JOURNALA Journal Devoted to the Study ofOF INDIAN SCHOOLA Journal Devoted to the Study ofOF POLITICAL ECONOMYIndian Economy, Polity and Society

Vol. XXIX	7	No. 1&2	
India's New Series National and Take-aways from the De	Accounts Statistics	Vikas Chitre	1
GDP Estimation in India: So	me Reflections	T.C.A. Anant	7
Recent Changes in Measu GDP: Overall Issues and So culture	rement of India's ome Focus on Agri-	S. Mahendra Dev	15
An Investigation into Some of GDP Estimation	Contentious Issues	G.C. Manna	49
New National Accounts Ser Highlights of Crucial Issues	ties: A Review and for Debate	S.L. Shetty J. Dennis Rajakumar	55
Critique of Recent Revision Change for Estimation of Sta	ns with Base Year ate Income in India	Ravindra H. Dholaki and Manish Pandya	a 131
Some Unsettled Question Manufacturing GDP Estimat	ns about Indian ion	Amey Sapre and Pramod Sinha	145
Comments		Dilip Nachane	153
Recent GDP Revisions - Data	a Issues and Beyond	R.B. Barman	157

CONTENTS

DOCUMENTATION

1.	The Poverty and Un-British Rule in India	Dadabhai Naoroji	167
2.	System of National Accounts 2008 European Commission, International Monetary Fund, Print Stock SNA EA 2008 001, Organisation for Economic Co- operation and Development, OECD Code 302009191P1, United Nations, Sales No. E.08.XVII.29, document symbol ST/ ESA/STAT/SER.F/2/Rev.5 World Bank		193
3.	Central Statistics Office (2015): Changes in Methodology and Data Sources in the New Series of National Accounts: Base Year 2011-12, Ministry of Statistics and Programme Implementation, New Delhi, 26 June Extracts from Sections 1, 2, 3, 4 and 6.		252
4.	Discrepancies in GDP Data	T C A Anant	370
5	Government of India Ministry of Statistics and Programme Implementation Under- standing the New Series of National Accounts, Frequently Asked Questions		371
6.	Government Product and National Income	Simon Kuznets	378

BACKGROUND TO THE JOURNAL ISSUE

The Indian School of Political Economy organised on January 21, 2017, a one-day Symposium on the **"Recent Changes in the Methodology of Estimation of India's GDP".**

We were extremely fortunate to be able to get as participants for the Symposium 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. Dr. G. C. Manna, then Director General of the Central Statistics Office, Dr. Mahendra Dev, Member, National Statistical Commission, and Chairman of the Sub-Committee on Agriculture and Allied Sectors (constituted for the new series), 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, Professor Ravindra Dholakia, IIM, Ahmedabad and Member, Monetary Policy Committee, and Dr. Manish B. Pandya, Jt. Director, Directorate of Economics & Statistics, Government of Gujarat, presented especially prepared papers on various aspects of the theme of the Symposium. It was a privilege that Dr. TCA Anant, Chief Statistician of India, addressed the Symposium. Dr. R.B. Barman, Chairman, National Statistical Commission, was the Chief Guest at the Symposium, presided over it and offered his observations at the end of the Symposium. All of them carefully finalised their papers for publication in this issue of the Journal. A number of the other participants of the Symposium had offered comments in the Symposium. Of these, the Comments by Professor Dilip Nachane, Former Director and Honorary Professor, Indira Gandhi Institute of Development Research, and former Member, Prime Minister^Rs Economic Advisory Council and Shri Pramod Sinha, National Institute of Public Finance and Policy, and Shri Amey Sapre, Indian Institute of Technology, Kanpur, have also been included in the present issue. We are extremely grateful to all of them for their contributions.

The Symposium was dedicated to the memory of a well wisher of the School, Dr. Gangadhar Darbha, former Executive Director, Nomura Securites and Advisor, Reserve Bank of India, and is funded in part out of a donation received by Indian School of Political Economy for the purpose.

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 new series of India's national accounts and also stimulate more discussion and work leading to further improvements in our national accounts in particular and our statistical system in general.

INDIA'S NEW SERIES OF NATIONAL ACCOUNTS STATISTICS AND TAKE-AWAYS FROM THE DEBATE

Vikas Chitre

In January 2015, the Central Statistics Office (CSO) introduced the new series of India's national accounts statistics with the base year 2011-12 in place of the previous one with the base year 2004-05. Apart from the revision of base year to a more recent year, the new series was marked by more radical changes compared to earlier base year changes, involving the use of new and expanded data sets and significant methodological revisions.

(A) The new and expanded data sets used consist of: (i) a much larger data base, Ministry of Corporate Affairs e-governance initiative MCA 21, covering about 5 lakh companies replacing the RBI sample of 2500 non-financial companies; (ii) a much better coverage of the data of the local bodies from almost all the states; (iii) additional data on financial intermediaries; (iv) additional data sources for agriculture; (v) incorporation of the results of the latest surveys, for example, of the new NSS Surveys on employment and unemployment and consumer expenditure (2011-12) and on unincorporated non-agricultural enterprises (2010-11); Population Census (2011); All India Debt and Investment Survey and Situation Assessment Survey (2013); All India Livestock Census (2012); Study on yield rates of meat products & by-products of different livestock species conducted by National Research Centre on Meat, Hyderabad; 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; Study on the inputs in the Construction sector by Central Building Research Institute (CBRI), Roorkee;

(B) The methodological revisions on the lines of UN System of National Accounts (SNA) 2008, include: (i) replacing estimation of GDP at factor costs by that of GVA at basic prices; (ii) adopting GDP at market prices in place of GDP at factor costs as the measure of the country's aggregate

domestic output; (iii) shifting to enterprise approach for the corporate manufacturing sector from the earlier establishment approach; (iv) in the process, capturing the GVA arising out of the economic activities of the head office (but treating them all as resulting in GVA of the corporate manufacturing sector); (v) incorporating a reclassification of the quasi-corporates from the households to the corporate sector; (vi) estimation of effective labour input with varying weights for owners, helpers and hired workers based on their marginal productivities and its use in the estimation of GVA of the unorganised sector; (vii) estimation of Financial Intermediation Services Indirectly Measured (FISIM) and its allocation to the sectors using it as input; (viii) estimation of the GVA of RBI on the lines suggested by SNA 2008; (ix) explicit classification of Cultivated biological resources and Intellectual property products (the latter being a particularly a new category) in Gross Fixed Capital Formation; (x) treatment of expenditure of households on valuables as savings in the form of physical assets and hence also as part of gross capital formation.

These thoroughgoing changes led to major changes in the new series compared to the previous 2004-05 based series, in GDP at current market prices (2 per cent lower in the year 2011-12); in the growth rates of GDP at constant market prices (6.9 per cent in the new series compared to 5 per cent in the previous series in 2013-14) and of some important sectors (GVA of manufacturing sector at constant prices growing at 6.2 and 5.3 per cent in 2012-13 and 2013-14, respectively, compared to 1.1 and (-) 0.7 per cent, respectively, in the previous series), and in components of GDP as well as their shares in GDP (GVA of manufacturing sector at current prices increased from 14.7 per cent of total GVA in the previous series to 18.1 per cent in the new series in 2011-12).

These changes and particularly the much higher growth rates of GDP and GVA of the manufacturing sector and the increased shares the manufacturing sector and the increased rates of saving (33 per cent in the new series compared to 30.6 per cent in the previous series in 2011-12) and gross capital formation (38.2 per cent in the new series compared to 35.5 per cent in the previous series in 2011-12) compared to those in the previous national accounts statistics, and also the contrast of these numbers with the very low growth rates of the Index of Industrial Production (1.and (-) 0.1 per cent in IIP General Index and 1.3 and (-) 0.8 per cent in IIP-Manufacturing, respectively, in 2012-13 and 2013-14), and the "ground level realities" such as the low growth rates of bank credit of scheduled commercial banks (14.1 and 13.9 per cent, respectively, for 2012-13 and 2013-14, and still lower for the later years) and exports in US Dollars ((-) 1.8 and 4.7 per cent, respectively, in 2012-13 and 2013-14) and the stagnating total gross investment (growing at 6.8 and (-) 1.9 per cent, respectively, in 2012-13 and 2013-14) led to intense academic and public debates about the new national accounts statistics. The role played in the estimates of the GVA of the manufacturing sector based on the MCA 21 data set was especially debated as also the shifting from GDP at factor costs to GVA at basic prices and giving the pride of place to GDP at market prices as the measure of aggregate output. The credibility and the veracity of the new national accounts statistics came under a shadow of doubt, if not suspicion and confusion, as it were. According to Press reports, the new GDP and growth rate numbers also became a subject of intense debate in the country's Parliamentary Committee on Finance.

It was felt that the School should contribute to promoting an objective understanding of the new estimates of GDP and its components, possibly some brain storming about the issues which need to be addressed some time in the future and a wide dissemination of both of these. The Indian School of Political Economy, therefore, organised on January 21, 2017, a one-day Symposium on the "Recent Changes in the Methodology of Estimation of India's GDP".

The main take-aways from the Symposium and the revised versions of the papers and Comments from the Symposium published in this journal issue are the following:

- 1. The larger data set of MCA 21, accounting for about 85 per cent of paid up capital, has certainly improved the coverage of the corporate manufacturing sector compared to the RBI sample used earlier, which had become much less representative over the years even in terms of the coverage of companies by paid-up capital. The inclusion of the head office activities has also removed a major gap in the earlier series depending exclusively on the establishment based data from ASI. (Anant, *this issue*, Barman, *this issue*).
- 2. However, the blow-up factor based on the aggregate paid up capital of all companies filing their annual returns under the scheme of MCA 21 to estimate the GVA of the companies not doing so vitiates the estimate of the GVA of the corporate manufacturing sector, most likely over-estimating its size as well as growth rate, as the missing companies may include a significant proportion of non-operating companies or companies not performing satisfactorily. Size-class wise blow-up factors by paid up capital could improve the estimates. (Manna, this issue). But as the paid-up capital values are based on historical and not the current market values of assets, it would be advisable to shift to some other criterion for arriving at more homogeneous classes for working out the blow-up factors. Classification of companies by industry, by size of GVA or by the growth rate of GVA, may be much less imperfect. (Sapre and Sinha, this issue).

- 3. The inadequate classification of the head office activities as activities of the manufacturing sector still continues to overestimate the GVA of the manufacturing sector and under-estimate that of the other sectors, such as financial services and trade.
- 4. Clearly, more work of collating and comparing unit level data from ASI and MCA 21 data sets may be necessary to better understand the comparability and complementarity of the enterprise level and establishment level data sources. Over time, greater efforts need to be directed at making the relevant digits of the corporate identification number of companies filing the MCA 21 returns dynamic to better reflect their current production activities.
- 5. Estimation of sectoral and aggregate GDP/GVA at constant prices by using the single deflation rather than the double deflation method are likely to over (under)estimate the growth rate of the estimated series depending on whether the prices of the inputs have been increasing at a lower (higher) rate compared with those of the output prices. While the use of the single deflation method may have been unavoidable in the absence of input data in the required detail, it should be recognised that this may have resulted in an over-estimate of the growth rate of the aggregate GDP/GVA and some sectors (such as manufacturing) during the recent years. (Shetty and Rajakumar, this issue).
- 6. At least one of the participants in the Symposium argued for using GDP numbers at current prices and not at constant prices, not for the reasons of the difficulties associated with single deflation, but because of the imperfections of the Wholesale Price Index used at many stages in the current deflation process.
- 7. Computation of growth rates of GDP over the 'Revision Cycle' often required for policy purposes has to be done carefully so as to use comparisons of likes over likes, that is, comparisons involving estimates based on identical data sources. The estimates during the Revision Cycle comprise Advance Estimates (AE), Provisional Estimates (PE), First Revised Estimates (FRE), Second Revised Estimate (SRE), sequentially in time. The data sets on which they are based for the manufacturing sector are IIP + Advance filing of corporate accounts for AE and PE, IIP + MCA 21 for FRE and MCA 21 + Non-corporate ASI for SRE, respectively. Growth rates computed for estimates based on non-comparable data sets are clearly erroneous and have been a source of much unavoidable confusion. The correct computation of growth rates must involve comparing estimates based on identical data sets. (Shetty and Rajakumar, this issue). While it is appropriate while arriving at PE to extrapolate the relevant benchmark indicators from the FRE of the previous year (Anant, "Discrepancies in GDP Data", A reply to the EPW Editorial on the latest data on India's GDP Series, Economic and Political Weekly, Vol 51, No. 30, 23 July (included in the Documentation Section of this issue), it is not clear whether it follows from this that comparing this year's PE with the previous year's FRE rather than the previous year's PE is appropriate.
- 8. As regards the discrepancies between the growth rate of GDP in the new series and the ground realities reflected by the slow (or negative) growth rates of IIP, bank credit, gross investment or exports, it is true that these are merely some of the components of GDP and "it is not necessary that a composite measure exactly reflects all components" (Anant, *this issue*, p. 8). However, it should be noted that the contrast between ground

reality and growth rate is drawn to find out the source of growth. Was the growth in 2015 mainly due to greater use of unused capacity and domestic consumption?¹ This needs checking.

- 9. While the coverage of the agricultural and allied sector has improved significantly in the new series, there is hardly any difference in the GVA of the aggregate of this sector as a whole but estimates of the sub-sectors, and especially the inputs of the sub-sectors of it, have been greatly refined and show considerable differences in the new series, particularly "[m]ajor changes were in live stock sector, inputs crop sector and forestry sector" (see Dev, *this issue*, for details).
- 10. However, it is not clear whether still all the data available with the Agricultural Universities is fully utilised in the exercise. It was pointed out in one of the comments made in the Symposium that while the data on the principal crops in the region is collected by the Agricultural Universities and submitted to the Directorate of Economics and Statistics of the concerned state for compilation of the costs of cultivation, it is not clear whether the data on minor crops in the region which is also collected by them in the process is also similarly transmitted and utilised in the estimation of the GVA in agriculture, to make it more accurate.
- 11. The coverage of financial sector was expanded and refined by including direct estimates of the loans by money lenders from AIDIS, 2013, loans to households from the Basic Statistical Returns of the Scheduled Commercial Banks (SCBs) in India, data for top 195 Non-Government Non-Banking financial companies obtained directly from the RBI and using a common blow-up procedure for all years, private mutual funds and their Asset Management Companies

(AMCs), private pension funds, and the three regulatory agencies, namely, the SEBI, IRDA and PFRDA. The computation of FISIM, which is the output of financial institutions and an input into the other sectors' production processes was much sharpened by using what has been called the Reference Rate approach. For instance, for the banking sector instead of merely using the difference between total property receipts (dividend +interest+ net profit on sale of investments) and total interest payments by the banking sector as in the earlier series, in the new series, this estimation is replaced by a weighted average of (the lending rate minus the Reference Rate) and (the Reference Rate minus the Deposit Rate), with loans and deposit shares in (loans plus deposits) of the banks as the measure of the banks' FISIM. The Harmonic mean of the banking sector's lending rate and deposit rate is used as the Reference Rate in the above calculation. With these, changes while the total GVA of the financial institutions as a whole has hardly changed, that of the NBFCs, the unorganised financial sector, and co-operative credit societies has greatly increased, while that of SCBs has fallen significantly.² (See C.S.O. (2015) Chap. 3 in the Documentation section. this issue.)

12. The estimation of the RBI's output and GVA has been changed radically in the New Series. Now the whole of RBI's operations are treated as non-market activity and is therefore evaluated at cost because of lack of availability of separate data on its market and non-market activities which problem was earlier dealt by treating the Issue Department's activities as non-market and Banking Department's activities as market activities. In view of this the entire profits generated in RBI operations is excluded from the estimation of its output. This has resulted into a large under-estimation of RBI's GVA as the

4

entire operating surplus of the RBI is dropped from its estimation. (Shetty and Rajakumar, *this issue*)

- 13. The inclusion of the Households' expenditure on valuables in gross capital formation, as done in the new series, while it is based on the guidelines of the UN System of National Accounts, does appear to be questionable as valuables cannot be considered to be a part of the productive capital of the country. This change has contributed significantly to showing an increase in gross capital formation in the new series. (Shetty and Rajakumar, *this issue*).
- 14. Perhaps the most important observation, which has happened to be completely ignored in the debate about the new series of national accounts, but brought out very effectively in one of the papers presented in the Symposium and published in the present journal issue (Dholakia and Pandya), is about the impact of the shift from the earlier establishment approach to the enterprise approach in estimating the GVA of the organised manufacturing sector pertains to its implication for the estimation of gross state domestic product (GSDP). This has greatly vitiated the estimation of GSDP. This is because this change 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. The critical importance of having a reasonably accurate estimate of GSDP, which 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, can hardly be overemphasised. Replacing establishment level data for the states by enterprise level data

sources has necessitated allocations of the GVA of multi-state enterprises among the states, also ignoring other rich data sources available at the state level. Extending the effective labour method to the state level has also involved imposing national level distribution of the types of labour on the state economies. All this has resulted in absurd estimates of production growth; several unintended and unjustified structural changes in the state economy and its sectors, as the paper by Dholakia and Pandya vividly brings out in the context of Gujarat. Further problems arise from this while estimating District Domestic Product. The state level estimation of domestic product aggregates for other states may also be saddled with some of these serious issues. The whole question needs an intensive and careful further discussion in the context of all the states.

15. Barman's paper in the present issue also offers some pointers to the possible direction of further work to improve state level estimates when it is suggested that "it may be possible to map ASI with MCA21 data to satisfactorily account for allocation of MCA21 data into different states. However, for the non-overlapping segment of the two. it may be necessary to undertake specialised Survey to apportion the amount by state. If we assign geo-code to each unit by its location, it will be possible to build estimate even at district level." However, he also notes the difficulties, particularly with regard to services sector. "In respect of companies engaged in services sector, the issue will be more complicated. This will be in spite of regularly conducted Annual Survey of Services Sector companies being proposed. For example, for a pure marketing company or a road transport company it may be difficult to apportion revenue and expenditure by geography. This may be an important difficulty. In such cases, it may be desirable to

undertake one or more type study to understand the nature of complexity and find an appropriate method for allocation, industry by industry. In any case we can not avoid allocation for supra regional enterprises like railways, airlines etc." (Barman, *this issue*).

16. Finally, it is necessary to consider the question of replacing the erstwhile commonly used series of GDP at factor cost in India's national accounts by GVA at Basic Prices and now giving the pride of place to GDP at market prices as the measure of aggregate output. The main limitation of the concept of GDP at factor cost as clearly brought out in a quotation from SNA 1993 in one of the papers is the following: "By definition, "other taxes or subsidies on production" are not taxes or subsidies on products that can be eliminated from the input and output prices. Thus, despite its traditional name, gross value added at factor cost is not strictly a measure of value added." (Anant, this issue). However, it has been argued with great force by Shetty and Rajakumar (this issue) that although GDP whether at factor cost or at market prices may not be considered as "a wholesome social welfare measure", "distributional issues concerning the income shares of labour and capital are capable of being analytically addressed through the concept of GDP at factor cost and not through the concept of GDP at market prices." (Shetty and Rajakumar). It is very true that GDP at factor cost provides a national income aggregate which enables one to consider factor shares unadulterated by the vitiating effects of direct and indirect taxes and subsidies,³ which GDP at Basic prices does not. Shetty and Rajakumar draw attention to Kuznets insistence that addition of indirect taxes to factor costs would result in doublecounting and "an exaggerated national product total" (Kuznets, 1951, for a detailed

analysis of various cases, included in the Documentation section, this issue). However, GDP at market prices can be a basic aggregate for considering after tax and subsidy distribution of factor incomes and total taxes net of subsidies of the government. One of the comments, published in *this issue* makes important observations about such a distribution of national income although it does not explicitly mention GDP at market prices or GDP at factor costs as such (Nachane, this issue). What is more important, GDP at market prices is the appropriate aggregate basic to understanding the circular flow of income in the macro-economy and for studying the questions of macroeconomic stability and factor income inequalities, and fiscal policy for addressing these issues.

These are only a few of a number of issues flagged and examined in the Symposium and the papers published in the present journal issue, as also in the academic debates about the new GDP series. The papers bring out the complexities and nuances of the arguments about the methodological issues and also the limitations of the available data. While doing so, they also under-score the essentially unbiased nature of the CSO's exercise, based as it is single mindedly on the guidelines of the latest UN SNA for the purpose, within the constraints of immediately available data sets.

NOTES

1. These observations were made in a comment made by a member of the Editorial Advisory Committee of the Journal while reviewing one of the related papers.

2. Thanks are due to Dr. S. L. Shetty and Dr. J. Dennis Rajakumar for drawing our attention to the omission in the previous draft of this Note of the important take-aways in this and the following paragraph.

3. It should be pointed out, however, that this is not quite correct because while the prices used in the computation of factor costs are free from the effects of indirect taxes and subsidies, the consumer and producer decisions determining the quantities of outputs and inputs used in the computation will not be so.

GDP ESTIMATION IN INDIA: SOME REFLECTIONS¹

T.C.A. Anant²

GDP estimation represents an important area of collaboration between academia and official statisticians. The recent revision to the Indian System of National Accounts have led to great deal of debate on various aspects of GDP estimation. In this paper, we explore some of these issues distinguishing between misconceptions and genuine areas needing further research or improvements in data. We examine the interplay between theoretical constructs and the structures of practical functioning. Understanding these issues is critical to removing the disconnect between economic theory and the needs of a practical policy.

GDP estimation represents an important arena of dialogue and collaboration between academia and official statisticians. The origins of modern GDP measurement are in a report presented to the US congress in 1934 prepared by the US Department of Commerce and the National Bureau of Economic Research under the leadership of Prof. Simon Kuznets.³ This was done with a view to better understand the impact of the great depression. Subsequently, under the guidance of the United Nations Statistical Commission, GDP measurement spread across the globe. In India, we began this journey with the report of the National Income Committee in 1951. The methodology was revised in 1967, 1978, 1988, 1999, 2006, 2010 and most recently in 2015. Each revision has sought to improve the coverage, update the data along with methodology. The recent revision is no exception; there has been a lot of discussion on these changes, unfortunately not always fully appreciating the nature of and reason for the changes. Understanding these changes and their implications are key to understanding the new measures and their properties. The base revision for 2011-12 was undertaken by CSO under the guidance of the Advisory Committee on National Accounts Statistics (ACNAS), which constituted five sub-committees for this purpose. The reports of these committees are available online⁴ and constitute a comprehensive

assessment of the changes and their rationale. We will review some of these in order to clear misconceptions that have arisen.

A preliminary point on GDP estimation is in order. It is sometime said, somewhat derogatorily, that GDP estimation in India is a mishmash of approaches; this is partly true, but the mishmash is not because of laziness or incompetence, but a conscious research effort. India is a developing country with limited data. This implies that in order to estimate GDP a variety of approaches are adopted depending on the data available in different domains. It may be noted that this approach is not unique to India or, for that matter, the developing world. In fact, early estimates of GDP were all characterised by such eclecticism. In an ideal world, all value addition would occur in establishments with complete books of accounts and it would be possible to compile GDP independently by the Income and Expenditure approaches by aggregating from these accounts. In practice, the quantum of accounting data is limited and thus we end up with the so called mishmash of combining accounting data with other approaches. Over time, the quantum and regularity of data has improved; this implies that we have improved with each round of revision and with each improvement in data sources.

Based on the transcript of address at Symposium on GDP estimates in India at the Indian School of Political Economy, Jan 2017.
 T.C.A. Anant is Chief Statistician of India, Secretary, Ministry of Statistics and Programme Implementation, Gov-

ernment of India, New Delhi. 3. Simon Kuznets, 1934. "National Income, 1929-1932". 73rd US Congress, 2d session, Senate document no. 124, page

 ^{7.} http://library.bea.gov/u?/SOD,888
 4. http://mospi.nic.in/publication/documents-report-sub-committee-national-income-0

^{4.} http://mospi.nic.in/publication/documents-report-sub-committee-national-income-0

Use of Company Accounts Data

The use of corporate accounting data sourced from the Ministry of Corporate Affairs' e-governance platform MCA-21 has been the basis for some of these misconceptions. These are briefly reviewed below:

a. "Shift from Establishment to Enterprise approach."

To examine this issue we first need to understand the difference between establishments and enterprises. In the terminology of SNA (2008) "An enterprise is the view of an institutional unit as a producer of goods and services. The term enterprise may refer to a corporation, a quasicorporation, an NPI or an unincorporated enterprise" and "An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added". To appreciate the difference between these two concepts it is important to note that GDP sits in a very funny intermediate domain between theoretical economics and the real world. In economics the notions of value addition and production are captured by a theoretical abstraction termed the production function which, in statistical terms, for statistical purposes is encapsulated in the notion of an establishment. However, in the real world economic activity takes place either inside legal entities termed as enterprises, like companies, partnerships, etc., or by individuals operating their own businesses termed proprietorships. While ideally from the perspective of economic analysis data should be obtained from establishments, in practice, we get data depending upon the legal framework and accounting practises of enterprises. For the most part, we get enterprise level data. In manufacturing, in India, we can also get establishment level data, because the Factories Act requires registration of manufacturing establishments.

With this back drop, it is useful to examine the changes made in 2011-12. Prior to 2011-12, national accounts in India used to compile accounts in the private non-governmental domain under the rubrics of organised and unorganised activities. Under Organised activities, estimates were compiled in different activity classes using different approaches. In Manufacturing, establishment level data from the Annual Survey of Industries (ASI), canvassed from establishments registered under the Factories Act, was used. In other Sectors, data was used either from the NSS 63rd round (2006-07), or NSS 55th Round (1999-2000) or Corporate Data from the RBI studies on company finances. For the Unorganised segments, estimation was done combining Value Added per Worker estimates from the NSS surveys of enterprises (NSS 55, 62 & 63 rounds) and Employment from the NSS Employment Unemployment surveys (61st round) as well as the MSME fourth all India census. Thus, a mix of approaches combing establishment level data with company data in different activity classes was being followed except in Manufacturing where the estimates were from establishment level data.

In the New series, the availability of MCA data permitted a much cleaner separation of institutional categories. Estimates are therefore prepared separately for Corporate Entities and Household enterprises. From the brief discussion of the older series, it should be clear that the principal impact of using corporate accounting data is in manufacturing which entails a shift from Establishment to Enterprise level estimates, i.e., instead of using ASI establishment data we are now using the enterprise level data for manufacturing in the corporate domain.⁵ What are the advantages and disadvantages of this change?

b. Advantages of the MCA data:

There are two broad issues involved: the first relates to the measurement of GVA. To illustrate, consider an enterprise with multiple establishments⁶ within the same corporate entity, some of which are in manufacturing and the others in services - these may be sales and marketing establishments, R&D establishments, etc. These non-manufacturing establishments will not be registered under the Factories Act. In the old series, the GVA of these activities would be omitted because the ASI would aggregate the value added of the manufacturing establishments, and our enterprise based coverage in services sectors may not include them because they are service establishments within an overall manufacturing enterprise. This purely conceptual divergence was accompanied by a second, more significant problem with the annual survey of industries frame. This has been pointed out by many researchers, that the coverage of the Factories Act frame done through the Chief Inspector of Factories has become very patchy over the years. This is due to a variety of reasons, which include the fact that liberalisation has led to a de-emphasis on inspectorates like the Chief Inspector of Factories. If we put these two points together, we get an explanation for the large difference in GVA in manufacturing from that calculated from ASI and that from MCA.

