans for balanced economic development.

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Note: Views and opinions expressed in this paper are of the author and not of the organisation he represents.

### **Division of Economy:**

As per the CSO guidelines using National follows:

Industrial Classification of all Economic Activities, the whole economy has been divided as follows:

#### Table 1. Classification of Economic Activities into Major Sectors of the Economy

I	П
(1)	(2)
Agriculture:	Primary:
Crops, Livestock, Forestry, Fisheries	Crops, Livestock, Forestry, Fisheries, Mining & Quarrying,
Industries:	Secondary:
Mining & Quarrying, Manufacturing, Electricity, Gas, Water	Manufacturing, Electricity, Gas, Water Supply & Remediation
Supply & Remediation Services, Construction	Services, Construction
Services:	Tertiary:
Trade & Repair Services, Hotels & Restaurants, Railways, Road	Trade & Repair Services, Hotels & Restaurants, Railways, Road
Transport, Air Transport, Water Transport, Services incidental	Transport, Air Transport, Water Transport, Services incidental
to Transport, Storage & Warehousing, Communication &	to Transport, Storage & Warehousing, Communication &
Broadcasting services, Real Estate, Ownership of Dwellings &	Broadcasting services, Real Estate, Ownership of Dwellings &
Professional Services, Public Administration and Other Services	Professional Services, Public Administration and Other Services
(Education, Health and Other remaining services)	(Education, Health and Other remaining services)

#### **Approaches in the estimation:**

The Estimates of SDP from the above sectors are prepared individually by adopting one or more of the following three approaches.

	Approach	Sector	Remarks
(1)	(2)	(3)	(4)
1.	Production Approach	Agriculture (excluding Government Irrigation System), Livestock, Forestry (excluding Fuel wood consumption), Fishing, Mining and Quarrying and Manufacturing sectors.	The sum of economic value of all goods and services produced within the state during the year is considered after deducting the inputs consumed in the process of production.
2.	Income Approach	Electricity, Gas, Water supply and Remedi- ation Services, Construction (excluding Departmental Commercial Undertakings and Household part), Transport, Storage and Com- munication, Trade, Hotels and Restaurants, Banking and Insurance, Real Estate, Ownership of Dwellings and Professional Ser- vices, Public Administration and Other Ser- vices.	The Income accrued to the four factors of pro- duction, namely, Land, Labour, Capital & Entrepreneurship in the form of Rent, Salaries and Wages, Interest and Profit is taken into consideration in the estimation of value addi- tion (income)
3.	Expenditure Approach	Agriculture (Government Irrigation System), Forest (fuel wood consumption) Construction sector (Departmental Commercial Undertak- ings and Household part)	Measurement of income at the stage of dis- posal. All that is produced is either ultimately consumed or part of it is saved for future consumption or future production of goods and services. Thus the money value of con- sumption expenditure plus savings gives the income

#### Table 2. Approaches Adopted for Estimating SDP of Different Sectors

#### **Income at Current and Constant Prices:**

The estimates of State Domestic Product is prepared at Current Prices and Constant Prices.

#### **Periodicity of Estimates:**

Central Statistics Office. Ministry of Statistics

and Programme Implementation, Government of India, issued a note on revision of nomenclature of GDP estimates recently. The same has been adopted at the state level with a few modifications, which is presented here under:

Sl.No.	Estimates	Period
(1)	(2)	(3)
1.	Advance Estimates (AE)	2 months before the completion of the Current Year
2.	First Revised Estimates (FRE)	10 Months after the completion of the year
3.	Second Revised Estimates (SRE)	22 Months after the completion of the year
4.	Third Revised Estimates (TRE or Reconciled Estimates)	28 Months after the completion of the year

**Table 3. Periodicity of GSDP Estimates** 

Advance estimates of SDP is based on the data on Agriculture, budget estimates of current year, partial information on Fishing, Mining, Transport and part of sub sectors of other services. The Advance estimates of the remaining sectors are prepared on the basis of past trends, noticed in earlier estimates.

For the first revised estimates, the data on Agriculture Sector is based on final forecast of Agricultural Production and Fishing, Index of Industrial Production, Revised Estimates of Budget documents and Annual Accounts of Non-Departmental Enterprises (NDCUs). Provisional figures in respect of Forestry, Construction and most of the Tertiary Sectors are used for the preparation of quick estimates.

The second revised estimates are based on district-wise fully revised estimates of production of Agriculture, Horticulture and Live Stock Products. The estimates of other sectors are based on data available on the actual figures provided in budget documents pertaining to Production of Fisheries and Forest Products, Mining, Transport, Trade, Real Estate, Business & Legal Services and also Other Services. Wherever the SDP of Central Government is needed, the related values are extrapolated for further years, using the past trends on previous years' contribution in the same sub-sectors or moved with the All India GDP trends.

During the reconciliation of SDP estimates, the second revised estimates will be revised by replacing the estimated figures with actual contribution of Central Government and reconciling the state level data. This will be held after two years of preparing the advance estimates.

#### **Adoption of New Base Year:**

The Gross State Domestic Product (State Income) Estimates are being prepared by adopting the new base year 2011-12 on par with the Central Statistics Office. The GSDP estimates are compiled at "Market Prices" in the new series instead of "Factor Cost". The Market Price includes 'product taxes' minus 'product subsidies'. As such, statistical comparisons between the old and new base year cannot be drawn for GSDP from 2011-12 onwards.

### Modifications in the sources and methodology to compute the GSDP with 2011-12 as base year

A brief introduction about the changes in sources and methodology to compute the GSDP in the revised new base year is presented below;

#### a. Methodological Changes:

\* GSDP, with 2004-05 as base was being compiled at "factor-cost". However, in the new series, i.e., 2011-12 as base year, the GSDP estimates are being prepared at *Market Prices*.

GSDP (GSDP at Market = Gross State Value Added at Basic Prices) Prices + Product Taxes - Product Subsidies

- \* Enterprise approach has replaced the Establishment approach adopted in the Annual Survey of Industries (ASI) from 2012-13 and post manufacturing activity has also been included in the estimation of GVA.
- \* In the new series, *MCA -21 (Ministry of Corporate Affairs)* data has been used in the \* estimation of Private Corporate Sector GVA.
- \* In manufacturing sector, All India Corporate estimates are allocated to the States based on State ASI ratios to arrive at Private Corporate sector at the State level.

\* The estimates of Computer related services was based on the proportion of private corporate workforce as revealed from Employment and Unemployment Survey (EUS) of NSSO in the 2004-05 series. In the 2011-12 series these allocations are based on the proportion of software exports made by the State (information collected from annual reports of Software Technology Parks of India-STPI). Due to this revision the GSDP of computer related services has increased substantially.

In the new series, the estimates of Agriculture and Livestock sector, Trade, Hotels and Restaurants sector are calculated separately. Transport sector estimates have been individualised as Road Transport, Water Transport, Air Transport and Services Incidental to Transport.

#### b. Change in Sources:

Further, the following results of latest surveys and census have also been incorporated:

- \* Population Census, 2011;
- \* All India Livestock Census, 2012;
- \* NSS 68th round (2011-12) Survey on Employment & Unemployment and Household Consumption Expenditure;
- \* NSS 67th round (2010-11) Survey on Unincorporated Non-agricultural Enterprises;
- \* NSS 70th round (2013) All India Debt and Investment Survey and Situation Assessment Survey.

The changes in the methodology and the sources and the effect on GSDP of Karnataka is presented below:

Sl. No.	Sector	2004-05 as Base Year	2011-12 as Base Year	Variation in GSDP
(1)	(2)	(3)	(4)	(5)
1.	Agriculture	Agriculture and Livestock were pres- ented together, as the inputs are inter-dependent. Indian Livestock Census 2003 and 2007 data	New Methodology proposes to com- pute Agriculture and Livestock as separate sectors. A larger number of fruits and vegetable crops have been included compared to 2004-05 series. Indian Livestock Census 2003 and 2012 data	Increase
2	Forestry	Fuelwood estimates are based on 2004-05 Household Consumption Expenditure Survey. Input rate 15.6 % of Output	Fuelwood estimates are based on 2011-12 Household Consumption Expenditure Survey. Input rate 16.2 % of Output	Decrease
3	Mining and Quarrying	Mineral Production data as per the Indian Bureau of Mines, Nagpur.	Mineral production data from Minis- try of Corporate Affairs (MCA 21) database	Increase
4	Manufacturing	Annual Survey of India (ASI) is the only source	In addition to ASI, Ministry of Cor- porate Affairs database MCA 21	Increase
5	Electricity, Gas Water Supply and Remediation services	Remediation services were captured under Other Services	Some Services of Other Services sector were reclassified according to NIC 2008. MCA 21 database for Pri- vate Electricity companies	Increase
6	Construction	Expenditure Approach	Income Approach and MCA 21 data- base for private corporate sector	Increase
7	Transport (excluding Railways)	Private Corporate part is not cap- tured properly	Private Corporate is captured through MCA 21 database	Decrease
8	Trade, Hotels and Res- taurants	Private corporate through RBI Study Unorganised part is moved with Gross Trading Income Index	Private Corporate sector is captured through MCA 21 database Unorga- nised part is moved with the Sales Tax data for Trade and Arrivals of Foreign Tourists to the State for Hotel & Restaurants	Increase
9	Business Services	Computer related Services is one sub sector. The GSDP of computer ser- vices were allocated to states based on the Employment in this sector as revealed from EUS	The GSDP of computer services were allocated to states based on the software exports as reported from STPI Annual reports	Increase
10	Other Services		Some of the sectors were moved to Remediation services and Communi- cation sectors	Decrease

# Table 4. Changes in Methodology and Data Sources and the Effect on GSDP of Karnataka

Shifting of base year has resulted in huge increase in the State's GSDP. The sector wise details are as follows:

Sl. No.	Industry	2011-12 Old Series	2011-12 New Series	diff	diff (%)
(1)	(2)	(3)	(4)	(5)	(6)
1	Agriculture, Forestry and Fishing	73349	75550	2201	3.0
1.1	Agriculture	61985	66892	4907	7.9
1.2	Forestry and Logging	8640	5935	-2705	-31.3
1.3	Fishing	2724	2723	-1	0.0
2	Mining and Quarrying	4005	4503	498	12.4
3	Manufacturing	70009	97139	27130	38.8
4	Construction	45128	50331	5203	11.5
5	Electricity, Gas, Water supply and Remediation Survey	9969	10829	860	8.6
6	Transport, Storage and Communication	32038	33509	1471	4.6
6.1	Railways	2044	2021	-23	-1.1
6.2	Transport by other means	24198	23072	-1126	-4.7
6.3	Storage	94	276	182	193.6
6.4	Communication	5702	8140	2438	42.8
7	Trade, Hotels and Restaurants	61754	60443	-1311	-2.1
8	Banking and Insurance	26639	28794	2155	8.1
9	Real estate, Ownership of Dwellings and Business services	78845	143668	64823	82.2
10	Public Administration	14688	14888	200	1.4
11	Other services	38787	32561	-6226	-16.1
	GSVA at Factor cost	455211	552215	97004	21.3
	Product Tax	0	70192	70192	100.0
	Product Subsidies	0	16396	16396	100.0
	GSDP At Market Prices	455211	606011	150800	33.13
	Population ('00)	597800	614820	17020	2.8
	Per Capita GSDP (Rs.)	76148	98567	22420	29.4

 Table 5. Sector-wise Differences in Karnataka GSDP Estimates between Old and New Series (for 2011-12)

 (Rs\_Crore\_at current prices)

Manufacturing sector with 39% increase, Computer related services (part of Business services under Real estate, Ownership of Dwellings and Business services) with 130% increase and adoption of Net Product Taxes and Subsidies with 100% increase (to arrive GSDP at Market Prices) are the major contributors to arrive at an increase of 33.13% in overall GSDP of Karnataka.

#### Implication of new series on GSDP:

Due to the adoption of new series of GSDP, the GSDP of Karnataka has increased from Rs. 455211 crore to Rs. 606011 crore with an increase of 33.13% for the year 2011-12 compared to the old series of GSDP i.e. 2004-05 series. Some of the sector wise limitations of methodologies adopted in new 2011-12 series are presented below:

Sl. No.	Sector / Sub Sector / Item	Limitations of methodologies adopted in 2011-12 Series
(1)	(2)	(3)
1	Forestry & Logging	The Fire wood part of the forestry sector is estimated by adopting Household consumption survey of 2011-12 moved with the inter survey growth rates and multiplied with the projected population. The value of output of this item is reducing since the beginning of this series as inter survey growth rate is negative. Moreover the entire urban and rural population (approx. 6 crore population) was considered for calculation of firewood production, which may be wrong since the number of households (hhs) which reported this item of consumption of firewood is 296 hhs and 931 hhs per 1000 hhs in urban and rural areas, respectively. Hence, it was assumed that a population of 4 crore <sup>1</sup> should be used in place of the total population of 6 crore. If this same populations (approx. 4 Crore population) is considered to find out the total production, then the total firewood production would have been reduced drastically but this will be more realistic. This also coincides with the 2011 population census figures of percentage of hhs using firewood, crop residue and cow dung cakes is also 22.2% and 86.6% hhs for urban and rural areas, respectively, according to Census 2011 results. <sup>2</sup>
2	Mining & Quarrying	Hence rather than multiplying the per-capita consumption of firewood with total population, we can use the proportionate population of firewood users for the computation of firewood production. If this correction of population is adopted in GSDP, the forestry share in total GSDP may be reduced but the estimate will be more realistic and accurate. Due to change in the policy at the centre, many non-metallic minerals are considered as minor minerals and handed over to the state from 2015-16. However, the State Department of Mines and Geology provides the production of minerals as accurately as possible, but the values of these minerals are not computed/ available with them, Hence, along with the production of minor minerals, the royalty charges are provided for computation. By using the royalty charges as value of minor minerals, the Gross Value Added of mining sector is under-estimated as the actual cost of minor minerals are not available. This would result in under-estimation in mining sector in total.

Table 6. Sector-wise Limitations in the GSDP Estimates of the New	Series
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<sup>1.</sup> There are a total of 79 lakh rural hhs; per 1000 hhs yields 74 hhs; multiplying it by average size of hh of 4.5 gives relevant rural population of 331 lakh. Similarly, corresponding to the total 54 lakh of urban hhs, 296 hhs per 1000 hhs, equals 16 lakh hhs; multiplication by the common average size of hh of 4.5 gives the relevant urban population of 72 lakh. Hence total relevant population is 4 crore.

<sup>2.</sup> Editor's Note: It was clarified that starting from the NSS figure for firewood consumption per capita, one could calibrate correctly to the whole census population or only the part of the population using firewood. There was considerable discussion in the seminar on the difference between the per capita consumption and production figures and about which should be taken as reliable. An example was cited of the UK completely discarding the figures of per capita consumption of ale based on the British Consumer Expenditure Survey, and the per capita production figure instead is relied upon. Similarly, it was also pointed out that the per capita consumption of jewelry in India from NSS data cannot be depended upon and instead, the data from production of jewelry (adjusted for imports and exports) has to be used. Attention was drawn to the Sub-Committee, chaired by Prof. Adhikari of Indian Statistical Institute at the time of the 2011-12 base year revision, which has analysed the sources of discrepancies between the per capita consumption and production figures. The Report suggests changes in the survey design as also for the computation of the national income aggregates. The CSO officials maintained that as regards per capita consumption of figure for per capita production, when corrected for inter-industry and other uses such as funerals, etc., matches fairly well the per capita consumption figure. However, some participants, citing anecdotal evidence of erratic revisions being made by the Director General of Forests of the States in the annual production figures for firewood for some years, doubted whether the firewood production figure itself can be taken as reliable.

Item	Limitations of methodologies adopted in 2011-12 Series
	(3)

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radie	0.	(Conta.)

(1)	(2)	(3)
		<b>Possible Solution:</b> IBM Nagpur should provide the methodology or the procedure to calculate value of minerals to State Departments of Mines and Geology to compute the actual value of minor minerals.
3	Construction	The Compensation of Employees paid to the employees of Public Works Depart- ment (PWD) is considered as GSVA. In 2004-05 Series, in addition to the compen- sation of employees of PWD, the amount spent on creation of new assets and maintenance of assets, i.e., Capital expenditure on construction and purchase of new assets and machinery & equipment are considered as Gross Value of Output and the GVA/GVO ratios provided by CSO are applied to arrive at GSVA. Due to expendi- ture approach adopted during 2004-05 series, the expenditure made on the above items by any department can be estimated and the contribution of such department to the total GSDP can be computed
		<b>Limitation:</b> In construction, the capital expenditure is considered as Gross Value of Output (GVO). And the ratios of GVA/GVO was applied to arrive at GVA of construction sector in 2004-05 series. Due to this approach the capital expenditure made by the social sector departments and so their share in GSDP could be worked out. Hwever, due to the adoption of income approach in 2011-12 new series, only the Compensation of Employees paid to the employees of Public Works Department (PWD) is considered as GSVA and capital expenditure is not computed for GSDP of construction. Due to this approach, it is very hard to know the contribution of some social service departments like, Social Welfare, Backward Class Welfare, Minorities Development and Planning in the Construction sector's GSDP.
4	All other Sectors of Services	During 2004-05 Series, more disaggregated level of computation along with rural and urban breakup was available. Such classification of disaggregated sub sectors (activity) level data was available since long.
		But due to [the use of MCA data for services in the?] new approach in 2011-12 series, such disaggregated / activity level data is not available since the adoption of new series of GSDP.
		Bangalore is known as IT capital of India and is contributing 40% of all India software exports. But we are not able to know the contribution of this sector as this sector is clubbed with Research and Development also.
		In sectors like Trade, road transport, private communication, the GSVA arrived at by the States as per the methodology will be prepared and shared before/during the reconciliation meetings. These are estimated using the methodology supplied CSO. However, these numbers undergo revision during the reconciliation of GSDP. For example: the trade and repair services base year estimates will be arrived at by using the Commercial Tax collection under Head of Account of 0040. The state estimates will be prepared on the same lines. But during the reconciliation meetings, CSO supplies a different number saying that it has been adjusted at all India level. This leads a lot of confusion at the state level while briefing these changes to senior officers.

Sl. No.

Sector / Sub Sector /
Sl. No.	Sector / Sub Sector / Item	Limitations of methodologies adopted in 2011-12 Series
(1)	(2)	(3)
		To calculate the GSVA of Hotels and Restaurants sector, it is suggested to apply the ratio of foreign tourists of the state to all India GVA of Hotels and restaurants. But for calculating Advance estimates of the State, CSO releases GVA at broad group of classification (for eight sectors only). Hotels and Restaurants sector is merged and presented as Trade, hotels, transport, com- munication and services related to broadcasting along with Transport, Storage, Communications sectors during its Advance estimates level or at provisional estimate level.
		Hence, States are requesting CSO to provide the breakup of Un-organised GVA of Hotels and Restaurants well before the reconciliation meeting rather than being made available during reconciliation meeting.

#### Table 6. (Concld.)

# Data required from CSO to finalise the GSDP

The items for which the information is required during the reconciliation is as follows:

- \* Supra Regional Sectors, viz., Railways, Financial Services, Communication-Public
- Crops and Livestock (Value of Byproducts, Input cost, Seed rate, prices of meat by-products)
- \* Electricity (Central and Private electricity companies)
- \* Biogas (No. of plants and Value added per plant)
- \* Construction (Central, Supra regional sectors, Central Plan Schemes, Plantations, Other Households (Other than Rural and Urban Residential and Non-Residential Buildings) and Residuals (the CSO prepares the construction sector at all India level using commodity flow approach and allocates to the states using state level data which is available at state level independently, and remaining part will be considered as Residual), GVO to GVA ratios)
- \* Mining (all Fuels and major minerals due to adoption of enterprise approach)
- \* Manufacturing (All India ASI, Private Corporate, Railways, Defense, RBI currency, Unorganised in the new base, CSO

will share all institution wise GSVA to the states which includes un-organised sector of Manufacturing also. The data is shared at 2 digit Compilation Catedgory wise. In the 2004-05 series, the base year unorganised manufacturing is moved with state IIP to arrive at constant price estimates and current prices estimates are arrived at from the constant price estimates by using the appropriate WPI.

- \* Transport (Air, Water transport and Private Shipping Companies),
- \* Storage (Central Warehousing and Cold Storage)
- \* Private Communication
- \* Trade and Repairs
- \* Hotels and Restaurants
- Professional Services (Computer related services)
- \* Ownership of Dwellings (Rural)
- \* Public Administration (Central and Autonomous Institutions),
- \* Other Services (GSVA from Central Govt. and private corporate part in education and health sectors)
- \* Product Taxes and Subsidies

The share of the above items works out to be more than 68 %. Efforts of State Income unit are

limited to Agriculture and allied sectors, State accounts for the rest 32% of GSDP. The sector

NDCUs analysis, State Budget Analysis, which wise share of DES and CSO is presented as below:

Sl. No.	Industry	2011-12 GSDP (Rs. Crore)			0/	0/ af
		TOTAL	BY DES	FROM CSO	% of DES	% of CSO
(1)	(2)	(3)	(4)	(5)	(6)	(8)
1	Crops	53395	52332	1062	98	2
2	Livestock	13497	13497	0	100	0
3	Forestry and Logging	5935	4239	1696	71	29
4	Fishing	2723	2723	0	100	0
5	Mining and Quarrying	4503	314	4188	7	93
6	Manufacturing	97139	0	97139	0	100
7	Electricity, Gas, Water supply and	10829	6006	4823	55	45
	Remediation Services					
8	Construction	50331	15665	34667	31	69
9	Trade and Repair Services	49570	203	49367	0	100
10	Hotel and Restaurants	10873	20	10854	0	100
11	Railways	2021	0	2021	0	100
12	Road Transport	21957	21338	619	97	3
13	Water Transport	269	45	224	17	83
14	Air Transport	374	0	374	0	100
15	Services Incidental to Transport	472	178	294	38	62
16	Storage	276	37	239	13	87
17	Communication	8140	0	8140	0	100
18	Financial Services	28794	0	28794	0	100
19	Real Estate, Ownership of	143668	19685	123983	14	86
	Dwellings and Professional Ser- vices					
20	Public Administration	1488	89251	5637	62	38
21	Other Services	32561	19785	12775	61	39
	GSVA at Basic Prices	552214	165318	386896	30	70
	Product Taxes	70192	39525	30667	56	44
	Product Subsidies	16396	9855	6541	60	40
	GSDP at Market Prices	606010	194988	411022	32	68
	Population ('000)	61482	61482	61482	100	100
	Per Capita GSDP (Rs.)	98567	31715	66852	32	68

Table 7. The Sector-wise Shares of GSDP of Karnataka Computed by DES and CSO

# **GSDP** with CSO):

The estimates of SDP are reconciled by the CSO every year (to arrive at comparable estimates across all states). The estimates of 2011-12 to 2013-14 have been reconciled during April, 2016,

Comparable Estimates (Reconciliation of 2015-16 and 2016-17 (partially) during May, 2018. During reconciliation meetings, the actual contribution of central government, central boards, central corporations and private corporate parts are provided by CSO, accordingly the revisions are adopted.

Usually the manufacturing sector is presented those of 2014-15 during May, 2017 and those of at disaggregated level by Compilation categorywise (There are approx. 20 categories). One such category is 19 - Manufacturing of coke and petroleum products. This group is further divided into functional institutions like, ASI, Private Corporate, NDCUs, DCUs, Railways and Unorganised. M/s Mangalore Refinery and Petrochemicals is one of Central NDCUs which contributes substantially to this group. It has been found from the annual accounts of this company that this enterprise made an accrued loss of approx. Rs. 2000 crore during 2014-15. This result effected the overall manufacturing sector registering an abrupt negative growth of 0.5% during 2014-15. Subsequently, the same enterprise improved its financial position and the GSVA contribution of the sector accordingly increased substantially.

After the reconciliation, estimates of GSDP of Karnataka at current prices for the years 2011-12 to 2015-16 have undergone revision, which is presented below:

Year	GSDP Before Reconciliation (Rs. Crore)	GSDP After Reconciliation (Rs. Crore)	Percentage Increase/ Decrease	Reconciliation held during
(1)	(2)	(3)	(4)	(5)
2011-12	603778	606010	0.37	April 2016
2012-13	691700	695413	0.54	
2013-14	817886	816666	-0.15	
2014-15	921788	913923	-0.85	May 2017
2015-16	1012804	1045182	3.20	May 2018
2016-17	1132393	1156002	2.08	
(Partially)				

Table 8. Year-wise GSDP of Karnataka before and after Reconciliation by the CSO

#### **Conclusion:**

This write up provides a birds eye view of revision of base year from 2004-05 to 2011-12. This revision is more important because effort to capture private corporate data from Ministry of Corporate Affairs is commendable as also the Methodological shift from Establishment approach to Enterprise Approach. Though the All India estimates are available at more disaggregate level (activity wise), at the State level, some activities within a few sectors were merged and estimates are clubbed together. However, in the previous base years these activity wise estimates have been shared to different research organisations, which have helped in policy corrections. Some such limitations are also briefly explained in the article. The over-estimation of firewood under forestry sector leads to exaggerated GSDP of forestry sector.

This is an appropriate time to take note of all these deficiencies and attempt to correct them in the up-coming new base year revision. CSO has always been with the states to improve the capacity of the personnel and we expect more from the CSO in future also.

# STATE SPECIFIC ISSUES IN THE NEW SERIES OF NATIONAL ACCOUNTS-2011-12

#### Om Prakash Bairwa\* and Rajeev Kumar Srivastava\*\*

This paper explains the impact of the new series of National accounts on State's GSDP. It shows the positive and negative aspects of introduction of new data set and definitions in compilation of State Income Accounts. In this paper six major issues on measurement of GSDP in the new series will be discussed. These are: (1) Factor cost GSDP v/s Market Price GSDP; (2) MCA 21 data base for Private corporate sector; (3) Effective labour input method for unorganised sector; (4) Mining sector in the new series; (5) Strengthening the state data base; (6) Scope for improvement in current data base.

Technological changes are rapidly taking place in the economy. It is a great challenge to the Indian economy to capture these changes in the estimation of GSDP. While incorporating these changes in the system, some problems may be seen at disaggregated level but we should solve these issues. For example, the portals of different ministries/departments should be integrated and data must be available on one platform. Recent use of MCA data at central level created dissatisfaction among the states because of non-availability of state wise data. States may develop their own system of analysing company accounts. A separate software and portal can be developed for analysing the state wise company accounts. MoSPI should think on the issue of strengthening states by providing technological and methodological support for updating the concept and data base.

# Keywords: GSDP, Enterprise survey, Manufacturing, mining, Local bodies accounts, Autonomous bodies' accounts

# Introduction

Gross State Domestic Product is compiled in the State under the guidance of National Accounts Division of Central Statistics Office, Ministry of Statistics and Programme Implementation (MoSPI), Government of India. From time to time CSO changes the base year of National Accounts and accordingly the states also change their base year of GSDP. The basic reason behind the base year revision is to take into account the structural changes which are taking place in the economy. CSO has shifted the base year form 2004-05 to 2011-12 on January 30, 2015.

CSO (2015b) shows three major components of the revision exercise:-

i. Revision of base year to a more recent year.

- ii. Complete review of existing data base and methodology employed in the estimation of various macro-economic aggregates.
- iii. To the extent feasible, implementing the international guidelines on the compilation of national accounts.

Earlier CSO used to revise its base year decennially because of availability of workforce data for unorganised sector from the population census. Since the 1993-94 series, CSO started using the workforce estimates from the result of quinquennial employment and unemployment surveys of NSSO. So, the base revision is being made every five years, to coincide with the NSSO survey. Current Base Year revision was due in the year 2009-10 and this year was not considered as

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normal year due to the global slowdown of 2008. So, the year 2011-12 was considered as the new base year.

Recommendations of the system of national accounts (SNA) 2008 are implemented in the new series of National Accounts. Some of the major recommendations implemented in the new series [see CSO, 2015a] are:-

- 1. Valuation of various GVA, NVA and related aggregates at basic prices and GDP at market prices instead of factor cost.
- 2. The head office activities have been allocated to the non-financial corporations sector unless all or most of its subsidiaries are financial corporations, in which case it is treated as a financial auxiliary in the financial corporation sector.
- 3. Comprehensive coverage of corporate sector both in manufacturing and services by incorporation of annual accounts of companies as filed with the Ministry of Corporate Affairs (MCA) under their e-governance initiative, MCA21. Partnership firms covered under Limited Liability Partnership Act have also been covered. MCA 21 database is supplemented by the information available in the Annual Survey of Industries (ASI). Data for quasi corporations, covered under ASI are obtained from the results of ASI.
- Improved coverage of activities of local bodies- both rural and urban- and autonomous institutions, resulting in better coverage of government activities.
- Incorporation of the result of the recent 5. NSS Surveys, viz.. Unincorporated Enterprises Survey (2010-11)and Employment- Unemployment Survey (2011-12), along with the adoption of an "Effective labour input method" for unincorporated manufacturing and services enterprises (except those manufacturing enterprises covered under the Annual Survey of Industries and except those of

'Trade & Repair Services', 'Hotels and Restaurants', 'Non-mechanized Road transport' and 'Telecommunication'). Giving due weights to different categories of workers, i.e., owners, hired workers and helpers, for compiling the estimates of the enterprises.

After the base year revision of 2011-12, States are facing several conceptual issues. Some of them are as follows:

# 1. GSDP at Factor cost v/s GSDP at Market Prices:-

This was a well-established understanding among the economists, policy makers, officers at Directorates of Economics and Statistics, authors on themes on state level incomes and the readers that sum of Gross value added of agriculture. industry and service sector is the GSDP of the state. After introducing the market price concept, everybody is facing trouble in understanding the concept of basic price, market price, product tax, production tax, production subsidies and product subsidies. The DESs often have difficulty in explaining all the new concepts to the state bureaucrats and state politicians. They are often suspicious of the new concepts being introduced in the measurement of GDP and GSDP, and the consequent changes in the estimates caused by them. Although the concept of GDP at basic prices has been mentioned in UN system of national accounts (SNA) 1993 and SNA 2008, it was not much discussed earlier in the academic field and official circles.

Conceptually, GSDP at factor cost and GSDP at basic prices are different but in most of the sectors, the Gross value added for both the concepts happens to be the same.

GSDP at factor cost shows the real picture of the economy. GSDP at market prices is the sum of GVA plus indirect taxes less subsidies. It

means GVA at factor cost plus artificial addition in the form of taxes less subsidies by the government is the new GSDP. Here artificial addition does not constitute any part of the real income of the factors contributing production process. Shetty and Sawant [2016]<sup>1</sup> prefer GDP at factor cost. According to them, "An objectionable feature of these new SNAs is to treat 'factor Income' as an inconsequential measure in the whole gamut of national income accounting, whereas in realty, factors of production, the relative rewards for them and the distributional issues of factor incomes are the foundational issues in such GDP accounting." Here we also agree with S. Mahendra Dev's [2017] view that "The nominal growth in GDP would get inflated if indirect tax base is expanded."

# 2. MCA data base for Private Corporate Sector:-

In the base year series of 2004-05, estimates of organised manufacturing were estimated by using the data from the ASI using establishment approach. In the new series of 2011-12, organised manufacturing data are compiled by using data received from the Ministry of Corporate Affairs (MCA) for the private corporate sector. At all India level, the MCA data provide better estimates for private corporate sector. Generally ASI results come with time lag of three years whereas the MCA 21 provides more recent data. The new data set of companies from the Ministry of Corporate Affairs (MCA-21) gives greater reliability in the results as it covers more than 5 lakh companies rather than the analysis of accounts of only 2500 companies as previously done by RBI. It shows a larger GVA because it provides additional information about the activities at the head office level.

MCA 21 data are based on the enterprise approach rather than the establishment approach. The enterprise approach does not provide the annual accounts by geographical locations of the plants. Every company has a CIN without considering the different activities in different states or locations. In this situation, if a company produces different products in different states, it is classified only in one sector and GVA will be allocated on the basis of ASI data to different states. This will create a wrong picture of growth of different industries in the state. Another issue with MCA data may be about the activity/activities being carried out by the company. It is possible that both the 2004 and 2008 NIC codes are being used by the different companies since there is reclassification of activities of industries under these two data sets which may create a wrong picture of an industry.

Now states are fully dependent on NAD, CSO for the estimates of private corporate sector. Currently, the states have no mechanism to capture the data of Private corporate sector through the MCA-21. On the other hand, the States are conducting Annual Survey of Industries (ASI) regularly.

ASI is still useful to allocate the all India estimates of private corporates to the states. We should mention the view of Dholakia and Pandya6: "For the state level estimates, the utility of replacing ASI by MCA-21 is not clear. Moreover, MCA-21 data set would be even more problematic for estimating DDP."

ASI data are establishment based and MCA-21 data are enterprise based, so allocating the all India estimates of Private corporate sector (based on MCA 21 data) to states using ASI proportions is the most appropriate way. DDP can be prepared in the same way since district wise ASI data are available.

CSO has not developed separate methodology for the states to compile the estimates for the private corporate sector. This created dissatisfaction amongst the states, although the alternative method of allocation of GVA of private corporate sector based on ASI results gives some level of satisfaction to the states.

In the case of Rajasthan, list of companies registered in Rajasthan has been received from

Registrar of Companies (RoC) and analysed by activity and district levels. Classification of companies by their share capital, by the nature of organisation (public, private, government companies), by activity, year-wise and whether active or inactive has also been done. Following table shows the activity-wise registered companies in Rajasthan as on 31stMarch 2017.

S. No.	Name of activity	Total No. of active compan- ies registered in RoC	Public com- panies	Private com- panies	Govt. compan- ies	Listed com- panies
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Agriculture, Hunting & For- estry companies	1113	47	1066	2	2
2.	Construction companies	4898	133	4765	3	6
3.	Education companies	788	14	774	0	0
4.	Electricity, Gas & Water sup- ply	410	42	368	17	0
5.	Financial Intermediation	1317	316	1001	1	14
6.	Health & Social work	480	21	459	0	1
7.	Hotels & Restaurants	1263	26	1237	1	1
8.	Manufacturing companies	9001	594	8407	9	115
9.	Mining & Quarrying compan- ies	3041	73	2968	7	8
10.	Other community, Social and personal service activities	609	30	579	1	0
11.	Public Administration &De- fense; Compulsory Social security	7	5	2	5	0
12.	Real Estate, Renting & Busi- ness activities	14347	328	14019	13	18
13.	Transport, Storage & Com- munication companies	969	49	920	13	3
14.	Wholesale & Retail trade; Repair of motor vehicle & Motorcycles & personal & Household goods	2633	73	2560	1	2
	Total	40,876	1,751	39,125	73	170

Table 1. Activity-wise Registered Companies in Rajasthan (as on 31st March 2017)

S.NO.	YEAR	TOTAL COMPANIES REGISTERED	ACTIVE COMPA- NIES	INACTIVE COMPA- NIES	PUBLIC COMPA- NIES	PRIVATE COMPA- NIES	ONE PERSON COMPA- NIES	GOVERN- MENT COMPANIES
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	2011	3736	2455	1281	124	3612	0	4
2	2012	3671	2827	844	64	3607	0	4
3	2013	3500	3156	344	45	3455	0	5
4	2014	2046	1927	119	29	1975	42	0
5	2015	2076	2028	48	62	1893	121	5
6	2016	2601	2591	10	78	2391	132	7
7	2017	2090	2083	7	77	1914	99	1

Table 2. Year - Wise registered companies in Rajasthan

In Rajasthan, we attempted to compile data for 89 large companies; we should be able to develop a mechanism at the state level to obtain regular yearly data on such a sample of companies to track the growth of companies. At a suggestion from the CSO, we are also seeking information on the district-wise location of their activities. We have prepared a format for compiling these data.

As regards companies which may be registered in other states but carrying on activities in Rajasthan, we are seeking from all District Industrial Centres in the state detailed information about companies carrying on production activities in their districts. Aggregating these data for the entire state and comparing the number of companies registered in the state, we can obtain information about companies registered outside the state but operating in the state.

# 3. Incorporation of effective labour input method for unorganised sector:-

In earlier series 2004-05, manufacturing (Unorganised) was estimated by the workforce approach. The GVA estimates from the base year 2004-05 had been prepared separately for two segments (i) the segment of MSME not covered in ASI and (ii) the rest of unorganised manufacturing not covered in MSME and ASI.

But in the new series 2011-12, NSS 67th Round Enterprises survey and 68th Round Employment unemployment survey are used. Apart from this, a new method called effective labour input method has been adopted. In the labour input method, as was being used in the earlier series, it was assumed that there is equal contribution from all category of workers engaged in an economic activity. The new method addresses the issue of category-wise differential labour productivity by assigning weights to different category workers engaged in an economic activity based on their productivity.

Using the new methodology, which is more scientific than the previous one, reduced the estimate of unorganised manufacturing by 19.8 percent at the national level but increased it by 5.89 percent in Rajasthan in the year 2011-12. For the subsequent years, estimates of unorganised sector reduced in the State by 13.28 percent and 12.94 percent in the year 2012-13 and 2013-14, respectively. Following table shows the gross value added from manufacturing (unorganised Sector) in Rajasthan. [Add a line to say why this might have happened.]

	(Rupees in crore, at current prices)
GVA in 2004-05 series	GVA in 2011-12 Series
(2)	(3)
16653.69	17633.77
17716.19	15364.08
17463.22	15203.08
18246.14	14590.28
	GVA in 2004-05 series (2) 16653.69 17716.19 17463.22 18246.14

 Table 3. Gross Value Added from Unorganised Manufacturing Sector in Rajasthan

 (Runger in Gross at current prices)

Due the rapid changes in the economy and regular availability of data, it is necessary to use the data sets which are more current in nature. In this context, incorporation of MCA data base for private corporate sector and effective labour input in unorganised manufacturing sector is appreciable. But for the states, there is no such methodology or system developed by CSO by which states can compile their estimates on their own and reduce the dependency on CSO for data.

State wise data on workforce, labour input, effective labour input and detailed calculations of sector wise GVA should be provided to the states by the CSO for developing confidence in the new system.

# 4. Mining sector in new series:

It was observed in the 2004-05 series that there is a need for improvement in the methodology for major mineral. Earlier, Indian Bureau of Mines (IBM) data was used for major mineral and minor mineral data was provided by the geology department of the state. IBM data for major mineral was under estimated because all companies operating in the field in the state did not provide data to IBM. There was a remarkable difference found in production data of major mineral between Directorate of Mines and Geology, Rajasthan and IBM. In the New series of National Accounts, for fuel minerals, estimates are being prepared, as sum of GVA estimates of non-departmental Enterprises and Private corporate sector. In the group of major minerals, estimates for the metallic and non-metallic minerals are being compiled as sum of GVA estimates of nondepartmental enterprises (NDEs) and Private corporate sector. These estimates are divided among the states in the same proportion as calculated on the basis of the information from Ministry of Petroleum for fuel minerals and IBM for metallic and non-metallic minerals in mining sector.

The States have at the state-level very comprehensive production data for both major and minor minerals. The methodology for compilation of GVO and GVA should be based on information of production data provided by the States. Estimates of NDEs and Private corporate sector may be allocated to the state accordingly. As per current methodology estimates of minor minerals are prepared by states using data from state mines and geological departments while for fuel minerals and major minerals estimates are allocated to state by CSO.

It is also observed that there are significant differences in production and sale value of major minerals between IBM and state Mines and Geological Departments. It is evident from the following table that at times IBM data is over estimated and some time it is under estimated.

MINERAL	201	1-12	2012-13		2013-14		2014-15		2015-16	
_	Sale Value (Crore)	Qty. (Lac Tonne)								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Iron	8.006	0.0003	19.81	0.0024	190.11	0.0070	320.12	0.0118	148.20	0.0114
Lead, Zinc	-	80.42	-	86.33	-	92.82	-	93.63	-	104.53
Manganese	14.97	0.0748	12.73	0.498	14.44	0.540	23.50	0.791	10.35	0.345

IBM Data for some of the Major Minerals of Rajasthan

\*Source: IBM Year Book of Respective years

MINERAL	2011-12		2012-13		201	2013-14		2014-15		2015-16	
	Sale Value (Crore)	Qty. (Lac Tonne)									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Iron	23.99	7.72	43.12	5.331	275.83	29.832	539.80	57.67	795.12	41.34	
Lead, Zinc Manganese	- 1.07	8.42 0.08	1841.61 1.247	86.322 0.050	1724.23 0.966	88.326 .039	1230.31 1.978	76.54 0.079	1403.9 1.04	59.00 0.0037	

\*Source: Mineral Statistics by Department of Mines and Geology, Rajasthan.

# Data for some of the Major Minerals released by State Mines Department of Rajasthan

As above tables show that there are significant difference in iron, lead, zinc and manganese production and sale value between IBM and State Mines and geology Department. Production of iron is always under estimated by IBM while in the case of lead, zinc and manganese sometimes data from IBM is under estimated and some times over estimated.

It has been realized that companies involved in the production of major minerals have to file

their annual returns/ revised returns to IBM regularly but they fail to do so. IBM made projections of the production for those companies which failed to submit their returns. In the case of State Mines and Geology Department, production and sale value data were revised whenever the company reported the data. So, there is always revision in estimates of production in the state data. In our view, state data are very much near the original data, so; while estimating the GVA of mining sector CSO should rely on the data supplied by the states. Following table shows the GVA difference between 2004-05 series and 2011-12 series for the year 2011-12 based on the methodology of the CSO.

Table 4. Sector-wise GVA in Mining under 2004-05 and 2011-12 Series (for the year 2011-12)(Value in Rs. Crore)

Mineral group	2004-05 series	2011-12 series
(1)	(2)	(3)
Fuel Mineral Metallic Mineral Non Metallic mineral Minor Mineral Total	8156.31 2576.00 1448.49 5777.05 17957.85	8560.20 2246.85 1466.16 6256.99 18530.20

# (5) Strengthening the state data base

State specific steps taken by DES Rajasthan for better calculations of GSDP:-

Economic purpose classification of annual accounts of local bodies: After the End of Thirteenth Finance Commission's period. Rajasthan has continued the system of analysing the annual accounts of local bodies. There are 10,412 local bodies in the state and DES is trying to classify accounts of all the 10.412 local bodies. In the Year 2014-15, the coverage of 10,412 local bodies was 64.45 Percent and in the Year 2015-16 it has reached to 78 percent. For the Year 2016-17 the work of analysing local bodies is going on and around 50 percent accounts have been classified by the purpose and economic activity so far. The local bodies' contribution to GVA was Rs. 6169.28 crore in the year 2014-15 and Rs. 6972.61 Crore in the year 2015-16.

- 1. Economic purpose classification of annual accounts of Autonomous Institutions: From the new Series of 2011-12, the state has also initiated the work of classifying annual accounts of Autonomous institutions separately. There are 84 autonomous institutions in the State and around 60 percent autonomous institutions are being classified, economic and purpose wise, regularly. By initiating this activity, the contribution of this sector in the GVA in the year 2011-12 was 707.70 crore and it reached to Rs.1236.00 crore in the year 2015-16.
- 2. Classification of annual accounts of Non-Departmental Commercial Undertakings (NDCUs): In the earlier series of 2004-05, NDCUs classification had been regularly done by NAD, CSO and supplied to State. From this new series of 2011-12, the DES Rajasthan has itself started to classify the annual accounts of

all the 36 NDCUs. CSO has provided software on the basis of which state is classifying its NDCUs accounts. This system of classifying the annual account regularly, boosts the morale of the state personel.

3. Regular Survey based on business register: The Business Register is being updated regularly in the state. Rajasthan has developed a format by which regular information system is being created to get the current picture of the economy. The information on all production and sales units operating in the state, which are registered under seven different Agencies, such as Companies Act. Factories Act. Shops and Establishment Act. Cooperative Act. Societies Registration Act. etc., since the inception of each such Agency, have been scrutinised and is being integrated in the Business Register of the state. In this way, we enlisted in all 12 lakh companies. We surveyed all these companies by sending investigators to their addresses. From this, we found 3.29,000 companies, some 50 years old, some 20 vears old, etc., and registered them under the State's Business Register, giving each of them a 16 -digit Business Registration Number. We have also started an online portal of Business Register. We got a Notification issued according to which anyone starting any new economic activity in the State will have to compulsorily obtain a Business Registration Number before starting the activity. This is a live portal which shows the number and the list of all active companies and business enterprises. We want to integrate this portal with all the registering Agencies, so that it is automatically updated. There are no legal bindings for an enterprise to deregister from the act in which it was registered. That limitation persists in this

portal. If de-registration process/ any amendment in the registration under different act comes into force, business register portal adopts these amendments accordingly. Business Register will thus be the list frame for ongoing and future surveys, and work out the various required rates and ratios on a regular basis.

As stated above, the online business register portal is working in the state. Main features of Business Register Portal are as follows:

- \* Facilities for applying for BRN and for update facility are available on E-mitra (Citizen service Centre).
- \* Search facility is available on portal for BRN.
- \* SMS/Email facility is available for Information of BRN/Reference number sent on registered mobile number.
- \* District-wise reports and district wise directory of BRN are available on BR portal for public. http://br.raj.nic.in/

#### \* BRN issued to Establishment (Act wise Numbers & Percentage)



# 4. For compiling District Domestic Product, indicators are being developed:

We are also currently allocating the state level GVA in the corporate sector in proportion to the district-wise ASI estimates, in the same manner as the CSO allocates the all-India sector-wise GVA to our state. For compiling District Domestic Product, Rajasthan has conducted several studies and is planning for new ones. Developing district wise indicators to allocate the supra-regional sectors is always a challenge. In the past three years, Rajasthan has conducted survey/studies on (i) banking and insurance sector (ii) Railway Sector (iii) District-wise Input cost of agriculture crops other than those covered in CCS. A new study on livestock sector is being planned to capture the new rates/ratios and recent activities or development in the Livestock Sector. For allocating GVA in services sector, we have used the man-power data from the Economic Census which we considered better than the NSS data.

Under a Government of India Project "Strengthening of Statistical Svstem(SSS)", the scheme [earlier called ISSP] was launched in the state during 2010-11. After revisit of the scheme during 2014-15, the scheme has been extended till March, 2017. The establishment of Block Statistical Offices has been one of the highlights of the scheme implementation in Rajasthan. The State has been able to extend the reach of the statistical systems up to Block Level. It is now the major lynchpin of outreach and data collection for the State. This has enabled us to compile a number of indicators, with greater speed than earlier. And accuracy has also improved.

DES Rajasthan could take advantage of its network of BSOs and DSOs in the faster compilation of data of its core statistics due to the development of several packages/applications on core statistics, such as Timely Reporting System of Agriculture, Index of Industrial Production, District Domestic Product, Local Body Accounts, District Business Register, Registration of Birth & Death, etc. An application for agricultural statistics is being prepared and is under security audit stage. A unique feature of this is that these have been done in collaboration with NIC only. The applications have been custom made as per the State requirements.

- 6. Socio Economic Data Hub-Bhamashah: A path breaking scheme of Financial Inclusion and Women Empowerment, Bhamashah Scheme was first launched in 2014. Bhamashah Scheme is an end-to-end service delivery platform to transfer cash and non-cash benefits to the targeted beneficiaries in a transparent manner. The main features of the scheme are:
- \* The Scheme is a family-based programme of financial inclusion, where each family is issued a 'Bhamashah Card'. The card is linked to bank account that is in the name of lady of the house who is declared as head of the family.
- \* The card leverages bio-metric identification and core banking. Multiple cash benefits like scholarship, pension, etc., would be accessed through the Bhamashah Card and will be transferred to bank accounts of the beneficiaries.
- \* Non-cash benefits would be given directly to entitled beneficiaries.
- To reform and institutionalise direct benefit delivery mechanism of government programmes
- \* To transfer all cash benefits directly to the bank account of the beneficiaries of the state.
- To provide all non-cash benefits/services directly into the hands of the beneficiaries of the state, using Aadhaar enabled biometric authentication



Socio - economic data of each family has been collected during registration under Bhamashah. These data are being regularly updated through integration of different portals functioning in the state. Due to Bhamashah data hub, duplication in surveys conducted under different programmes has been stopped. Online monitoring of each family is under one roof and service delivery cost has been significantly reduced. Real time literacy, sex ratio, migration data are easily available now.

- 7. Birth, Death and marriage registration Statistics: Directorate of Economics and Statistics, Rajasthan is a nodal department for registering Death, Birth and Marriage in the State. For quick and smooth collection of statistics and to provide services in a transparent manner, DES, Rajasthan has developed a web portal named "Pehchan". The main features of the portal are as follows:
- \* Single Registration portal at state level with Unique Registration No which is linked to Aadhar card and Bhamashah Card, across the state.

- \* Maintenance of Centralised Registration Database.
- \* Facility to maintain Legacy Registration.
- \* Issuance of Digitally / e-Signed Signed Certificates.
- \* SMS Alert facility for Citizens (On Application/Objection/Registration).
- \* Facility for Bilingual Registration certificate.
- \* Android Mobile App available.

**8. Integration of Portals:** To avoid duplication of work and to reduce time lag, DES has integrated different portals with Pehchan portal. The integration of the portals with civil registration system (pehchan portal) was done in-house in collaboration of National Informatics Centre. These are the portals integrated with pehchan portal:

- \* Bhamashah Portal
- \* Social Security
- \* Pregnant Woman and Child Tracking System
- \* The Unique Identification (UID) Aadhar
- \* Chief Minister's Dash-board [Monitoring system for Chief Minister]

\* Electoral roll

for storing documents]

\* Raje-vault [State government on line vault

\* Pahchan Portal (Death/Birth/Marriage)



(6) Scope for improvement in current data base: There is scope for improving database in crop sector like rates and ratios used in fodder, grass and kitchen garden. Similarly, methodology for the GVA of transport sector, real estate, professional services and storage should be reviewed in the new series of national accounts on the basis of surveys and studies which should be conducted on the regular basis by the state DES. Use of activity wise GST data set would create more realistic estimates of State Income. Use of Big data analysis in national accounts for sectors like trade, transport, hotels, financial and personal services would be another step to capture the most recent trends of the economy.

# Conclusion

In this paper, we have done some comparison [of the methodology and the GSDP estimates] between 2004-05 series and 2011-12 series. The new Series has set up a new mile stone in the history of national accounts by using forward indicators as in the earlier series the growth of public sector companies has been obtained, based on past trends in growth in GVA of public limited companies now current data of companies accounts are being obtained from MCA 21 data base. Enterprise approach has taken the place of establishment approach. Similarly, factor cost approach has been shunted out by incorporating the market prices approach. Another feature of the new series is incorporation of the effective labour input method instead of labour Input method. In our view, these are the requirement of latest economy to change the methodology of computing the GSDP. State should start analysing different sectors themselves and conducting regular surveys and studies should be made part of DES activity. Here we would like to conclude with the hope that whenever CSO changes or modifies the concepts, it should be discussed with all DESs and more emphasis should be given to a system in which estimates are generated from ground level.

#### FOOTNOTES

1. Shetty and Sawant argue that GDP at factor cost is fundamental for measuring real growth and not GDP at market prices.

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# INDIA'S NEW GDP SERIES-IMPLICATION FOR THE ESTIMATION OF GSDP AT STATE LEVEL

Pradeep Chauhan and Dr. Vinod Kumar

This paper presents the Comparative growth rates for the year 2012-13 to 2014-15 on old and new base year. The paper finds that changing the base year contributes to the increment in growth rates substantially - to about one percent. This is due to the changes in the prices and deflator in the economy. Besides, the paper also investigates the prevailing data gaps in calculating the growth rate. In view of potential of tourism development in the state the availability of data particularly in this sector remains the major issue and to address this, satellite accounts are proposed.

#### Keywords: Economic growth, data gaps, base year, inflation

The main object of the process of economic planning is to increase the volume of goods and services in a country or a state, i.e., economic development of the country or State, in order to know how far the economy has moved, it requires maximum valuation and measurement of the entire economic activities at the national/state level.

The Department of Economics and Statistics prepares the state income estimates both at current and constant prices from year to year on a regular basis to assess the growth of the economy of Himachal Pradesh.

Himachal Pradesh has emerged as a leading economy in the country and is also a leader in Hill Area Development, Agriculture and Horticulture revolution. The State is an ideal destination for investment in Power and Tourism sectors. The economy of the State has been progressing at a uniform pace and has achieved a growth rate of 8.1 percent in the year 2015-16 which is comparatively better than the national growth of 7.9 percent, and is expected to grow at 6.8 percent in 2016-17. The contribution of primary sector of the State Domestic Product was 58.56 percent in 1970-71 which declined to 14.90 percent in the year 2015-16. The contribution of secondary sector which was 16.73% in 1970-71 has increased to 43.02 percent in 2008-09 which later declined to 41.14 percent in 2015-16. The tertiary sector which showed a contribution of 27.71 percent in 1970-71 has increased to 43.96 percent in 2015-16. This structural shift from primary to secondary and tertiary sectors is a healthy sign of a growing economy. However, low productivity in agriculture is a matter of concern as was manifested in the form of under employment and disguised unemployment.

The Gross Value Added (GVA) at basic prices witnessed a growth of 8.0% during 2015-16 (Base 2011-12) against the growth rate of 7.4% during the year 2014.15. The growth rate in GVA during 2015-16 has been achieved due to high growth in other Services (13.7%), Mining and Quarrying (7.6%), Trade, Repairs, Hotels & Restaurant (10.0%), Public Administration (9.9%), Electricity, Gas, Water Supply & other utility services (9.2%) and Financial Services (6.3%). Agriculture, Forestry& Fishing has shown a decline of 0.6%. Thus, there is need to increase

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the productivity of Agriculture, forestry and fishing sector through diversification and technological improvement. The annual growth rate of real GDP per employed person was 5.8 percent during 2013-14, which increased to 6.1 percent during 2016-17.

# Comparative picture of Economic Growth and Per Capita in Himachal Pradesh *vis-à-vis* India

The growth rates of Gross Domestic Product and Per capita income for All India *vis-à-vis* Himachal Pradesh for the past few years are given below:

	(Bas	e 2011-12)				
Year	Growth Rate (percent) (GDP at constant prices)		Year Growth Ra (GDP at cor		Per Capi (Ru	ta Income pees)
	H.P.	All India	H.P.	All India		
(1)	(2)	(3)	(4)	(5)		
2011-12			87721	63,460		
2012-13	6.4	5.5	99730	71,011		
2013-14	7.1	6.5	114095	79,146		
2014-15(R)	7.5	7.2	124325	86,513		
2015-16(Q)	8.1	7.9	135621	94,178		
2016-17(AD)	6.8	7.1	147277	103818		

Table 1. Comparative Statement of Growth Rates & Per Capita Income of Himachal Pradesh (H.P.) and All India.

Lot of statistical data is used for estimation of GSDP and its reliability depends directly on the quality of data being supplied by and gathered from various Departments. There are some problems of data gaps and inordinate delay in transmission and publication of data.

# Major Changes incorporated in the New Methodology

#### Better coverage of the Corporate Sector:

- \* The corporate sector has been given better coverage both in the manufacturing and services segments by bringing in the following changes: Annual accounts of companies as filed with the Ministry of Corporate Affairs (MCA) under their e-governance initiative, MCA21, has been incorporated.
- \* Partnership firms covered under Limited Liability Partnership Act have been included.

\* For manufacturing enterprises, MCA21 database has been used to supplement the information available in the Annual Survey of Industries (ASI).

# **Better coverage of Government Activities:**

- \* The coverage of activities of local bodies - both rural and urban - and autonomous institutions has been improved. The results of the recent NSS Surveys, viz., Unincorporated Enterprise Survey (2010-11) and Employment-Unemployment Survey (2011-12) have been incorporated.
- \* An "Effective Labour Input Method" have been adopted for unincorporated manufacturing and services enterprises, giving due weights to different categories of workers, i.e., owners, hired workers and helpers, for compiling the estimates of these enterprises.

# Sector-Specific Changes in the New Method- Construction ology

# Agriculture, forestry and fishing

- Crop and livestock production has been segregated;
- \* Agriculture Census (2010-11) and Livestock Census (2012) have been adopted;
- Yield rates of meat & by-products of different livestock species have been revised based on the study conducted by National Research Centre on Meat, Hyderabad.

# Mining & manufacturing

- Value addition from extraction of sand has been estimated using an indirect method, in accordance with its use in construction;
- "Enterprise Approach" has been adopted for mining and manufacturing activity using the MCA21 database to take into account activities of head offices, ancillary activities, etc., which were not covered under the "establishment approach" followed in the old methodology.

# Electricity, gas, water supply & other utility services

\* Under the "electricity, gas and water supply" category, the following utility services have also been included in the new methodology: sewage, waste management, recycling and remediation activities.

Study on the inputs in the Construction sector by Central Building Research Institute (CBRI), Roorkee, NSS All India Debt & Investment Survey, 2013 results have been incorporated.

#### **Financial Services**

\* The coverage of the financial sector has been made more comprehensive by including financial services information from the accounts of stock brokers, stock exchanges, asset management companies. mutual funds and pension funds, as well as the regulatory bodies, SEBI, PFRDA and IRDA.

#### Implications of the New Methodology

The new definition of GDP and the change in base year has resulted in an increase in India's economic growth in 2012-13 and 2013-14 compared to the old series. With the base year of 2004-05, the GDP (at factor cost) growth in 2012-13 and 2013-14 stood at 4.5% and 4.7%, respectively. However, with the new base year of 2011-12, the GDP (at market price) growth has been changed to 5.5% for 2012-13 and 6.5% for 2013-14, showing marked improvement over the previously released data. Similarly in case of Himachal Pradesh with the adoption of new base year 2011-12 the growth rate has increased from the 2004-05 series to 2011-12 series.

Table 2. Comparison of growth rates for the year 2012-13 to 2014-15 on old and new base year

Years	Himachal Pradesh		% change	All India		% change
	2004-05	2011-12		2004-05	2011-12	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2012-13	6.2	6.4	0.2	4.5	5.5	1.0
2013-14	6.2	7.1	0.9	4.7	6.5	1.8
2014-15	6.5	7.5	1.0	7.2		

# Sector-wise data issues for Estimation of Gross State Domestic Product

# **1 Agriculture including Livestock**

# **1.1 Agriculture**

- \* The major issue in the agriculture sector is that Calendar year (July to June) used for crop GVA estimation, whereas all the other sectors of the economy are computed on the basis of Financial Year.
- \* Removal of time lag of two to three years of Annual Season Crop Report.
- \* Incomplete coverage of food crops.
- Revision of current rates & ratios (by Cost of Cultivation Studies)
- \* Time lag of 2 years between the data supplied by Agriculture department and Department of Land records
- \* Non availability of prices of Major fruits for Advance estimation.
- \* Area and production data on floriculture.

#### 1.2 Animal Husbandry

- \* Survival rates are not available
- \* Time lag of one year in Integrated Sample Survey by Animal Husbandry Department.
- \* Non availability of data on Unregistered slaughtering
- \* Livestock prices if not available may be collected by D.A.H.O. to supply to our State DES.

# 2. Forestry and Logging

- It has been experienced that the data on forestry is not homogeneously available at the district level. In many districts production of major and minor forest produces are not available.
  - \* Real time data on Trees outside the forest (TOF) is not available. TOF has been introduced in 2004-05 series which is continued in 2011-12 series, but there is no specific coverage of the State/district level. The estimates are

based on Forest Survey of India (FSI) 2006 data > The contribution of nontimber forest products (NTFP) or minor forest produce is under-evaluated as it has been evaluated on Royalty Value.

\* Non availability of Production and prices data for advance estimation.

# 3. Fisheries

- \* Capital stock data is not available
- \* There is no appropriate mechanism for collecting data on fish curing
- Items of inputs in fish production are not being collected on a regular basis and no input data is available

#### 4. Mining and Quarrying

- \* The data on production and value of major and minor minerals at district level is very scanty across all the districts. It has been experienced that the data required for computation of domestic product are not provided by the mines and geological department at district level.
- \* Variation in out turn and prices (Two sets of information i.e. from State Geologist and IBM) and non-availability of Production and prices data for advance estimation.
- \* Non availability of the list of Major mining industries in the State and their annual accounts. In new series for 2011-12 base year, the methodology has been changed not using production approach but analysing the accounts of major mining industries.

# 5. Manufacturing

\* MCA 21 data is being used in the 2011-12 series which is further validated with the final results of ASI. These different approaches leads to huge difference in GVA.

- \* Non-availability of data about the income of small producers or house enterprises
- \* Non-availability of the list of NIC-2008 Industry-wise updated frame of factories registered under Factories Act, 1948, and their annual accounts as per MCA21 for the purpose of selecting establishments to be covered under Annual Survey of Industries (ASI) used for both purposes, i.e., SDP estimation and Index of Industrial Production.

# 6. Construction

- \* There is no data on consumption of cement and steel in the state
- \* Rural Panchayat data on all types of construction activities
- \* Other construction data in respective constituency by MLA/MP fund are not available.
- \* Updated frame of Builders & Contractors and their annual accounts.

# 7. Electricity, Gas and Water Supply

- \* The accounts of private companies operating in more than one state are not available State wise
- \* Lack of data on private water suppliers
- \* Non-availability of accounts of Non-Departmental Commercial Undertakings (NDCUs) such as H.P. Power Transmission Corporation Ltd. (HPPTC), Himachal Pradesh Power Corporation Ltd. (HPPCL) and Electricity Board, etc., on a specific pattern as per MCA

### 8. Transports, Storage & Communication

- \* Data on Private mechanised transport is not available
- \* Non availability of data on private Communication companies

### 9. Trade Hotel and Restaurants

\* Non- availability of data on home stays, Guest Houses, Rest houses run by private players, which undervalues this sector

# **10. Banking and Insurance**

\* The State needs the methodology followed by CSO to prepare the estimates at State level of supra regional sectors such as Banking and Insurance.

# 11. Real Estate, Ownership of Dwellings, Business Services and Legal Services

\* No data on private builders, construction companies

# 12. Public Administration

\* Accounts of Autonomous bodies of the central government operating in the State are not available.

# 13 Other services

- \* The sustained and rapid growth of the services sector in the Indian economy has raised questions about how to accurately estimate the contribution of the sector to GDP. There are problems relating to the methodology employed on the contribution of the private sector, especially the unorganised part of the private sector.
- \* Annual accounts of Private Educational Institutions, Coaching centres and Health institutions are not available.

# Proposed studies to fill the DATA ISSUES

- \* Area and production estimates (Girdwari and crop cutting experiments)
- Employment under informal sector > Study of private transport system
- Study on Natural disasters in the state and their impact
- \* Time use survey (TUS)
- Study on Private banks' investment and saving
- \* Satellite Accounts for Tourism sector

- \* Satellite Accounts for Education Sector
- \* Study on Capital stock of fishery
- \* Study on NTFP at state level

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#### **Prof.** Chitre:

We request Shri Pradeep Chauhan and Dr. Vinod Rana to make a presentation on estimation of GSDP of Himachal Pradesh. We are really enjoying the participation from the DESs because we are getting to learn the nitty gritties of the data available at the state level, the tensions that the DESs are facing while making comparable estimates of the GSDP across states as desired by the CSO, and this has been a very rewarding experience for all of us. So, I request Dr. Chauhan and Dr. Rana to make their presentation.

# Shri Pradeep Chauhan

Hello, good morning. I am Pradeep Chauhan from Government of Himachal Pradesh. The formally I must thank Indian School of Political Economy, Vikas Chitre and their team for inviting us for this seminar. And I must thank the ministry and also the Chief Statistician of India and Secretary most of all as he has been a guiding force for giving the states whatever they require, not only for the GSDP estimation at the state level but also the help in the other areas. National sample survey, social statistics division, cap division., etc. We, at the state level are the recipients of methodologies not only in the national accounts but for the other sectors also. I must say that out of the total statistical force in the country, 80% statistical persons are in the state, in the State Bureaus of Economics and Statistics, and 20% at the national level. This data has been collected by the Ministry in the recent years. So, we came to know that only 20% at the national level who are doing the job for the nation, and also deliberating and discussing the issues on methodology and the other things for the state level. I must also pay my respects to our eminent professors who are the data users which the Bureau of Economics and Statistics present in the form of various publications, papers, etc. We only come to know when they use some data, deliberate the issues and present in some electronic and print medias. Then we come to know what has happened in this or that area. So, with these brief remarks I am going to present the paper, which has been also drafted with me by Dr. Vinod Rana who is Joint Director at the Department of Economics and Statistics. Most of the issues have been discussed yesterday. But still there are some grev areas which need to be flagged. There is a one saying, 'You cannot manage what you do not measure!' Now these are the base year changes till date. The National Accounts Division (NAD) people and all vou must be aware of these changes, but I am just refreshing your memory as well as my memory also

1948-49 was the first base year. Since then, eight base year changes have taken placein the national accounts. As the Secretary said vesterday they are in the process of making a new base year, maybe the ninth one. Why do we change the base vear?

#### LIST OF BASE YEARS

1.	1948-49 base year (introduced in 1956)
2.	1960-61 base year (in Aug 67)after 11 years
3.	1970-71 base year (in Jan 78)after 11 years
4.	1980-81 base year (in Feb 88) after 10 years
5.	1993-94 base year (in Feb 99) after 11 years
6.	1999-00 base year (in Jan 06)after 7 years
7.	2004-05 base year (in Jan 11)after 5 years

8. 2011-12 base year (in Jan 15)after 6 years

- Generally revised along with Quick Estimates

#### WHY WE CHANGE BASE YEAR

- To capture structural changes in economy
- To incorporate results of long-term surveys and census, as they are not included in between
- To incorporate latest international standards
- To make methodological improvements
- To realistically measure the real growth (relative prices of commodities in base year form weights for constant price growth rates)

This is a particular example showing why we change the base year. If the prices are changed, then how does the GVO behave, at the old basis and the new basis. If you see the total at GVO at 2004-05 prices, the growth rate is of GVO is 8.5 percent; at 11-12 prices, it is 7.7. This is another example, this is from the agriculture sector, paddy and fruits. This is the production sector. This is the reason why we are required to change the base year. How do we change the base year? This again is a technical issue, based on consultation with the expert bodies and in subcommittees.

#### GUIDING PRINCIPLES FOR NEW SERIES

- (i) revision of base year to a more recent year (for meaningful analysis of the structural changes in the economy)
- (ii) complete review of the existing data base and methodology employed in the estimation of various macro-economic aggregates including choice of the alternative databases on individual subjects
- (iii) to the extent feasible, implementing the recommendations of the System of National Accounts (2008 SNA)

There are international guidelines, which we have to followbecause your GDP estimate and other data are to be compared in international forums also. Similarly, at the estimates at state level, are to be compared with each other in the national account division. Otherwise, somebody will say that you have prepared the estimates and there is no authenticity, there is no validity to these estimates. Estimates for the new base year have to use the results of recent surveys.

### USE OF RESULTS OF RECENT SURVEYS

- \* Livestock Census, 2012
- \* NSS 70th round (2013) AIDIS
- \* Population Census, 2011
- \* NSS 68th Round Consumer Expenditure
- \* Study on yield rates of meat products & by-products of different livestock species conducted by National Research Centre on Meat, Hyderabad
- \* Study on the inputs in the Construction sector by Central Building Research Institute (CBRI), Roorkee
- \* Study on 'Harvest and Post-harvest losses of major crops and livestock products in India' conducted by Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana.

#### **RESULTS OF TYPE STUDIES USED**

- (i) Rates and ratios in agriculture sector
- (ii) CSO/States yield rates for meat, meat products and meat by-products
- (iii) market charges paid by the farmers
- (iv) Indian Council for Forest Research Education - output of forest products

#### IMPROVEMENTS IN COVERAGE

Production

 (i) meat production from unregistered slaughtering in the States where the same is presently not covered in the production estimates

Construction and capital formation

- (i) seven new tree crops during the gestation
- (ii) period
- (iii) installation of wind energy systems valuables

Improvements in coverage for example, in production (meat production from unregistered slaughtering houses), construction and capital formation (new tree crops; installation of wind energy systems; valuables), for other private communications, renting of machinery and other equipment without operators), computer related activities in unregistered sector, coaching classes: social work in accommodation; recreation and cultural activities, etc., these were not in the earlier base years. So, these are the new things which have been covered in the 2011-12 series. But still in the system, in the new base year, there is a fall in the GDP which I have already explained by giving one example in an earlier slide. And improvement in procedures, work force estimates at state level, NSS data at state level by compilation categories are now available. We are using those datasets.

#### IMPROVEMENTS IN PROCEDURES

- \* Adding 'fixtures and fittings' in the construction sector
- \* netting the retained reserves and dividends paid from the property income of mutual funds
- including software and new companies capital expenditures under private corporate sector's GFCF
- \* operating losses of DCUs imputed subsidies, as in irrigation departments
- \* inclusion of own-account production of housing services by owner-occupiers and of domestic and personal services produced by employing paid domestic staff;
- imputed value of own-account labour treated as mixed income;
- \* allocation of FISIM;
- \* Installation costs of wind energy systems estimated through perpetual inventory method;
- \* adopting the practice of changing base year every 5 years

#### WORKFORCE AT STATE LEVEL

- \* NSS data at state/compilation category are now available
- \* Census WF data is available at state level
- \* Economic Census work Force estimates

Census work force data at state level; Economic Census work force data at state level; Economic Census work force data at state level-these are now available., Prof. Rath said yesterday that Economic Census is a dataset which we have. We have done six Economic Censuses till date, right from 1978 that was the first Economic Census and the recent is the sixth one. In the all the sixth Economic Census; I have been associated with four of them. I think, Dr. Manna is also associated with all these Economic Censuses.

#### Dr. Manna:

The first Economic Census covered the turnover data at the establishment level; that was subsequently discontinued.I tried to re-introduce it in the sixth Economic Census. Just for the information of the audience, that was not the exact value of the turnover, but in terms of some broad class limits, less than Rs. 1 lakh, Rs. 1 lakh -1.5 lakh, etc., in terms of codes. That would have also been useful for thinking. But the experience was that when the pre-tesing was done, I did not participate in the pre-tesing, they said that the respondents were not in a position to give the figures. Anyway, I tried my best to introduce it, at least in terms of codes. The first Economic Census was in 1977. And that covered only the non-agricultural establishments; there also not all the establishments, but establishments with at least one hired worker Own account establishments involved in purely home based activities were left out.

# Prof. Dholakia:

But that was a very useful thing; it had the turnover.

# Dr. Anant:

For the Economic Census, we had received a lot of requests for including different items for measurement; these included turnover, capital stock, and so on. There was a technical expert group which had done a very detailed preevaluation of all of these. In fact, Prof. S P Mukherji, as chair of the expert group himself went to a number of the sites of pre testing. The final schedule was based on the assessment of the expert advisory committee.

#### Dr. Manna:

Another important revelation from the Economic Census is that particularly own account units and that too within the home-based category as such they are hugely under-estimated in Economic Censuses. And if you compare NSS figures, the Economic Census figures with corresponding NSS nearby round, you will find that about the own account in Economic Census is, maybe, 60% or 65% of the number in given by NSS. So, there is considerable under listing of own account establishments. But if you go to the units with at least one hired worker, I find the Economic Census figures to be higher than the NSS figures. That is the trend. So, Economic

Census under-lists own account establishments but it sufficiently captures the so-called large entities we had with us. In the sixth Economic Census, because of that experience of last five Economic Censuses, there is huge under-listing of own account establishments, we modified the questionnaire----- when door to door visit was made to the households, also at the household level, we added some 2-3 questions, such as, whether any person in the household was selfemployed; and if yes, how many members were like that. So, that helped the investigator or the enumerator to record some of the so-called selfemployed which otherwise are likely to be missed. But even then, my analysis is that based on the sixth Economic Census if you compare number of establishments with those in NSS 73rd round, even though there has been a refinement. the Sixth Economic Census has an underestimation.

# Shri Pradeep Chauhan:

So, we are using the huge databases from the Economic Census also for estimating the distinct domestic products. At the state level also in certain sectors we are using the Economic Census data. But for the distinct domestic products we have to use this data from this source. Because there are certain grey areas,for example, when it comes to the service sector. So, from where do you get the data? There are two sources. One source is Economic Census, and another is the business register which I will discuss in the later slides.

#### EXTRA INITIATIVES AT STATE LEVEL

- \* The State has prepared Business Register of all entities registered under any of the acts in the State. This data has been used in the Manufacturing, Trade and other services sectors of the GDP for its coverage.
- \* The coverage of Rural Local bodies has been taken. The state is first in the country to analyse and use this expenditure data in State GDP.
- \* For better coverage of Land use data the department has been able to trained the all field functionaries(Patwaris & Kangoo) under capacity building programmes.

Besides the methodologies being passed out by NAD based on SNA 2008, some of the extra initiative has to be taken at the state level to get their estimate more realistic and more meaningful. State level has prepared the business register of which yesterday Rajasthan showed example also. There are few states like Karnataka. Rajasthan. Himachal. Sikkim and one or two more states which have already prepared the business register. It was a mandate in the 13th finance commission that all the states and UTs have to prepare the business register on the analogy of the population census that when a person is there he is being listed. Similarly, when there is some economic activity going on under certain Acts, you have to put into a black and white form. We at the state level have to do it. Only a few states were able to do it. One of my neighboring states, Harvana, did not even start that issue. So, with these certain issues, how they are preparing the DDP estimates, we fail to understand, because in business register, you require the, there is work force estimates, in fact, not the estimates, there are the actual data. In what district, which type of business activities are going on, what is the workforce, what is their likely output in those areas, we are able to capture these. At the state level, we have prepared business register, and the data is being verified. Like yesterday Mr. Bairwa had said in the context of Rajasthan, we have to update it and we are happy that we have shared this dataset with the departments which had the registering authority, they do not know how many registering units with the industry department at the District Industrial Centres (DIC), we are providing in the datasets. So, they are happy again that somebody is looking after their registration. Like in Rajasthan, we have not prepared a portal, but we have a manual updating system. In every month, from the district statistical offices, a person goes to the industry centre, the the registrar of companies or the cooperative society registrar's office and then the data is being gathered and is updated in our own system. Then

it is being provided to the concerned agency that is the registering agency. So, we have updated data up to December 2017 in the business register.

# Prof. Dholakia:

In this context, I have one observation based on my own estimation survey in the past. When we want to ask the question - "how many people do you employ?", there is a possibility of serious underestimation, in the sense that respondents would say that they were employing only 30 people, but I could see sitting there that there were more than 60 persons who were actually working there. They were all workers. But the number that they gave was below a certain threshold, because otherwise they would be liable to provide certain facilities and benefits as per some laws. How do vou ensure correct answers? In the SDP and the other kind of estimates, we have the accounts and that too, the audited accounts, so things are verified. As far as the employment part is concerned, there is nothing similar that is available. The only thing there is the EPF. Now the issue is that because they do not want to pay the EPF, they do not want to give the numbers. Actually, they are employed, but not stated to be so! How do you tackle that? I just want to understand.

#### Shri Pradeep Chauhan:

Prof. Dholakia, you have raised a very valid point about employment data generation. Firstly, what we have done in the business register is that we have listed the entities from the office records, and whatever the number of workers they are showing. Maybe, they are showing 10 workers, and may be employing 40-50. Our investigator is a senior person - For this work we deployed statistical assistants and assistant research officers, in the class 2 category or grade C or B category; they were employed for doing this activity, because we apprehend this situation, that the system will not come up that clean as we have thought of. So, when we went to the unit, they will not give you entrance pass. That is true, sir. But at the state level, sir, you have to adopt some administrative approaches. In the case of these manufacturing units, what we have done is, we take permission from the Secretary, Industries, and write to their associations first that this data is required by the state because these datasets are not for your benefit but for all the state's benefit. And this letter was given to the investigators who went there. And audited reports were seen. In those audited reports, balance sheets, Profit &Loss accounts are there. But employment data was again a grey area. But with the judgment and taking into account all what they are saying, we have to take those numbers only.

#### Dr. Anant:

You cannot go beyond a certain limit. The fact is, ultimately in any survey or census, the investigator does not have x-ray vision that he can see beyond what the respondent is willing to tell him. We train them and in this a census is more difficult than surveys, we do a slightly better job of training for surveys than censuses we train them to probe. Ask a few questions, for NSS surveys we give guidelines on how the training is to be done. We can put some probing questions. But in a census please note that the investigator is hired for two months; he is given a modicum of training. He has to accept whatever the respondent tells him. Dr. Manna has explained about the challenges We have included some questions in the household schedule to do some additional probing, so something does not get left out. In big establishments, there is not much you can do.

#### Shri Srivastava:

I want to respond to Prof. Dholakia's question in practical terms. In the Economic Census, even we had personally gone to the field. And we saw that there were 50 or 60 persons working in some places. But when we filled up his employment schedule he showed only 20 persons as working there. When he was questioned about this he told no, those were not his but contractor's employees. That he has given the job to the contractor. They were the contractor's employees. He was not liable to pay them. There were 60 persons working there but, in fact, he was paying the contractor. He showed us the records that he was making the payment to the contractor. So, this is the situation, sir.

# Dr. Manna:

The problem is, the contractor can also be difficult to find, he also cannot be captured. So, all these workers are out of coverage. If you look for the worker estimate, all of you are familiar with NSS based employment-unemployment survey. Even if you assume say 40% people are in the workforce, so in our country about 50 crore people will be employed. Out of 50 crore, 50% share goes to agriculture, so 25 crore. So, ideally another 25 crore, roughly -these are the some rough estimates -should be in the non-agriculture. Now, let us look at the Economic Census figure. Economic Census figure, as I broadly recollect, it covers non-agriculture. About 6 crore units are there- a little less than 6 crore. And on an average a little more than 2: so, may be 13 crore may be employed according to the Economic Census. But employment survey shows 25 crore. That is the extent of underestimation of workforce in the Economic Census. There are so many reasons for that.