Returning to our initial concern of estimating GDP from Establishment data versus Enterprise data, we can conclude that if we had access to complete establishment level data, it would make GDP allocation to different activity classifications and locations more accurate; partial establishment analysis combined with enterprise data has serious methodological flaws and can lead to biases in the calculation of aggregate GDP.

c. Biases in the MCA Data:

There are two similar related criticisms levelled under this head. The MCA data is an administrative data source. Companies file annual returns under their statutory obligation. The law provided for a time schedule for filing. However, it is a fact that all returns are not filed in time. To deal with this issue, CSO has prescribed a revision calendar; estimates for a year are prepared according to returns filed up to a critical date, and returns filed later are accounted for in later revisions. To eliminate the reporting bias in this procedure, the estimates so calculated are scaled up in proportion to the Paid Up Capital of "Active Companies".⁷ It may be noted that this is equivalent to the procedure of converting sample estimates to population estimates through a multiplier. This scaling up has been criticised because it has been argued that we have not adequately accounted for the fact that companies that file returns late are different from those that file on time. The arguments sometimes polemically refer to these as "shell companies". This issue and the resulting bias have been examined

^{5.} Other than in manufacturing, data was in any case at the enterprise level but the coverage being on a sample basis (either RBI studies or NSS) was much smaller than that in MCA database, with the resultant measurement errors.

^{6.} The critical element here is of location, ASI captures data from books of accounts, and if these activities are carried out within the same location then the likely omission is small. However, if the work takes place in a separate location then the risk is higher. Similar issues would arise from a head office, located away from the site of manufacture. Ideally we should capture information of the whole enterprise with details of all subordinate establishments, as is done in the US establishment surveys. In India, until recently, this was not feasible, as the system of registration, under the factories act, did not permit a complete catalogue of all establishments within an enterprise. The enterprise registration, under MCA, only mandates consolidated accounts. A new window of opportunity has been created with GST, which provides for a catalogue of establishments within an enterprise.

^{7.} Company Law defines a dormant Company as any company that has not filed returns for three consecutive years. Other Companies are active.

carefully in a separate paper⁸ presented in this symposium. There are some valid concerns here but the likely implications of bias are quite misstated. A second criticism is even more specious. It is argued by some that accounting data is somehow less reliable than that obtained by a survey! There are two points here. In some surveys, like in the annual survey of industries, the data collected is from the books of accounts and is thus as reliable as the published accounts. In other surveys, like in the NSS, the data is collected through an interview.⁹ It is not clear why a respondent in a personal interview will give any information different from what he would have disclosed in his books of accounts had they existed. In fact, to the extent that books of accounts are backed by a paper trail, they are less prone to reporting or recall biases inherent in an interview.

Changes in the Institutional Structure of Accounts

A second broad area of concern has been the changes in the institutional framework in which the accounts are presented. The new series has presented its accounts within an institutional structure which is much closer to the spirit of the System of National Accounts 2008 (SNA). We have divided the economy into three broad categories. We have general government, which was there earlier and does not need elaboration. We have the corporate sector- defined using the parameters of SNA. These are enterprises or entities which have a legal structure and maintain accounts. Formally, this includes all registered companies, including all public sector companies and financial companies. It also includes the quasi corporate segment which consists of those entities which are not registered as corporates, but which maintain accounts. These include limited liabilities partnerships and other organisations where

complete accounts are maintained. This has implied partitioning the estimates obtained from the NSS surveys of un-incorporated enterprises into separate entities (i) which maintain accounts and classify them in the quasi-corporate segment and (ii) the balance as the household sector. A consequence of this is the improvement in corporate GVA in manufacturing discussed earlier and the decline in Value Added in the household sector which I discuss in a little while. It has meant that the share of the household sector has come down slightly in size in the new series.

This is more or less consistent with the SNA, except for one important lacuna and that relates to the treatment of non-profit institutions serving households. This includes all trusts and societies which may be the neighbourhood RWA but it could also be the major religious endowments. All of these are clubbed as part of the household segment. This creates some difficulties in GDP measurement; there are no regular sources of data for these entities. CSO has undertaken a study which is used in the estimation but the absence of effective legal framework which regulates and governs non-profit institutions and mandates regular submissions of accounts implies that these are not well measured. They are, in part, the reason why National Account estimates of consumption diverge from those obtained in household surveys as these surveys exclude such entities from their coverage. The Report of the Adhikari Committee undertaken as part of the base revision exercise discusses this and other aspects of the divergence in consumption estimates in detail.

Estimates of the Household Sector

I want to talk a little bit about the third major change which relates to the estimation of value added in the Household Sector. For the household sector we don't have regular data. So, value added

Dr. G.C. Manna discusses this in detail in his paper.
 Even here the instruction is to use the accounts if detailed accounts are available.

is assessed using both NSS Establishment surveys, which give us estimates of value added per worker and the NSS Employment Survey, which gives estimates of the Workforce. Earlier, in the national accounts, for this estimation, workers were treated as a single homogenous group treating owners, wage workers and unpaid household helpers as the same. This worked in the revisions between 1999-2000 and 2004-05 as the Workforce Participation Rate (WPR) rose quite sharply in corresponding NSS surveys. But, thereafter things changed. NSS surveys in the 64th, 66th and 68th round showed virtually stagnant, if not declining, WPR's. This triggered a debate on jobless growth at that time.¹⁰ However, what the focus on aggregate WPR hid was the sharp compositional changes underway in the Indian labour market. There has been a significant change in the compositional structure of the workforce between casual labour, wage labour and self-employed people which includes both owners and helpers. There is decline in selfemployment, largely in the category of helpers and a rise in wage labour, mostly in the form of casual labour.

To respond to this issue we undertook a careful modelling of the different productivity levels of these different types of labour. Using the productivity differentials, a concept of effective labour input was developed, and then Value Added per effective labour and the amount of effective labour, given work force estimates, were used to generate value added estimates. What was the impact of this change?¹¹ If we examine the GDP estimates for 2011-12 under the new series over the old (2004-05) series, we note a reduction in overall GDP by 2%, while GVA at basic prices is lower by about 4%. Had we continued with the earlier methodology and just updated the NSS surveys as we had done in the past, the reduction would be of a much higher percentage.¹²

Basic Prices versus Factor Cost

The difference between basic prices and factor cost is not a great deal, it is simply about how certain types of taxes and subsidies are treated in the measurement of GVA. This refinement in understanding of cost of production was introduced in the 1993 SNA which distinguished between different notions of valuations at market prices and basic prices. These differences arise on when and on whom taxes are levied. Market Prices refers to prices inclusive of all taxes less subsidies; deducting product taxes and adding subsidies received by the purchaser will give basic prices. However, the basic price still includes taxes paid by the producer which are not directly linked to the product, e.g., payroll taxes, or taxes on vehicles or buildings, etc. The notion of factor cost would in principle require valuation after eliminating all taxes. The difficulty in the concept were noted in the 1993 SNA as "The conceptual difficulty with gross value added at factor cost is that there is no observable vector of prices such that gross value added at factor cost is obtained directly by multiplying the price vector by the vector of quantities of inputs and outputs that defines the production process. By definition, 'other taxes or subsidies on production' are not taxes or subsidies on products that can be eliminated from the input and output prices. Thus, despite its traditional name, gross value added at factor cost is not strictly a measure of value added." In terms of practical measurement, the difference is small as these other taxes are relatively small magnitudes. But the change

^{10.} http://www.livemint.com/Politics/NT9rThviQrSJKNEelMICdI/The-great-jobs-debate.html

^{11.} These details are documented in the Sub Committee on estimates for the unorganised manufacturing and services Sectors.

^{12.} This is because in addition to the estimate of Value added per worker, the older methodology also used the inter survey growth rates to project estimates. The EUS of 2004-05 shows a much higher growth in Workforce over 1999-2000, than was seen in 2011-12 over 2004-05.

makes our terminology both conceptually and in terms of practice in line with international best practice.

The issue of discrepancies

GDP as we have noted in an ideal world with complete books of accounts can be compiled from the accounts of individual enterprises. Here too, like in the accounts of any enterprise, we can measure it in terms of the value produced (production account) or the value used (expenditure account). And like with double entry book keeping these would be the same. In practice, as noted earlier, we do not have complete data. In the developed world, close to 90% of the value addition in the economy is in the corporate segment where full accounts are available. This permits a much more complete estimate of the production and its allocation. In India, the household segment accounts for almost 44% of GDP, i.e., account maintaining entities in India are only about 55% of GDP. So, we can get at best accounting data for about 55% of the economy. In practice, we get less, because not all accounts are captured, e.g., local bodies, some quasi corporate entities, etc. Where accounts are not available, we use surveys. Surveys give us an incomplete pictures of behaviour. By combining different surveys, we piece together the overall profile. But the incompleteness of information implies our measures on production and income accounts can yield different numbers and these are termed in accounting parlance as discrepancies. This is an area where statistical work continues to both improve the design and coverage of surveys, as well as efforts to capture accounting data from entities whose accounting information is still inaccessible.

Use of deflators

The criticism here takes the form that estimates in constant prices in recent years are overstated because we use the WPI to deflate GDP. Since

WPI inflation is less than CPI inflation, the estimate is overstated. Some analysts then proceed to complain as to how we mis-measure inflation. This type of discussion also is misconceived. First, WPI and CPI measure very different things. CPI captures the price behaviour of the consumption basket of the average consumer, whereas WPI measures price movements at the largest, wholesale, point of trade of goods. They represent very different vectors of prices. If we consider the common sub-vector, between WPI and CPI, i.e., goods in final consumption, the behaviour of the two is identical. The difference is not between WPI and CPI; it is a difference in the corresponding sub-vectors. Now, in so far as the choice of deflator for GDP is concerned, it is important to note that in India, at present, we do not have data on the complete vector of prices. We have a complete set of prices for manufacturing, but in services we have data for some services, principally household services which are consumed by households. But in many other services, like business services, banking and Financial services, Trade, etc., we do not have as yet price indicators. What we do in GDP compilation, is not to choose any one indicator but examine the issue in a disaggregated manner, where in each disaggregated category we choose an indicator from the available set based on the best approximation. To illustrate, in trade as a price indicator for value addition in trade we use WPI because it allows us to cover the basket of goods traded. Further, the availability of price data between the new series and old series has not changed and the segment wise mapping continues to be done by the same rules of thumb. These rules of thumb are not complete and represent an area where more research is needed.

Concluding Remarks

Finally, I will briefly comment on some common observations on GDP measurement. First, it is sometimes said the higher growth of GDP (shown by the new series) does not match

ground realities. Here reference will sometimes be made to the Index of Industrial Production, or Bank Credit or Capital Formation. The problem with these comments is that these indicators are components of GDP calculation and it is not necessary that a composite measure exactly reflects all components. That would happen only if there was perfect correlation in all of these. One of the reasons GDP was developed, because is prior to this, policy makers would seek to describe the economy in terms of disparate indicators and come up with conflicting conclusions. GDP aggregates a variety of Indicators using the principle of value addition and so gives a more complete picture. This then leads to the second argument which runs along the feel good factor. There are many elements to this view and it is not possible to do a complete analysis of these here. but it is important to remember Simon Kuznets, cautionary note when pointing out the uses and abuses of National Income Measurements. He observed, "The valuable capacity of the human mind to simplify a complex situation in a compact characterisation becomes dangerous when not controlled in terms of definitely stated criteria". He points out in that discussion that National Income or GDP (as it subsequently became) is extremely useful in certain domains of comparison; it is not a measure of the overall welfare of a nation. To conclude, I would only like to emphasise that GDP measurement in India, like with most of our official statistics, reflects an attempt to describe the complex reality of a developing society, where we still do not have complete information. What we can state, however, is that there is complete transparency about our processes and our data. More information is available in India, not just data, but methods, reasons and assessments, than in comparable developing or, for that matter, in many developed countries. We would like informed engagement with these issues because there is considerable scope for improvement. However, reducing this to polemical debates is not very useful.

RECENT CHANGES IN MEASUREMENT OF INDIA'S GDP: OVERALL ISSUES AND SOME FOCUS ON AGRICULTURE

S. Mahendra Dev

This paper discusses (a) changes in measurement in industry and services (b) changes made in agriculture sector and (c) major issues on the measurement of GDP in new series. There are long term or legacy issues in agriculture, industry and services. The paper examines 10 major issues on measurement of GDP in the new series. These are: (1) MCA 21 data problems; (2) separation of Quasi corporations from household sector; (3) effective labour input method; (4) high growth rate of GDP vs. ground realities; (5) GDP at market prices vs. GVA at basic prices vs. GDP at factor prices; (6) GDP by production and expenditure methods; (7) single vs. double deflation; (8) price deflators WPI vs. CPI; (9) nominal growth vs. real growth; (10) reference point for growth: advance estimates, provisional estimates, first revised estimates and second revised estimates. In our view, although there are some gaps in the measurement of GDP the new series and the methodology adopted are based on 'best advice' from experts available in the country. The issues discussed in the paper will be useful for next base revision of National Accounts Statistics.

1. INTRODUCTION

At the outset, it may be noted that India's National Accounts Statistics (NAS) is one of the most massive statistical exercises undertaken in the world. It has a better statistical system among the developing countries. A rough calculation shows that it has more than 3000 data sources and based on more than 300 surveys. In January 2015, CSO introduced a new series of National Accounts Statistics with 2011-12 as the base year, replacing the old series with 2004-05 as the base year. The year 2011-12 also coincides with the Employment and Unemployment Survey, NSS 68th Round.

What are the the basic reasons for controversy on the new series compared to the old series? Generally, base year revisions lead to a marginal rise in the absolute size and do not show much change in growth rates. The new series showed marginal decline in the base year size but the over-all GDP growth rate and some crucial growth rates increased significantly. For example, GDP growth rate in 2013-14 was 4.8% in the old series but 6.2% in the new series. There was also significant rise in manufacturing growth in the new series. Media reports say that ground realities, like growth in investment, credit, etc., indicate that GDP growth looks is much lower than 6% to 7.5% as shown in the new series.

The CSO (2015b) says, the guiding principles for change are: (1) revision of base year to a more recent year; (2) complete review of existing data base and methodology employed in the estimation of various macro-economic aggregates and alternative data bases; and (3) implementation of the international guidelines based on SNA, the System of National Accounts 2008 to the extent possible. It may be noted that CSO makes it clear that the new series are not comparable with the old series.¹

1.1. Long term issues

The long term issues on data have been discussed in various research papers and government reports.² Due to the loss of credibility of official statistics, especially in the 1990s, the National Statistical Commission was appointed, with Dr. C. Rangarajan as Chairman, with wide-ranging terms of reference. The reasons for deficiencies in data gaps and quality were traced to: (a)

S. Mahendra Dev is Director, IGIDR, Mumbai.

The author is grateful to Prof. Vikas Chitre, Prof. Nilakanth Rath, Dr. R.B. Barman, Prof. T.C. A. Anant, Prof. R. Dholakia, Dr. S.L. Shetty, Dr. Dennis Rajakumar, Mr. T.C. Manna and other participants at the symposium for their comments and suggestions.

deterioration in administrative statistics at the primary level; (b) weakening of the institutional mechanisms of vertical coordination between the centre and the states; and (c) a similar weakening of the lateral coordination between the ministries at the centre and the central statistical organisation. After analysing the deficiencies of the Indian Statistical System, the commission has made several recommendations to revamp the statistical system. Rangarajan Commission gave 623 recommendations. They cover agriculture, industry, infrastructure. socio-economic services. statistics, financial and external sectors, corporate sector, prices, and the over-all National Accounts Statistics. National Statistical Commission (NSC) was appointed on a permanent basis subsequently. NSC has implemented many of the recommendations of the Rangarajan Commission.

Srinivasan [2013] discusses long standing unresolved data issues.³ According to him, the "First National Income Committee chaired by Professor Mahalanobis, besides estimating value added by each sector of the economy, also provided its estimates of errors of measured [measures] surrounding the estimates of the value added. The Central Statistical Office (CSO) has not published any error estimate since then, so that we have no idea how the proportions of errors (sector wise and in the aggregate) have been changing over time. It is time the CSO begins publishing error estimates." (p. 14). Srinivasan also comments on the problems with the estimates of consumption, saving and investment of households.

Another issue often discussed relates to the differences between the estimates of private consumption by the National Accounts Statistics and the National Sample Survey. The Rangarajan Committee on poverty discusses these differences. Like in many countries, The Indian statistical system has two parallel estimates of private consumption. The NSS estimates are from the household consumer expenditure survey and involve the distribution of mean per capita consumer expenditure by deciles. The National Accounts Statistics (NAS) estimates are from the CSO. It yields a scalar value of consumption for the nation as a whole, with no disaggregation by region or class (except by broad commodity group). The NAS estimate of private consumption is derived as a residual by deducting from the estimates of production (adjusted for foreign trade) the estimated use in capital formation and public consumption.

These two estimates of consumption (NSS and NAS) do not match in any country. India is no exception. What is alarming in India is that the difference between NAS and NSS is widening overtime. For example, the difference was less than 10% in the late 1970s; it rose to 50% in 2009-10. At the aggregate level, the NAS consumption has always been more than the NSS consumption. The differences are much higher for non-food (46%) compared to food (26%). Some adjustments made reduced the differences.

An exercise [Rangarajan and Dev, 2016] that adjusts agricultural produce for the financial year including trade and transport margins and taxes reduces the difference from 45.8% to 41.2% for the year 2009-10. For non-food expenditure, the financial intermediation services indirectly measured (FISIM), life insurance premium and imputed gross rental are part of NAS estimates with no counterpart estimates in NSS. An adjustment for this factor reduces the difference from 41.2% to 32.5% for the year 2009-10. But, still the differences are large. Non-food expenditure in NAS is much higher than in the NSS. Apart from problems in NAS, the fatigue of respondents in NSS surveys may not be able to capture some of the non-food expenditures [GOI, 2014].

CSO has been trying to solve the long term or legacy issues over time based on new data availability and new methodologies.

The objective of this paper is to provide an overview of major changes and issues relating to the recent changes in measurement of GDP. The paper is organised as follows. Section 2 examines the major changes made in the new series. There has not been much discussion on changes made in the agriculture sector as the focus has been mainly on manufacturing sector and trade. Therefore, in Section 3 we document the changes made in regard to agriculture sector in 2011-12 base year compared to 2004-05 base year. Section 4 discusses 10 major issues and debates on changes in measurement of GDP in the new series. Last section provides concluding observations.

2. MAJOR CHANGES IN MEASUREMENT OF GDP IN THE NEW SERIES.

There have been many changes in the new series compared to the old series. We concentrate on four major changes in the data and methods. These are:

- (1) Changes in corporate sector and financial sector data
- (2) Data for the government sector;
- (3) Changes in the factor income method for the informal Sector;
- (4) Changes in trade sector data: wholesale and retail

2.1. Corporate Sector Data and Manufacturing Growth

It is known that old series used RBI study on company finances from a sample of around 2500 companies. There has been a discussion in the last several years to change this approach. Therefore, in 2011-12 series, corporate sector both in manufacturing and services has been comprehensively covered by incorporation of annual accounts of companies as filed with the Ministry of Corporate Affairs (MCA) under the e-governance initiative, MCA 21. For the 'manufacturing' enterprises MCA21 data base has been used to supplement the information available in the Annual Survey of Industries [CSO, 2015a]. In the new series, CSO used the MCA 21 data set which had about 5.24 lakh non-financial private companies. New series also adopted the concept of enterprise in place of establishment. This led to big change in manufacturing sector value added.

Manufacturing growth was higher than in earlier series. It is important to keep in mind the following changes in order to understand the higher growth in corporate and manufacturing sectors.

(a) Data sources used for estimating GVA in manufacturing sector are different.

Table 1 provides the differences in the sources of data. In the old series, IIP and ASI data, both of which are establishment based, are used. The first estimate is derived by applying the IIP growth to estimates of the previous year. In the second revised estimate, these estimates were updated with the ASI figures when they are available. IIP reports output while ASI gives value added in the establishment. In the new series, IIP and MCA21 are used for 1st revised estimate while MCA21 and non-corporate ASI are used for 2nd revised estimate (Table 1).

Series	Year 1 (advance & provisional)	Year 2 (1st revised estimate)	Year 3 (2nd revised estimate)
(1)	(2)	(3)	(4)
2004-05 series 2011-12 series	IIP IIP + Advance filling of corporate accounts	IIP IIP + MCA21	ASI MCA21 + non-corporate ASI

Table 1. Sources of data for different estimates in old and new series for manufacturing

Source : CSO (2015c)

(b) Change from establishment to enterprise

According to CSO (2015c), usually there is not much difference between establishment and enterprise value added. But for large enterprises, these differences are significant. For example, take Reliance under Mukesh Ambani. Earlier they used to go to all factories of Ambani. Now they collect data for all factories together at the CSO enterprise level. Because of this change, we are capturing marketing, development, logistics and financial activities that take place at manufacturing firms' head offices. The value added by marketing and other services were being excluded in the old series from the GDP because they were not covered in the ASI. Also, under the earlier approach, Marutis and Audis were all put together as the same by taking only volume of production. Now monetary value is calculated by including product improvement and differentiation.

(c) Financial Sector

In the 2004-05 series, only Banking (80%) and insurance and others (20%) were covered under the financial sector. By contrast, the new GDP series expands coverage of the finance sector by including stock exchanges, stock brokers, asset management companies, mutual funds, pension funds as well as regulatory bodies like SEBI, PFRDA and IRDA [CSO, 2015b]. Earlier, informal finance was assumed to be one-third of formal non-banking finance industry. Now private moneylenders' contribution to the economy is measured using survey data.

2.2 Changes in Government Account: Local Bodies

Earlier information is based on local bodies of four states (Delhi, Himachal, Meghalaya and U.P.) only. Under the Thirteenth Finance Commission, DES (Directorate of Economics and Statistics) of eleven states - U.P., Tamil Nadu, Meghalaya, Maharashtra, Kerala, Karnataka, Himachal Pradesh, Delhi, Chandigarh, Andhra Pradesh and Telangana- have collected the accounts of local bodies. Local bodies which were captured on a sample basis are now being captured on a complete account basis. On the basis of this information, which accounts for about 60% of the transfers to all local bodies, national level estimates are compiled [CSO, 2015b]. The work is in progress to extend it to close to 100 per cent. This was a big change, due to which government accounting improved enormously.

2.3. Changes in Informal Sector and Labour

In the old series, labour input method (LI method) assumed that there is equal contribution from all categories of workers engaged in the economic activity. It assumes that the productivity of an employer, a casual wage worker, self employed worker, or a family worker is equal. Based on enterprise surveys of NSS, an average value added per worker is taken. Then total labour input is computed from Employment and Unemployment Surveys. Labour input is also

projected for the period between two NSS surveys. Workforce is multiplied by the average value added per worker to arrive at GVA in that industry .

addresses the differential labour productivity issue by assigning weights to the different categories of workers engaged in an economic activity based on their productivity (CSO, 2015b). The weights were based on the data from establishments covered in the NSS 67th round Survey on unincorporated Enterprises, 2010-11 (Table 2).

In the new series 'Effective Labor Input Method' has been adopted. The new method

Activity	Owner	Hired	Helper
(1)	(2)	(3)	(4)
Trade & Repairs	0.66	1.00	0.28
Hotels & Restaurants	0.63	1.00	0.35
Transport	0.33	1.00	0.38
Communication	0.32	1.00	0.37
Real estate & professional services	0.76	1.00	0.16
Education	1.29	1.00	0.44
Health	0.73	1.00	0.25
Other services	1.09	1.00	0.00

Table 2. Different weights to different workers: 67th Round

Source: Rajakumar and Shetty [2015].

2.4. Changes in trade sector

In the trade sector, value added for unincorporated sector is estimated from Enterprise Survey and Employment surveys of NSSO. For 2004-05 base revision, 1999-2000 Survey was used as there was no survey of a later date available. Employment growth was 2.8% between 1999-00 to 2004-05. This growth was imputed for the years between FY 05 and FY 12. For 2011-12, the 67th Round (2010-11) survey was used. Annual average growth rate in employment was only 0.8% for the period 2004-05 to 2011-12. (This growth rate is for the period 2004-05 to 2011-12, divided by the number of years.) 2004-05 series therefore, overstated the value added in the trade sector. The decrease in GVA of Trade is mainly due to the drop in the latest survey based estimates of trade for the unorganised sector. Large part of the trade happens in non-incorporated establishments. Trade surveys are done infrequently. For the old series of 2004-05, latest data could not be used

because the trade survey was available only for the year 1999-2000. Therefore, for the period 1999-00 to 2004-05, Gross Trading Income (GTI) index was used [CSO, 2015b]. Use of GTI index and old surveys has overestimated the value added for trade sector in the old series. In the new series, apart from using the latest survey 2010-11data, sales tax collection was also used as an indicator. The estimate of GVA for 2011-12 for 'trade and repair services' (level) has gone down by 39.4% compared to the 2004-05 series.

These are the four major changes. Of course, there are many other changes documented in the CSO reports and individual research papers, [e.g., see Rajkumar and Shetty, 2017⁴].

2.5. Differences in Old and New Series due to Changes in Measurement

As a result of the changes in procedures, methodology, data sources and use of latest data

from survey results, there are significant differences in the old and new series. These changes are discussed below.

The absolute GDP number in 2011-12 for the new series was 97.8% of the old series- 2.2% lower (Table 3). Recent revisions show that the absolute size of GDP was lower by 3.4% in new

series compared to old series in the same year. (Rajkumar and Shetty, 2017). The absolute size in the new series was much higher in the new series for industrial sector (18% higher) while it was much lower for services (14.2% lower) in 2011-12 (Table 3). For trade, hotels, transport etc. new series showed 31.5% lower than old series.

Table 3. GVA at FC by economic activity at current prices (%)

Industry	New series as a % of Old Series			New series as a % of Old Series	eries
	2011-12	2012-13	2013-14		
(1)	(2)	(3)	(4)		
1. Agriculture	103.7	105.2	102.4		
2. Industry	118.2	119.4	123.2		
Mining & quarrying	116.5	127.3	133.4		
Manufacturing	118.8	124.0	132.5		
Electricity Gas, etc.	149.2	139.3	121.0		
Construction	111.6	104.9	105.6		
3. Services	85.8	87.0	89.4		
Trade, hotels, transport, etc.	68.5	71.5	77.5		
Finance, real estate etc.	109.3	109.8	105.1		
Public administration etc.	88.6	86.4	89.0		
GVA at Factor Cost	97.8	98.7	100.1		

Source: Rajakumar and Shetty [2015]

old series to 33.1% in the new series (Table 4). repair services significantly dropped from 15.9% Similarly, manufacturing share rose from 14.7% to 18.1%. The share of services declined from in the share of agriculture.

The share of industry increased from 27.2% in the 54.8% to 48.6%, while the share of trade and to 9.7% (Table 4). There was only marginal rise

Table 4. Shares of Different Sectors in 2011-12	current p	orices)
---	-----------	---------

Industry	Old Series 2004-05	New series 2011-12
(1)	(2)	(3)
Agriculture & Allied	17.9	18.4
Industry	27.2	33.1
Mining & quarrying	2.7	3.2
Manufacturing	14.7	18.1
Electricity	1.6	2.4
Construction	8.2	9.4
Services	54.8	48.6
Trade & Repair services	15.9	9.7
Hotels & restaurants	1.5	1.1
Transport, Storage & com	7.3	6.5
Financial Services	5.7	5.9
Real Estate public dwelling	10.7	12.9
Public administration & defence	5.9	6.0
Other Services	7.8	6.5
Total GVA	100.0	100.0

Source: Same as Table 3

Although absolute size declined, growth rates of GDP were higher in the new series compared to the old series. For example, the growth rate of GVA increased from 4.7% in the old series to 6.6% in the new series in 2013-14 (Table 5). The

growth of manufacturing sector rose from -0.7% to 5.3% while the growth rate of trade, hotels etc. increased from 3.0% in the old series to 10.9% in the new series.

Industry	2004-0	2004-05 series		2011-12 Series		
	2012-13	2013-14	2012-13	2013-14	2014-15	
(1)	(2)	(3)	(4)	(5)	(6)	
1. Agriculture	1.4	4.7	1.7	3.8	1.1	
2. Industry	1.0	0.4	2.3	4.4	5.6	
Mining & quarrying	-2.2	-1.4	0.5	5.5	1.7	
Manufacturing	1.1	-0.7	6.1	5.3	6.7	
Electricity Gas, etc.	2.3	5.9	2.3	2.9	5.9	
Construction	1.1	1.6	-4.4	2.5	4.5	
3. Services	7.0	6.8	8.0	9.1	10.9	
Trade, hotels, etc.	5.1	3.0	9.2	10.9	9.1	
Finance, real estate	10.9	12.9	9.0	8.0	14.	
Public administration etc.	5.3	5.6	4.7	8.0	8.8	
GVA Aggregate	4.5	4.7	4.9	6.6	7.5	

Table 5. Growth rate of	f GVA at industry	level at constant	prices (%)
-------------------------	-------------------	-------------------	------------

Source: Same as Table 3.

huge rise in savings and capital formation of private corporate sector (PCS). Table 6 shows a rise of 40% in savings and 45% in investment in

One of the significant changes relates to the PCS in the new series compared to the old series. This reflects in year-to-year high growth rates in both savings and investments.

Year	2004-05 series 2011-12 series Annual change (i		ange (in %)	New series as % pf	
	(KS III CI)	(RS III CI)	2004-05 series	2011-12 series	old selles
(1)	(2)	(3)	(4)	(5)	(6)
		Savings			
2011-12	658428	854124	6.1		129.7
2012-13	713141	995930	8.3	16.6	139.7
2013-14		1231624		23.7	
		Gross Capital Form	nation		
2011-12	913282	1173855	-8.5		128.5
2012-13	925481	1346038	1.3	14.7	145.4
2013-14		1429734		6.2	

Table 6. Saving and Investment of Private Corporate Sector

Source: Same as Table 3.

Regarding gross savings of the total econ- was higher by 2.4 percentage points in the new omy, ratio of gross savings to GNDI (gross series compared to the old series in 2011-12 national disposable income) in the new series (Table 7).

Item	2004-0	2004-05 series		2011-12 Series		
	2011-12	2012-13	2011-12	2012-13	2013-14	
(1)	(2)	(3)	(4)	(5)	(6)	
Public Sector	111295	117919	125188	169210	179132	
	[1.2]	[1.1]	[1.4]	[1.7]	[1.5]	
	(3.9)	(3.9)	(4.2)	(5.3)	(5.2)	
Private Corporate Sector	658428	713141	854124	995930	1231624	
	[7.1]	[6.9]	[9.4]	[9.7]	[10.6]	
	(23.3)	(23.4)	(28.5)	(31.3)	(35.4)	
Household sector*	2054737	2212414	2014613	2016122	2065179	
	[22.2]	[21.4]	[22.2]	[19.7]	[17.8]	
	(72.7)	(72.7)	(67.3)	(63.4)	(59.4)	
Gross Savings	2824460	3043474	2993925	3181262	3475935	
	[30.6]	[29.4]	[33.0]	[31.1]	[30.0]	
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	

Table 7. Gross Savings by Type of Institution (In Rs. Crores)

Note: Figures in square brackets are as % of GNDI; round bracket represent sectoral shares in percentages. * 2011-12 Series includes valuables.

Source: EPW Research Foundation (2015)

However, there were significant compositional changes in gross savings by type of institution. The share of private corporate sector in gross savings rose from 23.3% in the old series to 28.5% in the new series in 2011-12. On the other hand, the share of the household sector declined from 72.7% in the old series to 67.3% in the new series in 2011-12. In fact, it declined much more in 2012-13 (Table 7).

Similar changes were noticed in gross capital formation (GCF). In the new series, the ratio of GCF to GDP rose to 36.1% compared to 33.6%

in the old series (Table 8). But, it showed only a marginal rise in 2012-13. GCF by the type of institution shows that the share of private corporate sector in gross savings increased from 30% in the old series to 36.8% in the new series. It rose from 28.5% to 40.2% in 2012-13. The share of household sector in gross savings declined from 46.9% in the old series to 42% in the new series. The share declined much more in 2012-13. The share of public sector in gross savings did not show significant change between old and new series.

Item	2004-0	2004-05 series		2011-12 Series		
	2011-12	2012-13	2011-12	2012-13	2013-14	
(1)	(2)	(3)	(4)	(5)	(6)	
Public Sector	695835	821962	674395	719426	902048	
	[7.7]	[8.1]	[7.6]	[7.2]	[8.0]	
	(23.0)	(25.3)	(21.2)	(21.5)	(25.5)	
Private Corporate Sector	913282	925481	1173855	1346038	1429734	
	[10.1]	[9.2]	[13.3]	[13.5]	[12.6]	
	(30.1)	(28.5)	(36.8)	(40.2)	(40.3)	
Household sector*	1422541	1495283	1337552	1284620	1212302	
	[15.8]	[14.8]	[15.1]	[12.9]	[1.7]	
	(46.9)	(46.1)	(42.0)	(38.3)	(34.2)	
Gross Capital formation*	3031658	3242726	3185802	3350084	3544084	
	[33.6]	[32.1]	[36.1]	[33.5]	[31.2]	
	(100.0)	(100.0)	(100.0)	(10.0)	(100.0)	

Table 8. Gross Capital Formation by Type of Institution

Note: Figures in square brackets are as % of GDP; round bracket represent sectoral shares in percentages. * Excluding valuables. Source: EPW Research Foundation (2015)

3. REVISIONS IN AGRICULTURAL GDP

In order to make it adaptive to contemporary changes in agricultural practices, the agricultural statistical system has been subjected to review several times since independence. Some of the important expert groups were: (a) the Technical Committee on Coordination of Agricultural Statistics (1949), (b) the National Commission on Agriculture (1976), (c) the High Level Evaluation Committee (1983) (d) the Workshop on Modernisation of the Statistical System (1998) (e) National Statistical Commission (2001), chaired by Dr. C. Rangarajan (f) more recently the Experts Group on Agricultural Statistics under the Chairmanship of Prof A Vaidyanathan [2010] and (g) Professional Committee on Agriculture and Allied Sectors under the chairmanship of Prof Y K Alagh in 2013.

The Rangarajan Committee says that "...despite impressive and commendable achievements in agriculture over the years, there is a growing concern over the quality of Agricultural Statistics that are now available" [p. 87]. "The major reason for the poor quality of area statistics is the failure of the patwari agency to devote adequate time and attention to the girdawari operations while yield estimates suffer on account of the poor performance of field operations. The heavy workload of the primary agency contributes substantially to the poor quality and delay in the availability of Agricultural Statistics" [p. 87 and 88, GOI, 2001].

The Vaidyanathan Committee made recommendations on improving area statistics and crop cutting experiments. It advocated setting up of National Crop Statistics Centre (NCSC) and use of remote sensing techniques for collection of agricultural statistics. Y.K. Alagh Committee also made several recommendations on improving statistics of both agriculture and allied activities.

Though these committees mainly focused on policy issues like reliability, timeliness and professionalism to collect, produce and disseminate quality Agricultural Statistics, none of the Committees dealt with the compilation of National Accounts Statistics in respect of Agriculture and Allied Sectors, its data requirements, issues thereof and improvements.

The Ministry of Statistics and Programme Implementation (MOSPI) asked the author of this paper to Chair the 'sub-Committee on Agriculture and Allied Sectors' to review the issues relating to compilation of Gross Domestic Products and other key macro-economic indicators in agricultural and allied sectors and recommended suitable improvements which would be useful for base year revision. Agriculture & Allied sector consists (i) Crop sector; (ii) Livestock sector; (iii) Forestry; and (iv) Fishing & aquaculture. The activities covered are: 1) Crop sector includes crop production and operation of Government irrigation system; 2) Livestock sector includes breeding and rearing of animals and poultry, production of milk, slaughtering, preparation and dressing of meat, production of raw hides and skins, eggs, dung, raw wool, honey and silk worm cocoons, etc.; 3) Forestry sector includes forestry, logging and farmyard wood (industrial wood and firewood from trees outside regular forests); and 4) 'Fishing & aquaculture' includes commercial fishing in marine and inland waters, subsistence fishing in inland waters and fish curing, viz., salting and sun-drying of fish.

The primary role of the sub-committee was to examine the current methodology, Rates and Ratios being presently used and other issues, so that a new methodology could be devised and rates and ratios could be updated/revised. These exercises and inputs of the sub-committee will help and facilitate the smooth changeover process from the current base year of 2004-05 to the proposed new base year of 2011-12. The committee gave 50 recommendations which are given in Appendix 1. Some recommendations relate to continuation of present practices till new data are available. Other recommendations relate to have special surveys and use the available new data sources, rates and ratios. New series have taken into account some of the recommendations of the sub-committee depending on the availability of new data.

3.1. Changes in the new Series compared to the old series in agriculture sector as documented by CSO⁵

Compared to major changes in industry and services, the changes in GDP agriculture in the new series are small. In the new series, the Gross Value Added (GVA) of Agriculture and Allied sector for the year 2011-12 has been estimated to be Rs. 15,05,580 crore at basic prices compared to Rs. 14,99,098 crore at factor cost in the old series. It shows an increase of Rs. 6,482 crore, i.e., 0.43 % increase over the previous GVA estimate. CSO says that the net increase in GVA is mainly on account of revision of prices of crops and livestock products, despite the fall observed in forestry and 'fishing & aquaculture' sectors.

Table 9 presents the sectors which showed 10 per cent or more differences in the estimates of gross value of output (GVO), value of inputs and GVA between the 2004-05 series and the 2011-12 series. Major changes were in live stock sector, inputs crop sector and forestry sector.

Description	2004-05 series (cr.)	2011-12 series (cr.)	% difference	
(1)	(2)	(3)	(4)	
A1. GVA (Crop Sector)	1225570	1236067	0.9	
A2 Inputs (crop sector)	265126	249464	-5.9	
Seed	26738	29408	10.0	
Feed of livestock	60705	29117	-52.0	
Diesel oil	29598	24684	-16.6	
FISIM	14245	31543	121.4	
B1 GVO- Livestock sector	470182	485103	3.2	
Increment in livestock	14740	9854	-33.1	
B2 Inputs (Livestock sector)				
Current repairs, maintenance and operational costs	968	3037	213.8	
Feed of livestock	123351	157740	27.9	
FISIM	5643	216	-96.2	
Total input (livestock)	130057	161090	23.9	
C 1. GVO Forestry Sector	156004	154320	-1.1	
Timber from trees outside forest	60066	73432	22.3	
Firewood	74070	47979	-35.2	
NTFP	28361	29720	61.9	
Total GVA Agricultural and Allied Sectors	1499098	1505580	0.43	

Table 9. GVO, Inputs and GVA	A of Agriculture and	Allied Sectors.	2011-12
------------------------------	----------------------	-----------------	---------

Note: New series estimates are at basic prices while the estimates in the old series were at factor cost. The GVA at factor cost for the new series is Rs. 15,53,960 crores. Source: CSO [2015b]

Some of the changes in methodology and data sources in 2011-12 series are the following.⁶

a. In the new series, the GVA of crop sector and that of the livestock sector have been compiled separately by bifurcating the common inputs. Therefore segregation of crop and livestock production is an important change in the new series.

b. Adoption of Agricultural Census (2010-11) and Livestock Census (2012) are two significant updates in data sources.

c. Some of the crops under other pulses, other fruits and other vegetables are compiled separately on the basis of production from the Ministry of Agriculture, and prices from the State Directorates of Economics and Statistics (State DES). d. Data on number of Tractors has been taken from "Agricultural Research Data Book", 2013, instead of Indian Livestock Census (ILC) for estimation of diesel oil consumption for crop cultivation.

e. Rates and Ratios of estimation of value of Meat products and Meat by-products have been updated as per results of Study of National Research Centre on Meat (NRCM), Hyderabad.

f. Various rates and ratios used for compilation of estimates of the Forestry Sector, i.e., Timber from Trees Outside Forest (TOF), Fodder from Forest and Fire wood have been updated as per India State of Forest Report (ISFR), NSSO 68th round Consumer Expenditure Survey (CES) -2011-12, ASI 2011-12, Population Census-2011 and State Government Budget documents.

Changes made in the new series in some of the sub-sectors.

In the new series, changes have been made in crop sector value of output, livestock sector value of output, seed, diesel oil, organic manure, forestry, industrial wood and timber from TOF, firewood, non-timber forest products (NTFP), forestry inputs, fishing and aquaculture [CSO, 2015b].

The changes in these sub-sectors are the following.

a. Value of Output- Crop Sector

The sub-committee suggested that efforts should be made to cover all agricultural crops for bringing out area, yield rate, production, farmharvest price and input costs so that GVO and GVA are estimated. If some of the crops are not covered annually, the same could be covered periodically say once in three years so that the GVO estimates are robust, reliable and directly computed.

In the new series, estimates of output for crops such as Cowpea, Rajma, Wal, Batna, and Choula (earlier covered under 'Other Pulses'), Beans, Bitter gourd, Bottleguard, Capsicum, Carrot, Cucumber, Muskmelon, Radish, Parwal, Pumpkin and Watermelon (earlier covered under 'Other Vegetables'), Aonla, Ber, Custard Apple, Kiwi, Passion Fruit, Peach, Plum, Pomegranate and Strawberry (earlier covered under 'Other Fruits') are compiled separately. The output of toddy is estimated from the consumption side, since there are obvious gaps in its reporting. The estimates of output for toddy have been updated using the estimates of consumption of Toddy from NSS 68th round CES, 2011-12. It is possible that consumption of Toddy could be an under estimate; this is universal. But, we may not be able to find out.

Major changes are made in both output and inputs of livestock sector. CSO [2015b] provides these changes as given below.

Value of Output- Livestock Sector

Two major changes related to estimation of value of livestock sector have been incorporated. These are as follows.

I. Estimation of Meat (including meat products and meat by-products)

National Research Centre on Meat (NRCM), Hyderabad, has undertaken a study sponsored by the Ministry to update the yield rates used in estimation of value of Meat The study provided the ratio of meat-products and meat by-products to total meat produced in terms of value and quantity for each species of livestock. As the information on the prices of the meat-products and meat by-products are not being provided by State/UT on systematic and regular basis, therefore, percentage share of value of meat products and meat by-products to total value of meat has been used in estimation of value of total output of meat for 2011-12 series. The ratio (in percentage) of value of meat products and by-products to total value of meat as per NRCM study is given in Table 10.

Item	Cattle	Buffalo	Sheep	Goat	Pig
(1)	(2)	(3)	(4)	(5)	(6)
Heads and legs	2.24	2.37	6.33	5.38	2.11
Fat	2.07	1.92	2.98	2.73	2.58
Skin	7.07	6.67	3.32	3.07	0.00
Energy, Oil and Gas	2.69	1.31	6.72	7.18	3.66
Other meat products	1.93	2.22	3.70	3.23	1.05
Total	16.00	14.49	23.05	21.59	9.40

Table 10. Ratio of value of meat products and by-products to total value of meat (%)

Source: CSO, [2015b]

II. Estimation of Dung by including Sheep and Goat droplets

In 2011-12 series, the value of evacuation/droplet from Goat and Sheep has been estimated by using results of a joint study by the Central Institute for Research on Goats and National Centre for Agricultural Economics and Policy Research on "Positive Environmental Externalities of Livestock in Mixed Farming Systems of India" published in year 2013. The evacuation rate as per study for Goat is 0.3 kg per day and for Sheep is 0.8 kg per day. The value of the droplets is estimated using the prices of dung and grouped with the estimates of dung. Also, the Livestock population has been updated as per Indian Live Stock Census-2012.

Major change: Segregation of Common inputs into crop sector and livestock sector

The major changes in the 2011-12 series are segregation of common inputs into crop sector and livestock sector, and estimation of seed, diesel oil and organic manure. These major changes relate to the procedure of apportioning the common input such as (I) Feed of livestock, (II) Expenditure on current repairs, maintenance and operational cost, (III) Market charges and (IV) FISIM (Financial Intermediation services Indirectly Measured) between crop sector and livestock sector. The procedure adopted for apportioning is given in CSO [2015b]

Seed

In the old series, except for paddy, the farm harvest prices were used for estimation of value of seed. The methodology did not account for improved/hybrid variety of seeds being used by farmers for growing crops mainly in irrigated areas. Some changes were made in 2011-12 series [see CSO, 2015b]. The seed estimate continues to be based on the cost of production surveys and is estimated as a proportion of the output.

Diesel Oil

As mentioned above, for the new series, the number of tractors has been revised using number of tractors sold in last 13 years (excluding exports) from the report of "Agricultural Research Data Book 2013" and per tractor value of diesel oil consumption as per CCS (cost of cultivation studies), 2011-12.

Organic manure

In the new series, for estimation of the value of organic manure, livestock population derived from Indian Live Stock Census 2012 has been used.

Forestry

In forestry, due to revision of prices and decline in consumption of firewood, the GVA of the forestry sector has registered a decrease of Rs.2562 crore for the year 2011-12 in the new series. Similarly, timber from trees outside of the forests has been revised; it declined in the new series.

Firewood

In the new series, the value of firewood has been revised using NSS 68th round CES 2011-12. It showed a decline in consumption rate of firewood. Further, using latest data from ASI and Census, the ratio of consumption of firewood used for religious, industrial and rituals in households has been revised from 7.64% to 6%.

Non-timber forest products

Fodder from the forest has been revised as per India State of Forest Report (ISFR) 2013. As a result, GVA of NTFP increased.⁷

Inputs-forestry

In the new series, input ratio has been revised on the basis of average expenditure on the purchase of goods and services and on repairs and maintenance of fixed assets to the total value of output of this sector in the government forest departments during 2011-12. It comes to around 16.2% in new series in place of 15.6% for old series.

Fishing and aquaculture In 2011-12 Series, though no changes have been made in this sector, the reduction in GVA to the extent of Rs. 1,004 crore for 2011-12 has been due to the adoption of updated prices provided by the State DESs.

Cost of Cultivation Studies

For the purpose of obtaining estimates of cost of cultivation of major and minor crops, DES agriculture initiated 'The Comprehensive Scheme for Studying the cost of cultivation of Principal Crops in India' (CCS) in 1970-71. This is being implemented in 14 states and 26 crops are covered. Agricultural universities and some general universities have been collecting this data. These implementing agencies collect and compile data in different states and send it to DES for generating the estimates of cost of cultivation.

Sampling methodology adopted is three-stage stratified random sampling. There are about 840 tehsils and 8400 sampled operational holdings covered under the study. Samples changed every three years. In each size class of land, two holdings are selected. Thus 10 holdings are selected in each village. Data are collected on inputs and outputs in physical and monetary terms following uniform methodology. The field data are collected on the cost accounting method. Daily entries of debit/ credit for the expenditure/ income are made to assess the total cost/ benefit. Field data is collected by field men who are posted in the village and one field supervisor allocated to 10 field men. About 155 crop estimates are being made for the 26 crops and the time lag in release of data is about 2 years. Plot wise unit level data is made available after 3 years.

Though the primary objective of the scheme is to supply requisite data for recommending Minimum Support Price (MSP) by CACP, CSO uses input costs of feed, seed, and diesel from the results of this survey. The sources and methods of national accounts statistics for the old series show that some of the items from CCS were used for estimating GDP in agriculture [CSO, 2012]. The important items collected through the CCS are: (1) quantity of seed rate by crops per hectare; (ii) value/quantity of by-products by crops per hectare; (iii) consumption of diesel, mobile oil and grease per tractor/pump set in quantity and value terms; (iv) utilisation of milk & milk products including details on conversion; (v) electricity consumed both in value and quantity terms: (vi) fodder fed to animals (green as well as dry); (vii) concentrate fed to draught animals; (viii) cost of insecticides & fertilisers; (ix) repairs &maintenance expenses of farm machinery, and (x) marketing expenses including transportation costs to the nearest market/mandi [CSO, 2012]. However, data available in respect of items like electricity, insecticides, fertilisers, etc., are not used as better and more reliable data on such items are available from sources like Central Electricity Authority (CEA), Fertiliser Association of India (FAI), Pesticides Association of India (PAI), etc. [CSO, 2012]. The CSO considers these sources to be better than the earlier sources.

New series also used data from CCS for some items of inputs (see Appendix 2) Regarding new series, the sub-committee on agriculture and allied activities discussed about the cost of cultivation studies (CCS). On CCS, the subcommittee says "though some of the items of inputs are estimated with the results of cost of cultivation studies, efforts should be taken to cover more items and make use of the analysed results for compilation and cross validation. This is more so when the plot level data are made available for more than 10 years. Time series analyses can also be on various inputs so analysed from the plot level data of the CCS" [CSO, 2014, p. 55]. The committee also suggested that time lag needs to be reduced for making effective use of cost of cultivation data.

4. TEN MAJOR ISSUES ON MEASUREMENT OF GDP IN NEW SERIES

Issue No. 1. Problems with MCA-21 on private corporate sector

Major change in the new series is the use of MCA-21 data base. The quality of MCA-21 data for private corporate sector is being questioned. MCA data are based on the responses of self selected companies. This may have introduced errors of which the magnitudes are unknown. The critics say that higher growth in manufacturing could be due to use of MCA data and the quality is unknown. On this T.N. Srinivasan says the "move to the MCA-21 data from a bunch of self-selected companies again are biased with the

size and direction of bias unknown.⁸" T.N. Srinivasan argues that one has to discuss the statistical issue of the validity and reliability of the estimates.⁹

A study by Sapre and Sinha [2016] examines some issues in the estimation of GVA in the manufacturing sector. They discuss three problems: (a) choice of indicators in measuring outputs and costs for computing GVA; (b) possibility of overestimation due to blow-up of GVA; (c) potential mis-classification of manufacturing companies that can distort GVA estimates. In order to examine these questions, they first mapped the data fields of XBRL form and CMIE Prowess indicators to identify components of outputs, taxes and intermediate costs. The paper argues that paid up capital (PUC) based blow-up of GVA can lead to overestimation of value. They proposed an alternative method of scaling up of GVA based on representative industry growth rates of GVA. Instead of paid up capital, they propose the use of growth rates of GVA for some identified representative industries. (See their paper for details. This method has an advantage over the PUC method as it scales up past year's GVA of unavailable firms, instead of blowing-up GVA of available firms.

Blow up method

More controversy is on blow up method for non-responding companies. There are questions on the methodology used to blow up [Nagaraj and Srinivasan, 2016]. Goldar [2016] asks some valid questions on criticisms of MCA data and blow-up method. For example, he says that "since several critics feel that the new series is overstating growth, one may ask why should the bias caused by self selection in MCA data always push up the measured growth rate". Another question is even if blow-up factor is low, 'it may impact the level of GVA slightly, but why should that impact (reduce) the estimated growth rate in GVA" [Glodar, 2016]. Basically Goldar's criticism is a logical one: He says levels may be affected with use of MCA data but growth rates may not be affected. Therefore, we can't blame MCA data for showing higher manufacturing growth.

There are also some other suggestions on multiple blow up methods than single blow up method. Rajakumar and Shetty [2017] suggest blow up factors separately for public and private limited companies. CSO seems to have revised its estimates based on this suggestion. Manna [2017] indicates that companies in the lowest two or three size classes are somewhat inadequately represented in the database. He suggests that it is more appropriate to use separate blow-up factors for different PUC size classes of the companies. Anyway, as many people mentioned, auditing of MCA 21 data would be useful.

The eternal problem of IIP

There is a lot of confusion for market analysts, researchers and policy makers regarding manufacturing growth in India. The confusion is because GVA in manufacturing shows higher growth while IIP shows lower growth. For example, IIP growth rate was -0.8% while GVA manufacturing growth rate was 5.6% in 2013-14.

Table 11. Growth Rates of IIP and GVA in manufacturing

Years	IIP growth rates (%)	GVA growth rates (%)
(1)	(2)	(3)
2012-13 2013-14 2014-15 2015-16	1.3 -0.8 2.3 2.0	6.0 5.6 5.5 9.3

Source: Compiled from CSO data

We know the differences between IIP and GVA in manufacturing. IIP is a pure volume (or output based) index and base is 2004-05. On the other hand, GVA is a value added concept with base 2011-12. Some estimates show that shifting the base of IIP to 2011-12 shows that growth rates

of manufacturing are higher. The explanation for high growth in manufacturing by CSO is the following. "The 2011-12 series capture value addition information based on corporate filing right from the first year and comprehensively from second year as against 2004-05 series where this information was getting captured only in the 3rd year. During 2013-14, high domestic inflation coupled with lower international prices for imported inputs could have helped improve corporate bottom-lines. This improvement would not be apparent through IIP and ordinarily would not be reflected in national accounts in the old series until the 2nd revised (3rd year) estimates which would have come out in 2016" [CSO, 2015c, p. 4].¹⁰ Recently CSO has released IIP estimates using 2011-12 as base.

Table 12. Growth Rates of IIP with base 2004-05 and 2011-12

	2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)
2011-12 base	3.3	3.4	4.0	3.4	5.0
2004-05 base	1.1	-0.1	2.8	2.4	0.7

Source: CSO, 2017

One advantage of IIP is that it is available every month. However, the large difference between IIP growth and GVA growth is leading to skepticism about the estimates relating to manufacturing. This difference has to be reduced as soon as possible by shifting to recent base for IIP besides improvements in quality of data. It may be noted that higher growth in GVA in manufacturing does not mean that we do not have problems with this sector. Volume growth is still important for indicators like employment and other supporting activities like transport, logistics, etc. Thus, slow growth in volume of output is a concern even if value added growth is high [CSO, 2015c]. Thus, although IIP shows output growth, it is still useful because output and volumes are important for employment, etc.

Issue No. 2. Quasi corporations and the growing at 7.6%. The critics say that growth rate household sector

Quasi-corporations (QC) have been separated from the household sector and added to the corporate sector in the new series. As Nagaraj and Srinivasan [2016] say, one contentious issue is that the 'growth rate of QCs is taken to be the same as that of non-financial PCS'. This could have inflated QCs' value added and PCS growth. Manna's [2017] estimates show that ASI Quasi growth rate of GVA was much higher than the informal sector GVA growth. If this is true, current approach overestimates growth in quasi corporations.

Issue No. 3 Effective Labour input method

Nagaraj [2016] and Nagaraj and Srinivasan [2016] raised some questions on the effective labour input method and application of nested Cobb-Douglas function for the unorganised sector. It may be noted that productivities and earnings differ across different categories of workers. In fact, Rajakumar and Shetty [2016] say that "the assumption of equal contribution from all categories of workers even in an unorganised enterprise, namely working owners, hired informal workers and helpers, is indefensible" [p. 13]. Nagaraj and Srinivasan [2016] advocate nested CES function for estimating marginal productivity of different category of workers. However, nested CES would be difficult to estimate as it involves non-linear estimation with many parameters [Goldar, 2016].