# Dr. Anant:

In assessing the Economic Census employment figure you need to account for coverage differences. Construction was not covered in Economic Census, similarly, also defense services, government, etc. The adjustment for these will reduce the magnitude of underestimation but some under estimation will be there. It is important to note that what we are primarily looking for in the economic census is an accurate characterization of the distribution of establishments, though not their actual number. And it should be pointed out that the size distribution characteristics is accurate. Even here are some concerns, because there was some analysis for the Fifth Economic Census and earlier, which showed that at certain critical levels, the distribution behaved anomalously. Particularly at employment numbers of 9 and then about somewhere near 30, they were unusual spikes, because people did not want to go above those thresholds. Analysts who examined this have commented about it; these are some of the pitfalls of questionnaire based data.

### Shri Pradeep Chauhan:

It is true sir. We have two datasets at the state level also. One from Economic Census workforce, other is from the business register but they are not matching, sir.

# **Prof. Chitre**

In Economic Census, you rightly said that people would try to under-report the manpower employed. But then, when the workers seen there were told to be contractors' employees, we are covering the contractors also, is it not? Then what happens?

#### Dr. Manna:

Sir, theoretically, as per instruction, Economic Census is supposed to cover each and every unit which is engaged in economic activity. So, the contractor is supposed to be covered. If he has got a fixed site or office, in that site he is supposed to be listed. If otherwise, he has no site, it is a household. That household level question is added-Any member self-employed? If they said yes, then also probing was done whether activity is in fixed structure or not. That information is there. If they say no, that means in the household, that activity is going on. So, in the household that contractor should be listed and his worker details should come there. But to what extent a numerator or investigators have followed this instruction that is a big question.

# Dr. Toprani:

Sir, even if the investigators followed the instruction, still too from the household to capture this we have to recognise visible enterprises and invisible enterprises. To capture the invisible enterprises from the household is a big task, really it is very difficult. Dr Anant Sir has rightly pointed out, we cannot see beyond a point with all the training and everything. There is a limitation.

# Shri Abhay Tilak:

I want only one clarification. In this business register, do we have any indication about the functional status of the unit?

#### Shri Pradeep Chauhan:

Yes, exactly. In the case of Rajasthan it was also pointed out. They have listed something like 5 lakh enterprises. Then, when they went to the field, only 40 to 50% of them were functional. In our case, at least 72% are functional. If there are 100 enterprises we have only 72 of them which are functional at the state level.

#### Shri Abhay Tilak:

How often do you update the lists?

#### Shri Pradeep Chauhan:

Every month, sir. Because ours is a small state, we are updating the list every month. We have a GDP size of 0.6 percent in the national GDP, we have a population size of 0.6 percent in the national population. Our Bureau of Economics and Statistics is also small, but it is doing a good job. I must compliment my Bureau. We are doing the things which are being required at the national level and the state level.

# Shri Abhay Tilak:

The reason, why I am asking this question is, that at the district level, it becomes extremely difficult to find out the mortality among units, because the DIC gives us the only the list of aggregate units, which are registered sometime back. But we have no information otherwise. We have been doing a lot of field studies in Maharashtra. Even if we go to an MIDC estate, the office does not give any idea about which of the units are operational in the area. We have only a master list. And you cannot make out anything from that.

#### Shri Pradeep Chauhan:

Oh, yes, definitely, you are right. We have taken these master lists or the records from their offices first and listed them out. Then what was the second step? This was mandated in the 13th Finance Commission's grant which was sent to the states from the Ministry of Statistics and Programme Implementation for doing this type of activities. After using those records, our person went to the field and saw whether this actual unit is functional or not. If it was not functional, we struck it out. If it had changed its business activity, then it was to be listed likewise.

# Dr. Rana:

Verification and updation is a regular process in our case.

### Shri Pradeep Chauhan:

On monthly basis, sir.

# Dr. Bairwa:

(Translated from Hindi) Your question is absolutely well-taken. We have started this in Rajasthan just recently. That anyone who intends to start any economic activity on a regular basis has to first of all take out our Business Registration Number (BRN). This has been made essential through a Notification. Their application is entertained by the industry department, factory and boilers department, electricity department, water supply department only if the application mentions our BRN in the Application. Further, in addition to regular surveys, we make efforts that we integrate our portal with the websites of the industry department, the MSME department, MCA website, etc., so that through web services their information should come to our portal and our information to their websites. In this way, we have developed a regular mechanism. In fact, I would appeal to Himachal Pradesh that instead of making such huge repeated exercise every year to up-date information, since our portal is that of the NIC, so you simply need to make your master portal for the purpose. Our portal can be adopted by all other states as well. In fact, we have had two or three meetings with the Registrar General of India (RGI). RGI is planning to implement in all states the Pehchan portal of Rajasthan, on which information of registration of births, deaths, marriages, is continuously being uploaded. For this the officials from the RGI had themselves come on a special visit to Rajasthan. They had carried out a complete verification in the field as well, about the manner in which our registering units carry out this work; how much time this process takes; what the capacity of our system is, etc. In fact, they have perhaps even got one or two states to implement the system as well. Since all our portals are the National Informatics Centre (NIC) portal, it works everywhere in the country. Government of India portal is also an NIC portal. Moreover, ours is an in-house portal, it is a portal of the state data centre. We have not outsourced it to anyone else. Thank you.

# Shri Pradeep Chauhan

Thank you, Bairwaji for this important knowledge transfer. Many many thanks.

# Shri Abhay Tilak:

Sir, with your permission, could I make a small comment? The reason why I am asking you this question is, we were working with the Economic Census data, between the two censuses for 1998 and 2005, not me, but Dr. Sharadini Rath. We could see major changes in the distribution of units according to employment sizes, from district to district. So, we selected two districts to find out why there are so vivid and major changes. We realised that not only the distribution of workers has changed, because of change in the categorisation - the workers who were employed as regular workers were reduced, and the number of contract workers had gone up. That was one of the major reasons: the other reason was, there was a physical shift of the unit itself. But we were unable to trace which units have shifted from one location to another, because we could have no access to any information, recorded or available with any of the official sources, which would tell us this particular detail. I was not aware whether that the Business Register is available in Maharashtra or not. But with this source, probably I think these kinds of surveys will now become easier because we postulate with the implementation of GST there is a likelihood of a major restructuring or relocation of industries across states. So, if this kind of source is available, probably it will be a useful help for the researchers at the field level. So, is it updated regularly?

#### Shri Pradeep Chauhan:

Yes, it is updated, just as I have already said.

These are updated in certain states; not that every state is doing these activities. This was mandated by the 13th Finance Commission, but updation and all that tends to be done by the state itself. So. the states, which want these datasets to be used. are updating it, otherwise there is no updation. But, as you said, in 4th and 5th Economic Censuses the number of employees criterion was there. There was an address list in the 5th Economic Census when 8 and more people were working, so you can see these things in the publication of the Economic Census. Otherwise, before that, in 4th Economic Census I am not aware that the list of the units carrying out manufacturing or the other activities, which had more workers, were taken at that time, in 1998. They were not taken in 1998: it was taken in 5th economic survey in 2005 and in the latest sixth Economic Census.

# Dr. Sharadini Rath:

I want a further clarification on the question that Dr. Dholakiya asked and to which Dr. Manna also gave answer. You are saying that, when you ask the units, how many workers they have, there is a tendency to underreport workers. Is it being said now, that this does not happen in NSS surveys that it only happens in Economic Census? For example, what is the status of this respondent problem in NSS and ASI data for instance, as against apparently with the occasional surveys and Economic Census? Is it that respondents give full answers to NSS, but partial answers to economic surveys?

#### Dr. Toprani:

Yes, as far as the NSS surveys are conducted, particularly ASI, it is a record based inquiry; therefore, the under-reporting there is a bare minimum. I would not say that it is not there. But it is a bare minimum in the ASI, whereas in NSS surveys, as is the case in any other survey, under-reporting is there. Beyond a point, our investigator also cannot keep on questioning. Otherwise, the respondent may become hostile, and whatever information otherwise we are going to get that also will perhaps be lost. So, underreporting is there as much as it is there everywhere else. But as far as ASI is concerned, to some extent, these are record based enquiries, wherein all the labour records are taken out and, on the basis of that, information that is being covered is reported. Further, in the case of ASI, contractual labour is also covered therein, because we do get the information about the contractual labour. That information is available, and is being collected in the ASI return.

# Dr. Srivastava:

As far as the quality of survey is concerned, for example, when we carry out a Census or an Economic Census, the whole exercise is carried out together during one short period; it involves a huge amount of work; a large number of enumerators are engaged in the work, therefore, that also affects the quality, whereas in the case of the NSS surveys or the ASI surveys, the work is done by our regular staff, so their quality is definitely better.

### Dr. Sharadini Rath:

Quality being better and the respondent's concerns are two different things. Even with a trained enumerator, if the respondent does not want to share some information, then it will not depend upon the quality of the enumerator as to whether the information will be provided.

#### Dr. Srivastava:

As Dr. Anant and Dr. Manna also mentioned, if the enumerator is a regular staff member of the survey, since he is engaged in this work all the time, he would be more skilled in this task and would put in a question or two in such a manner so as to elicit the information from there properly.

# Dr. Sharadini Rath:

But if that is the case, why is there the gap that you pointed out between NSS and the Economic Census?

# Dr. Manna:

Let me clarify one thing. A household based survey, in my view, is probably a better approach than an enterprise-based approach, or an establishment-based approach for data collection. By the household-based survey, I mean employment-unemployment survey, because there you are visiting a sample of households. which is drawn scientifically and in each household you are probing into how many people are engaged in work. So, there is very little chance of leaving out some work force in the householdbased survey. In the establishment survey, for example, Economic Census, as I told, there is huge under-listing. Many people -as per household-based survey they are workers-they are not getting captured in Economic Census. Just to give you one example, say, a maid servant, everyday coming to your household for cleaning utensils, etc. They will be classified as workers there. Here, can you capture that person? Even if an investigator visits, the maid servant will not report that she was self-employed. This is one type of problem in Economic Censuses and in enterprise surveys. Mr. Toprani has clarified about the relative data quality of Economic Census and NSS survey where he told that even in NSS beyond certain point you cannot probe. because it is information, I mean, whatever is reported by the respondent. Another problem in Economic Census why there is huge underlisting, as I have told you, because investigators, enumerators may not probe properly. Lot of home-based workers will be left out; that is one

thing. Another problem is, in my view, in many big units, having large number of workers, like say, a very big hotel, an investigator or an enumerator may have difficulty even to reach it; security may not allow. I am just giving one example, it may not be everywhere true. So, first of all entry is a problem. Even if you enter, how many people are there, whatever the owner will say, he will obviously try to understate the employment figure, unless there is a lot of publicity that this information is kept secret and confidential. A number of things contribute to the huge under-listing of number of units as well as workers in Economic Census. But on relative data quality, as far as an establishment survey of NSS and Economic Census are concerned, they are more or less at par; NSS may be a little better in my view because there are trained investigators. They are sufficiently trained, unlike in Economic Census where you have employed a huge chunk of people to carry out the Census. So, these are, in short, my quick views.

#### Shri Pradeep Chauhan:

Statisticians are always in the line of fire, because, the respondent is not responding to your question, the information is not correct from the person from whom the information is to be taken.

# **Prof. Rath:**

What I am saying might be taken as a joke. But it is a little more serious than that. An experienced investigator is one who can successfully cheat. And I am saying this with long experience with field work, with investigators. In Gokhale institute, we had a group of investigators for detailed rural surveys in the 40s and 50s, when nobody in the government was doing such surveys. And they were extremely trained and experienced people. They could have been *Talathis* in the villages and so on. And at one stage, the director had to dismiss one because, sitting at home, he gave schedules filled in which were extremely consistent.

#### Shri Pradeep Chauhan:

Extremely consistent, sir. That was his knowledge of the field.

# **Prof. Rath:**

What I meant by saying, trained people.

#### **Dr. Anant:**

That is true. That is a risk, and that is why one of the things which is not widely appreciated, NSS has a fairly strict discipline system. In fact, quite unusual for a Government organisation misreporting or poor conduct of work is a ground for disciplinary action. NSS has been doing this for a very long time. There are ways in which people get caught, including their own colleagues telling on them. But in this connection let me say something about survey based work which is very important to understand since many academics are here. As academics, we tend to take data in a very mechanical perspective. Let me give an example. Supposing I go to a household and ask you how many people do you employ? Now you will reply to this based on what you understand by the word 'employ'.. You may have a full time maid, you say I have a full time maid. It may be that in your house 3 or 4 part-timers come, do small tasks and go away. Maybe there is a mali who comes and waters the garden; maybe there is a woman who comes and sweeps the floor and goes away. You may not in your mind and in your understanding of the word 'employ', think of them as employed, or as people whom you may have employed. So, you would say I have employed one and you are being honest, it is not that you are trying to deceive the investigator, you are giving an honest answer of what you understand of the word 'employ'. This is what happens

in an establishment survey. Now let us continue this thought experiment and do a different exercise: we go around in the neighboring colonies and slums and whatever and ask people how many persons work. So, all the four people go to your house say, yes I go there and work. Somebody will say I do sweeping of floors, somebody will say I do dishes there. So what we will get from the establishment side, i.e., you as an employer has supported one person. The household survey had shown four. Both answers are from their perspective correct. The trouble is understanding of words and understanding of concepts, and beyond a point the investigator cannot explain to each respondent like I am doing right now. Unfortunately, in India, we make a lot use of survey data, but this limitation of survey research is very poorly understood. Elsewhere in the US and Europe, there has been an extensive work on the psychology of surveys, what is it that surveys can tell you and what is it that they cannot tell you. This is a major area of work. Unfortunately Indian academic departments undertaking survey research have not interacted with departments of psychology, and social psychology, to see how do people understand words. And for us, it is a challenge because we rely on academics to give us inputs. It is something which we need to think about and many of you are from universities, etc., you should think about this and see how can we promote this, because surveys are fundamentally an exercise in psychology, it is about two people talking to each other.

# Prof. Rath:

Arising out of your comment, I would like to draw your attention and that of Dr. Manna, for example. The population census lists people who are employed, some part time workers, some full time workers, and whatever. The Economic Census records for households participation in economic organisation. You take the totals, and both are censuses. What is the difference between this and that Census? If you calculate - Sharadini has done this for three Rounds. Population census gives a consistently higher figure than the Economic Census. The Economic Census does not list, cannot apparently list casual workers, purely casual workers, who are everyday awaiting some employment. This may be the type of thing in the households you were talking about; it is quite often of that order. If they are not regular workers, they are casual. Look at these two different censuses. The differences are very consistent, round after round.

# Dr. Sharadini Rath:

Can I just say one thing, just by way of a clarification? We have been doing a lot of work with the Economic Census data for the last 3-4 vears. And one of the reasons why we use it so extensively is because, first of all, it gives us the data at the district level. No other dataset does that. Especially for non-farm activities, and more specifically for manufacturing and so on, there is no other data source available to us that gives information at the district level. Second thing is that we have actually done field work on the basis of analysis that we did of Economic Census data at the district level. So, we have actually crosschecked in some sense, some of the data patterns that emerge at the district level for Maharashtra, for instance, by going to that district and actually talking to the industry people there, and doing extensive interviews over a period of time. Over a period of two years, actually we did a lot of a field work entirely based on Economic Census data and we have found that it has always brought out, - may be not in the absolute terms of who have under-reported 10 workers or who have under-reported 20 workers - those things we cannot also find out and we did not ask. But as far as the broad identification sectorally such as, for example, electrical goods industry, how many industries, what size, what happened to them over a period of two Economic Census rounds, these all were borne out. We found Economic Census data to be extremely useful by basing our field

work on that data. Going and actually talking to people, for example, we followed some of these electrical goods industries from Maharashtra to Guiarat, and we did field work in Guiarat to find out what were the reasons, and so on. So, now I have been waiting for the sixth round, the 2013 Economic Census, and it turns out that all these movements that we saw, which were reported to have happened during 2008-09, now show results in the 2013 round of Economic Census. The number of workers in Gujarat at that location, in that district, has actually increased substantially, and we can see why it has increased, which was already done in our field work. So, much of this has been reflected in the new Economic Census and so the movement that we were seeing in the 2005 and post 2005, we were able to track. This work we have done entirely based on Economic Census. There is no other database. Therefore, if you really want to work at disaggregated level. below the state level, sub sub-state level, there is no other database. So, please be careful, I am requesting you, as the entire data collection system and all of you, who work so hard in collecting these data, please be careful about sort of running it down. Basically! Be careful about running it down, because we use it. And we can assure you that, to the extent that we have used it, of course we have not used it all India level and we have not done this, and we have not done that. For example, I have looked at Himachal Pradesh data, for same, movement of industry and location and so on. And it has now been borne out. What was reported to us in the interim post 2005 and what we see in Himachal data now, it is borne out. So as far as whether the worker numbers are perfect, what Prof. Rath said just now about, we have done simple calculations by trying to compare Economic Census data as far as worker population census data with worker numbers in population census. And we find that they can be reasonably explained by viewing that the gap between Economic Census and non-farm workers in population census is what we think of as purely casual labor, who are not part of any enterprise, who are
not part of any establishment, who just move around, and are purely causal. And there is large number of them. I just wanted to say this because there has been a lot of criticism about the whole Economic Census; we wanted to say that we have used it, and we have found it useful.

#### Shri Pradeep Chauhan:

You can write to the Ministry and also have the unit level dataset from the computer centre of the Ministry. They have prepared data on unit level basis for the states also. On payment basis, they are also providing, the unit level data.

# **Prof. Chitre:**

Yes, this is a very important concern for us. We have very different data sources and their reliability and so on, because often observations are made about this aspect. I am very much keen that this discussion should have gone on, but we have to hear and talk more about the Himachal Pradesh GSDP estimation and data problems, and I think we should come back to that.

# Shri Pradeep Chauhan:

So, I will quickly go through it. Sir, the local bodies accounts are there. Yesterday, it has been dealt, we have prepared a template and the template was circulated to all the states. And so that yesterday it was discussed and the land use statistics in the states are in bad shape sir. That is a grey area for all the states. Likewise, in our state also there is a grey area but we have for our purposes, for not underestimating or overestimating while using the production approach, because Himachal has less agriculture production area but more fruit producing area. So, that is why we have to train our patwaris and local functionaries to have what we require. Again under the ambit of 13th Finance Commission grant we were able to have a training of these all *patwaris* in the state so that they were able to understand the issues of what is being asked from them. There is a Lal kitab, giving nine fold classification, they do the datasets, they give the entries in there, but that is not pure statistics. We have to ask them these are the things we require from you. So, we have trained those persons in 3 years but again after gap of two years we have to revisit them, because there are changes in the administrative set up; some get promoted; some get retired; some get transferred, so you have to be in chain with this issue.

#### **BROAD METHODOLOGY**

Agrl, for, fishing & mining - prodn\*price Regd. Manf -ASI/IIP with WPI Unregd. Manf

- Base year SSI census/economic census
- IIP with WPI for other years
- Construction same as in 04-05 series, coverage broadened Others -
- public sector Admn/DCU/NDCU
- private corporate sector (VAPW from h round)
- unorganised sector

- first - base year estimates (WF\*VAPW, except trade and computer software for private corporate sector)

other years - extrapolate with indicators

This is a broad methodology, I will skip these issues,

#### PRODUCTION AND PRODUCT TAXES

\* Production Tax and Production Subsidy: Does not depend on quantum

- Examples Stamps and registration fees; Support to farmers in the form of seeds
- \* Product Tax and Product Subsidy: Depends on quantum Examples - Excise Duty; Fertiliser Subsidy

what is a production tax and what is a product tax, this is as NAD is passing these issues to the states.

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						10. 01010
S. No.	Item				percentage previo	change over us year
		2013-14	2014-15	2015-16	2014-15	2015-16
1.	GVA at basic prices	88833	97165	106073	9.4	9.4
2.	Taxes on Product	6746	6978	7518	3.4	7.7
3.	Less Subsidies on Product	2990	3035	3080	1.5	1.5
4.	GVA at Market Prices	92589	101108	110511	9.2	9.3
5.	% difference between (1) & (4)	4.2	4.1	4.2	-	-

GVA MARKET PRICES VS. BASIC PRICES

## COMPARISON OF ESTIMATES - 2011-12 OLD AND NEW SERIES

S. No.	Industry	% Share	in GVA -12	Difference in % points
		2004-05 Series	2011-12 Series	
1.	Agriculture, for- estry & fishing	18.0	17.2	-0.8
3.	Manufacturing	20.1	25.9	5.9
4.	Elect, gas, water & other utility ser- vices	9.5	8.7	-0.8
5.	Construction	12.8	9.2	-3.6
6.	Trade, hotels, transport, commu- nication	14.9	10.9	-4.0
7.	Financial, real estate & prof. ser- vices	7.7	13.9	6.1
8.	Public administra- tion, defence and other services	17.0	14.2	-2.8
9.	TOTAL GVA	100.0	100.0	-

This is the slide on Market Price versus Basic Prices.<sup>1</sup> Yesterday, it was all discussed; there is a no change. If you see the right side of the two columns what is the difference between 2004-05 and 2015-16.

This Slide shows the estimates for 2011-12 in old and new series. You see the differences at the state level. Financial and professional services have increased; all other sectors have decreased in the new series, from the old series. Manufacturing has gone up in our case; only in our case. As for the other states, they have reduction in that also. There was a Tax Holiday here in Himachal, so the manufacturing units from Goa, in pharmaceutical industries, came to Himachal Pradesh. That is why there is an increase in the new series as well as in the old series.

Yes, there are certain limitations to it also.

These	estimates are revised three times for one year due to
the f	ollowing reasons:
- (i)	Time lag in Data
- (ii)	use of latest possible data
- (iii)	replacement of Indices with actual data
- (iv)	comparison at national level
The e	stimates for 2014-15 are provisional, 2015-16 quick
and 2	016-17 advance.
The e	stimates are finalised after its comparison with NAD
in co	mparable discussion every year.

The GSDP estimates are released in the budget document economic survey every year in the budget session in the state assembly after approval from the Honorable Chief Minister.

1. GVA at Factor Cost would be GVA at Basic Prices less (Indirect Taxes less Subsidies, on production).

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### NEW INITIATIVES OF HIMACHAL

- \* As a part of the technical assistance programme of the World Bank's Development Policy Loan Promoting Inclusive Green Growth and Sustainable Development in Himachal Pradesh and
- \* To assess the forest wealth and its contribution to the other sectors (Tourism & Hydropower)
- \* Green Accounting has been initiated

# GREEN ACCOUNTING IN HIMACHAL PRADESH

- \* The Green Accounting has been started in Himachal Pradesh
- \* The pilot was carried in Mandi District.
- \* The UN methodology of Sustainable Economic Environment Accounting(SEEA) has been used.

Himachal Pradesh is a revenue deficit state. But we have taken a policy loan from the World Bank for promoting inclusive growth at the state level, for the inclusive development of Himachal Pradesh. For this, they require green accounts for the forestry sector, tourism sector and the hydropower sectors. So, we have initiated these new things at the state level. We have made a paper, we have made a manual of it also. That can be shared with all the people who are interested in the accounting of these three sectors, i.e., forestry, hydro, and tourism sector. This is an initiative at the state level because of the World Bank's loan.

- \* Preparation of physical area, volume of forest resources in Himachal Pradesh as per SEEA framework.
- \* Estimate the exact potential and contribution of NTFP to the state.
- \* Understand the exact contribution of the Forests to Tourism sector of state economy.
- \* Physical accounts vs Monetary accounts (Development of PSUT tables for the timber and NTFP)

We have even prepared an estimate of the physical area of forest. And now we have this for tourism sector. This is what we have done by way of an extra initiative beyond that of the NAD's ambit. These are the proposed study to fill in the data issues, you can see it.

#### PROPOSED STUDIES TO FILL THE DATA ISSUES

- \* Area and Production Estimates (Girdwari and Crop Cutting Experiments)
- \* Employment under Informal Sector
- \* Study of Private Transport System
- Study of Natural Disasters in the State and its Impact
- \* Time use Survey (TUS)
- \* Study on Private Banks Investment and Saving
- \* Sateilite Accounts for Tourism Sector
- \* Sateilite Accounts for Education Sector
- \* Study on Capital Stock of Fishery
- \* Study on NTFP at State Level

Thank you very much sir.

# IMPLICATIONS OF INDEX NUMBER PROBLEM ON SECTORAL COMPOSITION OF THE BACK SERIES

# Deepak Sethia

Lack of the official back series of State Domestic Product (SDP) for most states makes it difficult for researchers and policy makers to engage in long-term analysis using SDP data. Hence, researchers working on regional issues have prepared back series of SDP on their own, generally following splicing approach. However, splicing approach creates serious discrepancies when one examines the sectoral composition of the state economies for years far away from the new base year, not only for the states but also at the national level. These discrepancies can influence studies examining structural change and sectoral contribution to economic growth. The present paper aims to explore this issue both at the national and state level. The paper highlights the need to use chain based GDP for measuring long run growth. Also, there is a need to identify sources of volume revision between the new and old series in terms of the coverage of activities that did and did not exist in the base year of old series.

# 1. INTRODUCTION

Estimates of State Domestic Product (SDP) are among the most extensively used inputs for research and policymaking particularly in the context of regional growth and inequality dynamics. At the state level, GSDP data are currently available in five different segmented series with base years 1980-81, 1993-94, 1999-00, 2004-05, and 2011-12. Regular revision of the base year is essential, particularly for a rapidly growing economy, where structural changes associated with economic growth are significant. Also, base year revision provides an opportunity to incorporate improved availability of data and methodology. At the national level, whenever a new series of national accounts is released with an updated base year, CSO also prepares back series by rebasing estimates for old years to the new base year. However, despite updating the base year of state series regularly, only a few states are preparing back series for SDP. For example, official back series at the 2004-05 base year is available only for Kerala and Punjab [DES Kerala, 2012; DES Punjab, 2013).<sup>1</sup>

While CSO maintains a database on SDP aggregates for all states, it has not undertaken any exercise to prepare back series of SDP. There have been private efforts from researchers to

prepare back series at the state level. EPWRF has brought out two publications for back series of SDP with base years 1993-94 and 1999-00 [EPWRF, 2009]. Individual researchers working on regional issues have also prepared back series, generally following the splicing method. Rebasing the old series at constant prices involves evaluating output in previous years at the prices of the new base year. However, the method of splicing could lead to significant changes in the sectoral composition of the economy, particularly at the constant prices. This may have implications on the measurement of growth dynamics in terms of sectoral contribution in the long run growth.

The present paper aims to explore these issues both at national and state level. After the release of the 2011-12 base year series in January 2015, CSO released the back series of national accounts at the same base year in November 2018.<sup>2</sup> However, this back series provides estimates up to 2004-05 only. The most recent official back series at national level going back to 1950-51 exists at 2004-05 base year only. Further, the most recent official back series at the state level is also available for the 2004-05 base year only (for Punjab and Kerala). Given the limited intertemporal and regional coverage of the available estimates for back series for the 2011-12 base year, we explore measurement issues related to

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long term growth and sectoral composition of GDP in the back series using 2004-05 as the base year.

Rest of the paper is organised as follows: The next section discusses the approach for back series preparation and its theoretical implications on sectoral composition of the economy. The third section examines this issue with the national level back series data for the 2004-05 base year. The fourth section explores this issue at the state level. The fifth section examines the implications of change in the base year on long-run trends of economic growth. Empirical analysis is carried out with back series estimates for Indian states. The sixth section explores issues related to methodological and data improvements in the base year revision that can lead to change in volume measures between old and new series. The last section concludes the paper.

#### 2. BACK SERIES PREPARATION AND SECTORAL COMPOSITION

Two standard approaches for preparing back series are; a) Splicing method; b) Reworking the estimates as per new methodology at the component level or detailed item level. CSO uses both the methodologies to update the national series, depending upon the availability of data [CSO, 2011]. For example, for the back series at 2004-05 base year, aggregates between the previous base year (1999-00) and new base year were estimated in light of the availability of new database and improved methodology. For the remaining years (1950-51 to 1998-99), estimates were revised with splicing approach. The idea behind splicing is to maintain the growth rate (volume movement in case of constant prices) of the old series at the component or at the aggregate level. However, if the growth rates are maintained at the component level, and aggregate is arrived at as the total of components, then the overall growth rate of the linked series will be different from that in the original series. On the other hand, if the growth rates are maintained at component and aggregate level, components will not add up to the aggregate, leading to loss of additivity between components and aggregate level. This is because sectoral weights in the new series differ from the old series.

Standard splicing approach focuses mainly on the price changes in the base years of the two series. This can be done using the constant price estimates for the common year in two series. For example, constant price estimates for 2004-05 in the 1999-00 series are by definition volume for 2004-05 measured at 1999-00 price levels. This same year also forms the base year in new series, where the annual output is measured at 2004-05 price level. Hence, the ratio between constant price output for the year 2004-05 in 2004-05 and 1999-00 series can be considered as revision factor of prices between the two series. When this ratio is applied to constant price series with the old base, one gets the linked series with the new base year for the back (old) years. As mentioned earlier, while preparing the back series for 2004-05 base year, CSO revised the estimates for 1999-00 to 2003-04 by using new methodology and improved data availability. Probably the rationale behind this could be to incorporate those changes, which were not known at the time of introduction of the 1999-00 series. Given that back series estimates for 1999-00 to 2003-04 are reworked, sectoral totals are additive to aggregate for these years. However, sectoral total does not add to aggregate in the back series for years from 1950-51 to 1998-99, which are prepared based on splicing. Thus, CSO seems to have chosen to maintain the sectoral and overall growth rate as in the original series, while sacrificing the additivity. On the other hand, for the two states that have released the back series, the sectoral total adds to the state aggregates for all the years, suggesting that they have chosen to maintain the additivity while allowing the aggregate growth rate to differ compared to original series.

Sectoral weight essentially refers to the share of particular sector in the total GDP for the particular base year. Original series at a particular base year is prepared using the sectoral weights of that particular year, which are determined based on the relative price levels and volume of output prevailing in that year. Estimation of back series through splicing applies weights of the new base year to the timeframe of original series. Inter-temporal changes in sectoral weights over different base years could be traced to at least four factors. Firstly, from the price elasticity perspective, inter-temporal changes in relative prices generally occur in a manner which has implications for sectoral shares in the output. Price and quantity relatives are generally negatively correlated. This is expected for price taker consumers and producers, who react to changes in relative prices by substituting goods and services that have become relatively cheaper. On inter-temporal basis, it is likely that sectors experiencing relative price rise along with inelastic demand/supply would occupy greater weight in the new base series. Secondly, income elasticity would also influence sectoral weights over the years in line with Engle's law. With economic growth over the years, sectoral share and weight for food items could be expected to decline, with corresponding rise in shares for items with positive income elasticity. Thirdly, sectors experiencing technical progress may experience fall in the relative prices along with greater volume growth. Particularly, this could be the case with manufacturing and other commodity producing sectors. On the other hand, those services suffering from technological stagnation are likely to experience rise in relative prices. This is well captured by the Baumol Cost disease which applies mainly in case of labourintensive services like education, health care, public administration where productivity generally grows at slower rate than commodity producing sectors.<sup>3</sup> Finally, relative prices of items like forestry product could grow because of rising scarcity and conservation efforts.

Overall interaction of these factors can influence the sectoral weights under different base vears. Further, differing sectoral weights under different base years may influence the composition of GDP when measured at constant prices of the new base year. This is so because splicing preserves the volume growth rate of the previous series. But in the process of retaining sectoral volume growth rate of the original series, volume levels of the previous years are revised in proportion to volume revision in the link year of the two series. Thus, change in the sectoral weight due to new base year would automatically translate into change in sectoral size relative to aggregate GDP for other years as well. Moreover, in case the aggregate GDP is derived by the sum total of sectoral outputs, as done in the case of two states for which back series are available, then the overall growth rate would also be influenced by the change in sectoral weights. Such effects simply arising from the base year changes are important since constant price estimates are widely used for long-run analysis of growth and evolution of economic structure.

It should be noted that in case the base year revision involves only price revision, with methodology and data source revision leading to no changes in volume measures for the time frame covered by the previous series, then current price estimates for back series would be exactly same as in original series. In reality, methodological revisions and use of new data sources during the base year revision also lead to change in current price estimates for common years covered in the two base series. To the extent there are volume adjustments in the current price estimates for the common years, even constant price estimates in the new base year are likely to have different volume levels compared to constant price estimates for the same year in the previous series. Accordingly, in addition to price level revision, the ratio of constant price estimates for two base series also involves changes in volume estimates, arising out of data and methodology revisions. This issue will be revisited in the section 6. To evaluate the possibility of changes in sectoral composition due to base year revision and its quantum, I use back series at 2004-05 base year from the national accounts. Subsequently, the analysis is extended to the state level as well.

#### 3. CHANGING SECTORAL COMPOSITION AT THE NATIONAL LEVEL

Table 1 shows sectoral shares in the GDP for the original series and 2004-05 base year series for selected years. As mentioned earlier, CSO's back series is not additive for years prior to 1999-00. To understand the relative size of various sectors in the economy. I have added the sectoral outputs. Sectoral shares are calculated with respect to the sum total of all sectors. Thus sectoral shares will add up to 100. A comparative analysis of the sectoral breakup in the original and back series shows some interesting patterns. In the original series for 1950-51 and 1960-61, the share of forestry was only 0.7 and 1.3 percent, respectively, of the total output. This increases to 14.9 and 9.8 percent, respectively, in the back series at constant prices and 7.1 and 4.7 percent in the back series at current prices, and at both constant and current prices, the back series show a steep inter-temporal decline in the share of forestry sector in the whole economy. At the same time. there is a significant decline in the share of agriculture in the back series compared to the original series. In fact, back series estimates at the constant prices for 1950-51 shows the size of forestry sector to be nearly one-third of the agriculture sector, which in the original series was less than 2 percent of the agriculture.

Such a large revision of our assessment of the size of forestry sector can have huge implications on studies examining income distribution as well as assessment of policies relating to the forestry sector based on its relative size. There can be two sources of rise in the size of forestry sector, either the workforce engaged in forestry sector was higher than implicit in the original series or the value added per worker (VAPW) was higher than the implicit in the original estimates (or a combination of both). An officially released back series of GDP showing greater sized forestry sector owe explanation on the implicit income levels and the size of workforce engaged in the sector.

Another interesting change in sectoral share is for manufacturing. In the original series, manufacturing accounted for nearly 15 percent of the output in 1950-51 (total for registered and unregistered manufacturing). However, in the back series, its share falls to nearly 10 percent at constant prices and 11 percent at current prices. The revision suggests that India was less industrialised than what our planners thought when they were actually working on the 2nd Five Year Plan. On the other hand, sectors like real estate, ownership of dwelling, construction, and other services experience rise in their sectoral shares in the back series, more so at current prices. The trend is not clear for public administration and defense, whose sectoral share falls at constant prices but rises at current price in the back series. Clearly, such sectoral changes can have significant implications for the studies that analyse sectoral changes in the economy using national accounts data.

To understand the change in sectoral composition in the original and back series of GDP, we explore implications of the change in sectoral weights between old and new base years. By definition, sectoral weight in the new base series can rise if the product of volume index and price index for particular sector grows at a rate faster than others. The reverse would be the case for sectors experiencing fall in their sectoral share. As evident, change in sectoral share is a result of interaction between price and quantity index. Since the current price and constant price estimates for a particular year in the back series measure same volume output at different price levels, implications of the change in price and

S. No.	Sector		C	Drigina	1 Serie	s			Back C	Series	s (2004 nt Price	4-05): es			Back	Series	s (2004 t Price	-05): s	
		1951	1961	1971	1981	1994	2000	1951	1961	1971	1981	1994	2000	1951	1961	1971	1981	1994	2000
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	Agriculture, incl. Livestock	50.1	48.0	45.7	34.7	28.4	22.9	42.1	38.5	33.2	29.3	23.6	19.6	45.8	36.6	36.5	29.8	24.4	21.0
2	Forestry & Logging	0.7	1.3	1.1	2.7	1.5	1.0	14.9	9.8	9.1	6.2	3.3	2.5	7.1	4.7	4.6	5.6	3.4	2.5
3	Fishing	0.4	0.6	0.7	0.8	1.1	1.1	1.0	1.1	1.1	1.1	1.2	1.0	0.4	0.5	0.5	0.6	1.0	1.0
4	Mining & Quarrying	0.7	1.0	1.0	1.5	2.6	2.3	1.9	2.1	2.1	2.6	3.2	3.0	0.8	1.0	1.0	1.7	2.5	2.2
5	Registered Manufacturing	5.4	8.5	9.3	10.0	10.5	9.7	3.6	4.9	6.2	6.7	8.8	9.2	4.5	6.4	7.2	8.4	9.4	8.5
6	Unregistered Manufacturing	9.5	5.7	4.9	7.6	5.6	5.1	6.0	6.4	6.4	7.4	5.7	5.8	6.6	7.5	6.7	8.0	6.0	6.1
7	Electricity, gas & water supply	0.4	0.6	1.1	1.7	2.4	2.5	0.3	0.5	1.0	1.5	2.2	2.3	0.2	0.5	1.0	1.6	2.6	2.5
8	Construction	4.1	4.6	5.3	5.0	5.2	5.7	5.3	6.3	7.4	7.5	6.6	6.5	2.7	3.9	4.6	4.7	5.1	5.9
9	Trade, hotels & restaurants	8.8	9.4	11.0	12.0	12.7	14.2	8.7	9.3	10.3	11.6	12.5	14.5	6.5	7.5	8.5	11.5	12.9	14.2
10	Railways	1.9	2.1	1.6	0.9	1.2	1.2	0.4	1.2	1.3	1.3	1.1	1.0	1.6	2.4	1.9	1.1	1.5	1.1
11	Transport by other means & storage	1.8	2.3	2.8	3.1	4.1	4.7	1.8	2.2	2.6	3.9	4.6	4.9	1.2	1.6	2.0	2.7	4.1	4.8
12	Communication	0.4	0.5	0.6	0.7	1.2	1.6	0.1	0.2	0.2	0.3	0.4	0.8	0.3	0.4	0.5	0.6	1.2	1.5
13	Banking & insurance	0.7	1.2	1.8	2.8	5.3	5.9	1.0	1.3	1.7	2.3	4.6	5.8	0.9	1.1	1.8	3.0	4.7	5.8
14	Real estate, ownership of dwellings & business services	4.3	4.3	4.0	6.0	6.2	7.2	2.0	6.3	5.7	5.8	8.6	8.7	9.9	14.3	11.2	8.1	8.3	8.2
15	Public adminis- tration & defence	4.5	3.8	4.5	4.7	5.6	6.9	2.8	3.1	4.5	5.5	6.1	6.7	3.4	4.0	4.8	5.0	5.6	6.7
16	Other services	6.3	6.2	4.6	5.8	6.4	8.1	8.0	6.9	7.0	7.0	7.3	7.7	8.3	7.5	7.0	7.6	7.3	8.0
	Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 1. Sectoral Shares in the GDP for Original Series (Base Years) and Back Series (% Shares)

Source: Basic Data from Respective National Account Series and Back Series 2004-05.

Notes: a) Except 1950-51, other chosen years are the base year of their respective original series. Hence, their current price and constant price estimates for the original base year would exactly be the same. Since the back series for 2004-05 base year starts from 1950-51, sectoral shares at current prices for the same year from original series is shown here, even though the base year for the particular series was 1948-49. Also, 1948-49 series provides only net domestic product estimates. Hence, the comparable sectoral composition for 1950-51 from 2004-05 back series also refers to NDP. b) Sectoral classification for 1948-49 series was somewhat different from one followed in the subsequent series. To make a comparable sectoral scheme, the output of sector 'factory establishment' for 1948-49 series was allocated to registered manufacturing and electricity, gas, and water supply based on their relative shares in quinquennium 1960-61 to 1964-65 for 1960-61 series. Similarly, the sectoral grouping of 'other commerce and transport' of 1948-49 series was allocated to construction, transport by other means, and trade, hotels & restaurants.

years can be examined using the back series itself. In case there is no volume revision in the back series compared to original series, then current price estimates of the back series should exactly

volume growth on sectoral composition over the be same as original series. For example, back series estimates of current and constant prices for 1960-61 can also be compared as original series estimates for 1960-61<sup>4</sup> and back series estimates at constant prices for the same year.

S. No.	Sector		Movement			Sectora	l Shares	
		Price	Quantity	Nominal	2005	1951 (Cur- rent)	1951 (Constant)	1951 (O)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	agriculture, incl. livestock	26	4.1	104	16.0	45.8	42.1	50.1
2	forestry & logging	61	1.5	93	2.1	7.1	14.9	0.7
3	Fishing	70	9.9	691	0.9	0.4	1.0	0.4
4	mining & quarrying	69	16.5	1135	2.9	0.8	1.9	0.7
5	registered manufacturing	22	28.3	632	9.8	4.5	3.6	5.4
6	unregistered manufacturing	25	9.8	248	5.4	6.6	6.0	9.5
7	electricity, gas & water supply	33	79.2	2596	2.1	0.2	0.3	0.4
8	Construction	53	16.1	857	7.7	2.7	5.3	4.1
9	trade, hotels & restaurants	37	20.4	751	16.1	6.5	8.7	8.8
10	Railways	15	9.0	137	1.0	1.6	0.4	1.9
11	transport by other means & storage	40	33.9	1370	5.8	1.2	1.8	1.8
12	Communication	11	123.3	1385	1.7	0.3	0.1	0.4
13	banking & insurance	32	62.5	2000	5.8	0.9	1.0	0.7
14	real estate, ownership of dwellings & business services	17	12.7	214	9.0	9.9	2.0	4.3
15	public administration & defence	24	22.3	524	5.9	3.4	2.8	4.5
16	other services	27	10.9	293	8.0	8.3	8.0	6.3
	Total	29	10.2	291	100.0	100.0	100.0	100.0

Table 2. Index Movements for 1950-51 to 2004-05 and Sectoral Shares in the GDP

Notes: A. Movements calculated using back series 2004-05: a) Price movement: by dividing constant price estimates of 1950-51 by current price estimates for the same year, b) Volume movement: by dividing constant price estimate for 2004-05 by that for 1950-51, c) Nominal movement: by dividing current price estimate for 2004-05 by that for 1950-51. B. Sectoral Shares: Calculated based on 2004-05 back series. Sectoral shares for 1951 (O) refers to sectoral shares in the original series calculated using 1948-49 series (also shown in Table 1).

Table 2 shows the price, volume, and nominal growth (as multiple of the levels in 1950-51) during 1950-51 to 2004-05, calculated using the back series 2004-05. Over 54 years, the general price level (overall GDP deflator) increased by around 29 times, real output increased by around 10 times, while nominal output has grown by around 291 times. The sectoral level picture is quite different from the aggregate trends. Forestry

sector has seen price levels rising at a faster rate than aggregate level with opposite being the case for the volume growth. Sectoral nominal growth rate (93 times) has been lower than the nominal growth for aggregate GDP (291). This led to reduction of its share in the output at current prices from 7.1 percent in 1950-51 to 2.1 percent in for 2004-05 (both back series). The absurd-looking high share of forestry sector at 14.9 percent at

constant prices has its origin in the choice of the base year (2004-05). Forestry sector can be expected to experience a relative rise in price given increasing conservation efforts, scarcity, and associated 'premium' attached to wooden products in today's time. Hence, the output of forestry sector in the 1950s would be valued at much higher level if seen from today's perspective. Notice that the sector has shown a volume growth of only 1.5 times in 54 years, compared to nearly 10 times volume growth of the overall economy. Obviously, forestry sector roughly two-third size of today's time (reciprocal of 1.5) would become much larger as a proportion of the GDP that is only one-tenth of today's time (reciprocal of 10).

Industrial output may have seen a fall in relative prices due to better technology and economies of scale. On the other hand, the same factors should lead to productivity growth in this sector at a pace faster than rest of the economy. These features are evident in Table 2, where the output of registered manufacturing has grown nearly 28 times of the levels in 1950-51 as against around 10.6 times for aggregate GDP. Prices for this sector have grown at a slower pace compared to aggregate price rise, though the difference is not very large. Unlike the fast growth of registered manufacturing, unregistered manufacturing has barely kept pace with the aggregate GDP growth. However, it should be noted that the distinction between registered and unregistered sector may be artificial for our purpose. In the long run, many firms that may have started as unregistered firms could have grown well and moved to the registered sector. Faster volume growth and slower price growth of manufacturing sector would have implications on its sectoral share. When analysed from the vantage point (and prices) of 2004-05, the output produced in the 1950s will be much less valuable (comparatively shoddy as well) in today's perspective. A sector that has grown fast over the years would seem relatively small in the past. All these lead to reduction in the share of manufacturing sector in the back series from 11.1 percent at current prices to 9.6 percent at the constant prices.

Story across other sectors is consistent. Intertemporal change in sectoral share between 1950-51 and 2004-05 (both at current prices) would be based on the interaction of volume and price index. Whereas change in sectoral share for the same year (1950-51) at current and constant price estimates of the back series is dependent upon the changes in relative prices. Wherever, the sector has experienced price growth faster than aggregate price levels (for example, forestry & logging (as discussed earlier), fishing, mining & guarrying and construction), its share for 1950-51 would increase at constant price estimates compared to current price estimates. On the other hand, as for the sectors that have seen price growth at a rate slower than the aggregate price levels (for example, agriculture, railways, and public administration (price levels for the last two are decided by the government)), their shares for 1950-51 would decrease at constant price estimates compared to current price estimates.

At this juncture, it is necessary to note that sectoral and aggregate deflators have been calculated here using both current and constant price series from the back series only. Hence, the relative differences in the sectoral deflators explain variation in sectoral shares for current and constant prices in the back series. In contrast, both current price estimates of the back series and original series are supposed to be evaluated at same prices. Hence, the difference between the two should refer to quantity revision rather than price revision. Thus, the difference in sectoral share in the original series and back series at constant prices can be broken down into two parts: a) varying rates of change of sectoral deflators

leading to differences in sectoral shares for constant and current price estimates of the back series, and b) difference in sectoral share for current price estimates of the back series and original series. The first component can be termed as price revision, while the second refers to quantum revision. Comparison between the sectoral share of original series and back series at the current price, from Table 1 and Table 2, suggests that even the quantum corrections are quite large, particularly for forestry, construction, manufacturing, and real estate sector. There is clear need to examine sources behind quantum adjustment. While notes to the CSO's methodology for the new series explains differences in the scope of the new base year compared to old series, it is desirable to identify contribution by various methodological and data improvements that lead to quantum adjustments. This issue will be revisited in section 6.

# 4. CHANGING SECTORAL COMPOSITION AT THE STATE LEVEL

The issue of changing sectoral composition is relevant for the state level macroeconomic aggregates as well. Here, in addition to the long run comparison, the spatial comparison may also be influenced by the changes in sectoral composition arising simply from revision in the base year. Kerala and Punjab are the two states for which the official back series at 2004-05 base year is available from respective state DES. Original series for SDP is available on CSO's websites. Using these, we analyse the sectoral composition of the state economies for the back series and original series from 1980-81 onward.

Table 3 provides sectoral shares for Kerala for the original and the back series. Changes in the sectoral composition from original to back series are on lines similar to that at the national level. though happening within a short span of time. For 1980-81 and 1994-94, forestry, trade, hotels and restaurants, real estate, ownership of dwelling, and business services, and other services see a rise in their sectoral shares in the back series compared to the original series. On the other hand, agriculture and manufacturing experience decline in their sectoral shares. Last two columns provide sectoral price and volume movements from 1980-81 to 2004-05, calculated using the back series. In 24 years, the overall price level has gone up to 641 percent of the levels prevailing in 1980-81. However, forestry, construction, and other services experienced a relatively greater increase in their price level. There are substantial variations in sectoral shares for the current and constant price estimates of the back series itself, which are purely driven by the price effect. Here, again wherever the sector experiences price growth faster than aggregate price levels, its share for 1980-81 in the back series would increase at constant price estimates compared to current price estimates. However, the difference between current price estimates of the back series and original series are even larger, pointing to impact of quantum revisions between two series. The quantum revision is quite large in case of the forestry sector, whose share is revised from 2.92 percent in the original series to 8.81 percent in the back series at current prices. Interestingly, in the 24 years, the volume index for this sector has fallen to 35 percent of the output level observed in 1980-81.

S. No.	Sector	Or	iginal Ser	ries	Back	Series: Co	onstant	Back	Series: C Prices	urrent	Move	ements
		1981	1994	2000	1981	1994	2000	1981	1994	2000	Price	Vol.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Agriculture & Allied Activities	31.58	24.79	18.48	20.61	21.04	17.46	22.43	23.10	19.11	5.89	1.83
2	Forestry & Logging	2.92	2.84	1.77	12.99	2.85	2.27	8.81	3.59	2.50	9.46	0.35
3	Fishing	2.07	2.70	2.21	3.39	2.68	2.04	1.39	2.22	2.03	15.6	1.19
4	Mining and Quarrying	0.13	0.26	0.42	0.21	0.45	0.45	0.15	0.41	0.38	8.85	4.92
5	Registered	8.19	6.10	5.74	3.66	4.42	5.29	4.00	4.74	5.12	5.87	2.78
6	Un-registered	6.35	5.48	3.90	4.07	5.27	4.74	4.12	5.33	4.59	6.33	3.09
7	Construction	8.47	7.85	9.44	8.48	10.70	8.79	6.80	8.40	8.90	8.00	3.80
8	Electricity, Gas and Water supply	2.16	1.18	1.64	1.14	0.99	1.56	1.26	1.06	1.51	5.84	4.24
9	Railways	0.30	0.37	0.57	0.33	0.43	0.46	0.33	0.55	0.52	6.51	3.66
10	Transport by other means and storage	4.28	5.64	6.34	2.23	4.59	6.06	2.26	4.75	5.90	6.33	8.33
11	Communication	0.74	1.50	1.72	0.26	0.52	1.01	0.55	1.41	1.54	3.07	24.70
12	Trade, hotels and restaurants	14.04	17.44	21.59	20.05	20.26	21.70	18.83	17.34	21.13	6.83	2.65
13	Banking & Insurance	2.72	4.34	4.62	0.91	2.66	4.37	1.72	3.74	4.27	3.38	14.8
14	Real estate, owner- ship of dwellings and business services	4.77	6.76	7.45	9.64	9.90	9.29	16.47	9.95	8.34	3.76	3.00
15	Public	4 01	5 11	4 98	1 93	3 55	4 00	2 29	3 59	3 85	5 4 1	5 74
15	administration	4.01	5.11	4.70	1.75	5.55	4.00	2.27	5.57	5.05	5.71	5.14
16	Other services	7.29	7.63	9.14	10.09	9.69	10.50	8.59	9.82	10.31	7.53	2.49
17	State domestic product	100	100	100	100	100	100	100	100	100	6.41	2.65

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Note: Sectoral share are in %. Movements are levels in 2004-05 as multiple of the levels observed in 1980-81. Source: Author's calculation. Basic data from back series and original series for the state

Table 4 shows the sectoral composition of Punjab for the original and back series. Here, DES has released the back series at constant prices only. Hence, we compare sectoral composition of the same with original series. Here again, for 1980-81 and 1993-94, agriculture experiences relative decline in its sectoral share while the size of forestry sector increases, though it remains smaller compared to that in Kerala (which is on

expected lines given smaller size of its forestry sector in the original series compared to Kerala). The back series again shows that the state was less industrialised in the 1980s from 2004-05 perspective than thought at that time using original series (combined share for registered and unregistered manufacturing). Correspondingly, it has industrialised at a faster rate if measured through back series rather than original series. There is a significant jump in the contribution of are not available for the official back series, we other services in the back series compared to the original series. Given that current price estimates

do not engage in the discussion of price and quantum revision for the state.

S. No.	Sector	(	Driginal Serie	es		Back Series	
		1981	1994	2000	1981	1994	2000
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Agriculture	48.2	45.8	37.0	38.8	39.8	34.6
2	Forestry &Logging	0.9	0.1	0.3	2.4	1.4	1.5
3	Fishing	0.0	0.2	0.3	0.0	0.1	0.2
4	Mining & Quarrying	0.0	0.0	0.0	0.0	0.0	0.0
5	Manu-Registered	6.71	0.5	9.0	4.4	7.6	7.9
6	Manu-Unregistered	5.0	4.5	5.9	4.0	6.6	7.7
7	Construction	5.7	4.2	4.4	6.1	4.1	4.7
8	Electricity, gas and water supply	2.6	2.5	3.4	1.9	3.1	3.3
9	Transport, Storage &	2.6	3.3	4.7	1.8	2.4	4.1
	Communication						
10	Trade, Hotels & Restaurants	13.1	12.1	12.2	13.5	11.2	11.6
11	Banking & Insurance	2.3	3.2	4.4	1.3	2.4	4.0
12	Real estate, Ownership of	4.7	5.0	4.7	9.2	6.9	6.0
	Dwellings						
13	Public Administration	2.8	4.1	4.9	3.4	4.3	5.0
14	Other Services	5.3	4.5	8.8	13.1	10.	19.4
	Total GSDP	100.0	100.0	100.0	100.0	100.0	100.0

#### Table 4. Sectoral Shares in the GDP for Punjab

Source: Author's calculation. Basic data from back series and original series for the state

#### 5. IMPLICATIONS OF SECTORAL CHANGES FOR OVERALL GROWTH RATES

Change in sectoral shares may influence not only our understanding of the structure of the economy but also the assessment of overall growth performance of the economy. To examine this possibility, we compare overall growth rate in the original and revised series. At the state level, as mentioned earlier, official back series at 2004-05 base year are available for Kerala and Punjab only. We prepared back series for all states using splicing method at 16 sectors and then aggregating the sectoral estimates for the back series to get the total. For Uttarakhand, Jharkhand, and Chhattisgarh, SDP series are available from 1993-94 onwards, though the states were created in 2000-01. We have prepared back series for undivided states till 1998-99. From 1999-00 onwards, back series are prepared for both undivided (U) and divided states.

After preparing the back series of SDP at constant prices, we compare the growth rate of GSDP in original and back series for the various states. Table 5 presents the growth rate of GSDP at constant prices for original and back series. It can be observed that for most of the states, the

growth rate in back series is lower than measured in old series for 1980-81 to 1993-94. Madhya Pradesh (U) experiences the largest revision in its growth rate at 1.73 percentage point fall in the back series for 1980-81 to 1993-94 period compared to original series. To probe it further, we examine sectoral shares in the back series and original series for Madhya Pradesh (U), shown in Table 6. The overall trend of changing sectoral shares on lines similar to previous two sections is visible here as well. For 1980-81, agriculture and manufacturing sector experience decline in their shares in the back series compared to original series. On the other hand, the share of forestry and

real estate sector increases by 3 and 2 times, respectively, in the back series at constant prices compared to the original series. There are substantial differences in the constant and current price estimates of the back series as well, indicating the differences in the sectoral deflators. Price level jumped by around 6 times in 24 years, though forestry and construction sector have experienced price rise of around 10 times. On the other hand, real estate sector has seen more of the quantum correction than the price correction, given that its share in current price estimates for revised series has gone up by 3 times compared to the original series.

State	CAG	R Original	Series	CA	GR Back se	eries	Differen	nce (Origina CAGR)	ıl - Back
	1980-81 to 1993-94	1993-94 to 1999-00	1999-00 to 2004-05	1980-81 to 1993-94	1993-94 to 1999-00	1999-00 to 2004-05	1980-81 to 1993-94	1993-94 to 1999-00	1999-00 to 2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Andhra Pradesh	5.95	5.46	6.49	5.29	5.30	6.38	0.66	0.16	0.11
Assam	3.94	2.09	4.38	3.93	2.20	4.33	0.02	-0.12	0.04
Bihar			5.63			5.65			-0.02
Bihar (U)	3.26	4.39	5.06	3.57	4.28	4.74	-0.31	0.12	0.32
Chhattisgarh			5.69			5.64			0.06
Gujarat	5.40	7.84	6.86	4.83	7.50	6.70	0.56	0.33	0.15
Haryana	5.49	5.91	8.15	5.14	5.84	8.36	0.34	0.07	-0.21
Himachal Pradesh	4.57	7.16	6.44	3.82	6.41	6.23	0.75	0.75	0.21
Jharkhand			4.2			3.69			0.52
Karnataka	5.64	7.63	4.38	4.91	7.41	4.57	0.73	0.22	-0.20
Kerala	4.19	5.64	6.42	2.89	5.18	6.22	1.30	0.46	0.20
Madhya Pradesh			1.93			1.89			0.04
Madhya Pradesh (U)	4.75	5.38	2.94	3.02	5.16	2.92	1.73	0.22	0.02
Maharashtra	6.56	6.25	5.02	5.58	5.83	4.88	0.98	0.42	0.14
Orissa	3.46	4.29	6.24	3.05	4.11	5.84	0.40	0.19	0.40
Punjab	5.17	4.77	3.94	5.03	4.95	3.97	0.14	-0.18	-0.03
Rajasthan	5.64	8.21	4.33	5.86	7.88	4.19	-0.21	0.33	0.14
Tamil Nadu	5.62	6.63	4.61	5.35	6.71	4.65	0.27	-0.08	-0.04
Uttar Pradesh			3.74			3.65			0.09
Uttar Pradesh (U)	4.31	4.58	4.18	3.84	4.67	4.07	0.47	-0.09	0.10
Uttarakhand			9.59			9.03			0.56
West Bengal	4.74	7.11	5.60	4.66	6.69	5.52	0.07	0.43	0.07

Table 5. Comparison of Annual Growth Rate of GSDP at Constant Prices in Original and Back Series

Source: Based on back series prepared by the author and original State Series published by CSO for the base year 1980-81, 1993-93, 1999-00 and 2004-05. Kerala and Punjab, back series released by the state DES are used. Back series may be supplied by the author on request.

S. No.	Sector	Or	iginal Ser	ries	Back	Series: Co	onstant	Back	Series: C Prices	urrent	Move	ments
		1981	1994	2000	1981	1994	2000	1981	1994	2000	Price	Vol.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Agriculture & Allied Activities	41.2	34.6	26.3	26.8	32.0	25.9	30.7	31.2	25.5	5.3	1.8
2	Forestry & Logging	7.6	2.7	1.7	25.5	4.9	3.7	15.7	4.4	3.7	9.9	0.3
3	Fishing	0.1	0.2	0.4	0.1	0.2	0.4	0.1	0.2	0.4	7.6	15.3
4	Mining and Quarrying	3.6	5.0	5.9	3.7	5.5	5.7	3.2	4.8	5.9	7.0	4.2
5	Registered	8.3	9.3	9.2	5.4	8.7	9.7	6.5	8.6	8.7	5.1	4.5
6	Un-registered	5.4	5.4	3.5	2.9	3.6	3.8	4.0	3.7	3.9	4.3	3.0
7	Construction	5.4	4.9	5.3	6.1	3.8	6.8	3.3	4.2	6.3	11.4	2.9
8	Electricity, Gas and Water supply	1.4	4.0	3.3	0.7	3.3	3.3	0.9	3.5	3.1	5.0	10.7
9	Railways	1.8	2.9	2.2	1.7	1.9	1.7	1.4	3.0	2.0	7.5	2.1
10	Transport by other means and storage	1.9	2.2	2.6	1.2	1.9	2.5	1.1	1.7	2.5	6.8	5.4
11	Communication	0.4	0.6	1.1	0.1	0.3	0.6	0.3	0.7	0.9	2.5	19.4
12	Trade, hotels and restaurants	10.1	10.5	14.1	9.9	12.4	12.4	11.0	11.9	12.7	5.5	2.8
13	Banking & Insurance	1.6	2.1	3.2	0.7	1.9	2.9	1.1	2.1	2.9	3.9	10.6
14	Real estate, owner- ship of dwellings and business services	4.1	6.1	6.6	7.4	8.0	7.1	13.3	8.4	7.6	3.4	2.4
15	Public administration	2.8	4.0	4.5	2.5	4.1	4.4	2.4	3.9	4.4	6.4	4.1
16	Other services	4.1	5.7	10.1	5.2	7.6	9.1	5.1	7.6	9.5	6.2	4.0
17	State domestic product	100	100	100	100	100	100	100	100	100	6.1	2.3

Table 6. Sectoral Shares in the GDP for Madhya Pradesh (U)

Source: Author's calculation. Basic data SDP series for the state

Forestry and logging sector is the main contributor to the change in the growth rate in the back series for Madhya Pradesh and Kerala. Whenever a sector shows high revision factor between two series, along with declining output trends in the older series; output in the initial years of the old series is revised substantially upward in the back series. This happens because splicing preserves the growth rate. Hence, upward revision in volume measures for the link year between two series translates into upward revision in the

older years as well.<sup>5</sup> In case of Madhya Pradesh (U), GSDP from the forestry sector in 1993-94 was only 28.45 percent of the output in 1980-81 for both the old and the back series (since sectoral volume growth rate is maintained in the back series). However, the share of the forestry sector in 1980-81 in the old series was 7.59 percent which got revised to 25.47 percent for the same year with the change in the base year to 2004-05! A similar problem is visible with forestry sector in Kerala where the GSDP in 1993-94 was only

31.77 percent of that in 1980-81. Such instances leading to an upward revision in the estimates for sectors with negative growth rates in earlier series would raise the shares of these sectors in the early years of back series. A rise in the share/weight for the particular sector coupled with negative growth rate for that sector will lead to the lower aggregate growth rate in the back series despite maintaining sectoral growth rates.

We checked the current price estimates of forestry sector for the year 1993-94 in the original 1980-81 and 1993-94 series to probe further. There were substantial upward revisions, 63.11 percent for Madhya Pradesh (U) and 221 percent for Kerala (see footnote 5). It is hard to believe that first the output substantially declines in the original series of 1980-81 and then require equally large upward revisions in the next original series of 1993-94. Such cases highlight issues with the old series, and require corrections at that level.

Change in sectoral weights over the years and consequent implication for overall growth can be attributed to index number problem. Volume growth rate in the GDP and SDP series are Laspeyres index having tendency to overestimate the growth in years subsequent to the base year, and underestimate growth for the years preceding the base year. Hence, measurement of growth at constant prices for years further from base year become subject to biases.<sup>6</sup> With long time series, it is as inappropriate to use the most recent price structure for years far back in time, as is the use of old price structure for today. Ideally, the price structure of the year itself should be used as the weight,<sup>7</sup> however this does not permit calculation of growth rate at constant prices. Another way to address the issue could be the use of chain Laspeyres index, where price structure of immediately preceding year can be applied for the current year, as done by members of the European Union [Eurostat, 2016].<sup>8</sup> Given the proximity, price structure can be expected to remain relatively stable for two consecutive years. This will permit evaluation of growth between two consecutive years at constant prices, though the price structure for each pair of two years will continue to change for measurement of growth. This approach helps in reducing biases in measurement of growth.

### 6. A BRIEF COMMENT ON QUANTUM AND PRICE REVISION

As referred earlier, the differences in sectoral shares in the original series and back series at the constant prices can arise through two sources: a) quantity revision, and b) price revision. Given that current price estimates for both the back series and original series are evaluated at same prices. the difference between estimates in two series can be attributed to change in volume measures arising from the improved scope of activities and new methodology. On the other hand, current and constant price estimates for the back series should differ solely due to price levels. We are borrowing this idea from Bhattacharya and Sakthivel [2002] who defined quantum adjustment as the "ratio average" of SDP for all common years in the new series to old series at current prices. Further, for re-basing current price estimates for 1980-81 series of the SDP to 1993-94 base year, they argued that quantum correction should be applied at the geometrically declining rate over time to unity in the base year of old series. Authors argued that quantum corrections are continuous change over time rather than a change at a fixed time. There should be no quantum correction for 1980-81, because all such things should have been accounted while preparing the series for that base year. It should be only subsequent changes in the structure of economy and introduction of new products that can lead to quantum correction. Hence, under their approach, there would be no quantum correction for the base year of old series. Back series estimation would only lead to a price adjustment for the base year of old series.

The idea of declining quantum correction is appealing, particularly in the context of the problem of changes in sectoral composition due to base year revision. However, there are some issues involved in applying declining quantum correction approach. For the official back series of Kerala at 2004-05 base year, Sethia and Dholakia [2012] noted that quantum correction measured as a ratio of current price estimates for the common years of new and old series show all kinds of trend from linear, U shaped, inverse U shaped, and unclassifiable shape even for the same sector. Such fluctuations at sectoral level for the common years between two series raise issues either on the quality of basic data itself or on the concept of quantum correction. Moreover, in practice, quantum correction in the old series could be because of emergence of new products over time or better coverage of activities existing in the base year of old series which were uncovered in the earlier data. Authors argued that the first part would justify 'no need of quantum correction' in the base year of old series, but the second case would require volume revision in the old base year.

There are several instances when quantum correction takes place due to the second case. For example, the item, trees outside forest (TOF), has been covered for the first time in forestry sector in the 2004-05 series. Similarly, betel leaf production in Assam was covered from the 1999-00 series onward. Use of geometrically declining quantum correction to unity in the base year of old series would effectively mean that there was no contribution of trees outside the forest/betel leaf in the base year of the old series. Clearly, these are cases of economic activity existing earlier but not covered in the national accounts. Use of traditional splicing method to update earlier series to 2004-05 base year would imply that contribution of TOF in the GDP has shown growth rate similar to the rest of forestry sector. One line of reasoning, justifying the use of splicing approach, could be that demand for forest products from the two subsectors (TOF and forests) are likely to be positively correlated. Thus, volume movements of output from two segments of the forestry sectors are also likely to be positively correlated. However, it is also possible that conservation efforts have reduced 'economic' output of the trees inside the forest (TIF), while some of the reduced supply is being met by trees outside the forest. Use of splicing approach would presume that output of TOF has also declined over the years along with TIF, revising TOF substantially upward in the previous years. However, under replacement theory of TIF by TOF, the volume movement of the two subsectors of forestry should be in the opposite direction. Thus, while declining quantum correction proposed by Bhattacharva and Shaktivel [2002] completely misses the TOF in the base year of old series, traditional splicing also wrongly revises the output of TOF substantially upward.

There are various changes in the methodology/indices/rates and ratios used for the calculations of intermediate consumption, prices, etc. With splicing, most of these changes are made up to the initial year of the old series at same rate. For example, Financial Intermediation Services Indirectly Measured (FISIM) were allocated to only a few organised sectors of economy (along with final consumption) prior to 1993-94 series, but were allocated to all user industries from 1993-94 series [CSO, 1999]. FISIM is considered as intermediate/final consumption in other sectors of economy, provided by banking sector. Revision in intermediate consumption would also change the estimates of value added, and these changes must be extended up to the base year of old series, though probably not uniformly. Revisions in the new series at current prices may also be made because of changes in the price data. For example, prior to 1999-00 series, valuation of non-procured food grains was done at prices

supplied by states for estimating GDP at current prices [CSO, 2007]. However, whenever these prices were below Minimum Support Price (MSP), the MSP was used for valuation. This would lead to over estimation of agricultural GDP, wherever grain prices were below MSP, but will correctly revise the GDP downward when MSP was higher than procurement prices. However, from 1999-00 series, non-procured foodgrains were evaluated at the prices furnished by the states for all such cases. Use of splicing would revise the output for even those years when the MSP was below the prices supplied by the states. Ideally, there should be no revision of the current price estimates of older series in these cases.

Such revisions in the price data also show that variations coming between current price estimates from the two series at different base years are not only because of quantum corrections, but also because of price corrections. Thus, the ratio of current price estimates between the two series cannot be termed as "pure quantum correction factor". Preferably, GDP /SDP in such cases should be recalculated at revised methodology/prices, while preparing the back series. It is desirable that whenever new base year series is released, greater details are provided on the sources of revision for current price estimates for years that are commons to different base years. This will help in preparing back series by separating out the quantum corrections due to new activities that did and did not exist in the base year of old series.

## 7. CONCLUSION

The basic goal of this paper is to examine and exhibit how the sectoral composition of the economy may change depending upon the base year used. Revision of GDP /GSDP estimates of the older years to new base year at constant prices

systematically leads to overestimation of the size of sectors for which the relative prices have gone up compared to the aggregate price level. While this is expected and consistent with the idea of constant price estimates, change in sectoral composition simply due to base year revision can hugely influence our understanding of the structural evolution of the economy and growth dynamics. Moreover, the aggregate growth rate for the back years in the back series also shows a downward bias due to the index number problem. The paper suggests the use of chain index for measurement of growth, particularly for long run. Also, it is desirable that whenever new base year series is released, greater details are provided on sources of revision for current price estimates for vears that are common to different base years. This will help in preparing back series by separating out the quantum corrections due to new activities that did and did not exist in the base year of old series.

#### NOTES

1. There may be other states which have released their back series. I could come across only two states. Even if available for some other states, there is no single source providing official back series for all states.

2. Editor's Note: Chairing the proceedings, Dr. TCA Anant commenting not on behalf of the CSO, but expressing his personal view, observed that back series is a huge conceptual nightmare. Working out back series usually involves such huge methodological assumptions that it takes a considerable element of faith to treat them as respectable estimates. Especially when such large methodological and data source changes are being incorporated as in the 2011-12 that it becomes difficult to say with any degree of confidence that we have captured the same statistical reality for the earlier years as of the present. It may be possible that for some sectors such as the commodity producing sectors like agriculture, the methodological changes may not be so sharp, and one could prepare a back series. For some institutional sectors, such as governments, public sector, etc., the changes again may not be very large and one could construct a back series. But for example, for the corporate sector, the available time series of the balance sheets compiled by some private agencies, with many ad hoc inclusions and exclusions of companies, are highly erratic. Even if one ignores these limitations, all of these companies are in a very very narrow segment of the corporate economy, being restricted only to some listed companies, which represent only the top end of the large companies. There can be huge differences between the patterns of behaviour of the larger and the smaller companies. When we are trying to build series back on the basis of these companies for others on which we have no information, we may not be very successful.

3. Baumol cost disease refers to the slower rise in productivity in sectors such as education, health care, public administration, compared to the factor remunerations in them. Hence, in these sectors volume growth will be slower than other sectors with reverse being the case for price movement. The overall impact of the two on sectoral composition will depend on the interaction between the price and volume growth compared to other sectors.

4. Current and constant price estimates for 1960-61 for original series are same, since it is the base year.

5. Madhva Pradesh: For the original 1980-81 series at constant prices, gross value added (GVA) by forestry sector in 1980-81 was Rs 59,156 Lakh which declined to Rs 16,828 Lakh in 1993-94, with the latter figure being 28.45 percent of the former. However, after this substantial fall in the volume over 14-year period, the GVA of forestry sector was substantially revised upward in the 1993-94 series. For the same year of 1993-94, GVA at current prices by forestry sector was measured at Rs 84,733 lakh in the 1980-81 series which was raised to Rs 1,38,210 Lakh in 1993-94 series, an upward revision by 63.11 percent. Kerala: For the original 1980-81 series at constant prices, GVA for forestry sector in 1980-81 was Rs 12,532 Lakh which declined to mere Rs 3,981 Lakh in 1993-94, with the latter figure being 31.77 percent of the former. This substantial fall in the volume within same series was followed by, large upward revision in 1993-94 series. For the same year of 1993-94, GVA at current prices by forestry sector was measured at Rs 23,280 lakh in the 1980-81 series which was raised to Rs 74,646 Lakh in 1993-94 series, an upward revision by 221 percent.

6. These biases in measurement of GDP growth due to use of Laspeyres index are also applicable to constant price estimates of the original series as well (say 2004-05 or 2011-12 series). To address this, the CSO revises the base year on regular basis to keep the price structure as close as possible to the year for which GDP is being measured. The problem gets worsened in the back series due to length of the time period involved.

7. This would effectively mean that the estimates should be prepared at current prices. However, this will not permit calculation of growth rate at constant prices. Hence, the suggestion made in the text is to use the prices of penultimate year, since the prices structure can be expected to remain stable for two consecutive years.

8. Editor's Note: There was considerable discussion at the end of the paper on aspects relating to construction and implications of using a chain index for CPI and chain index based constant price GDP and GSDP series. The primary reason for not being able to develop chain indices was that the required price data are slow to arrive. For example, the requisite data on all prices used for compiling a constant price GDP series for 2011-12 base year (in January 2018) was available only for 2015-16 (and only partially for 2016-17. Thus chain index based constant price series for 2011-12 base year for 2011-12 - 2015-16 could have been possible to compile only in 2018. For more timely constant price GDP series one will have to rely upon fixed weight Laspeyres index only. More up-to-date price data would have been available from NSS thin samples of consumer expenditure survey data, but the collection of thin samples of consumer expenditure survey has now been discontinued by NSSO, because of demands for a number of different surveys with vastly differing survey designs, on education, health, migration, establishment surveys, employment-unemployment surveys, etc., between 2004-05 and 2011-12. Another important point which was highlighted was that because our CPI index is not chain based while consumer price indices of many advanced countries, such as the US, are chain-linked, our inflation rate is not comparable to that of the US, for example. Yet, one regularly sees these being casually compared. [DS1] Since the references of RBI reports are not available with us, we may modify the sentence to exclude referring of the reports. We may still mention the issue of "huge differences between the patterns of behaviour of the larger and the smaller companies". I have modified the Editor's note to this effect, but I am also fine if the Editor find it desirable mentioning of the RBI reports as it has been mentioned by Dr. Anant. In that case, previous version of comment can be incorporated into the paper.

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at 2004-05 Prices												in Rs Lakh
State	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)	(6)	(10)	(11)	(12)	(13)
Andhra Pradesh	6189041	6920765	7015270	7357451	7204043	7545524	7444256	8232779	9575097	10187621	10566225	11123472
Assam	2296806	2643649	2760562	2835632	2870958	3059187	2966998	3105287	3139285	3365610	3423639	3571211
Bihar												
Bihar (U)	5332284	5722998	5850468	6235788	6738780	6943782	7384157	7206479	8133196	8097589	8747219	8510211
Chhattisgarh												
Gujarat	5155667	5572929	5526505	6352219	6442179	6385108	6727523	6190315	8087933	8134087	8294882	7861455
Haryana	2364558	2442494	2582234	2639433	2745811	3179438	3210990	3214539	3795336	3870901	4234211	4356156
Himachal Pradesh	752641	787615	746438	769993	709639	823103	863543	871762	977571	1034967	1099791	1094655
Jharkhand												
Karnataka	4643318	4837940	4949785	5228043	5587322	5474127	5889108	6235440	6689787	7040399	7135350	7897062
Kerala	4497621	4262842	4441108	4206596	4386897	4553250	4485262	4552610	4968035	5179314	5653109	5687798
Madhya Pradesh												
Madhya Pradesh(U)	6992688	7210539	7326341	7159589	6992685	7436586	7116467	7687168	8202945	8429646	9421912	9060148
Maharashtra	11457872	11758746	12247667	12967749	13296948	14008283	14319305	15154240	16403044	18724680	19488874	19586298
Orissa	3063697	3071560	2991916	3478384	3276928	3645298	3696220	3599226	4213813	4487316	4011384	4288162
Punjab	3151521	3410506	3523915	3609676	3858018	4140580	4304505	4523543	4760096	5128951	5198136	5436569
Rajasthan	3149699	3358693	3437754	4013289	3871779	3944003	4396916	4246982	5643701	5604462	6387667	6110513
Tamil Nadu	6006099	6562099	6361947	6712318	7458963	7768230	7746336	8209885	8879975	9558476	10192542	10451018
Uttar Pradesh												
Uttar Pradesh (U)	10824424	11152707	11819301	12196607	12237126	12713369	13261749	13811332	15294153	15703581	16598898	16839149
Uttarakhand												
West Bengal	5985991	5910662	6094837	6781055	6999655	7287707	7617085	8019061	8356061	8675063	9132310	9791454

Appendix: Back Series of GSDP with 2004-05 base year

JUL-DEC 2018

(Contd.)