Issue No. 4. High growth rates of GDP versus Ground realities

The growth rates of GDP are higher in the new series compared to the old series. Comparing the ground realities like credit growth, volume growth, private sector investment, exports, etc., some say Indian economy does not look like could be 5 to 6% if you look at ground realities and other indices.

In a paper, Sengupta [2016a] argues that two sources of growth of GDP are investments and exports. This paper says "that over the period from 1950 to 2015, for the \$100bn economies with growth rates similar to that of India, the average investment growth rate has been 15.4% and average export growth rate has been 12.8%". These are averages of the said rates over 65 years. On the other hand, as shown in Table 13, the growth rate of gross fixed capital formation is only 4% and export growth was negative for the one recent year. Therefore, the paper says there is disconnect between low investment/ exports and high GDP growth of 7.6% in India for the year 2015-16.

Table 13. Investment and Exports growth rates, 2015-16

Time period	GFCF	Exports
(1)	(2)	(3)
April-June	7.1%	-5.7%
July-September	9.7%	-4.3%
October-December	1.2%	-8.9%
January-March	-1.9%	-1.9%
Annual	3.9%	-5.2%

Source: CSO estimates quoted by Sengupta [2016a].

Chief Statistician of India says talking about divergence between the numbers and the ground reality is like 'the five blind men describing an elephant' [Anant, 2016c]. He says one has to look at totality rather than bits and pieces.

Issue No. 5: GDP at market prices versus Gross value added at basic prices or GDP at factor prices.

One issue is whether we should use GDP at market prices or GVA at basic prices. Which one is the right one? GDP at market prices includes indirect taxes net of subsidies. The nominal growth in GDP would get inflated if indirect tax base is expanded. Reserve Bank of India prefers GVA at basic prices. Rajakumar and Shetty [2017] prefer GDP at factor cost.¹¹ According to them, "GDP at factor cost measures the value added as the contributions of labour, capital and other factors in the production process. The measure so derived represents true value added as it is not coloured by the presence of any item outside the contributions of factors of production. This is the true economic welfare particularly when GDP is converted to per capita terms" [Rajakumar and Shetty, 2017].

Issue no. 6. GDP production versus GDP expenditure

Another issue is the differences between GDP in production method and GDP through expenditure method. They were large in the recent quarters of 2016-17. This is not new. These differences were there earlier also. The expenditure method is based on some thumb rules [Anant, 2016a]. Production method is supposed to be a robust one. Another related one is about quarterly figures. It is known that quarterly figures are more volatile while annual figures of GDP are better for comparisons over time.

Issue No. 7. Single versus Double Deflation

One issue is whether we should have single deflation or double deflation method while arriving at constant price series. Some feel we should have double deflation method, i.e., deflate inputs and output separately. Bhandari [2016] shows that in the absence of double deflation, manufacturing growth in FY 2015 could have been overestimated by 120 basis points. Felman [2016] also shows that single deflation method overestimates GDP in manufacturing.¹² As shown in Table 14, GVA growth in manufacturing with single deflation was 5.5% while it was 4.3% with double deflation in FY 15.

Rajkumar and Shetty [2015] also favour double deflation method.¹³ They say GVA in manufacturing growth comes closer to growth in IIP, if we use double deflation method.

Manufacturing Sector	INR bn. Constant prices			Growth Rates (%) y-o-y		
-	Output	Input	GVA (output- input)	Output	Input	GVA (output- input)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
FY 15 official	75204	58533	16671	3.1	2.5	5.5
	Double Deflation		Double Deflation			
FY15 (HSBC est.)	75204	56425	18778	3.1	2.8	4.3

Table 14. Double Deflation method

Source: Felman, [2016]

As mentioned by CSO, SNA recommends double deflation only if we have complete prices for inputs. It is better to have single deflation method if we do not have complete data.

Issue no. 8. Price Deflators: WPI versus CPI

In the new series, there are major differences

in the constant price GVA arising from the use of selected deflators. The divergence in annual inflation rates between WPI and CPI increased significantly. Difference between WPI and CPI inflation is quite large in recent years. Which one to use particularly for services? Is it CPI or WPI? Bhandari [2016] says that the manufacturing growth may have been overestimated by 450 basis
points in FY 2016 due to the divergence between CPI and WPI inflation. Felman [2016] indicates that the biggest component of GVA in the trade sector is wages and the best proxy for wage costs is the cost of services. If we use CPI-services for trade sector, the GVA estimate would be much lower. In general, some prefer to use CPI for deflating services sector data because of big divergence between WPI and CPI.

Rajakumar and Shetty [2017] say that the GDP deflators are mostly in tandem with WPI as shown in Fig 1.



Fig 1. Movements in Price Indices

Source: Rajakumar and Shetty (2017)

However, the Chief Statistician says, "if looked carefully on a common set of commodities, the two indicators behave similarly. It is not that something is being done differently in the WPI but different commodities are behaving differently" [Anant, 2016d]. It is also clarified that there was no change in the use of prices in the old and new series. Only change, he says, is that earlier they were using CPI for industrial workers. Now they have started using the CSO's new CPI series. Other than this, whatever price information has been available is the same that has been available for the last 50 years.

Issue no. 9: Nominal Growth versus Real Growth

Which is better for policy purposes? Is it

nominal growth or real growth? Some people feel nominal growth is an important indicator for policy purposes. As a result of negative inflation particularly for WPI, the difference between growth in constant and current prices is low in 2015-16 (Table 15). Also notice that nominal growth declined but real growth increased over time although it reversed in 2016-17. Nominal growth of GDP at market prices declined significantly from 13.9% in 2012-13 to 9.9% in 2015-16 before increasing to 11.0 in 2016-17. On the other hand, real growth of GDP at market prices increased from 5.6% in 2012-13 to 8.0% in 2015-16 before declining to 7.1 in 2016-17. The gap between growth in current and constant prices increased in 2016-17 as WPI started showing higher inflation. Demonetisation also had adverse impact particularly for GVA growth in 2016-17.

Fable 15. GDP and GVA	growth in Current a	nd Constant Prices (%)
-----------------------	---------------------	------------------------

	2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)
GDP at Market Prices Current Constant GVA at basic prices	13.9 5.6	13.3 6.6	10.8 7.1	9.9 8.0	11.0 7.1
Current Constant	13.6 5.4	12.7 6.3	10.5 7.2	8.5 7.9	9.7 6.6

Note: 2011-12 (2nd RE); 2012-13 (2nd RE); 2013-14 (2nd RE);, 2014-15 (1st RE); 2015-16 (1st RE); 2016-17 (PE) Source: Various documents of CSO

Issue no. 10: Reference points for growth: AE, PE, FRE and SRE¹⁴

(SRE)). Rajakumar and Shetty [2017] say that we should have estimates of growth for same reference points, (e.g., PE vs. PE, FRE vs. FRE).

The last issue is the relevant reference period for estimating GDP or GVA growth rates. CSO releases various estimates (Advance Estimate (AE), Provisional Estimate (PE), First Revised Estimate (FRE) and Second Revised Estimate

As shown in Rajakumar and Shetty [2017] Table 7, reproduced here as Table 16, if we use 2015-16 PE over 2014-15 PE, the growth of GDP at market prices was 6.6%.

Table 16. Comparison of growth rate using different reference points: GVA and GDP

Sr. No.	Sectors	At consta	At constant Prices		nt prices
		2015-16 PE over 2014-15PE	2015-16 PE over 2014-15 FRE	2015-16 PE over 2014-15PE	2015-16 PE over 2014-15 FRE
(1)	(2)	(3)	(4)	(5)	(6)
1.	Agriculture, forestry and fishing	1.3	1.2	6.5	4.9
2.	Mining and quarrying	12.5	7.4	15.5	4.7
3.	Manufacturing	2.6	9.3	0.5	8.1
4.	Electricity, gas, etc	1.2	6.6	14.9	10.8
5.	Construction	11.7	3.9	9.5	1.3
6.	Trade, hotels, etc.	4.9	9.0	3.5	6.6
7.	Financial services, real estate, etc.	11.6	10.3	6.8	7.4
8.	Public administration	6.1	6.6	11.6	12.1
9.	GVA at Basic Price	6.1	7.2	6.3	7.0
	GDP at market price	6.6	7.6	8.3	8.7

Source: Rajakumar and Shetty [2017] Based on data extracted from CSO [2015b and 2016b].

On the other hand, if we use 2015-16 PE over 2014-15 FRE, the growth rate was 7.6% - it increased one percentage point.

Shetty says that "one issue that worries me more in retrospect is the extent of revisions that get introduced as between advance estimates and provisional estimates and between provisional estimates and first revised estimates in the new series, unlike in the older series. This is contributing a major cause for the growth differences".¹⁵ One can give different estimates comparing PE versus PE, FRE versus FRE, etc. But, different growth rates should not lead to confusion among the users.

5. CONCLUDING OBSERVATIONS

This paper discusses (a) changes in measurement in industry and services (b) changes made in agriculture sector and (c) major issues on the measurement of GDP in new series. There are long term or legacy issues in agriculture, industry and services. We have many more problems in measurement of state level SDPs (state domestic product) for the new series [Dholakia and Pandya, 2017].¹⁶

Although overall GDP in agriculture did not change, there were lots of changes within subsectors with new data sources. Agriculture sector has been less discussed compared to the changes in industry and services in the new series of GDP. There has been some long term or legacy problems in agricultural statistics as pointed out by Data base of Indian economy volume I and II, Rangarajan Committee, Vaidyanathan Committee and Alagh Committee. In revising agriculture GDP series, CSO has taken into account the latest ratios, rates and data depending on the availability. In the future revision, hopefully, CSO will sponsor or conduct surveys to further improve agriculture data base.

For example, one of the recommendations of the sub-committee is that "IASRI should be requested to conduct special study/surveys on Horticulture Statistics to estimate production, prices and input costs for the important Horticultural crops. Since the percentage share from Horticulture is increasing, urgent action is required to estimate the state-wise production, price and input cost for the major horticultural crops. This gains importance due to the discontinuance of the Central Sector schemes on Fruits and Vegetables with effect from this financial year (2014-15)" [CSO, 2014].

Similarly on fisheries, CSO is already thinking of using the study on input costs of marine fish production being conducted by Central Marine Fisheries Research Institute (CMFRI), Kochi, and study on input cost of inland fish production conducted by the Central Inland Fisheries Research Institute (CIFRI), Kolkata

We have discussed in this paper 10 major issues on measurement of GDP in the new series. These are given below. (1) MCA 21 data problems: Major change in the new series is the use of MCA 21 data. Most controversy is on blow up method for non-responding companies. (2) Separation of Quasi corporations from household sector: Due to this separation, the value added of quasi corporations is inflated. The criticism is that the approach in the new series overestimates growth in quasi corporations. (3) Effective labour input method: This method is appropriate as productivities differ across different categories of workers. There are some issues in estimation of effective labour input. (4) High growth rate of GDP vs. ground realities: Comparing the ground realities like credit growth, volume growth, private investment and exports etc. some say that Indian economy does not look like growing at 7%. (5) GDP at market prices vs. GVA at basic prices vs. GDP at factor prices: Some, [e.g., RBI] prefer GVA at basic prices because GDP at market prices would get inflated if indirect tax base is expanded. (6) GDP production and GDP expenditure methods: Production method is supposed to be a robust one because the expenditure method is based on some thumb rules. (7) Single vs. double deflation: Some say we should have double inflation method, i.e., deflate inputs and output separately. However, as the system of national accounts (SNA) recommends that double deflation can be used only if we have complete prices of inputs. (8) Price deflators WPI vs. CPI: The divergence in annual inflation between WPI and CPI increased significantly in recent years till 2015-16. Some prefer to use CPI for services because of the differences in WPI and CPI. However, the differences in inflation for the deflators declined in 2016-17. (9) Nominal growth vs. real growth: Real growth is true indicator of progress. Nominal growth is also an important indicator for policy purposes. (10) Reference point for growth: advance estimates, provisional estimates, first revised estimates and second revised estimates: There is confusion of growth rates because of different estimates AE, PE, FRE and SRE. One can get different estimates comparing PE vs.PE, FRE vs. FRE etc.

The new GDP series show value added increased much faster than volume of output. It is true the growth was higher in new series as compared to that of old series. However, they are not comparable due to changes in methodology. We do not have any comparable series. Therefore, it is difficult to say whether growth rates in new series are higher/lower than comparable older series. In our view, there are some gaps in the measurement but the new series are based on 'best advice' from experts available in the country. There has been improvement but still it will take some time to catch up with SNA 2008 due to gaps in both organised and unorganised sectors. These discussions on GDP in different forums will be useful for next base revision of National Account Statistics. CSO also has to focus on statistical validity of the estimates which is important. At broader level main goal is to improve timeliness, reliability, quality and adequacy of Indian official statistics.

NOTES

1. See Anant [2015]

2. See *Data base of Indian Economy* of The Indian Econometric Society (TIES), Vol. 1 and Vol. 2.

3. Some of the long pending or legacy issues relating to NAS are discussed in Nagaraj and Srinivasan (2016).

4. The papers by Rajakumar and Shetty (2017) and Shetty and Rajakumar (2017) provide a comprehensive analysis of recent changes in GDP. On the issues relating to GDP measurement see Rajakumar (2015, 2016) and Rajakumar and Shetty (2015, 2015a, 2016, 2016a).

5. See CSO [2015b].

6. The data sources used for agriculture in 2011-12 series are given in Appendix 2.

7. The CSO sources do not provide information on bidi leaves.

8. This is based on personal correspondence with the

author. On RBI data T.N. Srinivasan says "Take for example the RBI sample of 2500 companies --as CSO itself points out, this sample is not a random sample from a well specified and known universe of companies nor is the sampling procedure stable over time. The estimates from this nonrandom sample drawn with varying procedures over time will be biased with the size and direction of bias unknown! The expectation that a sample frame and a statistically appropriate sampling procedure will be developed using the data from economic censuses and follow up surveys is yet to materialise. As of now the estimates from the RBI sample are of dubious statistical validity." (personal correspondence)

9. Personal correspondence.

10. Also see Anant [2016b] on IIP production.

11. Also see Shetty [2015]

12. For the summary of a conference on GDP measurement, see Sengupta [2016].

13. See Dholakia [2015]

14. AE = Advanced estimates; PE = Provisional Estimates; FRE = first revised estimates; SRE = Second revised estimates.

15. Personal correspondence

16. See Barman [2016] on micro and macro issues of Indian statistical system.

REFERENCES

- Anant, T C A, 2015; "Don't Compare New GDP Data Series with Old", The *Economic Times*, 14 April.
- Anant, T C A, 2016a; "Discrepancies are inherent part of expenditure side of GDP as of now", *Business Standard*, 2 June.
- Anant, T C A, 2016b; "IIP has limitations as a representative of aggregate growth in manufacturing", *The Hindu*, 20 June.
- Anant, T C A, 2016c; "CSO swears by GDP data, rebuts criticism", *Business Line*, July 12.
- Anant, T C A, 2016d; "Don't question my data, get your analysis right says India's Chief Statistician", *The Hindu*, January 22.
- Barman, R. B., 2016; "Rethinking Economics, Statistical System and Welfare: A Critique with India as a Case", *Economic and Political Weekly*, Vol. 51, No. 28, 9 July.
- Bhandari, P., 2016; "The Double Deflation Issue", presentation at the conference on 'GDP measurement issues', August 5, organised by IGIDR, Mumbai.
- CSO, 2012; "National Accounts Statistics: Sources and Methods, 2012", Central Statistical Office, New Delhi
- CSO, 2014; "Report of the Sub-committee on Agriculture and Allied Sectors", Chaired by S. Mahendra Dev, Central Statistical Office, New Delhi.
- CSO, 2015a; "New Series of Estimates of National Income, Consumption Expenditure, Saving and Capital Formation for the years 2011-12 to 2013-14", New Delhi, Central Statistical Office, Press Note, January 30.

- CSO, 2015b; "Changes in Methodology and Data Sources in the New Series of National Accounts: Base Year 2011-12", Central Statistical Office, New Delhi, 26 June.
- CSO, 2015c; "Understanding the New Series of National Accounts", Government of India, Central Statistical Office, New Delhi.
- CSO, 2017; "Revision of Base Year of All India Index of Production from 2004-05 to 2011-12", *Press release*, 12 May, Central Statistics Office, New Delhi.
- Dholakia, H.R. 2015; "Double Deflation Method and Growth of Manufacturing A comment", *Economic and Political Weekly*, Vol. 50, No. 41, 10 October.
- Dholakia, H.R. and M.B. Pandya, 2017; "Critique of Recent Revisions with Base Year Change for Estimation of State Income in India" paper presented at the Symposium on "Changes in Methodology of Estimates of India's GDP", January 21, 2017, organised by the Indian School of Political Economy, Pune
- EPW Research Foundation, 2015; "New Series of National Accounts: A Review", *Economic and Political Weekly*, Vol. 50, No. 7, 14 February.
- Felman, Josh, 2016; "The Deflator Issue", presentation at the conference on 'GDP measurement issues', August 5, organised by IGIDR, Mumbai.
- GOI, 2001; "Report of the National Statistical Commission", Chaired by Dr. C. Rangarajan, Government of India, New Delhi.
- GOI, 2014; "Report of the Expert Group to Review the Methodology for Measurement of Poverty", Chaired by Dr. C. Rangarajan, Government of India, New Delhi.
- Goldar, B., 2016; "Measuring India's GDP growth; by R. Nagaraj and T.N. Srinivasan - Some Comments on the paper", India Policy Forum, NCAER, July 12.
- Manna, G.C., 2017; "An Investigation into Some Contentious Issues of GDP Estimation", paper presented at the Symposium on "Changes in Methodology of Estimates of India's GDP, January 21, organised by the Indian School of Political Economy, Pune.
- Nagaraj, R., 2016; "Unorganised Sector in GAP Series: Why has it Shrunk?", *Economic and Political Weekly*, Vol. 51, No. 14, April 2.
- Nagaraj, R. and T.N. Srinivasan. 2016; "Measuring India's GDP Growth: Unpacking the Analytics & Data Issues behind a Controversy that Refuses to Go Away", *India Policy Forum 2016*, National Council of Applied Economic Research (NCAER), New Delhi, 12-13 July.
- Rajakumar, J. Dennis, 2015; "Private Corporate Sector in New NAS Series Need for a Fresh Look", *Economic and Political Weekly*, Vol. 50, No. 29, 18 July.

- Rajakumar, J. Dennis, 2016; "Estimates of High GDP growth in 2015-16 Not Entirely Convincing", *Economic and Political Weekly*, Vol. 51, No. 26&27, 25 June.
- Rajakumar, J Dennis and S.L. Shetty, 2015; "New National Accounts Series: An Exploratory Exposition", PPT presented at IGIDR, April 15, 2015, IGIDR.
- Rajakumar, J Dennis and S.L. Shetty, 2015a; "Gross Value Added Why Not the Double Deflation Method for Estimation?", *Economic and Political Weekly*, Vol. 50, No. 33, 15 August.
- Rajakumar, J Dennis and S.L. Shetty, 2016; "Some Puzzling Features of India's Recent GDP Numbers", *Economic and Political Weekly*, Vol. 51, No. 2, 9 January.
- Rajakumar, J Dennis and S.L. Shetty, 2016a; "Continuous Revisions Cast Doubts on GDP Advance Estimates", *Economic and Political Weekly*, Vol. 51, No. 10, 5 March.
- Rajakumar, J Dennis and S.L. Shetty, 2017; "New National Accounts Series: An Explanation and Key Issues in the Debate", in Dev, S. Mahendra (ed., 2017), India Development Report, Oxford University Press, forthcoming in 2017.
- Rangarajan, C. and S. Mahendra Dev, 2016; "Counting the Poor: Where do we Stand", Academic Foundation, New Delhi.
- S.L. Shetty and Rajakumar J. Dennis, 2017; "New National Accounts Series: An Explanation and Key Issues in the Debate", paper presented at the Symposium on "Changes in Methodology of Estimates of India's GDP", January 21, 2017, organised by the Indian School of Political Economy, Pune.
- Sapre, A. and P. Sinha, 2016; "Some issues in estimation of GVA in the manufacturing sector" presentation at the conference on 'GDP measurement issues', August 5, 2016, organised by *IGIDR*, Mumbai.
- Sengupta, Rajeswari, 2016; "IGIDR Conference on GDP Measurement Issues: A Summary of Discussions", *IGIDR*, Mumbai, August 5, 2016
- Sengupta, Rajeswari, 2016a; "Sources of GDP Growth", presentation at the conference on 'GDP measurement issues', August 5, 2016, organised by *IGIDR*, Mumbai.
- Shetty, S.L. 2015; "Factor Cost Basis of GDP is Fundamental for Measuring Real Growth and Not GDP at Market Prices", A paper presented at the 34th Annual Conference of the Indian Association for Research in National Income and Wealth held during November 20-21, 2015 at *IGIDR*, Mumbai.
- Srinivasan, 2013; "Some Reflections on the State and Near-Term Prospects of the Indian Economy", valedictory address at the Golden Jubilee conference of the Indian Econometric Society, December 2013, *IGIDR*, Mumbai.

Appendix 1. Summary of Recommendations of the Sub-Committee on Agriculture and Allied Activities (Chaired by S. Mahendra Dev)

- The Sub-Committee is fully endorsing the views and the recommendations of the Prof. A. Vaidyanathan Committee for imbibing professional approach for data collection and processing of Agricultural Statistics through qualified team of professionals so that errors in area enumeration and crop cutting experiments are reduced to the extent possible and the requisite data are made available within a timeframe.
- 2. IASRI should be requested to conduct special study/surveys on Horticulture Statistics to estimate production, Prices and input costs for the important Horticultural crops. Since the percentage share from the Horticulture is increasing, urgent action is required to estimate the state-wise production, price and input cost for the major horticulture crops. This gains importance due to the discontinuance of the Central Sector schemes on Fruits and Vegetables with effect from this financial year (2014-15).
- NAD would make efforts to conduct Special Surveys on estimating input rates for the Fishery Sector with the involvement of CMFRI and CIFRI for both Marine and Inland Fisheries including that of Cultured Fishery Sector and High valued Fishery sector.
- 4. The crop statistics are available only for 41 crops. Efforts should be taken to cover all agricultural crops for bringing out area, yield rate, production, farm-harvest price and input costs so that GVO and GVA are estimated. If some of the crops are not covered annually, the same could be covered periodically say once in three years so that the GVO estimates are robust, reliable and directly computed.
- 5. Since the percentage share of small millets and other cereals within cereal group and farm sector is insignificant, the existing methodology of estimation of GVO would be continued.
- 6. Unless special surveys are conducted, price data will not be available for each of the pulses crop grouped under other pulses. Data on production is available. Value of Output of Other Pulses is estimated by production multiplied by 85 percent of weighted average price of arhar, urad, moong, masoor, and horsegram. The existing methodology would be continued for estimating the GVO of other pulses. Therefore, the Committee is recommending to conduct special Surveys for these pulse crops to estimate the average weighted price for each growing State at least once in two years.
- 7. Unless special surveys are conducted, price data will not be available for each of these Oil Seeds grouped into others. Data on production is available. The existing methodology can be continued for estimating the GVO of other Oil seeds. Therefore, the Committee is recommending to conduct special Surveys for these oil seed crops to estimate the average weighted price for each growing State at least once in two years.
- The contribution of Other Sugar and other fibre crop groups are too insignificant and hence the existing methodology may be continued.
- 9. The value of Toddy production is estimated by multiplying the value of Toddy consumption in rural and urban area in a State by 97 respective rural and urban Population. Value of Output of Toddy is estimated at constant price multiplied by WPI growth of NonFood items. Till new NSSO survey results are made available, the present methodology may be continued.
- 10. The contribution of other Condiments & Spices crop in the Farm sector is insignificant and hence the existing methodology may be continued.
- 11. The yield rate of Fodder per hectare for both irrigated and unirrigated may be continued until a new study results are made available.
- 12. The existing methodology for the estimation of GVO from Grass would be continued till new NSS survey results are made available. In case new results from NSS 70th round is made available the same may be used.

- 13. The contribution of miscellaneous food crops and non-food crops to Farm Sector are insignificant and hence the existing methodology for the estimation of GVO may be continued. Value of Output of Kitchen Garden is 0.21% of Net area sown multiplied by weighted average value per hectare of all fruits and Vegetables. The existing rate may be changed based on the results of 70th round NSS survey results or latest Agriculture Census results.
- 14. Of late, State governments supply production data which are quite differing from the final estimates of the Ministry of Agriculture. The reason being stated is that the State Governments revises the data even after final estimates were released by the 98 Ministry of Agriculture, GOI. Ministry of Agriculture should be apprised of the importance of freezing of the estimates once finalized by it. No further changes should be considered.
- 15. There should be systematic and scientific efforts to collect horticulture data fully on 244 horticultural crops including production, yield rate, area, input costs and related details.
- 16. Due to rising share in GVO of Horticulture Sector, Horticulture activities may be considered as significant segment of agrarian activities and hence should be brought part of Agriculture Census and Surveys.
- 17. Apart from area, and production data, there is need to collect reliable data on Inputs, Prices, Imports, Storage facilities, Market facilities, exports, etc.
- 18. Multiple agencies involved with wide differences in their estimates and no cross validation mechanism existing. There should be nodal agency in the Ministry of Agriculture to consolidate the data on production, area, yield rate, input costs, etc., both at state level and at National level.
- 19. Value of output of Other-Vegetables is estimated by multiplying Production with weighted average prices of all vegetable crops for which separate data is available for estimating the GVO of Other Vegetables (Beans, Bitter gourd, Bottle guard, Capsicum, Carrot, Cucumber, Muskmelon, Radish, Parwal, Pumpkin and Watermelon). There should be nation-wide survey to estimate average price of these vegetable crops at state level. Till then, the existing methodology may be continued.
- 20. Value of output for Other Fruits (Amla, Ber, Custard Apple, Kiwi, Passion Fruit, Peach, Plum, Pomegranate, Strawberry, etc.,) is estimated by multiplying Production with weighted average prices of all fruits for which separate data is available. There should be nation-wide survey to estimate average price of these fruit crops at state level. Till then, the existing methodology may be continued.
- 21. The Integrated Sample Survey (ISS) conducted by the Department of Animal Husbandry need to expand it coverage to include Camel and Sheep Milk, Duck Egg for all the states, Goat Hair, Camel Hair and Pig Bristles.
- 22. There is also need to cover the Unregistered Sector for meat and animals slaughters, Meat Product (Heads and Legs, Fats from Slaughter and Fallen Animals) and Meat By-product (Hides and Skins).
- 23. Special surveys need to be conducted to estimate inputs of livestock sector, i.e., Feed of Livestock, Market Charges and Operational Cost, etc. at state level. This is important to derive GVA for the Livestock sector.
- 24. The Rates and Ratios obtained by CSO through National Meat Research Centre may be considered in place of the existing Rates and Ratios.
- 25. Seed rates (quantity per hectare) are available from the Cost of Cultivation Studies (CCS) and the State Agricultural Departments only for the principal crops and some minor crops. Special studies required to be conducted to supplement CCS to 100 cover other crops as well so that the overall input costs on seed usage is captured.
- 26. The estimates of consumption of chemical fertilizers are based on the material wise consumption of chemical fertilizers, as per 'Fertilizer Statistics', a publication of Fertilizer Association of India. The same may be continued.

39

- 27. For estimation of value of input as dung manure, the present method based on evacuation rate and utilization rates of Dung for manure may continue until alternative rate are made available through special surveys.
- 28. The existing method for Animal feed of roughages consisting of fodder, cane trash and grass and 95 per cent of production of by products (stalks and straws) in the agriculture sector considered to be consumed by livestock population would be continued taking into account the adjustments for the consumption of animals not used in agriculture sector, (viz., bullocks, horses, camels, etc., mainly used for non- agricultural purpose such as transportation, etc.,) and fodder from forest and some percentage of fodder from Non Forest.
- 29. The rate of concentrates for different animals are Cattle/ Buffalo is Rs. 685.26, Sheep/ Goat/ Pigs is Rs.164.82, and Poultry is Rs. 121.38 based on the Cost of Cultivation Studies and corroborated by special studies by State DES's would be continued.
- 30. Annual data on irrigation charges payable to the government from the States, consolidated from the respective irrigation departments based on the budget analyses would be continued.
- Market charges based on the Special studies conducted by the Ministry of Agriculture may be continued to use till new results are made available.
- 32 Data on electricity consumed for agricultural purposes and its corresponding price per unit supplied by the Central Electricity Authority (CEA) on an annual basis at state level would be continued to be used.
- 33. Estimates of consumption of pesticides and insecticides both in terms of quantity and value supplied by the Directorate of Plant Protection and Quarantine, Ministry of Agriculture, would be continued to be used.
- 34. The existing method of consumption of diesel oil based on the number of tractors and diesel engines estimated through the Indian Livestock Census (ILC) in use and per unit consumption of diesel oil based on CCS would be continued. Whenever the new results are made available by the Livestock Census and CCS, the same would be substituted.
- 35. The existing method of estimation of expenditure on current repairs and maintenance based on All India Debt and Investment Survey (AIDIS) would be continued.
- 36. Though some of the items of inputs are estimated with the results of cost of Cultivation studies, efforts should be taken to cover more items and make use of the analysed results for compilation and cross validation. This is more so when the plot level data are made available for about than 10 years. Time series analyses can also be on various inputs so analysed from the plot level data of the CCS.
- 37. The Committee is of the view that the Farm-Harvest prices of all commodities should be collected at least on regular intervals if not annually. Also they should be made available without considerable time lag.
- 38. Growth Rates between all India annual Average price and Wholesale price of all most all the crops, Livestock products, Fishery products and forestry products are not consistent. Even the direction is not the same and magnitudes are too alarming in some cases. This need special attention and priority to effect corrective measures.
- 39. The significant difference noticed between the price data from the DES of State Governments and the Farm-harvest prices should be examined and stages or error should be plucked. All possible effort by the Ministry of Agriculture through its DMI to eliminate the price differences between DMI and DES price data should be undertaken immediately.
- 40. In view of the large scale differences and delay in receipt of the price data, The Committee is of the view that the price data should be compared with the GR of WPI and abnormal differences noticed if any in the price data then, the GR of WPI should be used. Also in the absence of receipt of price data from any state, the Committee is recommending for the use of GR of WPI over the previous year price of the agriculture commodities.

Appendix 1. (Concld.)

- 41. Special study may be conducted to estimate state-wise the production, price and input costs of high valued Fishes and Cultured Fishes.
- 42. Based on the availability of data from the special study commissioned, the production, GVO and other parameters may 103 be shown separately for cultured fish (marine), Cultured Fish (Inland), High valued fish and Ornamental fish.
- 43. Based on the results of Special surveys being conducted by CMFRI, the input rate may be revised for deriving GVA from GVO in the Marine sector.
- 44. Based on the results of Special surveys being conducted by CIFRI, the input rate may be revised for deriving GVA from GVO in the Marine sector.
- 45. Necessary steps by CSO may be taken to ensure timely supply of the data on production and prices of industrial wood from forest by the State Forest Departments.
- 46. The state wise ratio given by FSI for estimating the proportion of fodder from forest may be continued.
- 47. The current methodology for the estimation of TOF based on the product of production figure available for 2010-11 based on all India biennial Survey conducted by FSI and the average annual growth rate of growing stock may be continued.
- 48. Special study may be awarded to collect state-wise price of TOF and inputs costs for TOF
- 49. The existing methodology of estimation of fuel wood consumption and deriving of GVO based on the Quinquennial Surveys of Consumer Expenditure, conducted in the NSSO may be continued.
- 50. In the absence of fresh data and alternative methodology the same input ratio of 15.6% may be continued. However, if fresh rate is made available based on the nation-wide survey by FSI; the same could be used for deriving GVA from GVO in the Forestry Sector.

1. Agri (crops)	Data Sources		Data Sources		Data Sources
(1)	(2)	(3)	(4)	(5)	(6)
a. Value of output		(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.	(ix) Camel hair/Goat hair /Pig bristles	Population: ILC, 2003, 2007 and 2012 from DADF Yield rates for goat hair: DMI Reports Prices: State DESs
(1) Major and minor crops		(5) Other products Gur	Production and Seed Rates: DESAg Quantity of sugar cane crushed by facto- ries: Dte. of Sugar, Ministry of Consumer Affairs, Food and Public Distribution Quantity of sugar- cane used in man- ufacture of khandsari in manufacturing sec- tor: ASI & NSS Survey of manufacturing enterprises (non- ASI) Prices: State DESs	(x) Dung and Droplet (a) Dung Fuel (b) Dung Manure	Population: ILC, 2003, 2007 and 2012 from DADF Prices, evacuation rate for dung, utili- zation rate for dung cake & dung manure: State DESs
(i) Major crops	Production: Direc- torate of Econo- mics and Statistics, Ministry of Agriculture (DE- SAg) Prices: State DESs	(1) palmyra	Production and prices: State DESs	(xi) Other Products - Silk - Ere, Tasar, Muga, Honey and Bee Wax	Production and prices of silk: Cen- tral Silk Board Production and prices of honey: KVIC Production and prices of bee wax: State DESs
(ii) Minor crops	Production: Horti- culture Statistics Division (DAC, M/o Agriculture) & State DESs Prices: State DESs	(iii) Bagasse	Prices: State DESs	(xii) Increment in livestock	Population: ILC, 2003, 2007 and 2012 from DADF Prices: State DESs

Appendix 2. Data Sources for Agriculture used in 2011-12 series

1. Agri (crops)	Data Sources		Data Sources		Data Sources
(1)	(2)	(3)	(4)	(5)	(6)
(iii) Small millets	Production: DESAg Prices: State DESs	(iv) Backyard and Foreyard far- ming(kitchen gar- den, i.e., homestead land raising for crop and having area less than 0.01	Net sown area: LUS from DES Ag / State DESs	Inputs Livestock	
(iv) Other pulses	Production DESAg and State DESs	(b) Inputs crop sector		(1) Repair and maintenance for livestock and operational costs	Average cost of Repair and Mainte- nance on (i) Barns; (ii) Animal Sheds and (iii) other mis- cellaneous costs: All India Debt and Investment Survey (AIDIS), 2013
(2) Commercial crops		1. seed		(2) Market charges for Live stock	Number of slaugh- tered animals: ISS from DADF Municipal charges per slaughtered animal: State DESs
(tea)	Production of pro- cessed tea: Tea Board Prices: State DES	(i) Wheat, Jowar, Bajra, Barley, Maize, Ragi, Small Millets, Gram, Arhar, Urad, Moong, Masoor, Linseed, Sesamum, Groundnut, Rapeseed & Mus- tard, Castor, Black Pepper and Turmeric	Seed rate, seed replacement rate, area: CCS from DESAg Area under the crop, prices: State DESs	(3) Feed of live- stock for Livestock Sector	Age-wise Species- wise Population: ILC, 2003, 2007 and 2012 from DADF . State-wise average price for Dry Fodder, Green Fodder and Con- centrates: CCS from DESAg
(ii) Coffee	Production: Coffee Board	(ii) paddy, sugar- cane and potato	Seed Rate, Seed Price: CCS from DESAg	(4) Forestry	
(iii) Rubber	Production: Rub- ber Board Prices: State DES	(iii) Other cereals, other condiments & spices, coconut, miscellaneous food crops ®	VPH of seed: Study conducted by Directorate of Marketing Inspec- tion (DMI), M/o Agriculture Area: State DESs	(1) Industrial wood from Forests	Production and Prices: State DESs

1. Agri (crops)	Data Sources		Data Sources		Data Sources
(1)	(2)	(3)	(4)	(5)	(6)
(iv) Cashewnuts and CoCoa	Production: Direc- torate of Cashew- nut and Cocoa Development Board Prices: State DESs	(iv) Misc. Non- Food Crops, Tapi- oca, Fodder, Guar Seed, Cotton, Dry Chillies, Other Vegetables & Dry- ginger	Value per Hectare (VPH): Benchmark study conducted by State DESs Area: State DESs	(2) Industrial Wood from Trees outside forest	Growing Stock: India State of For- est Report (ISFR), 2011 and 2013 from Forest Survey of India
V. Horticulture crops	Production: Horti- culture Statistics Division (DAC, M/o Agriculture) Prices: State DESs	(2) Pesticides	Consumption and prices: Dte. of Quarantine & Plant Protection	(3) Firewood	Monthly Per Cap- ita Quantity of Firewood consumed: NSS 68th Round CES, 2011-12 Popula- tion: Projections based on Population Census- 2011 Firewood used for industrial purposes: ASI -2011-12 . Prices: State DESs
Vi Opium	Production and Prices: Central Bureau of Narcot- ics	(3) Repair & Main- tenance for crop sector	Average cost of Repair and Mainte- nance on (i) Orchards & Plantation Resources, (ii) Wells & Irrigation, (iii) Agricultural Machinery & Implement and (iv) Transport Equip- ment: All India Debt and Investment Survey (AIDIS), 2013	Non-timber forest products	
(Vii) Arecanut	Production: Direc- torate of Arecanut and Spices Development . Prices: State DESs	(4) Electricity	Consumption of electricity for agri- cultural purposes and prices: Central Electricity Author- ity	(i) Minor forest products	Value of Output: State DESs

1. Agri (crops)	Data Sources	Data Sources			Data Sources
(1)	(2)	(3)	(4)	(5)	(6)
Viii Flowers (sepa- rately cut flowers and spike)	Production: Horti- culture Statistics Division (DAC, M/o Agriculture) Prices: State DESs	(5) Chemical Ferti- lisers	Consumption and Prices: Fertiliser Association of India	(ii) Fodder from forest	Percentage of Livestock depen- dent on forest for fodder: India State of Forest Report (ISFR), 2013 from FSI
(3) Miscellaneous crops		(6) Diesel oil ®	Number of trac- tors: 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	(b) Inputs of for- estry	Central & State Govt. Budget doc- uments
(i) other cereals		(7) Irrigation charges ®	Gross irrigated area: State DESs Receipts of Gov- ernment from sale of water: State Government Bud- get	5. Fishing	
(ii) other sugars (excluding Pal- myra)	Area: LUS from DES Ag / State DESs	(8) Feed of live- stock for Crop Sec- tor ®	Age-wise Species- wise Population: ILC, 2003, 2007 and 2012 from DADF Prices of Dry Fodder, Green Fodder and Con- centrates: CCS from DESAg	(1) Marine fish, inland fish and prawns ®	Production: DADF ® Production, dis- posals and prices: State DESs
(iii) Other oilseeds (excluding Tara- mira)	Area: LUS from DES Ag / State DESs	2. Irrigation Sys- tem		(2) Subsistence fish	Production, dis- posals and prices: State DESs
(iv) Other fibres	Area: LUS from DES Ag / State DESs	(i) Operation of Govt. Irrigation system ®	Central & State Govt. Budget doc- uments		
(v) Other drugs and narcotics	Area: LUS from DES Ag / State DESs	(3) Livestock Products			

1. Agri (crops)	Data Sources	Data Sources		Data Sources	
(1)	(2)	(3)	(4)	(5)	(6)
(vi) other condi- ments and spices	Area: LUS from DES Ag / State DESs	Value of output			
(vii) Other fruits	Production: Horti- culture Statistics Division (DAC, M/o Agriculture)	(i) Milk (Cattle, Buffalo and Goat), Eggs and Wool ®	Production: DADF (Integrated Sample Survey (ISS) for MLP) Prices: State DESs		
(viii) other vegeta- bles	Production: Horti- culture Statistics Division (DAC, M/o Agriculture)	(ii) Camel milk ®	Production: State DESs Prices: State DESs		
(ix) Tobacco stem	Production of tobacco leaves: DES Ag / State DESs Prices of tobacco leaves: State	(iii) Duck eggs ®	Production: ISS from DADF, in cases where ISS covers duck eggs		
(x) Toddy	MPCE of Toddy: NSS 68th Round CES, 2011-12 Rural and urban population: Pop- ulation Census 2011	(iv) Meat (Regis- tered + Unregis- tered) ®	Production: ISS from DADF and State DESs Prices: State DESs		
(xi) Fodder	Total and irrigated area under fodder crops: DES Ag and State DESs Prices: State DESs	 (v) Meat (Products and byproducts) (includes fats, edible offals & glands, hides & skins, heads & legs of slaughtered ani- mals) 			
(xii) Grass	Area: LUS from DES Ag / State DESs Prices: State DESs	(vi) Poultry Meat ®	Poultry population: ILC, 2003 and ILC, 2012 from DADF Production of eggs: ISS from DADF Prices: State DESs		

1. Agri (crops)	Data Sources	Data Sources			Data Sources
(1)	(2)	(3)	(4)	(5)	(6)
(xiii) Mulberry	Production and prices: State DESs	(vii) Fats from Fallen Animals (only for cattle and buffalo) ®	Mortality rates: DMI reports Pop- ulation: ILC, 2003, 2007 and 2012 from DADF		
(xiv) miscella- neous food and non-food crops	Area: LUS from State DESs Value per hectare: State DESs	(viii) Cattle hides, Buffalo hides, Goat skin and Sheep skin (fallen animals) ®	Mortality rates: DMI Reports Pop- ulation: ILC, 2003, 2007 and 2012 from DADF		

Source: CSO (2015b)

AN INVESTIGATION INTO SOME CONTENTIOUS ISSUES OF GDP ESTIMATION

G. C. Manna*

The new series of national accounts statistics in India, with 2011-12 as the base year, has extensively made use of data as reported in the annual accounts of companies filed with the Ministry of Corporate Affairs under their e-governance initiative. This paper attempts to draw conclusion about the adequacy of coverage of such data and also suggests alternatives to the present approach of use of 'blowing-up factor' to scale up the contribution of gross value added of sample companies for estimating total contribution of gross value added by the corporate sector. The paper also makes an assessment of the impact of not using the 'double deflation' method on the annual growth rates of gross value added by the manufacturing sector for two years, i.e., 2012-13 and 2013-14. Finally, the relative behaviour of growth rate of total gross value added by 'quasi-corporate' units of the intervening period of 2005-06 and 2010-11 has been studied and the effect of using the former growth rate to move forward the benchmark estimate of gross value added by the household segment of manufacturing sector has been commented upon.

1. INTRODUCTION

1.1 Ever since the new series of national accounts, with 2011-12 as the base year, has been introduced by the Central Statistics Office (CSO), Government of India, through its Press Release dated 30th January 2015, a number of articles have appeared in the public domain about the accuracy of the estimates of annual growth rates in GDP and gross value added (GVA) by economic activity. There have been arguments both in favour and against. In this article, we have chosen three contentious issues of GDP estimation: (i) adequacy of the MCA (Ministry of Corporate Affairs) database in terms of their coverage and the appropriateness of blowing-up factors used in the estimation of GDP for the corporate sector, (ii) impact of use of (and in the present instance, that of not using) the 'double deflation' method on annual growth rates of GVA for the manufacturing sector, and (iii) relevance of using ASI growth rate of GVA to move forward the benchmark estimate of GVA for the household segment of manufacturing sector in the official methodology.

2. THE ORIGIN OF CONTROVERSY IN THE ESTIMATION OF GDP

2.1 The controversy started with the marked differences witnessed in the alternative annual growth rates of GVA based on the new series vis-a-vis the old one, (i.e., with the base 2004-05) particularly in respect of industries of 'Manufacturing' and 'Trade, repair, hotels and restaurants' and, to a lesser extent, for the Community, social & personal services (**Table 1**). It may be noted that at the overall level and also for most of the industries, the new series depicts a higher growth rate in GVA. The difference is very pronounced in the sectors of Manufacturing and Trade, repair, hotels & restaurants.

^{*} G.C. Manna is Ex-Director General of Central Statistics Office, Government of India. Views are of the author. Acknowledgement: The author acknowledges with thanks the data support in respect of MCA21 database provided by Ms. Anindita Sinha Ray, ex-Director, National Accounts Division, CSO. The author is also grateful to Dr. Ravindra H. Dholakia for his comments on the draft of this article.

Industry	Growth at Constant Prices (%)				
	201	2-13	201	2013-14	
	2004-05 Series	2011-12 Series	2004-05 Series	2011-12 Series	
(1)	(2)	(3)	(4)	(5)	
Agriculture, forestry & fishing Mining & quarrying Manufacturing	1.4 -2.2 1.1	1.2 -0.2 6.2	4.7 -1.4 -0.7	3.7 5.4 5.3	
Electricity, gas, water supply and other utility services	2.3	4.0	5.9	4.8	
Construction Trade, repair, hotels & restaurants	1.1 4.5	-4.3 10.3	1.6 1.0	2.5 13.3	
Transport, storage, communication and services related to broadcasting	6.0	8.4	6.1	7.3	
Community, social & personal services Total GVA	5.3 4.5	8.8 8.8 4.9	5.6 4.7	7.9 7.9 6.6	

Table 1. Annual Growth Rates of GVA by Industry: Old Series vs. New Series

Source: Press Release dated January 30, 2015, Central Statistics Office.

3. MCA DATABASE: ADEQUACY OF COVERAGE AND APPROPRIATENESS OF BLOWN-UP FACTOR

3.1 Corporate sector is a vital institutional sector in the Indian economy in terms of its share in the overall GVA. During the years 2011-12 till 2014-15, the sector had a share of about 55% in the aggregate GVA. A major change in the new series of compilation of national accounts is the comprehensive coverage of corporate sector by way of use of data as per annual accounts of companies filed with the Ministry of Corporate Affairs (MCA) under their e-governance initiative (MCA21). This is likely to improve the estimates of the aggregates for corporate sector, at least at the national level, in view of the fact that accounts of at least about 5 lakh and odd companies have been analysed in the new series against the use of results of RBI Study on Company Finances in the old series wherein the financial results of only around 2,500 companies were being taken into account to derive the estimates for the corporate sector.

3.2 In the new series, data in respect of a substantial proportion of all active companies have been analysed. This is particularly true for manufacturing and trade sectors where data for at least 70% to 80% of the active companies have

been taken into account. This percentage is somewhat smaller, (i.e., in the range of 55% to 65%) in case of services other than trade (see Statements 1 to 3 in the Annexure). In terms of the total paid up capital (PUC) of the companies, this percentage is much larger. Thus, both in terms of number of companies and PUC, data coverage is fairly adequate. However, if we look at the distribution of the companies by their PUC size class (Statements 1 to 3) we see that companies in the lowest two or three PUC size classes are somewhat inadequately represented in the database that has been analysed in the GDP estimation. Further, it is interesting to note that GVA to PUC ratio has a declining trend with the increase in the PUC size class of the companies. These two facts together leads us to the conclusion that the use of common blown-up factor of PUC ratio of all active companies to the PUC of companies for which data has been analysed for the estimation of GVA probably underestimates the aggregate GVA of the corporate sector.¹ However, its impact on the annual growth rates of GVA could not be ascertained. In our view, instead of using common blown-up factor, it is more appropriate to use separate blown-up factors for different PUC size classes of the companies. More importantly, instead of PUC, use of some other economic variable, having higher correlation with the GVA, like turnover or value of fixed assets seems to be a better alternative in this regard. For this purpose, turnover or value of fixed assets for the latest preceding year for which such figure is available may be taken into account in respect of the companies missing in the data set of the current year.

4. IMPACT OF USE OF DOUBLE DEFLATION ON MANUFACTURING GVA

4.1 As per the existing practice, for most of the industries including manufacturing, GVA at current price is deflated by wholesale price index (WPI) to derive the estimates of GVA at constant price. The practice of use of this single deflator has been in vogue primarily due to absence of separate price deflators appropriate to output and intermediate consumption.

4.2 We undertook a study² to derive separate price indices for output and input by utilising data of Annual Survey of Industries (ASI) for the years 2011-12, 2012-13 and 2013-14 with 2011-12 price index taken as 100. For this purpose detailed unit/factory level data of quantity and value of output and input by items, (i.e., product/byproduct in case of output and raw materials consumed in case of input) have been taken into account. Item basket separately for output and input prices has been finalised in such a way that it accounts for a substantial share (at least 80%) of the total value of output and input in the respective years. This has been done separately for each compilation category³ within the manufacturing sector. For each item included in the basket, simple average of prices of all responding factories has been considered as the price for the item for a given year.⁴ Finally, price relatives of all items have been multiplied by the respective weights of the items and these are summed up over the items to derive the index for the current year, (i.e., 2012-13 & 2013-14). Weight of an item in the base year has been taken as the proportionate share of the item in the estimated value of output or input (as the case may be) of all relevant items included in the basket. Laspeyre's fixed base method has been used to derive the output and input price indices.

4.3 Finally, we have deflated the value of output and intermediate consumption (IC) at current prices by the output and input price indices at the compilation category (CC) level to derive the output and IC at constant prices.⁵ The difference of the two gives us GVA at constant (2011-12) price at the CC level and those summed up over CCs give GVA at constant price for the manufacturing sector. As per calculations based on this double deflation method, real GVA growth rate for the manufacturing sector reduces from 6.1% (the official estimate) to 5.0% for the year 2012-13 but the real growth rate increases from 5.7% to 6.6% for the year 2013-14.

5. GVA GROWTH: ASI QUASI VIS-À-VIS HOUSEHOLD SEGMENT OF MANUFACTURING SECTOR

5.1 As per the existing approach, benchmark / base year estimate of GVA of household segment of the manufacturing sector is moved forward by applying to it the GVA growth rate (GR) of ASI-quasi, (i.e., proprietary and partnership) at the CC level. The interesting question is whether these two GRs behave similarly. An analysis of GVA growth of ASI-quasi and that of Proprietary & Partnership units, (i.e., household segment or 'informal sector' pertaining to manufacturing activity) based on NSS 62nd and 67th rounds⁶ corresponding to the years 2005-06 and 2010-11 reveals that during the intervening period ASIquasi GR of GVA was much higher than the informal sector GVA growth (Table 2). In the absence of latest survey results from both the above mentioned sources for the year 2015-16 when NSS 73rd round was conducted with unincorporated / household segment of manufacturing sector as one of the subjects of enquiry, we are not sure whether similar trend persists even now. If so, the existing approach leads to overestimation of aggregate GVA of household segment of manufacturing sector. In the reverse situation, there will be underestimation. Whatever the case might be, there seems to be a case to revisit the present approach for a better alternative, if possible.

Activity / Industry Corresponding to NIC 2-Digit as per NIC 2004@	Growth Rate of GVA During 2005-11 (%)		
	ASI-quasi	Informal Sector	
(1)	(2)	(3)	
15: Food product, beverages	107.2	45.3	
16: tobacco and related products	313.7	42.1	
17: Textile products	58.7	87.3	
19: Leather and leather products	65.7	17.0	
21: Paper and paper products	205.4	185.7	
23: Coke, petroleum, nuclear fuel	137.3	-17.8	
24: Chemical and chemical products	207.4	33.2	
25: Rubber and plastic products	106.2	166.1	
27: Basic metals	85.7	81.5	
All-above	111.5	65.4	
Manufacturing including other NIC codes	132.8	81.5	

@ For the remaining industries concordance in NIC 2-digit codes between NIC 2004 and NIC 2008 (used respectively during the surveys of 2005-06 and 2010-11) is not readily available.

6. CONCLUDING REMARKS

6.1 The analysis carried out by us based on MCA21 database suggests that data coverage for corporate sector is fairly adequate. However, there is scope to improve the method of estimation of GVA for the corporate sector by using better blow-up factors. Use of double deflation method in the compilation of real GVA growth for manufacturing sector results in lower growth for the year 2012-13 but leads to a higher growth for the year 2013-14. We also observe that there are marked differences in the GVA growth for ASIquasi and unorganised/household segment of manufacturing sector at the compilation category level. These facts need to be kept in view for refinement of the methodology of GDP estimation in the next base revision exercise of national accounts.

NOTES

1. This is subject to the assumption that all non-reporting companies were in full operation. But, it may be quite possible that one reason for not reporting was the non-functioning of the enterprises during the year. To the extent that is true, the adopted inflation procedure may also result in the overestimation of GVA.

2. An internal study undertaken by the author with his colleagues S/Shri S.V.R. Murthy and Nagesh Kumar of National Accounts Division of Central Statistics Office, Government of India when the author was heading the division. Findings of the study are yet to be available in a paper form at the time of preparing this article.

3. Compilation category is a group of industry codes, used by CSO in the estimation of national accounts.

4. As suggested by Dr. Ravindra H. Dholakia during the Symposium where this article was presented, weighted average of prices of all responding factories [with the proportionate value of the supply of output by the factory concerned as the weight] is a better alternative than the simple average for this purpose. However, due to constraint of time, effect of using this alternative could not be studied.

5. Ideally, it is more appropriate to deflate only the value of products/by-products manufactured (VOP) by output price index, the value of raw materials consumed (VORM) by input price index and the residual part [i.e. other receipts and other exprenses] of output and intermediate consumption by separate price index (CPI or some other appropriate price index) for a more realistic picture. However, its impact may not be substantial given the fact that VOP and VORM have a major share in the overall output and intermediate consumption, respectively.

6. These are the last two surveys for which results are available. Of late, results based on NSS 73rd round on unincorporated units (2015-16) have been released, although ASI results for the year 2015-16 are not yet available.

53

			•				1	Manufacturing
PUC Size Class of companies	Number of companies			% Distribution			GVA to PUC Ratio	
	Active*	Data analyzed for NAS		PUC of active	GVA by companies for which data used in NAS		2012-13	2013-14
		2012-13	2013-14	- companies	2012-13	2013-14		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<= Rs 1L	76678	31772	33561	0.1	0.9	0.8	25.9	25.7
1-5L	28171	21979	22224	0.2	1.6	1.3	21.1	18.9
5-10L	15883	14244	14405	0.3	1.2	1.3	9.8	10.9
10-25L	17740	17525	17940	0.8	2.2	2.1	6.4	6.6
25-50L	13572	14287	14919	1.3	2.8	2.7	4.7	4.9
50-100L	11637	12280	12940	2.2	4.7	4.5	4.7	4.6
1-2Cr	7784	8211	8801	2.8	4.3	4.3	3.3	3.4
2-5Cr	7660	7679	8498	6.2	8.1	8.5	3.0	3.1
5-10Cr	3364	3383	3640	5.9	7.2	7.0	2.8	2.8
10-25Cr	2463	2557	2731	9.4	13.5	13.1	3.2	3.2
25-100Cr	1409	1393	1591	16.2	19.9	21.4	2.9	3.0
100-500Cr	363	389	449	18.5	17.0	18.0	2.1	2.0
500-1000Cr	45	42	47	7.8	8.9	6.6	2.9	2.0
>1000Cr	32	32	39	28.2	7.8	8.4	1.0	0.9
All	186801	135773	141785	100.0	100.0	100.0	2.6	2.4

Annexure Statement 1. Distribution of Paid-up Capital and GVA by Size Class of Paid-up Capital of Companies as per MCA21

*As on 31st March 2015

(Coverage in terms of PUC to total PUC of active companies: 90.5% & 104.5% for respective 2 yrs) [Note: In Statements 1 to 3, figures under Col. (3)/(4) may be greater than that in Col. (2) because PUC figures in Col. (1) relate to the position as on 31st March 2015 and the PUC of a company may vary over years.