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State	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
Andhra Pradesh	11062131	12097803	12755419	13461961	14268456	14079721	15722607	16495915	17794702	18539448	19100029	20809512	22471316
Assam	3621637	3789828	3881883	4000769	4111569	4158449	4185331	4319396	4442186	4546063	4861562	5151981	5339771
Bihar		4458573	4891397	4328827	5198571	5249001	5434862	5816907	6667926	6403688	7129765	6818089	7657401
Bihar (U)	8179402	8411758	9023085	8538018	9201836	10529110	10706643	10814174	10995271	10909734	11981245	12042789	13633958
Chhattisgarh		3110641	3173278	3243544	3374798	3442447	3630746	3638596	3452774	3914091	3915841	4544243	4786230
Gujarat	9675423	9524832	11105454	11725081	13260841	13595399	14515590	14701810	14018015	15093644	16382043	18659795	20337269
Haryana	4348057	4539052	4849430	4994931	5536938	5644057	5961980	6381059	6914757	7474808	7987164	8768085	9531918
Himachal Pradesh	1171777	1226045	1336908	1413986	1500416	1583433	1687576	1779825	1892940	1990406	2092938	2251277	2407658
Jharkhand		5153070	5455548	5487814	5361659	6967101	6509587	4987216	4290306	4475810	4832476	5215518	5976557
Karnataka	8102832	8660177	9143481	9709309	10578616	11292646	12738665	13298846	13494882	13954163	14662970	15240522	16630567
Kerala	6000317	6514392	7020738	7290027	7537520	7796393	8302502	8822063	9148202	9614417	10293353	10914070	11926400
Madhya Pradesh		7298871	7462093	7919979	8435827	8847473	9450165	10281200	9560352	10254867	9843338	10963557	11292689
Madhya Pradesh	9501386	10299086	10526269	11069291	11714587	12230228	13010117	13925144	13043319	14200537	13775489	15517085	16078919
(D)													
Maharashtra	21596512	23212377	23836880	26380013	27726562	29445696	30177878	32609646	31876905	33117022	35351141	37996575	41382561
Orissa	4244388	4529657	4767841	4930733	4713526	5331708	5442893	5766361	5677253	5972649	5966575	6772767	7657855
Punjab	5691721	5966383	6145464	6418722	6902765	7139980	7546690	7971277	8288843	8445263	8690014	9218923	9683851
Rajasthan	6845877	6600424	7591982	7919945	8740672	9735721	10211113	10402933	10251930	11202589	10370105	12885533	12774565
Tamil Nadu	10972274	11832188	13225400	13736934	14419120	15700112	16518878	17465618	18497355	18143484	18604545	19693177	21923360
Uttar Pradesh		16359779	17224992	17848149	19701481	19780213	20472913	21620137	22077139	22563252	23388730	24550153	25865307
Uttar Pradesh (U)	17231019	17656810	18614775	19250763	21177605	21292056	22049776	23215669	23848304	24416683	25430147	26742774	28347376
Uttarakhand		1343472	1426759	1441191	1511500	1544506	1597288	1610858	1774832	1864566	2049352	2201932	2482069
West Bengal	10090023	10825953	11513403	12235658	13067637	14116954	14924596	15962394	16561612	17755342	18427024	19536830	20885658
(U) refers to combin Source: Based on ba Punjab, back series r	ed GSDP for ek series pref eleased by th	the two states by the a e state DES a	s which were uthor and orig tre used	separated in 2 ginal State Se	2000-01 ries published	l by CSO for	the base year	1980-81, 199	1999-0	) and 2004-0:	lsom.www) č	oi.nic.in). For	Kerala and

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# PRIVATE FINAL CONSUMPTION EXPENDITURE OF HOUSEHOLDS IN INDIA: ESTIMATES, ISSUES AND CHALLENGES

Amey Sapre and Pramod Sinha

We estimate Private Final Consumption Expenditure (PFCE) of households in India using survey data from CMIE Consumer Pyramids (CP). The analysis is aimed at gaining comparability with existing sources of household expenditures and understanding the component of PFCE at the state level. Findings show that estimates from the CP data corroborate to the state wise distribution of food and Non-food expenditures as shown by the NSS Consumption Expenditure survey. The notable difference are in some of the Non-food categories, where the CP data for 2016-17 shows a much lower percentage for appliances, rent and health as compared to the NSS estimates. At the aggregate, the share of rural regions is much higher than of urban regions, with four major states (Bihar, Maharashtra, Uttar Pradesh and West Bengal) accounting for over 42% of PFCE from rural regions, and seven states (Gujarat, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal) accounting for over 65% of PFCE from urban regions. We argue that the allocation method that uses the NSS item wise expenditure shares rests on strong assumptions and may lead to discrepancies in state level PFCE. Given data challenges from the expenditure side of GDP and limitations of household surveys, most of these aggregates are inadequate for drawing any conclusive inferences about PFCE and its composition.

Keywords: Consumption Expenditure, National Accounts Statistics, GDP, GSDP, India

# **1 INTRODUCTION**

In this paper, we estimate private final consumption expenditure (PFCE) of households across major states in India. Our study is based on data from CMIE Consumer Pyramids that provides unit level information on expenditures of over 1,58,000 households in India on a monthly basis. The purpose of the analysis is twofold, first to assess comparability of a new dataset with existing sources of household expenditures and second, to understanding the component of PFCE from the expenditure side of GDP (Gross Domestic Product) at the state level. Presently. estimates of consumption expenditure are available from two sources, namely, the quinquennial surveys of the National Sample Survey Organisation (NSSO) and the National Accounts Statistics (NAS). The NSSO's estimates represent households, while the NAS estimates cover households and private Non-Profit Institutional Serving Households (NPISH). Even though the two sources differ in terms of coverage, scope, methodology and timeliness, historically, both sources had been fairly consistent in estimates. However, large differences in the estimates have cropped up over the years for a variety of reasons, thus resulting in an inconclusive analysis of trends and patterns of consumption expenditure in the economy.

The analysis of household consumption expenditures and the aggregate PFCE is important from many dimensions. From a socioeconomic point of view, consumption expenditure forms the basis of determining

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poverty lines and estimating the number of poor in the country. On the macroeconomic side, consumption expenditure constitutes a major part of the aggregate demand in the economy. Also, from a macroeconomic policy stance, a robust and sustained growth in PFCE is taken as a strong indicator of overall growth in the economy. Facts about consumption expenditure from the NAS show PFCE to be the single largest component in the GDP. The share of PFCE (at current prices) moved from 59.14% in 2004-05, to 56.2% in 2011-12 and further to 59.03% of GDP in 2016-17 [Government of India, 2016; CSO, 2017]. In terms of levels, the new 2011-12 NAS series shows that at current prices, PFCE nearly doubled from INR 49.10 trillion in 2011-12 to 90.01 trillion in 2016-17. Despite being the single largest component in GDP, the expenditure side of GDP receives short and limited attention primarily because aggregate and sectoral GDP estimates from the production side have always been considered firmer in the National Accounts.

Nevertheless, PFCE being the single largest component in the expenditure side requires a much detailed investigation, especially when alternate data sources show divergence between consumption estimates. For instance, at the aggregate, commodity wise estimates from the NAS show a secular decline in shares of food items, while the NSS surveys show a significantly higher proportion of food expenditure. The situation is no different for a host of non-food items like transport, power & fuel or other services where both data sources show dissimilarities in shares and magnitudes. Some of these issues have been documented in the literature, but have not been satisfactorily resolved over the years.

Other than the growing divergence between estimates, there are several other challenges in analysing household consumption. First, consumption expenditure at the aggregate does not reveal enough information about patterns, shares, composition and geographical variation. Thus, analysis of consumption expenditure at a disaggregated state level becomes important. Since GDP by expenditure is unavailable at the state level, the component of PFCE from the NAS cannot be analyzed in detail at a disaggregated level. We build on this premise to do a preliminary assessment of the component of PFCE at the state level.

It is undeniable that computing the expenditure side at the state level is a challenging task as it requires all components of Government Final Consumption Expenditure (G), details of Gross Capital Formation (I), Imports and Exports (X -M) at the state level. While some recourse is available for Government Final Consumption Expenditure and Capital Formation, estimating consumption expenditure poses difficulties primarily because inter-state transactions of state residents are unavailable and state boundaries are open for movement of goods and residents. We discuss these issues in the backdrop of methods proposed for allocation of state wise consumption expenditure as an alternative to direct estimation.

In the context of household surveys, issues in estimation of consumption expenditure also relate to finer and practical problems such as; recall errors by respondents, choice of reference period, non-representative sampling design, and non-response by households, among others. These issues have been repeatedly dealt with in the literature. We summarise some important issues especially in the light of a new household survey as they help in isolating part of the problem areas in estimation.

### 2. MOTIVATION AND QUESTIONS

There are several reasons to study PFCE of households. First, estimating consumption expenditure directly from household surveys provides several insights that macro variables may not be able to provide. Second, estimates based on the CP survey provide an opportunity to understand the sources of divergence between the

NSS and NAS estimates of household consumption. NSSO guinguennial survey results serve as a key input in estimating the final PFCE in the National Accounts. In the light of the changing dynamism in terms of preferences and consumption, the data has always been criticised over its datedness and relevance. Further, the growing differences between the estimates as seen in NAS and in NSSO survey has widely been deliberated. In this background, it is worthwhile an attempt to undertake a study of PFCE based on household survey which captures data with a representative sample and new age expenses category of the household. A detailed comparison between these alternate data sources is done in subsequent sections. Third, the new survey opens up the possibility of estimating consumption expenditure at a much higher frequency, such as monthly and annual instead of the traditional quinquennial rounds. Given annual estimates, the survey provides us some leads for building the PFCE component in the expenditure side at the state level.

From a survey perspective, direct estimation of household expenditure allows us to identify issues in sampling, item basket, recall periods, sources of under-estimation, etc., that often get ignored while analysing macro aggregates. To fix the context of the discussion, we attempt to answer the following questions;

- \* How does the estimate of household consumption expenditures (based on the CMIE CP survey) compare with existing estimates?
- \* What accounts for differences between PFCE estimates of household and the expenditure side PFCE from the NAS?
- \* What indicator(s) can be considered to allocate state wise PFCE from NAS?
- \* What are some of the problem areas in estimation?

The literature on consumption expenditure covers a variety of issues ranging from measurement of poverty, economic inequality, problems of survey design and the concerns over discrepancy between NSS and NAS. While the debates on measuring poverty and inequality remain relevant, other measurement issues have gained significant importance over the years. As a precursor, we contribute to the debates on two fronts; first by providing state wise, item wise aggregates of consumption expenditures from a comparable household survey and second by implementing the method of allocation of PFCE from the NAS to states to generate one component of the expenditure side at the state level.

In what follows, in Sections 3 and 3.1 we summarise the basic concepts, definitions used in the literature and findings of relevant studies that have addressed similar issues, in Section 4 we describe the data, method and present the estimates of PFCE by commodity groups at the state level, in Section 5 we discuss issues in estimation and Section 7 concludes the exercise.

#### 3. RECORDING AND ESTIMATING CONSUMPTION EXPENDITURE

In order to set the background of the discussion, it is imperative to revisit some of the basic facets of expenditure surveys and the method of estimation. In the National Accounts, the household expenditure on goods (durable and non-durable) and services for final consumption (and not for use in production) is referred to as the Private Final Consumption Expenditure (PFCE) (see NAS Sources and Methods [2012] for details). The terms PFCE and household expenditure are used often interchangeably. However, it must be emphasised that household expenditures represent private individual households (excluding NPISH), whereas PFCE refers to its larger aggregate in the expenditure side of GDP.

The quinquennial Expenditure surveys of the National Sample Survey Organisation are typically conducted once in five years and are based on a stipulated reference period of consumption. The survey provides estimates of average Monthly Per-capita Consumption Expenditures (MPCE) of households along with the distribution of households by various classes of MPCE, among others. (See NSSO's 68th Round [2011-12] for details).

The method of recording expenditure in surveys is based on a 'recall' (or reference) period. The usual practice is to follow two types of recall periods, viz., past 30 days (Schedule 1) and past 365 days (Schedule 2) for a class of items. In some cases, a recall period of 'last 7 days' has also been used. The purpose of using different recall periods is to separate consumption items by their nature of use and durability. For instance, a shorter recall period is used for necessary or routine consumption items such as food, clothing and personal effects. A longer recall period is more suitable for durable items such as electronic appliances, etc., that, in general, have a lower frequency of purchase.

In practice, the recall period of consumption plays a crucial role in recording and estimating consumption expenditures. Recall periods create several non-sampling errors as individuals tend to miss or incorrectly recall consumption expenditures over a long period of time. To elaborate, in the literature, two types of errors have been highlighted. Type A error denotes the failure to record that a particular item was consumed, while Type B error denotes the failure to recall the date (or period) during which a particular item was consumed. Typically, Type A error can occur for items that are either not included in the survey instrument, or do not get captured in any existing category of items. Type B error can occur in case of any commodity as the respondent may fail to recall the exact time period of consumption. In terms of quality of estimates, Type A errors can lead to a downward bias as consumption of items is left out from the survey. Type B errors, in general, do not create a systematic bias in the overall estimates as errors of incorrect inclusion or exclusion cancel out on a month-to-month basis.

It is widely believed that estimates based on shorter recall period are more accurate as it reduces the possibility of incorrect recording. In case of Type A errors, the extent of downward bias can be corrected only by routine updating of survey instruments and list of commodities. Studies in the past have highlighted problems associated with recall period, as errors in recall have a direct bearing on the reliability of the estimates. The literature in this domain has also discussed the implication of consumption data for measurement of poverty. However, the underlying finding from most studies has been that despite measurement problems, estimates from household surveys have been much closer to the expenditure patterns, instead of the NAS. On the comparability with the NAS, historically, Minhas, Jain, Kansal, and Saluja [1987], provide a detailed description of the methodology of NAS and NSS and the problem of divergence. Mukheriee and Chatteriee [2005] conducted a study to examine the validity of the NSS estimates. They argued that the NAS and the NSS estimates cannot be expected to show close agreement, but sample surveys are more than useful for conducting validation exercises for coming to a judgment on the trend of development in the country. Kulshrestha and Kar [2005], John [2007] conducted a validation exercise of the NSS and NAS estimate. They argue that a multiplicity of factors hasled to a divergence between the two alternate sources and that most differences have remained un-addressed.

The other strand of literature relates to more practical issues in survey estimation [see CSO, 2015; FOD, 2015; for a survey of issues]. These issues include inadequate and non-representative

sampling of households, changing item basket, sources of under estimation, among others. Does the new survey data resolve some of these issues? We return to discuss these practical issues in Section 6.1. We begin by briefly summarising the basic concepts used in the NAS, NSS and Consumer Pyramids (CP) survey. The differences in concepts are important to note as not all differences in the estimates can be considered as discrepancies. The differences in concepts also help us to understand the potential sources of under (or over) estimation in either method. We refer to the Sources and Methods in the National Accounts and the concepts given in the NSS surveys for a description. The points of departure on sources and methods are highlighted in subsequent sections.

# 3.1 Concepts and Definitions

From the perspective of the NAS, PFCE is estimated using the 'commodity flow' method and is derived as a residual in the expenditure side of GDP. Briefly, the method is based on working out the commodity balances of various items of consumption by considering (i) production (ii) intermediate consumption in agriculture, manufacturing and other industries, (iii) net imports, (iv) changes in stocks (v) consumption on government account, and (vi) Gross Fixed Capital Formation (GFCF). Since PFCE relates to final consumption, intermediate consumption of various industries and final consumption of entities other than households and Non-Profit Institutions (NPISH) are deducted from the total availability of commodities.

In case of food items, PFCE is estimated by taking into account two components, i.e., the quantity retained by the producers for their own consumption and marketed output. For manufacturing items, the total value of output is adjusted for excise duty and Trade & Transport margin (TTM), (see CSO [2012] on Sources and Methods for a detailed description of TTM and

price adjustments) In case of services, gross earnings from respective services is taken as value of output and the estimates of final consumption is arrived at after adjusting for the expenditure by private enterprises and public sector on these services during the financial year. Aggregating these two components, i.e., adjusted expenditures on goods and services, gives the estimate of consumption expenditures of the households including NPISH.

# 3.1.1 NSSO Consumption Expenditure Survey (CES)

For our purpose, we take the NSSO 68th round (2011-12) as a reference for comparing definitions and estimation methodology. Some of the important definitions are itemized as follows.

Household: A group of persons normally living together and taking food from a common kitchen constitutes a household.

- Household size: The total number of persons in the household.
- \* Household Consumption Expenditure: The household consumer expenditure is the total of the monetary values of consumption of various groups of items, namely, (i) food, pan (betel leaves), tobacco, intoxicants and fuel & light, (ii) clothing and footwear, and (iii) miscellaneous goods& services including durable articles. The consumption may be out of (a) purchases made during the reference period or earlier; (b) home grown stock; (c) receipt in exchange of goods and services; (d) any other receipt like gift, charity, borrowing and (e) free collection.
- \* Monthly Per-Capita Consumption Expenditure (MPCE): Total consumption expenditure of 30 days divided by the size of the household.

# 3.1.2 CMIE Consumer Pyramids (CP)

Consumer Pyramidsdxprovides record-level data of over 1,58,000 households in India. The dataset is available as a panel as it allows to track a sampled set of households based on repeated surveys in a year. The survey records data on household demographics including member-wise characteristics, household amenities, income, expenses, assets and borrowing by households. Data are captured on a hand held mobile device with a specially developed software application. Some of the relevant definitions used in the CP survey are as follows.

- \* Homogeneous Region (HR): A Homogeneous Region is a cluster of neighboring districts that share similar agro-climatic conditions, have relatively similar levels of urbanisation and female literacy compared to other neighboring districts. Homogeneous Regions do not cross state boundaries. The selection of a sample for both rural and urban is done from each Homogeneous Region. As of April, 2017 the sample frame had a total of 99HRs and approximately one percent of the sample was drawn from each HR.
- \* Wave: Wave is a period of four months and close to 39,500 households are surveyed every month. In each month, the representative household is asked to provide expenditure on items in the preceding four months.
- \* Household: A group of persons normally living together and taking food from a common kitchen constitutes a household.
- \* Household size: The total number of persons in the household.
- \* Household Consumption Expenditure: Total expenditure on food, intoxicants, restaurants & recreation, clothing & cosmetics, toiletries & home care products, bills (for water charges, society charges, etc.), rent, Equated Monthly Installments

(EMIs) & appliances, power, fuel, transport & communication, education, health and other miscellaneous items.

Data in CMIE-CP are available on a monthly basis. Each household has a unique identifier that can be used to aggregate the monthly household expenditure to arrive at an annual figure. For comparison, the distribution of the sample households from CP and NSS 68th Round for each state is described in Appendix A. CP sample data closely approximates the state wise distribution of the NSSO's sample but has a larger number of households in each state. In terms of commodity basket and coverage of items, a complete list is tabulated in Appendix 3. The CP data captures expenditures on a higher number of items compared to the NSS, but maintains comparability with the broad item categories of both NSS and the NAS.

#### 4. ESTIMATES OF PFCE OF HOUSEHOLDS

The estimates of household expenditures are presented for the financial year 2016-17. The estimation strategy is similar to the NSSO's methodology, where sample estimates are scaled by household weights. In order to arrive at a consistent sample for the entire year, we apply a few filters and adjust the weights accordingly. The details are given in Appendix 2. The estimates are computed at current prices so as to avoid complications of using price deflators. Thus, the figures are comparable to current price estimates in the NAS. The analysis is divided into three segments. In the first segment we present estimates by broad categories, followed by expenditure at a disaggregated state level. In the second segment, we compare the estimates with the NSS and NAS proportions and in the last segment, we discuss the use of an indicator for allocation of PFCE in the NAS to states. We begin by tabulating the aggregate expenditures by broad categories. Table 1 presents the expenditures of food and non-food items in levels and as percentages of aggregate PFCE.

S.No.	Item	Value INR Cr.	% of PFCE
(1)	(2)	(3)	(4)
1	Food	1506485.78	49.82
2	Non-Food	1516827.36	50.18
2.1	Intoxicants	94432.971588	3.12
2.2	Clothing, Footwear	58.71	5.25
2.3	Cosmetics	180043.54	5.96
2.4	Power, Fuel	416546.66	13.78
2.5	Transport	84684.94	2.80
2.6	Appliances	18542.55	0.61
2.7	Rent, Etc.	28070.88	0.93
2.8	Communication	120494.45	3.99
2.9	Health	82103.17	2.72
2.10	Education	127343.94	4.21
2.11	Recreation	11358.03	0.38
2.12	Restaurants	43809.22	1.45
2.13	Misc. items	150538.3	4.98
	Aggregate PFCE (HH)	3023313.09	100.00

Table 1. Aggregate Household Expenditure by Category, Current Prices, 2016-17

Computed using CMIE Consumer Pyramids

The total PFCE estimated at the household level is close to INR 30 Lakh crore, or INR 30.23 trillion. In order to check the reliability of this estimate, we compare the component wise distribution of expenditures shares with the NSS survey and figures from NAS (2017). The detailed assessment is done in section 5. To proceed with the analysis, the estimates show that at the aggregate (national level), expenditure of food items is close to 50% of total PFCE. In general, food items include cereals, fruits, vegetables and other processed food products. Non-food items are distributed over 13 categories that include goods (durables and non- durables) (intoxicants, clothing & cosmetics, toiletries & home care products, bills, EMIs & appliances, power, fuel, and other miscellaneous items) and services such as, medical (health), housing rent, etc., transport, communication, education, hotels, restaurants, recreation and financial services.<sup>1</sup> The categorisation of items in the CP data has a few new features. Items such as cosmetics, appliances, etc., are not separately available in the NSS list of items. Similarly, some new items such as monthly EMIs in case of housing are not captured in the NSS surveys. To maintain comparability with the item basket of both of the NSS and NAS, EMIs were excluded from the total expenditure of the household. There are conceptual issues in treating installments for housing as part of consumption expenditure. We deal with such cases and other issues regarding the commodity basket in a subsequent section. The next step is to estimate household expenditure by state which opens up the space for a wider and detailed analysis. Table 2 presents the disaggregated view of PFCE by state and by region, i.e., rural and urban.

State	Rural	Urban	Total	Rural %	Urban %	Rural % of Agg. PFCE	Urban % of Agg. PFCE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Andhra Pradesh	76751.93	37826.24	114578.10	66.99	33.01	4.27	3.08
Assam	765266.05	6110.79	71376.84	91.44	8.56	3.63	0.50
Bihar	179483.77	30512.90	209996.67	85.47	14.53	9.99	2.49
Chandigh	NA	3832.74	3832.74	NA	100.00	NA	0.31
Chhattisgarh	39407.45	16664.08	56071.53	70.28	29.72	2.19	1.36
Delhi	874.34	49579.29	50453.63	1.73	98.27	0.05	4.04
Goa	2977.59	9131.29	12108.88	24.59	75.41	0.17	0.74
Gujarat	95740.30	90603.28	186343.58	51.38	48.62	5.33	7.39
Haryana	51433.11	34974.04	86407.15	59.52	40.48	2.86	2.85
Himachal Pradesh	26474.14	4020.22	30494.36	86.82	13.18	1.47	0.33
Jammu & Kashmir	25312.19	14588.92	39901.11	63.44	36.56	1.41	1.19
Jharkhand	43764.46	23231.58	66996.04	65.32	34.68	2.44	1.89
Karnataka	83021.49	102168.68	185190.17	44.83	55.17	4.62	8.33
Kerala	53803.54	80375.86	134179.40	40.10	59.90	2.99	6.55
Madhya Pradesh	104287.48	45592.58	149880.06	69.58	30.42	5.80	3.72
Maharashtra	161984.41	198642.35	360626.76	44.92	55.08	9.02	16.19
Odisha	52494.72	14138.13	66632.85	78.78	21.22	2.92	1.15
Puducherry	1407.23	1006.27	2413.50	58.31	41.69	0.08	0.08
Punjab	48482.65	37861.03	86343.68	56.15	43.85	2.07	3.09
Rajasthan	110142.13	38585.62	148727.75	74.06	25.94	6.13	3.15
Tamil Nadu	108585.75	132784.83	241370.58	44.99	55.01	6.04	10.82
Telangana	41488.66	41336.46	82825.12	50.09	49.91	2.31	3.37
Uttar Pradesh	276235.22	117761.02	393996.24	70.11	29.89	15.38	9.60
Uttarakhand	16561.04	12553.71	29114.75	56.88	43.12	0.92	1.02
West Bengal	130569.00	82882.54	213451.54	61.17	38.83	7.27	6.76
Aggregate PFCE	1796548.65	1226764.45	3023313.09	-	-	100.00	100.00

Table 2. State-wise	PFCE of Households	, 2016-17, Curre	nt Prices in INR Cr.
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Computed using CMIE Consumer Pyramids

The data set covers 25 states and 2 Union Territories (Chandigarh and Delhi). In Table 2 for each state, we compute the shares of expenditures in rural and urban regions and express them as percentages of state wise, region wise PFCE. We also compute the state wise share of rural and urban expenditure in the aggregate rural and urban region of the country. The figures of rural and urban percentage capture some striking features of household expenditure across the country. First, for 18 out of 25 states, the share of PFCE from the rural areas is higher than that of the urban areas. At the aggregate, expenditure

share of rural region is considerably higher than the urban region. A few states like Delhi, Goa, Kerala, Maharashtra and Tamil Nadu show a higher percentage share of PFCE from urban regions.

In terms of concentration, 4 states (Bihar, Maharashtra, Uttar Pradesh and West Bengal) account for nearly 42% of PFCE from rural regions. Similarly, 7 states (Gujarat, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal) account for nearly 65% of PFCE from urban regions. Maharashtra, Uttar Pradesh Tamil Nadu and West Bengal are some of the states that have prominent shares in both rural and urban category. The analysis can be built further by doing a break-up of

broad expenditure categories. Table 3 presents the state wise expenditure into food and 13 sub-categories of Non-food items as described in Table 1.

State	Total Exp.	Food Exp.	Non-Food Exp.	Food Exp. %	Non-Food Exp %
(1)	(2)	(3)	(4)	(5)	(6)
Andhra Pradesh	114578.17	58541.10	56037.07	51.09	48.91
Assam	71376.84	35746.57	35630.27	50.08	49.92
Bihar	209996.67	127056.15	82940.52	60.53	9.50
Chandigarh	3832.74	1565.39	2267.36	40.84	59.16
Chhattisgarh	56071.53	25171.41	30900.12	44.89	55.11
Delhi	50453.63	23324.57	27129.06	46.23	53.77
Goa	12108.88	3274.63	8834.25	27.04	72.96
Gujarat	186343.58	97394.22	88949.36	52.27	47.73
Haryana	86407.15	39861.74	46545.41	46.13	53.87
Himachal Pradesh	30494.37	11998.53	18495.83	39.35	60.65
Jammu & Kashmir	39901.11	17379.70	22521.41	43.56	56.44
Jharkhand	66996.04	35466.02	31530.02	52.94	47.06
Karnataka	185190.16	87724.14	97466.02	47.37	52.63
Kerala	134179.40	56905.47	77273.94	42.41	57.59
Madhya Pradesh	149880.06	74027.37	75852.69	49.39	50.61
Maharashtra	360626.76	164091.13	196535.63	45.50	54.50
Odisha	66632.85	31731.35	34901.50	47.62	52.38
Puducherry	2413.49	928.71	1484.78	38.48	61.52
Punjab	86343.69	41899.75	44443.94	48.53	51.47
Rajasthan	148727.74	67698.58	81029.16	45.52	54.48
Tamil Nadu	241370.58	115641.79	125728.80	47.91	52.09
Telangana	82825.12	37863.60	44961.52	45.72	54.28
Uttar Pradesh	393996.24	214927.97	179068.27	54.55	45.45
Uttarakhand	29114.75	13791.81	5322.95	47.37	52.63
West Bengal	213451.54	122474.09	90977.45	57.38	42.62
Aggregate PFCE	3023313.10	1506485.80	1516827.30	49.83	50.17

Computed using CMIE Consumer Pyramids

Food and Non-food expenditures across states show an equal proportion, which was also reflected in the aggregates in Table 1. However, a few more insights can be drawn from its distribution. Expenditure on food is relatively higher for states that constitute for the bulk of PFCE from rural areas. The result corroborates the conventional argument that food expenditures that

constitute necessary items are relatively higher in rural areas compared to urban areas. Non-food expenditures that consist of personal effects, durables and services are in general much higher for states with an urban population. To get a sense of the Non-food expenditures, the following set of tables show the value and shares of Non-food goods and services for 25 states.

					Share	e in State PFC	CE (in percen	itage)
State	Tobacco Etc.	Clothing/ Footwear	Cosme- tics, Etc.	Power/ Fuel	Tobacco Etc.	Clothing/ Footwear	Cosme- tics, Etc.	Power/ Fuel
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	6731.70	7210.05	6283.82	11845.44	5.88	6.29	5.48	10.34
Assam	2196.57	3217.00	3941.16	7389.54	3.08	4.51	5.52	10.35
Bihar	1722.77	9683.57	11583.92	21661.37	0.82	4.61	5.52	10.32
Chandigarh	20.03	165.02	280.45	901.27	0.52	4.31	7.32	23.52
Chhattisgarh	2716.30	3189.65	4320.06	9503.68	4.84	5.69	7.70	16.95
Delhi	1061.88	1294.51	2044.91	8904.24	2.10	2.57	4.05	17.65
Goa	300.31	681.92	611.64	1572.91	2.48	5.63	5.05	12.99
Gujarat	8526.26	7699.58	9108.92	23938.22	4.58	4.13	4.89	12.85
Haryana	3551.20	3376.42	4956.77	14884.68	4.11	3.91	5.74	17.23
Himachal Pradesh	1410.36	1732.86	1237.41	3268.51	4.62	5.68	4.06	10.72
Jammu & Kashmir	948.96	3024.72	1869.15	4661.81	2.38	7.58	4.68	11.68
Jharkhand	1591.17	5566.54	4414.20	7127.61	2.38	8.31	6.59	10.64
Karnataka	4320.44	13515.74	12853.56	25077.76	2.33	7.30	6.94	13.54
Kerala	5896.22	10710.80	6679.82	17057.75	4.39	7.98	4.98	12.71
Madhya Pradesh	7227.88	7499.56	9088.87	24229.73	4.82	5.00	6.06	16.17
Maharashtra	7844.82	18893.80	23923.19	58233.15	2.18	5.24	6.63	16.15
Odisha	3941.19	3145.14	4103.17	10470.89	5.91	4.72	6.16	15.71
Puducherry	103.41	271.65	133.94	258.66	4.28	11.26	5.55	10.72
Punjab	1435.43	3362.16	6422.33	15344.79	1.66	3.89	7.44	17.77
Rajasthan	3272.57	11102.39	9676.16	24212.89	2.20	7.46	6.51	16.28
Tamil Nadu	7686.05	17614.98	14712.72	29921.80	3.18	7.30	6.10	12.40
Telangana	3796.93	5360.69	4929.92	10411.67	4.58	6.47	5.95	12.57
Uttar Pradesh	11971.55	14828.34	23165.00	55344.75	3.04	3.76	5.88	14.05
Uttarakhand	1111.53	1318.94	1199.65	4151.50	3.82	4.53	4.12	14.26
West Bengal	5047.44	4392.68	12502.80	26172.04	2.36	2.06	5.86	12.26

Table 4. Item Group wise Household Expenditure by State, 2016-17, Current Prices in INR Cr.

Computed using CMIE Consumer Pyramids

In the category of Non-food expenditures, Power and fuel expenses show a substantial share in total expenditure. The figures do not show a large variation across states which is indicative of the fact that power and fuel expenses are likely to have a similar composition across states. Expenditure on clothing and footwear is another important component of household expenditure and the figures in this category show some interesting facts. Expenditure shares in states like Delhi, Uttar Pradesh and West Bengal stand out as such low proportions appear contrary to popular perception. Table 5 presents the shares of other Non-food items before we compare the expenditures on services.

The estimates of expenditure on transport, appliances, (i.e., durables), rent and communication do not show a substantial variation across states. Some of the interesting facets are on the shares of rent, (i.e., expenditure on housing, rentals, etc.), which are significantly low as a proportion of total expenditure. For services, such as health, education and other recreation expenses, we tabulate the shares in Table 6. (Assam, Chhattisgarh) Health expenditure also does not show a large significantly higher shares compared to the variation across states, except for a few states other states.

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					Share	in State PF	CE (in percer	ntage)
State	Transport	Comm.	Appliances	Rent, etc.	Transport	Comm.	Appliances	Rent, etc.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	5589.00	610.62	1432.28	5529.29	4.88	0.53	1.25	4.83
Assam	2127.23	439.28	209.10	2753.49	2.98	0.62	0.29	3.86
Bihar	5263.88	245.83	06.87	4618.56	2.51	0.12	0.15	2.20
Chandigarh	33.72	10.88	78.01	204.93	0.88	0.28	2.04	5.35
Chhattisgarh	929.05	597.28	210.90	1881.49	1.66	1.07	0.38	3.36
Delhi	1337.28	334.92	394.81	2429.78	2.65	0.66	0.78	4.82
Goa	929.79	283.24	87.51	539.79	7.68	2.34	0.72	4.46
Gujarat	3555.51	146.03	1187.91	7075.37	1.91	0.08	0.64	3.80
Haryana	2040.03	992.36	471.13	3512.52	2.36	1.15	0.55	4.07
Himachal Pradesh	963.21	773.99	226.35	1188.38	3.16	2.54	0.74	3.90
Jammu & Kashmir	1570.40	1403.46	429.55	1658.57	3.94	3.52	1.08	4.16
Jharkhand	2014.81	85.45	146.84	2224.06	3.01	0.13	0.22	3.32
Karnataka	7024.92	1532.91	5758.22	7864.59	3.79	0.83	3.11	4.25
Kerala	5978.18	1208.54	650.23	7669.57	4.46	0.90	0.48	5.72
Madhya Pradesh	3949.59	615.99	645.14	5152.53	2.64	0.41	0.43	3.44
Maharashtra	10155.72	1929.77	7132.61	17274.50	2.82	0.54	1.98	4.79
Odisha	1140.07	890.23	196.14	2967.65	1.71	1.34	0.29	4.45
Puducherry	57.99	72.59	12.67	80.56	2.40	3.01	0.52	3.34
Punjab	1379.33	342.03	438.58	4059.13	1.60	0.40	0.51	4.70
Rajasthan	3269.90	856.04	883.30	6894.72	2.20	0.58	0.59	4.64
Tamil Nadu	6462.17	2578.76	3780.03	8453.60	2.68	1.07	1.57	3.50
Telangana	2234.19	825.24	2060.90	3586.84	2.70	1.01	2.49	4.33
Uttar Pradesh	10930.13	1013.55	419.31	14056.50	2.77	0.26	0.11	3.57
Uttarakhand	1103.79	612.79	456.72	1230.99	3.79	2.10	1.57	4.23
West Bengal	4645.05	140.80	455.77	7586.98	2.18	0.07	0.21	3.55

	Table 5. Item Grou	p wise Household Ex	penditure by State	, 2016-17	, Current Prices in INR C
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Computed using CMIE Consumer Pyramids

Expenditure on education shows some variation across states, with proportions ranging from a low of 1.92% and 1.93% (Andhra Pradesh and Gujarat) to nearly 10.51% (Delhi). The results show a sharp contrast as states with relatively poor economic conditions such as Bihar (6.04%), Jharkhand (8.02%), Chhattisgarh (3.23%) show relatively higher expenditure proportions. There

are a few more expenditure categories that consist of commodities and services not covered under the above heads. These are financial services. insurance premiums and other personal services that the household may avail. The NSS survey also includes items such as cosmetics and personal effects in the miscellaneous category as they are not classified under durables. In the CP data, cosmetics etc. is available as a separate category. In Appendix 3, the items under the cosmetics head are shown in the miscellaneous category in order to maintain comparability of the item basket.

The CP data also provides information on payment of all types of Equated Monthly

Installments (EMIs that a household may have. Typically, EMIs include payments for durables or housing and are a recurring part of the expenditure of the household. However, the treatment of such financial payments is not straightforward as such payments are made to acquire a physical asset (in case of a durable or house, etc.,) over a future time period.

					Share	e in State Pl	FCE (in percer	ntage)
State	Health	Educ.	Recreation	Hotel, etc.	Health	Educ.	Recreation	Hotel, etc.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	2174.95	2200.30	712.37	1808.80	1.90	1.92	0.62	1.58
Assam	5122.47	2879.18	78.60	1543.32	7.18	4.03	0.11	2.16
Bihar	5213.74	12692.27	119.48	2525.90	2.48	6.04	0.06	1.20
Chandigarh	72.10	167.89	25.21	129.73	1.88	4.38	0.66	3.38
Chhattisgarh	2504.78	1812.96	124.79	514.81	4.47	3.23	0.22	0.92
Delhi	1001.99	5300.81	194.50	973.52	1.99	10.50	10.39	1.93
Goa	496.01	541.26	341.34	550.27	4.10	4.47	2.82	4.54
Gujarat	4582.71	3604.50	867.49	2522.63	2.46	1.93	0.47	1.35
Haryana	2111.71	3202.56	478.09	1617.77	2.44	3.71	0.55	1.87
Himachal Pradesh	459.76	1143.12	244.44	344.24	1.51	3.75	0.80	1.13
Jammu & Kashmir	1100.55	2100.14	89.80	288.82	2.76	5.26	0.23	0.72
Jharkhand	810.39	5375.54	19.08	1166.16	1.21	8.02	0.03	1.74
Karnataka	3812.57	6793.66	971.22	907.21	2.06	3.67	0.52	0.49
Kerala	4974.47	4171.47	1431.58	3981.87	3.71	3.11	1.07	2.97
Madhya Pradesh	2917.20	4688.46	127.51	2430.44	1.95	3.13	0.09	1.62
Maharashtra	11643.40	13684.09	2095.95	4854.49	3.23	3.79	0.58	1.35
Odisha	1837.58	2294.26	13.52	1287.23	2.76	3.44	0.02	1.93
Puducherry	67.07	156.99	29.58	17.25	2.78	6.50	1.23	0.71
Punjab	2022.80	3112.16	570.57	1998.76	2.34	3.60	0.66	2.31
Rajasthan	2920.14	6301.35	428.49	1246.95	1.96	4.24	0.29	0.84
Tamil Nadu	6761.20	11777.73	1437.69	1925.13	2.80	4.88	0.60	0.80
Telangana	2362.82	3573.55	557.93	1204.01	2.85	4.31	0.67	1.45
Uttar Pradesh	8428.67	16742.54	249.18	5373.31	2.14	4.25	0.06	1.36
Uttarakhand	529.02	1090.74	80.85	850.22	1.82	3.75	0.28	2.92
West Bengal	8175.07	11936.41	68.77	3746.38	3.83	5.59	0.03	1.76

Table 6. Item Group wise Household Expenditure by State, 2016-17, Current Prices in INR Cr.

Computed using CMIE Consumer Pyramids
The treatment of EMIs in case of durables is also unclear, even when the durable is purchased in the current time period (or within the period of the survey). Although the basic principle in the expenditure survey is to record the value of the item, (i.e., durable), this category is an area of potential mis-measurement.<sup>2</sup>

The NSS surveys include items such as insurance premiums and many other services grouped under the head 'services N.E.C (not elsewhere classified)'. These services have been grouped under the Misc. Exp. category in the CP data. Table 7 presents the expenditure categories of miscellaneous items and EMIs. The details of

items in miscellaneous category are also available in Appendix 3. The shares of miscellaneous items are sizable and show a considerable variation across states. Shares in some states stand out prominently (Goa (15.68%), Gujarat (8.66%), Himachal (18.05%), J&K (8.46%)), which in some cases are higher than shares of most other categories of expenditure. The shares of EMI do not appear to be substantial, except for a few states where the figures are in excess of 3%. The component of miscellaneous items requires a much more detailed analysis at the state level. As households are likely to increasingly use financial services, the component is expected to become larger in future years.

			Share in State PFC	E (in percentage)
State	Misc. Exp	EMIs	Misc. Exp	EMIs
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	3908.46	930.75	3.41	0.81
Assam	3733.33	4720.21	5.23	6.61
Bihar	7302.40	508.48	3.48	0.24
Chandigarh	178.11	0.00	4.65	0.00
Chhattisgarh	2594.38	191.04	4.63	0.34
Delhi	1855.91	922.08	3.68	1.83
Goa	1898.27	181.07	15.68	1.50
Gujarat	16134.24	1774.43	8.66	0.95
Haryana	5350.15	406.86	6.19	0.47
Himachal Pradesh	5503.23	674.32	18.05	2.21
Jammu & Kashmir	3375.47	371.94	8.46	0.93
Jharkhand	988.18	191.92	1.47	0.29
Karnataka	7033.22	2427.70	3.80	1.31
Kerala	6863.44	6497.51	5.12	4.84
Madhya Pradesh	7279.79	248.49	4.86	0.17
Maharashtra	18870.11	6219.32	5.23	1.72
Odisha	2614.43	149.97	3.92	0.23
Puducherry	222.43	122.92	9.22	5.09
Punjab	3955.86	905.65	4.58	1.05
Rajasthan	9964.26	297.27	6.70	0.20
Tamil Nadu	12616.92	3579.59	5.23	1.48
Telangana	4056.82	453.65	4.90	0.55
Uttar Pradesh	16545.42	488.52	4.20	0.12
Uttarakhand	1586.22	355.14	5.45	1.22
West Bengal	6107.25	2639.31	2.86	1.24

Computed using CMIE Consumer Pyramids

### 5 COMPARISON WITH NSS AND NAS ESTIMATES

How do these facts compare with the NSSO's findings from their consumer expenditure surveys (CESs)? To begin with, we tabulate the shares of expenditure from the 68th Round of NSSO's CES for rural and urban areas in Table 8. In columns 3 and 4, we compute the shares of item wise PFCE by splitting the total item wise expenditure in rural and urban areas. For instance, the percentage of rural food expenditure from CP is calculated as;

(940919.90/1796548.66)W100? 52.37%. A similar proportion is available from the NSSO survey, which is tabulated in the last two columns. Some points of departure come from the comparison of share of power & fuel, appliances (durables) and health. The NSSO's 68th round shows a much higher percentage of these expenditures from urban areas. Although the NSS survey figures are for 2011-12, the difference in shares is substantial.

Table 8. Comparison of Shares of Items with NSSO CES, Current Prices CP Data (2016-17), NSS 68th Rd. (2011-12)

		CMIE Consume		NSS 68th Round		
Item	Rural Rs. Crore	Urban Rs. Crore	% Share Rural	% Share Urban	% Share Rural	% Share Urban
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Household Exp.	1796548.70	1226764.40	100.00	100.00	-	-
Food	940919.90	565565.88	52.37	46.10	52.90	42.60
Alcoholic Beverages	60138.88	34294.07	3.35	2.80	3.20	1.60
Clothing & Footwear	91849.61	67009.11	5.11	5.46	7.00	6.40
Power and Fuel	225247.95	191298.68	12.54	15.59	8.00	6.70
Transport	50047.74	34637.17	2.79	2.82	4.20	6.50
Appliances	9620.19	8922.39	0.54	0.73	4.50	5.30
Rent, Housing, etc.	5714.53	22356.34	0.32	1.82	0.50	6.20
Health	49008.80	33094.34	2.73	2.70	6.70	5.50
Education	65946.87	61397.06	3.67	5.00	3.50	6.90
Misc. Goods & Services	97049.25	53489.03	5.40	4.36	4.00	5.60
Cosmetics	107171.27	72872.26	5.97	5.94	-	-
Recreation	5375.89	5982.12	0.30	0.49	-	-
Communication	64184.40	56310.03	3.57	4.59	-	-
Restaurants & Hotels	24273.34	19535.88	1.35	1.59	-	-
EMIs (Excluded)*	17254.08	18004.05	0.96	1.47	-	-

Computed using NSSO 68th Round CES and CMIE Consumer Pyramids

\*Note: While computing the total expenditure of the household, we have excluded the amount of EMIs. The category has been shown for merely informative purposes as even in the NSS surveys this category is not explicitly captured in case of purchase of durables. Also, since by definition the value of the item is counted, adding this amount may lead to double counting. The figures for other categories also show some variation but are comparable to a considerable extent. If we abstract from the time lag between the two surveys, the differences in the shares can be accounted on the following counts: (i) differences in recall periods, (ii) differences in item composition and (iii) number of states covered in both surveys.

Difference in recall period poses several challenges in the reliability of the estimates. The NSS follows two different recall periods for food, i.e., past 30 data, and past 365 days for durable and services. The CP survey has a recall period of four months, split into three rounds each year. At the aggregate, the NSS data captures a point estimate for a household for the entire year, while the CP survey captures data for twelve months for the household. After comparing the expenditure in levels, (i.e., aggregate values), it is also useful to analyze the same by its summary measure, i.e., the Monthly Per-Capita Consumption Expenditure (MPCE). In the CP data, we use the household size to compute the MPCE for each state. Table 9 compares the MPCE derived from the CP data and the NSSO's 68th round.

The MPCE derived from the CP data is close to the average of the rural and urban MPCE (See Table 9). The estimates suggest that the CP data provides a close approximation to the NSS estimates and that the spread of aggregate PFCE is fairly consistent with the average monthly consumption expenditure. Our figures from the CP are also consistent in levels even if we compute the aggregate PFCE for each state by using the number of rural and urban households and scaling up the MPCE for 12 months, i.e., MPCE X Households X average family size X 12 for rural and urban regions. Apart from the time-gap between the figures and the sampling errors, we could not find any other compelling reason as to the differences between the two sets of figures.

Table 7. Annual and Mondin Fer Cabita Consumption Expenditure (MFCE), 2010-17 Current Frices (IN	Table 9. Annu	al and Monthly	Per Capit	a Consumption	n Expenditure	(MPCE).	2016-17	Current Prices	(INR
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	Annual Per Capita Cons. Population 2016-17 (Crores) Exp from the CP MPCE f Survey (INR) Survey		CE from th urvey (INI	e CP R)	NSS 681 MPCE	th Round E (INR)					
State	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Andhra Pradesh	2.64	1.15	3.79	29075	33007	30265	2436	2798	2546	1754	2685
Assam	2.53	0.16	2.69	25797	38349	26541	2175	3228	2237	1219	2189
Bihar	10.48	1.29	11.77	17131	23620	17843	1448	2011	1510	1127	1507
Chandigarh	0.00	0.07	0.07	-	51751	51751	-	4349	4349	2633	3357
Chhattisgarh	2.38	0.73	3.12	16535	22685	17984	1398	1929	1523	1027	1868
Delhi	0.03	1.34	1.37	34886	36891	36854	2810	3096	3091	276	3298
Goa	0.05	0.11	0.15	64066	86709	79776	5308	7343	6720	2408	3051
Gujarat	3.63	3.05	6.68	26376	29681	27886	2212	2521	2353	1536	2581
Haryana	1.49	0.79	2.28	34475	44549	37949	2896	3787	3203	2176	3817
Himachal Pradesh	0.65	0.07	0.72	40634	55088	42090	3416	4632	3539	2034	3259
Jammu Kashmir	0.84	0.30	1.14	30117	49052	5067	2546	4163	2968	1743	2485
Jharkhand	2.60	1.00	3.60	16855	23161	18613	1419	1978	1575	1006	2018
Karnataka	3.30	2.69	5.99	25179	37996	30937	2114	3241	2620	1561	3026
Kerala	1.38	2.38	3.77	38876	33722	35615	3211	2935	3036	2669	3408
Madhya Pradesh	5.88	2.02	7.90	17746	22517	18968	1502	1903	1605	1152	2058
Maharashtra	6.55	5.21	11.76	24742	38117	30670	2078	3219	2584	1619	3189
Odisha	3.27	0.62	3.89	16054	22905	17142	1350	1938	1443	1003	1941
Puducherry	0.04	0.03	0.07	31817	38551	34316	2686	3282	2907	2173	3216
Punjab	1.37	0.81	2.19	35270	46499	39447	2964	3930	3323	2345	2794
Rajasthan	4.56	1.46	6.02	24171	26431	24719	2042	2238	2089	1598	2442
Tamil Nadu	3.96	4.09	8.05	27424	32465	29985	2300	2746	2527	1693	2622
Telangana	1.68	1.32	2.99	24767	31393	27683	2076	2674	2339	-	-
Uttar Pradesh	14.04	4.38	18.42	19672	26901	21390	1657	2283	1806	1156	2051
Uttarakhand	0.48	0.23	0.71	34607	53579	40843	2909	4552	3449	1726	2339
West Bengal	6.54	3.26	9.80	19961	25405	21773	1679	2147	1835	1291	2591

Population is estimated for 2016-17 from CMIE Consumer Pyramids, NSSO 68th Round MPCE is for 2011-12

Based on these figures, the question to ask is: what is the reliability of the estimates? First, estimates based on the CP data have the advantage that they are based on twelve months' data of the household. Second, repeated surveys during a year for the same household are also expected to have lower errors in recall of expenditure. Thus, it is expected that estimates from CP are closer to month on month changes in expenditure, as opposed to a single point captured in the NSS. Third, on comparing the item basket (see Appendix 3) we find that there are no major differences in their composition. The broad categories of items map reasonably well between the surveys and differences on account of exclusion (or inclusion) of items are likely to be small. Fourth, the CP does not cover some of the north eastern states. To this extent, the CP data underestimates item-wise and total national estimates of consumption expenditure in comparison to the NSS.

The next point of comparison is with the NAS estimates of PFCE. In Table 10 we tabulate the proportion of PFCE by major items for 2015-16 and 2016-17. The NAS estimates aggregate PFCE close to 81.3 and 90.5 trillion for the years 2015-16 and 2016-17, respectively, which is nearly three times the value of household consumption expenditure available from the surveys. Even though the change in PFCE might be of greater interest, the differences in level estimates open several questions for analysis. For instance, does the contribution of NIPSH account for such a large magnitude? Or, is the difference on account of problems in the allocation method in the NAS? In the first case, the question cannot be answered, as the contribution of NPISH is not available on a regular basis. In the second case, some clues can be gathered by comparing the item wise shares.

Item (NAS)	2015-16 INR (Cr.)	2016-17 INR (Cr.)	2015-16 Share%	2016-17 Share%	Item (CMIE CP)	2016-17 INR (Cr.)	2016-17 Share%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Food and beverages	2381577	2718790	29.27	30.03	Food	1506486	49.82
Alcoholic, tobacco, etc.	204920	202837	2.52	2.24	Intoxicants	94433	3.12
Clothing and footwear	542263	581807	6.66	6.43	Clothing and footwear	158859	5.25
Transport	1196967	1359120	14.71	15.01	Transport	84685	2.80
Furnishings, Etc.	252309	265381	3.10	2.93	Appliances	18543	0.61
Housing/power/gas/	1220469	1301460	15.00	14.37	Power, Fuel	416547	13.78
fuels							
Gross rental of	867186	924863	10.65	10.21	Rent, Bills	28071	0.93
housing							
Communication	206618	213267	2.54	2.36	Communication	120494	3.99
Health	348378	408338	4.28	4.51	Health	82103	2.72
Education	320179	374207	3.93	4.13	Education	127344	4.21
Recreation and culture	68156	69766	0.84	0.77	Recreation	11358	0.38
Restaurants and hotels	163307	177807	2.01	1.96	Restaurants	43809	1.45
Misc. goods & serv.	1232681	1381846	15.15	15.26	Misc. items	150538	4.98
-	-	-	-	-	Cosmetics	180044	5.96
FISIM	254835	296298	3.13	3.27	-	-	-
Total PFCE	8137823	9054625	100	100	PFCE of HH	3023313	100

Table 10. Comparison of Shares of Items in PFCE, Current Prices, INR. Cr.

PFCE from NAS includes contributions of FISIM and NPISH

The share of food expenditure is the single largest point of departure between household surveys and the NAS. This fact was corroborated even by comparing the shares of NSS and NAS. Similarly, the NAS shows a significantly high proportion of expenditure on transport. On comparing the estimate with the NSS, we find the that CP data underestimates expenditure in this category as even the NSS shows a higher percentage for both rural and urban areas. For most other categories, despite leaving out some states and union territories and the contribution of the NPISH, the expenditure share show a considerable agreement.

It is known that the allocation method does not correspond to the actual pattern of household consumption. However, two sources of differences between the NSS and NAS are known; (i) imputed rental value in the NAS and (ii) TTM margins used for making adjustments in the production side. On the question of actual rents paid in the urban areas, we find that CP survey underestimates this component significantly. In most states, the survey does not capture households that show rental expense and thus points to problems of sampling and inclusion of affluent homes.

On comparing the results with the two sources, we find that estimates from CP are much closer to the NSS estimates, both in terms of levels and shares. However, the comparison also reveals that CP survey does not resolve all existing problems. The new survey also under estimates expenditures of some items and has a low sample representation of affluent households. Thus, as a result, the survey based estimates are more likely to be downwardly biased in level terms in comparison to the NAS. This is part of the reason why in level terms the household survey shows the household PFCE close to INR 30 Trillion, whereas the PFCE from the NAS (including the NPISH) is close to INR 90 Trillion.

# 5.1 PFCE at the state level: Conceptual and practical issues

Presently, state level private final consumption expenditure is not available in the NAS. The task of compiling PFCE is complicated for several reasons. To begin with, at the state level;

- Inter-state flow of goods and services is difficult to obtain
- \* State boundaries are open for movement of residents, goods and services
- \* Consumption expenditure of residents of a state made outside the state is unavailable
- Final Consumption of NPISH would have to be computed separately for each state

These limitations make it difficult to apply the commodity flow method at the state level. Thus, for compiling PFCE, the recourse is to use an allocation method that provides an ap- proximate value of item wise consumption expenditure for each state. Two studies Rajeswari & Singh [2017] and Kar. et. al. [2004] outline the allocation method wherein item wise PFCE from NAS is distributed across state using item wise shares of expenditure from the NSS survey. The method is applied to a majority of items, particularly where the divergence between the NSS and NAS item wise shares is not high. In case of other items, indicators such as power, LPG consumption available from All India Energy Statistics have been used to allocate PFCE for 'Fuel and Light'. However, the allocation method is not free from problems. The basic premise of the allocation method rests on two key assumptions; (i) item wise expenditure shares available from household surveys are similar to the shares in the expenditure side of GDP and (ii) item wise shares of NSS and NAS do not diverge over the years. Given the experience with recent rounds of the NSS and also from the CP results, both these assumptions do not appear to hold for a significant number of items. The allocation method also has a few other limitations. For any indicator to be representative,

- (i) it must have shares similar to the item's consumption expenditure (for relative magnitudes)
- (ii) it should preserve ordering (for relative positions)
- (iii) should be correlated with consumption expenditure (if used as a proxy), and
- (iv) must have usefulness over time (for reasonably capturing actual changes over time)

To see the effect of the allocation method, in Table 13 we compute the share of each item group for each state using the level estimates from CP data. For instance, for state (i), the share of food expenditure is given by the value of food expenditure in state (i) divided by the total food expenditure of all states. Following Kar and Gupta [2004] and Rajeswari and Singh [2017], the same proportions can be used to allocate the PFCE from the NAS to each item group, especially in cases where the aggregate shares do diverge from the NAS. Effectively, it means that the component of PFCE, (i.e., 90.5 Trillion in case of 2016-17) would get allocated item wise to all states based on two sets of ratios; (i) the item wise share in the NAS and (ii) state wise share of that item based on NSS.

While this seems to be a practical alternative, there are a few problems in the method. First, there is limited or no historic information on the size of PFCE (as a % of GSDP) for each state. As a precursor, in Appendix Table C2 we tabulate the PFCE available from CP data as a proportion of GSDP (both at Current Prices) for 2016-17. If, at the aggregate, PFCE is close to 58% of GDP, then in terms of its distribution, the state level figures show a clear under estimation (See Appendix Table C2). In contrast, it is more probable that PFCE for some states is a substantial component and may be much higher than the national average. The second part of the problem is that the allocation method may lead to some discrepancy in the PFCE component. For instance, if we apply the item wise shares, it is possible that PFCE for some states may exceed the GSDP value. Such discrepancies would have to be resolved based on identification of their sources and magnitude. Since consumption expenditure is captured as originating within a state (or is destination based), the problem could majorly be for states that have a higher consumption base (in comparison to their production) and for small regions such as northeastern states and union territories.

#### 6. WHAT DO WE KNOW ABOUT PFCE?

The process of estimation and detailed comparison of the three data sources has given some interesting insights about the composition of PFCE. What have we learnt? And what are the issues involved in estimation?

- \* Estimates from CP data show a close approximation to the estimates from the NSS household surveys. The distribution of expenditure shares and the MPCE by state show that levels of household expenditures are fairly consistent from the two sources.
- \* On the distribution of expenditures, both the CP and NSS estimates have similar proportions of food and Non-food expenditures (49.82%, 50.18%). However,

within the Non-food items by region, the NSS reports a much higher proportion for items such as durables, and health for urban regions, and a lower proportion for power & fuel expenses.

- In absence of detailed information, we have attempted to elaborate on the expenditure on Transport and Rents in Table 11 which highlights the fact that capturing such expenditures accurately is difficult and they are more likely to be understated. Since the survey does not provide any qualitative information, it is difficult to draw any further inferences on these categories.
- \* At the state level, bulk of the PFCE (59.9%) comes from the rural regions, and 4 states (Bihar, Maharashtra, Uttar Pradesh and West Bengal) account for more than 42% of PFCE from rural regions. In case of urban regions, 7 states (Gujarat, Karnataka, Kerala, Maharashtra, Tamil Nadu and West Bengal) account for more than 65% of total PFCE coming from urban regions.
- \* The NAS estimate of PFCE is nearly three times the aggregate of household PFCE. In terms of expenditure shares, rents, transport and Miscellaneous items are the three main groups in which the NAS shows a significantly high proportion compared to household surveys. On the other hand, the

expenditure share of food is substantially lower in NAS compared that from the CP survey. Further, NAS includes the contribution of NPISH; this component remains to be investigated as existing data sources do not allow us to routinely compute their consumption expenditure.

\* Household surveys in general show a considerable underestimation in items such as; actual rents paid and transport. Part of the underestimation is because household surveys are unable to cover high income households thus leaving out a large part of consumption expenditure of affluent households.

# 6.1 Problems in estimation

Household surveys point to a few sources of under estimation. For instance, the state wise sampling distribution is more likely to be inadequate in terms of coverage and stratification. The problem of missing affluent households in the survey has been emphasised in the literature and this issue remains unresolved both in the NSS and CP data. [See NSS, 2003; FOD, 2015; Pathak and Tomar, 2015; for a survey of the issues relating to respondents in household surveys, particularly in the context of NSS]. The situation is similar in case of the CP survey. Table 11 shows the maximum of annual expenditure on non-food items available from the sample across major districts.

Districts	Sample (N)	Rent/Bills	Power/Fuel	Transport	Comm.	Education	Health
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ahmedabad	547	1666.70	4640.50	866.70	1337.50	6386.70	5211.70
Bangalore	657	9683.30	9215.80	3863.30	1585.80	44433.30	3533.30
Chennai	386	6916.70	8390.40	808.30	1922.80	12500.00	4485.80
Indore	176	616.70	3604.80	314.20	551.30	6820.80	292.50
Jaipur	366	710.80	3895.50	600.00	979.20	3390.00	937.50
Kolkata	161	3875.00	3772.10	1416.70	1735.80	10538.80	2526.70
Lucknow	343	2600.10	14136.70	1321.70	1973.30	5960.00	2672.10
Mumbai	176	3562.50	5561.70	1796.70	1560.50	3601.70	1280.80
Pune	759	3816.70	7058.30	1544.30	2179.20	18854.20	3844.20
New Delhi (SW)	37	591.70	5087.50	1105.40	1853.30	8433.30	1197.50

Table 11. Maximum Sample Annual Household Expenditure in Selected Major Districts, CP Survey, 2016-17 in INR

Sample statistics show that in most non-food categories the expenditure is under stated. For instance, annual rental expenditure in the range of Rs. 3000 - 3800 in major urban places translates, on average, to monthly rents of Rs. 320, which is clearly under stated. Given a weighting structure (or a multiplier) for scaling based on sample stratification, the resulting aggregates are under estimated in comparison with the expenditure side of GDP. The issue of recall errors on part of the respondent is another source of under estimation in household surveys. The problem, however, is not limited only to recall errors as other issues such as, non-cooperation, reluctance in sharing information and supplying incorrect information are more challenging to resolve. For an overall expenditure profile, Appendix Table C3 presents the annual expenditure by various income ranges of the households.

PFCE is an important component of aggregate demand at the national or even at the state level. Detailed analysis of consumption expenditure is expected to provide deeper insights into changes in consumption patterns, seasonality and sources of growth. However, given data challenges from the expenditure side of GDP and limitations of household surveys, most of these aggregates are inadequate for drawing any conclusive inferences about PFCE and its composition.

#### 7. CONCLUSION

In this paper, we present estimates of private final consumption expenditures of households across 25 states in India using the CMIE Consumer Pyramids (CP) household survey data. The purpose of our study is twofold, first to assess comparability of the new dataset with the existing sources of household expenditures and second, to make some advancement towards building up the component of PFCE from the expenditure side of GDP at the state level. We present state wise expenditure on major item groups such as Food, Power, Fuel & Light, Durables, Transport, Health, Education and other services for the year 2016-17and draw a comparison with the expenditure shares available in the National Accounts Statistics (NAS) and the Consumer Expenditure Survey of the NSS.

Findings show that, on comparability, the CP survey closely follows the sampling, item basket and the estimates of the NSS 68th Round. Given that the NSS estimates are dated, both the CP and NSS estimates have similar proportions of food and Non-food expenditures (49.82%, 50.18%). However, within the Non-food items by region, the NSS reports a much higher share for durables and health for urban regions, and for transport in both rural and urban regions and a lower proportion for power & fuel expenses for both rural and urban regions. CP data also matches closely with state wise Monthly Per Capita Expenditure (MPCE) for both rural and urban regions. However, in comparison to the NAS (i.e. the expenditure side of GDP), there are substantial differences in expenditure shares. The NAS shows a low share of food items (29%), while household surveys show nearly 50% share of food items. Similarly, the NAS shows a significantly high share of transport, housing rent and miscellaneous items. While some of the reasons for divergence have been documented in the literature, no systematic method is available to reconcile the differences between the two sources.

Compiling state level estimates of PFCE from the NAS is a major challenge. It is known that the ratio based allocation of consumption expenditure in the NAS does not fully reflect the patterns of consumption, especially at the state level. Thus, one of the possible methods suggested in Kar and Gupta [2004] and Rajeswari and Singh [2017] is to use the NSS item shares to allocate PFCE from the NAS. This method rests on two key assumptions; (i) item wise expenditure shares available from household surveys are similar to the shares in the expenditure side of GDP and (ii) item wise shares of NSS and NAS do not diverge over the years. Given the experience with the recent rounds of the NSS and also from the CP results, both these assumptions do not appear to hold for a significant number of items. The allocation method might also lead to large discrepancies in state level PFCE and the same would have to be resolved before the estimates are considered as reliable and conclusive.

While the expenditure side of GDP receives short and limited attention, the analysis of PFCE as its single largest component in the GDP requires a fresh and much needed investigation. There are several measurement issues, both in the household surveys and in the use of ratios to allocate expenditure to items. Available data sources will continue to show contrasting and diverging trends of consumption expenditure as long as survey related problems and sources and methods of estimation of the expenditure side of GDP are not updated and improved. The emerging picture of consumption expenditure suggests that household surveys capture a greater part of ground reality, but analysing the expenditure side of GDP at the state level remains inconclusive.

#### APPENDIX

#### A Consumer Pyramids Survey Design and Sampling Methodology

The Consumer Pyramids Household survey (CP) is based on a random sample of 158,338 households, drawn through multiple stages of stratification and clustering and then simple random selection of households from the ultimate strata. For this purpose, a Homogeneous Region (HR) was taken as the broadest level of strata. The sub-strata are the rural and urban regions of the HRs. In an urban sub-strata, since the variation in town size is very high, the towns were further stratified as per their size, which are then referred to as the Primary Sampling Units (PSUs). A total of 315 towns were selected for this purpose. In the rural sub-strata, the villages were not stratified as these are of relatively uniform size. The villages were directly selected through the simple random sampling process. A total of 2,844 villages were selected in the CP survey. For details, see Consumer Pyramids Survey Design,<sup>3</sup> Sampling Methodology<sup>4</sup> and Survey execution.<sup>5</sup> The details of the sample are as follows;

		Urban Sample		Rural Sample		
State	Towns	CEBs	HH	Villages	HH	
(1)	(2)	(3)	(4)	(5)	(6)	
Andhra Pradesh	23	602	8862	211	3416	
Assam	3	68	988	30	496	
Bihar	16	356	5374	175	2904	
Chhattisgarh	9	204	3010	88	1408	
Gujarat	18	406	6046	147	2440	
Haryana	11	267	3968	85	1392	
Jharkhand	8	178	2646	85	1392	
Karnataka	17	445	6552	151	2472	
Kerala	10	228	3414	85	1368	
Madhya Pradesh	18	425	6124	165	2768	
Maharashtra	36	900	13254	263	4246	
Odisha	12	253	3858	105	1880	
Punjab	12	300	4464	81	1392	
Rajasthan	20	461	6834	179	2904	
Tamil Nadu	20	477	7058	152	2448	
Uttar Pradesh	43	1033	15346	453	7360	
West Bengal	23	539	7956	179	2952	
Chandigarh	1	29	428	0	0	
Delhi	1	77	958	31	496	
Goa	2	43	640	29	464	
Himachal Pradesh	2	45	640	30	496	
Jammu & Kashmir	4	93	1370	59	944	
Puducherry	2	44	644	31	496	
Uttarakhand	4	85	1282	30	488	
All India	315	7558	111716	2844	46622	

#### Appendix Table A1

CEBs are Census Enumeration Blocks, HH denotes households

Source: CMIE Consumer Pyramids

State	CP (April 2017)	NSS 68th Rd.
(1)	(2)	(3)
Andhra Pradesh	4.4	6.8
Assam	0.9	3.4
Bihar	5.2	4.5
Chandigarh	0.3	0.3
Chhattisgarh	2.8	2.1
Delhi	0.9	0.9
Goa	0.6	0.4
Gujarat	5.3	3.4
Haryana	3.3	2.6
Himachal Pradesh	0.7	2.0
Jammu & Kashmir	1.3	3.3
Jharkhand	2.5	2.7
Karnataka	5.6	4.0
Kerala	3.0	4.4
Madhya Pradesh	5.3	4.6
Maharashtra	12.1	7.9
Odisha	4.0	4.0
Puducherry	0.7	0.6
Punjab	3.7	3.1
Rajasthan	6.1	4.1
Tamil Nadu	5.9	6.5
Telangana	3.5	-
Uttar Pradesh	14.2	8.9
Uttarakhand	1.1	1.8
West Bengal	6.8	6.2
Total households	160473	101662

Appendix Table A2 Comparison of shares of sample (%) between CP and NSS surveys across states

# **B** Household weights and Standard Errors

B.1 Household weights

The methodology of assigning household weights in the Consumer Pyramids Household survey is as follows. The weight assigned to each household is calculated as the ratio of the estimated number of households (N) at the end of the last month of the four month series to the sample households (n) in a given stratum (i), i.e.,  $w_i = (N_i/n_i)$ . For urban and rural regions, it is the ratio of the estimated number of households of either type  $(n_U, n_R)$  in the Homogeneous Region in the four month series to the sample households of either type in that stratum. The estimated number of households in both rural and urban Homogeneous Regions are calculated by using the Compounded Annual Growth Rate (CARG) on the Census 2011 data for the Homogeneous Region, compounded on a daily basis. For the purpose of estimation, we apply the following filters to select a common sample of households that have data for all 12 months. The filters are;

- \* Survey status as 'Accepted'<sup>6</sup>
- \* Total Income and Expenditure greater than zero
- \* Common households during the 12 months period April, 2016 to March,  $2017^7$

Applying these filters, we re-compute the number of urban and rural households in each stratum, i.e.,  $(n'_U, n'_R)$ . In general, using the earlier weights, we reassign the weights to households for each respective stratum as; W prime = N/n prime. Thus, the expression for revised weights is given by;  $(W' = W \times (n/n'))$ . The same process is followed for both urban and rural households in each stratum.

#### **B.2** Standard Error of estimates

The ratio estimator  $r = \frac{\overline{y}}{\overline{x}}$  for the mean of a paired random sample  $(x_p, y_i)$  with (n) observations is given by  $\frac{\mu_y}{\mu_x}$  where  $(\mu)$  denotes the sample mean of the respective observations. The estimated variance of the ratio is given by;

$$\overline{\operatorname{Var}(\mathbf{r})} = \left(1 - \frac{n}{N}\right) \frac{1}{\mu_x^2} \cdot \frac{\sum_{i=1}^n (y_i - rx_i)^2}{n(n-1)}$$

As  $\mu_x$  is an unbiased estimator of  $\overline{x}$ , we can replace the value of  $\mu_x$  by  $\overline{x}$  by in the expression and estimate the variance of the ratio estimator. The Standard Deviation (SD) of the ratio is given by

$$SD = \sqrt{Var(r)}$$

and the Relative Standard Error (RSE) is expressed as a fraction of the estimate, i.e.,

$$RES_{y} = \frac{\sqrt{Var(r)}}{r} \times 100$$

The Confidence Interval around the ratio estimate for a chosen level of statistical significance ( $\alpha$ ) can be obtained by using unit Standard Deviation to compute the lower and upper bound around the estimate, i.e.,  $CI = r - \left(\frac{\alpha}{2}\right) \cdot SD < r < r + \left(\frac{\alpha}{2}\right) \cdot SD$ .<sup>8</sup>

		Rural		Urban			All India			
State	MPCE INR	SE INR	RSE %	MPCE INR	SE INR	RSE %	MPCE INR	SE INR	RSE %	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Andhra Pradesh	2436	46.20	1.90	2798	114.50	4.09	2546	50.50	1.98	
Assam	2175	114.90	5.28	3228	250.90	7.77	2237	117.70	5.26	
Bihar	1448	22.00	1.52	2011	127.80	6.35	1510	30.50	2.02	
Chandigarh				4349	-	-	-	-	-	
Chhattisgarh	1398	37.90	2.71	1929	193.40	10.03	1523	64.50	4.24	
Delhi	2810	70.20	2.50	3096	-	-	3091	5.30	0.17	
Goa	5308	452.60	8.53	7343	316.30	4.31	6720	333.90	4.97	
Gujarat	2212	63.40	2.87	2521	112.80	4.48	2353	60.60	2.57	
Haryana	2896	119.60	4.13	3787	169.70	4.48	3203	125.10	3.91	
Himachal Pradesh	3416	165.30	4.84	4632	452.10	9.76	3539	167.10	4.72	
Jammu & Kashmir	2546	138.20	5.43	4163	538.90	12.94	2968	272.80	9.19	
Jharkhand	1419	35.50	2.50	1978	185.10	9.36	1575	64.40	4.09	
Karnataka	2114	50.60	2.39	3241	443.50	13.68	2620	319.80	12.2	
Kerala	3211	98.70	3.07	2935	220.90	7.53	3036	159.90	5.27	
Madhya Pradesh	1502	40.20	2.68	1903	84.20	4.42	1605	40.60	2.53	
Maharashtra	2078	26.80	1.29	3219	133.80	4.16	2584	118.50	4.59	
Odisha	1350	30.90	2.29	1938	65.50	3.38	1443	37.20	2.58	
Puducherry	2686	234.70	8.74	3282	-	-	2907	207.50	7.14	
Punjab	2964	68.50	2.31	3930	221.20	5.63	3323	93.30	2.81	
Rajasthan	2042	45.40	2.22	2238	95.30	4.26	2089	44.00	2.11	
Tamil Nadu	2300	53.80	2.34	2746	137.10	4.99	2527	78.30	3.10	
Telangana	2076	63.40	3.05	2674	82.60	3.09	2339	112.80	4.82	
Uttar Pradesh	1657	21.10	1.27	2283	70.70	3.09	1806	29.30	1.62	
Uttarakhand	2909	118.30	4.06	4552	164.90	3.62	3449	281.40	8.16	
West Bengal	1679	21.40	1.28	2147	81.00	3.77	1835	31.30	1.71	

Appendix Table B1. Relative Standard Errors of MPCE (2016-17) using CP Household Survey

# C Distribution of share of major item groups in PFCE by state (by the expenditure side in the NAS)

State	Total PFCE	Food	Toba- cco etc.	Cloth- ing/ Foot- wear	Housin g/Rent	Health	Trans- port	Comm.	Recre- ation	Educ.	Hotel etc.	Misc. Exp.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Andhra Pradesh	3.79	3.89	7.13	4.54	2.99	2.65	6.60	4.59	6.27	1.73	4.13	2.60
Assam	2.36	2.37	2.33	2.03	1.71	6.24	2.51	2.29	0.69	2.26	3.52	2.48
Bihar	6.95	8.43	1.82	6.10	4.94	6.35	6.22	3.83	1.05	9.97	5.77	4.85
Chandigarh	0.13	0.10	0.02	0.10	0.22	0.09	0.04	0.17	0.22	0.13	0.30	0.12
Chhattisgarh	1.85	1.67	2.88	2.01	2.18	3.05	1.10	1.56	1.10	1.42	1.18	1.72
Delhi	1.67	1.55	1.12	0.81	2.09	1.22	1.58	2.02	1.71	4.16	2.22	1.23
Goa	0.40	0.22	0.32	0.43	0.37	0.60	1.10	0.45	3.01	0.43	1.26	1.26
Gujarat	6.16	6.46	9.03	4.85	5.65	5.58	4.20	5.87	7.64	2.83	5.76	10.72
Haryana	2.86	2.65	3.76	2.13	3.45	2.57	2.41	2.92	4.21	2.51	3.69	3.55
Himachal Pradesh	1.01	0.80	1.49	1.09	0.79	0.56	1.14	0.99	2.15	0.90	0.79	3.66
Jammu & Kashmir	1.32	1.15	1.00	1.90	1.15	1.34	1.85	1.38	0.79	1.65	0.66	2.24
Jharkhand	2.22	2.35	1.68	3.50	1.64	0.99	2.38	1.85	0.17	4.22	2.66	0.66
Karnataka	6.13	5.82	4.58	8.51	6.94	4.64	8.30	6.53	8.55	5.33	2.07	4.67
Kerala	4.44	3.78	6.24	6.74	3.98	6.06	7.06	6.37	12.60	3.28	9.09	4.56
Madhya Pradesh	4.96	4.91	7.65	4.72	5.59	3.55	4.66	4.28	1.12	3.68	5.55	4.84
Maharashtra	11.93	10.89	8.31	11.89	14.70	14.18	11.99	14.34	18.45	10.75	11.08	12.54
Odisha	2.20	2.11	4.17	1.98	2.40	2.24	1.35	2.46	0.12	1.80	2.94	1.74
Puducherry	0.08	0.06	0.11	0.17	0.06	0.08	0.07	0.07	0.26	0.12	0.04	0.15
Punjab	2.86	2.78	1.52	2.12	3.55	2.46	1.63	3.37	5.02	2.44	4.56	2.63
Rajasthan	4.92	4.49	3.47	6.99	5.64	3.56	3.86	5.72	3.77	4.95	2.85	6.62
Tamil Nadu	7.98	7.68	8.14	11.09	7.58	8.24	7.63	7.02	12.66	9.25	4.39	8.38
Telangana	2.74	2.51	4.02	3.37	2.81	2.88	2.64	2.98	4.91	2.81	2.75	2.69
Uttar Pradesh	13.03	14.27	12.68	9.33	12.54	10.27	12.91	11.67	2.19	13.15	12.27	10.99
Uttarakhand	0.96	0.92	1.18	0.83	1.04	0.64	1.30	1.02	0.71	0.86	1.94	1.05
West Bengal	7.06	8.13	5.34	2.77	5.99	9.96	5.49	6.30	0.61	9.37	8.55	4.06
Total	100	100	100	100	100	100	100	100	100	100	100	100

Appendix Table C1. State-wise Shares of Major Item Groups in their Respective Totals, 2016-17

State	PFCE HH CMIE CP	GSDP 2016-17	% of GSDP
(1)	(2)	(3)	(4)
Andhra Pradesh	114578.17	699307.00	16.38
Assam	71376.84	254341.00	28.06
Bihar	209996.67	425888.00	49.31
Chandigarh	3832.74	31823.00	12.04
Chhattisgarh	56071.53	262263.00	21.38
Delhi	50453.63	616826.00	8.18
Goa	12108.88	62661.00	19.32
Gujarat	186343.58	1162287.00	16.03
Haryana	86407.15	547396.00	15.79
Himachal Pradesh	30494.37	126020.00	24.20
Jammu & Kashmir	39901.11	126847.00	31.46
Jharkhand	66996.04	235560.00	28.44
Karnataka	185190.16	1132393.00	16.35
Kerala	134179.40	621700.00	21.58
Madhya Pradesh	149880.06	647304.00	23.15
Maharashtra	360626.76	2257032.00	15.98
Odisha	66632.85	377202.00	17.67
Puducherry	2413.49	29279.00	8.24
Punjab	86343.69	428340.00	20.16
Rajasthan	148727.74	759235.00	19.59
Tamil Nadu	241370.58	1270490.00	19.00
Telangana	82825.12	659074.00	12.57
Uttar Pradesh	393996.24	1250213.00	31.51
Uttarakhand	29114.75	195606.00	14.88
West Bengal	213451.54	879167.00	24.28
 Total	3023313.09	15058254.00	

Appendix Table C2. Share of PFCE of Households as %	% of GSDP Current Prices, 2016-17, Rs. Crores
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# Appendix Table C3. Distribution of Annual Expenditure and Number of Households in CP Survey, 2016-17, (in Rs.)