Statement 2. Distribution of Paid-up Capital and GVA by Size Class of Paid-up Capital of Companies as per MCA21

Trav								
PUC Size Class of companies	Number of companies			% Distribution			GVA to PUC Ratio	
	Active*	Data analyzed for NAS		PUC of active	GVA by companies for which data used in NAS		2012-13	2013-14
		2012-13	2013-14	- companies	2012-13	2013-14		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<= Rs 1L	53942	25869	26360	0.43	2.47	3.15	8.24	11.68
1-5L	21021	16649	17023	0.59	4.69	4.04	8.81	8.28
5-10L	9139	8072	8412	0.71	3.19	2.89	4.26	4.19
10-25L	12034	10973	11241	2.06	4.23	3.30	1.88	1.62
25-50L	8818	7873	8443	3.20	5.66	5.61	1.64	1.72
50-100L	6597	6127	6386	4.78	7.67	9.21	1.44	1.88
1-2Cr	4409	4072	4286	6.14	11.07	9.36	1.62	1.48
2-5Cr	2977	2724	3024	9.16	13.01	12.55	1.30	1.28
5-10Cr	907	869	878	6.19	7.82	7.41	1.08	1.16
10-25Cr	581	541	592	8.66	13.12	12.25	1.35	1.31
25-100Cr	280	274	297	12.72	14.68	19.57	0.95	1.40
100-500Cr	82	62	82	16.93	11.25	9.86	0.74	0.56
500-1000Cr	13	9	11	8.06	1.11	0.28	0.16	0.04
>1000Cr	8	3	6	20.36	0.03	0.53	0.00	0.03
All	120808	84117	87041	100.00	100.00	100.00	1.07	1.01

*As on 31st March 2015 (Coverage in terms of PUC to total PUC of active companies: 77.9% &93.9% for respective 2 yrs)

				. I			Services (Oth	er than Trade)
PUC Size Class of companies	Number of companies			% Distribution			GVA to PUC Ratio	
	Active*	Data analyzed for NAS		PUC of active	GVA by companies for which data used in NAS		2012-13	2013-14
		2012-13	2013-14	companies	2012-13	2013-14		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<= Rs 1L	217655	92373	110694	0.6	6.6	6.8	44.7	47.9
1-5L	50266	33672	37327	0.5	5.8	5.5	35.1	36.7
5-10L	18123	13853	15389	0.4	3.7	3.9	19.9	23.7
10-25L	15804	13989	15597	0.8	3.6	3.6	9.0	9.9
25-50L	11434	10291	11734	1.3	4.1	3.9	6.4	6.6
50-100L	9359	8362	9607	2.1	5.4	5.4	5.2	5.6
1-2Cr	6132	5262	6225	2.6	4.9	5.5	3.9	4.6
2-5Cr	5503	4721	5705	5.3	9.1	8.5	3.6	3.5
5-10Cr	2139	1726	2139	4.5	5.0	5.0	2.5	2.5
10-25Cr	1710	1464	1750	7.9	10.1	9.6	2.7	2.7
25-100Cr	1053	979	1158	14.4	11.3	11.4	1.5	1.6
100-500Cr	305	286	356	18.1	20.4	21.2	2.2	2.3
500-1000Cr	35	37	44	7.0	1.6	1.4	0.4	0.4
>1000Cr	34	34	37	34.5	8.5	8.2	0.6	0.5
All	339552	187049	217762	100	100	100	2.1	2.1

Statement 3. Distribution of Paid-up Capital and GVA by Size Class of Paid-up Capital of Companies as per MCA21

*As on 31st March 2015 (Coverage in terms of PUC to total PUC of active companies: 85.2% & 106.0% for respective 2 yrs)

NATIONAL ACCOUNTS SERIES: A REVIEW AND HIGHLIGHTS OF CRUCIAL ISSUES FOR DEBATE

S.L. Shetty* and J Dennis Rajakumar**

The latest re-basing of India's National Accounts series from 2004-05 to 2011-12 has been one of the most radical changes introduced ever in the adoption of new data sources as well as in the application of new concepts based on international guidelines for the revisions in the methodology of their compilation. These changes have aroused unusual misgivings and considerable debate amongst the academic circles and in the media. This paper seeks to provide an exposition of the rationale for the changes introduced so that there is better appreciation of the same, and at the same time, attempt some critical evaluation of the revisions made so that we could offer constructive suggestions for improving the overall results including, wherever necessary, the quality of estimates.

PART - I

I. A Brief Account of Earlier Attempts

Right from the beginning when the Central Statistics Office (CSO) released the revised 2011-12 series of National Accounts Statistics (NAS) on January 30, 2015, we have been taking an active interest in it. We have so far singly or jointly published eight brief or substantial articles and delivered four exploratory lectures on the subject in different fora. We have endeavoured to do so because in our view, this revision has made some extraordinary changes in the way NAS is measured in India and thus put its data base on a superior pedestal. In this respect, we have commended the CSO's efforts in undertaking comprehensive reviews of the existing data base as well as the methodology of compilation and implementation, to the extent feasible, based on the United Nations System of National Accounts (UN SNA) guidelines on the subject.

The objectives of our labour in this regard have been two-fold: first exploratory, providing an exposition of the changes that have been introduced so that there is a better appreciation of the rationale of those changes amongst students and the academic community, general commentators and the media; and second, some critical evaluation of the revisions made so that we could offer constructive suggestions for improving the overall results including the quality of estimates.

Towards these ends, our first article [EPW Research Foundation, 2015] explains the genesis of the conceptual changes introduced based on the UN SNA 1993 & 2008. The conceptual changes so introduced take three forms:

- (i) The concept of gross value added (GVA) at factor cost is not a concept of national income explicitly used in the SNA; it is a measure of income and not output with separate observable vectors of prices and output;
- (ii) Gross Domestic Product (GDP) at market prices is the GDP in SNA, as transactions are valued at the actual prices agreed upon by the transactors, and
- (iii) The SNA introduces an intermediary concept called GVA at basic prices covering valueadded at factor cost plus production taxes¹ net of production subsidies; the concept of GVA at basic prices is widely applied at the aggregate as well as sectoral levels.

Apart from the conceptual changes, a revised classification system has been introduced; it includes the presentation of more aggregates such as GVA, savings and investment for the first time in respect of institutional categories in the Indian

^{*} S.L. Shetty is Advisor, and ** J Dennis Rajakumar is Director, EPW Research Foundation, Mumbai. The authors wish to thank Prof. Vikaschandra Chitre for his detailed comments and suggestions on an earlier version of this paper.

SNA. Also, the traditional three institutional categories (public sector, private corporate sector and household sector) have been expanded to cover six-subcategories. In terms of widening the data base, a radical change has been in the use of MCA 21 data for the private corporate sector in mining, manufacturing and services. This in turn has facilitated the CSO to adopt the 'enterprise' approach as distinguished from 'establishment' approach which was being adopted earlier, an 'enterprise' being generally an umbrella organisation for a group of 'establishments'.

A major critical comment we offered in the above article related to the need to continue with the concept of GDP at factor cost. In our view, GDP at market prices cannot be the appropriate measure for gauging an economy's growth rate. We argue that GDP as a value added concept also has distributional value and no economic logic would allow indirect taxes to be part of value addition. We expand this theme much more strongly in a separate article [Shetty, 2015].

In a second contribution [Rajakumar and Shetty, 2015], we proposed the need for adopting double deflation method for the manufacturing sector output as is done by the CSO for the agricultural sector. In doing so, we ventured into working out the possible implications of adopting such double deflation on manufacturing growth as well as on overall GVA growth, both of which got reduced compared with the growth under single deflation. However, our measurement of deflated values of intermediate consumption was questioned by Dholakia [2015] on the ground that we had worked out the input price index taking into account only commodity inputs but ignored the higher inflation in construction services. Thus, Dholakia argued that "the use of double deflation method per se may not alter the results obtained through single deflation" [ibid:, 89]. Even so, Dholakia agreed with us that the CSO should move in favour of double deflation for the manufacturing sector.

In a paper [Rajakumar, Sawant and Anita Shetty, 2015], we brought out the incongruous nature of upward revisions of aggregate saving and investment rates in the new series even as the rates themselves have consistently fallen from the base year 2011-12 onwards. Besides, this has happened when the overall economy's growth rates have not only been revised upwards, but the growth rates themselves have accelerated over years. This, in turn, has suggested a steady improvement in capital efficiency contrary to the evidence otherwise.

In another paper [Rajakumar and Shetty, 2016], we examined the quarterly and half-yearly growth behaviour as per new series bringing out distinct seasonal patterns; the quarterly data follow a zig-zag pattern in practically every year with second quarter growth in general being the peak and the fourth quarter growth, the trough. This second quarter improvement is partly statistical as non-farm production units do window-dressing in the last quarter of the previous year and hence, due to base effects, the first quarter output gets reduced. This, in turn, leads to higher growth in the second quarter. This, of course, has not been peculiar to the new series. The study also examines the roles of agricultural output, indirect tax collections, GDP deflators vis-à-vis the behaviour of wholesale and consumer prices, and the differing influences of deflators in GDP derived from product method and those derived from expenditure method- all specific to the new series. Using these estimates for GVA at basic prices and GDP at market prices, we provide an assessment of the likely influence of indirect taxes on the computed GDP growth rate, even if negligible. Our review of these numbers also extends to a few more areas: (i) a comparison of the behaviour of GDP deflators with the behaviour of wholesale and consumer prices; (ii) a closer look at the deflators employed to estimate private final consumption expenditures (PFCE) in real terms, a key component of GDP at market prices; and, finally, (iii) the dichotomous nature of trends of the investment rate and the GDP growth rate.

In the meantime, in yet another article, one of us [Rajakumar, 2015] suggested the need for a fresh look at the estimates of the private corporate sector in the new NAS series. An arithmetical error was pointed out and a specific suggestion was also made. First, it was pointed out that in blowing up for the uncovered companies to the extent of 15%, the factor of 1.15 was wrongly applied; the blow-up factor ought to have been 1.1765 (that is, 100/85), which means CSO's estimates of GVA of non-government nonfinancial companies should be higher by 2.3%. At second remove, the said article pointed out that a methodological error was committed by not separating public limited companies from private limited companies (representing company census numbers of 58,439 public limited companies and 7,91,535 private limited companies at work at end-March 2013) and it suggested that instead of adopting a single blow-up factor, separate blow-up factors for the two sets of companies be adopted. In the absence of disaggregated data for the 5,57,621 total set of companies covered in the CSO sample, the aforesaid article used as a surrogate the RBI sample studies and presented a case study of the differences that arise in combining or not combining the two sets of companies. It is found that the single blow-up factor gave 33% higher of GVA than the separate blow-up factor and 38% higher in the estimates of savings. Conceptually, the single blow-up method is wrong and hence these higher estimates are questionable.

In the above respect, we were pleased to note that in its Press Note of January 29, 2016 [CSO, 2016], the CSO has revised the methodology of scaling. To quote the Press Note providing the revision of data for all the years 2011-12 onwards to adopt "[u]se of separate scaling factors for 'public limited companies' and 'private limited

companies' in the MCA21 database, instead of a common scaling factor used earlier (This method applies to the subsequent years as well)".

In the published article series, our substantive article [Rajakumar and Shetty, 2016a] examines at length the periodic revisions effected in the NAS series and their influences on macro numbers like growth rates and saving and investment ratios. By the very nature of national accounts estimation, their requirements for policy purposes and the gradual flow of data through the period of a year for different sectors, at times even supplemented by quinquennial or decadal survey results, the statistical authorities adopt welldefined "revision cycles" as part of good governance in statistics. Besides, due to multifarious changes introduced at one go in the latest 2011-12 series in concepts, methods of estimation and the uses of data sources, some special revisions, far beyond the routine changes required to be made following the flow of fresh data, are inevitable. In the process of undertaking varied revisions. they stumble upon errors of judgement or statistically inaccurate perspectives which when pointed out call for corrections. It is with this larger constructive goal in view, we have set out in the above article the goal of examining the first major revisions in the new NAS series, undertaken by the CSO in January 2016 along with Provisional Estimates for 2015-16, their consequences for alterations in various macro numbers including growth rates and saving and investment rates.

To be brief, the results in the aforesaid article have shown that in the revision cycle, the advance estimates for a year, say 2015-16, and the first revised estimates (FRE) for 2014-15 appear to have non-comparable data base. For advance estimates (AE) and provisional estimates (PE) of the revision cycle, the CSO uses, in the case of manufacturing, trends in index of industrial production (IIP) and advance filing of corporate accounts with stock exchanges which involve serious questions of high degree of scaling for uncovered companies, constitute the basis, whereas in the FRE and thereafter, coverage of MCA 21 data base improves and hence calls for limited degrees of scaling. A comparison of the two results shows their non-comparability. Hence, the article makes the suggestion that the growth rates for a year should be based on likes over likes, AE over AE of the previous year. The article shows that the real growth rate of manufacturing for 2014-15 based on AE over AE was 3.1% whereas it was 9.5% based on AE over FRE. Even the overall real GDP growth was 6.5% based on AE over AE, while it was 7.6% based on AE over FRE.

Finally, one of us (Rajakumar, 2016) extended the above theme of non-comparability of provisional estimates and FRE. It is shown that when we take PE of 2015-16 over PE of 2014-15, we get a GDP growth of 6.6% but if we take PE of the year over FRE of the previous year, we get a higher growth of 7.6%. Similar differences are noticed in quarterly growth rates.

Consolidating the various sub-themes presented above, we have written two substantive papers - one for IGIDR's India Development Report 2017 [Rajakumar and Shetty, 2017 -Forthcoming) and another for an independent website: www.ideasforindia.in [Rajakumar and Shetty, 2016b]. On both these occasions, we have had to abridge our writings due to space constraints imposed by the Editors and missed out on many details including many nuances of our arguments. We have, therefore, taken this opportunity to elaborate the sub-themes more comprehensively here and also incorporate the new estimates for some additional sectors such as (a) the financial and banking sector and (b) the external sector, which were not covered earlier.

PART II² THE EXPANDED VERSION

II. 1. Adoption of UN SNA 1993 & 2008 by the CSO

In building the structure, in adopting appropriate concepts and in employing diverse sources of data, the Indian statistical system, as in the case of the systems of all United Nations (UN) member states, has derived its inspiration from the UN System of National Accounts (UN SNA) first published in 1953 and updated thrice thereafter, in 1968, 1993 and 2008. Until the latest revision, India had used the broad conceptual contours of SNA 1968 which itself was a major attempt and all member governments had adopted it for achieving international comparability of their NAS. No doubt, India did make some changes "to the extent data were available" based on SNA 1993 in her 1999-2000 base year revision and those based on SNA 1993 and 2008 in the 2004-05 base year revision, but they were truly peripheral and indistinguishable in the totality of NAS numbers.³ It is only now in the latest series that the Central Statistics Office (CSO) has made concerted attempts to follow the SNA 2008 which is largely an updated version of the SNA 1993, and the changes introduced in the latest 2011-12 series based on SNA 2008 have been quite substantial, so much so that they have become very distinguishably large and set a new beginning in the measurement of NAS in India.

In so undertaking the changes, the Advisory Committee on National Accounts Statistics (Chairman: Prof. K Sundaram), sought supplementary support from five sub-committees⁴ with chairmen and members drawn from official circles and academia, and their recommendations were duly considered while revising the series and re-basing the NAS from 2004-05 prices to 2011-12 prices. Thus, at the outset it is important to appreciate the efforts made by the CSO in observing guidelines provided in the UN SNA and internationally followed best practices, while at the same time making efforts internally to improve the quality of statistics by relying on new sources of data and adopting improved methodology.

Periodic changes in the base year are an essential aspect of a healthy statistical system because shifting of base year serves as an attempt to capture structural changes taking place in the economy over time. Intervening between the first official estimates with base year 1948-49 and the latest with the base year 2011-12, there have been six base year changes in India's NAS. While effecting the base year changes, the statistical authorities take advantage and introduce firmer methodology, seek to capture newer and better quality data sets and improve the presentation. Such changes were done in all the base revisions in the past but the attention that the latest revision from 2004-05 to 2011-12 base series has attracted, is unparalleled.⁵ This has happened because the CSO have shown a commendable degree of dynamism this time by going far beyond the customary changes in the methodology employed and the data sources used.⁶ As we allude to them below, we emphasise that the changes introduced have been far more radical and they have resulted in equally radical changes in varied aspects of the NAS numbers - the levels and sectoral compositions as well as the reported growth. This Part of the paper is to present an exposition of the conceptual and methodological changes introduced and newer data sources used and also their implications for the estimates of various NAS numbers followed by the growth scenario depicted by the new numbers.

II. 2. Nature of Changes Introduced in the New Series: An Exposition

Comprehensive reviews of the existing data

base as well as the methodology of compilation and implementation, to the extent feasible, of the international guidelines in this regard have been the key objectives of the 2011-12 revision exercise. The substantive changes largely following the UN SNA thus introduced add up to impressive changes as presented in Box II. A.

Box II.A: Major Revisions in the New NAS Series

A. Conceptual changes

(i) Introduction of Gross Value Added (GVA) and sectoral aggregates at basic prices; and

(ii) Adoption of Gross Domestic Product (GDP) at market prices as GDP instead of GDP at factor cost as the aggregate income measure and a measure for deriving the economy-widereal growth.

B. Classificatory changes at sectoral level

(iii)Separate estimates of various aggregates for institutional sectors introduced for the first time in the Indian NAS; the sectoral categories are: public non-financial corporations; private non-financial corporations; public financial corporations; private financial corporations; general government; and households including Non-profit institution serving households (NPISH); and

(iv)Refinement in the coverage of institutional categories such as the separation of quasicorporations from the household sector and adding them to the corporate sector.

C. Improvements in coverage of sectors

(v)Use of MCA 21 e-governance data for a comprehensive set of over 5.3 lakh companies instead of the Reserve Bank of India (RBI)'s sample study of around 4,500 companies;

(vi)The coverage of financial corporations has been expanded to include a number of financial and capital market enterprises such as all mutual funds, stock brokers and stock exchanges and Pension Funds as well as financial regulatory authorities, namely, Securities and Exchange Board of India (SEBI), Insurance Regulatory and Development Authority (IRDA), Pension Fund Regulatory and Development Authority (PFRDA); and

(vii)A substantially improved coverage of local bodies and autonomous institutions under the General Government.

D. Methodological changes in compilation

(viii)By shifting to the 'Qenterprise' approach from the 'establishment' approach, the head office operations of companies in the form of trading and other activities have been allocated to the non-financial corporations in the manufacturing sector;

(ix)Adoption of effective labour input method (ELI method) instead of the bland labour input method (LI method) for unincorporated enterprises in the manufacturing and a majority of the services sector;

(x)Fixed capital formation have been compiled for four categories of assets (earlier two categories), in order to distinctly account for intellectual capital and cultivated biological resources; and

(xi)A few other important changes such as (a) Financial Intermediation Services Indirectly Measured (FISIM) based on the Reference Rate approach,⁷ (b) the output of RBI entirely treated as non-market at cost as part of public corporations unlike previously treating its Issue Department as non-market and part of general government and Banking Department as market and as part of the public financial sector and (c) the GVA estimates for the unorganised financial services (money lenders) based on specific field surveys rather than the blanket 1/3rd approach; and

E. Consequential changes in the dissemination of Data Series

(xii)No data series are now published on GDP at factor cost at the aggregate level or at the sectoral level; instead what are published are: (a) GDP at market prices only at the aggregate level which is called GDP; (b) GVA at basic prices both at the aggregate and sectoral levels; (c) key macro aggregates for 11 industries; (d) similar key aggregates for six institutional categories; (e) sector-wise gross capital formation; (f) four components of fixed capital formation; and (g) various components of private final consumption expenditure.

II.2.A. The Choice of 2011-12 as Base Year

As NAS relied on Population Census for certain vital information such as labour inputs, the choice of base year generally coincided with the census year, which was the case until the 1990s. But, because the Gulf War had adversely impacted the economy in 1990-91, the NAS was re-based to 1993-94. In line with the recommendations of the National Statistical Commission to rebase economic variables once in every five years, CSO had done a similar exercise in 1999-2000 and then in 2004-05. The next revision was due in 2009-10, but that year was not considered as a normal year in view of the global slowdown following financial crisis of 2008 and the quality of employment statistics collected was found to be unsatisfactory, the CSO has chosen the year 2011-12 to rebase NAS using the new Employment and Unemployment Survey (EUS) conducted with July 2011-June 2012 as the reference period.

II.2.B. Conceptual Changes

II.2.B.i Shift to alternative measures of value added and to GDP at market prices

Under the new NAS series, some radical changes have been introduced in the use of value added measures, based as they are on the UN SNA. First, for the national economy as a whole, the concept of GDP at market prices is preferred instead of GDP at factor cost. Both SNA [1993] and SNA [2008] have argued that GDP at factor cost is essentially a measure of income and not output [SNA 1993, p. 154 and SNA 2008, p. 104]. This is so because GDP at factor cost, which can be arrived at by adjusting gross value added (GVA) at basic prices for net production taxes (defined below), has no observable vectors of prices and outputs that define the production process. Hence, GDP at market prices is considered appropriate as GDP for measuring real growth at the aggregate level. The CSO has thus ceased to publish data series on GDP or GVA at factor cost under the new series as a separate macro identity.

But, even the UN SNA [2008] has conceded the importance of factor cost estimates. It has said that GVA at factor cost "is essentially a measure of income; it represents the amount remaining for distribution out of gross value added, however defined, after the payment of all taxes on production and the receipt of all subsidies on production" [p. 104]. SNA [2008] goes on to affirm that GDP as defined in the SNA is such that an identity exits between a measure built on value added, a measure built on income and one based on final expenditures - the three ways to reach a GDP measure. Further, "value added represents the contribution of labour and capital to the production process" [p. 103]. Hence, the importance of factor cost estimates lies in the study of these distributional issues (More on it later).

Incidentally, though the CSO does not provide the aggregate annual series of GDP at factor cost, we have been able to derive them from the data available on production taxes net of production subsidies. We have now designated them as GVA at factor cost (for details, see *EPWRF India Time Series NAS module* http://www.epwrfits.in;).

II.2.B.ii GVA at basic prices - an innovative concept

Second, at the sectors' level and for the national economy as a whole, what is now published are estimates of GVA at basic prices. It is perceived that production taxes like land revenue and stamps and registration fees are absorbed in the reported value of production and hence what we eventually get are GVA at basic prices, that is, value added at factor cost plus production taxes *less* production subsidies.

To dilate a while, prevalence of total indirect taxes in an economy is divided in the SNA into two categories:

(a) taxes on products consisting of all value added type taxes (VAT), sales taxes, service tax and import and export duties; and

(b) 'other taxes on production'.

This classification is done depending upon whether an indirect tax is paid on the factors of production employed or whether it is paid on per unit of output involved.

Taxes on products are thus taxes that are payable on sale, transfer, leasing or delivery of goods and services, that is, per unit of output or sale. In the Indian context, these consist of Union excise duties, State excise duties, sales tax, service tax, electricity consumption and sales tax, entertainment tax, hotel receipts tax, interest tax, custom duties and expenditure tax. *'Other taxes on production'*, on the other hand, are not related to products per unit or any such size of sale, transfer or delivery; they are charged regardless of the output size or transaction size involved. The UN SNA 2008 (para 7.97) has classified them under these categories:

(a) Taxes on payroll or work force; (b) Recurrent taxes on land, buildings or other structures; and (c) Business and Professional license fees.

In the Indian context, the CSO [2015a: 54] have included the following taxes as production taxes:

- i. Fringe Benefit Tax
- ii. Land Revenue
- iii. Stamps & Registration fees
- iv. Estate Duty
- v. Banking Cash Transaction Tax
- vi. Taxes on Vehicles, and
- vii. Other Taxes & Duties on Commodities & Services

In the same source, the CSO [Pp. 55-59] has listed a wide-ranging set of production subsidies (being subsidies received on the factors of production or inputs, irrespective of the volume of production) which are used for netting production taxes and thus deriving GVA at basic prices.

There is an important operational reason why the SNA experts have introduced such a distinction between taxes on production net of production subsidies and taxes on products net of product subsidies. Production taxes, charged on factors of production irrespective of the volume of production, are nowhere visible in any of the reported values of individual items produced or sold. Amounts of such production taxes get subsumed in the basic values of total output produced by an enterprise but not separately available per individual items of production. Land revenue, for instance, represents total amount paid by a farmer on the size and quality of land held and not on any per unit of rice or wheat output produced.

Figures of such production taxes are located in the government budgetary receipts under respective tax heads and these are the amounts which the NAS statisticians source and publish. So is the case with production subsidies received on the factors of production or inputs. On the other hand, taxes on products, charged per unit of output or sale, get counted and reported at each sale point. Thus, the amounts of product taxes are clearly visible at the unit of sale and become additive. So is the case with product subsidies

II.2.B. iii Indirect taxes and subsidies are deflated by rate changes to obviate their influence on real growth

As explained in a subsequent section, the use of GDP at market prices for measuring real growth, raises a ticklish question of the measure including indirect taxes net of subsides. The nominal growth in GDP would get inflated if indirect tax base is expanded. Such an exaggerated increase has to be obviated while working out the real growth in GDP, which calls for applying an appropriate deflator for the net indirect taxes. SNA (2008) [paras 14.150 and 15.175] has set out how (i) specific taxes levied on volume of a product, and (ii) ad valorem taxes levied on product values, have to be deflated.

Apparently, using the above recommendation, the International Monetary Fund (IMF) Mission in India which gave recommendations on the new NAS series, prescribed a statistical framework which "mandates only the real growth in the underlying indirect tax base is included in calculating GDP at market prices" [Sen, 2015]. This is done by ensuring that indirect tax collections due to an increase in indirect tax rates is reflected as a rate of change in price. Thus, for specific taxes, any change in the rate of specific tax is a price increase [SNA, 2008, para 14.150] and the volume effect is strictly limited to changes in the quantity of item purchased. For the *ad valorem cases*, the volume measure is calculated with tax rates from the base year. Sen [2015] opines that tax collection rate increases in addition to changes in tax rates -]be considered as a price effect; likewise new taxes be treated as price changes. As a result of these methods of deflation, the influence of indirect tax increases gets almost diluted from the real GDP growth. But, as we point out later, this deflating method only obviates the possible double counting at the real GDP level but it cannot negate the double counting charge at the nominal GDP level.

Such double countings can have significant influence on many instances such as in the inter-country comparisons are made for which the estimates of absolute levels of GDP and GDP per capita across countries are used in order to measure the relative levels of economic standings.

II.2.B.iv Less emphasis on output and more on value added

In defending the new NAS series, senior officials of the statistical system have vociferously argued that what GDP captures is value added and not output. This has always been the case but, a few fresh occurrences in the new series have brought home the difference much more frontally.