Annual Expenditure	Sample Count Of Household (Number)	Estimated Count Of Household (Lakh)	Estimated Annual Expenditure (Lakh)
(1)	(2)	(3)	(4)
> 0 and <=1,50,000	73809	2493.90	228639845.14
>150,000 and <= 2,00,000	10496	252.11	42814972.85
>2,00,000 and <=2,50,000	3231	80.82	17803643.79
>2,50,000 and <= 3,50,000	1513	36.48	10331291.05
>3,50,000 and <= 4,00,000	229	5.36	1985503.55
>4,00,000 and <= 4,50,000	124	3.14	1317078.73
>4,50,000 and <= 5,00,000	59	1.15	541091.36
>5,00,000 and <= 5,50,000	41	0.67	348456.27
>5,50,000 and <= 9,50,000	100	2.57	1690659.47
>9,50,000 and <= 10,00,000	1	0.02	23551.61
>10,00,000 and <=15,00,000	6	0.23	260035.76
>15,00,000 and <= 20,00,000	2	0.05	75189.00
>20,00,000 and <= 25,00,000	3	0.14	316190.81
Total	89614	2876.64	306147509.39

# **D** Mapping of consumption expenditure items

# Appendix Table D1

Item	NSS Consumption Expenditure	Item	CMIE Consumer Pyramids
(1)	(2)	(3)	(4)
1.0	Food and non-alcoholic beverages	1.0	Food and non-alcoholic beverages
1.1	Food	1.1	Cereals
1.2	Bread, cereals and pulses	1.2	Cereals Whole grain
1.3	Meat	1.3	Cereals Processed
1.4	Fish and seafood Milk,	1.4	Pulses
1.5	cheese and eggs	1.5	Edible Oils
1.6	Milk and milk products	1.6	Ghee
1.7	Eggs	1.7	Spices etc.
1.8	Oils and fats	1.8	Potatoes
1.9	Fruit	1.9	Vegetables
1.10	Vegetables	1.10	Vegetables, etc.
1.11	Sugar, jam, honey, chocolate and	1.11	Fruits
1.12	confectionery	1.12	Dry Fruits
1.13	Food products n.e.c.	1.13	Milk
1.14	Non-alcoholic beverages	1.14	Milk Products
1.15	Coffee, tea and cocoa Mineral waters, soft drinks,	1.15	Mithai
	juices	1.16	Bread
		1.17	Biscuit
		1.18	Salty Snacks
		1.19	Noodles
		1.20	Flakes/Muesli/Oats
		1.21	Confectionery
		1.22	Ice creams
		1.23	Jam/Ketchup/Pickles
		1.24	Health supplements
		1.25	Meat/Eggs/Fish
		1.26	Eggs
		1.27	Meat/Fish
		1.28	Ready to Eat Food
		1.29	Tea
		1.30	Coffee
		1.31	Sweeteners (Sugar, Gur etc.)
		1.32	Beverages (Soft drinks/Juices)
		1.33	Bottled Water
		1.34	Baby Food
		1.35	Others (Food)
2.0	Alcoholic beverages, tobacco and narcotics	2.0	Alcoholic beverages, tobacco and narcotics
2.1	Alcoholic beverages	2.1	Cigarettes/tobacco
2.2	Tobacco	2.2	Cigarettes
2.3		2.3	Bidis Gutka/Pan Masala, etc.
		2.4	Liquor
		2.5	

(Contd.)

Item	NSS Consumption Expenditure	Item	CMIE Consumer Pyramids
(1)	(2)	(3)	(4)
3.0	Clothing and footwear	3.0	Clothing and footwear
3.1	Clothing Footwear	3.1	Clothing (Garments, jackets, woolens, hosiery etc)
3.2		3.2	Footwear
4.0	Housing, water, electricity, gas and	4.0	Housing, water, electricity, gas and
4.1	other fuels	4.1	other fuels
4.2	Gross rentals for housing	4.2	Rent Bills
4.3	Water supply and misc. services (dwelling) Elec-	4.3	House rent
4.4	tricity, gas and other	4.4	Water Charges
4.5	fuel	4.5	Society Charges
4.6	Electricity	4.6	Others (Taxes Etc.)
4.7	Gas	4.7	Power
	Liquid fuels	4.8	Cooking fuel
	Solid fuels	4.9	Petrol
		4.10	Diesel
		4.11	Electricity
			Lighting
5.0	Furnishing, house equin & routine maint	5.0	Furnishing house equin and routine maintenance
51	Furniture, carpets and other floor coverings	51	Appliances
5.2	Household textiles	5.2	Kitchen appliances
53	Household appliances	53	Household appliances
5.5	Glassware tableware and household utensils	54	Furniture
5 5	Tools and equipment for house & garden	5 5	Utensils
5.6	Goods and services for routine household maint	5.6	Painting
5.0	Goods and services for routine nousehold maint.	57	EMI house
		5.8	EMI household durables
		5.9	EMI other Miscellaneous
		5.10	Livit offer Miscellareous
6.0	Health	60	Haalth
0.0	Health	6.1	General Medicines
		6.2	Destors Fee
		6.2	V rev/Teete
		0.5	X-ray/Tests
		0.4	Promising for books income of
		0.5	Premium for nearth insurance
		6.7	Gym/Yoga Classes/Dietitian Fees
7.0	Transport	7.0	Transport
7.1	Purchase of vehicles	7.1	Repair Motor Vehicles
7.2	Operation of personal transport equipment	7.2	EMI car
7.3	Transport services	7.3	Daily Bus/Train Fare
		7.4	Outstation Bus/Train Fare
		7.5	Autorickshaw/Cab
		7.6	Airfare

(Contd.)

Item	NSS Consumption Expenditure	Item	CMIE Consumer Pyramids
(1)	(2)	(3)	(4)
8.0	Communication	8.0	Communication
		8.1	Telephone
		8.2	Cable TV
		8.3	Cell Phone
		8.4	Internet
		8.5	Mobile
9.0	Recreation and culture	9.0	Recreation and culture
9.1	Audio-visual, photographic and information pro-	9.1	Newspaper
	cessing equip.	9.2	Recreation
9.2	Other major durables for recreation and culture	9.3	CDs/Cassettes/DVDs
9.3	Other recreational items and equipment, gardens and	9.4	Entertainment (movies/clubs Etc.)
9.4	pets Recreational and cultural services Newspapers,	9.5	Children's toys Holiday / tourism expenses
9.5	books and stationery	9.6	
10.0	Education	10.0	Education
		10.1	School/AcademicBooks
		10.2	Fiction/Non-Fiction Books
		10.3	Stationary
		10.4	School/College Fees
		10.5	Private Tuition Fees
		10.6	Additional Professional education
		10.7	Overseas Education
		10.8	Hobby Classes
		10.9	School Transport
		10.10	Others (Education)
11.0	Restaurants and hotels	11.0	Restaurants and hotels
		11.1	Restaurant Expenses on Food
		11.2	Restaurant/Bar Expenses on Liquor
12.0	Miscellaneous goods and services	12.0	Miscellaneous goods and services and Cosmetics
12.1	Personal care	12.1	Toothpaste
12.2	Personal effects n.e.c	12.2	Tooth powder
12.3	Insurance	12.3	Toothbrush
12.4	Financial services other than insurance	12.4	Bathing soap
		12.5	Face wash
		12.6	Shaving articles
		12.7	Hair oil
		12.8	Mehndi/Hair color/Hair gel. Etc.
		12.9	Shampoo
		12.10	Powder
		12.11	Creams
		12.12	Deodorants, perfumes
		12.13	Lipsticks/Nail Polish/Other
		12.14	Cosmetics
		12.15	Parlor/Salon/Spa
		-	Å

(Contd.)

Item	NSS Consumption Expenditure	Item	CMIE Consumer Pyramids
(1)	(2)	(3)	(4)
		12.16	Detergent Bars
		12.17	Detergent Liquids/Powder
		12.18	Scourer and housecleaning agents
		12.19	Other house care products
		12.20	Domestic help Remittances
		12.21	Sent
		12.22	Social Obligations
		12.23	Religious Obligations
		12.24	Expenses on pets/domestic animals
		12.25	Unaccounted Pocket Money
		12.26	Gems Bindis/Bangles/Artificial Jewelery
		12.27	Bags/Wallets/Watches/Glasses
13.0	FISIM	13.0	NA
14.0	Other services n.e.c	14.0	Other services n.e.c.
		14.1	Lawyer/Broker/CA charges
		14.2	General insurance

#### NOTES

1. The mapping of CMIE items of consumption *vis-à-vis* NSS Consumption Expenditure Surveys is shown in Appendix D.

2. Durable and semi-durable goods purchase forms one of the major expenses by the household with over 10% share in the total PFCE (2016-17). The data that gets recorded in the PFCE (NAS) is the market value of the durables. However, as we know that households financing these assets through EMIs are significant, in which case there are potential chances of measurement errors in recording expenditures.

3.https://consumerpyramidsdx.cmie.com/kommon/bin/s r.php?kall=wtabnav&tab=4000&type=Survey+Design

4https://consumerpyramidsdx.cmie.com/kommon/bin/sr .php?kall=wtabnav&tab=4000&type=Sample+Size+%26+ Distribution

5 https://consumerpyramidsdx.cmie.com/kommon/bin/sr.ph p?kall=wtabnav&tab=4000&type=Execution

6. As part of the survey design, Accepted/Non-response are the two categories under the field survey status. Accepted refers to household that responded for the reference period and carries complete information. Non-response implies that a household that was part of the sample but did not accept to be a part of the survey or the survey was not executed for some reason.

7. CMIE household survey data is disseminated on Monthly/Wave (4 months) bases. The data is available from Jan 2014 onwards. However, upon analysing the sample

across states, we observed that the sample stabilises only after Jan 2016 onwards for most of the states and hence we chose to restrict the period to a common sample for 12 months for the year 2016-17.

8. See NSSO 68th Round Report on Household Consumption Expenditure and also 68th Round Report on Employment and Unemployment in India for a similar process of calculating RSEs.

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- Rajeswari, T. and Reena Singh, 2017; Estimation of state level private final consumption expenditure, *The Journal of Income and Wealth*, Vol. 39, No. 2, July-December.

### Smt. T. Rajeswari:

As far as the methodology of compiling PFCE (at the national level) from the commodity balances is concerned, it is available in the CSO publications. Briefly, it implies working of commodity balances relating to various items of consumption, taking into account of production: intermediate consumption, net imports, stock variations, consumption on government account and gross fixed capital formation. Also imputed expenditures like rentals of owner-occupied dwellings and Financial Intermediation Services Indirectly Measured (FISIM) are included in estimates of PFCE. As far as the state level PFCEs are concerned, we have done an internal exercise and generated some estimates, which work has been published in The Journal of Income and Wealth. Indian Association for Research in National Income and Wealth. [Vol. 39, No. 2, July-December 2017] You may like to refer to it.

# **Dr. Amey Sapre:**

That will be a great help, because none of this documentation is available in the Compilation Methods or the Sources and Methods.

# Dr. Anant:

What you are trying to do is very interesting and I am quite intrigued by the regularity which you see with the CMIE survey versus NSS consumption expenditure survey. However, you know, some points I brought on the Adhikari Committee report need to be emphasised and one of the things is that expenditure surveys have inherent canvassing biases. And CSO has now done a set of different types of expenditure surveys. They have the main consumer expenditure survey; they have specialised surveys on education and health; last time, it was in the 72nd round, they did the survey on durable goods. What we get from those is the profile of expenditures on designated items, education, health, durable goods. What we get from these specialised surveys is very different from the profile which we get from the NSS consumer expenditure surveys. This is principally because the problem with specialised items is that the NSS survey has a very stylised way of capturing consumption. It has a notion of the recall period. It captures expenditure in the mixed or the now-modified mixed reference-period approach. These are not adequate for the purposes of specialised heads of expenditure, particularly in education and health. and as we noted it, in the durable goods sector in durable goods survey. When national accounts make compilation it actually uses all of them. It had not used the durable goods survey in 2011-12 base-year series, but it had used the education and health surveys. We shall get a better handle on how to treat this from the next base year because right now, in the field survey for 2017-2018, we have a simultaneous NSS survey which covers consumer expenditure, education, health as a composite round, so that users can make a comparable exercise of trying to figure out how to allocate these. But this is a challenge and it is a basic problem that a single instrument has limitations that is one part of the problem. The second problem is, now this is my personal bias, we are hoping in the next base revision, we shall get more precise numbers on this.

Last time around, we did an exercise with non-profit institutions. CSO in partnership with the state governments said that they attempted an exercise to document the non-profit institutions. That report is there on the website. That report is partly an acknowledgement of a failure. It is, if you read the report! It points out that they were able to trace a very small number of non-profit institutions (NPIs) from that exercise. From that they made an estimate of the NPIs and their values [the number of NPIs and the value of their consumption expenditures] and so on. The problem is, my guess is, this is probably an underestimate. They used that number for adjusting NPI consumption in the base revision. That number is probably an underestimate. NPIs are highly structured and some of them are very large. The difficulty in capturing NPIs is that the large ones are like getting enterprise data from the

establishment reports. The location may be somebody's house but it may be a very big organisation. One of the things which I think is the National Accounts Division has tried to do with the new base revision is that it has written to the state governments or is planning to write to the state governments to see if at least some administrative data can be captured on non-profit institutions. The reason why I am saying this is the divergence which takes place and the correlation between the NPI reports and the divergence in data is striking. The divergence takes place in 1988-89, somewhere around then, from that round onwards. If you look at the growth of non-profit institutions in that period during the 90s, it explodes. And it is a conscious act from the government policy because this was the period when the government consciously withdrew from the direct provision of services, major expansion took place of provision of services through NGOs. The Government itself created schemes. Sarva Shiksha Abhiyan, Health, which sought to promote role of NGOs in delivering services, the numbers just exploded. The divergence is so tightly correlated in time that it makes me suspect that NPI estimates are probably still, in our overall national accounts, probably a big black hole. It may not affect the overall value added as that we are capturing from the production side data. But the expenditure side estimates may well be significantly influenced if we have got better NPI data.

# Dr. Sethia:

Largely it is non-food items which account for the most of discrepancy and the transport sector alone accounts for 25% of the discrepancy between NAS and NSS estimates of aggregate consumption. So, I think probably there is a need to design a survey to estimate what is being consumed by transport sector for private final consumption expenditure, based on, let us say, the population of vehicles and petrol consumed by them, and so on. Those kinds of estimates are probably required, because 25% is a large amount, so we can adjust a large part of the discrepancy by just this, one improvement.

# **Prof. Dholakia:**

But is it the Transport sector per se or is it the service? Perhaps, it is the private petrol consumption quoted by themselves is much smaller than what the NAS is attributing to them for final consumption. So, it is the consumers' basket that needs to be checked, because part of it is captured in power and fuel which is separate. It is only the transport equipment which is the bigger problem.

My question is, that basket cannot be significantly different or should not be significantly different, from the basket used for calculating the CPI. Now, you know, that itself is opening the Pandora's Box, because then what you are saying is that the CPI's basket itself is a questionable thing!

#### Dr. Anant:

I should point out, if you look at the point, what he is mentioning on non-food is good because fuel is one of the items you would expect a very large consumption taking place in NPIs. And in fact, that NPIs are not classifying themselves as consumers is actually a misnomer. The SNA requires that we should be classifying NPIs as a separate institutional category in its own right. Not having them creates a problem; the sample survey explicitly excludes them, because the household design does not mandate the coverage of NPIs. And there is a gap.

I think Manna sahab was trying to say something.

#### Dr. Manna:

I have two points about this paper. As I see, from the point of view of methodology, I have

some suggestions to make. One is, since in your methodology you have looked at their data, Panel data or whatever, certain one lakh or certain number of households, and then what you have done is to derive the estimate of aggregate of PFCE. To arrive at the total you have taken the household level data, what is the average for household and multiplied by the total number of households, the projected number of households, is it not? So, as if, the sample of households for which the panel data is available, is a random sample, representative of all the households in the state! Now, how valid is this assumption representativeness of your sample households, which are reporting the panel data? How representative are they of the universe of all the households of that state! I think a justification is necessary for that. So, my suggestion would be that in order to throw more light on that, since you have the data of so many households and the data on their consumption expenditures, you can group the households by consumption expenditure class limits, say, in 10 classes or 12 classes. And you can look at the average household expenditure in those classes and compare them with NSS estimated distribution of the average MPCE by household classes. If they compare across designed classes with more or less similar behaviour, then you can argue that these sample households which are reported in the panel data are truly random samples representing the households.

#### **Dr. Amey Sapre:**

Actually, we were all about to do that, so we shall do this.

# Dr. Manna:

So you keep that in mind, number one! Number two; I am looking at table 11 where you have given the level estimates of total PFCE state-wise. Here I find Delhi total PFCE as per this data is much higher than that of Uttarakhand. I really donot know Uttarakhand's total population, Delhi we know is little more than 1 crore. Is Uttarakhand also the same level? No. smaller. Al right, then also it would be interesting to see that per capita expenditure for Delhi and Uttarakhand are almost similar. Now, here in your table, Delhi figure is almost double. So that is why, this gives us the question about the representativeness of the sample. My specific suggestion on table 11, it would be interesting if you also give, based on NSS round, of course that would be the 68th round, also subsequently the 75th round- it will come later, it will take some time and if you can give the all India PFCE and its distribution by the share of different states, as per the CMIE data and the NSS data. If the percentage behaviour is similar, you can argue strongly that your assumption is correct, and it gives a realistic picture. So, this is just a suggestion.

#### **Unidentified Voice:**

Why do you not think that remittances have an influence on consumption expenditure? Because it is true in Kerala, Gujarat and Punjab cases and for interstate migrants also remittances do matter a lot these days. But the interstate remittances are not taken into account actually in the computation of GSDP. That in Kerala's case it comes around 20%, so that is why Kerala always records higher in terms of per capita consumption expenditure that cannot be true in case of per capita income.

#### **Prof. Dholakia:**

That is fine, because you are still talking about the GSDP. GSDP is not personal disposable income. I mean, this is the income originating from within the state boundaries. Now, the remittances, etc., are truly transfer payments. Likewise, you know the transfer payments from the rest of the world or including the rest of the country, that also has to be adjusted. Similarly, if you want to complete the regional accounts, then you need to get into all these aspects and estimate

the savings. What I was talking was only the expenditure approach, expenditure side of the GSDP calculations. In that, you require only C. vou need total investment, then you need only government expenditures excluding transfers, etc. And then you have exports and then you must subtract imports. These are the only things you incorporate. In my earlier effort which was also published in the Journal Income and Wealth, I was trying also to generate savings for Gujarat. And I was interested in looking at the saving investment gap. I am happy to find and note that you are also arguing forcefully about the allocations of national aggregates. So, at that point in time, I had no other alternative but to allocate. But then I went in for the national level database and did the regressions, based on such independent variables, which I could obtain at the state-level readily! From there, I derived the relevant state

level estimate which was essentially an allocation. Now, if you do any such allocations, there will be fewer questions. But anyway, I tried to do that, and I was able to tackle most of these questions. If I apply the same methodology to Kerala, I should get reasonably close estimates. And I think it is not 20%, if I do not make a mistake. For Kerala the figure for remittances may turn out to be around 30% to 33%. That was the impression I gathered from scholars working on remittances in Kerala.

# **Prof. Chitre:**

I think we should close this session. I thank Amey for preparing the paper on this rather neglected subject. Well, Amey, you got some comments; you will get some more perhaps, so thanks very much.

# **TCA ANANT- CLOSING REMARKS**

# **Prof. Chitre:**

As this session comes to an end, we are also coming to the end of this seminar. We have put down on the programme, the Observations from the Floor as the final item. I am inclined to drop that unless someone feels strongly that something which was upper-most in his mind has got neglected in the discussion then I will give time for the discussion. But I think we have sufficiently deviated from the main themes every time that we have given people time to talk about the things on the top of their mind. So, now I request Mr. T.C.A. Anant, Chairman for this seminar to make whatever closing observations he would like to make.

# **TCA Anant- Closing Remarks**

It has been a very exciting two days of discussion. I would like to start, first of all, by thanking our colleagues from state DESs who have come and presented about the efforts they have been making. Each time I visit one of you and I discover so many new things and to me, it has been the most heartening part of my tenure and an affirmation of the work which we have been doing. A large part of improvement which has taken place is due to the efforts which our colleagues in state directorates have been making in compiling statistics, particularly economic statistics. One way of assessing this improvement is if we take a look at the recommendations in report of the committee of regional accounts which was submitted in 1976, and view it as a wish list, we will realize how much has been achieved over the last forty odd years. The major changes, of course are, the regular program of surveys by NSS, ASI, and so on, which have filled in a lot of data gaps which existed then.

But, it is also clear from the discussions in this seminar that our challenges have increased. For the most part, the efforts then were largely with an attempt to better describe growth and structural change from the state accounts. Now it is explicitly linked to a variety of policy requirement of the government, budgets, finance, and so on. All of which are ongoing, dynamic, and much more contemporaneous. Structural change can be described with a lag of three years and nobody is bothered so much. But when it comes to budgetary requirements or assessing fiscal prudence the demand for timely data is critical. So, I think that the recognition that we need to pay much closer attention to compilation of regional accounts and that timeliness is an issue which we need to confront upfront. We have been requested by the finance ministry, if we can make the calendar of reconciliation and updating more contemporaneous. It is in part because of their request that we started the process of partial reconciliation, which we do with a one-year gap and the full reconciliation after two years. Largely the reason behind the delays in reconciliation is that the data flow continues to be a challenge. For instance. We and the states use data from local bodies and which becomes available late, can we do something to speed up this important data source.

Improvement in State Statistical Capacities has created some conceptual challenges for CSO. which will need to be addressed in the future. We have for instance advised states on compiling state level IIP, undertake pooling, generate state and district level CPI, etc. Many of them have started doing so. This however poses an issue for us because when states are collecting information they will obviously make use of it in their compilation of economic statistics. However, if we have not integrated their data collection as a part of our own national data production, we will issues of inconsistency. So, we need to also think about the integrating state-data, where available into our work. But this means we have to discuss with them, not just the data but its timeliness, because we cannot relax our calendar too much as it is linked to many national and international commitments. Technology now permits us to create common portals in which we can both maintain and jointly use the data and we can then access it at the same time. But there are issues on validation protocols, timelines, dissemination, rules for revision which will need extensive discussion before they can be converted to practice. It is clear however that this is a conversation that will need to begin.

A second major issue which came up repeatedly in our discussion and I do want to flag that, is, one of our challenges throughout in doing economic statistics is the poor quality of frames from which we collect data on economic statistics. The Annual Surveys of Industries, for instance, is dependent on the Chief Inspector of Factories, and the Factories Act. Many papers have been written about the limitations of this frame. The states have done work on business registers and that work for the time being at least will need to be continued.

I have raised this issue because GST now provides us with an integrated frame for establishments across all forms of activities and is backed by a registration requirement which is enforced by the power of the tax authorities. This is therefore a possible statistical frame which is reasonably accurately followed up by the concerned government because revenue is important to all governments. So, that frame we suspect will be better, well maintained and tracked on regular basis. The challenge however on using the GSTN frame what about those entities which are not there in GSTN we will have to craft our future business register and Economic Census work in a way to tabulate the non-GSTN segment better. The problem is that the Economic Census is an extremely expensive proposition. If we have to do this regularly we will need to think of ways on cutting costs. Some things have not worked, earlier the Economic Census were done with the Population Census. But then the Population Census declined to do the Economic Census any further. So the challenge is to develop cost effective solutions.

Since the resource requirements of good economic statistics is very large and in these times of fiscal stringency we have to find ways to sharing cost. Here we may need to identify other users in Government and outside who can make use of this data. Possible candidates include the revenue department, with their need to better understand tax compliance; RBI; the private sector. The CSO will need to deliberate on these issues in the future.

I do want to close by reiterating one point, I think the debate of compilation vs allocation is somewhat overblown. The formal requirement of SNA is, you use the best data that is available. And the quality of data is assessed in terms of issues relating to timeliness, completeness, comprehensiveness of coverage and the ability to describe the underlying variables, or indicators which are required. Having chosen the best data what comes out is the correct estimate. This will in some cases need allocation and in others compilation. What is needed however is to document the methods of allocation more completely so that there is greater transparency on that. CSO can consider bringing a publication on the methodology being used to compile state accounts.

I shall stop with this and I really wish to thank the Indian School for having hosted this seminar. You have had a long tradition of hosting empirical and policy-based research and I am very glad that you have taken up the national accounts as a part of that focus because it is something which Gokhale Institute had a long tradition of being involved in. And I think, Indian School continues to carry that forward. And I think that is something which we are all very happy with because we are a very small community. The general people working in National Accounts are very small and I also wish to thank both Amey and Deepak for the papers which they contributed to this discussion because additions of new names to the list are welcome. I am sure my colleagues in National Accounts will tap them for future work.

# **Prof. Chitre:**

Not for these papers!

# Dr. Anant:

Not for these papers! Because this is an area in which we have considerable difficulty in getting more people to work on various issues. So, I am particularly pleased that that has happened.

#### Thank you, all!

### **Prof. Rath:**

This is not proper to comment after the Chairman has said his last word for the seminar, but this is about what you said about our tradition of empirical and national income business. I am now speaking personally because he was not associated with Indian School. The Indian School was created almost after a year. Prof. Gadgil was a member of the committee on National Income. the First committee. And we had the great National income person Simon Kuznets. So I have seen all these people in the committee in my young days. But more interestingly, Prof. Gadgil's rural surveys provided - we have always been amused, - the only basis for making estimates for rural agricultural income distributions. Small, half-a-dozen village surveys providing these sorts of mess, because there was nothing else available around! And Prof. Dandekar was associated with various committees. He was nominated by his professor, Prof. Mahalanobis to chair the NSS for 10 years. I know this, for Prof. Mahalanobis said, "Dandekar, now my days are over, you have to take it up." And that is how Prof. Dandekar became the chairman of governing body of the NSS. So Sir, associations are quite old. Our

Poverty in India is the outcome of the report of 1961. I think its number is 171th which we got in the cyclostyled form and we have worked up. They are very old associations and they continued to interest. As Prof. Chitre was mentioning our monthly Marathi journal, my friend Dr. Vidwans who is no more there, who was director of Bombay Bureau for 30 years. He was one of the honorary fellows and then honorary director of the School before his death. He made it a point that NSS reports, - most newspapers, magazines never mention anything about this,- in this Marathi journal he made it a point to print based on the NSS Reports what is happening in various fields in this country in a readable and accessible form in Marathi language. I am saying this in order merely to say that we have had a long association with National Accounts and the NSS -.

# Dr. Anant:

I agree, Sir.

#### Dr. Sriraman:

I have just two observations, Dr. Anant, You know, one of the things you said there is a problem of financing the collection of statistics and so on so forth and we also heard specifically from the Maharashtra DES people that some money was allocated but did not come to them finally and they had a major problem in setting up the Business Register, and so on and so forth. Now, I know you people within the government may not be able to put forward; maybe we should try in various forms, various forums try to say that, and you also said that finance people are not ones who have been persuaded into releasing funds. We can try our best to do that in whatever way [we can], - you tell us the way also! We will take it forward. That is one thing. Secondly, you know, I have very limited exposure to data. And my this one [association] is only [mainly] confined to the transport sector. But I have been involved in huge traffic surveys all over the country through the NHAI, through the ministry of transport. None of this is available for public use at all. Now, I mean for example, in 2006 to 2009, [on behalf of/in collaboration with] RITES, an organisation of the Ministry of Railways, we did a major survey of

truck operators 200,000 trucks were caught on the roads and we asked them a big questionnaire, etc. Nothing was released, no one even knows, I do not think the CSO knows anything about it at all. Why don't the government departments share these? It was a Planning Commission's study.

# **DOCUMENTATION**

The purpose of this section is to make available to the readers official documents such as reports of committees, commissions, working groups, task forces, etc., appointed by various ministries, departments, agencies of central and state governments and international organisations, which are not readily accessible either because they are old, or because of the usual problems of acquiring governmental publications, or because they were printed but not published, or because they were not printed and remained in mimeographed form. We also present in this section, official documents compiled from scattered electronic and/or other sources for ready reference of the readers. It will be difficult and probably not worthwhile to publish the documents entirely. We shall publish only such parts of them as we think will interest our readers. The readers are requested to send their suggestions regarding official documents or parts thereof for inclusion in this section.

We are also keen to publish Papers, Notes or Comments based on the material included in this section. We invite the readers to contribute the same to our journal, which we shall consider for publication in subsequent issues of the journal, after the usual refereeing process.

In the present section, we publish excerpts from:

- 1. The Committee on Regional Accounts, First Report, Central Statistical Organisation, Department of Statistics, Ministry of Planning: Government of India, November 1974
- The Committee on Regional Accounts, Final Report, Issued by Central Statistical Organisation, Department of Statistics Ministry of Planning: Government of India, September 1976
- 3. System of National Accounts, 2008, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank
- 4. Gross Value Added at Basic Prices (for the 2011-12 Series)

# THE COMMITTEE ON REGIONAL ACCOUNTS FIRST REPORT CENTRAL STATISTICA ORGANISATION, DEPARTMENT OF STATISTICS, MINISTRY OF PLANNING: GOVERNMENT OF INDIA, NOVEMBER 1974

#### CHAPTER 1 REVIEW, USES AND PROBLEMS

# 1. A Review

1.1 The work on state income started in Bihar. Uttar Pradesh and West Bengal somewhere around 1948-49. The first estimate of state income was published in January 1950 for the erstwhile Bombay state for the year 1948-49 and subsequently in 1951 and 1952 for the years 1949-50 and 1950-51. The next to follow were Uttar Pradesh and Bihar. The estimates of Uttar Pradesh were first published in 1955 giving a rural-urban break-down and presenting figures at current and constant prices. Estimates for Bihar for the year 1146-47 were also published in 1955. After the publication of the First and the Final Reports of the National Income Committee in 1951 and 1954 respectively, a number of other states like Madhya Pradesh and Assam prepared their first estimates broadly following the methodology adopted by the National Income Committee; West Bengal also adopted this pattern. The concept of state income followed for these estimates was generally that of total income originating in different sectors of the state economy or in other words, the net geographical output at factor cost. This concept has been referred to as the state domestic product (SDP) in this Report. Broadly, the value added method for most of the commodity producing sectors and income method for the remaining sectors were followed.

1.2 At this stage, the Fifth Joint Conference of Central and State Statisticians held at Jaipur in 1956, recommended that all states should make every effort to prepare estimates of state income broadly following, the method recommended by the National Income Committee for preparation of such estimates at the all-India level. It was also suggested, that in the first instance, the states might prepare estimates of commodity producing sectors only and publish them in their Bulletins together with detailed technical notes on concepts, definitions and method of estimation. Subsequently, at the Preliminary Conference on Research in National Income in 1957, regional income estimation was distussed as one of the topics. This conference recommended that a Working Group consisting of active workers engaged in state income estimation in the Central Statistical Organisation (CSO), a few of the states and other agencies might be sct up to review the work done on the subject in different states and to formulate standard concepts, definitions and methods of estimation. While laying down the procedures account should be taken of the nature of available statistics in individual states. The Working Group was also expected to undertake technical examination of the estimates of state income prepared by the State Stististical Bureaus (SSBs) from time to time and make recommendations on the important gaps in statistics which could be filled up for improvement of such estimates. Such a Working Group set up by the CSO has since been functioning.

1.3 With the progress of time, the work of estimation on state income has improved and expanded in different states. Today practically all the states of India compute such estimates. Annex I to this chapter gives the latest position in this respect. The estimates are being compiled both at current and constant prices though neither the period covered nor the base year for the constant price series is uniform among states. Also, the methodology adopted by the states is not always uniform being primarily dependent on the type of data available in individual states.

1.4 The Working Group has examined the estimates prepared by most of the states and has made detailed suggestions for improving the estimates and achieving inter-state comparability. The Working Group has made recommendations regarding farm management studies for improvement of the data on input structure of

the agriculture sector and collection of basic data in sectors like unregistered manufacturing, construction, trade, transport by means other than railways and other services. The Working Group has also devoted considerable attention to other problems like the use of appropriate price for evaluation of agricultural output. In the last few meetings, the Working Group has been concentrating on the problem of laying down standard methodologies for estimation of income originating in different sectors and such methodologies have been recomended for nearly all the sectors of the economy. To the extent data are available, the SSBs generally adopt the standard methodology recommended by the Working Group. This is particularly true for the estimates in the six commodity producing sectors, viz., agriculture, animal husbandry, forestry, fishery, mining & quarrying and manufacturing (registered). For the remaining sectors, the data position is far from satisfactory and the estimates of only a few of the states are prepared following the standard methodology.

1.5 However, it is generally felt that the standard methodologies have often been formulated too rigidly. This has resulted in a superficial uniformity among the state estimates and sometimes states having better data are required to follow unsatisfactory procedures in the name of standardisation. The Committee feels that it is necessary to ensure that only concepts and definitions are standardised and the best possible methods suited to different types of data are indicated so that states could make an optimal use of their available data. The standard methodologies are being reformulated by the Working Group keeping in view the present availability of data and recognising the fact that the methodology cannot be evolved independent of the data base. Appendix I of the present Report gives the broad definitions and scope in respect of the main macro-aggregates in the Standard Tables recommended for state income estimation while the possible methods to be adopted will be covered in the Final Report of the Committee along with detailed consideration of concepts and definitions.

1.6 No review of the development of state income studies in India would be complete without a reference to the work of the individual research workers who contributed substantially to the subject. Attempts have been made by research workers to compile the estimates either by the method of allocation or by direct estimation on the basis of the data collected at the local level or by a combination of the two different approaches depending upon the availability of data.

1.7 B. Natarajan presented emtimates of income for British Provinces in undivided India for the years 1938-39 and 1949-50. Before estimating the incomes of the provinces, the national estimates had been obtained by taking forward the figures for the years 1931-32 prepared by V.K.R.V. Rao. The interesting part of the method was that the incomes for each one of the sectors were allocated among the states using a combined index of several items of information. Thus, for example, the agricultural index was based on cultivated area, population occupied in exploitation of land, total yield of principal crops and livestock population. For the services sector, the index was prepared on the basis of employment under each category weighted by the average income under each source. Subsequently, a detailed attempt was made by S.G. Tiwari in 1951 to prepare the estimates both at current and constant prices for one single state of India., viz., United Provinces for the years 1921-22, 1931-32 and 1938-39. In the compilation of these estimates extensive data on output, input, income per worker, etc., at the state and local levels were collected and analysed. V.V. Divatia also attempted a comprehensive estimate of the domestic product for Bombay state for the period 1938-39 to 1948-49 making extensive use of data in respect of most of the sectors. S.R. Bose, About the same time, prepared the estimates for the state

of Bihar for 1946-47 using the limited data available at the state level. Mahinder Choudhry obtained the estimates of state domestic product for the year 1955-56 using the allocation method. M.A. Telang jointly with B.W. Chavan worked on the state income of Maharashtra for the period 1955-56 to 1958-59. Allocation method had subsequently been used by K.N. Raj, Ravi Verma and others.

1.8 About the same time the work on compilation of state income also drew the attention of independent organisations like the Indian Institute of Public Opinion (IIPO) and the National Council of Applied Economic Research (NCAER). The IIPO compiled estimates for the years 1950-51, 1955-56, 1960-61 and 1965-66 both at the sectoral level as well as at the state level to assess the effect of the First. Second and Third Five Year Plans on the distribution of income between states. The method followed was a combination of the allocation approach and the direct measurement at the local level depending on the type of data available for individual sectors. The NCAER, undertook comprehensive studies on state domestic product in connection with their techno-economic surveys not only at the state level but even at the district level. The NCAER undertook detailed sectoral estimates, for agriculture, manufacturing industry and services, and covered different points of time between 1950-51 and 1960-61. The NCAER also attempted a study of the differntial patterns of growth between states at 1960-61 prices. One of the special features of the estimates prepared by the NCAER was that a great deal of attention was given to the problems of methodological comparability of the estimates among the states so that the regional development studies based on these estimates would given meaningful results. The Indian Association for Research in National Income and Wealth (IAR-NIW) also contributed Substantially to the development of regional income work at the research level. A Special seminar on the subject was Organised as far back as in 1962 at the Gokhale Institute of Politics & Economics at Poona where the problems of state income estimation were discussed in detail. Subsequently, regional income estimation, inter-regional comparison of macro-economic aggregates as well as special problems of state accounts have formed the subjects of discussion at different conferences of the IARNIW. At each of these sessions, a large number of papers either highlighting conceptual and estimational problems or presenting the estimates for individual macro-economic aggregates have been discussed. Such papers cover a Wide range of subjects like sectoral estimates of value added. capital formation, distribution of personal consumption expenditure at the regional level, the determination of the reliability of the estimates, problems of inter-regional ranking on the basis of macro aggregates and the form of presentation of regional accounts. The Standard Tables recomended in this Report draw heavily on the deliberations at the IARNIW seminar held in January 1973 at Mahabaleshwar.

1.9 The work of state income estimation has thus reached a stage when it is pertinent not only to undertake a review of the' Vailable estimates but also to raise the basic question of the future development of the whole field of macrostatistics at the regional and sub-regional levels. It is only through such development that a deeper understanding of the regional disparities would be possible and policy formulation for the elimination of such disparities would become an easier task. Development of possible fields of study is, however, directly linked with the possible uses which can be made of such information. A review of the possible uses of regional income statistics may, therefore, be the first step towards their further development. The development of statistics on the subject can be viewed either in the context of independent study of each individual region or in the context of measurement of inter-regional disparities for the country as a whole.

#### 2. Uses: Present and Potential

2.1 The estimates of SDP are of considerable importance to the individual states as a measure of their growth as well as for studying structural shifts within the states. Also, the rise in per capita income to a given level is normally kept as an objective in formulating the plans at the state level. This growth rate is further sought to be achieved through specified growth rates in individual sectors. Past patterns of growth rates as well as of investments in these sectors help in indicating the extent to which the postulated growth rates are achievable and are commensurate with the investment targets. The estimates are also useful in measuring the effects of implementation of planned programmes.

2.2 The sectoral estimates of SDP are also used for policy formulation in given sectors. The income generated in agricultural activities, for example, is, used for purposes like measuring productivity differentials among districts or taxable capacity. Thus, the estimate of agricultural output per hectare in different districts is one of the indicators used for identifying backward districts and formulating agricultural development programmes. These estimates for the agricultural sector are also used for studying the incidence of prevailing agricultural taxes, potential for agricultural taxation and revision or rationalisation of agricultural income tax rates. Individual departments such as the Comercial tax Department also use sectoral estimates of gross value of agricultural output of important crops for checking their receipts. Similarly, for a state like Gujarat where the coritribution of registered manufacturing industries to SDP is comparatively high, the estimates of SDP originating in registered manufacturing industries at current and constant prices are used for watching the growth of this sector. The development of small-scale manufacturing industries is one of the accepted policies, for increasing employment opportunities. The study of the part played by the unregistered manufacturing sector in the development of the state economy and the assessment of the fund required for increase in its contribution to SDP is not only helpful in formulating the investment Policy but also in directing the progress of the state economy along desired lines.

2.3 In budgetary work also the estimates of SDP are Often used for studying the scope of resource mobilisation from different sectors of the economy and for shaping the fiscal policy on a rational basis. For assessment of tax burden, taxable capacity and tax efforts, per capita SDP. and SDP at the Sectoral level are often made use of. Similarly, before introducing new tax or increasing any prevalent tax rate or determining a new source of taxation, the levels of output at the sectoral level become an important Point for consideration. State domestic produce is also used for assessing the impact of budgetary transactions, on the state economy. Thus, in a given year the proporations that the tax and non-tax receipts of the state government constitute to the SDP are worked out and these percentages are then applied to the projected SDP for the plan period to obtain some indication of state's likely receipts. Given the rate of growth of different sectors and the pattern of income distribution, the state governments can identify the pockets of higher money income and frame their taxation policies accordingly. Some states have made such attempts. The work of budgeting cannot, however, be based on the economic considerations alone. Besides economic aspects, social aspects have also to be kept in view. If the aim is to achieve a socialistic pattern of society, the tax structure is required to be such that the weaker sections of the society are called upon to bear the minimum burden of taxes, levies etc. At the same time care has to be taken during budgetary work that the

additional levies or other budgetary measures do not hamper the growth of any sector of the economy.

2.4 The estimates of domestic product when available for areas smaller than the states become one of the more important indicators for studying the stage of development of such areas. Some states use per capita domestic product at the district level as the primary indicator in this respect. However for a satisfactory assessment of the stage of development, indicators other than per capita income should also be taken into account. Thus, dndicators like gross value of agricultural output per person in rural areas, net area sown per agricultural worker. cultivable area, per agricultural worker, irrigated land, number of manufacturing and repair establishments using electricity have been considered by the Planning Commission and the state governments for determining the backward areas. The other indicators which could be used for the purpose are incomes of different sections of the population within regions, details of savings by households, sectorwise factor incomes with corresponding employment and the like. The use of several inclicators, however, could raise the question of their aggregation into a single index and this question has not been answered satisfactorily by the planning authorities either at the centre or at the regional level. Absence of this statistical facility fortunately does not preclude one from arriving at some sort of a judgement.

2.5 In India, the existence of inequality in the distribution of per capita SDP by states or by areas smaller than states, has been recognised for quite some time and the reduction of such regional income disparities has been accepted as a part of the-country's national development plans. However, a solution of the problem of regional disparity would require its identification. So far, very limited, research has heen undertaken on regional inequality as related to national development. The most important and convenient

measure of regional disparity is the differential in regional or state domestic product at the per capita level. Such estimates when available for given point of time for all regions of the country, could give a cross-section measure of iner-regional disparity When available over a period of time intertemporal comparisons will be possible and causal factors involved would be suggested. Thus, by relating the regional inequality pattern to the variations in growth rates among regions, it might be possible to understand better the factors responsible for persistence or otherwise of spatial inequality. It would also be necessary to consider the changes in the industrial structure. employment pattern, labour participation rates and capital, structure in the overall analytical scheme. Statistical materials exist for some of the studies indicated and have been partially attempted by several agencies. With Systeniatisation and augmentation of data, such studies would find a stronger underpinning.

2.6 The Planning Commission has used per capita income at the regional level as one of the criteria for determining the extent of central assistance to each individual state. Thus, nearly 20 per cent of the total assistance to the states is based on the comparable estimates of SDP. The proportionate allocation of this assistance is determined as follows:

(i) 10 per cent of the total assistance is allocated to the states having average per capita income, (over last three years) below the all-India average. The procedure of allocation is the deviation method according to which each state is allocated an amount At which is determined as

$$A_{i} = \frac{T}{P} \left( 1 + \frac{\overline{x} - x_{i}}{\overline{x}} \right) P_{i} = \frac{T}{P} \left( 2 - \frac{x_{i}}{\overline{x}} \right) P_{i}$$
  
where,

- T = total amount to be distributed
- P = total population
- $\overline{x}$  = average per capita income of all states
- $x_i = per capita income of state i$
- $P_i = population of the.state i$
- (ii) Another 10 per cent is allocated on the basis of per capita income (over three years). For purposes of measurement of tax efforts only the state taxes are taken into account. The ratio of the state tax receipts to state income determines the direct proportion on the basis of which the allocation is made.

2.7 The fifth and subsequently the sixth Finance Commissions have also considered per capita income in a state as an important yardstick for obtaining idea of the levels of development and have used this measure as the criterion for assessing the relative economic position of the states. These estimates have also been used by the Commission as one of the indicators for determining the share of individual states in central taxes. Thus, the sixth Finance Commission has recommended that:

- (i) 25 Per Cent of the divisible share of the union excise duties is to be divided among the states in relation to the 'distance' of a state's per capita income from that of the state with the highest per capita income multiplied by the population of the state concerned according to 1971 census. The balance, i.e., 75 per cent is to be distributed on the basis of population alone.
- (ii) additional excise duties are to be allocated among states, using the combined indicators of population, SDP and the production of relevant commodities (textile, sugar and tobacco). The weights given to these indicators for determining the overall position are 70, 20 and 10 per cent respectively.

(iii) discriminatory debt relief to the states is to be determined on the basis of the ratio of amounts falling due for payment (to the centre) during the fifth plan period and the SDP. The states have then been classified into three groups A, B and C according to the ratio being less than 10 per cent, between 10 and 20 per cent and 20 per cent and above, respectively and separate provisions are to be made for the state falling,in each of these groups.

2.8 However, use of state domestic product as one of the indicators for such policy purposes has often been questioned. It is possible that the estimate of SDP could be partially affected by extra-economic considerarion and use of such an aggregate as an indicator, whatever might be the formula used for the purpose, would have different effect for different states depending on its level of development. It is also true that the cut-off point of the national per capita income for determining the relative position of a state is arbitrary. As such, it might be desirable to classify the states in given slabs for determining the stage of development of a state or of a region and use this criterion for allocation of items of central aids in such a manner that even the states in the highest slab have a share in the distribution though at a much lower rate. The Finance Commission used a very similar method for discriminatory debt relief.

2.9 The study of regional disparity cannot, however, end here and has to be examined in the context of economic inter-dependence between regions and factor mobility. Internal factor flows have to be studied separately for labour and capital. Labour migration can obviously be selective accentuating the divergence between regional incomes unless special steps are taken to ensure proper, distribution of sectoral development keeping the regional potentials in view. Similarly, for a country like India inter-regional flow of private capital may accelerate regional

disparity unless investment in under-developed regions is made attractive and the effect of inter-regional capital flow is watched with care. Inter-regional development is also directly connected .with inter-state linkages in the sense of the spread effects of technological change, income multipliers and social change. The study of sub-national disparity is directly linked with all these aspects and can hardly be undertaken in the absence of data on the other related variables besides total and per capita income at the regional level. The other variables to be considered for the purpose can be the proportion of agricultural/ industrial labour to the total labour, the overall labour participation rates, the wage rates in agricultural/industrial sector in different regions, levels of sectoral output/income in different regions or agricultural/industrial productivity differentials.

2.10 Again, for balanced regional development, it is not only necessary to get a clear idea of the levels of development but the link effect of localised investment within the states in generating income and employment. In other words, it is necessary to study not only the inter-regional multiplier effect and inter-regional capital flow effect but also the intra-regional employment effect and capital flow effect along with the productive structure. This would, in essence, also include the study of the development of activities at the regional level as a result of the public sector outlay from the central funds. Also included will be activities such as public transport which have far reaching effects it the form of generating linked activities at all levels.

2.11 At the next stage, it would become necessary to have, if feasible, disaggregated limited input-output tables at the regional level. This would enable a study of the detailed input structure of industries at the state level and would be the first step towards multi-level planning which requires classification of all industries according to national, regional and local levels for identification of location of industries. This could then be used for studying localisation effect, clustering effect as well as spread effect among regions. Again, for multi-level planning it would be of utmost importance to have the Measure of the indirect effect of development on the population or in other words, the cost to the population of organised services like transport in big cities. This would obviously require compilation of different macro-economic aggregates and their break-up at levels lower than the states. For full use of the regional income statistics for planning purposes, the analysis has, to extend beyond the measure of differentials among states and among big cities and should also cover those among big cities and rural and urban areas. Demarcation of the areas within regions on the basis of proportions of monetised and non-monetised parts of the domestic product and study of the differentials either between the two sections for individual regions or for each of the two characteristics viz. monetised and non-monetised parts of the domestic product over different regions may make the study of regional disparity more meaningful.

2.12 Income redistribution between regions either through public investment or through differential distribution of central assistance is one of the accepted policies of the government. The total impact of public investment would tend to include secondary effects which also would result in redistribution of income among the regions of the country. To measure such impact it would become necessary to obtain detailed information on patterns of public investment made both by the central government as well as by the, regional authorities. The industry of use, location and period of gestation would also be essential part of the information necessary to study the total impact of such investment. The sectoral break-up of SDP would give a broad indication of the extent to which the resources within the regions have been exploited and indicate the strategy to be
adopted regarding the policy of public investment. Consequently the resources to be allocated to each region and to various sectors within each region would also be thus known. These details would help in obtaining a broad rationale for utilisation of resources among regions.

2.13 Some studies have indicated that per capita SDP by itself may not be sufficient as an indicator for assessing the differentials in the stage of development of states (regions) in as much as states (regions) with high per capita SDP but associated with low population density may not necessarily be economically advanced and states (regions) with low per capita SDP but associated with high population density may not necessarily he backward states (regions). The studies do, however, point out the fact that states (regions) with high per capita SDP and high population density, and those with low per capita SDP and low population density could be identified as really advanced and backward, respectively. The possible reason for this type of per capita SDP population density relationship in a less developed economy such as ours, with preponderent dependence on agriculture for livelihood, is that areas of high per acre agricultural productivity also experience population pressutes without anything being added at the margin. This tendency makes for low per capita income-high population density regions. Similarly, high per capita income-low population density regions belong to the category of somewhat backward regions from where population-particularly the working age group-tends to migrate to other regions. This aspect of inter-regional comparison for economies abounding in high rates of under employment and unemployment deserves to be noted before any conclusions are drawn on the sole basis of differentials in per capita SDP of states (regions).

### 3. Major Problems

3.1. As has been seen, substantial use is being made of the estimates of state income and related sectoral and other aggregates, ratios, etc. for policy purposes both by the authorities at the cevre as well as. at the state level. However, their use would be much more widespread and intensive if the time-lag in the availability of the estimates can be reduced and the presentation can be made more policy Oriented. Generally, the estimates become available with a time-lag of two, to four years. Even the provisional figures are available with a substantial time lag. At present the estimates from most of the states are available till 1970-71 and in some cases only upto 1969-70. In the case of only a few states the estimates are available for 1971-72 or 1972-73. The main reason is not far to seek Even for the sectors for which annual data are, available, there exists no satisfactory arrangement for timely flow of the data necessary for the conputation of state income. This is particularly true in respect of agriculture, forestry and registered manufacturing sectors.

3.2 Estimates, of state income for the current vear do not become available at the end of the financial year when the budget provisions for the following year are made. If methods can be developed for preparing a quick estimate of SDP of the current year, the review of the past performance of the economy as well as the financial proposals for the coming year would become more reliable. In the context of Planning, shortterm projection of domestic product at the regional level would be extremely relevant even if the exercise is limited to a few important sectors only. Such exercises could even include quarterly or half-yearly estimates. Similarly, at present, the state budgetary estimates are made on the basis of the past trends by items of taxes, etc. If the estimates of state domestic product can be presented with more detailed break-downs so that the individual items of taxes can be related to the corresponding values of commodity output, these would become more, useful for policy purposes.

3.3 Besides the time-lag in the availability of the state income data, the background material accompanying the estimates quite often does not offer the necessary details regarding the method of collection of the basic data and the coristruction of the series. As such it is not possible to assess either, the reliability of the estimates or their comparability with the estimates of other states or of the country as a whole. Thus, the estimates of agricultural by-produts or yield rates of livestock products are not based on sample surveys in many cases. It would be extremely useful to indicate such limitations while issuing the estimates so that their reliability can be judged before using them for policy purposes. Similarly, the state income data give an overall picture of the economy as well as sector-wise data on value added but makes no distinction between the public and the private sectors. Since, in the planning process a substantial amount of investment is made by the public sector either through the state governments or by the central authorities directly, it is desirable that the estimates are given with break-down between the public and the private sectors. This would enable one to assess the effects of investments made by the public sector and also help in a better planning of the future investment policies. At the state level, the estimates of factor share for identifiable groups of industries as well as the-urban-rural break-up of sectoral products would be extremely useful for understanding the problems of development and the implications of the policies adopted so far.

3.4 At present, the estimates suffer not only because of the lack of data but also because of indifferent quality of some of the data collected through the routine administrative system. Also, the absence of appropriate current data often leads to crude methods of estimation consisting of moving the benchmark estimates with the help of

a set of indicators. This further affects the accuracy of the estimates. To make the estimates of state income more useful for policy purposes it is, therefore, of primary importance that the estimates of net value added for all the sectors are based on current data. Schemes for such improvements need to be taken up by all the states on uniform basis. Thus, the collection at regular intervals of data on prices and production of animal husbandry, unregistered manufacturing and other similar products and employment and earnings for services sectors become essential. This might make it necessary for the SSBs to have sufficient held agencies to carry out surveys and type studies at regular intervals. To ensure uniformity all over the country such surveys have to be coordinated by the centre and launched simultaneously.

3.5 The degree of reliability of the present estimates of state income varies considerably from sector to sector or among sub-sectors or for certain constituents of a sector. Thus, the gross value of output in agriculture (proper) is more reliable than that of net output; estimates, of income originating from activities of state government are more reliable than the estimates of income from the central government activities within the state boundaries. Some objective assessment of the reliability of the estimates of various sectors and sub-sectors could be included in the notes accompanying the estimates. This will help the users in picking and choosing the figures for their purposes.

3.6 The choice of value added method for estimation in India has been, in large measure, governed by the availability of data as well as its usefulness for the study of problems of growth and development at the regional and sub-regional level Measurement of income in a given region

within a country, however, raises certain conceptual problems which are not common to the measure at the national level. Thus, it is to be determined whether the income of a region should include all the income originating as a result of the utilisation of the physical assets and the labour force of the region even though some of the income might flow to residents outside the region or it should include all the income received by the residents of a region even though some of it might have accrued outside the region. The two measures might make substantial difference in the estimates. For example, there may be absentee landowners in rural areaswho primarily live in the nearby urban areas and hence transfer the income earned from the property in rural areas for use in urban areas. Similarly, an employee or the owner of an un-incorporated enterprise may spend his working day in one state while his residence is in another. Consequently, in the smaller administrative units like districts and cities, the issue of place of residence versus place of activity becomes much more relevant and concerns not only income froin capital but also income from labour. Such measurements have to be well defined and the statistics to be collected for the purpose have to be a joint endeavour of the central and regional authorities. Further, large incomes may originate within a state which is highly industrialised and be transferred to other areas so that it is not available for the well-being of the normal residents of the state. Thus, the possibility that a state with a lower originating per capita income may in fact be more affluent in respect of per capita income received than one with a higher originating per capita income as a result of repatriation of income cannot be ruled out. For a realistic measurement of income received. therefore, account needs to be taken of net inflow/outflow of income between states. But in an open economy like that of as state in this country, it is very doubtful whether such an estimate can be prepared unless special effort is made for the collection of relevant data.

3.7 The other two alternative methods of measurement, viz., aggregate expenditure and, aggregate income of resident households, are also not easily feasible in India because of the insuperable difficulties involved in measuring the inter-regional flows. A direct survey approach could however yield the aggregate of expenditures. Consequently, a method of measurement limited to personal disposable income, and honsehold consumption expenditure, public current and capital expenditures can be developed as a complement to the sub-national value added methodology.

3.8 In the USA, income of states is compiled by the Department of Commerce by aggregating 'income Payments to individuals'. This is, in fact, personal income with no deduction of personal taxes. This series differs from US national income because it excludes corporate savings and contributions by both employees and employers to social security funds and includes 'public assistance and other direct relief, veterans' pensions, adjusted service benefits (the soldiers' bonus), retirement payments by government, social insurance benefits, the government's contributions to allowances paid to dependents of enlisted military personnel, and mustering out payments'. The limited attempts in this direction made in Canada by the Dominion Bureau of Statistics and in the U.K. under a project at the National Institute of Economic & Social Research sponsored by the Department of Economic Affairs on the other-hand, followed the value added method using either direct data of output at the regional level or allocation of factor incomes.

3.9 The income accruing to the households can obviously be measured by simply aggregating factor incomes and other transfer receipts. In such a case income data on receipts by way of wages and salaries, interest, dividend, rent, etc., transfer receipts (public and private), draft on past Savings and liquidation of assets will have to be collected. The income approach by the aggregation of factor incomes has been attempted in the U.K. for the years 1961 and 1964 to estimate the total regional income. These estimates have been found to be quite reliable when compared with those provided by the regional authorities and based on other methods.

3.10 In case data on consumption expenditure by the resident households within regions can be considered as a possible proxy of income accruing, the relevant data have to be collected. On the expenditure side, data on consumption expenditure as well as data on purchase of gold and capital assets, increase in cash and bank holdings, and transfer payments of different kinds could also, be gathered simultaneously.

3.11. Income accruing at the state level is perhaps the most satisfactory measure of economic welfare. This measure is somewhat wider than personal income in the sense that the incomes from public and private corporate sectors accruing to the region are included. This becomes more relevent for states where big public sector projects are located and the benefits from such projects often do not accrue to the people of the state. However, in view of the difficulty of measuring inter-State flows, it might be difficult to evolve a method for measurement of income accruing at the state level.

3.12 The present series of state income data do not give any idea about the income distribution pattern. For an understanding of the disparities either among regions or within regions, it is essential to have an idea of the distribution of personal income by size classes. While for the lower tail of the distribution the analysis based on household consumption expenditure may, serve the purpose, for the upper tail expenditure distribution pattern is likely to be substantially different from the income distribution pattern and the latter will have to be studied independently. It might even be worthwhile studying the distribution for different sections of the population separately so that the population in the upper income classes and those at the lower income classes are automatically separated out.

3.13 Last but not the least in the list of requirements of macro-economic data at the regional level is the estimate of capital formation. Along with such estinaates it would also be important to study the regional variation in savings rates. A direct measure of this rate may not be feasible with die present position of data availability. However, independent attempt at measuring household savings in a region, gross and net, might be fruitful. This component then, measured as a proportion of personal income or income accruing to households within a region may be a reasonable enough measure to assess the situation within and among the regions. Another important aspect on which data have to be collected and presented meaningfully is sectorwise employment along with the corresponding incomes so that the labour productivity aad the employment potential between sectors can be studied for individual states.

3.14 Even the measurement of income originating which has been adopted in India has its own problems both conceptual and operational. Conceptually one has to resolve the problem of measurement by states of income of enterprises whose activities extend beyond the boundaries of a given region and spread over the country as a whole. Value added in individual industrial sector at the state level in such cases can be estimated either independently by using the local data or by allocation of the national totals using relevant indicators. Even for allocation, determining the relevant indicator, for example, for allocation of overhead expenses of railway operations in the regions or for the surplus of public enterprises owned by the central government and located in different regions is complicated. For estimation of domestic product at the regional level two approaches have, therefore, been adopted: (i) use of local data in respect of all the sectors where the product can be measured within the given area without any ambiguity such as in agriculture or mining or storage, hotels and restaurants and (ii) allocation of value added (estimated at the centre for the country as a whole) for all sectors where the activities are spread over a number of regions.

3.15 The important categories of institutional sectors whose operations extend beyond the boundaries of a given region and for which allocation method need to be applied are railways, communications, central government administration, large corporations like banks and insurance and large productive enterprises (in the private and public sectors) with branches located in a number of regions. For such enterprises or activities, the internal accounts are not maintained in a form which would facilitate the estimation of income originating from their activities within given regions. For manufacturing enterprises which are registered under the Factories Act and for which the data are collected unit-wise, it is

possible to prepare the estimates of income originating at the regional levels making full use of the data thus collected. However, since the activities extend over different regions, the problem of allocation of overhead expenses and operating surplus would still remain. For sectors like railways and communications, on the other hand, or for banks and insurance the problerli is more complicated because of the absence of the relevant information at the unit/regional level. In such cases the estimate of the domestic product has to be obtained by allocating the national total to regions on the basis of relevant indicators. Factor share approach or the distribution of different factor payments among regions appears to be the most convenient method in this case. The Working Group on State Income paid considerable attention to this problem and evolved standard indicators for allocation of such items for different sectors. For formulating the indicators. the Working Group has been primarily guided by the type of data available and these are different for different sectors, for different sub-sectors within the sector as well as for different types of factor payments. Thus, for railway freight earnings and passenger earnings different indicators are used for allocation of the corresponding products between regions. At present, such state-wise estimates for the sectors, railways, communications, banking & insurance, central government administration and air transport are prepared by the CSO by allocation of the national totals using relevant indicators and are communicated to the SSBs for their use. The procedure could continue to be used, taking care that the indicators do represent the value of output, gross or net.

3.16 Just as more meaningful presentation of the available data on state domestic product and additions to the list of available information would enhance the use of such data for, policy purposes, the improvement in the reliability of the available estimates would also add to their utility. The standard framework for presentation of state income and related aggregates would also result in articulated plans for data development.

3.17 As regards the reliability of the estimates, these can be broadly grouped into three main categories according to the data base:

- (a) sectors for which the estimates aro prepared on the basis of data collected every year, (e.g., production data of principal crops, mining, registered manufacturing, etc.)
- (b) sectors for which current data are not available and the estimates are prepared on the basis of 'bench-mark estimates' and at times inadequate data for some past year/years, (e.g., livestock products, unregistered manufacturing sector, construction, trade, services, etc.).
- (c) sectors for which the estimates are derived from allocation of national totals, (e.g., banking and insurance, air transport railways, communication, central government administration).

3.18 Even for sectors falling under category (a) the est imates are often not based on satisfactory current data. Thus, the area statistics of crops in states like Kerala and Orissa are obtained through sample surverys. The size of the sample is often not sufficient to provide reliable area figures for minor crops which contribute substantially to agricultural production in a state like Kerala. The production estimates of crops like coconut and arecanut are based on sample, surveys for a few states only and for pepper, ginger, mango, citrus fruits, vegetables, etc., the estimates are based on either conventional yield rates or local enquiries. Up-to-date data on agricultural by-products such as rice husk, rice bran and straw are not available and the present estimates are based on out-dated data or local enquiries.

3.19 The computation of income from animal husbandry also suffers from limitation of data. The estimates of the output of livestock products are based on the yield rates which are not obtained from regular surveys. In the case of fisheries, data on catch of inland fish are inadequate and do not depend on any objective survey. Similarly, the lack of current data for sectors like forestry or registered manufacturing reduces the utility of the estimates of value added.

3.20 Lack of relevant annual data for sectors covered under (b) affect the reliability of the estimates and consequently their utility. Thus, for the non-commodity producing sectors, the basic data available for estimation are limited to given points of time at long intervals. The incomes for these sectors (trade, transport and unregistered manufacturing industries) are computed using estimates of working force and Per capita earnings. The main source for woriing force statistics is the decennial censuses. Besides their being available after long intervals, the definition used for working force in the 1951, 1961 and 1971 censuses are different affecting the comparability of working force estimates. As a result, the method adopted for obtaining the estimates for intercensal periods varies substantially between states and leads to unsatisfactory estimates at the state level. Similarly, basic data on average earning per worker are not collected by states in any uniform manner and are also not available annually. Issues connected with item (c) have already been dealt with earlier.

3.21 The overall estimates of domestic product are thus affected by the quality of the basic data which often vary markedly between states and often are not dependable enough for bringing out the regional growth pattern accurately. Consequently, it is difficult to observe inter-regional economic disparities. With these limitations, they can at best serve as broad indicators of the direction of growth of the states' economy. The answer to this problem lies in the improvement of the quality of basic data, their timely availability and the collection of data on important gaps at regular intervals following uniform concepts and definitions.

3.22 The develoiment of the work on SDP in the individual states has also raised the problem of comparability of the estimates among states. Besides being used for a study of development of particular states, the most important application of the estimates of state income is in their use for studies of regional development and integrated plan programes within country. The use of state domestic product for inter-egional comparison implies that the estimates are comparable. But for such a large number of states with varying levels of statistical development, it is extremely difficult to ensure strict comparability in the estimates prepared by different agencies even when the details of concepts and methodology are laid down. This is mainly because of the differences in the quality of data available in different regions and large number of assumptions involved at different levels in the preparation of the estimates. In spite of their overall comparability in terms of concepts and definitions, the present estimates of state domestic product prepared by the individual SSBs suffer from this limitation. This problem had been raised often by the authorities like the Planning Commission as well as by independent bodies like the Fifth and Sixth Finance Commissions.

3.23 The Planning Commission first considered this problem as far back as in 1961 when it had suggested that the CSO should undertake compilation of comparable estimates of state income for the commodity producing sectors on the income originating basis and these would be used by the Planning Commission for policy purposes. It was also suggested that the preparation of these estimates could be undertaken by the CSO in consultation with the SSBs who should be requested to supply any basic data which might be required for the purpose. Subsequently the subject was discussed by the Planning Commission in several meetings with the state governments. At the instance of the Planning Commission, a set of comparable estimates for three years 1962-63 to 1964-65 initially for the commodity producing sectors and subsequently for all the sectors were prepared by the CSO in 1969. The estimates for the commodity producing sectors at the national level are even otherwise obtained as aggregates of the state level estimates prepared by CSO. The preparation of statewise estimates for the commodity producing sectors (except unregistered manufacturing industries). therefore, does not involve any special assumptions. For the rest of the sectors, however, except for the base year (1960-61), the estimates are prepared at the all-India level. The statewise estimates for these sectors have therefore, been prepared by the CSO basically following the allocation method after the estimates at the national level are prepared. The indicators for the purpose are different for different activities depending on the type of activity as well as the data availability. These estimates do, implicitly, take account of the statewise differentials to the extent the base year estimates are prepared at the state level. For a strictly correct measurement of differential movement among states the base year state level estimates need to be moved by the corresponding indicators and the national totals

built up as aggregates of the same. For the present estimates, however, statewise physical indicators are used for allocation of the national totals and this method measures the differential movements. to the extent, the statewise indicators in individual years used for allocation do reflect the clifferential movements for individual states. These comparable estimates had been made available to the Planning Commission before the formulation of the Fourth Five Year Plan. The Fifth Finance Commission also used, these estimates as one of the indicators for allocation of resources between states. Similar estimates for the subsequent period of 1967-68 to 1969-70 have also been prepared by the CSO in 1973 for the use of the Sixth Finance Commission as well as the Planning Commission prior to its fomulation of the draft Fifth Five Year Plan. It is no doubt true that these estimates prepared by a single agency at the centre suffer from the limitation to the extent that some of the local material available for some of the states cannot be taken account of in. the interest of comparability. However, generally, the indicators for the purpose of allocation are so formulated that all such information are integrated within the overall indicatorg to the extent possible.

3.24 The question of comparable estimates raises also another important issue. The comparability has to be achieved not only from the point of view of definitions and to the extent possible, methodology adopted for preparing the estimates but also from the point of view of measurement of real quantum of production in different states. The problem of inter-state price differentials becomes particularly important in this context because not only do the prices differ among states but their movement over time is not uniform for all states. This creates distortion in the interregional comparison of per capita incomes and the measurement of any conceivable index of disparity at different time points. The estimates of per capita state income at constant prices do not answer the question either because the interstate variations in prices which are implicit in the base year estimates are not removed.

3.25 This problem, in a way, can be considered similar to the one of comparing of purchasing power of currencies for inter-country comparison of per capita incomes. At the international level. one of the simplest answer to the problem has been attempted by valuing the quantities of production at one or more common sets of prices. Perhaps, the earliest attempt along these lines was made by Colin Clark in which per capita income of a large number of countries were computed using as price weight "oriental units" representing the purchasing power of a rupee in India and "international units" representing the purchasing poster of US Dollars. This method was subsequently. improved upon by several authors and the work by Milton Gilbert and Irving Kravis stands out here as a signific int contribution. This method compares the income of USA and other European countries at US and average European country prices. The UN Statistical Commission has recently, initiated methodological studies through the International Comparison Project to evolve a method for making binary and multilateral comparison of the purchasing power of currencies between countries. A suitable method developed along these lines would be extremely useful in making a more meaningful study of the extent of real disparity at the sub-national level within a country.

3.26 However, till such a detailed method can be developed, a satisfactory alternative needs to be evolved. The common method of inter-state comparison of per capita income (at state prices) is very unsatisfactory for such of the states where the price levels are either too high or too low in

comparison with the rest of the country. Also, for a study over a given time horizon, if the price level in a state A rises faster than in another state B, the per capita income of state A at current prices would rise more steeply than in state B when the increase in production is the same in both. The Sixth Finance Commission recognised this problem and realised that the ranking of the states according to their per capita incomes does not represent a satisfactory picture. It felt that an adjustment of the comparable estimates of per capita state income on account of both absolute price differentials between states and their nonuniform movement between states would be desirable before they are used as one of the indicators for arriving at an equitable solution to problems like division of revenues. The method adopted by the Finance Commission for such an adjustment has been the recalculation of the state domestic product of all the states using a common set of prices. The all-India weighted average prices have been used for the purpose and a fresh set of comparable estimates have been obtained. Development of a technically more sound method

similar to that for international comparison would very much expand the horizon of possible uses of state per capita income data for the study of regional disparities.

### 4. Concluding remarks

4.1. Enough has been detailed on the importance, present status and quality of the state income statistics as available today. The possible uses to which the, state income estimates can be put have also been elaborated. Whatever might be the current limitations of such statistics, their coordinated presentation in a meaningful manner can go a long way in making them more useful for policy purposes In the next Chapter such a broad framework is being presented with figures for Maharashtra state in Appendix IT as an illUstration. The framwork is in the form of a set of Standard Tables and limits itself to such information as can be readily obtained by all the states without much effort. In Appendix the concepts, definitions and coverage of the Standard Tables ate elaborated.

# THE COMMITTEE ON REGIONAL ACCOUNTS FINAL REPORT Issued by CENTRAL STATISTICAL ORGANISATION DEPARTMENT OF STATISTICS, MINISTRY OF PLANNING: GOVERNMENT OF INDIA, SEPTEMBER 1976

## 1. INTRODUCTION

2. CHAPTER I SYSTEM OF REGIONAL ACCOUNTS

3. CHAPTER II STANDARD TABLES: COVERAGE AND METHODS OF ESTIMATION

4. CHAPTER III

RECOMMENDATIONS

5. ANNEX I

6. FOOT NOTES

7. ABBREVIATIONS

# FINAL REPORT OF THE COMMITTEE ON REGIONAL ACCOUNTS SEPTEMBER 1976

#### INTRODUCTION

1. The Regional Accounts Committee was appointed under the Government of India Resolution No. M. 13013/1/72-NSS.I, dated the 2nd May 1972, which reads as follows:

"The Government of India have set up a Committee for Regional Accounts with the following functions:

- (a) to consider and advise on the levels (state, district or other regions) at which Accounts should be prepared;
- (b) to devise a system of regional accounts and standard supporting and supplementary tables for adoption by all the states;
- (c) to suggest measures for building up regional accounts in the country taking into consideration the availability of data and requirements of Central and State Governments; and
- (d) to examine the concepts, definitions, and classifications for preparation of regional accounts and to lay down guidelines.

The Committee will consist of the following members:

Prof. M. Mukherjee Chairman Director,

Research and Training School, Indian Statistical Institute Calcutta.

Shri V. V. Divatia Member Statistical Adviser, Department of Statistics Resrve Bank of India Bombay.

Shri M. A. Telang Member Director, Bureau of Economics and Statistics Maharashtra Bombay.

Shri K. C. Sharma Member Deputy Economic Adviser, Department of Economic Affairs, Ministry of Finance, New Delhi.

Dr. L. S. Bhat Member Planning Unit, Indian Statistical Institute, New Delhi.

Smt. Uma Roy Choudhury Member Secretary Officer on Special Duty, Central Statistical Organisation, New Delhi. The Committee will have the power to co-opt, as and when considered necessary. any other person(s) to attend its meetings.

The Headquarters of the Committee will be at the Central Statistical Organisation, Department of Statistics. New Delhi, which will also provide secretarial assistance to the Committee. The Report of the Committee will be submitted to the Central Statistical Organisation, Department of Statistics. Government of India."

2. Shri K. C. Sharma resigned from the Committee on January 8, 1974 as he had to leave the country on a foreign assignment and no successor was, nominated. Shri M. A. Telang also had to leave the Committee on his taking up a foreign assignment in the middle of 1975 and his place was taken by Shri S. M. Vidwans, Director of Economics and Statistics. Government of Maharashtra, Bombay.

3. The Committee signed the First Report on November 24, 1974, and presented the same to Secretary, Department of Statistics on December 11, 1974. The Committee in its First Report recommended a set of Standard Tables mainly to meet the immediate requirements of the policy makers at the regional level. Subsequent to the presentation of the First Report, the Second Conference of Central and State Statistical Organisations held in Now Delhi from February 3-5, 1975 considered it, on being presented by Shri V. V. Divatia, one of the members of the Committee. The Conference recognised the usefulness of the tables and recommended a time schedule so that the State Statistical Bureaus (SSBs) may take early steps for preparation of the Standard Tables. In order to facilitate the construction of the tables, the Conference recommended that a workshop participated by the State officials associated with this work and some of the Commiffee members- may be convened by the Central Statistical Organisation (CSO).

4. The proposed Workshop on Regional Accounts was organised by CSO in April 14-22. 1975 and representatives from the SSBs with the exception of Bihar. Tamil Nadu and Tripura participated. Some members of the Committee also participated at this Workshop to clarify the conceptual and operational problems associated with the preparation of the Standard Tables. The Workshop felt that the time schedule recommended in the Conference can he adhered to and that some of the tables could be prepared in the course of the year. The work on the preparation of Standard Tables is in progress in practically all the states. Some of the states like Andhra Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and the Union Territories of Goa, Daman and Diu have made considerable progress in the preparation of the recommended tables.

5. Since the presentation of the **First Report**, the Committee held three meetings on April 23, 1975, April 26-27. 1976 and September 24-27, 1976 to finalise the Final Report. All the meetings were held at the CSO. Department of Statistics, New Delhi.

6. The **Final Report** consists of three chapters and one appendix. Chapter I deals with the system of regional accounts which consists of three consolidated accounts for the region, accounts for the household sector and accounts relating to the public sector. This chapter also discusses the conceptual basis of different transactions appearing in the regional accounts recommended. Chapter II describes the concepts, coverage and method of estimation of various aggregates appearing in the Accounts and Standard Tables. Chapter III deals briefly the major gaps in the existing data system and makes recommendations for the collection of essential statistics required for satisfactory measurement of regional income and related aggregates and construction of the recomended System of Regional Accounts. Appendix I gives the list of Standard Accounts and Supporting Tables. In recommending the collection of fresh data, account has been taken of the recent developments in different fields and the current proposals of the government regarding collection of statistics such as the Economic Censuses and Surveys and the long-term programmes of the National Sample Survey Organisation.

7. It will be observed that while, the committee felt that an accounting framework for the states can be recommended (Chapter I of this Report) there is little point in recommending one for regions smaller than states, like districts. The supporting and supplementary tables are given in Chapter I of the First Report. The measures for building up regional accounts in the country. taking into consideration the availability of data and the requirements of the central and state governments are considered in Chapters II and III of the present Report, Chapter III furnishing the concrete recommendations about data requirements. The examination of concepts, definitions and classifications for the preparation of regional accounts and laying down necessary guidelines is the concern of Chapter II of the First Report as well as the Chapters II and III of this Report.

8. The Committee's thanks are due to members of the State Income Unit of the National Income Division of the Central Statistical Organisation, New Delhi for the work they have put in. The preliminary draft of the report was prepared by Smt. Uma Roy Choudhury, Member-Secretary and Joint Director in charge of NID. The Committee also appreciates the work of Smt. Grace Majumdar and Shri D. K. Joshi of NID.

9. The Committee's thanks are due to Shri V. R. Rao, Director, CSO who attended some meetings of the Committee and provided all facilities for its smooth functioning. The Committee finally places on record the cooperation of all those who helped in its work.

#### CHAPTER I SYSTEM OF REGIONAL ACCOUNTS Introduction

1.1 The Committee in its First Report recommended a set of Standard Tables for recording and presenting information for the states and possibly for other geographical areas smaller than the country, i.e., they refrained from presenting a set of regional accounts. This was primarily because the regional accounts raise some conceptual as well as data problems which are different from those connected with the preparation of accounts at the national level and have to be resolve prior to the preparation of regional accounts. The main problems which the Committee identified during its earlier deliberations were in respect of saving. change in stocks and external trade and finances. The Committee had felt that without the availability of relevant data and the clarification of the conceptual problems involved it would be futile to recommend a system of accounts at the regional level.

1.2 The Standard Tables recommended earlier by the Committee cover all aspects of economic transactions other than those mentioned above. The Committee had recommended the preparation of these tables at the regional level with the hope that this exercise would generate sufficient interest at the regional level in the form of collection of additional data and preparation of fresh estimates and the time would then be ripe for considering a system of regional accounts which can be recommended for adoption. The System of Regional Accounts (SRA) recommended in this Report takes into account both the conceptual as well as the data problems and it is hoped that the preparation of such a system would become feasible in some states in the near future.

1.3 The UN System of National Accounts does not make any recommendations regarding such a system at the regional level. However, the SNA recognises that for developing countries it might be of value to compile special national accounting data in respect of selected rural and urban areas, or even all of the rural and urban portions. According to the SNA, the use of governmental administrative areas should ease the difficulties and burden, of compiling national accounting data and enhance the usefulness of the accounts for purpose of planning and administration. Also, the flows which it may be of considerable analytical value to classify according to categories of rural and urban areas at included in the production, consumption expenditure and capital formation accounts and the income and outlav accounts of the full system. The supporting tables in which these flows are presented are gross domestic product, household final consumption expenditure and gross capital formation at current and constant prices. Tabulation of employment according to kind of economic activity is suggested by rural and urban areas. The UN Report recognises that it is likely to be especially difficult, and perhaps impracticable to compile data classified according to areas in respect of main flows of national and disposable income. It, mentions that regional accounts give rise to a number of conceptual and measurement problems which are of minor importance (if they exist at all) at the national level and need to be tackled independently. It does not extend any high priority to the construction of any such system at the regional level.

1.4 In India all the states are engaged in the preparation of the domestic product by industry of origin and in this process a large body of data are collected, analysed and evaluated. Since the publication of the **First Report**, work is already in progress in most of the states for the preparation of the Standard Tables and it is but natural that we now think in terms of a framework of accounts extending the System of National Accounts to the regional level. The System at the regional/state level is being recommended with the hope that this would give the necessary impetus to make the

states collect more information and improve the data system to meet the needs of the suggested accounts.

1.5 Any system of regional accounts has to resolve several conceptual and methodological problems of a kind different from those at the national level. Thus, the state has an open boundary with neighbouring areas regions and the transactions of the region with these areas need to be recorded and treated in the same manner as the transactions of the country with the rest of the world if a complete SRA is to be prepared. However, hardly any data exist on inter-state transactions of goods and services as well as other financial flows which will enable such a measurement. It is, therefore. difficult for each region to compile a complete system of articulated accounts.

1.6 The SRA being recommended in this Report consists of a set of three consolidated accounts for each region relating to (i) production, (ii) income and outlay, and (iii) capital finance; two accounts giving the transactions of the households (defined to include unincorporated enterprises) and the population in the form of income, outlay and expenditure; and the public sector accounts separately for administrative departments, departmental enterprises and nondepartmental enterprises. The broad frame-work of public sector accounts had been included in the First Report along with the other Standard Tables. These accounts have beeninarginally amended to cover the complete transactions of the public sector within the region and included in the SRA to complete the system. No System can however, be complete without the supporting tables which give further details on the transactions covered in the accounts.

1.7 The SRA recommended in the present Report also has a list of Supporting Tables which cover two independent aspects. In the first group are included the Standard Tables already recommended in the **First Report** (except for tables 5, 6, 7, 8 and 9 which now form a part of the Accounts) and they cover the detailed information on domestic product. final consumption, capital formation, etc. The second group gives two new tables 10 and 11 showing the size distribution of income and assets of the households using the same format as of table 9 on consumption expenditure. Further, it is felt that it would be desirable that the table 15 on socioeconomic indicators should include a few items bringing out the position of the weaker sections of the population. These indicators would be:

- (i) percentage of scheduled caste to total population
- (ii) percentage of scheduled tribes to total population
- (iii) percentage of agricultural labourers to total agricultural workers
- (iv) percentage of workers in household industry to total workers in secondary activity

The complete list of accounts and tables comprising the SRA is included in the Annexure. The SRA, it is expected, will give a comprehensive picture of all the economic activities of the region, viz., production, consumption, capital formation, etc., and transactions of the region with the rest of the economy and the rest of the world. It also depicts the transactions of the State government departments with the local authorities and other economic agents of the region as well as the transaction with the central government. The detailed explanation on the accounts and the broad coverage of the transactions are included in this Chapter while the details of measurement, etc., of the Standard Tables are given in Chapter II.

1.8 For the purpose of these accounts the region has been considered as co-terminus with the geographical boundary of the state. Similar accounts And tables can be conceived for regions smaller than the state or for a group of states. One of the Standard Tables, as a matter of fact, suggests disaggregation of domestic product for the commodity producing sectors to obtain such estimates for areas smaller than the state. All economic activities undertaken within the domestic territories of the region including those of the central government are considered as activities of the region. The activities of the central government within the region are shown separately to the extent possible.

1.1 compensation c I employees within the region	1.6 private final consumption expenditure within the region
1.2 mixed income of self-employed within the region	<ul><li>1.7 government final consumption expenditure</li><li>1. centre</li><li>2. state and local governments</li></ul>
1.3 operating surplus within the region	<ol> <li>1.8 gross fixed capital formation within the region</li> <li>1. centre</li> <li>2. state and local governments</li> <li>3. private</li> </ol>
1.4 consumption of the fixed capital within the region	<ul><li>1.9 increase in stocks</li><li>1. centre</li><li>2. state and local governments</li><li>3. private</li></ul>
<ul> <li>1.5 indirect taxes less subsidies<sup>2</sup></li> <li>1. state and local governments</li> <li>2. centre, government</li> </ul>	1.10 net exports to all other regions and rest of the world
gross domestic product at approximate market prices	expenditure on gross domestic product

#### The Accounts I. CONSOLIDATED ACCOUNTS OF THE -REOION 1. PRODUCTION ACCOUNT

### 2. INCOME AND OUTLAY ACCOUNT

2.2 final consumption of central, state and local governments	2.5 mixed income of the self-employed within the region
within the region $2.2 \times 10^{-3}$	
2.3 saving of the region	2.6 operating surplus within the region
	2.7 net current transfers received from the central government
	2.8 indirect taxes less subsidies
	$2.9 \ \mathrm{net}\ \mathrm{factor}\ \mathrm{income}\ \mathrm{received}\ \mathrm{from}\ \mathrm{all}\ \mathrm{other}\ \mathrm{regions}\ \mathrm{and}\ \mathrm{rest}$ of the world
	2.10 net current transfers received from all other regions and rest of the world
appropriation of disposable income	disposable income

## 3. CAPITAL FINANCE ACCOUNT

gross accumulation	finance of gross accumulation
	3.6 net lending (including capital transfers) received from all other regions and rest of the world
	3.5 net lending (including capital transfers) received by the region from central government
3.2 increase in stocks within the region	3.4 consumption of fixed capital within the region
3.1 gross fixed capital formation within the region	3.3 saving of the region

.1 Private final consumption expenditure	4.3 wages and salaries
1. purchases	1. in cash
(i) in cash	2. in kind.
(ii) in kind	4.4 pension. annuities etc.
2. own account	4.5 employers contribution to provident fund etc.
.2 gross saving	4.6 gross entrepreneurial income
1. of the population	1. rental income from dwellings
2. of the unincorporated enterprises <sup>6</sup>	(i) owner occupied
	(ii) rented out
	2. mixed income of unincorporated enterprises <sup>5</sup>
	4.7 property income received (net)
	1. interest
	2. di vidend
	3. rent from land
	4.8 casualty insurance benefits
	4.9 unrequited current, transfers (net)
	1. social security benefits (net)
	2. other current transfers received (net)
appropriation of household income	household income

## II. HOUSEHOLD4 ACCOUNTS 4. INCOME AND OUTLAY ACCOUNT

## 5. TOTAL CONSUMPTION AND INCOME OF THE POPULATION

5.1 final consumption expenditure	5.5 income of the population <sup>7</sup>
1. purchases	
(i) in cash	5.6 income due to free or reduced cost services furnished by
(ii) in kind	1. government
2. own account	2. private non-profit bodies
	3. industries
5.2 final consumption from free or reduced cost services	
furnished by	
1. government	
2. private non-profit bodies	
3. industries	
5.3 total consumption of the population	
5.4 saving of the population	
apprviation of total income	total income of the population

## III. ACCOUNTS OF STATE AND LOCAL GOVERNMENTS 6.1 PRODUCTION ACCOUNT OF STATE GOVERNMENT<sup>8</sup> DEPARTMENTAL ENTERPRISES

6.1.1 intermediate consumption	6.1.5 output of goods and services	
6.1.2 compensation of employees	6.1.6 subsidies	
6.1.3 consumption of fixed capital		
6.1.1 operating surplus		
disbursement	receipt	
6.2 PRODUCTION ACCOUNT OF STA	TE GOVERNMENTS <sup>9</sup> NON-DEPARTMENTAL ENTERPR	ISES
6.2 PRODUCTION ACCOUNT OF STA 6.2.1 intermediate consumption 6.2.2 compensation of employees	TE GOVERNMENTS <sup>9</sup> NON-DEPARTMENTAL ENTERPR 6.2.6 output of goods and services	ISES
<ul> <li>6.2 PRODUCTION ACCOUNT OF STA</li> <li>6.2.1 intermediate consumption</li> <li>6.2.2 compensation of employees</li> <li>6.2.3 consumption of fixed capital</li> </ul>	<b>TE GOVERNMENTS<sup>9</sup> NON-DEPARTMENTAL ENTERPR</b> 6.2.6 output of goods and services	ISES
<ul> <li>6.2 PRODUCTION ACCOUNT OF STA</li> <li>6.2.1 intermediate consumption</li> <li>6.2.2 compensation of employees</li> <li>6.2.3 consumption of fixed capital</li> <li>6.2.4 operating surplus</li> </ul>	<b>TE GOVERNMENTS<sup>9</sup> NON-DEPARTMENTAL ENTERPR</b> 6.2.6 output of goods and services	ISES

disbursement

receipt

disbursemet	receipt
7.1.5 saving	7.1.9 miscellaneous receipts net of refunds
4. others	7. other taxes and duties
3. households	6. entertainment tax
2. educational institutes	5. taxes on vehicles
1. local bodies	4. stamps
7.1.4 other current transfers	3. sales tax
	2. excise duty
5. less interest of departmental enterprises	1. share of central taxes
4. other sectors	7.1.8 indirect, taxes
3. autonontoas bodies	
2. inter-state	3. other direct taxes
1. central government	2. land revenue
7.1.3 interest on public debt	1. share of central taxes
	7.1.7 direct taxes
7.1.2 subsidies	
	3. other property receipt
(ii) less sales	(v) less interest of departmental enterprises
(i) purchases	(iv) other sectors
2. net purchase of commodities and services	(iii) co-operative
	(ii) inter-state
(ii) pensions	(i) local bodies
(i) wages and salaries	2. interest receiPt
1. compensation of employees	1. operating surplus of departmental enterprises
7.1.1 consumption expenditure	7.1.6 income from entrepreneurship and property

# 7.1 INCOME AND OUTLAY ACCOUNT OF STATE GOVERNMENT<sup>10</sup> ADMINISTRATIVE DEPARTMENTS AND DEPARTMENTAL ENTERPRISES

# 7.2 INCOME AND OUTLAY ACCOUNT OF STATE GOVERNMENT<sup>9</sup> NON-DEPARTMENTAL ENTERPRISES

7.2.1 property income	7.2-5 operating surplus
2. dividend	7.2.6 property income
3. rent and royalty	1. interest and dividends
	2. rent and royalty
7.2.2 direct taxes	
	7.2.7 Gurreill. transfers n.e.c.
7.2.3 current transfers n.e.c.	
7.2.4 saving	
disbursement	receipt

1. administrative departments 2. departmental enterprises		
8.1.3 <i>net</i> purchase of land		
2. departmental enterprises	5. others	
1. administrative depari nieiits	4. abroad	
8.1.2 Increase in stocks	3. local bodies	
	2. financial institutions	
physical assets	1. central government	
(iii) net purchase of second hand	8.1.8 net borrowings from	
(ii) new machinery and equipment		
(i) new construction	4. others	
2. departmental enterprises	3. private sector	
	2. local bodies	
physical assets	1. central government	
(iii) net purchase of second hand	8.1.7 net capital transfers from	
(ii) new machinery and equipment		
(i) new construction	8.1.6 consumption of fixed capital	
1. administrative departments	e	
8.1.1 gross fixed capital formation.	8.1.5 saving	

## 8.1 CAPITAL FINANCE ACCOUNT OF STATE GOVERNMENT<sup>10</sup> ADMINISTRATIVE DEPARTMENTS AND DEPARTMENTAL ENTERPRISES

## 8.2 CAPITAL FINANCE ACCOUNTS OF STATE GOVERNMENT<sup>9</sup> NON-DEPARTMENTAL ENTERPRISES

8.2.1 gross fixed capital formation	8.2.5 saving	
1. new construction		
2. new machinery and equipment	8.2.6 consumption of fixed capital	
3. net purchase of second hand		
physical assets	8.2.7 net capital transfers from	
	1. central government	
8.2.2 increase in stocks	2. state government	
	3. others	
8.2.3 net purchase of land		
	8.2.8 net borrowings	
8.2.4. net acquisition of financial asses	1. at home	
	(i) central government	
	(ii) state government	
	(iii) others	
	2. abroad	
	8.2.9 other liabilities	
disbursement	receipt	

#### Notes on Accounts

#### Consolidated accounts of the region

1.9 The three consolidated accounts relate to (1) production (2) income and outlay and (3) capital finance. For these, all the economic activities located and performed within the region are taken into account irrespective of their organisational set up and ownership. Thus, the productive activities of the households within the region are included just as the administrative activities of the central government. The activities of the central government within the region are shown separately to the extent possible.

## **Production account**

1.10 Gross domestic product originating in the region due to the economic activities of all agents operating in the region reckoned at market prices is measured in this account The gross domestic product is broken down into (1) compensation of employees, (2) mixed income of the selfemployed, (3) operating surplus, (4) consumption of fixed capital and (5) indirect taxes less subsidies. On the expenditure side of the account are shown (1) private final consumption expenditure, (2) current consumption of centre, state and local governments, (3) gross fixed capital formation within the region, (4) increase in stocks within the region and (5) the balancing item of net exports of the region to all other regions and rest of the world.

1.11 The estimates of gross domestic product at factor cost are already available with most of the state governtments. Its components as given in the account will need to be estimated separately for each industrial sector. Since it is difficult to separate labour income and income from assets for unorganised enterprises a separate head, mixed income of the self-employed, has been introduced. This practice is also followed at the national level. Measurement of none of these components raise any special problem at the regional level.

1.12 For the measurement of gross domestic product at market prices, the regional share of indirect taxes and subsidies are to be taken account of. This would cover such taxes and subsidies collected by the state and local governments and the allocated part of central taxes like import duties, custom duties, cesses, etc., which are levied on items utilised within the region. Indirect taxes and subsidies collected by the state and local governments are directly available. The allocation of indirect taxes collected by the central government may be made according to the utilisation pattern of the region in the form of intermediate consumption, final consumption and capital formation, i.e., the share of a region in the indirect taxes of the central government will be in the proportion which the utilisation of the region bears to the corresponding total at the all-India level.

1.13 For items appearing on the other side of the account, the preparation of the estimates of private final consumption expenditure, the consumption expenditure of centre/state and local governments and gross fixed capital formation in the region has been discussed in detail in Chapter II and are either already available at the state level or are likely to be prepared in the near future. Each of these aggregates are being presented in the supporting tables<sup>11</sup> the work on which is already in progress in several states. The increase in stocks is rather difficult to measure at the regional level and efforts have to be put in by the state governments to obtain information on the stocks held by the economic agents within the region. With the present availability of data, it is next to impossible to estimate the net exports to all other regions and rest of the world independently and this item, it has been assumed will be obtained as a residual till availability of data allows measurement of the components.

## Income and outlay account

1.14 This account relates to the disposable income of the region and its appropriation. The disposable income consists of (1) compensation of employees, (2) mixed income of the selfemployed (3) operating surplus of activities within the region. (4) indirect taxes less subsidies. (5) **net** current transfers received from the central government, (6) net factor income received from all other regions and rest of the world and (7) net current transfers received from all other regions and rest of the world. On the appropriation side of the account, private final consumption expenditure, consumption expenditure of the centre/state and local governments and saving appear. The compensation of employees relates to the whole economic activity within the region, i.e., it includes the compensation paid by the central government due to its activities in the region. The same principle is followed for income of the self-employed also. Further, the operating surplus has to be estimated allocating the total operating surplus originating in central government departmental and non-departmental enterprises as well as private multi-regional establishments between the regions in proportion to the volume of economic activities within the regions. This will imply that in case of departmental enterprises like railways and communication, the allocation will be among all states and union territories (save in exceptional cases like non-existence of railway lines in the regions of Meghalava, Mizoram, etc.), according to the extent of activities while for non-departmental enterprises in the public sector and enterprises in the private organised sector the allocation will be among the states where the headquarters, branches and production units are located. This method is currently followed t'or measuring net products of supra-regional public-owned industrial sectors, (i.e., departmental enterprises). The method has to be extended to cover all economic activities within the region. However, unlike the national economy, the operating surpluses of the central governments enterprises and enterprises with similar characteristics in the private organised sector would accrue to the centre or the head office and the regions do not have direct access to this operating surplus for outlay on consumption or capital formation. The net amounts received by the region from such public and private sector enterprises owned by the central governments, government authorities or the private sector in other regions will, however, be reflected in the current and capital transfers from the central government or from other regions. Transfers/grants received directly by public/private sector undertakings, e.g., centrally administered universities, research institutions, private non-profit institutions from central government, regional governments/charitable institutions will also be included.

1.15 The first two entries under appropriation side already appear in the Production Account. Also, the measurement of private and public consumption expenditure has already been discussed. It may only be worthwhile to mention that at the regional level the estimation of private final consumption expenditure creates speciali problems such as difficulty in the measurement of outlays on final consumption by private nonprofit institutions serving households is not easy to obtain. The last item of the appropriation account is the saving of the region which consists of the saving of the households, the private corporate and unincorporated enterprises and the state and local governments. The saving within the region is exclusive of net profits of multi-regional foreign companies transferred from the region, the term 'foreign' here referring to all other regions and rest of the world. Efforts have to be made to pm (Tare estimates of savings of the region. The savings of state and local governments including

those of departmental and non-departmental undertakings can be obtained without much difficulty except in the case of undertakings where activities are spread over to other regions. Attempts should be made to analyse the balance sheets of the single unit companies of the central government and private organised sectors located within the region. In the case of multi-regional private as well as public sector companies, efforts will have be made, to estimate the net profits transferred from the region to other regions and rest of the world. The estimation of saving for household including non-corporate nonhousehold enterprises and household enterprises is of great importance and special efforts have to be made to obtain this component. The. saving of the household will consist of saving in financial assets and saving in terms of formation of physical assets. It might be necessary to conduct periodical surveys to obtain the components of household saving. The items, net factor income received from all other regions and rest of the world and net current transfers received from all other regions and rest of the world may be combined and kept as a residual for the present till comprehensive inter-State transactions are recorded.

#### **Capital finance account**

1.16 The items on the accumulation side of the account consist of gross fixed capital formation within the region and increase in stocks which are already available in Account 1. The **net** lending including **net** capital transfers received by the region from the central government can also be estimated. Saving of the region corresponds to the saving mentioned in Account 2, whereas consumption of fixed capital relates to the item given in Account 1. The last item, viz., net lending including capital transfers, may be considered as a residual item.

## **Household Accounts**

1.17 Two accounts-one relating to household

income and outlay and another relating to total income and consumption of the population-have been suggested. Because of the composite nature of the activities in the country and particularly so in the rural areas, the household sector has been sepcially defined for the purposes of these accounts. The unincorporated enterprises whether in agriculture or manufacturing industries or services like transport, function as a part of the household unit and the functions of the households as consumers and as producers cannot always be distinctly separated. This becomes even more true in the case of household income in the form of labour income of the household members and the mixed entrepreneurial income. For the purposes of this account therefore 'household' represents not only the population treated as final consumers but also the activities of unincorporated enterprises either owned or operated by any member/members of the households jointly or individually. Accordingly the income and out-lay account includes not only a measure equivalent to the personal income of the population but also the gross entrepreneurial income of the unincorporated enterprises and this measure is termed as the household income.<sup>12</sup> The 'population' referred to in 'total income and consumption' account covers the transactions of the individual ,consumers only, who in common terminology and economic literatures, (e.g., in the NSSO surveys) are classified as 'household'.

#### Income and outlay account of the households

1.18 The household income in the account covers gross primary income in the form of wages and salaries, pensions, employers' contribution to the provident fund and gross entrepreneurial income as well as the **net** property income received and net current transfers. The wages and salaries received by the population will be shown separately as 'in cash' and 'in kind'. The gross entrepreneurial income will be divided into rental income from dwellings and mixed income of unincorporated enterprises. The income from

dwellings will be further divided into that arising out of owner occupation and possibly imputed and that earned from dwellings rented out. If the ownership, leasing and operation of dwellings is undertaken as a primary activity of the owners, they are treated under entrepreneurial income and not included in the income from rental of dwellings. The mixed income of the unincorporated enterprises would need to be further subdivided into imputed labour income and other income, if an approximate measure of the income actually received by the population is to be obtained. This division, not easily obtainable, is necessry if 'total income and consumption' account of the population (which follows) is to be prepared satisfactorily. This may be attempted in cases of such unincorporated enterprises (partnerships, etc..) where accounts are available and where such division is meaningful. However, in cases of enterprises like agriculture this should not be attempted. The mixed income would measure value added net of wages and salaries paid out and disbursement of property iticome, if any, to the population.

1.19 Property income received by the population in the shape of interest, dividend, rent on land and royalties, etc., net of such demands like consumer debt interest forms another component of this account. Current transfers like social security benefits net of such transfers received, viz., social security contribution and other current transfers received net of direct taxes, fees, fines paid, etc., and net casualty insurance benefits will also form components of this account. All these components when added give the household income as defined. Appropriation of household income is in the form of final consumption expenditure which is split up into consumption from purchases and consumption of own production. The purchases are further divided into cash purchases and those obtained in kind. The balancing item namely the gross saving in this account would include not only the saving of the population but also the gross saving of the unincorporated enterprises. For the relevant entries in the subsequent account it will, however, be necessary to split up aggregate household saving between 'saving of the population' and 'saving of unincorporated enterprises'. Saving of such non-profit bodies which appear in Household Income and Outlay Account would be included in that of unincorporated enterprises.

## Total consumption and income of the population

1.20 The consumption financed out of incomes of the population in cash or in kind or derived from their own production is very often supplemented by services provided free of charge or at reduced cost by government, private nonprofit bodies and by industries. This total consumption of households provides a better picture of the welfare of the population than the final o hsurnption expenditure as commonly measured.

1.21 The account for the population shows on the right hand side, the income of the population which is different from the household income to the extent thaL it excludes the other income component of the mixed income of unincorporated enterprises. Income due to free or reduced cost services furnished by (i) government private non-profit bodies and (iii) industries Corms the other component. Goods and services provided free of charge as part of the remuneration for services rendered are nbt included here but are taken as of wages and salaries in kind. On the left hand side of the account appears the final consumption of the population paid for in ieish and kind (including own production) and the final consumption from reduced cost and free services which together constitute the total consumption of the population. The balancing item will be the saving of the Population excluding the saving of the unincorporated enterprises which is already presented in Account 4.

## Accounts of State and Local Governments

1.22 For presentation of the details of transactions of state and local governments, the activities of the government sector have been grouped mainly into three categories namely, (1) administrative departments, (2) departmental enterprises and (3) non-departmental enterprises.

1.23 The administrative departments cover all government agencies whether state or local whose function is to organise for the community but not normally sell to the community, the common services which cannot otherwise be conveniently or economically provided. It is also expected to act as the administrative agency for the economic and social policies of the community. These agencies undertake activities like general administration; administrative services connected with education, health, low and order, justice and social security, recreational and social services, promotion of eronomic welfare and technological development.

1.24 The enterprises of the government are covered under two groups, viz., departmental and non-departmental enterprises. The departmental enterprises are incorporated enterprises owned and controlled by the government. They do not normally hold and manage financial assts and incur financial liabilities. In practice, it is often difficult to separate these activities from the activities of the administrative departments. The more important departmental enterprises under the state and local governments are forestry, road transport. electricity, irrigation and printing presses. Other activities like milk schemes, opium. distillery, emporium, etc., are also examples of departmental enterprises of state and local governments.

1.25 Non-departmental enterprises comprise government companies and subsidiaries and government statutory corporations set up under special enactments of state legislatures like State Eoml Transport Corporations, State Electricity Boards and these enterprises may function more or less in the same manner as private enterprises.

1.26 A few accounts designed for the public sector comprising state and local governments had been presented in the First Report of the Committee as a part of the Standard Tables. These accounts with marginal modifications have now been presented as a set of public sector accounts as a complementary system to the SRA td give a complete account of the transactions of the region. These accounts relating to the administrative departments, departmental enterprises and nondepartmental enterprises can be classified into three main categories: (i) production accounts for departmental enterprises and non-departmental enterprises. (ii) the income and outlav accounts of the administrative departments and the non departmental enterprises and (iii) capital finance accounts of administrative departments and departmental enterprises combined and that of non-departmental enterprises. For purposes of presentation, state administrative authorities have been grouped into state government administration, municipalities and municipal corporations and village panchayats and zila parishads. The annual profit and loss accounts and balance sheets of the non-departmental enterprises need to be similarly analysed, though the work in this case is less complicated because of a more economically meaningful presentation of the transactions in the annual reports of the enterprises. Expenditures and receipts in the accounts are generally classified department-wise and the revenue and capital accounts do not follow strictly the standard definition of current consumption and capital expenditure. In order to make a meaningful study of all the different aspects, the transactions of the government, as given in the budget need to be reclassified and regrouped into meaningful economic categories to enable the preparation of these accounts.

1.27 The scope and coverage of different transactions appearing in the accounts under which all items of revenue and expenditure are classified are detailed below.

1.28 Production accounts have been drawn for state departmental enterprises and non-departmental enterprises.

- (i) Intermediate consumption represents consumption of raw materials, stores and spare parts, water, power and fuel; freight charges; handling and inspection charges; advertisement expenses; insurance premium, commission, stationery, printing, telephone bills, postage and telegrams. travelling and daily allowances, legal expenses, rates and taxes and bank charges. Current repairs and manitenance of fixed assets are covered here.
- (ii) Compenation of employees consists of
  (i) wages and sararlies and (ii) pensions. Wages and salaries include pay of officers and staff, house rent allowances, dearness allowances, city compensatory allowance, overtime allowances, children's education allowances, provident fund and value of benefits in kind. The pension fund represents the actual amount of pensions paid during the accounting year including the commuted value of pension.
- (iii) Consumption of fixed capital represents the current replacement cost of the reproducible fixed assets used up during the period of account as a result of normal wear and tear, foreseen obsolescence and the normal rate of accidental damage. Unforeseen obsolescence, catastrophies and the depletion of natural resources are not taken into account.
- (iv) **Operating surplus** is measured as the excess of gross output at market prices of an enterprise over the sum of its intermediate consumption, compensation of employees, consumption of fixed capital and indirect taxes **net** of subsidies.

- Output of goods and services consist of (v) the value at market prices of goods and services produced by the enterprises. The total value of sales of goods and services during the year is adjusted for net changes in stocks of finished and semi-finished goods and work-in-progress to obtain estimates of the output. Examples of goods and services produced by drpartmental enterprises are irrigation services, timber and other forest products, opium milk end milk products, stationery and printing, road and water transport services, communication services, ports and pilotage services and commercial broadcasting. In the case of non-departmental enterprises, sales cover, for example, value of manufactured goods and products mined, value of work done and contract receipt in the case of construction enterprises, traffic revenue in the case of transport enterprises, and warehousing charges in the case of warehousing corporation. Value of goods and services produced for own use or transferred departmentally and miscellaneous incomes each as sale proceeds of scrapped material are also included.
- (vi) Indirect taxes cover taxes assessed in respect of production, sales, purchases or use of goods and services of producers which they charge to production. The principal taxes in this category are state excise duties. general sales tax; regulatory duty on motor spirit, diesel oil, vaporising oil and furnace oils; taxes on vehicles, electricity duties; sale of judicial and non-judicial stamps; registration fees; entertainment tax; cess on sugarcane; surcharges under procurement scheme on rice, wheat, pulses and sugar.
- (vii) Subsidies include all grants on current account, which industries receive from the government. These take the form of either direct payments to producers or the difference between the buying and the selling

prices of government trading organisations. Examples are rebate on the sale of handloom cloth, loss on the sale of fertilisers, improved seeds, pesticides and agricultural implements; payments to cooperative societies for employing managers or for loss suffered by the co-operative societies.

### Income and outlay accounts

1.29 Combined Income and Outlay Accounts are to be presented for administrative departments and departmental enterprises. A separate account is to be presented for non-departmental enterprises.

- (i) **Consumption expenditure** consists of (i) compensation of employees and (ii) net purchase of goods and services. The purchase of goods and services includes all expenditure under contingency such as pay and allowances of casual employees, expenditure on liveries and uniforms of police personnel, office supplies, fuel and light, printing, travelling and daily allowances, telephone and telegraph charges, postage, current repairs and maintenance, rates and taxes and rent of hired buildings and machinery and equipment. It also includes the loss incurred by the governmen,t printing presses. The sale of goods and services covers such items as fees charged in government educational institutions and hospitals; sale of articles produced by inmates of jails; television and radio licence fees; sale of 'articles of art by museums etc.
- (ii) Interest on public debt represents the payments of interest on public debt to other. sectors/other states and to rest of thf world by administrative departments. Inter-departmental payments of interest get cancelled in the process of consolidation of accounts.
- (iii) Other current transfers include grants to households and private non-profit institutions in the form of stipends and scholarships, expenditure on mid-day smeals in schools. 'grants educational toinstitutions, compensation to refugees, allowances to-widows and destitutes. pensions for distinguished and meritorious services, territorial and political pensions, prizes, gratuitous relief to famine-striken people, etc. Any trans- fers to other states, centre and to the rest of the world which are of similar nature also fall in this category. Official grants received by public authorities from the rest of the world are, treated as capital transfers. (viii) Saving represents the surplus- of current' receipts over . current expenditure.. ^U (ix) Income from entrepreneurship and property comprises operating surplus of departmental enterprises and income from property in the form of interest and other property receipts. The 'former appearing in the production account of departmental enter prises is transferred to c )1, ibined in, onie anti outlav account of administration and departmental (-do rprise, (x) Income from property includes income - from the ownership of financial assets, physical assets like buildings, machinery etc, and patents, copy rights- and similar intangible assets. Mineral concession fees and rovalties, toll tax on road and income from endowments are also treated as income from property. However, rent is not imputed for buildings and structures owned and occupied by government for civilian purposes. (xi) Direct taxes includes-levies by public authorities at regular intervals on income from employment, property, capital gains etc as well as on finan.cial assets and on the net or. total worth- of enterprises; non-profit institutions and households. Taxes falling under this category-\_ are income tax,

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corporation tax, taxes on agricultural income, urban 1g/id tax,

expenditure tax, gift tax and the like. Land revenue, estate duty and wealth tax are also treated as direct taxes. (viii) Miscellaneous receipts of public authorities comprise charges in respect of regulatory services provided mainly by government agencies. Regulatory activities and services of government have no parallel in the private sector as they depend on the use of compulsory powers. Examples of such charges (paid mainly by households) are birth, death and marriage registration fees; court fees;, fines and penalties. Conceptually, all such charges when paid by producers are to be classified as indirect taxes. However, because of paucify of details, this distinction cannot be followed and all such charges are included under this category.

### **Capital fince accounts**

1.30 A combined capital linance account has been designed for the administrative departments and departmental enterprises because the financial decision in respect of these enterprises are largely taken departmentally. An independent account is to be presented for non-departmental enterprises.

(i) Gross domestic fixed capital formation is defined to cover outlays (purchases and own account production) on new construction and durable goods in the form of addition to the stocks of fixed assets less sales of similar second hand and scrapped goods. Excluded are outlays on durable goods for military use except in ordnance and clothing factories. Unfike the treatment in the case of enterprises, purchases of durable goods like office equipment and furniture, staff cars, etc., by government administrative departments are treated as current consumption.

- (ii) Increase in stocks in the case of departmental enterprises and administrative departments, includes increase in stocks of strategic materials like foodgrains, fertilisers, steel, cement, equipments under malaria programme, etc., held by administrative departments for policy purposes. Changes in stocks of workstores are also included. In the case of nondepartmental enterprises this item represents the change in the book value of finished, and semifinished goods and work-in-progress as at the beginning and at, the end of the accounting year of the enterprises.
- (iii) Net purchase of land relates to acquisition or purchase of land net of sales. However, in such cases where seperate data are not available, other physical assets of small values are also included.
- (iv) **Net capital transfers** cover grants received from other sectors, the central government and the rest of the world to finance capital formation in the form of construction of building, roads, irrigation works, water supply and sewage system, etc., and purchase of machinery and equipments.
- (v) Other liabilities include extra budgetary receipts in the form of loans, deposits and advances, remittances, net change in the balances of various funds administered and managed by the government.

### CHAPTER II STANDARD TABLES: COVERAGE AND METHODS OF ESTIMATION

### Introduction

2.1 In the present Chapter the coverage and methods of estimation at the state level, of the aggregates appearing in the supporting tables have been preserftecl under four broad groups, viz., domestic product, private final cosumption expenditure, capital formation and indicators of regional development.

2.2 The measurements have been, dealt with separately under the broad categories of (i) coverage, (ii) procedure of estimation: the approach, (iii) estimates at current prices and (iv) estimates at constant prices. The chapter contains seventeen different sections. For domestic product details are given separately in thirteen different section covering each of the category of economic activities according to which the tables by the industry of origin are prepared and presented. Three different sections cover private consumption expenditure, fixed capital formation and and purpose classification economic of administrative departments of the state governments. Scope and coverage of some of the socio-economic indicators of the region has been defined in the last section.

2.3 Each of the section recommends the broad methodology, which, it is desirable to follow for preparation of the estimates. However, the measurement of the macro-aggregates like domestic product or capital formation is essentially linked with the availability of basic data. It is not only that all the detailed data suggested for use for estimation are not always likely to be available but even the extent of their availability is likely to differ substantially between states. Though it is expected, that over time there will be continuous improvement in the availability of data and the Method of estimation in different states will gradually become uniform, the present position is yet far from this ideal. Because of the nonuniformity in data availability, the method of estimation followed by the states would differ in detail though it is expected that between states the 'coverage' and the 'approach' would be uniform and the measurements would be comparable in this respect.

2.4 The methods of estimation recomended conform to the corresponding approaches at the national level for the all-India estimates. This implies that no definite recommendations could. for example, be made for the use of 1971 working force data of th measurement of net value aided in the services sectors. This is a consequence of the fact that the problem of obtaining comparable estimates of working force for the years 1961 and 1971 is vet to be resolved at the national level measurement at the state level moreover raises special problems like the treatment of value added of departmental and non-departmental enterprises owned by the central government or the treatment of retained profits, etc., of multiunit largescale establishments with branches located in different states. Such problems have been discussed and procedure of estimation suggested keeping the feasibility aspect in view.

## State domestic product

## AGRICULTURE Coverage

2.5 The economic activities to be considered in this sector are (i) growing of field crops, fruits, nuts, seeds and vegetables, (ii) tea, coffee and rubber plantations, (iii) growing of trees on farm yards and village common lands, (iv) agricultural and horticultural services on a fee or contract basis such as harvesting, threshing and tabling, husking and shelling, preparation of tobacco for Marketing, pruning, picking, packing, pest destroying, spraying, and operating irrigation systems (including those operated by government), (v) ancillary activities of the cultivators such as

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transportation, rental income from farm buildings and farm machinery and interest on agricultural debt (vi) breeding and rearing of animals and poultry including private veterinary services, (vii) production of milk and milk products, (viii) slaughtering, and preparation and dressing of meat, (ix) production of raw hides and skins, eggs, raw wool, honey, and silkworm, cocoons and (x) hunting and trapping. Hand-pounding of rice and indigenous production of gur are also included in this sector.

### Procedure of estimation: the approach

2.6 The estimates of SDP from the agriculture sector may be prepared by using the production approach to obtain the value added. This involves deducting intermediate consumption from gross output.

2.7 As the cultivation of crops aid animal husbanchy often go together, it is difficult to prepare reasonably reliable estimates of value added separately for the two sub-sectors. However, separate estimates of gross value of output for (a) agriculture (proper) and (b) animal husbandry (livestock products) may be prepared while the estimates of both the gross and net value added may be prepared after combining the two sub-sectors.

2.8 In principle, the gross output of agriculture during a year (or any other accounting period) should cover the value of harvested crop during the year sold, used as payments of wages and salaries in kind, consumed by the farmers' own households and added to stocks. It should exclude harvested crops used as intermediate consumption in agricultural operations during the year The gross output so defined could be estimated from the data on the uses listed above, but such data will usually not be available. It is therefore preferable to define another term, 'gross aggregate output' as equivalent to the value of crops harvested including seeds and reduced by any wastage that occurs during harvesting. The 'gross intermediate consumption' may be defined to include the wastage and losses in stocks and also the harvested crop used as intermediate consumption.

2.9 The same concept of 'gross aggregate output' and 'gross intermediate consumption' is to be used for livestock and livestock products also. The gross output of animal husbandry is equivalent to the value of sales and own account consumption of livestock products plus the value of physical change in stocks between the beginning and the end of a period of account. The gross output in breeding stock, dairy cattle, etc., during a period of account equals the value of their net physical, increase, and this also enters the gross output of the subsector.

2.10 Agricutural output should generally be valued at producers' values at the time the commodities are harvested and are ready to be sold, consumed by the farmers' households or added to stocks. In practice, however, the data on prices available and used for this purpose generally consist of, at best, average farm prices (during months when the harvested crops are marketed). However, often even such data are not available and the data used for the purpose of valuation may, in suchcases, relate to the primary wholesale prices during the peak marketing period.

#### Estimates at current prices

2.11 The commodities in agriculture proper for evaluation of gross aggregate output can be classified for convenience of estimation under the following four categories: (i) principal crops<sup>13</sup> (ii) minor crops<sup>14</sup> (non forecast), (iii) miscellaneous and unspecified crop<sup>15</sup> groups and (iv) other products and by-products.<sup>16</sup>

2.12 The estimates of the area and quantity of production of principal crops are regularly published by the Directorate of Economics and Sta-

tistics, Ministry of Agriculture (DESAg). These are based on results of random crop cutting experiments conducted by the state government agencies and may be used for the preparation of estimates. For minor (non-forecast) crops, the estimates of output based on ad-hoc surveys and traditional methods may be used. For miscellaneous and unspecified crops, the estimates may be prepared by using average yield per hectare obtained from ad-hoc surveys and the total estimated area under each of the crops. Alternatively, the value of the output per hectare of each of the crops may be estimated directly on the basis of corresponding specified crop groups. In the case of other important products and by-products the estimates may be based on annual ad-hoc surveys or on other locally available data.

2.13 The aggregate value of output of agricultural products should, in general, be computed using farm harvest prices. As data on such prices are not uniformly, available in all the states, the evaluation may be made, whenever necessary, at average wholesale prices prevailing in the primary markets during the peak marketing period. For some commodities, prices may not however, be available and special attempts have to be made for the collection of such data. In case where only area figures are available, estimates of value of output per hectare may be obtained. The value of output thus obtained may be aggregated over all the commodities to obtain the gross aggregate output from agriculture. The average district price can be worked out as a simple average of average weekly prices prevailing in the marketing centres during the peak marketing period. The state average prices for a commodity may be obtained as weighted average of average district prices using quantities of outputs as weights. From the total value of output estimated in the manner indicated, deductions may be made for foodgrains procured by government at prices different from free market and for value' added for rice milling industry.

2.14 The livestock products may he classified into seven broad group, viz., (i) milk and milk products, (ii) meat and meat products, (iii) hides and skins, (iv) eggs and poultry meat, (v) wool and hair, (vi) dung and (vii) other products. In addition, increment in stock is to be included. Conversion of milk into khoa, ice cream, channa, etc., is not to be taken into account as it is covered in the manufacturing industry.

2.15 In the case of the livestock products, annual data on production are generally not available. In view of this, the production may be, estimated as a product of the yield rates of different types of livestock and the population of relevant category of livestock. Comprehensive data on Livestock population are collected in the quinquennial censuses. For years other than the census year, the population of livestock may be estimated on the basis of an assumption of constant annual growth rate between census years involving interpolation and extrapolation. The states may, however, try to obtain these annual numbers by, using more direct methods wherever possible.

2.16 The surveys conducted by Institute of Agricultural Research Statistics (IARS) giving estimates of yield rates and production of milk, eggs, wool, etc., at given, points of time would form a major source of information or estimating production in many of the states. The states may supplement such information by collecting similar data on yield rates and production for different items by organising sample enquiries at the local level whenever possible. The number of hides and skins produced may be estimated by adding the number of animals slaughtered for production of meat and the number of animals fallen due to natural death (preferably after allowing for wastage).

2.17 The value of output may be obtained by aggregating the gross output of different livestock products and the net addition to livestock. The

evaluation of each commodity may be made at corresponding average annual wholesale prices adjusted for trade and transport margins between producers' prices and wholesale prices when the producers' themselves do not market their products and for urban/rural price differentials when the basic data relate entirely to the urban areas. The adjustments should be based on survey and similar other information available for the state.

2.18 In order to arrive at the value added from agriculture and animal husbandry, deductions have to be made for various items of intermediate consumption. Because of the interdependence of agriculture and animal husbandry, the cost deductions are made for the combined enterprises yielding value added for the consolidated sector only. The items of intermediate consumption are (i) seed. (ii) manure and fertilisers. (iii) marketing charges, (iv) electricity charges, (v) pesticides, (vi) diesel oil, (vii) irrigation charges, (viii) livestock feed and (ix) current repairs and maintenance of fixed assets and other operational costs. Items considered to constitute the livestock feed are (i) roughages, (ii) grains, (iii) concentrates, and, (iv) salt, medicines and miscellaneous feeds. Repairs and maintenance costs should not include the replacement cost. The costs of repairs and maintenance are in respect of (i) all types of farm implements and machinery, tractors, and bullock carts, (ii) farm houses, grain golas, cattle sheds, plantations and orchards, (iii) reclamation of land, bunding and other land improvements, (iv) wells and other irrigation sources and (v) meat stalls.

2.19 Farm management surveys provide one of the most satistfactory sources of data on almost all the items of intermediate consumption. Such surveys with relatively large sample size would provide adequate bench-mark data to prepare reliable estimates for the bench-mark year and also serve as a basis for making annual estimates for other years from less complete data. In the absence of annual farm management surveys, estimates of various inputs may be based on unit input co-efficients derived from bench-mark enquiries or from special investigations. Thus, the bench-mark year data on the quantity of seed or fertiliser used per unit area sown may be multiplied by the area sown in the current year, or the quantity of seed used per head of livestock may be multiplied by the number of livestock in the current year or the quantity of fuel used per tractor may be multiplied by the number of tractors in the current year and so on. The evaluation may be made at current purchasers' prices for arriving at the value of intermediate consumption. The bench-mark data may also be supplemented by information available from other sources. For example, estimates for chemical fertilisers may be based on data on actual off-take by the states in case the data on actual consumption are not available. Similarly, estimates for electricity may be gleaned from the data available on electricity used for agricultural purposes with the state electricity boards; information on pesticides and insecticides from state departments of agriculture or from data available with the Pesticides Association of India, and that on irrigation charges from the budget documents of the state governments. In the case of repairs and maintenance, the estimates for other years may first be prepared at constant prices of the bench-mark year with the help of quantum indicators and thereafter adjusted for price changes. Examples of quantum indicators are (i) the value of farm implements and machinery at constant prices and (ii) gross capital formation at constant prices. Examples of price indicators are index numbers of cost of construction, index numbers of wages of rural skilled workers, index numbers of wholesale prices by types of machinery, etc.

2.20 The estimate of gross value added may then be obtained by deducting the intermediate consumption from the gross value of output. To arrive at the total gross value added, an estimate of gross value added from operations of government irrigation system has to be added. The gross Value added by public irrigation works can be obtained from the budget documents of various state governments. This is taken to be the sum of (i) compensation of employees, (ii) interest payments and (iii) operating surplus, Since the estimates for agriculture are prepared using a production approach and no deductions have been made for veterinary services, services of pest destroying and spraying; it follows that these services are include in the sector.

2.21 For arriving at the net value added, consumption of fixed capital need to be, deducted. The total current market value of all capital assets by type of assets for a bench-mark year may first be estimated on the basis of appropriate survey results. The estimates of consumption of fixed capital for the bench-mark year may then be estimated on the basis of the value of assets and the average expected life of the assets by applying the straight line rule. To this, the allowance for the consumption of fixed capital in public irrigation obtained from the budget documents of the states are to be added. For other years the estimates of stock of wealth by type of assets may first be prepared with the help of suitable indicators and the consumption of fixed capital may be obtaine by applying the age-structure of the various types of assets. If, however, details of age-structure by type of assets are not available, the consumption of fixed capital may be obtained by using the proportion of the value of assets as observed in the bench-mark year. The All-India Rural Debt and Investment Surveys (AIRDIS). All-India Debt and Investment Surveys, All-India Rural Household Saving Surveys and All-India Household Survey of Income, Saving and Consumption Expenditure conducted by the National Council of Applied Economic Research (NCAER) will be the major sources of information on the value of assets and consumption of fixed capital for a bench-mark year. Examples of quantum indicators to be used are value of assets at constant prices and estimates of gross capital formation by type of assets at constant prices, Examples of price-indicators are index numbers of cost of construction, index numbers of wages of rural skilled workers and index numbers of wholesale prices of certain types of assets.

### **Estimates at Constant Prices**

2.22 Estimates at constant prices May be prepared by the Method of double deflation. This method involves evaluation of the physical quantity of each output at the base year's price and then deducting from it the cost of various inputs evaluated at the base year's prices. For those crops for which figures of annual physical output are not available, the estimates may be worked out on the basis of an assumption that the average value of yield per unit of area of these crops forms a fixed proportion of the average value of vield per unit of area of principal crops falling in the group evaluated at the base year's prices. Similarly in the case of some inputs for which the data are available only in value terms, the estimates may be obtained by using the proportion of the value of the specified item to total value of output in the base year for other vears also. In a like manner, in the case of irrigation charges, the charge per unit of area in the base year may be applied to the area irrigated in the current year. These cruder methods could however be eschewed when some current information is available in the state bearing on the matter. So far as raw materials are concerned. double deflation is feasible. However, for consumption of fixed capital such a method cannot be easily followed and the approach primarily gives gross value added. Deflation of consumption of fixed capital will mean application of triple deflation method.

#### FORESTRY AND LOGGING

### Coverage

2.23 Forestry includes economic activities like planting replanting and conservation of forests

and gathering of natural products like resins, lac, wild rubber, etc. The activities covered under logging are felling and rough cutting of trees, hewing or rough shaping of poles, blocks, etc., and transportation of the logs up to the permanent line of transport. Also included in forestry are forest tree nurseries and establishments mainly engaged in providing forest-services such as marking and measuring timber and planting and conservation.

## Procedure of estimation: the approach

2.24 The estimates of S.D.P. may be prepared by using the production approach to obtain the value added. This involves deducting intermediate consumption from gross output.

2.25 The output in this industry consists mainly of the value of timber felled, prepared into logs and floated or otherwise transported by lugging establishments to the purchasers of timber. The producers' value of timber should be recorded at the point of delivery of the timber. The gross output of all other additional activities of this sector should, as far as possible, be recorded at the time the activity takes place.

#### Estimates at current prices

2.26 The forest products for the purpose of evaluation may be classified into two broad groups, viz., (i) major products and (ii) minor products. Major products consist of (i) Industrial wood (timber), round wood and match and pulp wood and (ii) fuel wood (fire wood and charcoal wood), while the minor products consist of a large number of heterogeneous items such as bamboo, resin, lac, etc.

2.27 The annual data on quantity and value of output of the major forest products and the value of minor forest products are reported by the state forest departments. Information on minor products represents the royalty value or the contract fee realised by the government and not the economic value of these products. The economic value of these products may be worked out on the basis of local Surveys. In the absence of such surveys, this may be worked out on the basis of the ratio of the value of output to royalty value observed in the case of major products. However, direct data, on physical output to the extent available may be used in the first instance. In the case of industrial and fuel wood, considerable quantities escape reporting from official estimates because of unauthorised removals and adjustments need to be made for these. The estimates of such removals may be prepared on the basis of data obtained from special type studies.

2.28 The output in general should be valued at average producers' prices for each type of output. If the available data on prices relates to wholesale prices at assembling centres of these products they need adjustment for trade and trapsport margins. In case where only retail prices are available from cost of living enquiries for some of the products which go for household consumption (such as firewood), these data may be used after necessary adjustments. To the extent possible, the estimates of margins used should be based on actual enquiries and studies.

2.29 Deductions in respect of various items of intermediate consumption have to be made to arrive at the gross value added. Intermediate consumption in the sector consists mainly of the cost of seedlings, repairs and maintenance of roads, machinery and equipment, purchase of minor tools with short life period and other operational costs. Net value added is to be estimated by further deducting the consumption of fixed capital.

2.30 Information on some items of intermediate consumption of forest establishments entrusted with the management of government owned forests will be available from government budgets. However, special sample surveys may be needed to study i he ratios of current output in relation to current input of various forest products at the state level. Such special surveys may provide, simultaneously, information on minor products for which data available otherwise are not complete. The estimate of the consumption of fixed capital should relate to the capital assets at current market prices, their age structure and life of assets in the sector.

#### Estimates at constant prices

2.31 Estimates at constant prices may be prepared by the method of double deflation. This involves the evaluation of physical quantity of each output at the base year prices and then deducting from it the cost of various items of inputs also evaluated at base year's prices. In the case of minor products, the data in, terms of quantity may not be available. In such cases (where only value is available) an index of prices relating to other forest products for which both quantity and price data are available may be used for deflating the value of output at current prices.

#### FISHING

#### Coverage

2.32 This sector includes commercial and subsistence fishing in (i) ocean, coastal and offshore waters and gathering of seaweeds, sea shells, pearls, sponges and other ocean and coastal water products (ii) inland water fishing which Includes catching, tackling and gathering of fish from rivers, irrigation and other canals, lakes, tanks, inundated tracts, etc., and exploitation of uncultivated plant life in inland waters and artificial ponds (iii) fish curing, e.g., salting and sundrying of fish and (iv) subsistence fishing. Sports fishing should, in principle, be excluded.

### Procedure of estimfttion: the approach

2.33 The S.D.P. may be estimated by using the production approach to obtain the value added. This involves deducting intermediate consumption from gross output.

2.34 The output should be recorded at the time the catch is landed; preparations of the catch which are customarily undertaken prior to landings, such as salting, freezing, processing on fishing vessels should be included in the output. Producers' value of output hould include the cost of storage undertaken by the fishery establishments before delivery to the first purchaser.

#### **Estimates at current prices**

2.35 The estimates of quantity of output of marine fish are available from two sources, viz., (i) the Central Marine and Fisheries Research Institute (CMFRI). Mandapam and (ii) state fisheries departments. Information available from the two sources may be examined in detail before arriving at the satisfactory and reliable estimates of quantity of output of marine fishing at the state level. The wholesale prices of the various types of marine catch are also available from these sources. In the case of inland fishing, the quantity of output and prices of various varieties of fish are available with the state fisheries departments SSPs. In the case of minor marine products like sea-weeds, pearls, chanks etc., the gross output may be based on local sample surveys. Other sources for estimates of gross output of minor products may be wholesalers dealing in these products or the information on the number of persons engaged in these activities and average output per person. Average gross output per fisherman may be gathered from bench-mark censuses sample surveys, spotchecks, trade associations, government fishing authorities, etc. The estimates for salting and sundrying may be prepared on the basis of the quantity of raw fish used for salting and sundrying. The gross output of subsistence fishing may be obtained by suitable enquiries at the state level. Estimates of output of fish from ponds may be obtained on the basis of data on the area of different type of ponds and information on average gross output per unit of area. These may be obtained by sample enquiries. The information on fishery services may generally be obtained on the basis of information provided by the local fishery authorities.

2.36 The quantity of output should be valued at producers' prices. Producers' price of fish includes the cost of storage by the establishments before delivery to the first, purchaser. Price data collected from marketing organisations, wholesalers or retailers, should be adjusted for trade and transport margins. It is necessary to collect price at various points of time during the year because of the seasonal price variations.

2.37 In most cases, fish used for self consumption is not included in figures of landings. These include fish caught by fishermen and consumed by their own household or fish caught from household ponds solely fot own consumption. The estimates of such own consumption may be based on information obtained from household expenditure surveys or on data collected from local fishery authorities.

2.38 Intermediate consumption in fishing consists of use of minor spare parts for boats and other equipments, repair and maintenance of boats, nets, fishing gear, ice used for preservation of fish with the producer and communications and other services. Included also are packing materials, salt, sugar, spices and chemicals used for the processing of the products on board the fishing boats.

2.39 Estimates of intermediate consumption may be obtained on the basis of bench-mark fishery enquiries. Such bench-mark surveys may be geared to collection of information on various types of inputs in detail. Intermediate consumption for other years may be obtained by extrapolation of the bench-mark year estimates by means of quantum and price indicators. Examples of the quantum indicators are sizes and details of uses of fishing fleet for the repair and maintenance, cost of fishing nets, gross output of fish for maintenance of fishing gear and expenditure on baits, etc. The wholesale prices of different items may be used as the price indicators. In the case of minor products like gathering of pearls, seaweeds, etc., and subsistence fishing, the intermediate consumption may be estimated as an overall percentage of gross output obtained by local enquiries covering limited number of fishermen.

2.40 To get the net value added, it is necessary to deduct the consumption of fixed capital. The estimate of this has to be obtained following the principles outlined for agriculture and forestry.

#### **Estimates at constant prices**

2.41 Estimates at constant prices may be prepared by valuing the quantity of output of marine and inland water catches and subsistence fishing at base year prices. The intermediate consumption may be obtained preferably by deflating the current price estimates with appropriate price index numbers or in their absence by using the percentage rate of deductions as in the ease of current price Series. It is possible that the gross output is available only in value terms with detailed bench-mark estimates. In such a case the estimates at constant prices may be obtained by carrying forward the bench-mark estimates with appropriate physical indicators. In the absence of such bench-mark data the estimates at current prices may be deflated by the appropriate price index numbers.

## MINING AND QUARRYING

#### Coverage

2.42 The economic activities covered in this sector include extraction of minerals which occur in nature as solids, liquids and gases; underground and Surface Mines, guarries and oil wells with all supplementary activities for dressing and beneficiation of ores and other crude minerals such, as breaking. milling. washing. cleaning pelletization, grading, etc., to the extent these activities are carried on at the mine site. Production of salt by the evaporation process is to be excluded to the extent covered under manufacturing. Prospecting for minerals on a contract basis is not considered to be mining activity. The preparation of mining sites and similar works performed by other establishments on a contract or fee basis should be included in construction.

#### Procedure of estimation: the approach

2.43 The S.D.P. may be obtained using the 'production approach. This involves deducting intermediate consumption from gross outputto estimate the value added.

#### Estimates at current prices

2.44. The mining activity is divided into Iwo groups, namely, major minerals and minor minerals. In addition to the output of minerals, any small portion of self-generated electricity sold out should be included in the gross output. Electricity generated for own use need not be considered as a part of gross output or intermediate consumption; the purchased materials used in the generation of electricity form a part of intermediate consumption.

2.45 The estimates of quantity and value of output of various items of major minerals except coal and petroleum natural gas are obtained, from

the monthly returns published, on a regular basis, by the Indian Bureau of Mines (IBM). Estimates of quantity and value of output of coal, petroleum and natural gas are available with the Coal Controller and Ministry of Petroleum and Natural Gas, respectively. The value here refers to the sale value of minerals at the mine site, which may be considered as the producers' value. Data on minor minerals are collected by and are available with respective state departments. In some instances these are available only in value terms. The values of output used for measuring gross output should be exclusive of indirect taxes and inclusive of subsidies, if any.

2.46 Intermediate consumption consists of, expenditure of items like fuels, electricity, explosives and other raw materials and various services purchased from outside. Statewise and mineralwise estimates of rates of intermediate consumption/mining expenses and consumption of fixed capital for those major minerals for which the data are compiled by the IBM are prepared by the IBM on the basis of annual questionnaire on expenditure accounts of mining companies. For the remaining major minerals and for minor minerals where such estimates are not available, it should be possible for IBM or state departments of geology or other concerned departments to organise collection of such data on intermediate consumption and consumption of fixed capital.

#### Estimates at constant prices

2.47 The ideal approach would be to prepare the estimates at constant prices by the method of double deflation when both outputs and inputs are separately worked out at constant prices before arriving at the value added. This involves the availability of annual data on quantity and prices of various items of output and input. In the absence of this information, the estimates at constant prices may be prepared by revaluing the quantity of production, at base year prices wherever the quantity figures are available. In
cases where the estimates of the quantity of production are not available, the constant price estimates may be prepared by deflating the current value of production by the implicit price deflator of minor minerals. If details of quantity of intermediate consumption are not available, the intermediate consumption may be taken as proportion of the gross output; the ratio observed for the current price estimates may be used for the purpose.

#### MANUFACTURING

2.48 Manufacturing is defined as the mechanical or chemical transformation of inorganic or organic substances into new products, whether the work is done by power-driven machines or not, is done in a factory or in the workers' home, or whether the products are sold or consumed by the producers themselves.<sup>17</sup> The assembly of component parts of manufactured goods in factories, such as the assembly of automobiles, electronic goods, etc., is also included in manufacturing. The assembly and installation of machinery and equipment in the establishments of the users (owners) and the repair of machinery and equipment belonging to producers on a contract basis are also classed as manufacturing. If the assembly and installation of machinery equipment is performed as a service incidental to the sale of goods, it is included in the activity of the seller which may, be either manufacturing, or wholesale trade or retail trade. Problems may arise in distinguishing manufacturing from agricultural activities, where the processing of agricultural product takes place on farm or plantations. Efforts should be made to separate the processing from the agricultural activities and include such processing activities in manufacturing. However, some of the processing of agricultural products such as, handpounding of rice and gur making cannot be separated from agriculture and are included

therein. Under the present structural set up it may not be desirable to attempt any artificial separation in such cases.

2.49. According to the nature of organisation and availability of data, the manufacturing activity may be divided into two subsectors, viz., registered manufacturing and unregistered manufacturing. Due to the differences in the type and sources of data for the two sub-sectors, the method of estimation of state domestic product from the two sullasectors has to be different. The two subsectors are, therefore, treated separately.

#### **MANUFACTURING (REGISTERED)**

#### Coverage

2.50 Manufacturing (registered) sector should include all manufacturing and processing establishments (called factories) which are registered under section 2m (i) and 2m (ii) Of the Indian Factories Act. 1948 (IFA). Establishments registered under section 85 of TFA are, however, to be excluded. Likewise establishments, though registered under section 2m (i) and 2m (ii) but not engaged in manufacturing activities, such as those, providing water and sanitary services. recreation services, personal services (Labour Bureau code Nos. 52, 83 and 84) and those engaged in generation, transmission and distribution of electricity or manufacturing of gas in gas works or distribution of Manufactured or natural gas to domestic and industrial consumers Would be outside the scope of the manufacturing (registered) sector. Similarly, the operation of cold storage even though a manufacturing activity, should be included in the industry group, transport by other means and storage. Gur making is excluded from manufacturing and is included in agriculture. On the other hand, railway workshops, mints, ordnance factories and other similar manufacturing activities in the public sector should be included in manufacturing industry.

#### Procedure of estimation: the approach

2.51 Estimates of S.D.P. may be prepared by using the production approach. This involves deducting intermediate consump tion from gross value of output to obtain the value added.

#### Estimates at current prices

2.52 The ideal source for estimating the gross output and intermediate consumption relating to manufacturing establishments would be annual surveys covering practically all manufacturing establishments, classifying them in detail by type of industries and specifying outputs and inputs by a detailed commodity classification. The Annual Survey of Industries (ASI) provide comprehensive information on outputs and inputs of various industries on a census basis for all establishments employing more than 50 employees and using power and more than 100 employees and not using power. In the case of establishments employing 10 to 49 workers with the aid of power and 20 to 99 workers without the aid of power which are not covered in the census part of the ASI, detailed information on inputs and outputs is collected on a sample basis. Estimates of gross output, intermediate consumption, consumption of fixed capital and net value added may be prepared with as much details as possible from the results of ASI (census and sample sectors). Adjustments, however, are to be made for nonresponse in the census sector. These adjustments may be carried out either by special collection of data from the non-responding establishments or by using jointly the employment figures in the non-responding factories along with the value added per worker relating to similar responding establishments.

2.53 It has been observed that there is a time lag in detailed ASI results becoming available. When such contingency arises, the estimates for more recent years for which ASI results are not available, may be obtained with the help of specially constructed indicators of production and pricese for individual industry groups. For this, it is essential to have estimates of indices of industrial production as well as indices of prices of manufactured articles at the state level. If no such state level indices are currently available, it is desirable to initiate work on a priority basis to construct such Indices would be of considerable use to the states for other analytical studies also. However, some of the states are making their own tabulation of ASI data and also covering the sample sector on a complete enumeration basis. In the case of these states, it would he possible to use more up-to-date and exhaustive information for arriving at the estimates.

#### Estimates at constant prices

2.54 Estimates at constant prices should ideally be prepared by the method of double deflation wherein the estimates of gross output as well as intermediate consumption are separately estimated at constant prices. This Method could be adopted on the basis of the detailed quantity and value data on outputs and inputs available from the ASI. Besides the appreciable time lag in the availability of detailed reports of ASI which furnish quantity figures of inputs and outputs, the primary limiting factor in applying this method is the exceptionally large number of items under each industry group for which evaluation at base year prices is required. Also, the differences due to quality changes in such items over time and the large proportions of non-quantifiable items under total values of outputs and inputs within each industry group make it impossible to follow the double deflation method and therefore other methods have to be considered for obtaining estimates at constant, prices. One method would be to carry forward the base year's figures of net value added with the help of an index of industrial production as a physical indicator. The other method would be to deflate at the industry group level either the current values of input and output or the value added with the help of representative indices of wholesale prices pertaining to the states. For these shortcut methods it is essential to have index numbers of production or prices by various industry groups at the state level. When the quantity index numbers are of the Laspeyrs type, it would be desirable to use Paasche type price index numbers.

#### MANUFACTURING (UNREGISTERED)

#### Coverage

2.55 The unregistered manufacturing sector should cover all manufacturing and processing activities, including repair and maintenance services undertaken by household and nonhousehold small scale manufacturing units which are not registered under the Indian Factories Act. 1948. According to The 1971 Population Census, a household industry is one, which is conducted by the head of the household himself/herself and/or mainly by the members of the household at home or within the village in rural areas and only at home in urban areas. All industries not covered either under the IFA. 1948 or under household industries are treated as nonhousehold. In other words, it covers all manufacturing enterprises employing less than 10 workers if using power or less than 20 workers if not using power. Handpounding of rice, conversion of sugarcane into gur, slaughtering of animals for meat and preparation of milk products, (e.g., ghee, dahi, etc., except khoa, ice cream and channa) are treated as ancillary activities in agriculture. It does, however, include manufacturing activities like small rice mills, cotton gins and manufacture of unrefined sugar (khandsari) by pan or centifuge processes.

#### Procedure of estimation: the approach

2.56 ideal approach would be to use the value added method which involves the deduction of intermediate consumption from gross value of

output (similar to registered manufacturing sector). The adoption of this method assumes the availability of annual survey results which cover all establishments included in the sector either on a census basis or on a sample basis providing detailed information on output, input, etc., by various kinds of manufacturing activities. However, unlike in the case of registered manufacturing, such annual surveys are not undertaken on a regular basis for the unregistered manufacturing sector. Data available on this sector at best are based on ad-hoc surveys at long intervals of time. The feasible approach, therefore, would be to prepare bench-mark estimates of output, intermediate consumption, etc., on the basis of comprehensive surveys for a bench-mark year. Such bench-mark surveys most be conducted at intervals of at the most five years. To obtain annual estimates, it may then be necessary to extrapolate the results of the enquiries by less complete annual available data on some items of output, intermediate Consumption, employment, etc. Use may also be made of ratios from less frequent enquiries of input to gross output, gross output per person engaged, etc.

#### Estimates at current prices

2.57 As already mentioned, in the absence of annual sample surveys, the estimates of output, value added, etc., may be prepared for a benchmark year on the basis of results of comprehensive sample surveys. These estimates may be prepared by as many industry groups as feasible ensuring the possibility of comparison at the national and international levels. If no direct estimates of output, intermediate consumption, etc., are available, estimates may alternatively be prepared as a product of value added per worker and estimates of working force which are available on the basis of population censuses. If possible, such estimates may be prepared separately for household and non-household industries. Such benchmark estimates may be prepared at an interval of five years at its longest.

2.58 In the absence of annual data based on comprehensive survey, the bench-mark figures for gross output may be extrapolated on the basis of indicators of physical output or input or other aggregates having high correlation with them such as employment, man hours worked, etc. The figures so arrived at by using physical indicators are expressed in bench-mark year prices and must therefore be converted to current prices by means of price indices appropriate for the various kinds of activities. If price indices referring to the output of various industries are not available, the components of wholesale price indices which are most relevant to the industries in question may be used. However, it is understood that the revised index of wholesale prices will follow more closely the industrial classification and will therefore make them directly applicable to the various industry groups. When the gross output is extrapolated, the estimates of intermediate consumption for current years may be obtained by using the bench-mark ratio of intermediate consumption to gross output which implies that input-output ratio is assumed to remain the same as in the base year. Alternatively, the value added in the bench-mark year may be directly extrapolated with the indicators of production and prices by major industry groups.

#### Estimates at constant prices

2.59 The estimates at constant prices may be arrived at by moving the bench-mark year estimates by appropriate physical indicators of output, input, employment, etc. If, however, the estimates are prepared on the basis of annual data based on independent annual surveys, the estimates at constant prices may be worked out by either the method of double deflation or by using any one of the alternatives suggested in the case of registerd manufacturing industries.

# CONSTRUCTION

# Coverage

2.60 Activity covered in this industry includes construction, alteration and repair of buildings,<sup>18</sup> highways, streets bridges and culverts, railway road beds, railway roads, subways, airports and parking areas, dams, drainage, wells and other irrigation sources, water-power projects, communication systems such as telephone and telegraph lines, land reclamation, bunding and other land improvement, planting and cultivating new orchards, tea, coffee and rubber plantations and all other types of heavy construction. It also includes assembly and installation on the site of the prefabricated integral parts into bridges, storage and warehouse facilities, etc. All such construction carried out by either contractors or on own account is included.

#### Procedure of estimation: the approach

2.61 For measurement of value added from construction activity at the state level, methodology which can be followed with advantage is the expenditure approach. This approach consists of preparing estimates of gross output namely total expenditure on construction by type and taking the factor income component in the value of construction for each type as the measure of value added.

### **Estimates at current prices**

2.62 For measuring the total expenditure on construction, the economy can be divided into three broad sectors, viz., public, private enterprise (organised) and residual.

2.63 Public sector covers administrative departments and enterprises both departmental and non-departmental.

2.64 The private enterprise sector comprises non-government establishments such as all mining establishments covered under Mineral Conservation and Development Rule (MCDR), 1958. all factories registered under IFA, trading establishments<sup>19</sup> registered under Sales Tax Act of respective states, transport establishments covered under Motor. Vehicles Act. scheduled and non-scheduled (private sector) commercial banks, other financial institutions, including all co-operative banks and societies. Hotels, cinemas, etc., for which some established coverage is ensured under relevant state or Local Authority Acts and other private organised enterprises, e.g., construction companies in the corporate sector are also brought under this organised part of the private enterprise sector.

2.65 The residual sector will comprise, apart from individuals, all non-government enterprises not covered above like agriculture and allied activities, smallscale manufacttiring establishments which are not registered under IFA, transport, trading activities and personal and community services covering under unincorporated household and non-household sectors, nonprofit institutions like charitable trust, religious endowments, educational institutions, hospitals, etc.

#### **Public sector**

2.66 Construction work of the Central Government would consist of such activities by (i) administrative departments and (ii) departmental enterprises. Railways and Post and Telegraph (P&T) account for more than 90 per cent of the construction activities of the departmental enterprises Information about railway construction is available only by zones in the 'Supplement to Indian Railways-Reports and Accounts' and not by states. However, data by states can be obtained from the chief engineers of the respective railways. In the case of P&T, circlewise expenditure on construction is available with the P&T Directorate. The statistical unit of P&T Directorate can work out statewise estimates and supply them to the SSBs on request. In respect of the Central Public Works Department (CPWD). the expenditure incurred on construction is shown in the statements on appropriation accounts prepared by the State Accountant General (AGs) for each year.<sup>20</sup> These details are available with the respective zonal offices of the CPWD. The SSBs should make arrangements either with their A.G. offices or with the zonal offices of the CPWD, to get the corresponding information for their respective states. Due to lack of data, defence construction may have to be omitted from the total unless the consumption of basic materials used for defence construction within the state boundary can be used for the purpose. Whenever state breakdown of figures are required CSO should play an important role in making such data available.

2.67 Information on expenditure on construction incurred by the state governments can be culled from the budget documents. Revenue and capital expenditure incurred by the state government on construction of buildings, roads, bridges, irrigation works, reclamation of land, cofitour bunding, terracing, conservation, etc., are shown separately in budgets. Expenditure on repairs and renovations of major magnitude are given separately but for petty repairs detail are not given. In a number of cases, certain lumpsum expenditure is shown which contains also amounts spent on construction. In such cases, attempts are to be made to obtain the required details from departments concerned or from the office of the Accountant General (AG).

2.68 In the case of local authorities, the relevant information may be culled from the statements of income and expenditure which are presented in their annual accounts/ administration reports. While major corporations, port trusts, etc., should be fully covered, smaller local authorities could be dealt with through sample surveys to avoid delay in data collection for current years.

2.69 The non-departmental enterprises are autonomous bodies which prepare their annual profit and loss accounts and balance sheets. Details of expenditure on construction for these non-departmental commercial undertakings (NDCUS) (financial and non-financial) may be obtained from their annual accounts. The activities of some of the central government NDCUS, however, often extend over several states. Statewise information on expenditure on new construction and repairs for such undertakings should be obtained from the establishments located within the state boundaries.

2.70 To the extent feasible the details of total expenditure on construction by each authority/enterprise may be obtained separately in terms of material inputs, payments of wage and salaries, rent and interest so that the estimates of value added from construction can be prepared. For estimating such break-up for items of expenditure for which no details are available, details of input structure of various types of construction works may be Collected from state PWD. Similar data can also be obtained from important construction companies in cach Using such information, value added from construction may be obtained from the total value of construction.

#### Private enterprise sector

2.71 Since the corporate enterprises are generally multi-unit establishments and are registered in one place and can have, and indeed do have establishments in a number of states without preparing the corresponding establishment-wise accounts, it is not possible to obtain the state-wise estimates of capital formation or expenditure on construction or income generated by the analysis of balance sheets, and profit and loss accounts. The best way to estimate the, aggregates of value added, capital formation, etc., relevant to the construction activity undertaken within this sector is to utilise details from the ASI for the factory sector of manufacturing, IBM data on mining, and similar details for non-industrial establishments. Detailed data on value of input, output and capital formation (itemwise) relating to major mining activities; are being collected by the IBM under MCDR, 1958. These details can be obtained at the state level from the IBM. Similarly the ASI data both for the census and the sample subsectors give all the necessary aggregates at the state-level, viz., information on net additions to land, buildings, plant and machinery, etc. The estimates of expenditure on construction can, therefore, be conveniently estimated. Most of these non-industrial establishments are covered by different Acts like the Sales Tax Registration Act, for trade, Motor Vehicle Act for transport, and Shops and Establishments Act for hotels and restaurants, cinemas, etc., in at least those areas (mostly urban), where the Act is applied which supply suitable frames for sample surveys. The establishments registered under each of these Acts could be used to construct the frame for undertaking surveys at regular intervals. Estimates of total expenditure on construction and the value added by construction activity in these sub-sectors can then be estimated on the basis of the results of such periodic sample surveys. In all such surveys a special schedule, can be canvassed to collect data on input structure in the case of own account construction and the value of construction in the case of construction undertaken through contractors. These details alongwith input norms available from the construction companies should provide enough details to obtain the estimates of value added.

2.72 To avoid double counting it will be necessary to obtain details regarding the ownership of the enterprises, i.e., public or private. Effort should also be made to cross-check the estimates of building construction (nonresidential) thus obtained with the details from the municipal and panchayat records.

# **Residual sector**

2.73 Annual data on construction are not readily available for the residual sector and estimates have to be based on results of sample surveys undertaken from time to time and annual indicators of expenditure. For rural household construction, one of the major sources of information for the present is the report of AIRDIS, 1961-62 of the RBI and a similar survey undertaken with 1971-72 as the reference period and covering urban areas as well. The results give information on capital expenditure on individual items of farm business and non-farm business and residential housing. The NSSO has also conducted surveys relating to residential buildings and other construction works for the year 196L-62. For the year 1971-72 the survey conducted by RBI as well as 'Land Holding and investment Survey' conducted, by the NSSO form the basic sources of information for preparation of estimates of construction. More recent information on construction are likely to be available from two enquiries of NSS covering rural and urban areas for the year 1972-73. The enquiry on 'Current Building Activity in Rural Areas' would give detailed informationregarding construction of building in rural areas by households. Similar information for urban areas would become available from the other enquiry, viz., 'Survey on Investnient in and Financing of Building Construction, 1972-73'.

2.74 The SSBs may use the data collected in the above surveys and such other relevant information which may be available at the state level and prepare bench-mark estimates in respect of rural and urban household construction works. Estimates for other years may then be prepared with the help of these estimates and such other information on indicators of capital expenditure (for example, new construction undertaken during the year) which may be available at the state level.

2.75 For the unregistered factories, trade and transport establishments, etc., the states will have to depend on extensive sample surveys undertaken periodically (at least once in five years). A special schedule may be canvassed for such establishments to get the particulars of input structure of own account construction by types and the value of construction activities undertaken by contractors. The annual estimates should be built by using suitable indicators for the purpose.

2.76 One important source of information on urban construction for household and nonhousehold private enterprise rests in the records of the local authorities. So far as the municipalities are concerned, each authorised construction within the confines of a municipality must secure permission both at the commencement and at the completion stage. Plans have to be submitted to municipal authorities for new construction and major alterations. Generally, information on estimates of cost are not given but only the area under construction is given. These data provide a frame for further inquiry into construction costs and the period over which construction takes place. This source can yield norms of costs per unit area of construction of various types and can also yield an indicator of building activity in urban areas on the basis of built-in area for which new works have been commenced or completed. Using these, details on construction costs per unit of area and simultaneously with the information on time-phasing for completion of different types of construction works, the annual values of construction can be estimated. On the basis of this and other available details the total value of construction in residential and non-residential premises can be estimated for the urban areas.

2.77 Data on expenditure on current repairs and maintenance of construction works are not available at the state level. Some data on repairs were collected in AIRDIS, 1961-62. Similar data on repairs, including major repairs forming part of capital expenditure, has again been collected in 'Land Holdings and Debt and Investment Survey, 1971-72'. These data may be supplemented by those available independently at the state level and estimates prepared for different years.

2.78 For the measurement of value added from construction, the construction works may be classified by types such as:

- 1. Rural residential and non-residential buildings, (kutcha and pucca separately).
- 2. Urban residential and non-residential buildings (kutcha and pucca separately).
- 3. Rural and urban 'other construction and works'
  - (i) reclamation of land, bunding and other hand improvement.
  - (ii) wells masonry and non-masonry) and other minor irrigation resources, including installation works,
  - (iii) plantations and orchards.

The gross value added may he estimated from the total value of construction on the basis of proportion of factor payments (value added) in the value of output for different types of construction works. These proportions may be worked out on the basis of data available or studies conducted at the state level. While working out the proportions, due consideration should be given to the labour intensive nature of works like construction and repair of kutcha houses, reclamation of lands, bunding and other land improvements, planting of orchards and plantations, kutcha wells and other minor irrigation sources, etc. Similarly, the repair-construction in the case of pucca works will have a higher percentage of factor payments in the value of output compared to new construction. The estimates of consumption of fixed capital are to be based on the value and useful life period of assets used in construction activity. Such details need to he collected from construction companies, contractors and construction workers.

#### Estimates at constant prices

2.79 For obtaining the estimates at constant prices, deflators may be prepared for each type of construction allotting suitable weights to different input items on the basis of data available from NSSO and other sources at the state level. The total value of construction by types at current prices may then be deflated to obtain the constant price series. The value of construction in the case of items like reclamation of land, bunding, terracing, land improvements, plantations and orchards, kutcha wells, minor irrigation sources. etc., which are mostly labour intensive, may be deflated by the index of wages of rural skilled workers engaged in construction. The gross value added at constant prices may then be prepared by applying the proportion of gross value added to total value of construction at current prices in the base year, to the total value of construction (at constant prices) by types in other years. In the absence of any independent source material, the rates of allowance for consumption of fixed capital at current prices may be applied to obtain the net product at constant prices.

# ELECTRICITY, GAS AND WATER SUPPLY

# Coverage

2.80 The economic activities to be included under 'electricity' are generation and transmission of electric energy and its distribution to households and industrial, commercial and other users. In the case of gas, the economic activities are to include manufacture of gas in gas works and distribution of manufactured and natural gas through mains to households to other users. The activities relating to oil well and natural gas well operations are covered under mining; manufacturing of non-illuminating gases, production and distribution of steam for heating and power purposes are included in manufacturing and supply of gas cylinders to households belong to wholesale and retail trade. The activity of water supply would include collection, purification and distribution of water to domestic and industrial consumers. Operation of irrigation system should be included under agriculture.

## Procedure of estimation: the approach

2.81 Most of the enterprises engaged in the production, and distribution of electricity and gas and in water supply are usually either government owned or are closely regulated by government authorities. It should therefore be possible to obtain data on gross output and intermediate consumption directly from annual reports of these enterprises. Also, ASI covers these enterprises and provides information on gross output and, intermediate consumption which should make it possible to prepare estimates of SDP. To the extent such details are available, the estimation of SDP may be prepared by the value added approach which involves subtraction of intermediate consumption from the gross output. However, if such direct data on inputs and outputs are not available, the estimates of net state domestic product may be prepared by using an income approach, i.e., by measuring the factor incomes, viz., compensation of employees and operating surplus on the basis of the details available in profit and loss accounts of individual undertakings. The gross product may then be obtained by adding the consumption of fixed capital to net product.

#### **Estimates at current prices**

2.82 The ASI provides details of gross output, intermediate consumption, etc., on all these sub-sectors in respect of both public and private enterprises. Information on items of factor incomes and consumption of fixed capital can also be obtained from the individual reports and accounts of these enterprises. In the case of water supply, data on employmentand compensation of employees may also be collected from corporations and municipalities: analysis of accounts of municipal corporations should give useful data. In the past, it has been observed that, at the national level, the estimates of relevant macroaggregates obtained from the ASI in some of the years were lower than the estimates obtained independently. However, the states may examine the two sources of information before finalising the method and the source material to be used. In cases of corporations like the Damodar Valley Corporation (DVC) it may be possible that the activity of transmission will cut across state boundaries, in which case the operating surplus has to be allocated in relation to fixed assets located in the states involved. In case there is non-reporting or inadequate coverage, adjustments may be made on the basis of employment in the missed establisments and the average output/input per person employed in similar reporting establishments.