First, as brought out later, the use of corporate sector data as distinguished from the Annual Survey of Industries (ASI) data or the physical growth in the Index of Industrial Production (IIP) has produced higher sets of value added numbers. Both the IIP and the ASI capture information from establishments at the plant level, whereas the corporate data provide such information for an entire enterprise owning the plant, including other establishments and its head office operations dealing in post-manufacturing value added through marketing, trading and other services. Second, subsequent to the introduction of the new series, the economy's inflation represented by Wholesale Price Index (WPI) and Consumer Price Index (CPI), particularly WPI, has decelerated leading to the deceleration in the rates of change in deflators which, in turn, has resulted in higher growth of value added in real terms. This has also come about because input prices have fallen more than their output prices have, leading to higher value added. In fact, these price changes have made double contributions to increases in GVA - once the WPI-deflated output increases and secondly, lower input prices contributing to higher net value added. Finally, there are three or four key elements in the calculation of value added: physical value dimension, per unit price of output, per unit price of intermediate inputs and efficiency in the use of inputs due to technological changes. It is claimed that being sensitive to the underlying factors in the value added measurement, the new series reflects the combined effects of all of these elements. Their effects will be seen in GVA both at current as well as constant prices.

II.2.C. Estimates of Key Aggregates for Institutional Sectors for the First Time

Yet another key feature of the new series is the publication for the first time of key macroeconomic aggregates in respect of six institutional sectors, as described in Box II.A. Like in the past series, savings and capital formation estimates are made available under these categories. In addition, GVA at basic prices by institutional categories are also provided. More importantly, the coverage of sectors has also undergone significant changes, as noted below.

The most important compositional change relates to the private corporate sector that has now been enlarged. Previously, private corporate sector was defined to include non-government joint stock companies registered under the Companies Act 1956 and co-operative institutions [CSO, 2012, p. 199]. Under the new series, private corporate sector additionally includes also business enterprises registered under the Limited Liability Partnership (LLP) Act 2008 as well as quasi-corporations (QCs) maintaining books of accounts but not [having been registered either under the Companies Act or LLP Act [MOSPI 2015a] The QCs may be partnership firms or proprietary concerns, which were hitherto included under household sector and also cooperatives. Inclusion of these sub-institutional categories can place estimates of private corporate sector on the higher side compared to the old series, with a corresponding decline in the estimates for the household sector. Besides, the estimates for private corporate sector are presented separately under two sub-categories: private financial corporations and private non-financial corporations.

II.2.D. Improvements in Coverage of Sectors

II.2.D.i Use of MCA 21 database for the corporate sector

As cited earlier, in sourcing of new data sets, the use of MCA 21 database for the private corporate sector stands out as the most outstanding change. Traditionally, the population estimates of savings and capital formation of the private corporate sector were derived using the Reserve Bank of India's (RBI) studies of nongovernment non-financial public limited companies (NGNF PLC) and NGNF private limited companies (NGNF PTC). Since these studies are based on sample companies, they had to be scaled up using blow-up factors - ratio of paid-up capital (PUC) of population to the PUC of sample companies. In the 1950s and 1960s, these sample companies used to account for a major chunk of PUC of their respective population groups. For instance, the coverage of NGNF PLC, in terms of total PUC of the NGNF PLC, used to be about 80% in the 1960s and 65% in the mid-1980s. In the case of NGNF PTC, the coverage was 35% in the 1950s which declined to about 13% in the mid-1980s. With major policy reforms introduced since the early 1990s, there has been a phenomenal rise in the growth of private sector companies and consequently, the coverage of RBI sample companies has declined sharply in the last two and a half decades or so [Rajakumar, 2015]. The RBI's studies coinciding with the new NAS base year of 2011-12 had NGNF PLC and PTC accounting for 30.5% and 6.8%, respectively, of PUC of their respective population.

Thus, with the coverage of RBI studies in terms of PUC deteriorating, concerns have been raised time and again on the reliability of estimates based on their blow- up factor.⁸ In the early 1980s, Working Group on Savings, chaired by K N Raj [Government of India, 1982], had endorsed the use of data set of RBI sample companies and blow-up method for estimating corporate savings and capital formation because of the large coverage at that point in time, though recommended use -of representative sample for PTC. The Rangarajan High Level Committee [Ministry of Statistics and Programme Implementation, 2009] recommended using a larger set of companies so as to improve the reliability of the estimates.

Until then, the Companies Act had mandated all registered companies to file manually annual reports with the Registrars of Companies (ROC) after their annual general meetings. Such filings were, however, far from satisfactory. The National Statistical Commission [2001] observed that only 47% of registered companies filed their returns for 1997-98 by March-end 1999. Therefore, in order to cover all registered companies and following the advancement in telecommunications technology, the Ministry of Corporate Affairs (MCA) undertook a major step, to implement an e-Governance programme, popularly known as MCA 21,9 whereby registered companies were required to submit their returns online.

With effect from 2010-11, MCA 21 has been made mandatory¹⁰ for corporate filing in a web platform known as XBRL (Extensible Business Reporting Language) for four classes of companies, namely, companies listed in any stock exchange in India and their India subsidiaries, companies having paid-up capital Rs. 5 crore and above, companies with a turnover of Rs. 100 crore and above, and companies required to file their returns in 2010-11 through the XBRL platform. Filings by other companies have to be done through another web platform known as Form 23 CA/ACA,11 which collates financial information in a simpler e-form. The LLP firms are also covered by MCA 21 portal, but they need to file through LLP Form since 2012-13.

With considerable success being achieved in terms of the number of registered companies e-filing their returns, the MCA 21 has become a preferred data set over the erstwhile sample-based RBI studies and as such CSO has decided to use the same for NAS purposes. Apart from MCA 21 data, yet another improvement has been introduced for the corporate sector data. In the earlier series, in the initial years of advance and provisional estimates, the manufacturing sector output was being measured through IIP. In the new series, for the Advance Estimates, IIP growth estimates for some quasi-corporate and unorganised segments, supported by data available from listed companies for the first three quarters, are used, while, for the provisional estimates, IIP for some sectors such as mining and quarrying and the information available from company finance studies of RBI supplemented with the information available from the advance filing of corporate accounts, that is, in respect of listed companies under stock exchanges (Bombay Stock Exchange and National Stock Exchange) [CSO, 2016b], are used to derive the value added data, as explained below.

- - - - the process of blowing-up or scaling up

But the problem of full coverage continues to remain. By the time CSO begins to retrieve information from MCA 21, it is very unlikely that all companies would have completed e-filing. At the time of the release of NAS new series in January 2015, for the first two years 2011-12 and 2012-13, CSO could cover about only 5.24 lakh non-financial companies through online reporting of forms 23ACA/AC and 31,636 companies through XBRL reporting, though there were close to 7.5 lakh and 8.3 lakh active companies in those years, respectively [Ministry of Corporate Affairs, 2014]. In order to account for the uncovered companies, CSO uses traditional blow-up procedure by deriving population PUC based on active companies, defined to include all those companies which have filed their returns at least once in the last three years.¹² Those covered companies had accounted for 85% of population PUC [CSO, 2015]. Thus, though a large number of companies have been covered, the blow-up procedure could not be completely dispensed with.13

There is yet another catch in the application of this blowing-up procedure. As rightly desired by Sinharay, Kumar and Anant [2015], filing of accounts by all companies is a dynamic process. For the NAS releases on January 30, CSO presents a cut-off date of December 1 for accepting the filings.¹⁴ Subsequent filings are accounted for in subsequent revisions. It is revealed in the above study that for 2013-14, the estimates were derived based on growth in about 3 lakh common companies between 2013-14 and 2012-13 and this growth was applied to the base numbers of 2012-13 which were obtained by analysing the results of 5.24 lakh companies referred to above. An important implication of this is that the dynamic character of data reporting compels the CSO to scale up each year's estimates independently based on the total PUC of active companies reported for that year. It is only such global estimates based on scaling up separately each year facilitate year-on-year comparisons of growth estimates. Hence, the scaling up for the 3 lakh **II.2.E. Methodological Changes** companies would be quite different from the 15% of population PUC suggested for 5.24 lakh companies.

That is not all. Of the initial two Advance and Provisional Estimates as referred to above, Advance Estimates are based on IIP, for quasicorporate and unorganised segments combined with the available data for listed companies during the first three quarters, are used but for the Provisional Estimates, the measures are, as stated above, based on advance information of corporate results (RBI sample study and BSE & NSE database) For these estimates, the process of scaling up would be drastically different.

Considering thus the slow flow of corporate data, the CSO has no option but to fall in line with the results obtained from the dynamic blow-up factors. But, as we point out subsequently, it has serious implications for measuring growth with comparable numbers - apples with apples and not apples with oranges. Also, the results would be different if some workable stratification of companies is done for deriving aggregate corporate results.

II.2.D.ii Data base for local bodies and autonomous institutions under the public sector widened

As for general government, local bodies, both rural and urban, and autonomous institutions,¹⁵ which were hitherto captured on a sample basis, are now being captured on a complete enumeration basis for 60%-70% of local bodies and autonomous institutions and attempt is being made to capture them in their entirety over time. That may be work in progress, but the efforts to capture on complete enumeration basis are going to be a big change. Thus, the coverage of local bodies and hence of the government sector has improved considerably [Anant, 2015].

in Compilation

II.2.E.i. Shift to enterprise approach for the corporate sector data

In the NAS new series, CSO follows enterprise approach for defining an institutional unit of observation (or analysis). Earlier establishment approach was followed whereby an institutional unit was seen confined to a geographical boundary (or physical structure or factory) in which that unit functioned. Under the enterprise concept, the consolidated accounts of the parent organisation become vital and such approach is likely to change the relative significance of sectors, as explained below.

The implication of adopting enterprise approach can be illustrated as follows. Consider a company, for example XYZ Limited, having production operations (factories) distributed across the country, with its head office providing major shared services like accounting and finance, marketing, human resources, information system and so on. In the enumeration of factories under the Annual Survey of Industries (ASI), which follows establishment approach, head office of XYZ Limited would not be counted as part of manufacturing, if they are not directly involved in production activities defined to include processing, preserving and packaging, whereas the company's factories are individually counted as separate institutional units. On the contrary, due to the adoption of enterprise concept in the new series, XYZ Limited is considered as an independent unit in the national income accounting. If XYZ Limited is considered as principally a manufacturing company, then apart from manufacturing, trading, marketing and other ancillary services performed at its head office also become part of their manufacturing activities. Now, therefore, instead of considering several factories of XYZ Limited as individual units and collecting data separately from each of them for national income accounting, which is colossal and an unending task, only the consolidated financial statements of XYZ Limited becomes the primary data source.¹⁶ This can easily give rise to an upward shift in the relative share of manufacturing and a simultaneous reduction in the share of services under NAS new series. A specific case cited by the CSO [2015a, Pp. 87-88] was that of 'trade and repair services' carried out by manufacturing companies, which has now become lower partly because they have now been covered under 'manufacturing' as per the enterprise approach and partly because of the survey-based estimates for the unorganised sector. Thus, the transition from the use of factory output to the adoption of enterprise approach has made many data convolutions: value added data as against physical output (when IIP growth is used); inclusion of supplementary trading, marketing and other services rendered by the head offices of the companies; and benefits of possible savings on intermediate costs due to falling commodity prices, have helped better and more wholesome estimation of value added in manufacturing output in the period covered so far in the new series.

A moot question posed by us in a later section is: while the levels of manufacturing output may be higher due to the inclusion of head office activities, why should the rate of growth be necessarily accelerating and so radically superior year-after-year?

II.2.E.ii. Estimates for informal sector GVA are based on effective labour input method:

With regard to the informal sector, novel changes have been introduced in the methodology in order to account for differential productivity of different workforce categories [CSO, 2015a, Pp. 8-11]. Previously, CSO used to follow a simple labour input (LI) method for arriving at income of informal sector by the following procedure: first, average value added per worker (AVAW) for a benchmark year using Enterprise Surveys of

NSSO were worked out; second, total labor input or workforce (total of usual and subsidiary activity of workers engaged in the activity) used to be computed from the EUS for the survey years and projected for the period between two surveys; and, finally, workforce used to be multiplied by AVAW to arrive at GVA in an industry (that is, in any compilation category).

To improve the methodology, the CSO has now introduced the concept of effective labor input (ELI) so as to reflect the differential productivity of various categories of workforce. A nested Cobb-Douglas production function has been used for computing the weights of different categories of workers [MOSPI, 2015a]. Accordingly, CSO assigns different weights to owners, hired workers and helpers.¹⁷ This change is a major improvement over the traditional labour input method, as the weights are expected to account for differentials in productivity.¹⁸ In the case of rural and urban establishments of a few non-financial segments, 19GVA estimates as based on a modified ELI method are as follows:

```
GVA = Effective LI (Rural) * GVAPEW (Rural Establishments)
+ Effective LI (Urban) * GVAPEW (Urban Directory
Establishments)
```

In some sectors,²⁰ where productivity of different types of labours may not impact the value addition, the traditional LI method has been used and GVA of these sectors were arrived as follows:

GVA = LI (Rural) * GVAPW (Rural Establishments) + LI (Urban) * GVAPW (Urban Directory Establishments)

----- doubts on LI method are answered

Some questions have been raised regarding the veracity of applying the neo-classical production function for the unorganised sector [Nagaraj, 2016 and Nagaraj and Srinivasan, 2016] on the ground that a majority of enterprises are subsistence activities by self-employed workers whose opportunity cost is close to zero; it is further argued that it is unrealistic to assume that workers

in such enterprises get "wages equal to their marginal product". These questions may be valid in a broader macro-economic sense. In the present instance, the CSO has departed from its earlier assumption that the average product per worker is valid for all categories of workers, namely, working owner, hired worker and helper classes and sought to derive their relative differences in their possible wage earnings. Nagaraj [2016] has proposed that "it would be better to stick to the simpler yet sound measure of the earlier labour-input method of average product per worker (capturing contribution of all factors of production) than to use the marginal product of labour obtained using the production function to estimate unorganised sector output".

We beg to differ with Nagaraj on the above issue. First, we ought to appreciate that the assumption of equal contribution from all categories of workers even in an unorganised enterprise, namely, working owners, hired formal and informal workers, and helpers, is indefensible. Their relative productivities and hence earnings for any given period would be realistically different. Hence, we appreciate that the CSO has attempted to move away from the earlier assumption of equal or undifferentiated treatment of workers. And then the second question was: how to measure the differing remunerations received by different classes of workers. An obvious rational answer to that would be that enterprises would reward the workers based on their importance, which in economic terms, implies relative productivities.

In order to quantify the above rational answer, the Economics literature has produced many measures, the most widely accepted one being is the measure of relative productivities of workers in the form of Cobb-Douglas production function. It is true that this equation system provides an estimate of marginal productivities of capital (K) and different categories of labour (L1, L2 & L3). It is wrong to presume that "the marginal product of capital is completely left out in computing the GVA" by the CSO calculations as argued by Nagaraj [2016, p. 26]. What the Cobb-Douglas production function does here is, first to work out the marginal productivities of capital and three labour categories and then, given the role of capital as measured in the equation system, the measures of marginal productivities of three sets of labour are used to derive just the relative importance of each of these labour categories in producing the given level of GVA. Earlier, this level of GVA was divided by the un-weighted total labour input to estimate the gross value added per worker (GVPW). In the new series, weights have been assigned to different categories of workers relative to their marginal productivities. To emphasise again, in deriving these marginal productivities, the role of capital was not left out; it has constituted a part of the multiple regression system as one of the explanatory variables. Given this role of capital in the equation system, there is the relative contributions of different types of labour which are determined by their marginal productivities. When the GVPW is so worked out, it is total GVA divided by the number of workers; earlier, the workers' number was un-weighted but in the new series, it is weighted by the relative importance of each worker class.²¹

II.2.E.iii Fixed capital formation:

Investment taking place in the economy is always captured in the national accounts in the form of capital formation essentially as change in stock of capital assets and stock of inventories. While the former is termed as fixed capital formation, the later is termed as change in stock. Though they are computed on net basis, when depreciation is added we get their value on gross basis.

The gross fixed capital formation (GFCF) in the past NAS series used to consist of two items,
'Construction' and 'Machinery & Equipment'. Now the revised series compiles them under the four following categories:

- (i) Dwellings, Other Buildings & Structures;
- (ii) Machinery & Equipment;
- (iii) Cultivated Biological Resources; and
- (iv) Intellectual Property Products (normally accounted for under intellectual capital such as investments in research and development, mineral exploration; database and software and other IPPs)

These four categories of fixed assets formation have been created out of the existing two (Construction and Machinery & Equipment) so as to introduce clarity in nomenclature; it would also give importance to the new and growing areas such as biological resources and intellectual property. The item (i) 'Dwellings, Other Buildings & Structures' in the new series consists of all 'Construction' sub-items of the 2004-05 series except that capital expenditure on plantation then included therein has now been shifted to (iii) 'Cultivated Biological Resources'. Item (ii) 'Machinery & Equipment' retains the same nomenclature except that three sub-items therein, namely, investment in livestock, software and expenditure on R & D, have now been shifted: the first one to (iii) 'Cultivated Biological Resources', and the next two to (iv) 'Intellectual Property Products'. These changes appear very apt to us.

- - - household sector remains a 'residual' category in the methodology

It is important here to note at this stage that the CSO continues to follow the commodity flow approach for computing capital formation at the economy level. From the total of capital formation so estimated, it subtracts estimates independently done for public sector and private corporate sector so as to arrive at estimates for the household sector. Thus, the age-old practice of treating household sector as a 'residual' category continues even in the new NAS series. Given the expected increase in the level of capital formation in public sector and private corporate sector due to the inclusion of new sub-institutional categories some of which were earlier part of the household sector, the relative share of households in capital formation is sure to go down under the new series. Data show that there has been a 6% reduction in the gross capital formation (GCF) of the household sector as between 2004-05 and 2011-12 estimates for 2011-12 [CSO, 2015].

II.2.E.iv Treatment of valuables in the NAS

There has been a peculiar treatment of 'valuables' in the Indian NAS and it has differed in different NAS series. In the 2004-05 series, treatment of nation-wide expenditures on acquisition of valuables (imports) differed from the acquisition by households. Total net acquisition of valuables by the economy as a whole in the form of precious items like gold, gems, ornaments and precious stones was included as part of gross capital formation (GCF) and not gross fixed capital formation (GFCF), whereas such acquisition by households was treated as consumption expenditure in the 2004-05 series and not as part of household savings. In the new series, while the total economy-wide acquisition of valuables has been continued to be treated as part of GCF (and not GFCF), the acquisition by households is now treated as physical savings, thus, this small component of expenditures on valuables getting counted as part of GFCF. For the sake of clarity, the relevant data are presented in Table 1. Thus it becomes clear that the entire acquisition of "valuables" gets counted as part of GCF. Analytically, it is improper to accord the status of productive capital to "valuables". The subject thus calls for a closer look conceptually and empirically.

II.2.E.v Flow of funds approach remains for estimating gross capital formation (GCF)

Another traditional method employed for

estimating the total GCF based on the flow of funds approach remains unchanged. GCF is equivalent to domestic savings plus the net inflow of capital from the rest of the world. This is an important methodological device employed in the Indian NAS; under this device, GCF derived from the flow of funds approach is assumed to be better than the separate total of sector-wise estimates of GCF derived by the commodity flow method referred to earlier. The sector-wise total so derived plus the estimated of valuables is adjusted for its variation from the GCF derived from the flow of funds total, as shown in Table 2.

II.3. An Overview of the Impact Made on the NAS Numbers by the New Series

level of income and other macro aggregates change but also their respective growth rates vary due to changes in scope, use of recent prices and change of methods. In what follows, we examine percentage differences in the estimates of different aggregates in the new series over the previous series, and also percentage point differences in the growth rates of given aggregates for the overlapping years; apart from the GDP aggregates, annual variations in their deflators are also examined here.

The following simple arithmetic is used to work out the percentage differences in the level of an aggregate in the later series (say for 2011-12) over its corresponding estimates in the previous series:

Each time base year gets shifted, not only the se

Percentage difference =
$$\begin{bmatrix} Estimates & for 2011 - 12_{2011 - 12_{series}} - Estimates & for 2011 - 12_{2004 - 05series} \\ Estimates & for 2011 - 12_{2004 - 05series} \end{bmatrix} X 100$$

For the purpose of this analysis, we have considered three overlapping years, 2011-12, 2012-13 and 2013-14 for which estimates are available under both 2011-12 and 2004-05 series. But, with a view to bringing out the significance of the latest revision, we have carried out a similar exercise for the previous revision of 2004-05 from the 1999-2000 base, for which estimates are available for four overlapping years from 2004-05 to 2007-08. As the 2004-05 series has followed a near similar approach in terms of recourse to data sets, methodologies followed and presentation as in its predecessor 1999-2000 series, it provides an opportunity to bring out how the recent revision to the 2011-12 base year has been significantly different from the earlier revisions.

Likewise, the percentage point differences in growth rates for the overlapping years (say for 2011-12) under the later and previous series, have been arrived at in a simple way thus:

For example, percentage point differences

in growth rates for 2012-13 = Estimated growth for $2012-13_{2011-12 \text{ series}}$ minus_Estimated growth for $2012-13_{2004-05 \text{ series}}$

II.3.A Percentage differences in key aggregates

The percentage differences, worked out for various macro aggregates, both income and expenditure, reveal that contrary to the previous revision to the 2004-05 base year, sizes of income

aggregates have uniformly experienced absolute reductions under the latest revision (Table 3). The GDP at factor cost for the year 2011-12, for instance, has been lowered by (-)3.5% under the 2011-12 series compared to its corresponding estimates under 2004-05 series and by (-)0.9% in 2013-14. In contrast, in the previous revision,

GDP at factor cost for the year 2004-05 was higher by 3.3% under 2004-05 series than its corresponding estimates under 1999-2000 series and this difference had risen to 4.6% by the third year 2006-07 and then to 6.0% in 2007-08. A similar trend holds for other income measures as well. Such absolute reductions say, in GDP at market prices in the new series, have been reflected in working out relative ratios where GDP serves as a denominator, such as GCF to GDP or export to GDP ratios (more on it later).

Amongst the expenditure items, the highest size of reduction in 2011-12 series has occurred in government final consumption expenditure (PFCE) followed by private final consumption expenditure. As explained later, there being no source or methodological differences, the data on exports and imports have hardly experienced any noticeable differences on revision.

On the other hand, the absolute sizes of domestic savings and capital formation has increased under both the latest and previous base year revisions; but the magnitude of the rise in gross savings has been far higher under the revision to 2011-12 series compared to the revision to 2004-05 series. Revision of consumption of fixed capital (depreciation) has been upward under 2011-12 series, whereas downward in 2004-05 series. The relatively higher order of depreciation could be attributed to the reductions in the assumed average service lives of several classes of fixed assets in the new series.²²

Such upward revision of depreciation and valuables in the NAS new series, compared to their corresponding estimates under 2004-05 series, has been indeed reflected in a higher order of both domestic gross capital formation and gross savings in the 2011-12 series.

--- Percentage point differences:

In terms of current prices, the percentage point

differences in growth rates in the first year under 2004-05 series were very meagre - nil or higher by just 0.3 percentage points over the 1999-2000 series in most of income aggregates (Table 4); the same has gone up in the following years. In sharp contrast, point differences in growth rates of 2012-13, the first year under the new series, seems to be of a higher order over the 2004-05 series nearly 1.7 percentage points higher across all income aggregates, though the magnitudes come down in the very next year. A queer feature of these changes is that while income aggregates have registered absolute declines on revision in the 2011-12 series, the same have experienced improvement in growth rates, that is, there has not only been positive growth but even the percentage point growth has been higher in the 2011-12 revision than in the 2004-05 revision, at any rate in the initial years of revision. The cause for these differing revisions may be traced to revisions at the sectoral levels as explained below.

The point differences in growth rates of income aggregates at constant prices has also remained higher under the 2011-12 series (Table 5). For instance, the GDP at factor cost under 2011-12 base year prices is observed to be higher by 0.9 percentage point in 2012-13 and then by 1.7 percentage points in 2013-14, compared to their corresponding growth rates under 2004-05 series. This broad trend has been noticed in expenditure components as well, except in GFCE and imports.

The point differences in the annual variations of deflators are observed to be fractional in the 2011-12 series (Table 6). This is essentially due to a large use in the new series of composite price indices of major commodity groups of WPI, with 2004-05 weighting diagrams, for estimating output at constant prices. It may be recalled that the 2004-05 series also used the same price index weights.

II.3.B Percentage size and growth differences at the sectoral level:

Analysis at the sectoral level of GDP/GVA shows that the size of physical industry GDP comprising four items, namely, mining & quarrying, manufacturing, electricity, gas & water supply, and construction, have been revised considerably upward in the 2011-12 series, but the size of services GDP got revised downward equally sharply (Table 7). In particular, upward revision of GDP of manufacturing and electricity, simultaneously with a considerable reduction in the GDP of trade, hotels and restaurant, is to be noted. While the previous revision in 2004-05 had also effected changes across all sectors, the large magnitude of revision in the 2011-12 series makes the series stand out. Such revision could be attributed to switch over in respect of corporate sector data from establishment approach to enterprise approach and to new sets of data that capture head office trade and other services as well. Apart from this, it has been conceded that the GVA contribution of trade had been overestimated earlier [Anant, 2016b]. The new series has been able to correct it because of the NSSO surveys on unincorporated enterprises which account for the large part of the trade sector.²³

Though the revisions in the levels of sectoral GDP were straightforward as described above higher for industry GDP and lower for services, the percentage point differences in growth rates were not so straightforward. The sub-sector 'electricity, gas & water supply' experienced large negative growth during both the years after revision (Table 8). However, in line with the observed upward revision in the GDP of mining and quarrying and manufacturing sectors under the new series, these sectors witnessed large magnitudes of point differences in the growth rate for 2012-13 and 2013-14. Particularly, manufacturing GDP in 2012-13 under new series grew 4.9 percentage points higher than that recorded for the same year under 2004-05 series, and 6.9

percentage points higher in 2013-14.²⁴ As a whole, industry and agriculture have registered higher growth under the new series compared to the old series. Such magnitude of differences had not been noticed in the previous revision. Interestingly, amongst the services sector items, 'trade, hotels and restaurants' is the only one to show sizeable point differences in growth in the new series over the growth under the 2004-05 series, despite substantial downward revision of its GDP in the new series (Table 8 read with Table 7).

A near similar trend has been observed even when we consider sectoral GDP at constant prices (Table 9). In fact, the positive point differences of industry in general and of manufacturing in particular stand out. Within the services sector, 'trade, hotels and restaurants' again exhibit positive point differences.

A noteworthy feature of sector-wise revision in 2011-12 series is the minor difference being noticed in the annual variations in deflators compared to their corresponding variations under 2004-05 series (Table 10). As referred to above, one plausible reason is that the WPI which is widely used in the series remains with an unchanged 2004-05 base. A comparison of the past two revisions shows that point differences in the annual variations of deflators across sectors generally used to be higher in the previous revision.

II.3.C Revisions in relative sectoral shares

Have the revisions of sectoral GDPs changed the individual sectors' relative shares? This question assumes significance considering the general consensus that India's growth is led by services sector, given its relatively higher share in total GDP. Although the service sector's share has been reduced to 48.6% in 2011-12 under the 2011-12 series from 54.9% under 2004-05 series, it continues to be the mainstay of the economy (Table 11). The share of industry has increased by 5.1 percentage points and of agriculture marginally by 1.2 points. The share of manufacturing sector in total GDP went up by nearly 2.5 percentage points between the two series from 14.7% to 17.2%. Within the services sector, there has been a sharp reduction in the share of 'trade, hotel and restaurants' by 6.6 percentage points, while that of 'real estate, ownership dwelling and business services' rising by almost two percentage points. The decline in the share of trade has been neatly explained by the Government as arising on account of the new source of data used, that is, NSSO surveys on unorganised enterprises, as referred to earlier and also an increase in the share of manufacturing at the cost of trade, as explained earlier.