#### **Estimates at constant prices**

2.83 The estimates at constant prices may be prepared by carrying forward the base year estimates by suitable indicators separately for electricity, gas and water supply. In the case of electricity, the indicator could be the quantity of electricity produced or sold. In the case of gas, the quantity of gas produced or in the absence of which quantity of gas sold may be considered as a suitable indicator. In the case of water supply, the quantity of water supplied may be used as the indicator. If such an indicator is not available any other appropriate indicator for this activity may be used as a substitute.

# TRANSPORT, STORAGE AND COMMUNICATION

2.84 The economic activities included in this group relate to (i) transport by railways, (ii) transport by other means and storage, and (iii) communication. Transport by other means are further subdivided into different forms of transport services, (e.g., road, water and air) for estimation purposes. Since the nature of data available are different for different sub-sectors, the procedures to be followed are being discussed separately.

#### RAILWAYS

#### Coverage

2.85 Included in this sector are the activities of both the government and non-government railways. Railway workshops, printing presses and railway manufacturing establishments like Chittaranjan Locomotive Works, Integral Coach Factory (Perambur). are, however, excluded from the coverage of this sector and included under registered manufacturing. Construction including major repairs. undertaken by the railways is also excluded and included in the construction industry.

#### Procedure of estimation: the approach

2.86 This is one of the institutional sectors whose operations extend beyond the boundaries of a given state and spread over the country as a whole. Relevant records are maintained by the authorities concerned according to railway zones which are not always co-terminus with state boundaries. In the circumstances, the estimate of the domestic product for a state has to be based on an allocation of the national total on the basis of relevant indicators. The factor share approach or the distribution of the different factor payments among regions appears to be a feasible and satisfactory method. A method of this type can only be undertaken by a central agency like the CSO.

#### Estimates at current prices

2.87 The factor incomes, viz., wages and salaries, surplus and interest at the national level can be distributed between the zonal railways in proportion to (i) total cost of staff, (ii) net earnings, and (iii) capital-at-charge, respectively which are available in the Railway Board publication entitled "Supplement to Indian Railways-Statistical Statements". Based on the information furnished by some of the zonal railway offices, adjustment for salaries and wages of the headquarter staff has to be made. A breakup of the above factor incomes below the zonal railway is not feasible with the presently available statistics. Estimates of income for each zonal railway thus obtained (after adjustments offers of headquarters of zonal railways) may be apportioned into value added from passenger traffic and value added from goods traffic on the basis of gross earnings of zonal railways from passenger and goods traffic. In respect of each zonal railway the share of each of the states (falling within the zone) from passenger earnings can be obtained an the basis of the proportion of track length in the absence of data on passenger kilometers. Similarly a state's share of goods earnings may he obtained on the basis of railway sectionwise data on average net tonne kilometers available in the Railway Board. The sum of the earnings from different zonal railways for each state will represent the state's product from railways.

#### Estimates at constant prices

2.88 The total value added by railways may be conceived as consisting essentially of (i) value added by goods traffic and (ii) value added by passenger traffic. The problem of estimation of real product thus will reduce to finding appropriate physical indicators for carrying forward the values added by goods and passenger traffic eliminating the effect of changes in freight charges and passenger fares. The total 'freight tonne kilometers' and 'passenger kilometers' would suggest as the natural and anpropriate indicators.

2.89 In the first stage the real product may be worked out for each railway zone with the help of above indicators at the zonal level available in the Railway Board.

2.90 While state-wise figures of tonne kilometers can be built from the section-wise breakdown of zonal data available in the Railway Board, similar details for passenger kilometers are not available. For the preparation of statewise. estimates therefore, the zonal figures of real product from goods traffic and passenger traffic as obtained above may be allocated among the states on the basis of state-wise tonnes kilometers and track lengths, respectively.

# TRANSPORT BY OTHER MEANS AND STORAGE

2.91 The economic activities included in this industry group are (a) transport by other means, viz., road transport excluding railways, water transport, air transport and services incidental to transport, and (b) storage.

# TRANSPORT BY OTHER MEANS

# **Road Transport**

2.92 Transport by road comprises (i) mechanised road, transport viz., tramways and bus and lorry services as well as transport by other motor vehicles, (ii) non-mechanised road transpot (consisting of activities using means of transport such hackney carriages, bullock carts, ekkas, etc., and animal transport and transport by men). The supporting services to land transport include operation of highway bridges, toll roads, vehicular tunnels, parking lots, etc.

#### Water transport

2.93 Transport by water, e.g., by river, canals and sea, comprises (i) organised water transport of freight and passenger by shipping companies, and supporting services like maintenance and operation of piers, docks, pilotage, light houses and other aids in water transport and navigation, e.g., loading, discharging vessels as also operation of canals and salvaging of distressed vessels and their cargoes, and (ii) unorganised water transport relating to sailing vessels, boats, etc.

#### Air transport

2.94 This includes transport of passengers and freight by air transport corporations, private non-scheduled operators, flying clubs and gliding clubs. The supporting services consist of operation of airports flying fields and air navigational facilities such, as radio beacons, flying control centres and radar stations.

#### Services incidental to transport

2.95 These comprise forwarding, packing and crating arrangements for transport. Included also are activities of travel agencies, ship brokers, etc.

#### Procedure of estimation: the approach

2.96 The approach depends on the nature and availability of data. Broadly the state domestic product from all the above sub-sectors may be estimated by either the production or the income approach. The production approach may consist of deducting intermediate consumption from gross output or by taking the product of estimated value added per worker and the relevant working force. The income approach consists of adding the components of factor incomes in the form of wages and salaries and operating surplus.

#### Estimates at current prices

2.97 Separate estimates may be prepared for mechanised and non-mechanised road transport and organised and unorganised water transport. Estimates of gross output and intermediate consumption will essentially be based on different sources and methods of estimation for each of the sub-sectors. Sources of data are likely to be scarce for non-mechanised road and unorganised water transport and the method of estimation would be largely guided by the data availability.

2.98 For publicly owned transport units, the annual, data on output, intermediate consumption end consumption of fixed capital may be available from the reports of the government administrating agencies as well as from the accounts of the enterprises. In the private sector similar data for large-scale road and water transport units may be obtained from such enterprises by making special efforts, if necessary. For the remaining units where it is not possible to obtain annual accounts. the bench-mark estimates of gross output, intermediate consumption and consumption of fixed capital will have to be prepared first by special collection, of basic data to obtain the value added and these may then be extrapolated by using suitable indicators. The bench-mark estimates should be based on surveys undertaken at frequent intervals. Extrapolation of bench-mark estimates may be based on annual traffic statistics or indicators like Consumption of diesel oil for mechanised road transport and because of the possibility of greater homogeneity in the activities included in such categories. Such estimates are likely to be reliable if indicators of traffic movement are constructed at detailed categories. The indicators to extrapolate the bench-mark estimates may be, volume indices for passenger traffic and goods carried preferably classified according to the class of service and the average length of journey. Many of these indicators are not currently available and annual surveys may be necessary to get the information. Weighted price indices (changes in freight rates and passenger rates) for each type of traffic need be estimated in order to arrive at current price estimates. These indices may he built up from the information on freight and passenger rates classified according to the type of carrier, route and distance travelled.

2.99 While extrapolating intermediate consumption, and consumption of fixed capital, berich-mark input-output relationship may be adjusted to obtain current year estimates on the basis of trends in the value of intermediate consumption and consumption of fixed capital from special enquiries addressed to associations of enterprises in each sub-sector or from the trends observed in the public sector for similar types of transport or from some current enquiries on cost structure.

#### Mechanised road transport

2.100 The estimates of SDP from this subsector may be prepared separately for (i) transport by tramways and bus services and (ii) transport by other motor vehicles. Annual estimates of gross output, intermediate consumption and consumption of fixed capital may be worked out separately for enterprises in public and private sectors. For the public sector such data are available from their annual reports and profit and loss accounts. In the absence of relevant data on private sector, the alternative approach may be to prepare the corresponding estimates as a product of value added per worker (as observed in the public sector) and the working force in the sector. This implies the assumption of same per worker value added both in public and private sectors which may not be true. Independent data by ownership should therefore be collected throwing light on this differential. Working force in the

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public sector can be obtained from either the undertakings themselves or from the annual data on employment. For census years; the working force in the private sector can be obtained as a residual and yearly estimates of working force may be prepared on the basis of suitable physical indicators like the number of vehicles.

#### Non-mechnised road: transport

2.101 The estimates of output and cost structure of this sector may be available only from ad-hoc sample surveys. Estimates of SDP may therefore be prepared for a bench-mark year on the basis of such surveys. If such surveys are not available approximate estimates have to be prepared on the basis of information on number of units or persons engaged from registers of licences or labour force and employment survey coupled with information on output per employed person worked out from small sample or type studies of the units. The annual estimates may be obtained by extrapolation of bench-mark estimates with the help of suitable indicators, such as trends in number of carriers, employment, or in the extreme case using the marketed part of the gross output of agriculture, mining and manufacturing, which accounts for the major share of the commodities transported. Relevant price indices may be used to adjust estimates for changes in transport charges.

#### Organised water transport

2.102 The estimates may be prepared by income approach by adding components of factor incomes on basis of the data available from the profit and loss accounts of shipping companies and budgets of central and state governments. The problem of apportionment of the product will arise in the case of shipping companies operating in more than one state as the accounts are available only in a. consolidated form. This apportionment may be done on the basis of suitable indicators like passenger and freight carried, at the ports of the state or number of employees in the state. The compensation of employees and rent<sup>21</sup> may, however, be estimated from the records at the state level and the apportionment may be needed for only the rest of the operating surplus.

#### Unorganised water transport

2.103 The estimates for this activity may be prepared separately for (i) unorganised inland water transport and (ii) unorganised sea transport, by extrapolation of bench-mark estimates. The estimates for the bench-mark year as well as the indicators needed for extrapolation may be arrived at in the same manner as those relating to non-mechanised road transport.

# Air transport

2.104 Estimates may be prepared by an analysis of individual accounts of air transport companies. However, the activity of scheduled and non-scheduled operators in air transport is spread all over the country, and the accounts will usually be available in a consolidated form. The total product thus derived from consolidated accounts may be apportioned on the basis of indicators relating to the intensity of the activity in each state. In case the estimates of factor incomes like employees' compensation and rent can be prepared from the accounts maintained by the operators in each state, the rest of the value added need only to be obtained by allocation of the all-India estimate. The relevant indicators may be employment, volume of freight and passenger transport originating at the airports, etc.

#### Service incidental to transport

2.105 The estimates for these services may be prepared by obtaining figure for a bench-mark year first and then by extrapolating bench-mark estimates of value added or gross output and intermediate consumption by the use of indicators of physical output like employment and appropriate price/wage indices. The bench-mark estimate may be obtained either by sample surveys at the state level or by using information on the number of units or persons engaged coupled with information on gross output/net product per person obtained from small samples or local enquiries. In the absence of employment data as an indicator, the bench-mark estimates may be moved by assuming that the movement of gross output or the net product of these services is the same as of the units they serve. Similarly in the absence of price data on these services, the wage and salary rates of the related industries may have to be used.

# Estimates at constant prices

2.106 In all the sub-sectors, the estimates at constant prices may be obtained by moving forward the base year estimates on the basis of physical indicators relating to the intensity of the activity. In general, the combined indices of volume of passenger and freight transported by road, water and air will form the indicators for moving forward the base year estimates. These indicators need be prepared for, all the sub-sectors separately. Thus, for example, the cargo handled by sailing vessels for unorganised transport by sea and employment for services incidental to transport, may be used as indicttors.

#### STORAGE

# Coverag

2.107 The economic activities included in storage relate to warehousing, cold storage, furniture repositaries and safe deposits when such facilities are offered as independent services and can be separated from other operations.

# Procedure of estimation: the approach

2.108 The SDP may be estimated by produc-

tion or income approach. The production approach involves deductions of intermediate consumption from gross output thus arriving at the value added. The income approach consists of adding factor iacomes in the form of compensation of employees and operating surplus obtained from the accounts of the enterprises.

#### Estimates at current prices

2.109 Gross output of storage is the value of the storage service rendered to other domestic producers and housholds. The preparation of estimates may be considered sepately for state warehousing corporations, cold storage and other storages. In the case of warehousing corporations, the data on factor incomes and consumption of fixed-capital can be obtained from their annual reports and the estimates can be prepared by following the income approach. ASI covers the large cold storage establishments in their annual surveys. Estimates of gross output, intermediate consumption, consumption of fixed capital, employment, etc., for such cold storage will be available from the results of these surveys.

2.110 In the case of the remaining part of the cold storage, and other storages, the estimates of gross output and intermediate consumption, etc., have to be prepared on the basis of special surveys conducted at the local level to prepare estimates of value added for a bench-mark year. If such surveys do not cover all establishments either on a census or a sample basis, the estimates may be prepared as a product of the estimated working force and the value added per worker obtained from the surveys. The employment estimates may be obtained by adjusting the census working force for employment in warehousing and cold storage already considered. Estimates for other years may be obtained by carrying forward the bench-mark estimates by extrapolating the employment and the value added per worker. The extrapolation

may be made on the basis of growth rates obtained in the other storage activities or other direct indicators.

#### Estimates at constant prices

2.111 The estimate for the base year may be extrapolated with the help of index of volume of comodities stored in the warehousing corporations.

# COMMUNICATION

#### Coverage

2.112 Covered under this sector are the activities of P&T and Overseas Communication Service (OCS). The activities of P&T relating to post office saving bank, cumulative time deposit accounts, defence and national saving certificates and postal life insurance are however, excluded and included under the industry group 'banking and insurance'.

#### **Procedure of estimation: the approach**

2.113 This is one of the institutional sectors whose operations extend beyond the boundaries of a given state and spread over the country as a whole. Relevant records are not, generally, maintained by the authorities concerned according to state boundaries. In the circumstances, the estimation of the domestic product has to be by the method of allocation of the national total by regions on the basis of relevant indicators. Factor shares approach or the distribution of the different factor payments between regions appears to be the most convenient method

# ESTIMATES AT CURRENT PRICES

#### **Posts and Telegraphs**

2.114 The circle-wise break-down of wages and salaries, capital expenditure and gross

receipts and gross expenditure are available with the Accountant General, Posts and Telegraphs (AGP&T) Delhi. The estimates of compensation of employees for the country may be distributed among the postal circles on the basis of data on wages and salaries of P&T staff. The interest can be allocated in proportion to circle-wise figures of cumulative capital expenditure. The circlewise differences between gross revenue receipts and expenditures may be used as the indices to allocate the surplus estimated at the national level. The estimates of factor payments thus worked out are aggregated to obtain the circle-level estimates of domestic product. In case where a circle is not coterminus with state boundary, the estimate of the circle may be allocated among the states comprising it to yield the domestic product for the states within that circle by using the estimates of working force. For he purpose, the working force may be engaged in the activity projected on the basis of employment data available from EMI to obtain the corresponding estimates for the mid vear.

#### **Overseas Communications Service**

2.115 The requii-ed information relating to wages and salaries and developmental expenditure are available with the Director General, OCS, Bombay. The estimate of compensation of employees of OCS in net national product can be distributed between states on the basis of centre-wise data on wages and salaries paid. Interest payments May be distributed in proportion to the cumulative developmental expenditure in the respective centres. Since data on investment are not available by centres the surplus may be allocated to the states in proportion to their total share in compensation of employees and interest.

#### Estimates at constant prices

2.116 Estimates of real product from communication at circle level may be obtained by

carrying forward the base year figures with the help of a combined indicator pre pared using different physical measures of output. These indicators are, for example, total number of postal articles, total number of inland and foreign money orders total number of telegrams and total number of telephones. The respective weights for constructing the combined index may be the corresponding receipts from these activities in the base year. The circle-wise information in physical terms is available in the office of the Director General of Posts and Telegraphs (DGP&T) while the revenue receipts for the corresponding activities have to be obtained by an analysis of details in the annual budgets of the P&T department, which will give the figures at the national level. The estimates at the national level thus obtained may then be allocated to the circles on the basis of the physical indicators considered earlier.

2.117 As for the allocation of the circle-wise estimates at constant prices among states comprising each circle, a procedure analogous to the one followed for allocating the current price estimates may be adopted.

# TRADE, HOTELS AND RESTAURANTS

#### Coverage

2.118 The activities included in this industry group are wholesale and retail trade, restaurants, cafes and other eating houses, hotels, camps, boarding houses and other lodging places. These may be broadly grouped as (i) trade and (ii) hotels and restaurants.

2.119 Wholsale trade covers the activities of reselling without transformation of new and used goods to retail tradrs, industrial, commercial, institutional or professional users, or to other wholesalers. Also included are the activities of enterprises acting as agents in buying and/or selling merchandise and the sales branches of manufacturing and mining establishments. Wholesaler may frequently assemble, tort or grade goods in large lots, repack, bottle and redistribute in smaller lots, refrigerate and install goods. Government agencies such as 'government stores', 'medical stores', etc., which purchase and supply goods to government services are included in wholesale trade. Marketing boards and smaller units operated by government or co-operative organisations are also included.

2.120 Retail trade covers units which mayresell without transformation new and used goods for intermediate consumption or final use. Renting of goods for personal or household use except the amusement and recreation goods like cycle, boat, motorcycle, etc., is included. Renting of goods used for purposes of recreation is covered in personal services. Repair and installation services rendered by the retailer are included. Where retail trade is combined with other activities like cooking and sale of food or manufacturing, the entire activity may be classified as that which accounts for most of the output when it is impossible to treat the activities separately, i.e., as if they are activities of separate establishments.

2.121 Activities under hotels and restaurants include services rendered by hotels, boarding houses, eating houses, cafes and restaurants Camping and lodging facilities on a fee basis are also included. Lodging facilities provided by enterprises and government as well as canteens in plants, offices and clubs are also classified here if the details of these activities can be separated.

#### Procedure of estimation: the aproach

2.122 Gross output in the distribution industries is to be valued at the gross margins realised on the sale of goods in the same condition as they have been purchased, that is, the value; of sales at the distributive trading unit, reduced by the delivered cost of the goods to the unit. Gross margins may be exclusive of commodity taxes. In the case of the goods lost by wastage or similar other reasons, the value of goods at cost should be deducted from gross trade margins. The gross output of the transport services may be included in gross trade margins only if these services are provided by the wholesaler/ retailer himself and it is not possible to separate these activities. The gross output of restaurants and hotels includes the purchaser values of meals and drinks sold and fees received for lodging, etc.

2.123 Domestic product from this sector May be estimated by production and income approach. Production approach will consist of estimating the gross value added either by subtracting intermediate consumption from gross output or as a product of value added per worker and the working force. Income approach which consists of estimating compensation of employees and operating surplus may be used in the case of such trading companies whose profit and loss accounts and balance sheets are obtainable.

2.124 Data on activities of establishments of unorganised nature covered under tins group are usually available from occasional or ad-hoc surveys and type studies. The procedure of estimation may thus consist of preparing bench-mark estimates for the year for which such information is available and extrapolating these by means of small-scale annual surveys or in the absence of which, with the help of suitable indicators of production and prices.

#### **Bench-mark estimates**

2.125 The bench-mark estimates may be prepared on the basis of the results of largescale surveys covering the trading activities and giving information on value of goods sold in the same condition as purchased, purchase value of such goods, value of various items of intermediate consumption and consumption of fixed capital. If such surveys are undertaken at regular intervals, the gross trade margins (the gross output) and the intermediate consumption (in the form of packing materials, chemicals, etc., wastages, services purchased, e.g., transportation and warehousing charges, etc.) estimated from the surveys will provide bench-mark figures of value added at regular intervals. However, such detailed distributive trade surveys, are yet to be undertaken either at the national level or in most of the states.

2.126 In the absence of a readily available frame for such comprehensive surveys for the sector, the bench-mark surveys may alternatively be undertaken of establishments which are covered under Sales Tax Registration Acts. A large number of wholesalers, retailers etc., are covered through the turnover limit for purposes of sales tax registration which is likely to differ somewhat between states. These registration records may therefore form a suitable frame for undertaking periods sample surveys which should aim at preparing estimates of income generated in these establishments and collect data on gross turnover, value of inputs, employment, etc. However, in this case it will be necessary to obtain independent estimates of trading activity not covered under the Sales Tax Act and independent sample surveys will have to be organised. Such bench-Mark estimates obtained on the basis of large-scale surveys of either all trading establishments or establishments registered under the Sales Tax Act can then be interpolated/extrapolated for other years using sales tax turnover as an indicator.

2.127 Till results of such surveys become available the estimates may have to be pre pared by other indirect metnods or on limited data on the subject. Thus, the estimates may be prepared separately for corporate and non-corporate sectors. In the case of the corporate sector, the estimates may be obtained by analysing the profit and loss accounts of joint stock companies operating within a state. In case, only a sample of these companies are analysed, the sample estimates may be blown up using the ratio of total paid-up capital of undertakings functioning within the state and the paid-up capital of the sample companies. For companies operating in more than one state, the share of each state in total income may be determined by estimating the compensation of employees and rent paid by the establishments in each state and distributing the rest of the, operating surplus in proportion to compensation of employees or the amount of goods handled.

2.128 The non-corporate sector may he further divided into income-tax paying and non-income tax paying entrepreneurs. For the income tax paying entrepreneurs the business income assessed to income tax may be available from statewise income tax statistics. Income of the corporate sector has to be excluded to arrive at the product due to income tax paying entrepreneurs in the non-corporate sector. For non-income tax paying entrepreneurs the estimates may be prepared as a product of working force and value added per worker. The value added per worker may be estimated frdm sample surveys of establishments in this sub-sector. The working force may be obtained on the basis of information available from the population censuses after necessary adjustment for employment in the corporate sector and the income tax paying noncorporate establishments.

2.129 The estimates of consumption of fixed capital may be based on the profit and loss accounts of the trading companies and the results of the surveys for the non-corporate sectors.

# Estimates at constant prices

2.130 Bench-mark estimates may be extrapolated to other years on the basis of a specially constructed indicator of gross trading income to arrive at estimates at constant prices. Estimates of gross trading income may be prepared for traded commodities as a product of marketed surplus and the trade margins. As already stated, the trade margins may not be separable from transport margins in the case of some commodities in agriculture, livestock, fishing and forestry sectors. In such cases the total may be considered as the trade margin.

2.131 The estimates of trade margins and marketed surpluses should be revised from time to time depending on the availability of data from fresh surveys. A commodity-wise price analysis covering from the production to the retail stage could throw some light on shifts in trade margins.

#### **Estimates at current prices**

2.132 The ideal method would be to obtain information on gross output, intermediate consumption, etc., annually by comprehensive surveys. In the absence of such surveys it would be necessary to employ the method of using jointly the quantities of marketed surplus by commodities and current trade margins. This method needs organisation of two simultaneous surveys every year which will permit estimation of the proportion of marketable surplus by items and trade margins Generally such annual information is not available in most of the states.

2.133 The estimates at current prices may therefore be prepared by adjusting the constant price estimates with the changes in price index numbers of different commodities, If price indices are not available at the state level, these may be worked out on the basis of annual change in the prices of selected items at the state level and weighted in relation to transactions in the states. In the extreme case where no such method can be followed, the all-India wholesale price indices or implicit price indices of consumption expenditure at the state level may have to be used for the time being.

# **BANKING AND INSURANCE**

#### Coverage

2.134 The sector covers commercial banks banking department of the Reserve Bank of India, insurance activities of all kinds and other financial institution such as stock exchanges, loan, investment, hire purchase, chit fund and other non-banking financial companies, industrial development and financial corporations, activities of the P&T department relating to the post office savings bank, cumulative time deposit accounts, National Savings Certificate and Postal Life Insurance (PLI) and Cooperative Credit Societies such as, primary agricultural and nonagricultural credit societies, grain banks, primary land mortgage banks, supervisory unions, central credit societies, industrial cooperative banks and state cooperative banks.

#### Procedure of estimation: the approach

2.135 This is one of the institutional sectors whose operations extend beyond the boundaries of a given state and spread over the country as a whole. Relevant records are not generally maintained by the authorities concerned according to state boundaries. In the circumstances the estimate of the domestic product has to be by the method of allocation of the national total by regions on the basis of relevant indicators. The factor share approach or the distribution of the different factor payments between regions appears to be the most convenient method here.

#### Estimates at current prices

2.136 At the national level, estimate of income from banking and insurance sector is estimated separately for activities relating to (i) commercial banks, (ii) banking department of RBI, (iii) saving bank and other deposits in post offices, (iv) non-banking financial companies, (v) State Financial Corporations, (vi) Industrial Finance corporations (IFCs), (vii) Unit Trust of India (UTI), (viii) Cooperative credit societies, (ix) life insurance, (x) postal life insurance, and (xi) fire, marine and miscellaneous insurance. The estimates at the national level have to be allocated to the states on the basis of relevant indicators. Formulation of indicators for allocation should primarily be governed by the type of data available and these are different for different sectors, for different activities within the same sector as well as for different types of factor payments.

#### **Commercial banks**

2.137 The estimation may be based on measurement/allocation of factor shares. Wages and salaries may be distributed on the basis of employment in commercial banks. Statewise estimates of directors' fees can be worked out by analysing balance sheets of scheduled banks. Estimates of operating surplus may be obtained by distributing the national figures on the basisr of loans and advances of scheduled banks.

# Life insurance

2.138 The Life Insurance Corporation of India (LIC) provides data on statewise employment and zone-wise payment of salary to staff and the net premium income. Wages and salaries may be distribilted on the basis of salary payment/employment and income arising from commission paid to insurance agents and surplus may be distributed on the basis of zone-wise net premium income.

### **Cooperative credit societies**

2.139. The statewise data relating to wages and salaries and surplus and other expenses are readily available in "Statistical statement relating to cooperative movement in India" published annually by the RBI.

## **Banking department of RBI**

2.140 Direct data on wages and salaries and rent by states are available from the RBI. The operating surplus may be distributed on the basis of deposits with RBI of banks, central and state governments and other bodies.

#### Saving bank and other deposits in post offices

2.141 The net income may be distributed on the basis of the figures of small savings in post offices obtained from the Ministry of Finance, Government of India.

#### Non-banking financial companies

2.142 Statewise data on paid up capital of non-banking financial institutions as obtained from the Company Law Board may be used as an indicator for allocation of the national estimates.

#### State financial corporations

2.143 Statewise estimates may be obtained by analysing the balance sheets of state financial corporations.

#### **Industrial Finance Corporation**

2.144 Direct data on rent and wages and salaries by states are obtained from IFC. Operating surplus may be allocated on the basis of statewise loans and advances made by the IFC.

# **Unit Trust of India**

2.145 Statewise data on wages and salaries are available from the UTI. The operating surplus may be allocated between states in proportion to investment made by UTI in different states.

# Postal Life Insurance.

2.146 Data on - wages and salaries are obtained

statewise from the office of postal life insurance. The proportions of wages and salaries may be used to arrive at the domestic product at the state level.

#### Fire, marine and miscellaneous insurance

2.147 Factor incomes from fire insurance may be distributed states on the basis of income from property, business and professions assessed to income-tax. The net value added from marine insurance may be distributed between states in proportion to the value of exports through different sea ports, and the corresponding national measure from miscellaneous insurance activities may be allocated in proportion to the number of vehicles taxed every year.

2.148 In the absence of data on consumption fixed capital at the state level, these estimates may be obtained by using the same rates as at the national level.

#### Estimates at constant prices

2.149 As in the case of current price estimates, the estimates at constant prices are to be obtained separately for each of the sub-sectors.

2.150 For banks and insurance, the volume of activity at corrent prices is given by a value flow like deposits, advances, premium income, etc. The net value added in real terms, under the circumstances, can either be obtained by deflating these value flows by some price index numbers or by appropriately deflating costs involved in provision of the services. While the former approach has been recommended, the Committee is conscious that real measurements that emerge are somewhat nebulous in character. It is, therefore, necessary to try also the cost approach as well as to think about more well defined indicators of real output. In the absence of such indicators, in the case of commercial banks, the estimate of net value added at constant prices may be obtained by carrying forward the base year figures using the annual deflated values of total deposits and advances of banks. The total deposits and advances may, for the purpose, be deflated by the index of wholesale prices. Alternatively, the volumes of credit and debits 45 (deflated) may be used as the indicator. For Life Insurance, the premium income duly deflated by the consumer price index numbers may be used as a physical indicator to carry forward the base year estimates. As for Cooperative Credit Societies, a physical indicator such as, membership of cooperative societies may be thought of. This, however, has the disadvantage that the membership may tend to remain static after some time. It, therefore, seems preferable to utilise the volume of agricultural credit duly deflated by consumer price index number as the appropriate claflator. For the remaining sub-sector, for which, appropriate state level deflators are not available, the detailed estimates for each state for the three major subsectors (as obtained above) may be used to provide an implicit indicator, for the real product. However. as will be obvious. the deflators/indicators suggested for the major subsectors are not satisfactory and have to be used only in the context of present availability of data. It might be desirable to use relevant physical indicators as and when availability of data permits any such switch over.

2.151 Imputed service charges accruing to the banks also need to be estimated and the same allocated to various industries and households. These need to be deducted from the respective industries to avoid double counting. However, at the national level a deduction is made for manufacturing (registered) sector only. For other sectors like trade and transport, since the estimates are prepared following the income approach such deduction is not necessary. Imputed bank charges of registered manufacturing sector at all-India level are allocated to various states in the same proportion as the state domestic product bears to the corresponding all-India estimates (gross of imputed bank charges).

# OWNERSHIP OF DWELLINGS AND REAL ESTATE, AND BUSINESS SERVICES OWNERSHIP OF DWELIEJCS AND REAL ESTATE

# Coverage

2.152 Ownership of dwellings encompasses letting, management and operation of all residential dwellings whether owner occupied or tenant occupied. It excludes all non-residential buildings, the rent originating in these buildings being included in the sectors where these assets are being used. The activity of real estate should include the purchase, sale, letting and operating of real estate such as residential and nonresidential buildings. It also covers leasers of real property, real estate agents, brokers and similar establishments engaged in renting, buying and selling, managing and appraising real estate on contract or fee basis.

# Procedure of estimation: the approach

2.153 Estimates of S.D.P. from ownership of dwellings should be prepared by production approach which consists of deducting intermediate consumption from the gross output. The gross output in this case is the gross rental. The gross rental should cover all payments received for the use of the dwelling and its integral services like gas, electricity and telephone where these are included in the rental. The imputed rent of owner occupied dwelling, should in principle be equal to rent paid in the market for similar dwellings. In the absence of data on market rents, the imputed rent for owner occupied dwellings may be estimated as the sum of expenditure on the operation and maintenance of the dwellings such as repairs and maintenance, insurance charges, taxes, consumption of fixed capital and interest on borrowed capital and own funds invested.

2.154 The gross output of establishments which manage and operate, arrange and negotiate sales and purchases, appraise, subdivide and develop real estate on account of others consists of grossw fees and commissions they receive for these services. Intermediate consumption consists of stationery, office appliances, minor repairs and maintenance of machinery, building and transport equipment, communication, and miscellaneous services and travel expenses.

2.155 Estimates of SDP for real estate may be prepared following either the production or the income approach. The production approach here will consist of estimating the SDP as a product of working force and the value added per worker. Income approach will imply aggregation of factor incomes in the form of wages and salaries and operating surplus from the accounts of the companies dealing in real estate.

#### Estimates at current prices

2.156 In the case of ownership of dwellings the number of census dwellings available for census years may be extrapolated for other years on the basis of suitable growth patterns of the number of dwellings. For urban areas, permits issued for completed dwellings annual similar controlled records may provide annual information on trends in the number of dwellings.

2.157 The bench-mark estimates of gross rental per census dwelling may be estimated for the census year separately for urban and rural areas on the basis of number of census dwellings and the gross rental estimated through municipal and village panchayat records. Alternatively special surveys may be undertaken, to estimate gross rental. The s estimates for subsequent years can be prepared on the basis of annual change in rental observed from the records of relevant authorities. Alternatively a suitable indicator depicting change in average rental may be used to extrapolate bench estimates.

2.158 Since dwellings as defined in census and municipal records are not synonymous, the following procedure may be followed to estimate gross rental per census dwelling from administrative records providing data on number of municipal houses, amount of tax collected, annual assessed rent and expenditure on repair and maintenance, etc. First, per capita gross rental for urban municipal areas need to be estimated using the total gross rental of the municipalities for the census year and the census urban municipal population. The product of per capita gross rental and the urban population then gives the total gross rental for urban areas. Using urban census dwellings along with this estimate, the gross rental per census dwelling may be estimated. The gross rental per rural dwelling may be estimated similarly by using rental data available from village panchayats. In the absence of such data, special surveys need be undertaken for the purpose.

2.159 Estimates of repair and maintenance of dwellings may be prepared for urban areas on the basis of municipal data. Consumption of fixed capital may be estimated by using data on average value of the dwelling and its average life. The average value of the dwellings may be estimated on the basis of costs of labour and purchased material used in construction. Both for rural areas and urban areas the estimates of repair and maintenance cost and consumption of fixed capital may be prepared by using the results of either the AIDIS or specially conducted surveys.

2.160 Estimates of value added by real estate operations may be prepared separately for organised and unorganised parts of this sector. For the organised part consisting of public and private joint stock companies, the value added may be estimated as the total of the factor incomes and consumption of fixed capital available from their individual profit and loss accounts. In case the accounts are available for only a limited number

accounts are available for only a limited number of these companies, the estimate of the product may be blown up on the basis of the total paid up capital and that observed in the sample.

2.161 For the unorganised part consisting of registered and unregistered real estate companies with unlimited liability and house agents, the SDP may be estimated as a product of estimated working force and value added per worker. Bench-mark working force in this category may be estimated by using census working force and the employment in the organised part. Value added per worker in the benchmark year may be estimated on the basis of special surveys of establishments dealing in real estate. For subsequent years, the value added per worker may be estimated by extrapolating the benchmark estimate with the help of an indicator based on gross rental.

#### Estimates at constant prices

2.162 The estimates at constant prices may be prepared by moving forward the base year estimates on the basis of an indicator of change in the number of dwellings. Allowance for intermediate consumption and consumption of fixed capital may then be made by using the base year input/output ratios.

# **BUSINESS SERVICEs**

#### Coverage

2.163 This subsector includes 'business services', provided on fee or, contract basis such as accounting, auditing and bookkeeping services, data processing and tabulation services, engineering, architectural, development, testing and other technical services, advertising, commercial art work and market research services, and other business services not elsewhere classified. Such services provided by the employees of units engaged in manufacturing, construction, etc., are not classified here but under the main activity of the enterprises.

#### Procedure of estimation: the approach

2.164 The estimates may be prepared by using either the production or the income approach. Production approach may consist of deducting intermediate consumption from gross output or taking product of the working force and the value added per worker. Income approach will consist of adding factor incomes in the form of wages and salaries and operating surplus.

#### Estimates at current prices

2.165 Gross output of business services is equivalent to the gross receipts of establishments and the individuals following the activity. Intermediate consumption consists of office supplies, communication, transport and materials, repair and maintenance and profesional costs. The annual data on output and intermediate consumption will not be available for this sector except for the joint stock companies located within the regions. For these companies factor incomes and consumption of fixed capital may be obtained from the analysis of their annual reports giving profit and loss accounts and balance sheets.

2.166 The estimates for the remaining part may have to be prepared separately for urban and rural areas as a product of value added per worker and the working force. The estimates of value added per worker for rural and urban areas may be prepared, on the basis of extensive data on employment, output, intermediate consumption, consumption of fixed capital, for a benchmark year. These estimates may be moved to other years on the basis of index numbers of wages. 2.167 Yearly estimates of urban and rural working force may be prepared by extrapolating the census working force on the basis of suitable indicators of employment or on the basis of annual growth rates observed between censuses. Urban working force in the unorganised pact of the subsector may be obtained by deducting the employment in joint stock companies from the census based total.

#### Estimates at constant prices

2.168 Estimates of domestic product obtained in the base year may be moved forward with the help of a physical cost indicator such as working force in this activity. In the case of joint stock companies, the current price estimates may be deflated by index number of wholesale prices, to obtain the constant price estimates.

# PUBLIC ADMINISTRATION

#### Scope

2.169 The industry group includes (i) state government administration and local bodies and (ii) central government administration.

# STATE GOVERNMENT ADMINIS-TRATION AND LOCAL BODIES

#### Coveage

2.170 The services included in public administration pertain to administrative departments of all public authorities which comprise state government, municip corporations, municipalities, district and local boards, village panchayats, improvement trusts, housing boards and other local bodies. However, the services rendered by the administrative departments which by their nature belong to other industrial activities are excluded. These services related to education, medical, public health, water supply, sanitary services and construction. The services rendered by the departmental commercial enterprises such as forests, road and water transport, electricity schemes, ports and pilotage civil aviation, light houses and light ships, irrigation and manufacturing industries are also excluded and are included in the appropriate sectors. This sector covers, therefore, the expenditure on collection of taxes, administrative services, such as police, justice, jails, audit, pensions and other retirement benefits, famine relief, social and developmental services such as scientific departments, rural development, cooperation, community development projects and labour and employment.

#### Procedure of estimation: the approach

2.171 The services produced by government administrative departments are for selfconsumption and are not meant for sale and hence the element of operating surplus does not exist. The value of product is, therefore, estimated in terms of compensation of employees only. For want of data on capital consumption on assets like office buildings, machinery, etc., used for administrative purposes the estimates for gross and net product are taken to be the same.

#### Estimates at current prices

2.172 The estimates of net value added from government services of the state governments and local authorities are estimated from the information on wages and salaries and other remunerations contained in the budget documents of the state governments and local bodies.

2.173 In the case of local authorities, the budget documents and the annual reports giving the financial transactions of these bodies, in many cases, may not give the essential break-up of the expenditures into various components and as a result it may be difficult to work out the estimates of value added. Moreover, there may be the problem of time lag in the availability of data in regard to these agencies. These problems have to be sorted out at the state level in the best possible manner, keeping in view the type and nature of the local body as also the availability of data. Special type studies/surveys may have to be conducted and projections made on the basis of relevant indicators.

2.174 Wages and salaries include the pay of officers, the pay of establishment, allowances and honoraria (other than travelling allownnce) and also wage payments to contingent staff employed by administrative departments. The compensation of employees should, in addition to wages and salaries, include expenditure on rations to police personnel, superannuation and retirement allowances, gratuities and commuted value or pensions. However, governmental expenditure on family pensions, pensions for meritorious services, compassionate allowances and political and, old age pensions, etc., are not to be treated as compensation of employees.

2.175 Estimates of domestic product should be prepared and presented separately for (i) state government and (ii) local bodies consisting of municipal corporations, municipalities, improvement trusts, village panchayats and other local bodies.

2.176 Data on wages and salaries are to be culled out from the budget documents. In public financial statements more detailed information is often available in respect of 'budget estimates' or 'revised estimates' than in respect of the 'account'. In such cases, the actual expenditure on various items presented in 'accounts' may be allocated on the basis of information available in the "budget' or 'revised estimates' of the relevant year. Efforts may be made in the first instance to get the necessary break-up of the expenditure from the concerned departments. Budget documents do not show details of expenditure on 'plan schemes' in a number of cases. Efforts may be made in such cases to obtain data on wage component of these schemes, from the relevant departments.

# Estimates at constant prises

2.177 The estimates at constant prices are to be prepared by removing the effects on the exchequer due to the periodic revisions in the pay scales, dearness allowance and other compensatory allowances. The SDP from government administration constant prices should, therefore, be prepared by making adjustments, each year, for changes in the rates of pay and dearness allowances (other than travelling and daily allowance) of governmentemployees in relation to those in the base year. The information available in this regard with the finance departments of the state governments is to be utilised for the purpose.

#### **Central Government administration**

2.178 The activities included in this sector are the administrative departments of the central government located within each state and the issue department of the RBI. Besides excluding the services rendered by the administrative departments which can be classified in other industrial sectors, some activities of special nature of the central government are excluded for the purposes of the estimates of SDP. These activities are Defence Services, Border Security Force, Central Reserve Police, Armed Police Constabulary, embassies and high commissions abroad, charges in England and Union territories.

#### **Procedure of Estimation: the approach**

2.179 As in the ease of state government administration, the domestic product from this sector may be estimated in terms of compensation of employees. However, the operations of central government extend beyond the boundaries of a given state and are spread over the country as a whole. The estimates of SDP may, therefore, have to be obtained by a method of allocation.

#### Estimates at current prices

2.180 Statewise estimates of income from this sector may be obtained by the analysis of A.G. Circle-wise details from offices of Accountant General contained in the 'Demands for Grants' of the central ministries. The national estimates may then be allocated to the states on the basis of the proportion observed in this analysis.

#### Estimates at constant prices

2.181 At the national level, the estimates of net value added at constant prices from administrative dapartments of the central government are obtained by adjusting the current price estimates for changes in the rates of pay and allowances of the employees between the current year and the base year. Extra expenditure on pay and allowances due to the revisions in their rates is deducted from the total compensation of employees to arrive at the total componsation of employees at base year prices. The required information is collected either dirtly from the Ministry of Finance or from the budget documents of individual ministries. The central government employees are paid dearness and other compensatory allowances on a uniform pattern irrespective of their place of duty. The current price estimates of SDP may therefore, be deflated using the same proportion as observed for the central government as a whole for estimates at the national level.

# **OTHER SERVICES**

#### Coverage

2.182 The activities covered in this sector are (i) education and research services, (ii) medical and health services, (iii) religious and other community services, (iv) legal services, (v) recreation and other entertainment services, (vi) personal services comprising domestic services, laundries, cleaning and dyeing, barbers and beauty shops and other personal services, (vii) sanitary services (comprising garbage and sewage disposal including the operation of drainage system) and (viii) services not covered elsewhere or inadequately described. All such activities operated in public, corporate or household sectors are included.

2.183 Educational and Research services cover government and private educational institutions of all types. This includes universities: colleges, primary and secondary schools, technical, vocational and commercial schools, music, dancing and other art schools and automobile and similar training schools. Scientific institutes primarily engaged. research usually on a non-profit basis, in agriculture, biological, physical and social sciencas, and also research carried on in association with teaching are classified in this group. Research departments, whether at a separate address or not, attached to establishments activities of which can be classified under a single group of the industrial classification are excluded and classified in that group. Governesses and tutors employed in private households will be covered in 'domestic service'. Schools, primarily concerned with recreation, such as bridge and golf schools are classified in 'recreation and other entertainment services'.

2.184 Medical and health services cover hospitals, sanatoria, nursing homes and similar institutions, maternity and child welfare clinics, nurses and mid-wives, whether employed in an organised health service or working on own account or in consulting rooms or offices; physicians, surgeons, ambulance services, medical and dental laboratories furnishing services to order as part of diagnosis and treatment of patients by doctors and dentists. Medical practitioners following various indigenous and homoeopathic systems are also to be covered. Also included are asylums for the insanes and the care of the mentally defective persons.

# Procedure of estimation: the approach

2.185 Due to the helerogeneous nature of the activities in this sector, the estimates may be prepared to the extent possible, separately for each of the above individual groups.

2.186 The estimates Of SDP may be prepared by production/income approach. The production approach may consist of ether deducting intermediate consumption from the gross output or taking the product of value added per worker and the working force. The income approach will consist of adding factor incomes in the form of wages and salaries and operating surplus which may be estimated from the accounts of the establishments.

#### **Estimates at current prices**

2.187 Published administrative records. annual reports or accounts are generally available for at least a section of each type of these services e.g., in the case of public sector units, large establishments or recognised institutions. In the case of education, the establishments like universities, colleges, schools, etc., are likely to be covered on the basis of readily available information. In the case of medical and health services, information on public sector units are likely to pose no special problem. For rest of the services, published data would be available for large establishments like the joint stock companies. In the case of such establishments, estimates of gross output, value of input and consumption of fixed capital may be prepared from these details.

2.188 Regarding establishments and own account workers which are not covered above, the estimates will have to be prepared by either of the two following methods. The SSBs may conduct special large scale surveys for a bench-mark year enabling estimation of gross output, intermediate consumption, consumption of fixed capital, employment, etc. The estimates for the benchmark year may then be carried forward other years on the basis of appropriate indicators of production and prices. Examples of quantum indicators are index number of students or index number of teachers or an average of the two in the case of educational services, index number of patients treated or the index number of doctors and other health personnel or an average of these measures in the case of medical services, etc. Examples of price indicators are indices of salaries and wages per head in the case of specific services, if available. For those services for which such indices are not readily available, the estimate may be prepared by using the indices of wage rates of similar services for which Information is available. Alternatively where census or surveys of establishments are not available or feasible, estimates of gross output, etc., may be based on data on the number of persons engaged in the specific services obtained from the population census or labour force or establishment surveys coupled with data on gross output/value added etc., per person engaged, derived from special surveys of limited number of establishments. Such special surveys may collect detailed information on output, intermediate consumption, consumption of fixed capital, employment, earnings, etc., and may be carried out annually so that the per worker estimates obtained from these surveys may be used for annual estimates at current prices.

#### Estimates at constant prices

2.189 When estimates at current prices are obtained on the basis of current survey results, it will be necessary to construct relevant physical indicators of volune of activity under each subsector to carry forward the base year estimates to obtain the corresponding estimates at constant prices. The indicators in such cases may be constructed using the information on number of Students, etc., which have been detailed above and which are to be used along with measures of price changes for the preparation of estimates at current prices when no survey results are available. When the estimates at current prices are obtained by the use of physical indicators and price adjustments the estimate at constant prices is obtained first and then it is translated to current price using the shifts in wage rate as the indicator of price changes.

#### Private final consumption expenditure

#### Concept, scope and coverage

2.190 The private final consumption expenditure comprises outlays by resident households<sup>22</sup> as well as private non-profit institutions serving households. The final consumption expenditure of households consist of outlays which households make on new durable and non-durable goods and services, less net sales of second hand goods. The purchases of non-reproducible tangible assets such as works of art, antiques, etc., and consumer durables like furniture. automobiles, refrigerators etc., are also included. The imputed rent of owner occupied dwellings is also a part of final consumption expenditure. The final consumption expenditure also includes the own account production included in gross output to the extent it is consumed by the households themselves. Examples are the own account productions of agriculture, forestry and fishing which are consumed at home. Payments for domestic services which one household makes to another (such as payments to maids, cooks, child nurses and gardeners) are included in the final, consumption expenditure. Goods and services which the employers provide to the employees such as housing, food or clothing at free or markedly reduced prices may be considered as wages and salaries paid in kind and thus would form components of household consumption.

#### Procedure of estimation: the approach

2.191 The household consumption expenditure could be estimated by either (i) commodity flow method based on statistics of net availability of household goods and services or (ii) the direct method based on results of household expenditure surveys. At the state level, because of open boundary, estimation by the commodity flow method may raise several measurement problems and therefore estimates can possibly be built only on the basis of household expenditure surveys. However, an estimate of a bench-mark survey of the consumption pattern can be carried forward by crude estimates of net availabilities that can be obtained at the state level. When estimates of household consumption expenditure are based on complete survey and the data on net availability can be derived from production and other data two would help in checking the consistency and should be examined for consistency before presentation.

2.192 Goods and service for final consumption by households should normally be valued at purchasers' prices including transport, installation and similar charges. The value of net sales of second hand goods and scraps is equivalent to the proceeds of the households from such sales less the value of second hand goods purchased by the households. In general the expenditures by households should be recorded when the purchases are made irrespective of delays in the delivery of goods. In the case of hire purchase arrangements, the purchases may be considered to occur at the time the contract takes place or in the absence of this information at the time the goods are delivered.

# Estimates at current prices

2.193 As mentioned earlier the estimates of household consumption expenditure at the state level may be prepared by the direct method using data collected through sample surveys. The data collected by the NSS provide basic information for estimating household consumption at the state level. Though these surveys are reasonably comprehensive in coverage, adjustments for non-coverage of certain items of the expenditure may be necessary. Thus NSS expenditure data do not include rentals of owner occupied houses and an adjustment for this is necessary. Similar treatment may be necessary for other items, if any, included in SDP but left out in the NSS. The data would enable analysis of household consumption expenditure according to the object of expenditure. The data would also permit classification of expenditure according to the household characteristics such as level of expenditure. The data obtained by this method would refer to final consumption expenditure of resident households only and will not include the estimates relating to the non-profit institutions. The best source of estimating the final consumption of non-profit institutions is their accounts.

2.194 The NSS data on household consumption will now be available only once in five years. Hence the bench-mark estimates could be built up in deail for the years for which the survey data are available and these bench-mark estimates may be extrapolated for intervening years on the basis of suitable indicators as already pointed out, Due to inter-state flow of the commodities, the availability of goods and services for consumption purpose at the state level is difficult to obtain. The production at the state level may not also be a proper indicator due to the fact that for individual cornmodities, surpluses/deficits to different degrees do exist at the state level. States may therefore have to make special efforts in carrying out local surveys at a smaller scale in order to build up indicators of consumption of at least the major commodities, apart from using indicators based on crude estimates of net availabilities.

#### Estimates at constant prices

2.195 The estimates at constant prices could be prepared by evaluating the quantity of consumption at base years prices provided the quantities are available. In cases where the estimates of consumption are available only in value terms, the estimates at constant prices may be prepared by deflating those at current prices with appropriate consumer price indices separately for urban and rural areas.

#### DISTRIBUTION OF HOUSEHOLD AND PERSONS BY PER CAPITA HOUSEHOLD INCOME AND PER CAPITA HOUSEHOLD ASSET GROUPS

#### Concepts, scope and coverage

2.196 Data on distribution of income and assets are essential for assessing the extent of inequality between population groups and also for determining the groups of population who could be defined either as the rich or the poor. Because of the composite nature of the activities in the unorganised sectors in the country and particularly so in the rural areas, the households for these two tables have been specially defined for the purposes of household income and assets. Here, the household represents not only the population treated as the final consumers but also the activities of unincorporated enterprises either owned or operated by any member/members of the household either jointly or individually. This is because he unincorporated enterprises whether in the form of agriculture or manufacturing industries or services like transport, function as a part of the household and therefore cannot be distinctly separated. This becomes all the more true in the case of, income in the form of labour income of the household members and the mixed entrepreneurial income. This measure of income of the population and the unincorporated enterprises is termed as the 'household income'. The same definition of 'household' will be applicable in the case of honsehold assets also. This is because, as in the case of income, it is difficult to separate out the items of gross saving' or assets distinctly between those owned and used by either the population or the unincorporated enterprises.

#### Procedure of estimation: the approach

2.197 Very limited data exist on household incomes and assets which would enable the shrlv of distribution of households by income or asset size classes. The Primary reason for this is the limited coverage of Households under Income Tax Act, the proportion of people paying income tax being generally very low. The only method which could be adopted at the state level as also at the national level seems to be the survey method, on the basis of which estimates of household income and assets could be obtained. Surveys on the subject at regular intervals, covering the households as per the above definition as well as obtaining information on income and assets should be conducted in different states at regular intervals using an appropriate sample design and co-ordinated between states to enable presentation of an all-India picture.

# Method of estimation

2.198 As mentioned earlier, the estimates of household income and assets at the state level can be prepared only by using data collected through sample surveys. The surveys should cover the self-employed in agriculture and non-agriculture household industries, the fixed income groups in the form of employers, employees etc., and other income recipients in the form of receipts from ownership of assets such as rent, interest and dividend. Besides data on current income, it might be desirable to collect data on capital receipts from insurance, provident fund, loan repayment etc., as the payments on such accounts need to be netted out. The data collected as above would also permit classification of households according to the level of income, types of employment, socio-economic groups etc.

2.199 Information on total assets and liabilities at particular dates and levels of capital formation and savings of the households as well as the sources of finance for capital expenditure need also to be collected in similar types of sample surveys. In this case also, the data collected would permit distribution of households by asset size classes ete.

#### **Fixed capital formation**

#### Concepts, scope and coverage

2.200 Domestic capital formation is defined as 'that part of country's current output and imports which is not consumed or exported during the accounting period but set aside as addition to its stock of capital goods'. Net capital formation is distinguished from gross capital formation in that it is measured after allowances are made for consumption of fixed capital which includes foreseen obsolescence and accidental damage to the extent provided for by the enterprise. Total capital formation can be broadly classified into fixed capital formation and changes in stocks of raw-materials, semi-finished and finished goods.

2.201 Gross fixed capital formation consists of the outlays of industries and the producers of government services and of private, non-profit services to households on additions to their fixed assets, reduced by their net sales (sales less purchases) of similar second hand and scrapped goods. The commodities in question may be purchased or produced on own account. They include (i) durable goods-the lifetime of which is one year or more-acquired by producers, (ii) improvement and alteration of the durable goods which significantly extend the expected lifetime or productivity of assets, (iii) new construction

and major improvements which extend its life period, (iv) reclamation and improvement of land and the development and extension of timber tracts, mines, orchards, plantations and similar other agricultural holdings and (v) breeding stocks, draught animals, dairy cattle and the like. Durable goods like land, mineral deposits, timber tracts, etc., classified as non-reproducible tangible assets are not included though dealer's margins, service charges and other transfer costs in regard to transactions in such assets form part of capital formation. Construction works and durable goods which are meant primarily for military purposes are also excluded. Outlays on newly construnted dwellings (either by households or industries) and expenditure on major improvements and alterations of residential buildings form a part of fixed capital formation while the purchase of durable goods by households is not treated as capital formation. Expenditures on intangible assets such as patents, good will, etc., as also on health, research, education etc., for improvement in technology and productivity of working force are excluded fron the scope of capital formation

2.202 Expenditure on current repairs and maintenance incurred for keeping the fixed assets in proper working order is not classified as capital expenditure. Capital repairs consist outsignificant alterations and additions to, or replacements of the parts of fixed assets which have an expected lifetime of use of one year or more and involve substantial outlays and also extend the life of the fixed assets or increase their productivity.

2.203 Detailed classification of items of gross fixed capital formation by type is available in  $SNA^1$  1938 (Table 6.3, page 114).

2.204 Identification of fixed capital formation in the case of resident industries within the state boundaries will not create problems of measurement. However, in the case of organised enterprises in the public and the private sectors which have activities spread over a number of states as also in the case of transportable fixed assets operating in several states there will be problems of identification and measurement in the context of state domestic capital formation. The transportable fixed capital assets would refer to items like railway rolling stock, ships, aircrafts, fishing boats, fishing vessels and vehicles used for road transport. To the extent the transportable fixed assets are owned by state enterprises these should form a part of the capital formation of the state to which the ownership belongs. In the case of central government enterprises like railways, Indian airlines, no attempt should be made to allocate the transportable fixed assets. In such cases, only capital formation in the form of construction, etc., within the state boundaries should form a part of state domestic capital formation.

2.205 For purposes of identification and measurement, the multi-state enterprises should be dealt with differently from the transportable fixed assets. In the case of multi-state enterprises, it will be necessary to obtain a clear measurement of fixed assets of units located within the State boundaries.

#### Procedure of estimation: the approach

2.206 Items of capital goods comprising gross fixed capital formation will have to be identified first preferably with necessary details of user industries. The user industries, in this case, will include besides enterprises producers of government services and private non-profit services to households as well as the households themselves (with respect to residential construction). The commodities which enter fixed capital formation should in principle be valued at purchasers' prices. However, in the case of fixed assets produced on own-account (particularly construction) this may not be possible. In this case it may be necessary to value such own-account production at cost including any imputation

which may be necessary in respect of ownaccount labour employed for the purpose. Purchasers' values should cover all costs directly connected with the acquisition and installation of the items of assets. However, indirect outlays for the purposes of acquisition of such assets in the form of advertising, etc., are excluded. The purchasers' value would thus include the cost of purchase of fixed assets in the market (or cost of production in the ease of own-account construction and own-account production of machinery and equipment), customs duties (if relevant), purchase and indirect taxes and fees paid for the purpose, transport, delivery and installation charges, direct preliminary expenditure on site clearance, fees of architects, designers, engineers, etc., and other similar costs.

2.207 The measurement could be either in terms of the producer values plus trade and transport margins or the actual expenditures incurred by the user industries. The Classification by user industries could be either in terms of the industrial classification used for measurement of net domestic product or by types of institutions.

#### Method of estimation

2.208 At the state level the estimates of capital formation can more conveniently be prepared by the institutional approach though for selected industries independent approach can also be made to obtain the estimates by industrial use. This particularly refers to sectors like agriculture, mining, manufacturing, electricity generation and transmission, banks and co-operative societies and educational institutions. For institutional approach the classification of the economy can be along the same lines as suggested for measurement of construction,<sup>23</sup> viz., public, private enterprise (organised) residual.

# **Public sector**

2.209 The information on total capital

expenditure in respect of administrative departmonts and departmental enterprises of state governments is to be culled from the details available in the budget documents. While analysing such documents, the establishment expenditure under the capital head is to be treated as capital formation. Further, expenditure of capital nature, even if classified under revenue head, e.g., expenditure on furniture, fixtures, office equipment, tools and instruments, etc., is to be covered. In a number of cases, the details of such expenditure are not available in the accounts. In some cases, however, the details are available in respect of budget estimates and actual expenditure may be allocated to different items in the same proportion as exhibited by the budget estimates, In other cases, (e.g., furniture, etc.,) where expenditure is not generally shown separately but is included under office or contingent expenditure, attempt should be made to allocate the expenditure on the basis of suitable case studies.

2.210 Quiet often, projectwise details available in the budgets of central government permit statewise allocation of such expenditure by states. State-wise information on the construction component of capital expenditure is available in the appropriation accounts of the CPWD. With the availability of these details statewise information on capital expenditure of central government administration need to be collected only for machinery and transport equipment. These details may be collected from the concerned departments. The establishment expenditure of central government administration may be allocated to the states in the same proportion as the expenditure on capital works.

2.211 The capital expenditure incurred by state governments and local bodies and the undertakings owned and run by them may be obtained from the budget documents and statements of income and expenditure presented in the annual accounts/administration reports. In the case of local authorities, if adequate details are not available, representative sample of institutions be studied for the details of general pattern of the outlay.

2.212 In the case of central government departmental and non-departmental enterprises the statewise estimates of capital expenditure can be obtained by following the precedures similar to those discussed in the section on construction. Transportable equipment will, however, need differential treatment. Separate details on expenditure on new additions to fixed capital (including major repairs) and current repairs and maintenance will have to be collected.

#### Private enterprises and residual sectors

2.213 For the preparation of estimates in regard to the private enterprises sector, the states will have to depend heavily on data collected by organisations like the IBM or Under ASI and similar other sources, (e.g., Statistical Tables Relating to banks in India, Statistical Statements relating to Cooperative Movement in India, etc.). It will also be necessary to conduct fresh census/sample surveys to collect relevant data at the state level for certain groups of enterprises or the residual sector.<sup>23</sup> At the time of organising such surveys it will be necessary to ensure that total capital expenditure on fixed assets (machinery and equipments and construction) are collected separately by categories. The estimates for years for which no surveys are undertaken, will have lo be prepared using the bench-mark estimates and such other indicators which are of relevance for measuring capital expenditure and are otherwise available at the state level. In the absence of any such information, small scale annual sample surveys at the state level will be needed to measure the annual change particularly in the residual sector.

2.214 The acquisition of breeding stock, draught animals, dairy cattle, etc., forms part of fixed capital formation. The estimates of this component of fixed capital formation may be prepared on the basis of livestock census data rather than by using an expenditure approach. For estimating the value of additions to livestock forming a part of fixed capital formation, all livestock excepting bulls and bullocks over three years not in use for breeding or work, cows over three years not in use for breeding or work, buffaloes over three years not in use for work or breeding purposes, young stocks, goats under one year, female goats of one year and above and not in milk and pigs and poultry are taken into account. As the annual data on livestock population are not available, these may be estimated by interpolation/extrapolation using geometric rates of growth determined from the data on quinquennial livestock censuses. The changes in livestock thus obtained may be evaluated at the average wholesale prices for various categories of livestock prevailing in the state during the reference period.

#### Estimates at constant prices

2.215 The estimates of gross fixed capital formation at current prices may be converted to constant prices by making use of appropriate deflatiors for construction, machinery and equipment and livestock. In case of value of construction the method preparing estimates at constant prices has already been discussed.<sup>23</sup> Capital expenditure on machinery and transport equipment may be deflated by suitable price deflators based on index number of wholesale prices of machinery and equipment available at state level or prepared for the purpose. For this, detailed information may have to be collected for the base year for ascertaining and assigning weights to important items of machinery and equipment in addition to regular collection of price statistics. Livestock may be evaluated directly at the base year prices.

# Economic and purpose clssification of the expenditure of administrative departments of the state government

# Concepts, scote and coverage

2.216 The expenditure of government administrative departments can be classified in accordance with (i) the economic character of the expenditure, e.g., capital formation, consumption expenditure, current transfers and (ii) the purpose which it is likely to serve, e.g., production of health, education, economic services, etc. The two way distribution of the expenditure is said to form the economic-cum-purpose classification. Such distribution of government expenditure shows simultaneously the details of expenditure by particular purposes divided between economic categories, as well as the expenditure under each economic category by the purposes of public services provided.

2.217 The scope of the data presented in this table refers exclusively to the activities of administrative departments (state governments, local authorities, village panchayats, etc.,) and excludes current expenditures of goods and services of departmental and non-departmental commercial enterprises. The final expenditures considered are taken net of receipts from sales of goods produced in administrative departments such as jails. All the information needed is obtained from the annual budgets and other documents of the state governments.

# Method of classification

2.218 For the purpose of classification, the activities have been divided into nine major categories with a large number of sub-categories within each major category following the UN recommendations. The nine major categories are (1) general government services, (2) civil defence, (3) education, (4) health, (5) social and welfare services, (6) housing and community

amenities. (7) cultural, recreational and religious services, (8) economic services, and (9) other services. The format of the tables is given in Appendix I to this chapter.

2.219 For presentation, all the items of expenditure are to be grouped under appropriate categories regardless of their manner of presentation in the budget. Items relate to more than one purpose class are first disintegrated on the basis of the details given in the budget and then classified into appropriate purpose categories. If, in cases of loans, grants and advances to private institutions or to the individuals, the purpose of utilisation is not specifically indicated, classification may be made on the basis of the main functions of the institution which are receiving the grants, loans and advances. Facilities provided to employees like residential housing, free or subsidised medical aid, etc., are classified by the nature of the facility and not by the functional character of the department providing the facility. Accordingly, loans and advances to employees for construction of houses, purchase of motorcars, etc., are classified according to the type of services likely to be obtained by the utilisation of loans. Pensions and other retirement benefits have to be distributed to all purposes in proportion to the amount of wages and salaries attributable to the different categories.

2.220 Expenditures of government administrative departments can be further distinguished between those which are for maintenance of law and order and general administration of the state such as the departments of personnel, administrative reforms, home, police, jails, justice, etc., and those on administrative work related to purpose categories like education, health, defence, agriculture, industries, etc.

2.221 For the purpose-wise classification, the expenditures of the former type are to be shown under the general administration and those of the latter type are to be shown under the related

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purpose categories. For departments for which, expenditure on administration is not available separately, it might become necessary to collect such details from the departments concerned.

# **Details of classification**

2.222 Details of classification for some of the important purpose categories are presented in the following section to give a broad idea of the scope of the sub-categories within the major categories.

# Education

2.223 Expenditure on education can be split into:

- (i) general education, provided in schools, colleges, universities, centres of higher research and learnings and other institutions providing specialised trainings.
- (ii) in-service training or on the job training for the employees of any office or department.
- (iii) apprenticeship or similar other trainings in specialised fields organised for persons with the object of providing them employment.

2.224 For purpose-classification, category (i) is classified as expenditure on education while the expenditures under the other two categories are classified according to the character of the department/office organising the training.

2.225 The medical schools and colleges, engineering schools and colleges, mining schools, nursing schools, etc., are grouped nnder the category education even though they are reported under account heads like health and industry. On the Other hand, educational activities which are integral part of particular departments are grouped under the respective services. Thus, expenditure relating to police training schools is grouped under police and prisons reformatory schools with jails.

2.226 All types of scholarships to students whether paid by the department of education, department of social welfare, or any other body are grouped under education. Similarly, expenditure in regard to physical training in the educational institutions is classified under education. Expenditures on cultural, recreational and religious activities (including that for National Cadet Corps (NCC), youth welfare and physical education) are however classified under 'recreational services'.

# Health

2.227 Hospitals and dispensaries are grouped under the category 'health' but hospitals attached to medical colleges are considered as integral part of medical education and therefore, grouped under 'education'. rather than 'health'. Expenditure incurred on registration of births, deaths, diseases etc., is considered as expenditure on health research and classified under 'health'. Family planning activities are treated as welfare services and classifies accordingly.

2.228 The expenditures relating to account heads 'rural development, community development', 'national extension services', etc., are to be split up according to purposes to the extent possible and classified accordingly.

# **Construction activities**

2.229 The expenditures of public works departments are split up and classified under diferent, categories according to the nature of the department for which construction is undertaken. Thus, expenditure on construction of school buildings is classified under the category 'education', hospital buildings under 'health' and all other government office buildings, for which there is no clear indicator of purpose, are to be classified under general government services. Expenditure on residential quarters for employees (including their controlling office, i.e., estate office) is classified under 'housing and community services' irrespective of the utilisation, i.e., whether the accommodation is for school teachers or for hospital doctors.

#### Other economic activities

2.230 Cooperation in general is classified under 'other economic services'. But expenditure for cooperative societies serving particular economic activities is classified under the purpose category of that activity.

2.231 Expenditures on multi-purpose schemes like river valley projects, which are meant for flood control, irrigation, electric power generation, navigation, etc., are classified under 'other economic services' where detailed information is not available, for distributing the expendture under related purpose categories.

## Publicity

2.232 Expenditures incurred on publicity relate to different purposes like family planning, improvement of agricultural products and tourism. These expenditures are classified under various purpose categories according to the nature of the service. However, expenditures on the Directorates of Advertisement and Visual Publicity and press information establishments which serve all the departments of the government are classified under 'general government services'.

# **Relief operation**

2.233 Refugee-relief is grouped under the category relief operation along with famine relief, flood relief, drought relief, etc. However, often expenditures under refugee-relief are also meant

for specific types of services such as education, medical, housing, etc. Such expenditures are attributed to specific purposes for which they are incurred and those expenditures which cannot be attributed to specific purposes are classified under relief operation.

#### LIST OF POSSIBLE ITEMS UNDER VARIOUS PURPOSE CATEGORIES

# **General Public Services**

2.234 General administration, external affairs, public order and safety includes:

- (a) organs of government, viz., expenditure on Governors, including their staff, library, research and other facilities, district and sub-divisional establishments, state legislature including expenditure for ministries (pay, allowances, TA, etc.,) and expenditure on elections.
- (b) financial affairs and fiscal administration, viz., expenditure on ministry of finance, i.e., department of revenue, department of expenditure and cost of collection of taxes and revenue. This also includes gold control administration, national savings schemes, state lotteries organisations, etc.
- (c) offices serving the government as a whole when it is not possible to seggregate, viz., expenditure of department of personnel, planning department and SSBs. This also includes expenditure on operation and maintenance of government buildings, control of general pool government quarters (but not construction of quarters), printing and stationery, expenditure pertaining to all departments, purchase and disposal office serving all the departments, publicity and publication departments serving whole of the government.
- (d) organs to maintain internal order, viz., expenditure on ministry of home affairs, police department including traffic police, fire protection. This includes expenditure on prisons, jails, lock-ups, and other places
of detention and correction reformatory schools, intelligence department district and sub-divisional establishments, general grants to village panchayats purposes of which are not specified.

(e) Judicial system, viz., expenditure on ministry of law, law courts, registration of legal titles to properties. This includes expenditure on general legal tribunals transfer payments for legal aid to households and private non-profit institutions.

# **General research**

2.235 Items under this category include institutions and organisations engaged in basic and general research and promotion of such research and in general scientific knowledge and endeavours.

# **Civil defence**

2.236 Civil defence covers xpenditure on civil defence personnel including their training.

### Education

2.237 Administration, regulation and research includes:

- (a) administration of ministries or departments of education, i.e., expenditure of the depattment of education, directorate of education, etc.,
- (b) general regulation and promotion of school system, institutions higher learning and adult and other educational activities, i.e., expenditure on board of higher secondary education.
- (c) research into objectives, organisation, administration and methodology of all types of education, commission to study educational system. expenditure on production of text books, collection of educational statistics, etc.

2.238 Universities, schools, and other educational facilities includes:

- (a) educational services, i.e., all types of expenditure for primary and secondary schools, colleges, universities, technical training institutes like medical colleges and schools (including attached hospitals) nursing colleges/schools, veterinary colleges/schools, engineering colleges, art colleges/schools, music colleges and schools, etc. This includes all expenditure on education for backward classes, adult education, education for displaced persons, non-custodian type schools for deaf. dumb and blind. Items of expenditure like introduction of Hindi in universities. development of Sanskrit education, institute of fisheries education. marine engineering training school, etc., are also included. Expenditure on custodian type schools for deaf, dumb and blind is however excluded and grouped under welfare services. Expenditures for development of any language like development of Sanskrit, Hindi, etc., are also excluded and classified as cultural services.
- (b) scholarship for education and research, i.e., all types of scholarships for study in schools, colleges, universities or for research in any subject in India or abroad including payment of maintenance allowances for students doing research or study. (this does not include maintenance allowance for inservice trainees).
- (c) loans or grants for education, i.e., grants to universities, colleges, schools, educational institutions or to individuals.
- (d) subsidiary educational service, i.e., expenditure for mid-day meals for students, free transport to attend schools, colleges, etc., or free supply of text books or any other facilities to attract attendance in schools.

# Health

2.239 Administrative, regulation and search includes:

- (a) administration of ministries and similar departments for health, i.e., expenditure of department of health.
- (b) administration of national health schemes, i.e., expenditure for medical insurance schemes.
- (c) regulation of standards, i.e., expenditure for regulation of hospital, medical and dental clinics, doctors, dentists, nurses and midwives. This includes expenditure of directorate of health services, expenditure for drug control, drug laboratory, etc.
- (d) medical, dental and healh research, i.e., expenditure on and grants to research institute like All India Institute of Medical Sciences. National Institute of Communicable Diseases, All India Institute of Physical Medicine and Rehabilitation, Institute of Public Hearth, etc.
- (e) registration of information on vital events and diseases, i.e., expenditure for registration of birth and death, expenditure for collection, analysis and research on vital statistics. This includes a part (vital statistics) of the office of the registrar general.

2.240 Hospitals, clinics and other health services include:

- (a) hospitals and dispensaries, i.e., all expenditure on hospitals, dispensaries, health clinics including insane asylums and care of mentally defective persons. These include expenditure on drugs supplied, provisions of appliances, cost of construction and maintenance of hospitals, dispensaries and their development.
- (b) medical and health schemes, i.e., expenditure on drugs and appliances of national health schemes or programmes for immunization, vaccination and other

expenditure for eradication of epidemic diseases like malaria control programme, filaria control programme, etc.

(c) loans and grants for medical or health purposes to private hospitals clinics, health centres, other bodies and individual doctors.

#### Social security and welfare services

2.241 Social security and welfare services include:

- (a) administration, i.e., expenditure of department of social welfare, department of family planning, etc.
- (b) social security benefits, i.e., expenditure on unemployment benefits, old age pensions, accident injury and sickness compensation and other benefits to compensate loss in income. This includes expenditure on personal injuries, compensation insurance schemes, state insurance schemes, grants to life insurance corporations, etc.
- (c) public relief, i.e., expenditure on civil supply or rationing systems, subsidised food schemes etc.
- (d) child welfare services, i.e., expenditure for child and mother care, maternity benefits, child welfare clinics, institutions/homes for child and mother like maternity homes, orphanages, etc.
- (e) care of aged, disabled persons, i.e., expenditure and grants to institutions for care of aged and other helpless persons like blind, deaf and dumb, destitute women etc.
- (f) family welfare services, i.e., expenditure on family planning, family guardians and widows' allowances, applied nutrition programme, etc.
- (g) other welfare services, i.e., expenditure, for settlement of landless persons and displaced goldsmiths, expenditure on bhoodan yagna, payment of pension to freedom fighters, territorial and pensions, unspecified and general expenditure on

welfare of backward classes, grants, loans, etc., to institutions or organisations engaged in welfare activities like Red Cross Society and contribution for unspecified charitable purposes.

### Housing and community amenities

2.242 Housing and community amenities include:

- (a) administration, regulation of standards and promotion of and facilities in respect of housing, community development and sanitation, urban and rural renewals. This includes expenditures of ministry of works and housing and department of community development.
- (b) housing and related slum clearance activities, i.e., expenditure for provision, assistance or support of residential house building activities, cost of acquisition of land for housing for urban development, loans to individuals or organisations for construction of residential houses, expenditure of the departments engaged in mortgage and financing for residential buildings the liabilities of which solely rest with the government.
- (c) town and country planning, i.e., all types of expenditure for planning and development of towns, colonies, etc. This includes loans/grants to town and country planning organisations.
- (d) urban and rural renewal and municipal amenities, i.e., all types of expenditure for collection and disposal of garbage, development and maintenance of sewerage and drainage system, street cleaning, smoke regulation, etc.
- (e) community facilities, i.e., expenditure on community development schemes (general and unspecific items), national extension scheme, local development works, etc.

### Cultural, recreational and religious services

2.243 Cultural, recreational and religious services include:

- (a) administration of departments concerning with culture, recreation and religion, i.e., expenditure of department of culture, diretorate of physical education and sports, department of tourism, ministry of information and broadcasting.
- (b) cultural and literary activities, i.e., expenditure including grants/loans for studies of language, literature, etc. This includes loans/grants for and to central Institute of Indian Languages, children books in regional languages, National Book Fair, expenditure on prizes for writers for best books, development of Sanskrit, Hindi, and other state languages (under development of Hindi following are excluded: Commission for Scientific and Technical Terminology, preriaration of Hindi encyclopaedia, translation of manuals and forms in Hindi, correction of Hindi text books, opening of Hindi departments in colleges and universities).
- (c) recreational organs, i.e., expenditure on All India Radio (excluding news division) film production, film censor department, T.V. programme, songs and drama Division, organisation in film festival, grants/loans to organisation or institution engaged in research and production of film, drama like national school of drama, film production training centres, art exhibitions etc.
- (d) recreational places, i.e., expenditure on maintenance and improvement Of botanical and zoological gardens (excluding botanical and zoological surveys and research) development of tourism, maintenance and development of tourist places, museums, parks, playgrounds, beaches, swimming pools, expenditure for camps, hostel and other lodging places (excluding

student hostels) uplift of youth welfare including NCC physical education and sports.

- (e) memorial of great personalities, e.g., grants to Gandhi Memorial Committee, Dr. Zakir Hussain Memorial Committee, Ram Mohan Roy Centenary Committee.
- (f) religious services, i.e., grants for religious purposes including repairs and maintenance of ancient temples, contribution to religious institutions and for memorial of religious leaders like Guru Nanak Birth Anniversary, Dusshera Exhibitions.

#### **Economic services**

2.244 General administration, regulation and research include:

- (a) ministries and departments concerned with the general administration of economic, commercial and labour affairs. This includes expenditure on manpower directorate, commercial intelligence and statistics, factory inspection (unspecified or general) and regulation of working conditions of labour (unspecified or general).
- (b) general regulation and registration of business, i.e., expenditure on wage board, price control board, regulation of markets, shops and establishments, regulation and standardisation of weights and measures, etc.
- (c) labour affairs of general character, i.e., expenditure on employment exchanges including training centres for unemployed persons with the object of fixing them with employment, expenditure on factory inspection (unspecified or general) and regulation or working conditions of labour (unspecified or general), expenditure for inspection of mines, inspection of steam boilers, etc., expenditure on labour arbitration boards, labour tribunals, etc.

(d) research on technological, engineering, market, labour and similar other research not allocable to any specific kind of industry. Expenditure on market research, research on manpower, employment, unemployment survey, etc., are included. General meteorological and map making services, i.e., expenditure on meteorological department and centres including weather forecasting, expenditure on National Atlas Organisation, Surveyor General of India, etc.

2.245 Agriculture, forestry, fishing and hunting includes:

- (a) administration, regulation and research, (e.g., expenditure on Ministry of Food and Agriculture, Indian Council of Agricultural Research).
- (b) development of agriculture, i.e., expenditure on agricultural firms, implementation of improved method of agricultural practices including its demonstrations, exhibitions publicity, etc., distribution and control of seeds and fertilisers, storing facilities for agricultural produce, marketing of agricultural produce, expenditure on agricultural price support schemes, expenditure on grow more food schemes. This also includes expenditure on improvement of condition of agricultural labourers, development of jute, cotton, tea plantation, sericulture and other cash crops.
- (c) development and use of soil, i.e., expenditure on soil conservation irrigation and drainage of lands, reclamation of waste lands, land settlement, etc. This also includes consolidation of holding, flood control measures, settlement of land disputes.
- (d) forest, i.e., expenditure on conservation of forest, forest works, reforestation, forest fire protection services, plantation, fruit storage.

- (e) livestock and animal husbandry, i.e., expenditure on veterinary hospital, research on animal husbandry, development of animal husbandry and livestock, expenditure on poultry farms, fodder development schemes and research on it, expenditure for development of milk production, wool production, etc., (Expenditure on manufacturing, grading and processing of wool, etc., are excluded).
- (f) fishing, i.e., expenditure for production of fish both in inland and coastal, development of fisheries and research on it, mechanisation of fish catching station, construction and improvement of fish landing station, expenditure for fish nurseries, fish preservation and cold storage for fish. This also includes improvement of working condition of fishermen and contribution to fishermen cooperative societies.
- (g) wild life, i.e., expenditure for propagation and protection of wild animals, control of hunting licences, aid for research on nature and behaviour of wild animals and their development.

2.246 Mining, manufacture and construction includes:

- (a) (a) administration, regulation and research, i.e., expenditure on ministry of industry, ministry of steel and mines, ministry of petroleum and chemicals, expenditure on geological survey, commission for oil and natural gas, Indian Standard Institute.
- (b) mining, i.e., expenditure for promotion, investment grants, subsidies and other assistance for extraction of coal, petroleum natural gas and other mineral ores, expenditure for development of mines and working conditions of mines including labour welfare activities.

- (c) manufacturing, i.e., expenditure for promotion, investment grants, subsidies, and other assistance for industrial development including village and small scale industries. This also includes Khadi Industries and marketing of Khadi and village industrial products.
- (d) building and construction industries, i.e., expenditure for promotion, development of building material, etc.

2.247 Electricity, gas, steam and poWer includes:

- (a) electricity, gas and steam, i.e., expenditure on promotion, regulation, research, investment grants, subsidies and other assistance for generation, transmission, and distribution of electric power, gas, steam, heat, etc. This includes loans and advances to bodies like state electricity boards, etc., (subsidies given for consumption of electric power for the benefit of a particular industry say Khadi Industry, is excluded from here and taken into account under that industry).
- (b) water supply, i.e., expenditure on promotion, regulation, research investment grants, subsidies and other assistance for storing, purification and distribution of water, development of tanks, and other water reservoirs in the rural areas, digging of wells in the rural areas for drinking purpose. Tubewells and other Water resources for irrigation purposes are excluded.

248 Transportation and communication includes:

(a) administration, regulation and research expenditure of ministry of shipping and transport, ministry of communication, department of civil aviation.

- (b) highways, roads, bridges and tunnels, i.e., expenditure for construction, repairs, maintenance and other outlays for highways, roads, blidges and tunnels, development and regulation of car park and other type of parking places, terminal facilities for bus, trucks, etc., bridges, tunnels, car parks, highways, etc., for which tolls are charged are excluded.
- (c) waterways and other navigation, i.e., expenditure including assistance loans, etc., to commercial enterprises for promoting providing for and maintaining facilities for inland and coastal water ways, regulation and control of waterways. This includes expenditure for dredging of canals, rivers, lakes, including construction and operation of light houses, buoys and other navigational aids, construction, Maintenance and operation of docks, harbours and port facilities, expenditure for protection of sea coast, river coast and canal banks. Canals, harbours and ports which are operated by commercial enterprises are excluded.
- (d) air transport and other communication, i.e., expenditure as investment, grant, subsidies and other assistance for air transport, railways, post and telegraphs, telecommunication services. This includes expenditure on overseas communication services, ropeways, etc.

2.249 Other economic services include:

- (a) storage and warehousing, i.e., expenditure for promotion, regulation research and other outlays for storage and warehousing of general character (storage for specific items are grouped in appropriate category of that item).
- (b) cooperative activity, i.e., expenditure for promotion, regulation, research and other outlay, assistance loans, etc., for cooperative activities of general character. This includes expenditure of office for

registration and control of cooperative societies, development of cooperative movement in the country. (cooperative activity on a specific field will be classified in the category of recording of the field of activity).

#### 9. Other purposes

2.250 Relief operation includes:

- (a) flood relief, drought relief and relief work on other disasters and calamities. (expenditure on specific purpose like education, health, etc., incurred under these heads are excluded and classified under concerned categories).
- (b) refugee relief and rehabilitation, i.e., expenditure of the department of rehabilitation, development of area for resettlement of refugees, feeding and other expenditure on refugees, management of camps, grants/loans to refugees for business, etc.
- 2.251 Other miscellaneous purpose include:
- (a) interest on general and unspecified debt, unspecified grants/loans, etc.
- (b) other outlays not elsewhere classified, i.e., expenditure on the payment of privy purses, compensation for zamindari abolition, commission on inter state water dispute, grants to Bharat Sevak Samaj, etc.

# Socio-economic indicators at district level

2.252 A tentative list of indicators for which the data may be compiled at the district level is included in the supporting table 15. These indicators can be broadly grouped into four categories viz., demographic resources base economic activities and infra structure related to economic development. Salient features of these indicators are next discussed.

#### Population

2.253 The process of regional development is characterised by the emergence of selected settlements as nodal centres and thesacquire over a period of time the services and facilities and economic activities to which the surrounding areas show functional affinity. The nodal centres by and large qualify to be designated as urban centres. Thus the extent of urbanisation measured in terms of the percentage of people living in towns to total population can be used as one of the indicators of the level of development.

#### **Population density**

2.254 The importance of this indicator can vary among different regions. For example in regions of very high density of population as in Kerala or Uttar Pradesh the intra-regional variations may not be of much relevance. However, in regions with extremely diverse totopographical conditions areas of low density may have several other features of under development such as inaccessibility, limited area under cultivation, low level of urbanisation lack of social services and amenities.

2.255 Moreover alternative sets of indicators such as rural population or urban density can be used jointly with other indicators for meaningful interpretations. Thus rural density can be taken in relation to cultivated area as a crude measure of the extent of pressure on agriculture. Similarly, urban density would reveal the spatial pattern of distribution which is complementary to urbanrural ratio. Here the density of towns per 100 Km<sup>2</sup> may be calculated in order to measure the extent of nodality, i.e., whether the nodality is highly polarised around one or two urban centres or the nodal centres are relatively evenly distributed within the district. Likewise, number of villages per 100 Km<sup>2</sup>. may also be used.

#### Area in Sq. Kms. - percentage of urban area

2.256 This refers to the urban limits as defined in the Census.

#### **Total working force**

2.257 The percentage of workers to total population in urban and rural areas worked out separately would be relevant to measure the degree of dependence while the proportion of the total work force living in towns would serve to measure the impact of urbanisation.

#### Percentage in working force

2.258 The extent of diversification of the emloyment structure can be one of the inportant indicators of development on the assumption that the stages of development are chracterised by a decrease in the proportion of workers engaged in the primary sector.

#### Area under cultivation

2.259 Percentage of cultivated area to total geographical area can be interpreted in two ways. First, it is a measure of the structure of the physical landscape. Higher the percentage of cultivated area relatively homogenous is likely o be the topography and this provides favourable conditions for relatively dispersed pattern of distribution of population and economic activities. Second, with higher percentage of cultivated area there is a possibility of more even spatial distribution of one of the major means of livelihood. Intra-district and intra-regional disparities in development can possibly be less under such situations.

# Cultivable waste

2.260 The data on cultivable waste are likely to be useful as one of the indicators of potential cultivated area. The ratio of cultivable waste to net area sown can be used along with other variables related to agricultural development or in assessing the potential scope of agricultural output.

# Area under forest

2.261 The percentage of area under forest to total geographical area is an expression of the natural environment of the district and it can also be used as a possible indicator of the structure of the resource base and the development norms associated with it.

#### Area sown (gross/net)

2.262 The perceniage of net sown to total geographical can be used as one of the possible indicators for studying agricultural development besides reflecting the nature of the physical landscape. Empirical studies reveal that areas with relatively higher levels of agricultural development have generally more diversified employment structure and higher levels of development of secondary and tertiary sectors. Intraregional disparities in development are also less marked in such areas because agriculture is often marked by homogeneity and extensive areas spread.

2.263 Gross cropped area or the percentage of area sown more than once to net area sown can on the other hand, be used as an indicator of agricultural intensity.

#### Percentage of gross area sown

2.264 Commercial crops would include hose which are almost wholly marketed. Area sown more than once, i.e., gross area sown includes dry farming as well as farming with the use of irrigation. This shows differences in cropping pattern, and agricultural practices and also is likely. to serve as an explanation for the in variations in the responses of the farmers to modern methods of farming.

#### Net irrigated area

2.265 Net irrigated area as a percentage of net area sown is another measure of the variations in the intensity of farming and cropping pattern.

#### Gross value of agricultural output (Rs.)

2.266 While there are several indirect. variables such as proportion of irrigated area, area under commercial or non-food crops which explain the variations in agricultural productivity, gross agricultural output per unit of area is possibly more direct measure of intensity of agricultural production or in other words productivity per unit of cultivated area. Likewise per capita gross agricultural output for the rural population is a possible means of measuring the extent to which agriculture is a way of providing the livelihood to the rural economy.

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# Percentage of gross value of agricultural output

2.267 The share of food and commercial crops in the gross agricultural output, is a way of Measuring the extent of diversification agriculture.

#### **Cliemiral fertilisers distributed**

2.268 The quantity of fertiliser used per unit of cultivated area is worked out to analyse the variations in the application of chemical fertilisers, according to natural conditions of the soil. and the cropping pattern. Though the desirable and relevant indicator is the use of chemical fertilisers per unit of cultivated area, in the absence of such data, the quantum of chemical fertilisers distributed has been recommended as an indicator.

#### Per Capita value added by manufacturing

2.269 The variations in per capita value added by manufacturing between rural and urban areas are likely to help in stydying the intra-district variations in the pattern of distribution of manufacturing industries.

#### Percentage of village electrified

2.270 Electricity as on infra-structure and its availability or otherwise would help in not only differentiating between the electrified and nonelectrified villages in their spatial distribution but also in categorising them-according to the pattern of electricity consumption, i.e., for example, domestic, agricultural and industrial uses.

#### Per capita consumption of electricity (Kwh)

2.271 In practice the extent and variations in

the use of electricity for agricultural and industrial purposes are useful indicators for studying levels of development. These details combined with the percentage of electricity consumption for domestic purposes would throw useful light on inter-district disparities.

#### Road conditions and their availability

2.272 The degree of accessibility to different regions is measured in several ways. One way is to measure accessibility to different means of transport within certain distance ranges. In the case of district level data; percentage of villages connected by all weather roads would serve to differentiate areas according to functional spatial organisation. A distinction has been suggested between surfaced roads and rural roads to indicate broadly the possibility of using different means of transport. The rural roads for example, would include cart tracks and other roads which connect most of the villages unlike surfaced roads which are relatively more important and they pass through important places only and are primarily used for mechanised transport.

### **Education and literacy**

2.273 The indicators relating to levels of educational facilities are included in this group. The adequacy or inadequacy of different types of educational institutions upto higher secondary level within a district is considered as important as the education facilities available to children of different age groups have to be organised within certain distance ranges. This is measured on the basis of the percentage of school-going children in different age groups (6 to 11 years and 11 years to 14 years) to total number of children in that age group. Variation in the availability of educational

number of schools per hundred school-going children

2.274 Literacy and economic development may, often show high positive correlation at the national level, although it is likely to vary between different regions. Percentage of literates to total population has been suggested as it would also be complementary to other indicators relating to education.

#### Health and Family Welfare

2.275 Indicators relating to health facilities are included under this category. A distinction has been made between three types of establishments namely, hospitals, dispensaries, family planning and family welfare centres, and these could be considered as a package of health establishments and the non-availability or inadequacy of any one or all of them would be reflected in overall ranking of districts according to levels of development. Number of hospital beds per lakh of population would be an indicator complementary to the one regarding number of hospitals.

# facilities is also measured by working out the Water supply, banking, post offices and radio sets

2.276 The indicators relating to availability of protected water supply, banking and postal facilities and radio sets are self explanatory and these are analysed in relation to the population to give added information on inter-district disparities.

# Number of commercial vehicles per lakh of urban population

2.277 Commercial vehicles would include trucks used for goods transport and is a possible way of measuring transport development.

#### Birth rate of infant mortality

2.278 Birth-rate and infant-mortality are important demographic indicators and would possible indicate indirectly the economic consciousness of the population and their health conditions/facilities available.

2.279 In addition to the above, four more indicators bringing out the position of the weaker sections have been included; the notes on which are not deemed necessary.

(Rs. crates)														
economic clas-		Curre	ent expen	diture					Capit	tal expen	diture			
sincation	consu- mption expen- diture	subsidy	current trans- fers to local autho- rities	current transfer pay- ments (other than local autho- rities)	Total	gross fixed capital forma- tion	changes in stocks	sub- total	net invest- ment in shares	capital transfer to local autho- rities	capital transfer pay- ments (other than local autho- rities)	loans and ad- vances to local bodies	loans and ad- vances issued to do- mestic sector (other than local bodies)	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
<ol> <li>General gov- ernment ser- vices</li> <li>general administrati on, public order and safety</li> <li>2 general research</li> <li>civil defence</li> <li>education</li> <li>administra- tion, regu- lation and research</li> </ol>														
<ul> <li>3.2 school, unversities, and institu- tions, including subsidiary services</li> <li>4. health</li> <li>4.1 administra- tion, regu- lation, end</li> </ul>														
lation and research 4.2 hospitals, clinics and individual health ser- vices 5. social secu- rity and welfare services														

#### APPENDIX I TABLE: ECONOMIC AND PURPOSE CLASSIFICATION OF EXPENDITURE OF ADMTNLSTRATIVE DEPARTMENTS (at current prices)

(Contd.)

#### APPENDIX I (Concld.)

economic clas-		Curre	ent expen	diture					Capit	tal expen	diture			
stication	consu- mption expen- diture	subsidy	current trans- fers to local autho- rities	current transfer pay- ments (other than local autho- rities)	Total	gross fixed capital forma- tion	changes in stocks	sub- total	net invest- ment in shares	capital transfer to local autho- rities	capital transfer pay- ments (other than local autho- rities)	loans and ad- vances to local bodies	loans and ad- vances issued to do- mestic sector (other than local bodies)	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
6. housing and other com- munity ame- nities	. *	. *		. ,	. *	. ,		. *	. *	. ,			. /	
7. cultural, rec- reational and other religious services														
8. economic														
services 8.1 general administrati on regu- lation and research														
8.2 agriculture, forestry, fishing and hunting														
8.3 mining, manufacturi ng and con- struction														
8.4 electricity, gas, steam and water														
8.5 transport and commun ication														
8.6 other eco- nomic ser- vices														
9. other ser- vices 9.1 relief on														
calamities 9.2 other mis- cellaneous														
services														

#### CHAPTER III RECOMMENDATIONS Introduction

3.1 The purpose of this chapter is to bring at one place the various recommendations of the Committee arising out of its deliberations and discussions with various authorities and experts. Some of these recommendations have already been made in the chapters that precede. Some others relate to the common measures required to be taken to improve the data base, the methodology, the co-ordination between the states and the central statistical agencies, and the personnel expertise. These recommendation which apply, with almost equal force, to the work of estimating income, expenditure and other related aggregates are not repeatedly mentioned in the earlier chapters and are stated here so that action can be taken to bring about a general improvement in the quality of all the estimates when they are fully implemented.

3.2 In this context, two general points may be made. First, in view of the fact that cost structure change slowly, annual information on gross output is indispensable while data on costs could be collected at longer intervals. Second, it is important to ensure that an estimate pertaining to a year is based on data relating to that year, and the use of past observations trends, etc., could be permitted only for the estimates of dimensionally unimportant variables.

3.3 The Committee would like to emphasise that improvement of estimates at the regional level and filling up data gaps for the purpose would automatically lead to improvement of the estimates at the national level. It would, therefore be desirable that co-ordinated efforts are made to improe the data position in all the states simultaneously so that the fruits of such labour can also benefit and improve the estimates prepared at the centre. 3.4 The major problems in the state income estimation have been already stated in the **First Report** (Chapter I, Section 3). In para 3.17 of this **First Report** it has been indicated that the reliability of the estimates can be broadly grouped into three main catagories according to data base:

- (a) where data are collected every year, (e.g., production of principal crops, mining, registered factories, etc.)
- (b) where 'bench-mark' estimates can be worked out reasonably satisfactorily every few years and the estimates for the intervening years can be worked out by moving the bench-mark estimates by means of appropriate indicators of physical output and prices (e.g., livestock products, unregistered manufacturing, construction, trade, services etc.) and
- (c) where national totals are allocated among states by the use of some meaningful indicators, (e.g., banking, insurance, railways, central government administration, etc.)

The improvement in the quality of estimates will have to be brought about by improving the data base and priorities will have to be assigned in the task so that a co-ordinated and planned performance of data improvement can be taken up in accordance with the importance of the sectors or sub-sectors where the reliability of estimates is at present weak. It is recognised that all the three types of estimates (a) (b) and (c) mentioned above may have to continue for quite some time and in the case of some sub-sectors no change may be possible in the foreseeable future. However, even here, improvements will be necessary. For instance, in regard to estimates listed under (a) above, time-lags can be reduced to a minimum; in regard to those under (b), better 'bench-mark' period estimates can be made and their frequencies might be increased. Also the appropriateness of the indictors used may be improved, whereas for the estimates under (c), allocation methods may need improvement. It may be, that, in course of time, some of the sectoral estimates of (b) type may have to be upgraded to (a) type estimates and wherever possible, this type of improvement will have to be brought about. One would, for instance, desire that, considering their importance, the estimates of income from construction, or registered trade establishments are worked out through (a) type data base. These factors will have to be taken into account while working out the priorities in the programme of improving the data base.

3.5 Each regional economy may be divided broadly into (i) public sector and (ii) private sector. The latter can be further classified into (i) private organised sector and (ii) private unorganised sector. The private organised sector can be defined to include those enterprises or establishments owned by non-government economic agents, which are registered or covered under. one or the other of the widely applied Acts. It is assumed that, in the manufacturing sector, establishments which are registered under the IFA belong to the organised sector. In the trade sector such establishments or business which are registered under the Sales Tax Act (which are prevalent in almost all the states in one form or another) and in the mining sector, mines registered under the Mineral Conservation and Development Rules may be considered as falling under the organised sector. The rest of the economic entities or establishments can be considered as falling under the unorganised sector. The division is purely one of convenience since the establishments classified as 'organised' enable one to set up a frame for sampling or a frame for identification of the establishments and have, generally speaking, better records and readily available annual accounts.

3.6 The problems of data improvement are, however, not necessarily related to the organised or unorganised parts of any given sector. For instance, income estimates from registered trade rest today on weak data base, whereas agriculture which definitionally belongs to the unorganised part of the private sector, has much better data base at least for the principal crops. But, by and large, the unorganised parts of the economy will need much better data base than the one they have now.

3.7 The specific steps to be taken for improving the data base in each sector or sub-sector for estimating regional incomes, expenditures, etc., are recommended in this chapter. It must, however, be underlined that in the First Chapter wherein the Committee has attempted to present a set of accounts and supporting tables for households, population, and public sector, estimation of several economic aggregates is involved. Saving of the region, mixed income of the self-employed in the region and income due to free or reduced cost services furnished by government, private non-profit bodies and by industries, are some instances. Estimation of such additional items increases the magnitude of the task on hand. Here also, priorities will have to the assigned to the construction of accounts and tables. It may be that Account 5 on total consumption and income of the population will have to be given low priority. Another feature of the regional accounts and tables is the conceptual framework which one will have to grasp before the work can be started, and the figures, properly understood and interpreted.

#### Agriculture and livestock

3.6 Regular annual estimates of yield rates based on crop cutting experiments are available only for the principal crops. We recommend that crop cutting experiments may be extended to cover all important minor crops in each state. This list of such minor crops may differ between regions. In the case of unspecified crop, other products and by-products, we feel that surveys should be undertaken at least once in three years to estimate the yield rates and input structure apart Irom conducting type studies at shorter intervals.

3.9 Data on livestock population become available in five years through quinquennial livestock censuses. Yield rates of various livestock products are available only from occasional or ad-hoc surveys conducted by IARS of DMI and are not uniform between states in terms of reference period, etc. There is a requirement of annual estimates of yield rates for providing figures or estimates of livestock products year by year. The Committee recommends that a set of annual surveys be undertaken furnishing estimates of livestock numbers and yield rate of major livestock products in all the states. Surveys may be conducted less frequently for estimating the average yield rates of various other items of livestock products including the subsequent processed products as well as the input structure of different products. The NSSO survey on livestock and livestock products undertaken in the 30th round if repeated at regular intervals would meet the latter requirement.

3.10 For agricultural and livestock products, it is necessary to collect prices for more items and from more markets, the selection of markets being reviewed periodically. Collection of prices of livestock products, particularly in rural areas, should be intensified. For livestock products, producer prices are usually not available and in order to obtain the estimates of gross output at producer prices, adjustments for trade and transport margins become necessary. This could be avoided by collecting prices regularly from producers.

3.11 Data on intermediate consumption in respect of agricultural crops and livestock products are inadequate. Recently a comprehensive survey for studying the cost of cultivation or principal crops has been, launched by the Ministry of Agriculture on a continuing basis and the requisite data are to be collected for different crops by rotation. The results in respect of individual crops as and when available should be put to use. Each state should examine the crops winch are important to their economy and left out of this programme, and organise surveys to collect for such crops data on intermediate consumption and consumption of fixed capital. All such surveys on cost of cultivation or livestock should collect data on fixed capital formation as well.

#### Forestry and logging

3.12 Output of major forest products by varieties and out-turn and prices of minor forest products have to be collected on a regular basis by state forest departments and the time-lag in the availability of data should be reduced. Studies may be conducted, say once in five years, to estimate the unauthorised/unrecorded production. Surveys to Collect data on intermediate consumption, consumption of fixed capital as well as fixed capital formation need be conducted at least once in five years.

#### Fishing

3.13 Surveys to estimate the catch of inland fishing and subsistent fishing may be conducted by all the states through the collecting agencies in the states. Wherever two sets of estimates of production are available, (e.g., from CMFRI, Maridapam and state agency), efforts should be made to bring about reconciliation to the extent possible. This is essential as often widely divergent figures are reported. It is also necessary to get data on inputs, repair and maintenance, consumption of fixed capital and addition to capital during the year for both inland and marine fishing. Such information may be collected periodically at least once in five years. For the evaluation of output at 'producer prices' wholesale prices have to be adjusted for trade and transport margins. Attempt therefore should be made to collect producer prices at least from small sample.

### Mining aod quarrying

3.14 Data on output of all minor minerals as well as the details about intermediate consumption and consumption of fixed capital are not available. Information on inputs and consumption of fixed capital has to be collected in the ease of the two major products as well, viz., coal and petroleum. The IBM or state departments of mining and geology may collect such information annually.

# Other organised sectors

3.15 For manufacturing, while ASI data are available to the states, both for the census and the sample sectors, it is necessary that the states develop their own index number series for industrial production and prices similar to the All-India series. This would provide an appropriate indicator to the states to move the latest available estimates based on ASI data to obtain current year estimates on a provisional basis.

3.16 Although a part of the trade sector belongs to the organised part, hardly any data are available. Available estimates of various aggregates like the value added, capital formation, total turnover and input costs, etc., are very weak. It is necessary that the establishments registered under Sales Tax Act is used as a frame and the turnover figures, also collected in this context, are used to stratify the various establishments covered under the Act. It is generally observed that a very small proportion of the trading establishments account for a large proportion of the total turnover. From the sampling point of view this is a great advantage. It should therefore be possible to organise an all-India survey of distributive trade at the interval of every five years through an appropriate agency. The state statistical agencies will need to co-operate in this matter by updating the frame, and also maintaining turnover figures on an annual basis for estimating figures of value added, etc., for inter-survey years.

3.17 Similar surveys should also be undertaken for organised transport and professions. Registration under the appropriate acts and similar other provisions may supply the appropriate frames.

3.18 For construction, the feasible approach would be through the agencies making outlays rather than from institutions like construction companies. For example, in manufacturing, the ASI returns should provide the necessary informatien.

#### Unorganised sectors

3.19 In the case of manufacturing, construction, transport, trade, hotels, etc., and services, some information on the organised/corporate components will be available.

3.20 In the case of the unorganised components of these sectors, it would be necessary to collect comprehensive information on various aspects for a bench-mark year These bench-mark deta are to be supplemented by current data on major indicators of trends of each of the transactions/macro-aggregates for each of the activities on an annual basis for estimation for the intervening years. Till now it has not been possible to organise collection of annual data in these sectors.

3.21 As the Committee has observed, country-wide periodic censuses/surveys covering all these economic activities simultaneously will help in obtaining the bench-mark information. It is understood that the CSO has already initiated action for conducting the first economic census in the country to be followed by sample surveys by types of activities. Considering the magnitude of the Sectors to be covered, the collection of data has been planned in two stages. The first stage consists of listing of all establishments, both household and non-household, collecting information on some basic characteristics at the listing stage, thus providing a suitable frame for conducting sample surveys at the second stage. The sample surveys at the second stage would provide detailed information on inputs, outputs, employment capital formation, sources of finances, factor incomes, etc., on individual economic activities. The project would be comprehensive to the extent of covering all nonagricultural establishments in the unorganised sector and activities like wholesale and retail trade barring public and private corporate enterprises. The Committee hopes that the scheme will be expeditiously implemented and thus the major data gap in these sectors filled to a large extent.

3.22 It is also important to ensure that both household and non-household enterprises are covered in the course of data collection both for the census as well as the sample surveys. In other words, the household and non-household surveys should be tied up in such a way that the same set of economic activities are covered at the same time in the household and non-household sectors and the complete results for any particular economic activity are obtained for the same period. Such economic censuses and surveys should be repeated periodically so that adequate benchmark information relating to the unorganised sectors of the economy flows continuously.

3.23 Obviously, however, this programme will not provide the annual output indicators, and these can best be obtained by freezing a fraction of the NSSO and, the Economic Census samples and canvassing the same would provide estimates of a limited set of variables that could serve as surrogates of gross output for the unorganised sector. Once there is an agreement about this plan the Committee feels confident that the CSO in consultation with the SSBs could work out the relevant variables or their surrogates.

3.24 It will be observed that all private activities except construction have been covered above. The analysis of balance sheets and annual

accounts is not likely to prove useful for state level estimates in these sectors. The best way to estimate value added, capital formation, etc., is to use information available from the ASI for organised manufacturing. For other establishments covered under sales tax registration, shop establishments, etc., it should be possible to obtain regularly inforreation on output, input, etc. For construction activity the most satisfactory answer for data on output, capital formation, etc., may be organisation of sample surveys on the basis of area sampling and details available from AST, etc. For non-registered manufacturing as well as other non-registered establishments which are not so covered, it will be necessary to organise large scale sample surveys at least once in five years giving details of output, input, capital formation, etc. The estimates for inter-survey years should be built up with suitable indicators based on information on important inputs.

3.25 In the municipal areas, there is usually a system of approving building plans and issuing commencement and/or completion certificates. These records also provide a suitable frame for conducting sample surveys in urban areas. In the rural areas, surveys will be necessary to estimate the various aggregates related to the construction sector. These surveys can cover households and unorganised factories, trading establishments, etc., in the private sector.

#### **Public sector**

3.26 For the public sector, the most outstanding gap in information is with respect to local authorities. Detailed information on income and expenditure of local authorities needs to be collected regularly on an annual basis. The number of local bodies within a region is likely to be large depending upon its site and tiers of local administration. However, the collection of data alone will not suffice and economic analysis of the details would be necessary. The task of analysis would require considerable resources and the problem is enhanced as the presentation of the budget is not uniform and does not provide information in sufficient detail. The Committee therefore, feels that a uniform system of presentation and classification of accounts of the local bodies is necessary as in the case of state government budgets. The question of collection of the minimum necessary information in a specially devised form for the purpose, might facilitate the collection of relevant data as well as their analysis.

3.27 At present CSO, besides analysing the the central government budgets, is also engaged in the analysis of budgets of all state governments and local bodies and accounts of nondepartmental enterprises for the preparation of the public sector accounts. Once all the state governments undertake the analysis of the budgets of administrative departments and nondepartmental commercial undertakings falling within their jurisdiction within a specified time schedule following uniform classificatory system, the CSO can make use of these results for consolidation thus avoiding the present duplication of work. The CSO can, in turn, concentrate in preparing more detailed analysis of the corresponding counterparts at the centre providing the detailed breaks-up of various aggregates of the central government, the administrative departments as well as departmental and non-departmental enterprises located in the various states.

### Private final consumiition expenditure

3.28 According to the present long-term programmes of the NSSO, the household consumer expenditure surveys are to be carried out once every five years. The major gaps in the data system in this respect would therefore be relating to the annual indicators which would be needed to carry forward the bench-mark estimates of private consumption expenditure which would be built up in the basis of the NSS data. The SSBs may have to make special efforts in carrying out surveys on a smaller scale in order to build up indicators of consumption of at least the major commodities or build up series of net availability of such commodities to the households for current consumption. However, if the NSSO uses a frozen sample recommended by the Committee, the sample could throw annual estimates of size distribution of an important segment of household consumption. Also, surveys should be organised to obtain size distribution of income suitably defined (as detailed in Chapter II).

#### **Capital formation**

3.29 Wherever a producing sector is studied in detail through a census/survey, the Committee recommends that the query should cover all capital outlays of the enterprise. This has been mentioned in some of the above sections also, but this specific mention should be considered as the general recommendation of the Committee for all producing sectors.

#### Problems of inter-state comparability

3.30 In the past, the Planning Commission, the Finance Commission and the Ministry of Finance have been handicapped in the use of SDP estimates, not merely, due to conceptual and methodological non-comparability between the estimates prepared by SSBs but also due to the price differentials that exist between the states. The conceptual and methodological problems have received good deal of attention and have been resolved to some extent. But the problems of differential prices and its effect on the interstate comparability has not yet received the attention it deserves. The United Nations project International Comparison of National on Accounts aggregates and purchasing power of currencies is devoted to the problem corresponding to price differentials between various countries and the associated question of comparability of per capita incomes. The method

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used is suitable for a realistic interstate comparison. India happens to be a participating country of this Project. In view of this, the Committee recommends that the CSO should pursue the project, already initiated, to study the purchasing power parities of the rupee in different states for a more meaningful comparison of domestic product between states. The Committee feels that to pursue this point, it would be desirable to have final outlays on consumption and capital formation by states at intervals more frequent than five vears.

#### The co-ordinating function of the CSO

3.31 The SSBs and the CSO in the past have played distinctive roles in the development of regional income studies in the various states. The CSO assisted by a Working Group on State Income which includes several Directors of SSBs evolved Standard methodologies whose adoption by SSBs has helped in achieving comparability in the estimates prepared by individual states. However, the present expanded work on the subject, as recommended by the Committee in its two Reports, would call for much more important role to be played by CSO and SSBs mainly because of the broader coverage and scope of the work involved. The methodologies suggested though, broadly conforming to the standard methodologies adopted earlier provide enough flexibility for the states to use better available data. This will call for examination of the methodologies from the point of view of uniformity of concepts as well as representativeness of the data used at the state level. Moreover, the preparation of regional accounts is an entirely new experience for the states. Estimation of the aggregates like capital formation, consumption expenditure and household income is likely to present both conceptual and methodological problems and some 27 September, 1976

SSBs may require guidance from the CSO at least in the initial stages. The preparation of SRA and the supporting tables will also necessitate collection of fresh data through sample surveys and type studies at the local level and unless these are enthusiastically pursued by SSBs and coordinated by the CSO by providing guidelines at the technical level as well as ensuring their simultaneous implementation, it is unlikely that comparable estimates for all the states will become available soon.

3.32 It would be clear from the report that for a large number of items of the accounts and tables the sources of data lie beyond the ambit of the SSBs. Apart from this some of the estimates to be entered in these accounts are to be based on notional calculations and a certain uniformity in these calculations is necessary so that their allocation to all states add up to what in aggregate was allocated initially. This points, therefore, to the necessity of a central agency securing the necessary data, making the calculation of allocation and communicating them to the states. The CSO would thus have to take up this additional role if the SRA is to be put into practice. Without its active participation in this endeavour the states would not be able to prepare the accounts.

> **MUKHERJEE** (Chairman) V. V. DIVATIA (Member) S. M. VIDWANS (Member) L. S. BHAT (Member) UMA DATTA ROY CHOUDHURY (Member-Secretary)

# ANNEXURE I List of Accounts and Supporting Tables of the System of Regional Accounts

ACCOUNTS I. Consolida	s ted Accounts of the Region	Table 4.1	Share of Public Sector in the State Domestic Product (at current prices).
Account 1	Production Account.		
Account 2	Income and Outlay Account	Table 4.2	Share of Public Sector in the State Domestic Product (at constant prices).
Account 3	Capital Finance Account.	Table 5.1	Gross State Domestic Product of Commodity- producing Sectors by areas (at current prices).
II. Househol	d Account		
Account 4	Income and Outlay Account.	Table 5.2	Gross State Domestic Product of Commodity- producing Sectors by areas (at constant prices).
Account 5	Total consumption and Income of the Popula-		
	tion.	Table 6	Selected Components of State Domestic Final Expenditure (at current prices).
III. Account	s of State and Local Governments		
Account 6.1	Production Account of State Government Departmental Enterprises.	Table 7	Economic and Purpose Classification of the Expenditure of Administrative Departments.
Account 6.2	Production Account of State Government Non-Departmental Enterprises.	Table 8.1	Private Final Consumption Expenditure by object (at current prices).
Account 7.1	Income and Outlay Account of State Govern- ment Administrative Departments and Departmental Enterprises.	Table 8.2	Private Final Consumption Expenditure by object (at constant prices).
Account 7.2	Income and Outlay Account of State Govern- ment Non-Departmental Enterprises.	Table 9	Distribution of Households and Persons by per capita Household Expenditure Groups (at current prices).
Account 8.1	Capital Finance Account of State Government Administrative Departments and Departmental Enterprises.	Table 10	Distribution of Households and Persons by per capita Household Income Groups (at current prices).
Account 8.2	Capital Finance Account of State Government Non-Departmental Enterprises.	Table 11	Distribution of Households and Persons by per capita Household Asset Groups (at current
CUDDODTIN			prices).
SUPPORTIN Table 1	State Domestic Product and some Palated		r).
	Aggregates.	Table 12.1	Gross Domestic Fixed Capital Formation by Types and by Agencies (at current prices).
Table 2.1	Gross State Domestic Product at Factor Cost by Industry of Origin (at current prices).	Table 12.2	Gross Domestic Fixed Capital Formation by Types and by Agencies (at constant prices).
Table 2.2	Gross State Domestic Product at Factor cost by Industry of Origin (at constant prices).	Table 13	Price Indices by Industry Groups (base year=100).
Table 3.1	Net State Domestic Product at Factor Cost by Industry of Origin (at current prices).	Table 14	Manpower by Industry Groups and Agencies.
Table 3.2	Net State Domestic Product at Factor Cost by Industry of Origin (at constant prices).	Table 15	Socio-economic Indicators of the Region (for each distt.).

#### FOOT NOTES

1. A System of National Accounts (Studies in Methods, Series F. No. 2, Rev. 3, United Nations, New York, 1968).

2. Indirect taxes, **less** subsidies on state domestic product levied and collected by the state and local governments within the state boundaries and the allocated share of the indirect taxes like import duties, exports and drawbacks according to utilisation pattern; central subsidies will also be treated similarly.

3. Saving within the region exclusive of **net** profits of multi-regional foreign companies transferred from the region.

4. Household is defined to include resident population of the region and unincorporated enterprises within the region.

5. Mixed income includes both. income due to labour and other forms of income. Even though it is not easy to separate these, it may be necessary to obtain the labour component of this income atleast in cases of such incorporated enterprises where accounts are available and where such division is meaningful in oider to obtain income of the population.

6. Includes gross saving of non profit bodies covered under households.

7. Income of the population differs from the household income to the extent that it excludes the 'other income' component of the mixed income (of the self-employed) of unincorporated enterprises.

8. Tables 6.1.1 will contain similar data for state local authorities. For states where port trusts are important, Table 6.1.2 will contain data for these local bodies.

9. State government non-departmental enterprises will cover those owned by state government and also by local authorities. If for any state, separate accounts for non-departmental enterprises owned by local authorities is desired, Table 6.2 may be split up into Tables 6.2.1 and 6.2.2.

10. Table 7.1.1 and 7.1.2 will contain similar accounts for municipalities and municipal corporations and zilla parishads and village panchayats. In states where port trusts, improvement trusts, housing bodies, etc., are important, Table 7.1.3 for other local bodies may be prepared.

11. Same as Standard Tables of First Report with minor changes. For details see Annexure I at the end.

12. Also see 'Statistics of the distribution of income, consumption and accumulation', 'Draft outlines for the Developing Countries' UN document E/CN3/462 and 'Statistics on Distribution of Income, Consumption and Assets'; Pachmarhi System, Indian Association for Research in National Income and Wealth.

13. Rice, wheat, jowar, bajra, barley, maize, ragi-small millets, gram, tur, urad, moong, masur, other pulses, groundnut, rape and mustard, sesamum, linseed, castor, sugar cane, cotton, jute, mesta, sunnhemp, tobacco, potato, dry chillies, dry ginger, black pepper and turmeric.

14. Indigo, opium, sweet-potato, mango, citrus fruits, grapes, cashewnut, tea, coffee and rubber.

15. Other cereals, other oilseeds, other sugars, other dyes and tanning materials, other drugs and narcotics, other condiments and spices, other fruits and vegetables, fodder, misc. food crops and misc. non-food crops.

16. Gur (indigenous production only), bagasse, cotton sticks, jute sticks, arhar sticks, rice bran, rice husk, cane trash, grass, straw and farm yard wood.

17. Exclusive of such services of housewives for household consumption which can be purchased, e.g., tailoring or cooking.

18. Demolition-also in the case of buildings.

19. Trading establishments covered under the Sales Tax Registration Acts, though turnover limit for purposes of registration may be different in different states.

20. These accounts are prepared under the major heads 103 (104 in Delhi) 50 and 52.

21. Treatment of rent followed here is the one recommended in old SNA wherein the rent paid forms part of the value addad of the using industry. This is different from the treatment recommended in the revised SNA wherein the rent paid forms part of intermediate consumption of the user.

22. A household is a group of persons usually living together and taking principal meals from a common kitchen. A boarding house, a hotel or a hostel is treated as a cluster of households, where each individual boarder (with his dependent, guests) forms a separate household. Households maintained and fed directly by government, e.g., those in prisons, police quarters, cantonments, hostels, asylums, etc., are however, excluded,

23. See section 'construction' of this chapter.

#### ABBREVIATIONS IFA Indian Factories Act. IFC Industrial Finance Corporation. AG Accountant General. Life Insurance Corporation India. LIC AIRDIS All fndia Rural Debt and Investment Survey. MCDR Mineral Conservation and Development Rules. National Council of Applied Economic Research. ASI Annual Survey of Industries. NCAER CMFRI NSSO National Sample Survey Organisation. Central Marine and Fisheries Research Institute. CPWD Central Public Works Department. OCS Ovevseas Communication Service. CSO Central Statistical Organisation. Р&Т Post and Telegraph. DES Ag. Directorate of Economics and statistics, Ministry RBI Reserve Bank of India. of Agricniture. SDP State Domestic Product. DMI Directorate of Marketing and Inspection. SNA System of National Accounts. System of Regional Accounts. EMI Employment Market Information. SRA IARS Institute of Agricultural Research Statistics. SSB State Statistical Bureaus. IBM Indian Bureau of Mines. UTI Unit Trust of India.

# **SYSTEM OF NATIONAL ACCOUNTS, 2008**

# European Commission International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank

# Chapter 18: Elaborating and Presenting the Accounts

[Section A to D not printed here]

### E. Regional accounts

- 18.45 Regional accounts are of special importance when there are important disparities between the economic and social development of the various regions of a country.
- 18.46 A full system of accounts at the regional level implies treating each region as a different economic entity. In this context, transactions with other regions are recorded as if they are external transactions. External transactions of the region have to distinguish between transactions with other regions of the country and transactions with the rest of the world.
- 18.47 Three types of institutional units have to be considered in the context of regional accounts.
  - a. There are regional units, the centre of predominant economic interest of each of which is in one region and most of their activities take place in this region. Among regional units are households, corporations whose establishments are all located in the region, local and state governments, at least part of social security and many NPISHs.

- b. There are multiregional units, the centre of predominant economic interest of each of which is in more than one region but does not relate to the country overall. Many corporations and a number of NPISHs are in this situation.
- c. A small number of units are national units, which means that their centres of predominant economic interest are not located geographically even in the sense of multiregional location. This is usually the case of central government and may be the case for a small number of corporations (probably public), generally in a monopolistic or quasi-monopolistic situation, such as the national railway corporation or the national electricity corporation.
- 18.48 Assigning transactions of the regional units to a specific region does not raise any conceptual problem. Assigning the transactions of multiregional units between various regions raises more difficulties. When considering deliveries between units of the same enterprise in different regions, it is necessary to apply the recommendation in paragraph 6.104 about intra-enterprise deliveries. Such deliveries are recorded only when the receiving unit assumes responsibility for making the decisions about the level of supply and prices at which their output is delivered to the market. When this is not the case, the receiving unit is regarded as providing only a processing service to the sending unit.

- 18.49 Further, some of the transactions of multiregional units simply cannot be allocated between the different regions in which they operate. This is the case for most property income and financial transactions. Thus the only balancing items of multiregional units that can be determined at the regional level are value added and operating surplus. These difficulties are parallel to those that arise when trying to construct accounts for industries where different types of activities are undertaken in separate establishments of the same enterprise.
- 18.50 Assigning the transactions of national institutional units by region raises even more complex issues to the point where the usefulness of attempting to do so may be questioned. While sales of electricity and railway services or compensation of employees paid by central government may be assigned to regions, interest on the public debt payable by central government or national corporations cannot be geographically located. Consequently, a reasonable solution is to introduce a kind of national "quasi-region", not allocated as such between the regions and being treated as an extra region. This national "quasiregion" may include the head offices of enterprises that have establishments located in, and assigned to, the regions.
- 18.51 These conceptual difficulties partly explain why no country establishes the complete SNA accounts for every region. In most cases regional accounts are limited to recording production activities (with conceptual problems arising for locating some of them, such as transportation and communication) by industry and more complete accounts for institutional sectors composed of regional units, such as households and local and state government. Establishing accounts for goods and services and input-output tables by region does not raise insoluble conceptual issues, though it involves treating deliveries to and from other regions as exports and imports. However, the practical difficulties of doing so are very considerable in the absence of a sophisticated system of transport statistics.
- 18.52 It should also be noted that in large countries there may be significant variation in prices of the same products across different regions. A full investigation of the impact of price variation on regional production and expenditure could involve the construction of a type of PPP exercise to be able to estimate the difference in purchasing power in different regions.

	ISIC Rev. 4 sections	Description
1	А	Agriculture, forestry and fishing
2	B, C, D and E	Manufacturing, mining and quarrying and other industry
2	2a C	of which: manufacturing
3	F	Construction
4	G, H and I	Wholesale and retail trade, transportation and storage, accommodation and food service activities
5	J	Information and communication
6	Κ	Financial and insurance activities
7	L	Real estate activities
8	M and N	Professional, scientific, technical, administration and support service activities
9	O, P, and Q	Public administration, defence, education, human health and social work activi- ties
10	R, S, T and U	Other services

#### Table 18.1: High-level SNA/ISIC aggregation (A\*10)

18.53 Nonetheless, regional accounts, even with the limitations mentioned above, are a very useful tool for economic policy. Partial regional accounts may be inserted in a set of regional statistical indicators on labour participation, unemployment, poverty, etc. The greater the contrast between the regions in a country, the more useful is such a system of regional indicators, including value added per capita, household disposable income and household consumption per capita. It is for countries themselves to devise their own regional accounts and statistical indicators, taking into consideration their specific circumstances, data systems and resources that might be devoted to this work.

18.54 There are two manuals giving more detail on regional accounts; *Regional accounts* methods - Gross value-added and gross fixed capital formation by activity Eurostat, 1995) and Regional accounts methods - Households Accounts (Eurostat 1996).

	15IC, Kev. 4		Description
Sections	Divisions	Groups	
			Monetary
А			Agriculture, forestry and fishing
	01		Crop and animal production, hunting and related service activities
			Cash crops
			Food crops
		014	Animal production
	02		Forestry and logging
	03		Fishing and aquaculture
в	05		Mining and quartying
C			Manufacturing
C			Formal
			Formal
D and E			Electricity, gas, steam and air conditioning supply; and Water supply; sew
_			age, waste management and remediation activities
F			Construction
G			Wholesale and retail trade; repair of motor vehicles and motorcycles
			Formal
			Informal
Ι			Accommodation and food service activities
Н			Transportation and storage
		491	Transport via railways
		492	Other land transport
		511, 512,	Air transport, transport via pipeline and warehousing and support
		493, 521,	activities for transportation
		522	1
	53 60 and 61		Postal and courier activities: programming and broadcasting activ
	55, 00 und 01		ties: and telecommunications
L to U			Other services
5100	84		Public administration and defence: compulsory social security
	0 <del>4</del> 85		Education
	0 <i>5</i> 96 97 and 99		Education
	80, 87 and 88		Ruman nearm and social work activities
	08		Missellereeue
			Miscenaneous
			Total Monetary
			Non-Monetary
А			Agriculture, forestry and fishing
	01		Crop and animal production, hunting and related service activities
			Food crops
		014	Animal production
	02		Forestry and logging
	03		Fishing and aquaculture
F			Construction
	68		Imputed rental of owner-occupied dwellings
			Other non-monetary activities
			Total Non-Monetary
			Total value added at basic prices
			Total value added at basic prices Taxes less subsidies on products and imports

# Table 18.2: Industry level headings for a country with a large subsistence economy

Item	Data: Source	Method	of estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
<ul> <li>I. Agriculture (Crop Sector)</li> <li>(a) Value of output</li> <li>(1) Major and minor crops</li> <li>(i) Major crops</li> </ul>	* Production: Directorate of Econ- omics and Statistics, M/o Agricul- ture (DESAg) * Prices: State DESs	<ul> <li>Value of output = current year production</li> <li>* current year price</li> </ul>	Value of output = current year production * base year price	
(ii) Minor Crops	* Production: Horticulture Statis- tics Division (DAC, M/o Agricul- ture) & State DESs * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(iii) Small Millets	* Production: DESAg * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	Price = 75% of weighted average price of jowar, bajra, barley, maize and ragi in the reference year
(iv) Other Pulses	* Production: DESAg and State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	Price = 85% of weighted average price of arhar, urad, moong, masu and horsegram in reference year

GROSS VALUE ADDED AT BASIC PRICES (for the 2011-12 Series)\*

\* We are grateful to Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India, for permitting us to reprint this material in the Journal. Thanks are especially due to Dr. TCA Anant, Shri Pravin Srivastava (Secretary and Chief Statistician of India), Dr. Ravindra Dholakia, Shri S.V. Ramana Murthy and Dr. Sudeepta Ghosh, for their help in placing the Table, Gross Value Added at Basic Prices for the 2011-12 series, in the public domain while at the same time permitting us to reprint the same.

Item	Data: Source	Method o	of estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(2) Commercial Crops				
(i) Tea	* Production of processed tea: Tea Board	Value of output = current year production of Raw tea * current	Value of output = current year production of Raw tea * base year	Production of Raw tea = processed tea $/ 0.225$
	* Prices: State DESs	year price	price	
(ii) Coffee	* Production: Coffee Board * State DESs (prices)	Value of output = current year production * current year price	Value of output = current year production * base year price	
(iii) Rubber	* Production: Rubber Board * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(iv) Cashew Nuts And Cocoa	* Production: Directorate of Cashewnut and Cocoa Develop- ment Board * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(v) Horticulture Crops:	* Production: Horticulture Statis- tics Division (DAC, M/o Agricul- ture) * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(vi) Opium	* Production and Prices: Central Bureau of Narcotics	Value of output = current year production * current year price	Value of output = current year production * base year price	
				(contd.)

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Item	Data: Source	Method of	of estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(vii) Arecanut	* Production: Directorate of Are- canut and Spices Development * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(viii) Flowers (separately for cut flowers and spike)	* Production: Horticulture Statis- tics Division (DAC, M/o Agricul- ture) * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(3) Miscellaneous Crops				
(i) Other Cereals	* Area: LUS from DES Ag / State DESs	Value of output = area * current year value per hectare (VPH)	Value of output = area * base year value per hectare	Value per hectare = weighted average of value per hectare of the crops: jowar, bajra, barley, maize and ragi in reference year
(ii) Other Sugars (excluding Pal- myra)	* Area: LUS from DES Ag / State DESs	Value of output = area * current year value per hectare	Value of output = area * base year value per hectare	Value per hectare = 0.90* VPH of the crop sugarcane in reference year
(iii) Other Oilseeds (excluding Taramira)	* Area: LUS from DES Ag / State DESs	Value of output = area * current year value per hectare	Value of output = area * base year value per hectare	Value per hectare = 0.85 * weighted average of value per hectare of linseed, sesamum, cas- torseed, nigerseed and safflower in reference year

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Item	Data: Source	Method o	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(iv) Other Fibres	* Area: LUS from DES Ag / State DESs	Value of output = area * current year value per hectare	Value of output = area * base year value per hectare	Value per hectare = 0.90* weighted average of value per hectare of sanhemp and mesta in reference year
(v) Other Drugs and Narcotics	* Area: LUS from DES Ag / State DESs	Value of output = area * current year value per hectare	Value of output = area * base year value per hectare	Value per hectare = 0.90* weighted average of value per hectare of opium (Madhya Pra- desh & Rajasthan) and tobacco & tobacco stem (other states) in reference year
(vi) Other Condiments and Spices	* Area: LUS from DES Ag / State DESs	Value of output = area * current year value per hectare	Value of output = area * base year value per hectare	Value per hectare = 0.90* weighted average of value per hectare of dry chillies, dry ginger, cardamom and black pepper in reference year.
(vii) Other Fruits	* Production: Horticulture Statis- tics Division (DAC, M/o Agricul- ture)	Value of output = current year production * current year price	Value of output = current year production * base year price	Price = weighted average price of all fruits for which separate data is available in reference year.
				(contd.)

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(viii) Other Vegetables	* Production: Horticulture Statis- tics Division (DAC, M/o Agricul- ture)	Value of output = current year production * current year price	Value of output = current year production * base year price	Price = weighted average price of all vegetable for which separate data is available in reference year.
(ix) Tobacco stem	<ul> <li>* Production of tobacco leaves: DES Ag / State DESs</li> <li>* Prices of tobacco leaves: State DESs</li> </ul>	Value of output = current year production * current year price	Value of output = current year production * base year price	Production= 86.63% of production of tobacco leaves and Price=50% of the price of tobacco leaves
(x) Toddy	<ul> <li>* MPCE of Toddy: NSS 68th Round CES, 2011-12</li> <li>* Rural and urban population: Population Census 2011</li> <li>* WPI: M/o Commerce and Indus- try</li> </ul>	Value of output= estimate at con- stant price * (WPI (non-food articles) current/ WPI (non-food articles) base)	Value of output= value of con- sumption of toddy per annum per person in the base year * population in the current year	Value of consumption of toddy per annum per person in the base year = Monthly Per Capita expen- diture of toddy in the base year (year of survey) *(365/30)
(xi) Fodder	* Total and irrigated area under fodder crops: DES Ag and State DESs * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	Production =irrigated area under fodder crops (in ha)* (50MT/ha) + un-irrigated area under fodder crops (in ha) *(25MT/ha) (Yield rates based on a study conducted by Socio-Economic Research Centre)

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(contd.)

Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(xii) Grass	* Area: LUS from DES Ag / State DESs * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	Production = total area (4* area under permanent pastures +1 * miscellaneous tree crops + 2* cul- turable waste + 2* fallow lands + 1* net area sown) * state-wise yield rates (based on NSS results)
(xiii) Mulberry	* Production and prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(xiv) Miscellaneous food And non-food Crops	* Area: LUS from State DESs * Value per hectare: State DESs	Value of output = area * Value per hectare in current year	Value of output = area * Value per hectare in the base year	
(4) By products	* Area: LUS from DES Ag / State DESs * Value per hectare: CCS from DES Ag/State DESs (except for poppy husk and poppy seed). * Value of poppy husk and poppy seed are made available by State DESs * WPI: M/o Commerce and Indus- try	Value of output = area * Value per hectare in current year In case CCS is not available for the cur- rent year, Value per hectare of current year = Value per hectare of reported year from CCS * (WPI cur- rent/WPI reported year) of respec- tive crop.	Value of output = area * Value per hectare in base year as per CCS 2011-12	

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(contd.)

Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(5) Other products				
(i) Gur	* Production and Seed Rates:	Value of output = current year	Value of output = current year	Rates assumed -
	DESAg	production of Gur * current year	production of Gur *base year	* State-wise percentage (9-10%)
		price	price	of quantity of sugar cane retained
	* Quantity of sugar cane crushed			for gur making
	by factories: Dte. of Sugar, M/o			* State-wise percentage of sugar
	Consumer Affairs, Food and Pub-			cane used for chewing
	lic Distribution			* State-wise quantity of sugar
				cane used for seed based on latest
	* Quantity of sugarcane used in			CCS
	manufacture of khandsari in man-			* State-wise percentage of sugar-
	ufacturing sector: ASI & NSS			cane used for manufacture of
	Survey of manufacturing			khandsari.
	enterprises (non-ASI) . Prices:			Quantity of sugarcane retained for
	State DESs			gur making = total sugarcane pro-
				duction - sugarcane used for
				chewing, seed, crushed by
				factories and Khandsari
(ii) Palmyra	* Production and prices: State DESs	Value of output = current year production	Value of output = current year production * base year price	
		current year price		
				(contd.)

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(iii) Bagasse	* Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	Based on a study conducted by Socio-Economic Research Centre, production of bagasse = 3.5% * sugar cane used for gur making
(iv) Foreyard and Backyard farm- ing (kitchen garden i.e. Home- stead land raising for crop and having area less than 0.01 H)	<ul> <li>* Net sown area: LUS from DES Ag / State DESs</li> </ul>	Value of output = Area under Foreyard and Backyard farming (kitchen garden) * value of output per hectare of fruits and vegeta- bles in current year	Value of output = Area under Foreyard and Backyard farming (kitchen garden) * value of output per hectare of fruits and vegetable, in the base year	Based on NSS Survey on Land & Livestock Holdings, Area under Foreyard and Backyard farming (kitchen garden)= 0.21% of net sown area
<ul> <li>(b) Inputs (Crop Sector)</li> <li>(1) Seed</li> <li>(1) Wheat, Jowar, Bajra, Barley, Maize, Ragi, Small Millets, Gram, Arhar, Urad, Moong, Masoor, Linseed, Sesamum, Groundnut, Rapeseed &amp; Mus- tard, Castor, Black Pepper and Turmeric</li> </ul>	* Seed rate, seed replacement rate, area: CCS from DESAg * Area under the crop, prices: State DESs - * WPI: M/o Commerce and Indus- d try	<ul> <li>Value of Seed = Value of improved variety of Seed at cur- rent year prices + Value of har- vested Grains retained for Seed at</li> <li>current year prices</li> </ul>	Value of Seed inputs= Value of improved variety of Seed at base year prices + Value of harvested Grains retained for Seed at base year prices	Value of improved variety of Seed=Seed Rate * (Irrigated Area * Seed Replacement Rate) * CCS Seed Price for current/base year; WPI is used for extrapolation till CCS becomes available Value of harvested Grains retained for Seed = Seed Rate * [Irrigated Area * (100 Seed Replacement Rate) +

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
				Un-irrigated area } * Farm Harvest Price of respective crop for cur- rent/base year
(ii) Paddy, Sugarcane and Potato	* Seed Rate, Seed Price: CCS from DESAg * WPI: M/o Commerce and Indus- try	Value of Seed = Area * VPH (Seed Rate*CCS Seed Price) for current year; In case CCS is not available for the current year. Value per hectare of current year = Value per hectare of reported year from CCS * (WPI cur- rent/WPI reported year) of respec- tive crop.	Value of Seed inputs = Area * VPH (Seed Rate * CCS Seed Price) for base year.	
<ul> <li>(iii) Other cereals, other condiments &amp; spices, coconut, miscellaneous food crops</li> </ul>	* VPH of seed: Study conducted by Directorate of Marketing Inspection (DMI), M/o Agricul- ture * Area: State DESs * WPI: M/o Commerce and Indus- try	Value of seed = Estimate in col. (4) * relevant WPI current/ WPI base	Value of seed = area under the crop in the current year* value of seed per hectare in the base year	

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(contd.)

Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
<ul> <li>(iv) Misc. Non-Food Crops, Tapi- oca, Fodder, Guar Seed, Cot- ton, Dry Chillies, Other</li> <li>Vegetables &amp; Dry-ginger</li> </ul>	* Value per Hectare (VPH): Benchmark study conducted by State DESs * Area: State DESs * WPI: M/o Commerce and Indus- try	Value of inputs = Estimate in col. (4) * relevant WPI current/ WPI base	Value of inputs = (area * Value per Hectare as per Bench mark study)* relevant Wholesale Price Index (WPI) for 2011-12	Input cost per hectare has remained constant over years, with only price adjustments.
(2) Pesticides	* Consumption and prices: Dte. of Quarantine & Plant Protection * WPI: M/o Commerce and Indus- try	Value of input = State-wise con- sumption * current year price; WPI used for extrapolation till current year prices are received	Value of input = State-wise con- sumption * base year price	
(3) Repair & Maintenance for Crop Sector	* Average cost of Repair and Maintenance on (i) Orchards & Plantation Resources, (ii) Wells & Irrigation, (iii) Agricultural Machinery & Implement and (iv) Transport Equipment: All India Debt and Investment Survey (AI- DIS), 2013	Benchmark/ Base year estimates (as derived from AIDIS, 2013) moved with the estimates of capi- tal stock of farm business at cur- rent prices	Benchmark/ Base year estimates (as derived from AIDIS, 2013) moved with the estimates of capi- tal stock of farm business at con- stant prices	
(4) Electricity	* Consumption of electricity for agricultural purposes and prices: Central Electricity Authority	Value of electricity inputs = elec- tricity consumption in the current year * current year price	Value of electricity inputs = elec- tricity consumption in the current year * base year price	
				(contd.)

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At current prices         At current price	Item	Data: Source	Method of	f estimation	Remarks
(1)     (2)     (3)     (3)     (4)       (5) Chemical Fertilisers     * Consumption and Prices: Ferti liser Association of India     Value of inputs = quantity con- sumed in the current year * base rent year price     (4)       (6) Diesel oil     * Number of tractors: Agriculture Number of tractors: Agriculture * Number of diesel angles/tractors in the current * Number of diesel ongines/tractors in the current * Number of diesel ongines/tractors in the current * Consumption in value terms per per diesel engine/tractor in the diesel engine/tractor in the diesel engine/tractor in the search Data Book. ICAR     Number rents, are the engines/tractors in the current year * base rents are consumption in value terms per per diesel engine/tractor in the diesel engine/tractor in the diesel engine/tractor in the diesel engine/tractor in the diesel engine/tractor in the search of diesel on per rent year     (4)       (7) Irrigation charges     * Receipts of Government from diesel engine/tractor in the relevant head from DESAg     Total receipts in the relevant head from DESAg     Total receipts in the relevant head from Sec of value port     An estim       (8) Market charges for crops     * Gross irrigated area: State DESs     Market charges at current prices of output of crops at tase year     An estim			At current prices	At constant (2011-12) prices	
(5) Chemical Fertilisers       * Consumption and Prices: Fenti itser Association of India       value of inputs = quantity con- sumed in the current year * buse rent year rent       Yalue of inputs = no. of diesel       Number         (6) Diesel oil       * Number of tractors: Agriculture Research Data Book, ICAR       Value of inputs = no. of diesel       Number         (7) Diesel oil       * Number of tractors: Agriculture Number of diesel engines/tractors in the current year       Value of inputs = no. of diesel       Number engines/tractors in the current year       Number for the year has         (7) Diesel oil       * Number of diesel ongines: ILC, 1977 and ILC, 2003       year       seconsumption in value terms per diesel engine and per tractor: CS       Yalue of inputs = no. of diesel       Number for the year         (7) Irrigation charges       * Receipts of Government diesel engine and per tractor: CCS       Year       seconsumption in value terms per per diesel engine and per tractor: CCS       Year       seconsumption in value terms per per diesel engine and per tractor: CCS         (7) Irrigation charges       * Receipts of Government diesel engine and per tractor: CCS       Total receipts in the relevant head       Gross Irrigated Area through gov- second for the year       and.         (7) Irrigation charges       * Gross irrigated area: State DESA       Total receipts in the relevant head       Gross Irrigated Area through gov- per diesel engine and ere: State OSA       Andet charges = 3.22% of value       An estim         <	(1)	(2)	(3)	(4)	(5)
(6) Diesel oil       * Number of tractors: Agriculture       Value of inputs = no. of diesel       Number of tractors: Agriculture         Research Data Book, ICAR       engines/tractors in the current       engines/tractors in the current year for the year has 1997 and ILC, 2003       year* consumption in value terms per year has 1997 and ILC, 2003       year* consumption in value terms per year has 1997 and ILC, 2003       year* consumption in value terms per year has diesel engine/tractor in the base inter-sur-       inter-sur-         * Consumption of diesel oil per diesel oil per diesel engine/tractor in the sure diesel engine and per tractor: CCS from DESAg       Year       rate.         (7) Irrigation charges       * Receipts of Government from greated area through gover       seconstruction in the relevant head       from sale of water in the seconstruction and the charge of water in the second	(5) Chemical Fertilisers	* Consumption and Prices: Ferti- liser Association of India	Value of inputs = quantity con- sumed in the current year * cur- rent year price	Value of inputs = quantity con- sumed in the current year * base year price	
(7) Irrigation charges       * Receipts of Government from       Total receipts in the relevant head       Gross Irrigated Area through govater         sale of water: State Government       from sale of water       erment canals (ha) * Per Hectare         Budget       receipt from sale of water       receipt from sale of water in base         * Gross irrigated area: State DESs       year       year         (8) Market charges for crops       Market charges = 3.22% of value       An estim of market prices         of output of crops at current prices       of output of crops at current prices       put has by the D	(6) Diesel oil	* Number of tractors: Agriculture Research Data Book, ICAR * Number of diesel engines: ILC, 1997 and ILC, 2003 * Consumption of diesel oil per diesel engine and per tractor: CCS from DESAg	Value of inputs = no. of diesel engines/tractors in the current year* consumption in value terms per diesel engine/tractor in the current year	Value of inputs = no. of diesel engines/tractors in the current year * consumption in value terms per diesel engine/tractor in the base year	Number of diesel engines/tractors for the years beyond the survey year has been calculated using inter-survey/intercensal growth rate.
(8) Market charges for crops          (8) Market charges for crops       Market charges = 3.22% of value       An estim         (8) Market charges for crops       Market charges = 3.22% of value       An estim         of output of crops at current prices       of output of crops at base year       of market put has by prices         very on m       prices       prices       very on m         very on m       prices       prices       very on m	(7) Irrigation charges	* Receipts of Government from sale of water: State Government Budget * Gross irrigated area: State DESs	Total receipts in the relevant head from sale of water	Gross Irrigated Area through gov- ernment canals (ha) * Per Hectare receipt from sale of water in base year	
	(8) Market charges for crops		Market charges = 3.22% of value of output of crops at current prices	Market charges = 3.22% of value of output of crops at base year prices	An estimated proportion of 3.22% of market charges to value of output has been derived using a survey on market margins conducted by the DESAg during 2004-05

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At current prices         At constant (2011-12) prices           (1)         (2)         (3)         (4)           (2) Feed of livestock for Crop         * Age-vise Species-vise Popula         Value of Feed = Per animal annual         Value of Feed = Per animal annual         Per animal annual           Sector         * Age-vise Species-vise Popula         203         (3)         (4)         Adult           Sector         * Prices of Dry Fodder, Green         * Adult Male Buffalo *         Adult Male Buffalo *         Adult           * Prices of Dry Fodder, Green         * Prices of Dry Fodder, Green         Current Year price * population of Base Year price * population of deriv         East           * Prices of Dry Fodder         Carent Year price = Base Year         Price: Arenage price for Dry Fod- Carent         East           * WPI: Mo Commerce and Indus         Current Year price = Base Year         Price: Arenage price for Dry Fod- Carent         East           * WPI: Mo Commerce and Indus         Current Year price # population of Base Year Price * Adult Male Buffalo *         East         East           * Trans inflated with growth rate of trans by CCS         these categories *         Price for Dry Fod- Carent         East           * Trigation System         *         WPI of Fodder and food grains         Price setimated with growth rate of trans by CCS         Cant	Item	Data: Source	Method of	f estimation	Remarks
(1)     (2)     (3)     (3)     (4)       (9) Feed of livestock for Crop     * Age-wise Species-wise Population rates of Adult Male     (1)     (2)       Sector     ion: ILC. 2003, 2007 and 2012     Consumption rates of Adult Male     (2)     (4)       Sector     ion: ILC. 2003, 2007 and 2012     Consumption rates of Adult Male     (2)     (4)       Sector     ion: ILC. 2003, 2007 and 2012     Consumption rates of Adult Male     (2)     (4)       Fodder and Concentrates: CCS     these categories     these categories     (4)       Fodder and Concentrates: CCS     these categories     these categories     (4)       Tron DISAg     Current Year price * population of Base Year     Price: Average price for Dry Fod- Cent     Cent       Try     trans: inflated with growth rate of     trans: by CCS     Cent       Try     trans: inflated with growth rate of     trans: by CCS     Cent       Operation of Govt. Irrigation System     * Annual Reports of NDEs     Estimates of GVA at current     Base year estimates are moved       Item     emmens     * Annual Reports of NDEs     approach.     through government canals       1     Irrigation System     * Annual Reports of NDEs     Estimates of GVA at current     Base year estimates are moved       1     Irrigation System     * Annual Reports of NDEs     Est			At current prices	At constant (2011-12) prices	
(9) Feed of livestock for Copp       * Age-wise Species-wise Population       Value of Feed = Per animal annual       Per a       Per animal annual       Per a         Sector       from DADF       Consumption rates of Adult Male       Consumption rates of Adult Male       Adult Male         From DADF       cattle & Adult Male       Consumption rates of Adult Male       Consumption rates of Adult Male       Adult         * Prices of Dry Fodder, Green       current Vear price * population of       Base Vear price * population of       deriv         * Prices of Dry Fodder, Green       current Vear price * population of       Base Vear price * population of       deriv         * WPI ADD ESAg       three caregories       three caregories       deriv       Estin         * WPI: M/o Commerce and Indus-       current Vear price = Base Vear       three and Concen-       Base         try       try       three caregories       deriv       Estin         try       try       three caregories       deriv       Estin         try       three caregories       deriv       three caregories       deriv         try       three caregories       deriv       three caregories       deriv         try       three caregories       deriv       three caregories       deriv         try	(1)	(2)	(3)	(4)	(5)
2. Irrigation System       2. Irrigation System         0. Operation of Govt. Irrigation sys-       * Budget documents of state gov-       Estimates of GVA at current       Base year estimates are moved         0. Operation of Govt. Irrigation sys-       * Budget documents of state gov-       Estimates of GVA at current       Base year estimates are moved         1. Item       * Annual Reports of NDEs       approach.       Incues estimated using production       with the index of area irrigated         3. Livestock Products       * Annual Reports of NDEs       approach.       Incues down       Incues government canals         (a) Value of Output       * Production: DADF (Integrated       Value of output = current year       Value of output = current year         (i) Milk (Cattle, Buffalo and       * Production: DADF (Integrated       Value of output = current year       Value of output = current year         (i) Milk (Cattle, Buffalo and       Sample Survey (ISS) for MLP)       production       Production * base year price	(9) Feed of livestock for Crop Sector	* Age-wise Species-wise Popula- tion: ILC, 2003, 2007 and 2012 from DADF * Prices of Dry Fodder, Green Fodder and Concentrates: CCS from DESAg * WPI: M/o Commerce and Indus- try	Value of Feed = Per animal annual Consumption rates of Adult Male Cattle & Adult Male Buffalo * Current Year price * population of these categories Current Year price = Base Year Prices of Roughages and Concen- trates inflated with growth rate of WPI of Fodder and food grains respectively	Value of Feed = Per animal annual Consumption rates of Adult Male Cattle & Adult Male Buffalo * Base Year price * population of these categories Price: Average price for Dry Fod- der, Green Fodder and Concen- trates by CCS	Per animal annual Consumption rates of Adult Male Cattle & Adult Male Buffalo have been derived using the study on ^SIn- dia^Rs Livestock Feed Demand: Estimates and Projection^T by Centre of Economics and Social Research, New Delhi and National Centre for Agricultural Economics and Policy Research, New Delhi
3. Livestock Products         (a) Value of Output         (i) Milk (Cattle, Buffalo and * Production: DADF (Integrated Value of output = current year Value of output = current year Goat), Eggs and Wool Sample Survey (ISS) for MLP) production	<ol> <li>Irrigation System</li> <li>Operation of Govt. Irrigation system</li> </ol>	* Budget documents of state gov- ernments * Annual Reports of NDEs	Estimates of GVA at current prices estimated using production approach.	Base year estimates are moved with the index of area irrigated through government canals	
* Prices: State DESS * current year price	<ol> <li>Livestock Products</li> <li>(a) Value of Output</li> <li>(i) Milk (Cattle, Buffalo and Goat), Eggs and Wool</li> </ol>	* Production: DADF (Integrated Sample Survey (ISS) for MLP) * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(ii) Camel milk	* Production: State DESs * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(iii) Duck eggs	* Production: ISS from DADF, in cases where ISS covers duck eggs * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	States where ISS does not cover hen eggs -
				Production= 3.5% of hen eggs in case of Gujarat;
				Production = 3% of hen eggs in case of Goa, Madhya Pradesh, Mizoram, Daman & Diu, Dadra & Nagar Haveli, Delhi
(iv) Meat (Registered + Unregis- tered)	* Production: ISS from DADF and State DESs * Prices: State DESs	Value of output = production (af- ter adjusting the quantity produced in manufacturing sector) * current year price	Value of output = production (af- ter adjusting the quantity produced in manufacturing sector)* base year price	
(v) Meat (Products and by- products) (includes fats, edible offals & glands, hides & skins, heads & legs of slaughtered animals)		Animal-wise Meat (Product and by-product) estimated as % of Value of Meat at current price	Animal-wise Meat (Product and by-product) estimated as % of Value of Meat at base year price	Proportion of meat taken as meat product and by-product -Cattle (16.0%), Buffalo (14.49%), Goat (21.59%) Sheep (23.05%) and Pig (9.4%) (Based on a study by NRCM on Meat Products and Meat by-products, 2013-14)

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(vi) Poultry Meat	* Poultry population: ILC, 2003 and ILC, 2012 from DADF * Production of eggs: ISS from DADF * Prices: State DESs	Value of output is estimated sepa- rately for four components (a) chicken and ducklings killed, (b) adult fowls killed, (c) adult ducks killed and (d) other poultry killed multiplied by the respective price per bird.	Same procedure as adopted for the current price estimates, but the prices used are the respective base year prices	<ul> <li>(a) chickens &amp; ducklings killed         <ul> <li>a</li> <li>chickens &amp; ducklings killed</li> <li>chicks survived + 50% of hens &amp; cock population + 50% of ducks</li> <li>cock population + population of chickens &amp; ducklings + 62.5 %</li> <li>of other poultry)</li> </ul> </li> </ul>
				<i>-total poultry of next year</i> (population of hens +cocks + ducks + drakes + chickens + other poultry),
				where chicks survived = 1/3rd of eggs kept for hatching (eggs kept for hatching = fixed ratio * total egg production)
				(b) adult fowls killed = $50\%$ of population of hens & cocks
				(c) adult ducks killed = 50% of population of ducks & drakes
				(contd.)

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Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
				(d) other poultry = 37.5 % of other poultry
s from Fallen Animals y for cattle and buffalo)	* Mortality rates: DMI reports * Population: ILC, 2003, 2007 and 2012 from DADF	Value of output = Number of Fallen animal * yield rate *current year price	Value of output =Number of Fallen animal * yield rate * base year price	
tttle hides, Buffalo hides, t skin and Sheep skin en animals)	* Mortality rates: DMI Reports * Population: ILC, 2003, 2007 and 2012 from DADF	Value of output = Number of Fallen animal * current value of hides/ skin per animal	Value of output = Number of Fallen animal * base year value of hides/ skin per animal	
nel hair/Goat hair /Pig tles	* Population: ILC, 2003, 2007 and 2012 from DADF * Yield rates for goat hair: DMI Reports * Prices: State DESs	Value of output = yield rate * pop- ulation of camel/goat/pig * current year price	Value of output = yield rate * pop- ulation of camel/goat/pig * base year price	Yield rate of hair Camel - 800 gm. per animal per year (as available for single-humped camel) Pig Bristles: For pig bristles 155gm per pig per year.
g and Droplet Dung Fuel Dung Manure	* Population: ILC, 2003, 2007 and 2012 from DADF * Prices, evacuation rate for dung, utilization rate for dung cake & dung manure: State DESs	Production of dung = population of cattle, buffalo, sheep and goat * evacuation rate (a) dung fuel value of output = 0.4 * utilisation rate for estimating dung used for making cakes	Same procedure as adopted for the current price estimates, but the prices used are the respective base year prices	Evacuation rate for sheep and goat have been derived from a study conducted by Central Institute for Research on Goats and National Centre for Agricultural Economics and Policy Research, New Delhi,

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		* dung production * current year price (b) dung manure value of output = utilisation rate for estimating dung used for manure purpose * dung production * current year price		during 2013, on "Positive Envi- ronmental Externalities of Live- stock in Mixed Farming Systems of India"
ki) Other Products - Silk - Ere, Tasar, Muga, Honey and Bee Wax	* Production and prices of silk: Central Silk Board * Production and prices of honey: KVIC * Production and prices of bee wax: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
xii) Increment in livestock	* Population: ILC, 2003, 2007 and 2012 from DADF * Prices: State DESs	Value of output = additions to livestock population during the year * current year price	Value of output = additions to livestock population during the year * base year price	
b) Inputs-Livestock				
<ol> <li>Repair and maintenance for livestock and operational costs</li> </ol>	* Average cost of Repair and Maintenance on (i) Barns; (ii) Animal Sheds and (iii) other mis- cellaneous costs: All India Debt and Investment Survey (AIDIS), 2013	Benchmark estimates (as derived from AIDIS, 2013) moved with the estimates of capital stock of farm business at current prices + Value of Operational Cost at current prices	Benchmark estimates (as derived from AIDIS, 2013) moved with the estimates of capital stock of farm business at constant prices + Value of Operational Cost at constant prices	Value of Operational Cost = 0.2 <sup>4</sup> % of value of output at cur- rent/constant prices of (poultry meat, silk, wool, hides and increment in livestock)

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(2) Market charges for Live stock	* Number of slaughtered animals: ISS from DADF * Municipal charges per slaugh- tered animal: State DESs	Market charges = rates in Rupees per animal in current year * no. of slaughtered animals	Market charges = rates in Rupees per animal in base year * no. of slaughtered animals	Assumed to be fixed till revised by state governments.
(3) Feed of livestock for Livestoch Sector	<ul> <li>* Age-wise Species-wise Population: ILC, 2003, 2007 and 2012 from DADF</li> <li>* State-wise average price for Dry Fodder, Green Fodder and Concentrates: CCS from DESAg</li> </ul>	Value of Feed = Species-wise and Category-wise per animal annual feed Consumption value for base year (except Adult Male Cattle & Adult Male Buffalo) *(relevant indicator based on WPI of Fodder and food grains)* Species-wise and Category-wise population	Value of Feed = Species-wise and Category-wise per animal annual freed Consumption value for base year (except Adult Male Cattle & Adult Male Buffalo) * Species- wise and Category-wise popula- tion	Per animal annual Consumption rates have been derived using the study on ^SIndia^Rs Livestock Feed Demand: Estimates and Pro- jection^T by Centre of Economics and Social Research, New Delhi and National Centre for Agricul- tural Economics and Policy Research, New Delhi
4. Forestry (a) value of output				
(1) Industrial wood from Forests	* Production and Prices: State DESs	Recorded: Value of output = pro- duction * current year price Total = 1.1*Value of output of recorded production	Recorded: Value of output = pro- duction * base year price Total = 1.1*Value of output of recorded production	Value of output of unrecorded production= 0.1 * value of output of recorded production
				(contd.)

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(2) Industrial Wood from Trees outside forest	* Growing Stock: India State of Forest Report (ISFR), 2011 and 2013 from Forest Survey of India	Value = Estimated production (Projection using potential pro- duction from TOF in the year of survey and Growth Rate of Growing Stock of TOF) * base year price* (Current year price of Industrial Wood from Forests/Base Year Price of Indus- trial Wood from Forests)	Value = Estimated production (Projection using potential pro- duction from TOF in the year of survey and Growth Rate of Growing Stock of TOF) * base year price	Growth rate in price of industrial wood from TOF is the same as that of industrial wood from recorded forests
(3) Firewood	* Monthly Per Capita Quantity of Firewood consumed: NSS 68th Round CES, 2011-12 * Population: Projections based on Population Census-2011 * Firewood used for industrial purposes: ASI -2011-12 * Prices: State DESs	Value of Output: (Total Value of Firewood at Current Price - Value of agricultural by products used as firewood at Current Price)*1.0764	Value of Output: (Total Value of Firewood at Base Year Price - Value of agricultural by products used as firewood at Base Year Pri- ce)*1.0764	Total Value of Firewood= Monthly Per Capita quantity of firewood consumed * Popula- tion*(365/30)* Price in the refer- ence year ii) 1.0764 = Factor of adjustment for contribution of firewood for Industrial and Religious purposes

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(1) (4) Non Timber Forest Products (i) Minor forest products			I estimation	Kemarks
<ul> <li>(1)</li> <li>(4) Non Timber Forest Products</li> <li>*</li> <li>(i) Minor forest products</li> </ul>		At current prices	At constant (2011-12) prices	
<ul> <li>(4) Non Timber Forest Products</li> <li>*</li> <li>(i) Minor forest products</li> </ul>	(2)	(3)	(4)	(5)
1	* Value of Output: State DESs * WPI: M/o Commerce and Indus- try	Value of output estimates are directly furnished by the State DESs	Value of output at current prices deflated by the relevant WPI	
(ii) Fodder from forest	* Percentage of Livestock depen- dent on forest for fodder: India State of Forest Report (ISFR), 2013 from FSI	Value of Roughages (as estimated for the input -feed of livestock in crops & livestock sectors) at cur- rent year price*Percentage of Livestock dependent on forest for fodder	Value of Roughages at base year price*Percentage of Livestock dependent on forest for fodder	
(b) Inputs of forestry e	* Budget documents of state gov- ernments	16.2% of total value of output at current price	16.2% of total value of output at base year price	Calculated using the information available for 2010-11, 2011-12 & 2012-13
<ul> <li>5. Fishing</li> <li>(a) value of output</li> <li>*</li> <li>(1) Marine fish, inland fish and</li> <li>*</li> <li< td=""><td>* Production: DADF * Production, disposals and prices: State DESs</td><td>Value of output = Quantity of fish sold in raw form *current price + quantity of salted fish sold * cur- rent price + quantity of sun-dried fish * current price + quantity of fish let-in for freezing * current price</td><td>Value of output = Quantity of fish sold in raw form *Base year price + quantity of salted fish sold * Base year price + quantity of sun- dried fish * Base year price + quantity of fish let-in for freezing * Base year price</td><td></td></li<></ul>	* Production: DADF * Production, disposals and prices: State DESs	Value of output = Quantity of fish sold in raw form *current price + quantity of salted fish sold * cur- rent price + quantity of sun-dried fish * current price + quantity of fish let-in for freezing * current price	Value of output = Quantity of fish sold in raw form *Base year price + quantity of salted fish sold * Base year price + quantity of sun- dried fish * Base year price + quantity of fish let-in for freezing * Base year price	

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
2) Subsistence fish	* Production, disposals and prices: State DESs	Value of output = Production of subsistence fish * Current price	Value of output = Production of subsistence fish * Base year price	Production of subsistence fish- 0.123*production of Inland fish, for the states where production of subsistence fish is not available
b) i <i>inputs</i> 1) Marine fish and prawns		Value of inputs = 0.225 * value of catch at current prices of marine fish and prawns	Value of inputs = 0.225 * value of catch of marine fish and prawns at base year prices	Fixed input rates
2) Inland fish		Value of inputs = 0.1 * value of catch of inland fish at current prices	Value of inputs = 0.1 * value of catch of inland fish at base year prices	Fixed input rates
<ol> <li>Fish salting/sun dried/subsis- tence</li> </ol>		Value of inputs = 0.01 * value of output of (Let out of salted fish and subsistence fish) at current prices	Value of inputs = 0.01 * value of output of (Let out of salted fish and subsistence fish) at base year prices	Fixed input rates
. Mining & Quarrying	* Annual Reports of Public Sector Companies * State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * WPI: M/o Commerce and Industry	Estimates of GVA at current prices are estimated by the pro- duction approach and allocated to States. Compensation of Employees (CE) is distributed on the basis of the number of employees in each State in propor- tion to State-wise employment in		In the case of single-state NDEs, the entire GVA is allocated to that State/UT.

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Item	Data: Source	Method of	festimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		that NDE, while Operating Sur- plus (OS = GVA -CE) is distrib- uted in proportion to the State-wise gross block (Value of Assets) of that NDE.	Current year estimates are deflated using WPI	
(1) coal	* MCA21 database for the annual reports of Private Sector Compan- ies * State-wise production of coal in private sector: O/o Coal Controller * WPI: M/o Commerce and Indus- try	Estimates of GVA at current prices are estimated by the pro- duction approach and allocated to States on the basis of the : state-wise production of coal in . private sector		
(2) crude petroleum and natural gas	* Annual Reports of Public Sector Companies * State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * WPI: M/o Commerce and Industry	Estimates of GVA at current prices are estimated by the pro- duction approach and allocated to States. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while Operating Surplus (OS = GVA -CE) is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	I t S Current year estimates are deflated using WPI	n the case of single-state NDEs, he entire GVA is allocated to that state/UT.
				(contd.)

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Image: constant of the provise contract of the provise	Item	Data: Source	Method of	f estimation	Remarks
(1)         (2)         (3)         (4)         (4)         (5) <th></th> <th></th> <th>At current prices</th> <th>At constant (2011-12) prices</th> <th></th>			At current prices	At constant (2011-12) prices	
* MCA21 duabase for the annual reports of Phynike Sector Compan- ies       • MCA21 duabase for the annual reports of Phynike Sector Compan- ies       • MCA21 duabase for the States wise production of crude oil in the phynice oil in the phynice       • MCA21 duabase for the States wise production of crude in the phynice       • MCA21 duabase for the sector       • MCA21 duabase for the sector       • MCA21 duabase for the sector       • MCA21 duabase for the production of crude oil in the ph- woP1.       • MCA21 duabase for the sector       • MCA21 duabase for the production of crude oil in the ph- sector       • MCA21 duabase for the physical or the production of the production of the sector       • MCA21 duabase for the production of the production production produ	(1)	(2)	(3)	(4)	(5)
(3) other major minerals       * Annual Reports of Public Sector       * Estimates of GVA at current       Constant price estimates are       Deflators of metallic and non-         * Major minerals other than salt       * MCA21 database for the amual       * Estimates of GVA at current       Constant price estimates are       Deflators of metallic and non-         reports of Private Sector Companies       * MCA21 database for the amual       production approach allocated       from the IBM data on production at the error duptin trates.       Deflators compiled       metallic minerals can be derived         reports of Private Sector Companies       * MCA21 database for the amual       production approach allocated       from the IBM data on production at the error duptin trates.       State level also.         * State wise mineral-wise data on production: IBM       * Prices and input of major mineral-wise production       prices and input rates.       State level also.         * Prices and input of major mineral-wise production       * State wise walke of state-wise value of error dusing deflators of non-metallic minerals       Constant price estimates are       Deflators of non-metallic minerals         site IBM       * Input rates.       * Commissioner's       * Estimate of state-wise value of error dusing deflators of non-metallic minerals       Deflators of non-metallic minerals         eited       * Input rates.       * Input rates.       Perfore trate wise value of error dusing deflators of non-metallic minerals       Defla		* MCA21 database for the annual reports of Private Sector Compan- ies * State-wise production of crude oil in the private corporate sector: MoPNG * WPI: M/o Commerce and Indus- try	Estimates of GVA at current prices are estimated by the pro- duction approach and allocated to States on the basis of State-wise production of crude oil in the pri- vate corporate sector		
Annual Reports of Public Sector       * Estimates of CVA at current       Constant price settimates are betations of metallic and non- companies         Major minerals other than salt       * MCA21 database for the annual reports of Private Sector Compan- ties       Prices are estimates are betations of metallic and non- reports of Private Sector Compan- ties       Definition at the derived using deflators compiled in the IBM data on production.         * MCA21 database for the annual reports of Private Sector Compan- ies       to the State wise is mineral-wise production       Figue wise interal-wise production       State visit in the IBM data on production at the is state-wise mineral-wise production         * State-wise       * State-wise       mineral-wise production       from the IBM publication at the derived using deflators of morthe IBM         State       * State-wise mineral-wise data on production: IBM       * To the state-wise value of as: IBM       State-wise with the IBM publication at the state wise value of of find with a on production, prices       Deflators of non-metallic minerals compared from the IBM pub- ited         State       * Output: Tates: Hindustan Salt Lim- tied       * Estimate of state-wise value of derived using deflators of non-metallic minerals of the case of salt produc- ited       Deflators of non-metallic minerals and input rates.         * Input rates: Hindustan Salt Lim- tied       * Estimate of state-wise value added, input rates.       Deflators of non-metallic minerals and input rates.	(3) other major minerals			-	
Salt       * Output: Salt Commissioner's       * Estimate of state-wise value of constant price estimates are of fractors of non-metallic minerals       Deflators of non-metallic minerals         Office       output in the case of salt produc-       derived using deflators of nonme-       can be derived from the IBM pub-         * Input rates: Hindustan Salt Lim- tion is obtained from Salt Com-       tallic minerals compiled from the       incation at the State level also.         ited       * For estimating value added,       and input rates.       and input rates.         of Hindustan Salt Limited are       of Hindustan Salt Limited are       and input rates.	Major minerals other than salt	* Annual Reports of Public Sector Companies * MCA21 database for the annual reports of Private Sector Compan- ies * State-wise mineral-wise data on production: IBM * Prices and input of major miner- als: IBM	<ul> <li>* Estimates of GVA at current prices are estimated by the production approach allocated to the States using State-wise mineral-wise production</li> </ul>	Constant price estimates are derived using deflators compiled from the IBM data on production, prices and input rates.	Deflators of metallic and non- metallic minerals can be derived from the IBM publication at the State level also.
	Salt	* Output: Salt Commissioner's Office * Input rates: Hindustan Salt Lim- ited	* Estimate of state-wise value of output in the case of salt produc- tion is obtained from Salt Com- missioner's Office. * For estimating value added, input rates as observed in the case of Hindustan Salt Limited are used.	Constant price estimates are derived using deflators of nonme- tallic minerals compiled from the IBM data on production, prices and input rates.	Deflators of non-metallic minerals can be derived from the IBM pub- lication at the State level also.

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(1) (4) minor minerals except sand * St for * II			t estimation	Remarks
(1) (4) minor minerals except sand * Si for for * II		At current prices	At constant (2011-12) prices	
(4) minor minerals except sand * Si for for * II	(2)	(3)	(4)	(5)
	State Geological Departments r value of output IBM for input rates	* Value of output estimates are directly available at current year price * Input rates of non-metallic min- erals as available from IBM are used.	Constant price estimates are derived using deflators of nonme- tallic minerals compiled from the IBM data on production, prices and input rates.	Deflators of non-metallic minerals can be derived from the IBM pub- lication at the State level also.
(5) Sand * R * Ir	Results of CBRI Study Input rates: IBM	* Value of output = 7.21% of value of material inputs in con- struction, adjusted for TTM * Intermediate consumption and Value Added derived using the input rate obtained from IBM * GVA allocated to States on the basis of value of production of sand received from the States	Constant price estimates are derived using deflators of nonme- tallic minerals compiled from the IBM data on production, prices and input rates.	<ol> <li>Growth of GVA-Construction can be used as an indicator to move the previous year's esti- mates.</li> <li>Deflators of non-metallic minerals can be derived from the IBM publication at the State level also.</li> </ol>
7. Manufacturing Public corporations: Railway * R Workshops & Production * V Units	Railway Budget Documents WPI: M/o Commerce and Indus-	* Estimates of GVA compiled using production approach and allocated to the States on the basis of sanctioned strength of employees in the case of Railway Workshops & state-wise salaries in the case of production units.	Current price estimates are deflated with the relevant WPI.	

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IDENTIFY         At current prices         At current prices         At current prices         At current price	Item	Data: Source	Method of	f estimation	Remarks
(1)     (2)     (3)     (3)     (3)     (6)     (5)       Public corporations: Other     * Budget Documents of central & * Estimates of GVA compiled     Current price estimates are using production approach.     (4)     (4)     (5)     (5)       Departmental Enterprices     state governments     using production approach.     (4)     (4)     (5)     (5)       Departmental Enterprices     * WPI: M/o Commerce and Indus.     * GVA of States on the basis of the location of the DE.     (4)     (7)     (7)     (4)       Public corporations: Nm.     * Annual Reports of NDEs     * Estimates of GVA at current     (4) <t< th=""><th></th><th></th><th>At current prices</th><th>At constant (2011-12) prices</th><th></th></t<>			At current prices	At constant (2011-12) prices	
Nollic corporations: Other Departmental Enterprises state governments (DEs)         * Budjeat Documents of central As state governments * WPI: M/o Commerce and Indus- * WPI: M/o Commerce and Indus- * WPI: M/o Commerce and Indus- try         * Estimates are value         Current price estimates are deflated with the relevant WPI.         the respective States.           Departmental Enterprises (DEs)         * WPI: M/o Commerce and Indus- Prise         * GVA of central DEs are allo- cated to the States on the basis of the location of the DE.         Annual Reports of NDEs states vise number of employees the location of the DE.         In the case of single-state NDEs the cation of the DE.           Public corporations: Non- bepartmental Enterprises & value of assets: Public Enter- prises Survey of DPE miss Survey of DPE multi-state NDEs. G is in notation approach and allo- prises for the multi-state NDEs. G is in notation approach and allo- prises for the multi-state NDEs. G is in notation approach and allo- state-wise gos block Value of Astate-wise in proportion to State- wise employate- in the case of Astate-wise gos block Value of Astate- state- in proportion to State- wise provident of the State-wise gos block Value of Astate- in the relevant WPI.         And	(1)	(2)	(3)	(4)	(5)
Public corporations: Non-       * Annual Reports of NDEs       * Estimates of GVA at current       Current price estimates are       In the case of single-state NDEs         Departmental Enterprises       * State-wise number of employees       * State-wise number of employees       # state-wise number of employees       In the case of single-state NDEs         VDEs)       & value of assets: Public Enter-       acted to States in the case of       deflated with the relevant WPI.       the entire GVA is allocated to the pais of the nulti-state NDEs. CE is         Industry       Mon Commerce and       inti-state NDEs. CE is       industry       industry       State/UT.         Industry       No Commerce and       inti-state NDEs. CE is       industry       industry       State/UT.         Industry       Industry       industry       industry       industry       State/UT.         Private Comparison       NDE, while OS is distributed       in proportion to the State-wise goes block (Value of Assets)       deflated with the relevant WPI.         Private Comparison       Mrtate Comparison       acted to State-wise goes block (Value of Assets)       deflated with the relevant WPI.         Private Comparison       * MCA21 database for the annual       Bestinction to the State-wise goes block (Value of Assets)       deflated with the relevant WPI.         Private Comparison       * MCA21 database for the annual       Bestin	Public corporations: Other Departmental Enterprises (DEs)	<ul> <li>* Budget Documents of central &amp; state governments</li> <li>* WPI: M/o Commerce and Industry</li> </ul>	<ul> <li>* Estimates of GVA compiled using production approach.</li> <li>* GVA of central DEs are allo- cated to the States on the basis of the location of the DE.</li> </ul>	Current price estimates are deflated with the relevant WPI.	GVA of State DEs are allocated to the respective States.
Private Corporations       * MCA21 database for the annual       * Estimates of GVA are compiled       Current price estimates are         Private Companies       * MCA21 database for the annual       * Estimates of GVA are compiled       Current price estimates are         reports of Private Sector Compan-       using production for the Pri-       deflated with the relevant WPI.         ies       vate Sector Companies using	Public corporations: Non- Departmental Enterprises (NDEs)	* Annual Reports of NDEs * State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * WPI: M/o Commerce and Industry	* Estimates of GVA at current prices are estimated by the production approach and allo- cated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State- wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated with the relevant WPI.	In the case of single-state NDEs, the entire GVA is allocated to that State/UT.
	Private Corporations Private Companies	* MCA21 database for the annual reports of Private Sector Compan- ies	* Estimates of GVA are compiled using production for the Pri- vate Sector Companies using	Current price estimates are deflated with the relevant WPI.	

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(1)A current pricesA constant (2011-12) prices(1)(2)(2)(4)(5)(2)(2)(3)(4)(5)(3)(3)(3)(4)(5)(5)(3)(3)(4)(4)(4)(5)(5)(4)(3)(4)(4)(4)(4)(5)(5)(5)(4)(4)(4)(4)(5)(5)(5)(4)(4)(4)(4)(5)(5)(5)(4)(4)(4)(4)(4)(1)(1)(1)(4)(4)(4)(4)(1)(1)(4)(4)(4)(4)(4)(1)(1)(4)(4)(4)(4)(4)(1)(1)(4)(4)(4)(4)(4)(1)(1)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4)(4)(4)(1)(4)(4)(4)(4) <th></th> <th>Data. Dunt to</th> <th></th> <th></th> <th></th>		Data. Dunt to			
(1)(2)(3)(4)(5) $(1)$ * Annual Survey of Industries $MCA21$ database and allo- cated to States (by compile- value)(4)(5)(5) $(1)$ * WPI: Mio Commerce and Indus- try* wPI: Mio Commerce and Indus- state-value state(10)(11)(11)(11) <i>Private Quasi- corporations</i> * ASI* atte-value state state-value stateatte-value state atte-value state(11)(11)(12) <i>Private Quasi- corporations</i> * ASI* State-value state atte-value state(12)(12)(12)(12) <i>Private Quasi- corporations</i> * ASI* State-value state atte-value state(12)(12)(12)(12) <i>Private Quasi- corporations</i> * ASI* State-value state atte-value state(12)(13)(14) <i>Private Quasi- corporations</i> * ASI* State-value state atte-value state(12)(13)(14) <i>Private Quasi- corporations</i> * ASI* State-value state atte-value state(13)(14)(14)(11)(11)(12)(12)(13)(14)(14)(14)(12)(11)(12)(13)(14)(14)(14)(12)(13)(14)(14)(14)(14)(12)(13)(14)(14)(14)(14)(12)(13)(14)(14)(14)(14)(13)(14)(14)(16)(14)(16)(14)(14)(16)(16)(16)(16)			At current prices	At constant (2011-12) prices	
* Annual Survey of Industries     MCA21 database and allo- (ASI)       (ASI)     cated to States ( <i>ty compiler</i> - (ASI)       (ASI)     cated to States ( <i>ty compiler</i> - (ASI)       (ASI)     ion category) on the basis of state-wise value added in mandacuming (oal1 not institution-wise) as per last variable ASI.       Private Quasi- corporations     * ASI       * ANI     * State-wise estimates of GVA, by institution-wise) as per last variable ASI.       Private Quasi- corporations     * ASI       * ANI     * State-wise estimates of GVA, by institution-wise) as per last variable ASI.       Private Quasi- corporations     * State-wise estimates of GVA, by institution-wise) as per last variable ASI.       Private Quasi- corporations     * State-wise estimates of GVA, by institution-wise) as per last variable ASI.       Private Quasi- corporations     * State-wise estimates are variable ASI.       Private Uniccorporated     * State-wise estimates are variable esti- mates of the preceding vare variable esti- mates of the preceding vare vare volter from ASS and 68th Round EUS, 2010-11       * NSS 67th Round EUS, 2010-11     Per effective worker from NSS 68th stand- volter from NSS 68th	(1)	(2)	(3)	(4)	(5)
(AS1)       cated to States (b, compile- * WPI: Mo Commerce and Indus- ry       cated to States (b, compile- interacting (cord) not the basis of matterning (cord) not institution-wise) as per last available AS1.         Private Quasi- corporations       * AS1       state-wise suitates of CVA, by institution-wise) as per last available AS1.         Private Quasi- corporations       * AS1       * State-wise setimates of GVA, by institution-wise) as per last available AS1.         Private Quasi- corporations       * AS1       * State-wise setimates of GVA, by institution-wise) as per last available AS1.         Private Quasi- corporations       * AS1       * State-wise setimates of GVA, by index of Industrial Production (FD)       * State-wise setimates of GVA, by index AS1 but not registered under ry       * Commerce and Indus- inder AS1 but not registered under Companies Ac1).         Private Unincorporated       * WPI: Moond ES2, 2010-11       * TII AS1 becomes available, seti- mates of the preceding year use extrapolated using IP       * True to the current price estimates are extrapolated using IP         Private Unincorporated       * NSS 67th Round ES2, 2010-11       * GVA at the national level for the CVA coupled sing Branchank estimates of ever and number of effec- tive worker from NSS fielh         Round       * NSS 67th Round ES2, 2010-11       Prive and number of effec- tive worker from NSS fielh		* Annual Survey of Industries	MCA21 database and allo-		
* WPI: Mo Commerce and Indus       ion cargeory) on the basis of try         try       isate-wise value added in munifacturing (oral, not institution-wise) as per last available. SI.         Private Quasi- corporations       * ASI         * Mot       * ASI         Private Quasi- corporations       * ASI         * Index of Industrial Production       emanfacturing (oral, not institution-wise) as per last available. ASI.         * Index of Industrial Production       emplation category, obtained       deflated with the relevant WPI.         (IIP)       import of Ractories covered       deflated with the relevant WPI.         (IIP)       emproved       comporations (Factories covered         try       uber ASI but not registered under       companies Aci.         try       uber ASI but not registered under       companies Aci.         try       inder ASI but not registered under       companies Aci.         try       inder ASI but not registered under       companies Aci.         try       inder ASI but not registered under       inder ASI but not registered under         try       inder ASI but not registered under       companies Aci.         try       inder ASI but not registered under       inder ASI but not registered under         try       inder ASI but not registered under       inder ASI but not registered under		(ASI)	cated to States (by compila-		
Ty       state-wise value added in munification (oral, not institution-wise) as per last wailable AT         Private Quasi- corporations       * ASI         * ASI       * Sate-wise estimates of GVA, by wailable AT         * Index of Industrial Production       * State-wise estimates of GVA, by compliation category, obtained       deflated with the relevant WPL.         (IP)       * NSI for the quasi- iry       * State-wise estimates of GVA, by compliation category, obtained       deflated with the relevant WPL.         The or of Industrial Production       * State-wise estimates of compliation category, obtained       deflated with the relevant WPL.         (IP)       from ASI for the quasi- try       * State-wise estimates covered       *         * WPI: MO Commerce and Industrial Production       companies Acti       *       *         Private Unincorporated       * TIII ASI becomes available, esti- mates of the preceding year are extrapolated using IIP and WPI.       *       *         Private Unincorporated       * GVA at the national level for the funct-vise becomes detinates are extrapolated using trans are extrapolated using trans are extrapolated using trans are extrapolated using trans and effated with the relevant WPI.         * Instrovises       * NSS 67th Round ES, 2010-11       * GVA at the national level for the for worker from NSS 6th         * NSS 67th Round EUS, 2011-12       for worker from NSS 6th       *         * NSS 67th Round EUS, 2011-12		* WPI: M/o Commerce and Indus-	tion category) on the basis of		
Private Quasi- corporations       * ASI       manufacturing (total, not institution-wise) as per last available ASI.         Private Quasi- corporations       * ASI       state-wise estimates of GVA, by Current price estimates are available ASI.         Private Quasi- corporations       * ASI       * State-wise estimates of GVA, by Current price estimates are comparing (total, not all of the quasi-(IP))         * UP:       WD:       com ASI for the quasi-       the relevant WPI.         (IP)       try       comparing (total)       deflated with the relevant WPI.         Private Unicorporated       under ASI becomes available, estimates are extrapolated using IP and WPI.       # TII ASI becomes available, estimates are extrapolated using IP and WPI.         Private Unicorporated       * NSS 67th Round ES. 2010-11       # Try A the mational level for the current worker from NSS and 68th Round ES. 2010-11       deflated with the relevant WPI.         * NSS 67th Round ES. 2010-11       estrepolated using Water are extra are office-for worker from NSS follow       deflated with the relevant WPI.         * NSS 67th Round ES. 2010-11       per effective worker from NSS follow       deflated with the relevant WPI.         * NSS 67th Round ES. 2010-11       for worker from NSS follow       deflated with the relevant WPI.         * NSS 67th Round ES. 2010-11       for worker from NSS follow       deflated with the relevant WPI.         * NSS 67th Round ES. 2010-11       for worker		try	state-wise value added in		
Private Quasi- corporations       * ASI       institution-wise) as per last         Private Quasi- corporations       * ASI       * State-wise estimates of GVA, by         Value of Industrial Production       * State-wise estimates of GVA, by       Current price estimates are         * Index of Industrial Production       * State-wise estimates of GVA, by       Current price estimates are         * Index of Industrial Production       * State-wise estimates of GVA, by       Current price estimates are         * WPI: M/o Commerce and Indus       compilation category, obtained       deflated with the relevant WPI.         (IIP)       tron ASI for the quasi-       tron ASI for the quasi-         * WPI: M/o Commerce and Indus       comparisons (Factories covered       tron ASI for the quasi-         * WPI: M/o Commerce and Indus       comparisons (Factories covered       tron ASI for the quasi-         * WPI: M/o Commerce and Indus       comparisons (Factories covered       tron ASI for the quasi-         * WI = ASI for the production       comparisons (Factories covered       tron ASI for the precestimates are         * Totate Unincorporated       * GVA at the mational level for the       tran price estimates are         * Nose 67th Round ESI. 2010-112       67th Round ESI. 2010-112       for A compiled using value added         * Nose 67th Round ESI. 2010-12       for A compiled using value added       f			manufacturing (total, not		
Private Quasi- corporations     * ASI     available ASI.       Private Quasi- corporations     * ASI     * State-wise estimates of GVA, by     Current price estimates are       * Index of Industrial Production     * Index of Industrial Production     * State-wise estimates of GVA, by     Current price estimates are       * Index of Industrial Production     * Tind ASI for the quasi-     * Compilation category, obtained     deflated with the relevant WPI.       (IIP)     * WPI: M/o Commerce and Indus-     corporations (Factories covered     under ASI but not registered under       1     * WPI: M/o Commerce and Indus-     corporations (Factories covered     under ASI but not registered under       1     * WPI: M/o Commerce and Indus-     corporations gravitable, estimates are     ender work       1     * Till ASI becomes available, estimates of Companies Act).     * Till ASI becomes available, estimates are       Private Unincorporated     * CMA at the national level for the Current price estimates are       1     * Niss 67th Round ES, 2010-11     estrate-wise benchmark estimates of GVA compiled using Pare added       * NSS 67th Round ES, 2010-11     for the form NSS fash     ether elevant WPI.       * NSS 67th Round ES, 2010-11     for workers from NSS fash     ether elevant WPI.			institution-wise) as per last		
Private Quasi- corporations       * SI       * State-wise estimates of GVA, by       Current price estimates are         * Index of Industrial Production       * Index of Industrial Production       * Endex with the relevant WPI.         (IIP)       from ASI for the quasi-       * Endex with the relevant WPI.         * WPI: M/o Commerce and Indus       corporations (Factories covered       * endex with the relevant WPI.         * WPI: M/o Commerce and Indus       corporations (Factories covered       * endex with the relevant WPI.         r v       * WPI: M/o Commerce and Indus       corporations (Factories covered       * endex with the relevant WPI.         r v       * WPI: M/o Commerce and Indus       corporations (Factories covered       * endex with the relevant WPI.         r v       * Solution       * TII ASI becomes available, estimates of the preceding year are       * extrapolated using IIP and WPI.         Private Unincorporated       * GVA at the national level for the Current price estimates of the preceding year are       * estimates of the preceding year are         R and 68th Round EUS, 2011-11       * GVA compile using value added       * flated with the relevant WPI.         * NSS 67th Round ES, 2011-11       for the outle using value added       * flated with the relevant WPI.         * NSS 67th Round ES, 2011-11       for the outle using value added       * flated with the relevant WPI.         * NSS 67th Ro			available ASI.		
* Index of Industrial Production       empilation category, obtained       deflated with the relevant WPL.         (IP)       from ASI for the quasi-       from ASI for the quasi-         (IP)       from ASI for the quasi-       exporations (Factories covered         try       under ASI but not registered under       empanies Act).         Private Unincorporated       * Till ASI becomes available, esti-       mates of the preceding year are         Private Unincorporated       * GVA at the national level for the       Current price estimates of         Bruterprises       * GSAfh Round ES, 2010-11       errefloctive scimates of         * NSS 67th Round ES, 2010-11       6reflated with the relevant WPL         and 68th Round EUS, 2011-12       6reflated with the relevant WPL         and 68th Round ES, 2010-11       6reflated with the relevant WPL         ive worker from NSS 68th       for the relevant WPL         ive worker from NSS 68th       for the relevant WPL         Round EUS, 2011-12       67th Round and number of effec-         ive worker from NSS 68th       for the relevant WPL	Private Quasi- corporations	* ASI	* State-wise estimates of GVA, by	Current price estimates are	
(IP)       from ASI for the quasi-         * WPI: M/o Commerce and Indus       corporations (Factories covered         try       under ASI but not registered under         Try       under ASI but not registered under         companies Act).       * Till ASI becomes available, esti-         mates of the preceding year are       * Till ASI becomes available, esti-         mates of the preceding year are       * GVA at the national level for the <i>Enterprises</i> * GVA at the national level for the         * NSS 67th Round ES, 2010-11       * GVA compiled using value added         * NSS 67th Round ES, 2010-11       for A compiled using value added         * NSS 67th Round EUS, 2011-12       67th Round and number of effective worker from NSS         and 68th Round EUS, 2011-12       67th Round and number of effective worker from NSS		* Index of Industrial Production	compilation category, obtained	deflated with the relevant WPI.	
* WPI: M/o Commerce and Indus- try try try try try try companies Act) and a SI but not registered under Companies Act) * Till ASI becomes available, esti- mates of the preceding year are mates of the preceding year are trapolated using IIP and WPI. * GVA at the national level for the trapolated using IIP and WPI. * SISS 67th Round ES, 2010-11 and 68th Round EJS, 2011-12 allocated using trate-wise benchmark stimates of GVA compiled using value added * NSS 67th Round ES, 2010-11 and 68th Round EJS, 2011-12 and 68th Round EJS, 2011-12 five worker from NSS and 68th Round EJS, 2011-12		(IIP)	from ASI for the quasi-		
try       under ASI but not registered under         Companies Act).       Companies Act).         Private Unincorporated       * Till ASI becomes available, esti-         Private Unincorporated       * Till ASI becomes available, esti-         Briteoprises       * Till ASI becomes available, esti-         Private Unincorporated       * GryA at the national level for the         Current Enterprises       * GVA at the national level for the         * NSS 67th Round ES, 2010-11       ereffective worker from NSS         and 68th Round EUS, 2011-12       67th Round and number of effec-         ive workers from NSS 68th       five workers from NSS 68th		* WPI: M/o Commerce and Indus-	corporations (Factories covered		
Private Unincorporated       Companies Act).         Private Unincorporated       * Till ASI becomes available, esti-         mates of the preceding year are       extrapolated using IIP and WPI.         Futerprises       * GVA at the national level for the vector are year 2011-12 allocated using and editated with the relevant WPI.         * NSS 67th Round ES, 2010-11       per effective worker from NSS and 68th Round EUS, 2011-12         * NSS 67th Round ES, 2010-11       per effective worker from NSS and 68th Round EUS, 2011-12         * NSS 67th Round ES, 2010-11       per effective worker from NSS 68th         * NSS 67th Round EUS, 2011-12       for worker from NSS 68th		try	under ASI but not registered under		
* Till ASI becomes available, esti- mates of the preceding year are extrapolated using IIP and WPI.       * Till ASI becomes available, esti- mates of the preceding year are extrapolated using IIP and WPI.         Private Unincorporated       * GVA at the national level for the year 2011-12 allocated using pear 2011-12 allocated using deflated with the relevant WPI.         * NSS 67th Round ES, 2010-11       per effective worker from NSS and 68th Round EUS, 2011-12         * NSS 67th Round EUS, 2011-12       for worker from NSS from worker from NSS and 68th Round EUS, 2011-12			Companies Act).		
Private Unincorporated       mates of the preceding year are extrapolated using IIP and WPI.         Private Unincorporated       * GVA at the national level for the sear 2011-12 allocated using         Enterprises       * GVA at the national level for the year 2011-12 allocated using         * Solution       * GVA at the national level for the year 2011-12 allocated using         * NSS 67th Round ES, 2010-11       ertifective worker from NSS 67th Round EUS, 2011-12         * NSS 67th Round EUS, 2011-12       67th Round and number of effec- tive worker from NSS 68th Round.			* Till ASI becomes available, esti-		
Private Unincorporated       extrapolated using IIP and WPI.         Private Unincorporated       * GVA at the national level for the Current price estimates are year 2011-12 allocated using deflated with the relevant WPI.         Enterprises       state-wise benchmark estimates of GVA compiled using value added         * NSS 67th Round ES, 2010-11       per effective worker from NSS         and 68th Round EUS, 2011-12       67th Round and number of effecture         tive workers from NSS 68th       Round.			mates of the preceding year are		
Private Unincorporated     * GVA at the national level for the Current price estimates are year 2011-12 allocated using       Enterprises     * GVA at the national level for the Current price estimates are year 2011-12 allocated using       Anterprises     * GVA compiled using value added       * NSS 67th Round ES, 2010-11     per effective worker from NSS 67th Round EUS, 2011-12       Anterprises     67th Round and number of effec- tive workers from NSS 68th       Round.     Round.			extrapolated using IIP and WPI.		
Enterprises     year 2011-12 allocated using deflated with the relevant WPI.       Reterprise     state-wise benchmark estimates of GVA compiled using value added       * NSS 67th Round ES, 2010-11     per effective worker from NSS       and 68th Round EUS, 2011-12     67th Round and number of effective worker from NSS       tive workers from NSS 68th     Round.	Private Unincorporated		* GVA at the national level for the	Current price estimates are	
state-wise benchmark estimates of GVA compiled using value added * NSS 67th Round ES, 2010-11 per effective worker from NSS and 68th Round EUS, 2011-12 67th Round and number of effec- tive workers from NSS 68th Round.	Enterprises		year 2011-12 allocated using	deflated with the relevant WPI.	
GVA compiled using value added * NSS 67th Round ES, 2010-11 per effective worker from NSS and 68th Round EUS, 2011-12 67th Round and number of effec- tive workers from NSS 68th Round.			state-wise benchmark estimates of		
and 68th Round EUS, 2011-12 67th Round and number of effec- tive workers from NSS 68th Round.		* NSS 67th Round FS 2010-11	GVA compiled using value added ner effective worker from NSS		
tive workers from NSS 68th Round.		and 68th Round EUS, 2011-12	67th Round and number of effec-		
Round.			tive workers from NSS 68th		
			Round.		

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Item	Data: Source	Method of	of estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
	* IIP * WPI: M/o Commerce and Indus- try	* The benchmark state-wise esti- mates are moved to subsequent years using the state's growth rate of GVA-manufacturing as esti- mated by ASI to get the state-level estimate. * Compilation category-wise esti- mates are compiled by allocating the state's estimate using base year structure of the state's GVA by compilation category. * For the year when ASI is not available, the preceding year esti- mates are moved using IIP and WPI.		
Electricity, gas, water supply and other utility services electricity <i>blic corporations: Departmen-</i> <i>tal Enterprises (DEs)</i>	* Budget Documents of central & state governments * Quantity of electricity sold: CEA	* Estimates of GVA compiled using production approach * GVA of central DEs are allo- cated to the States on the basis of the location of the DE.	Base year estimate moved with the index of quantum sales of electricity	GVA of State DEs are allocated the respective States. For the State-level data, Generation Overview Report (a monthly report) of Central Electricity Authority giving monthly electriity ity generated can be used to form the index.

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	Data, Dutto			Nelliarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Public corporations: Central Non-Departmental Enterprises Electricity generating companies (DVC, NEEPCL, NHPC, NLC, NPCIL, NTPC)	* Annual Reports of Public Sector electricity generating companies * State-wise quantity of electricity generated and sold: CEA/con- cerned NDE	* Estimates of GVA compiled using production approach of these multi-state companies is allocated on the basis of state-wise electricity generated	Base year estimate moved with the index of quantum sales of electricity	
<b>Public corporations: Central</b> Non-Departmental Enterprises Power Grid Companies	* Annual Reports of Public Sector power grid companies * State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * State-wise quantity of electricity sold: CEA	* Estimates of GVA at current prices are estimated by the production approach and allo- cated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State- wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Base year estimate moved with the index of quantum sales of electricity	In the case of single-state NDEs, the entire GVA is allocated to that State/UT.
Private Corporations	* MCA21 database for the annual reports of Private Sector Compan- ies * State-wise quantity of electricity generated and sold by private companies: CEA	* Estimates of GVA compiled using production approach and allocated on the basis of sum of number of units of electricity generated and num- ber of units of electricity sold by private companies	Base year estimate moved with the index of quantum sales of electricity	The sum of number of units gener- ated and number of units sold is taken assuming that the companies either generating electricity or involved in distribution.

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(2) Gas				
Public Corporations: Central Non-Departmental Enterprises (NDEs) Gas generating companies (GAIL India Ltd.)	* Annual Reports of Public Sector electricity generating companies * State-wise quantity of gas sold: concerned NDE	* Estimates of GVA compiled using production approach * NDE-wise GVA is allocated among States based on state-wise gas sold by the NDE	Base year estimate moved with the index of quantum sales of electricity	Index of quantum sales of gas is based on the information available from GAIL. In the case of single- state NDEs, the entire GVA is allocated to that State/UT.
Public Corporations: Other Non- Departmental Enterprises (NDEs)	<ul> <li>* Annual Reports of Public Sector Companies</li> <li>* State-wise number of employees</li> <li>&amp; value of assets: Public Enter- prises Survey of DPE</li> </ul>	* Estimates of GVA at current prices are estimated by the production approach and allo- cated to States. CE is distrib- uted on the basis of the number of employees in each State in proportion to State- wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Base year estimate moved with the index of quantum sales of gas.	Index of quantum sales of gas is based on the information available from GAIL. In the case of single- state NDEs, the entire GVA is allocated to that State/UT.
Private Corporations	* MCA21 database for the annual reports of Private Sector Com- panies	* Estimates of GVA compiled using production approach and allocated on the basis of state-wise revenue of the Companies	Base year estimate moved with the index of quantum sales of gas.	Index of quantum sales as used for Public Sector is assumed to be relevant for Private Corporations also

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Private Unincorporated Enterprises: gobar gas	* State-wise Value of production: Khadi & Village Industries Com- mission (KVIC) * No. of bio gas plants: M/o Non-Conventional Energy	* State-wise GVA is calculated as the value of production at cur- rent prices. This is duly adjusted for share of KVIC in total biogas plants installed up to current year.	Base year estimate moved with the index of no. of bio gas plants	Value of inputs is assumed to the same as the value of by-product, i.e. manure.
(3) water supply				
General Government: State Administrative Departments	<ul> <li>* Budget documents of state gov- ernments</li> <li>* CPI from MOSPI</li> </ul>	* Estimates of GVA compiled using production approach	Current price estimates are deflated with the CPI (General)	
Public corporations: Non- Departmental Enterprises	* Annual Reports of Public Sector Companies (exists only in Kerala -Kerala Water Authority) * CPI from MOSPI	* Estimates of GVA compiled using production approach	Current price estimates are deflated with the CPI (General)	Kerala Water Authority being a single-state NDE, the entire GVA is allocated to Kerala.
Private Corporations	* MCA21 database for the annual reports of Private Sector Compan- ies * CPI from MOSPI	* Estimates of GVA compiled using production approach and allocated to the States on the basis of State-wise annual wages of workers in the industry as per NSS 68th Round.	Current price estimates are deflated with the CPI (General)	

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Private Unincorporated Enterprises	* NSS 68th Round EUS, 2011-12 * CPI from MOSPI	* For the base year, the estimate of GVA is calculated as Wage per day * Number of working days and allocated to the States on the basis of State-wise annual wages in the activity as per NSS 68th Round * For the subsequent years, the growth rate of GVA at current prices of Private Corporate Sector at the national level in this cate- gory is used and allocated accord- ing to the base year proportions.	Current price estimates are deflated with the CPI (General)	
(4) remediation (recycling)				
Public & Private Corporations	* ASI * IIP * WPI: M/o Commerce and Indus- try	* State-wise GVA are obtained from the results of ASI. * For the year when ASI is not available, the previous year^Rs estimates are moved using IIP and WPI.	Current price estimates are deflated with the relevant WPI.	
				(contd.)

Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Private Unincorporated Enterprises	* NSS 67th Round ES, 201011 and 68th Round EUS, 2011-12 (for the unorganised portion of recycling) * IIP * WPI: M/o Commerce and Indus- try	* National estimates of GVA have been allocated to the States on the basis of state-wise GVA as per NSS 67th Round * The estimates for unorganised recycling are moved to subsequent years using IIP and WPI and are replaced by ASI when its results become available	Current price estimates are deflated with the relevant WPI.	IIP and WPI of 'Basic Iron and Steel + Casting of iron and steel' are used for this category.
(5) remediation (sewerage & sanitation)				
General Government: State Administrative Departments	* Budget documents of state gov- ernments * CPI from MOSPI	* Estimates of GVA compiled using production approach	Current price estimates are deflated with the CPI (General)	
Private Corporations	* MCA21 database for the annual reports of Private Sector Compan- ies * CPI from MOSPI	* Estimates of GVA compiled using production approach in the case of Private Sector Companies and allocated on the basis of base GVA obtained from NSS 68th Round	Current price estimates are deflated with the CPI (General)	

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Private Unincorporated Enterprises	* NSS 67th Round ES, 201011 and 68th Round EUS, 2011-12 * CPI from MOSPI	* National estimates of GVA have been allocated to the States on the basis of state-wise GVA as per NSS 67th Round	Current price estimates are deflated with the CPI (General)	
		* For the subsequent years, the growth rate of GVA at current prices of Private Corporate Sector at the national level in this category is used and allocated according to the base year proportions.		
9. Construction				
General Government: Adminis- trative Departments	<ul> <li>* Budget documents for central &amp; state governments</li> <li>* Amnual accounts of local bodies</li> </ul>	<ul> <li>(i) NVA of State Government in Construction is taken from State Government budget documents</li> </ul>	Deflated by General Pucca Con- struction Index	General Pucca Construction Index is a weighted index of prices of building materials (i.e. Cement, Iron & Steel Bricks and Timber),
		(ii) NVA of Central Government in Construction is allocated to States based on the information in the "works annexue" of the bud- get documents.		labour and fixtures & fittings.

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Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		(iii) CFC of GG is allocated on the basis of NVA as derived above and GVA is calculated as sum of NVA and CFC.		
Public Corporations: Departmental Enterprises	* Budget documents for central & state governments	Estimates of GVA are compiled using production approach in the industry. Estimates of central DEs are allocated to the States using state-wise outlay on construction.	Deflated by General Pucca Con- struction Index	GVA of State DEs are allocated to the respective States. General Pucca Construction Index as in the case of General Government.
Public Corporations: Non- Departmental Enterprises	* Annual reports of nondepart- mental commercial undertakings * State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * Length of highway awarded (Number of kilometres) in PPP and EPC projects: website of NHAI	Estimates of GVA at current prices are estimated by the pro- duction approach and allocated to States in the case of multi-state NDEs. In the case of NHAI, GVA is allocated using state-wise length of highways awarded under PPP and EPC projects in the year. In the case of other NDEs, CE is dis- tributed on the basis of the number of employees in each State in proportion to State-wise employ- ment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Deflated by General Pucca Construction Index	In the case of single-state NDEs, the entire GVA is allocated to that State/UT. General Pucca Con- struction Index as in the case of General Government.
				(contd.)

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IIIant	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Householdsector				
Rural/Urban residential buildings	* AIDIS 2013 for capital expendi-	The state wise estimates of new	Deflated by Cost of Construction	Cost of Construction Index (CCI)
(RRB) - new construction outlays	ture in rural & urban residential	construction and repairs & mainte-	Index for Rural/Urban Housing	for Rural/Urban Housing is a
plus repair & maintenance	buildings and Census 2011 for	nance in respect of rural and urban		weighted index of prices of build-
	number of dwellings	residential buildings of AIDIS are		ing materials, (i.e., Cement, Iron
		moved to later years with the help		& Steel Bricks and Timber),
	* NBO/States for prices of	of inter-censal growth rate in the		labour. Additionally for the urban
	cement, I&S, bricks & timber and	number of dwellings. Price		CCI, fixtures & fittings and 'other
	wages of urban labour	changes are imposed with the help		materials' are also considered. Fo
		of Rural/Urban Cost of Construc-		labour, (CPI-R) is taken in the
		tion Index (CCI).		case of rural CCI and index of
				wage of urban labour for urban
				CCI.
		Ē		
Kural / Urban - nonresidential	* AIDIS 2013 Ior capital expendi-	The state wise estimates of new	Denated by General Pucca Con-	In the Combined Index of output
buildings and other construction	ture in R/U nonresidential build-	construction and repairs & mainte-	struction Index	of Agriculture and manufacturing
works (new construction plus	ings and other construction works	nance in respect of rural and urban		indices of output at current prices
repairs & maintenance)		non-residential buildings of		of agriculture and manufacturing
		AIDIS are moved to later years		are combined using their share in
		with the help of combined index		sum of output of agriculture and
		of value of output from Agricul-		output of manufacturing.
		ture sector and manufacturing sec-		
		tor.		

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Plantations in the household sector	* State-wise area under cultivation for plantation crops: NHB and Commodity Boards	All India estimates of GVO of construction in plantations in the household sector are distributed to the States using State-wise infor- mation on increment in area under cultivation of the plantation crops.	Deflated by CPI(R)	18 plantation crops namely, Coco- nut, Tea, Coffee, Rubber, Citrus fruits, pineapple, Cashew Nut, areca nut, banana, mango, grapes, papaya, apple, litchi, sapota, guava, pomegranate and carda- mom considered
Other households	* Includes NPISH and unincorpo- rated enterprises not covered in AIDIS	Obtained as residual through the commodity flow method of the household sector and allocated on the basis of a composite indicator using State-wise consumption of cement and iron & steel. (same as residual sector)	Deflated by General Pucca Con- struction Index	General Pucca Construction Index as in the case of General Govern- ment.
Residual Sector	* Includes data on Private Corpo- rate Sector and other un- allocated portion of GVA construction at the national level	Estimate allocated on the basis of a composite indicator using State- wise consumption of cement (weight: 19.66%) and iron & steel (weight: 80.34%).	Same as above	Combined growth of Cement (with weight: 19.66%) and iron & steel (with weight: 80.34%) can be used to extrapolate till allocation is available.

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# SYSTEM OF NATIONAL ACCOUNTS 2008

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Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
10. Trade & repair services				
Public Corporations: Departmen- tal Enterprises	* Budget documents of central & state governments	Estimates of GVA compiled using production approach.	Current price estimates are deflated using CPI (General)	GVA of State DEs are allocated to the respective States.
	* CPI from MOSPI	GVA of central DEs are allocated to the States on the basis of the location of the DE.		
Public Corporations: Non- Departmental Enterprises	* Annual reports of NDEs	Estimates of GVA at current prices are estimated by the pro-	Current price estimates are deflated using CPI (General)	In the case of single-state NDEs, the entire GVA is allocated to that
	* State-wise number of employees	duction approach and allocated to		State/UT.
	& value of assets: Public Enter-	States in the case of multi-state		
	prises Survey of DPE	NDEs. CE is distributed on the		
		basis of the number of employees		
	* CPI from MOSPI	in each State in proportion to		
		State-wise employment in that		
		NDE, while OS (OS = GVA -CE)		
		is distributed in proportion to the		
		State-wise gross block (Value of		
		Assets) of that NDE.		

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JUL-DEC 2018

Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Private Corporations				
Private Companies	* MCA21 database for the annual reports of Private Sector Compan- ies * WPI: M/o Commerce and Indus- try	Estimates of GVA at current prices compiled using production approach and allocated on the basis of GVA estimated using GVAPW from NSS 67th Round and labour input from NSS 68th Round.	Current price estimates are deflated using CPI (General)	
Co-operatives	* NABARD publication, "Statisti- cal Statements Relating to Cooperative Movement in India, 2004-05"	Estimates of GVA at current prices allocated on the basis of LI in the sector from NSS 68th Round.	Current price estimates are deflated using CPI (General)	
		For subsequent years, GVA at cur- rent prices are obtained by extrap- olation using index of sales tax.		
Private Unincorporated Enterprises	* NSS 68th Round EUS, 2011-12 and population Census 2011	Base year State-wise GVA allo- cated using GVAPW from NSS 67th Pound and Jabour input from		
	* NSS 67th Round ES, 2010-11	NSS 68th Round.	Current price estimates are	
	* CPI from MOSPI	For subsequent years, GVA at cur- rent prices are obtained by extrap- olation using index of sales tax.		

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
11. Hotels and Restaurants				
Public Corporations: Non- Departmental Enterprises (NDEs)	* Annual reports of NDEs * State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * CPI from MOSPI	Estimates of GVA at current prices are estimated by the pro- duction approach and allocated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS (OS = GVA - CE) is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated using CPI (General)	In the case of single-state NDEs, the entire GVA is allocated to that State/UT.
Private Corporations	* MCA21 database for the annual reports of Private Sector Compan- ies * CPI from MOSPI	Estimates of GVA at current prices compiled using production approach and allocated on the basis of tourist arrivals (domestic + international tourists)	Current price estimates are deflated using CPI (General)	
Private Unincorporated Enterprises	<ul> <li>* NSS 68th Round EUS, 2011-12 and population Census 2011</li> <li>* NSS 67th Round ES, 201011</li> <li>* CPI from MOSPI</li> </ul>	Base year State-wise GVA com- piled using GVAPW from NSS 67th Round and labour input from NSS 68th Round. For subsequent years, current prices estimates are obtained by using growth in the corporate sector	Current price estimates are deflated by CPI (General)	
				(contd.)

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		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
2. Railways				
Railways * ,	Annual Railway Budget	Estimates of GVA are allocated		
		on the basis of indicators like	Constant price estimates at the	
*	Annual reports of the NDEs	section-wise passenger and freight	national level are estimated using	
		earnings, state-wise number of	the Implicit Price Deflator at the	
*	MCA21 database for the annual	employees and the capital-at-	national level.	
fən	sports of Private Sector Compan-	charge in each zone.		
ies	S			
<ol><li>Transport other than Rail-</li></ol>				
ways and storage				
<sup>2</sup> ublic Corporations (Departmen-				
al & Non-Departmental Enter-				
nrises - DEs & NDEs)				
i) Land Transport * ]	Budget documents of central &	Estimates of GVA compiled using	Base year estimates are moved	
. sts	tate governments	production approach.	using index of registered vehicles	
*	Annual reports of the NDEs	GVA of central DEs are allocated		In the case of single-state NDEs,
(ii) Water Transport * 1	State-wise number of employees	to the States on the basis of the	Current price estimates are	the entire GVA is allocated to tha
\$r	c value of assets: Public Enter-	location of the DE.	deflated by CPI (transport & com-	State/UT.
br	rises Survey of DPE	In the case of Central NDEs,	munication)	
(iii) Services incidental to trans- * ]	Number of registered vehicles	except in the case of air transport,		
port fro	com M/o Road Transport	estimates of GVA at current prices	Previous year's estimate extrapo-	
*	CPI from MOSPI	are estimated by the production	lated with the combined growth of	
		approach and allocated to States.	GVA of water+air+land transport	
iv) Storage & warehousing		CE is distributed on the	at constant prices	

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Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS (OS = GVA -CE) is distrib- uted in proportion to the State- wise gross block (Value of Assets) of that NDE.	Current price estimates are deflated by CPI(misc)	
Private Corporations All categories given below	<ul> <li>* MCA21 database for the annual reports of Private Sector Compan- ies</li> <li>* NSS 63rd Round ES, 2006-07 for Cooperatives (for land and</li> </ul>	Estimates of GVA compiled using production approach and allocated on the basis of GVA estimated using GVAPW from NSS 67th Round and labour input from NSS 68th Round.		
(i) Land Transport	water transport) * Number of registered vehicles from M/o Road Transport	Constant price estimates of GVA are inflated using CPI (transport & communication)	Base year estimates are moved using index of registered vehicles	
(ii) Water Transport	* Cargo handled at ports from M/o Shipping * CPI from MOSPI	GVA at the national level is allo- cated using share of cargo handled and length of navigable rivers.	Current price estimates are deflated by CPI (transport & com- munication)	
				(contd.

Image: matrix of the state of the model of the model of the state of the model of the model of the state	Item	Data: Source	Method of	f estimation	Remarks
(ii) Services incidental to trans-         (i) Previous year's estimate extrapo- lic set set mote extrapo- lic set and combined growth of (water + air + land transpor) at current prices         (i) Revious year's estimate extrapo- lic set and set growth of (water + air + land transpor) at current prices         (i) Revious year's estimate extrapo- lic set and set and and transpor) at current prices         (ii) Revious year's estimate extrapo- lic set and set and and transpor) at current prices         (ii) Revious year's estimate are constant prices         (ii)           (iv) Storage & watehousing         * Annual reports of the NDEs s given above         EVA at the national level is allo- constant prices         Current price estimates are current prices           (iv) Storage & watehousing         * Annual reports of the NDEs s given above         EVA at the national level is allo- potention approves         Current price estimates are current prices           Air transport (Public and Private Corporations)         * Mon Civil Autidue for states on the basis of pas- s given above         Current price estimates are current price estimates are reports of pas- sergers handled by the aritical lip- private         Annol EUS, 2011-12           * Mon Civil Autidue for passers         * Mon Civil Autidue for states on the basis of pas- sergers handled by the aritical lip- gent adfine         Munication)           * Mon Civil Autidue for price         * Mon Civil Autidue for states on the basis of pas- sergers handled by the aritical lip- gent adfine         Mon Civil Autidue for state and constant price estimates are and opulation Casus 2011           * Mon Cirregistered			At current prices	At constant (2011-12) prices	
(iii) Services incidental to trans.     * CPI from MOSPI     Pervious year's estimate extrapo- to targit combined growth of (water + air + land transport) at current prices     Pervious year's estimate extrapo- tient sing combined growth of (water + air + land transport) at current prices     Pervious year's estimate extrapo- tient sing combined growth of (water + air + land transport) at current prices     Pervious year's estimate extrapo- tient sing twe year proportions       (iv) Storage & warehousing     * Annual reports of the NDEs segrent brites     GV at the national level is allo- cated using base year proportions     Current prices estimates are cated using base year proportions       Air transport (Public and Private Corporations)     * Annual reports of the annual evolution approve.     Current prices estimates are cated using base year proportions       Air transport (Public and Private Corporations)     * Mo Civil Aviation for passen- ger traffic.     Estimates of CVA compiled using the state during the year.       * Mo Civil Aviation for passen- ger traffic.     * Mo Civil Aviation for passen- ger traffic.     Estimates of PS- enger shundled by the airports in the state during the year.       * Mo Civil Aviation for passen- ger traffic.     * No Civil Aviation for passen- ger traffic.     Estimates are for No.       * Mo Civil Aviation for passen- ger traffic.     * No Civil Aviation for passen- ger traffic.     Base year state-wise GVA esti- fice       * CPI from MOSPI     * No SS 68th Round EUS, 2011-1     Sestath Round EUS, 2011-1     Current price estimates are for NO.       * No Civil Aviation for registered duriton </th <th>(1)</th> <th>(2)</th> <th>(3)</th> <th>(4)</th> <th>(5)</th>	(1)	(2)	(3)	(4)	(5)
(iv) Storage & warehousing       (iv) Storage & warehousing       GVA at the national level is allo- as given above       Current price estimates are cated using base year proportions         Air transport (Public and Private Corporations)       * Annual reports of the NDEs       Estimates of GVA compiled using deflated by CPI (Miscellaneous)         Air transport (Public and Private Corporations)       * MCA21 database for the annual errors of Private Sector Compan- teports of Private Sector Compan- ies       Estimates of GVA compiled using deflated by CPI (transport & com- nunciation)         * MCA21 database for the annual errors of Private Sector Compan- ties       * MCA21 database for the annual error of Private Sector Compan- cred to states on the basis of pas- sergets handled by the arrors in the state during the year.       Minechoin (Fransport & com- nunciation)         * Mo Civil Aviation for pasen- ger taffic.       * CPI from MOSPI       Mine state during the year.         Private Unincorporated Enter- prises       * Softh Round EUS, 2011-12       Interted using CPI (Transport & from NSS 67th Round EUS, 2010-11         * Mo Transport       * NSS 67th Round ES, 2010-11       Interted using CPI (Transport & from NSS 67th Round and LI from NSS 67th Round ENG, from NSS 67th Round and LI from NSS 67th Round and LI from NSS 67th Round ENG         * Mo Transport for registered wehicles       * CPI from NOSFI       Softh Round ENG	(iii) Services incidental to transport	* CPI from MOSPI	Previous year's estimate extrapo- lated using combined growth of (water + air + land transport) at current prices	Previous year's estimate extrapo- lated using combined growth of (water + air + land transport) at constant prices	
Air transport (Public and Private Corporations)         * Annual reports of the NDEs * MCA21 database for the annual reports of Private Sector Compan- reports of Private Sector Compan- ger traffic.         Estimates of GVA compiled using react to states on the basis of pas- sengers handled by the airports in the state during the year.         Termsport & com- munication)           * M/o Civil Aviation for passen- ger traffic.         * M/o Civil Aviation for passen- ger traffic.         Reated to states on the basis of pas- sengers handled by the airports in the state during the year.           Private Unincorporate Enter- prise         * CPI from MOSPI         Reated to state-wise GVA esti- form NSS 68th Round EUS. 2011-12 form NSS 68th Round EUS. 2010-11           * M/o Transport         * NSS 67th Round EUS. 2010-11         Constant price estimates are fourt vears. these are movied vehicles           * M/o Transport for registered         * SS 67th Round EUS. 2010-11         Constant price estimates are fourt vears. these are movied vehicles           * CPI from MOSPI         * CPI from MOSPI         * CPI from MOSPI	(iv) Storage & warehousing		GVA at the national level is allo- cated using base year proportions as given above	Current price estimates are deflated by CPI (Miscellaneous)	
* M/o Civil Aviation for passen- ger traffic.       * M/o Civil Aviation for passen- ger traffic.         * CPI from MOSPI       * CPI from MOSPI         * Triate Unincorporated Enter- prises       * SS 68th Round EUS, 2011-12         * NSS 68th Round EUS, 2011-12       Constant price estimates are and Population Census 2011         * NSS 67th Round EUS, 2010-11       Enter estimates are inflated using CPI (Transport and Population Census 2011         * N/o Transport       * N/o Transport for registered vehicles         * M/o Transport for registered vehicles       * M/o Transport for registered using growth in registered vehicles.	Air transport (Public and Private Corporations)	* Annual reports of the NDEs * MCA21 database for the annual reports of Private Sector Compan- ies	Estimates of GVA compiled using production approach. GVA at the national level is allocated to states on the basis of passengers handled by the airports in the state during the vart.	Current price estimates are deflated by CPI(transport & com- munication)	
Private Unincorporated Enter- prises       * NSS 68th Round EUS, 2011-12       Constant price estimates are inflated using CPI (Transport & and Population Census 2011       Base year state-wise GVA esti- mates are compiled using GVA         * NSS 67th Round EUS, 2010-11       inflated using CPI (Transport & inflated using CPI (Transport & work of the Round and LI from NSS 68th Round. For subse- quent years, these are moved using growth in registered vehicles.         * CPI from MOSPI       * CPI from MOSPI		* M/o Civil Aviation for passen- ger traffic. * CPI from MOSPI	0		
(i) Land Transport     * NSS 68th Round EUS, 2011-12     Constant price estimates are inflated using CPI (Transport & * NSS 67th Round ES, 2010-11     Base year state-wise GVA esti- mates are compiled using GVA from NSS 67th Round and L1       * NS 67th Round ES, 2010-11     * NSS 67th Round and L1 from NSS 68th Round. For subse- quent years, these are moved wehicles     * CPI from MOSP       * CPI from MOSP1     * CPI from MOSP1     * CPI from MOSP1	Private Unincorporated Enter- prises				
* M/o Transport for registered quent years, these are moved vehicles vehicles * CPI from MOSPI	(j) Land Transport	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11	Constant price estimates are inflated using CPI (Transport & communication).	Base year state-wise GVA esti- mates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subse-	
* CPI from MOSPI		* M/o Transport for registered vehicles		quent years, these are moved using growth in registered vehicles.	
		* CPI from MOSPI			

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				management of the state of the
į		At current prices	At constant (2011-12) prices	
(I)	(2)	(3)	(4)	(5)
(ii) Water Transport	<ul> <li>* NSS 68th Round EUS, 2011-12 and Population Census 2011</li> <li>* NSS 67th Round ES, 2010-11.</li> <li>* CPI from MOSPI</li> </ul>	Base year state-wise GVA esti- mates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subse- quent years, GVA at national level allocated using index of navigable	GVA at current prices deflated using CPI (transport & communi- cation).	
(iii) Air Transport	No household enterprises in this industry	length plus cargo handled.		
(iv) Storage & warehousing	<ul> <li>* NSS 68th Round EUS, 2011-12 and Population Census 2011</li> <li>* NSS 67th Round ES, 2010-11.</li> <li>* CPI from MOSPI</li> </ul>	Base year state-wise GVA esti- mates are compiled using GVA from NSS 67th Round and LJ from NSS 68th Round; these are used as proportions to allocate the national level GVA at current prices.	Current price estimates are deflated using CPI(Miscellaneous).	
(v) Services incidental to transport	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11.	Base year state-wise GVA esti- mates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subse- quent years, combined growth of (water+land transport) at current prices used to extrapolate the base	Base year state-wise GVA esti- mates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, combined growth of (water+land transport)	
		year estimates.	at constant prices used to extrapo- late the base year estimates.	

Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
14. Communication & Services	s related to broadcasting			
Public corporations	* Budget document of Department of Posts	t Estimates of GVA compiled using production approach.	Current prices estimates are deflated using CPI (transport and communication)	In the case of single-state NDEs, the entire GVA is allocated to that State/UT.
	* Annual reports of NDEs	Estimates of GVA allocated in the case of Dentt of Posts and Central		
	* CPI from MOSPI	NDEs of communication on the basis of indicators like receipts, rent, interest, etc. In case of broad- casting (Prasar Bharati), it has been allocated on the basis of sanctioned strength.		
Private Corporations				
Courier activities, Cable opera- tors, Telecommunication and Recording, publishing &	* MCA21 database for the annual reports of Private Sector Compan- ies	Estimates of GVA compiled using production approach.	Current prices estimates are deflated using CPI (transport and communication)	
Broadcasting services	* NSS 63rd Round ES, 200607 for Cooperatives (for telecommunica- tion)	GVA from courier activities has t been allocated on the basis of GVA of Posts. GVA of Cable operators, Recording, publishing		
	* CPI from MOSPI	& Broadcasting services has been allocated on the basis of popula- tion having television in Census 2011.		
				(contd.)

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		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		GVA of Telecommunication in		
		the base year has been allocated		
		on the basis of average number of		
		subscribers in the base year. This		
		has been extrapolated using		
		growth in subscribers and		
		CPI(transport & communication)		
		for the subsequent years.		
Private Unincorporated Enterprises				
*	* NSS 68th Round EUS, 2011-12	Base year GVA as compiled using	Current prices estimates are	
Courier activities, Cable opera-a	and Population Census 2011	GVA from NSS 67th Round and	deflated using CPI (transport and	
tors, Telecommunication, Record-		LI from NSS 68th Round has been	communication)	
ing, publishing & Broadcasting *	* NSS 67th Round ES, 2010-11	allocated on the same criteria as		
		used III une I IIVate Cotporate Sec-		
~	* CPI from MOSPI	tor.		
15. Real estate, Ownership of Dwel	llings and Professional Services			
Public Corporations: Non-*	* Annual accounts of NDEs	Estimates of GVA at current	Current year estimates are deflated	I In the case of single-state NDEs,
Departmental Enterprises	* Ctoto mico mmbor of omelonood	prices are estimated by the pro-	using CPI (Miscellaneous)	the entire GVA is allocated to that
Neai estate ana Erojessionat Services &	* state-wise number of employees & value of assets: Public Enter-	e uucuon approach.		State U1.
1	prises Survey of DPE			
*	* CPI from MOSPI			

Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		In the case of multi-state NDEs, it is allocated to the States. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS ( $OS = GVA - CE$ ) is distrib- uted in proportion to the State- wise gross block (Value of Assets) of that NDE.		
<b>Private Corporations</b>				
Real Estate and Professional Services	* MCA21 database for the annual reports of Private Sector Compan- ies * CPI from MOSPI	Estimates of GVA compiled using production approach has been allocated on the basis of Base year GVA as compiled using GVA from NSS 67th Round and LI from NSS 68th Round.	Estimates at current prices are deflated using CPI (Miscell-aneous)	
Computer and Information related Services	* MCA21 database for the annual reports of Private Sector Compan- ies * State-wise software exports made by units registered under Software Technology Parts of India (STPI): STPI * CPI from MOSPI	Estimates of GVA compiled using production approach have been allocated on the basis of informa- tion on State-wise software exports made by units registered under STPI.	Estimates at current prices are deflated using CPI (Miscell- aneous)	

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ltem	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
rivate Unincorporated Enterpris	es			
Real Estate, Professional Services and Computer and Information	* NSS 68th Round EUS, 2011-12 and Population Census 2011	Base year GVA has been allocated on the basis of GVA as compiled	Estimates at current prices are deflated using CPI (Miscell-	
ciated Delvices	* NSS 67th Round ES, 2010-11	USS 67th Round and LI from NSS 68th Round	ancous)	
	* CPI from MOSPI			
		For the subsequent years estimates are moved using Corporate Growth (same as in organised sec-		
		tor)		
<b>Dwnership of dwellings</b>	The GVA for the ownership of dwe the cost of repairs and maintenance	ellings is equivalent to gross rental of	f the residential census houses less	
	Details for rural & urban awening	S are given Delow.		
Jrban dwellings	* Population Census 2011 for number of residential houses	Gross rental=no. of census houses (urban) * rent per household as	Estimates of Urban GVA are obtained by moving the base year	In the absence of updated information on the number of dwellings,
	* CPI (R) & CPI (U) from MOSPI	obtained from CES for the base year.	estimate with inter censal growth rate of dwellings.	the intercensal growth rate is assumed to be valid till the next Population Census.
	* NSS 68th Round CES, 2011-12	For years subsequent to the base		4
	for rent per household	year, Rent per household as in the base year is extrapolated using the		
		index of house rent (urban areas) and the number of dwellings is		
		extrapolated using the inter-censal growth rate of urban dwellings.		

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Item	Data: Source	Method of	f estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Rural dwellings	* Capital Stock at current and con- stant prices of rural residential buildings as estimated using perpetual inventory method * CPI (R) from MOSPI	Gross rental at the national level is estimated through user cost approach, using the capital stock of rural residential buildings. The national level estimates are allo- cated to States using state-wise stock of rural dwellings as estimated from AIDIS, duly extrapolated for the reference year using growth in the number of dwellings and CPI(R).	Estimates of Rural GVA are obtained by deflating the current price estimates using CPI(R)	In the user cost measure, the net operating surplus is imputed using the opportunity cost principle; i.e., the net operating surplus is esti- mated on the basis of what owner occupiers could have earned on alternative investments (if they had not bought the dwelling). Then, the dwelling costs (inter- mediate consumption and con- sumption of fixed capital) are added to the imputed net operating surplus to obtain the imputed rent.
16. Financial Services				
Financial Services	* Number of employees, deposits, credits, life insurance premiums, etc., from various financial institu- tions	Estimates of GVA are split into CE, Rent, Profit, etc. and are allo- cated by CSO at the enterprise level using the information like state-wise salaries, deposits, pre- miums and number of employees	Current price estimates are deflated by the implicit price deflator for financial services as derived at the national level.	

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Item	Data: Source	Method of	festimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
17. Public administration and def	ence			
Central Government	* Budget document of central government	Estimates of GVA at current prices are allocated on the basis of number of central government employees across States	Current price estimates deflated by the CPI (General)	
State Governments & Local Bodies	* Budget documents from state governments and annual accounts of local bodies	Estimates of GVA at current prices compiled using production approach	Current price estimates deflated by the CPI (General)	
Autonomous Institutions	* Annual Accounts of sampled Central Autonomous Institutions and State Autonomous Institutions	Estimates of GVA are compiled using production approach for the sample autonomous institutions for the base year and these bench- mark estimates have been proj- ected at the national level with the help of total grants given to all autonomous institutions. These are allocated to the States on the basis of indicators like location of these institutions and state wise public sector LI proportions as per NSS 68th Round. Estimates of GVA are compiled using production approach for the State autonomous institutions and allocated to the respective states.	Current price estimates deflated by the CPI (General)	
				(contd.)

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Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
18. Other Services				
Public Sector (General Governme.	nt and Public Corporations, i.e., DE	Es & NDEs)		
General Government: Adminis- trative Departments and Public Corporations in Education, Health and Recreation	* Budget documents of state gov- ermments * Annual reports of NDEs	Estimates of GVA at current prices are estimated by the pro- duction approach. In the case of Central NDEs, GVA is allocated to States. CE is distributed on the	Current price estimates are deflated using CPI for Education and Health in the case of GVA of Education & Health Services and CPI (Miscellaneous) in the case of	In the case of single-state NDEs, the entire GVA is allocated to that State/UT.
	* State-wise number of employees & value of assets: Public Enter- prises Survey of DPE * CPI from MOSPI	basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS (OS = GVA - CE) is distributed in proportion to the State wise arrose blook (VA) an of	GVA of Recreation	
		Assets) of that NDE.		
<i>General Government: Autono-mous Institutions in</i> Education & health	* Annual Financial Accounts of sampled Central Autonomous Institutions and State Autonomous Institutions * CPI from MOSPI	Estimates of GVA are compiled using production approach for the sample autonomous institutions for the base year and these bench- mark estimates have been proj- ected at the national level with the help of total grants given to all autonomous institutions. These are allocated to the States on the basis of indicators like location of these institutions and state wise public sector LI proportions as per NSS 68th Round.	Current price estimates deflated by the CPI (General)	

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(contd.)

Item	Data: Source	Method of	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		Estimates of GVA are compiled using production approach for the State autonomous institutions.		
Private Corporations				
Coaching centres + Activities of the individuals providing tuition + Education excluding Coaching	* MCA21 database for the annual reports of Private Sector Compan- ies	Estimates of GVA compiled using production approach and allocated for the base year on the basis of LI from NSS 68th Round.	Current price estimates deflated using CPI(education)	
	* NSS 63rd Round ES, 200607 for			
	Co-operatives	For subsequent years, previous year's estimate moved using state-		
	* CPI from MOSPI	wise inter-survey growth, between NSS 64th and NSS 71 st Rounds, in the expenditure on education.		
Human health activities + care services	* MCA21 database for the annual reports of Private Sector Compan- ies	Estimates of GVA compiled using production approach and allocated for the base year on the basis of LI from NSS 68th Round.		
	* NSS 63rd Round ES, 200607 for		Current price estimates deflated	
	Co-operatives	For subsequent years, previous vear's estimate is moved using	using CPI(health)	
	* CPI from MOSPI	state-wise inter-survey growth, between NSS 64th and NSS 71st Rounds, in the expenditure on		
		health.		
				(contd.)

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Item	Data: Source	Method of e	estimation	Remarks
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Remaining social & personal services	* MCA21 database for the annual reports of Private Sector Compan- ies	Estimates of GVA compiled using production approach and allocated on the basis of LI from NSS 68th	Current price estimates deflated using CPI (Miscellaneous)	
	* NSS 63rd Round ES, 2006-07 for Co-operatives	Round.		
	* CPI from MOSPI			
Private Unincorporated Enterpris	es.			
Coaching centres + Activities of the individuals providing mittion +	* NSS 68th Round EUS, 2011-12	Base year GVA has been allocated on the basis of GVA from NSS		
Education excluding Coaching	* NSS 64th and 71th Rounds on Expenditure on Education, 2007-08 & 2014, respectively	67th Round and LJ from NSS 68th Round. For subsequent years, pre- vious year^Rs estimate moved	Current price estimates deflated using CPI(education)	
	* NSS 67th Round ES, 2010-11	using state-wise inter-survey growth, between NSS 64th and		
	* CPI from MOSPI	ture on education.		
Human health activities+ care ser-	* NSS 68th Round EUS, 2011-12	Base year GVA has been allocated		
VICES	* NSS 61st and 68th Rounds CES, 2004-05 & 2011-12, respectively	67th Round and LI from NSS 68th Round.	Current price estimates deflated using CPI (health)	

(contd.)

At current prices         At current prices         At current prices           (1)         (2)         (3)         At current prices           * NSS 67th Round ES, 2010-11         Year's estimate moved using state- wise inter-survey growth, between         At current prices           * CPI from MOSPI         * NSS 68th Rounds.in         He consumer expenditure on health.         NSS 61th and NSS 68th Rounds.in           Remaining social & personal ser-         * NSS 68th Round EUS, 2010-11         Rase year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th         Current price 6st           vices         * NSS 61th Round ES, 2010-11         Round and LI from NSS 68th         Current price 6st           vices         * NSS 61th Round ES, 2010-11         Round and LI from NSS 68th         Current price 6st           vices         * NSS 61th Round ES, 2010-11         Round and LI from NSS 68th         Current price 6st           vices         * NSS 61th Round ES, 2010-11         Round and LI from NSS 68th         Current price 6st           vices         * NSS 61st and 68th Rounds CES.         Round.         Current price 6st           vices         * NSS 61st and 68th Rounds CES.         Round.         Und.           Private Households with employed         * NSS 61st and 68th Rounds CES.         Private starts, previous           Private Households with emp	Item	Data: Source	Method of	estimation	Remarks
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For subsequent years, previous         * NSS 67th Round ES, 2010-11       year's estimate moved using state- wise inter-survey growth, between         * CPI from MOSPI       * NSS 68th Round EUS, 2011-12         Remaining social & personal ser- vices       * NSS 68th Round EUS, 2011-12         Remaining social & personal ser- vices       * NSS 68th Round EUS, 2010-11         Remaining social & personal ser- vices       * NSS 68th Round EUS, 2010-11         Remaining social & personal ser- vices       * NSS 68th Round EUS, 2010-11         Remaining social & personal ser- vices       * NSS 68th Round EUS, 2010-11         Remaining social & personal ser- vices       * NSS 61th and NSS 68th Round and LI from NSS 68th Round and LI from NSS 68th Round         Private Households with employed       * NSS 61st and 68th Rounds CES, 2004-05 & 2011-12. respectively         Private Households with employed       * NSS 61st Round EUS, 2004-05         Private Households with employed       * NSS 61st Round EUS, 2004-05         Private Households with employed       * NSS 68th Round EUS, 2004-05         Private Households with employed       * NSS 68th Round EUS, 2004-05         Private Households with employed       * NSS 68th Round EUS, 2011-12         Remoting ender ender ender ender expediter       * NSS 68th Round EUS, 2011-12         Remoting ender	(1)	(2)	(3)	(4)	(5)
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SNC	2	
ABBREVIATIC		
ACRONYMS/		

AIDIS	All India Debt and Investment Survey	III	Index of Industrial Production
ASI	Annual Survey of Industries	ILC	Indian Livestock Census
CBRI	Central Building Research Institute	ISS	Integrated Sample Survey
CCI	Cost of Construction Index	KVIC	Khadi and Village Industries Commission
CCS	Cost of Cultivation Studies	LI	Labour Input
CE	Compensation of Employees	LUS	Land Use Survey
CEA	Central Electricity Authority	MCA	Ministry of Corporate Affairs, GOI
CES	Consumer Expenditure Survey	MLP	Major Livestock Products
CFC	Consumption of Fixed Canital	MoPNG	Ministry of Petroleum & Natural Gas, GOI
CPI	Consumer Price Index; (R) for Rural & (U) for Urban	MOSPI	Ministry of Statistics and Programme Implementation, GOI
DAC	Department of Agriculture, Cooperation & Farmers Welfare, GOI	MPCE	Monthly Per Capita Expenditure
DADF	Department of Animal Husbandry, Dairying & Fisheries, GOI	NDE	Non-Departmental Enterprises; also referred to as Non-Departmental
DE	Departmental Enterprises; also referred to as Departmental Commercial		Commercial Undertakings (NDCUs) or Public Sector Undertakings
	Undertakings (DCUs)		(PSUs)
DES	Directorate of Economic & Statistics	NEEPCL	North Eastern Electric Power Corporation Limited
DES Ag	Directorate of Economic & Statistics, Ministry of Agriculture, Cooper-	NHAI	National Highway Authority of India
I	ation & Farmers Welfare	NHB	National Horticulture Board
DMI	Directorate of Marketing Inspection, M/o Agriculture	NHPC	National Hydroelectric Power Corporation
DPE	Department of Public Enterprises, GOI	NEC	Neyvell Lignite Corporation Limited
DVC	Damodar Valley Corporation	NPULL	Nuclear Power Corporation of India Ltd.
EPC	Engineering, Procurement and Construction	NDCM	Non-Front Institutions Serving Housenoids Motional Doctoria on Moot Hudorchad
ES	Enterprise Survey or NSS Survey of Unincorporated Enterprises	NSS	National Nessencti Centre on Meat, Hyuerauau National Samule Survey
EUS	Employment-Unemployment Survey	NTPC	National Thermal Power Cornoration I imited
FSI	Forest Survey of India	NVA	Net Value Added
GG	General Government	OS	Operating Surplus
GVA	Gross Value Added	PPP	Public Private Partnership
GVAPW	Gross Value Added per Worker	STPI	Software Technology Parks of India
GVO	Gross Value of Output	TTM	Trade and Transport Margin
IBM	Indian Bureau of Mines	HdV	Value per Hectare
ICAR	Indian Council of Agricultural Research	MPI	Wholesale Price Index

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