Such marked changes across sectoral shares has not been the experience of the previous revision; in fact, the services sector share went up marginally by 0.4 percentage point under 2004-05 series over the 1999-2000 series; the shares of agriculture and industry fell by (-)0.3 percentage point each.

II.3.D Sectoral GDP shares versus employment shares:

Further, we have compared the proportion of employment in various sectors with their respective shares in GDP at factor cost (A comparison of Table 12 with Table 11). As is known, the employment share in agriculture is disproportionately higher compared to its share in GDP. There is some similar disparity in industry shares too, but the difference is not so large. Conversely, the services sector's share in employment is much lower than its share in GDP.

A related question is whether the revision of GDP across sectors has brought about changes in the divergence between sectoral employment and their respective shares in GDP, thus introducing any change in the incidence of sectoral income inequality. On the face of it, some obvious and some tentative inferences that can be drawn from the trends in income and employment shares of different sectors as between the two series. The first obvious result is that of the services sector. Its share in GDP has declined by 6.3 percentage points as between 2004-05 series and 2011-12 series (Table 11), whereas its share in employment has risen by 3.5 percentage points, implying that the earnings per employee would have fallen. In the case of agriculture, a sharp fall in employment share is accompanied by a marginal increase in income share, presenting yet another clear picture of possible increases in per person earnings. In industry, the picture is not so obvious because a sharp increase in employment share is accompanied by a noticeable increase in income share. To an extent some clarity can be introduced here by measuring GVA per employee which we have not done. Even this change in the incidence of sectoral income inequality has two components: first, an effect of change in the real income share and second, the effect of changes in the sectoral terms of trade which is explained by the differences in sectoral GVA shares at current and constant prices as well as sectoral deflators (Table 13).

Broadly, the results of the above sectoral income inequality in the successive NAS series may be summed up thus. The broad caricature of the disproportionality between income and employment shares traditionally known, as described above, stands generally reaffirmed in the new series too. The relative proportions presented in Tables 11 and 12 prove this point. At the same time, it should be admitted that the new NAS series shows a small improvement in the sectoral pictures of inequality. Thus, the GDP shares of agriculture and industry improve somewhat compared with the 2004-05 series; in fact, the industry share improves in the 2011-12 series compared with even the 1999-2000 series too. Correspondingly, the GDP share of the services sector in the new series has declined compared with the sector's GDP shares in both the previous two series. These changes in sectoal GDP shares have thus, tended to correct the disparities that exited *vis-à-vis* the sectoral shares in employment.

The above picture is based on GVA at current prices. A comparison of relative shares in the new series at constant as well as current prices and also the sectoral deflators is presented in Table 13. These data bring out first, that the reported improvement in the income shares of agriculture and industry as per the estimates for the initial year of 2011-12 get arrested in the estimates for the subsequent three years up to 2014-15. Thus, both at current and constant prices, GVA shares of agriculture and industry have slipped from the initial 2011-12 levels. But, in this slippage, there is a distinct difference as between agriculture and industry. In agriculture, the constant price GVA share has slipped at a faster rate than the current price GVA share, whereas in industry, it has been the other way around, with the current price share slipping at a faster rate than the constant price share. As a result, the terms of trade have moved in favour of agriculture, which is reflected in the deflators of agriculture GVA topping at 125.9 for 2014-15 (base: 2011-12=100) in contrast to the industry deflators sticking at very low level of 113.4 for that latest year.

II.3.E Key revisions in expenditure components of GDP

Earlier analysis of percentage differences of expenditure components had revealed that while the size of capital formation went up, other components declined under the 2011-12 series. It is likely that such revisions would have also brought about changes in the percentage shares of major expenditure components in total GDP at market prices. To test for this, we have considered estimates of expenditure shares for 2011-12 under both 2011-12 and 2004-05 series, and for 2004-05 under both 2004-05 and 1999-2000 series (Table 14). There has been a marked rise in the capital formation share, particularly GCF, up by 3.2 percentage points in 2011-12 under the latest revision compared to its corresponding estimates under 2004-05 series, with percentage shares of PFCE and GFCE declining and those of exports and imports rising somewhat.

Interestingly, discrepancies in both base years got reduced by (-)1.8% of GDP each time the base year has been revised. It must be admitted that the marginal differences in shares of expenditure components like in exports and imports may be explained by the fractional fall in the levels of GDP in the 2011-12 series compared with those in the 2004-05 series. Otherwise, the source of data being largely identical as between the two series, there is no cause for differences in base numbers as between the two series for exportimport data (more on it later).

----- At the institutional level:

Comparing saving and capital formation estimates across three types of institutional categories, namely, public sector, private corporate sector and household sector, which CSO continues to provide, will help to discern if there has been any change in the relative significance of each of the institutions. We have seen that quasi-corporations (QCs), hitherto part of household sector, are now being included under private corporate sector. Coverage of government sector has improved. New classes of assets, now categorised as fixed assets, such as intellectual capital and biological resources, may be higher for private corporate sector. Thus, one may expect some qualitative changes in the relative significance of sectors under the new NAS series.

We have first worked out percentage differences on successive revisions in gross savings and capital formation rates by institutional categories (Table 15). Under 2004-05 series, there had been marked percentage differences over 1999-2000 series across institutions, but the magnitude of such differences was relatively less in the case of private corporate sector except in the last year 2007-08 for which data are available. In contrast, under 2011-12 series, the estimates of savings and capital formation of private corporate sector have been scaled up considerably in comparison with the previous revision and also in comparison with the revisions of the other sectors. The GCF of private corporate sector under 2011-12 series was placed higher by 26.7% and 46.2%, respectively in 2011-12 and 2012-13, compared to their corresponding estimates under 2004-05 series. A similar trend is also noticed with respect to the sector's savings. It is obvious that adoption of the MCA 21 database and also widening of the coverage of the private corporate sector has tended to raise its share in total GCF as well as domestic savings.

Gross savings of public sector has also gone up under the new series, compared to 2004-05 series probably because of better coverage. The 'valuables', part of which is now attributed to physical savings of household sector, had contributed to the sector's savings sticking nearly at the same level as that of 2004-05 series, despite the exclusion of certain sub-institutional categories from its coverage.

We have further examined if savings rate and percentage share of each of these institutional categories have changed in both base years, under their respective series over previous series. There is a change in the method of relating savings to national income; now gross savings are taken as percentage of gross national disposable income (GNDI) at current prices (see Table 16). The overall savings rate in 2004-05 had remained more or less unchanged when the base year got changed to 2004-05 from 1999-2000. But, there has occurred a radical change when the latest base year revision to 2011-12 has taken place. As per the 2011-12 series, the overall savings rate has stood at 30.6% of GNDI in 2011-12 as per 2004-05 series, but shot up to 33.8% as per 2011-12 series (Part A of Table 16). This has largely occurred due to a sharp rise in the savings of private corporate sector that went up from 7.1% of GNDI in 2011-12 under 2004-05 series to 9.2% under 2011-12 series.²⁵ There has occurred some increase in the savings rate of the household sector too probably because of the improvement in the coverage of mutual funds which nurture household financial savings. It should be recognised at this stage, however, that this improvement in the saving rate is also partly because of an absolute fall in the denominator, namely, GNDI.

The above is also reflected in a decline in the relative share of household sector in total savings as per the 2011-12 series, compared to 2004-05 series by about (-)4.5 percentage points, with a concomitant rise in the share of private corporate sector by 4.0 points between the two series ^V for the reasons cited above (see Part B in the same Table 16).

Likewise, a notable change is seen in the investment rate, that is, gross capital formation (GCF) as percentage of GDP at market prices, which goes up by 3.0% percentage points in 2011-12 compared to its corresponding estimates under 2004-05 series (Table 17). Such rise is seen across all institutional categories except the public sector but the rise in the case of private corporate sector has been of a higher order, accounting in its entirety the overall rise in the level of capital formation under the new series. As a result, there is an increase in the relative share of this sector in the economy-wide capital formation with a simultaneous reduction in the shares of others, more sharply in the case of the household sector, both in GCF and GFCF. The private corporate sector's share in GCF jumps from 30.1% under 2004-05 to 36.1% under 2011-12 (both for 2011-12), while the share of the household sector slips from 46.9% to 43.4%.

II.3.F Discrepancies' are an inherent aspect of the methods of GDP estimation on the 'expenditure' side

Incidentally, we may digress a while and address the related subject of 'discrepancies' which has attracted the attention of many a commentator on the new NAS and which in turn has compelled the MOSPI and CSO spokespersons to repetitively clarify the issue [see Anant, 2016 and 2016a]. On this, our intellectual position is squarely in sympathy with the clarifications offered by the official agencies.

'Discrepancies' arise primarily because the aggregates of GDP derived through the product method do not tally with those derived through the expenditure method. In this regard, it should be borne in mind that for all practical purposes, what is crucial is GDP derived through the product method; it is that GDP number that is used to measure the real growth in the economy. When the sum of the estimates of private final consumption expenditure (PFCE), government final consumption expenditure (GFCE), GCF and exports minus imports is derived, it constitutes the total GDP from the expenditure side, which ideally should tally with the GDP estimates derived through the product method.

It does not mean that GDP derived through expenditure components is not important. It is, but there are two or three problems associated with the expenditure method of GDP which prevent it from tallying with the product method GDP. First, it is argued that we do not have independent, detailed data sets to derive the expenditure components of GDP. In the absence of regular expenditure data covering the entire economy with the same degree of periodicity with which we get production data, the expenditure data is estimated, based on the production side data, supplemented by some rules of thumb to extract the share of consumption and investment as expenditure items. As a consequence, the expenditure side numbers do not add up to GDP numbers derived from the production side [Anant, 2016a]. To elucidate further, foodgrains output is dissected into seed, feed and wastage, exports net of imports and change in stock based on some thumb rules and past evidences and the balance is treated as household consumption expenditure. Similarly, GFCF is derived from the data on production of capital goods in the index of industrial production. Secondly, the consumption components of production side data are valued differently; in food items, by the ex-farm price for the product method and by the retail prices for some parts of consumption. This is done in the absence of direct data on expenditures on a regular basis. Thirdly, expenditure side data entail more projections and rules of thumb rate calculations than production side data for measuring GDP. Finally, it should be recognised that even if independent expenditure side data were available for household consumption and fixed capital formation, there is no guarantee that such data would agree with production side data. It is the experience of statisticians the world over that some source differences always give rise to differences in estimation. For instance, field survey data on consumption or on capital formation do not entirely tally with the production data reported from the farms and the factories as gathered by the official agencies. Incidentally, the rising discrepancies between the estimates of consumption from the NAS and those from the quinquennial consumption household expenditure surveys have been extensively studied and documented from the days of B.S. Minhas onwards [see Kumar and Sharma, 2007]. Before we conclude this section, we may look at the estimates of discrepancies for different years under the two NAS series and at different stages of revisions in the new series (Table 18).

A few key observations can be made on these data. First, the size of discrepancies has been considerably reduced in the new series compared with that in the 2004-05 series, which suggests that the new data sources or the methodology of estimation or both are an improvement over the previous data sources and methods. Second, for almost all the years since 2011-12, the sizes of discrepancies have narrowed as more data become available when estimates move from Advance Estimates (AE) stage to Provisional Estimates (PE) stage, from PE stage to First Revised Estimates (FRE) stage and then to final or Second Revised Estimates (SRE) stage. Finally, however, as highlighted earlier, there are some noticeable differences in discrepancies as between the current price series and constant price series. The only reason for this appears to be the differences in the use of deflators which tend to accentuate the differences measured in real terms. as explained in the next paragraph.

II.4. Subtle Changes in the Growth Scenario Emerging from the New Series:

There are certain distinct features of growth that are discernible in the new series; they have been highlighted also earlier by us. To enumerate them briefly,

First, there is a clear contrast seen between current and constant price estimates of GVA at basic prices and GDP at market prices insofar as the trends in their annual growth rates are concerned. While growth at current prices has been falling, that at constant prices has been rising during the past four years from 2012-13 to 2015-16 (Table 19). As a result of these contrasting trends, the differences between the growth rates of both GDP and GVA at current prices and those at constant prices have considerably narrowed down over the years. This phenomenon can be attributed to the falling trends in GDP or GVA deflators (Table 20). This peculiar feature of the new series can be traced to the behavior of WPI, which has an overwhelming influence on the GDP deflators and which has been behaving in a parallel fashion with such deflators.

Second, another distinctive feature of the new series is the unusually large revisions effected in successive updating of GDP and GVA estimates. Unlike in the 2004-05 series, the revisions subsequent to the 2011-12 series have been much larger, and as explained below, this has much to do with alterations in the data base, particularly for the manufacturing sector. The AE and PE are based on IIP and advance filing of corporate accounts with stock exchanges. For the FRE, apart from IIP for mining, the results of a larger sample of (say, 3 lakh) common companies are applied. As explained below, because of the divergent sources of data and varied sizes of companies, the estimates undergo substantial revisions and hence, we have proposed that (a) corporate results be obtained by adopting the principle of stratified sampling instead of the simple random sampling method (see section II-6 below), and (b) the final growth rates be obtained by relating the likes with likes so that the growth rates are not worked out in a period over the latest available estimate (see section II.5.C below). This is specifically recommended for the estimates which remain in the revision cycle within the Advance and Provisional Estimates as well as FRE which subsequently get substantially revised downwards.

Third, there has been a phenomenal rise in government collection of indirect taxes in 2015-16 - it grew by 19.4% at current prices, but by 7.5% at constant prices indicating a larger rise

in its deflator (Table 20). As explained earlier, the changes in the deflator of taxes on products normally reflect changes in tax rates and collection rates of indirect taxes and, thus, the relatively higher growth of deflator of indirect taxes in 2015-16 shows that government has collected more revenue by taxing products and raising taxes. Also, it has been repeatedly emphasised by the government and CSO spokespersons that declining oil prices was the major cause for India's GDP growing at 7.9% in O4 of 2015-16. Anant, for instance, was quoted as saying thus: "Insofar as the growth is concerned, it is substantially on account of the subsidy compression. That is the major factor in the increase" (The Economic Times, June 2, 2016). A more pertinent question is not asked as to what subsidies have to do with working out the real growth? We trace it to the root of the problem which is that it is improper to take the concept of GDP at market prices to measure the real GDP growth in the economy (More on it later).

Fourth, a peculiar development is seen in the new series which concerns the phenomenon of "discrepancies". As rightly pointed by Anant (The Economic Times, June 2, 2016), discrepancies are inherent in the Indian NAS in which the methodology and data sources differ for the production-side of the GDP estimates (which is the principal estimate) from the expenditure-side estimates, the most of which are projected and extrapolated from the available base data. Our issue is not with the large size of "discrepancies" as some commentators perceive it. On the other hand, what we are intrigued by are the large differences in "discrepancies" between the current and constant price estimates and also between the successive revised estimates. To cite two instances, first, "discrepancies" have been (-) Rs. 44,117 crore, (-) Rs. 35,284 crore, and (+) Rs. 2,14,843 crore, respectively, during 2013-14, 2014-15 and 2015-16 at constant prices, In contrast, these "discrepancies" have all been positive but not so large at current prices, particularly in the latest year; they are Rs. 40,206 crore, Rs. 44,168 crore and Rs. 9,135 crore for the above three years, respectively.²⁶ The second instance concerns the changes effected in the sizes of discrepancies in the successive revisions of the NAS data series. For instance, the AE for 2015-16 at constant prices gave a figure of Rs. 58,745 crore as 'discrepancies', but at the next stage of PE, the size of "discrepancies" has shot up to Rs. 214,843 crore - nearly four-fold. A more intriguing trend is seen in the successive revisions in discrepancies effected for the year 2014-15 in its constant price estimates: (-) Rs 10,656 crore in AE; (+) Rs. 43,491 crore in PE; and (-) Rs. 35,284 crore in the FRE. In a subsequent section, we have speculated on the possible causes for these "discrepancies", broadly attributing them to (i) different deflators used, (ii) differing sources of data for the private corporate sector, and (iii) corrections in the sizes of "discrepancies" with the flow of better information at successive stages of revision.

Lastly, persistent falling trends in the domestic capital formation to GDP and, to an extent, savings to GNDI ratios appear to be a distinct feature of the new NAS series (Figure 1). Contrasted to this is the steady increase in the growth rate of GDP as per the new series from 5.6% in 2011-12 to 7.6% in 2015-16. In the 2004-05 series, the picture was somewhat different. The GCF to GDP ratio had registered only a marginal fall between 2010-11 and 2012-13 from 36.5% to 34.8% whereas the real GDP growth had slipped rather drastically from 8.9% to 4.5% during the same period (as per data available for the old series). Interestingly, the macro-perspective derived from the new series gets sorted out if the growth measurement is altered to reference points with likes over likes - an important justification for comparing comparable estimates as proposed below under 'reference points for estimating growth'.



II.5. How Real are the GDP Growth Estimates Themselves?

Under this enquiry, we raise three issues: one, whether GDP at market prices can be considered an appropriate measure of income; two, are the deflators used appropriate; and, three, what should be the reference period or base estimates for working out growth for the recent periods?

II.5.A GDP as a measure of income:

GDP is essentially a value added concept. Once the final goods are adjusted for intermediate consumption, what we get is the value added that constitutes, by foolproof economic logic, as the earnings of land, labour and capital, that is, factor incomes No doubt, it is thus a measure of income-factor incomes generated in the process of production ^V and not output.. The contention that GDP at factor cost has no observable vectors of prices and output is thus factually correct but it is only a technocratic argument and it misses out on the analytical thrust of GDP as a value added measure. That is, this measure of GDP at factor cost automatically gets quantity and price counterparts in measures of final goods and intermediate goods used to derive the value added. Value added in national income accounting arises, as is widely known, only as a construct brought in for measuring output or income without duplication. It does not require the rates of wages, interest, rent and profit to derive such value added numbers. Of course, if data on the vector of the quantities of *factor* inputs, as distinct from physical inputs), and that on the vector of factor prices were available, these would be the vectors of quantities and prices from which GDP at factor cost could be computed. In the present SNA framework, factor cost valuation is analytical construct in-built in the production approach. A genuinely accurate measure of real growth and also the one close to measuring social welfare should thus be GDP at factor cost - a historically accepted concept, and not GDP at market prices which are influenced by the presence of indirect taxes and subsides, as argued earlier.

The new NAS series has embraced the use of GDP at market prices, that is, GVA *plus* indirect taxes net of subsidies, as the true measure of GDP. The authorities have done this by falling in line with the 1993 and 2008 UN SNA. We have probed

into the genesis of this adoption. A detailed study traces this development to the writings of the US Department of Commerce without closer examination of its economic significance [Shetty, 2015]. Comparing GDP at market prices against GDP at factor cost, well-known economists have given this judgment: "addition of indirect taxes to factor costs would result in double-counting and an exaggerated national product total" [Kuznets, 1951]. The US system has accepted that GDP "is still the best measure of market value of goods and services, it is not necessarily a measure of welfare or even a significant measure of standards of living" [Greenspan, 2000]. For us GDP should indeed be a true measure of the people's standards of living, though not a wholesome social welfare measure; it cannot be, just a market-based commercial or accounting concept. With that understanding, distributional issues concerning the income shares of labour and capital are capable of being analytically addressed through the concept of GDP at factor cost and not through the concept of GDP at market prices By accepting the US Department of Commerce's view, the UN SNA has grievously erred and departed from the most valid concept of GDP at factor cost - a welfare measure. Such an approach using GDP at market prices alone has harmed the analytical construct of the true national income measure. It included indirect taxes net of subsidies. A legitimate question is not asked as to how growth can be raised by increasing indirect taxes. To cite an example, in a nominal GDP growth of 8.7% during 2015-16, there has been a 19.4% increase in indirect taxes or an 11.9% increase in indirect taxes net of subsidies. The growth in GVA at factor cost may not be much different, but the question is one of not neglecting an important concept in the national income parlance.

To an extent, the method of deflating indirect taxes may moderate the growth in real GDP compared to the exaggerated growth in nominal terms. That is, CSO deflates the indirect taxes levied on quantities of products by extrapolating using volume indices of products; for those levied on values of products, it uses volume index with tax margin from the base year; and new taxes, changes in tax rates and collection rate increases are treated as price changes. With this method of using volume changes for deflation of indirect taxes, it is claimed that the real growth in GVA at basic prices and GDP at market prices become by and large similar for which there is some evidence in the growth rates. The growth rates at current prices during 2015-16 were 7.0% in GVA and 8.7% in GDP, with a difference of 1.7 percentage points, that is, far higher than those in the previous years. This difference was reduced to 0.4 percentage point in the same measures at constant prices-very similar to the earlier three years.

The import of the above methodology used for measuring the deflators for product taxes has manifested itself in differing growth rates of implicit deflators of various NAS aggregates as presented in Table 20. The growth rates of implicit deflators of both GVA and GDP moved in tandem till 2014-15 with only marginal differences, but in 2015-16 they have diverged considerably by about 1.5 percentage points. The implicit deflator of product taxes remained marginally higher than GDP deflator over the years but in 2015-16, this divergence has considerably widened. While the implicit GDP deflator grew at 1% in 2015-16 against 3.3% in 2014-15, the implicit deflator of taxes on products grew at 13% in 2015-16, compared to 4% in the previous year. The divergence in the growth rates of GVA and GDP in 2015-16 in nominal terms but not in real terms, as also their respective deflators in the same year, should thus be attributable to the novel deflator method employed for product taxes. Until the 2004-05 series, the CSO had been using the same deflators for GDP at factor cost and at market prices. While the new deflator method is indeed novel and helps to correct the artificially inflated nominal GDP growth due to indirect taxes, it does not obviate the basic objection to the use of an inappropriate concept of GDP for measuring real growth [Rajakumar and Shetty, 2016b].²⁷ More importantly, the expansion of nominal GDP due to the inclusion of indirect taxes tends to overestimate the size of per capita GDP - an economic welfare measure.

At this stage, it is necessary to recognise that the complex system of national accounts is capable of diverse analytical constructs, each of which has its own importance. First, there is the supply and use tables (SUT) framework for balancing supply and demand. Such balancing exercise involves the reconciliation of discrepancies that arise between the production side and the expenditure side due to the use of disparate data sources.²⁸ This is obviously done at GDP at market prices as the following final results suggest (Table 21). GDP figures at current market prices contain over 7% of indirect taxes which by no stretch of imagination can form part of real GDP estimation.

Second, GDP at factor cost which measures the value added as the contributions of labour, capital and other factors in the production process. The measure so derived represents true value added as it is not coloured by the presence of any items outside the contributions of factors of production. This is the true economic measure of the people's standard of living as earnings of the factors of production; it is so particularly when GDP is converted to per capita terms.

Finally, there is the *Consolidation Accounts of the Nation* which provides a comprehensive accounting framework integrating complex economic activities including capital finance and external transactions accounts, put together in the form of a set of national accounts for depicting the overall picture of the economy. Each of these has independent analytical importance serving different purposes. It is necessary to recognise that it is improper to apply one measure to another which is unrelated. The balancing exercise under SUT is done at market prices but that does not qualify for measuring real growth or for working out per capita income - an economic welfare measure. The latter has to be done at factor cost.

II.5.B Appropriateness of deflators used:

In the new NAS, there has arisen a major source of distortion in deflators, that is, vastly divergent behaviour of WPI and CPI insofar as their respective annual inflation rates are concerned. The GDP deflators themselves are a conglomerate based on individual deflators used for final goods consisting of consumption and capital goods, and services; they sometimes cover output value indices, or WPI or CPI themselves.²⁹ The WPI is based on wholesale price quotations of producers of domestically produced commodities such as basic, intermediate and final goods and does not reflect taxes on products. The CPI has market price as the reference point but its basket comprises consumption items of goods as well as services, and as such they absorb product taxes and subsidies. This may also include prices of imported goods, if they are consumed. Given these structural differences in the coverage of various indices and their weighing diagrams, some differences may be noticed amongst different price indices (Figure 2). However, the GDP deflators under new series move mostly in tandem with WPI.



While rebasing NAS, CSO has now relied on both CPI and WPI for deflating output of a number of commodities. But the CPI used for 2011-12 series has been indexed to a recent period, that is, 2012, whereas the WPI still has price weights of 2004-05. If the structure of primary articles and manufactured output has undergone changes by 2011-12, the WPI weighing diagram would also have got altered. The failure to use price weights of more recent point in time is likely to impact estimates at constant prices, if composite price indices have been used as deflators - indeed, that has been the case.

The question is not one of any inappropriateness of deflators; rather due to the peculiarity of the situation since the third quarter of 2011-12, the differing behavior of CPI and WPI have contributed to the aberrations in the behaviour of deflators.

II.5.C Reference points for estimating growth:

Moving on to the third issue, namely, the relevant reference period or base estimate to arrive at the real growth, we first discuss various phases by which CSO releases estimates of national income. Firstly, CSO releases advance estimates (AE) of a given financial year much before the closure of the financial year, sometime in the second week of February of that year, provisional estimates (PE) on the last day of May of the next financial year, first revised estimates (FRE) on the last Friday of January of the succeeding financial year, and finally second revised estimates (SRE) in the last quarter of the second succeeding year.³⁰ As at present, under the NAS new series, we do not have a single year for which GDP estimates are available through these four rounds of estimation. We do have AE, PE and FRE for 2014-15 and, FRE and SRE for 2013-14.

Rajakumar [2016] has observed that for the year 2013-14, SRE of real GDP and GVA are about 0.8 and 0.9 percentage point, respectively, lesser than their respective FRE. While FRE of GDP in 2014-15 is 0.9 percentage points lower than its PE, it is about one percentage point lower compared to AE. A similar trend is noticed in the case of FRE of GVA which is less than its corresponding PE and AE. Differences are not much between PE and AE in 2014-15 and 2015-16.

Thus, there is not much change between AE and PE, but a major revision happens between PE and FRE and further between FRE and SRE.

The root cause for the above differences is that data sources radically change as we move from AE and PE to FRE and from FRE to SRE. As shown in Table 22, AE and PE have the same data sources, namely, IIP for some purposes and advance filing of corporate accounts with stock exchanges, but for FRE and SRE, the corporate sector data sources are 3 lakh common companies and 5.25 lakh companies, respectively. As explained in an earlier sub-section, the blowing-up in such situations are quite distinct and different; hence we see divergent results.

Looking at it differently, as shown in Table 23, there are persistent declines in the estimates of GDP and GVA (both at current and constant prices) from one stage of the revision cycle to the succeeding one, from AE to PE, from PE to FRE, and finally from FRE to SRE. The implications of such persistent downward revisions are significant in two ways: first, lower estimates of GDP or GVA in each of the successive steps of estimation get hidden from the public glare. What gets highlighted is the inflated growth over the lowest estimate of the previous year. Thus, when PE is published for 2015-16, the growth rate is worked out over the latest estimates available for 2014-15, that is, the FRE for that year. But, the fact that the FRE of that year is a considerably reduced figure gets ignored. Between the PE and FRE of 2014-15, there was a reduction of 0.9% in GDP at constant prices or that of 1.0% in GVA at constant prices. Thus, if PE of 2015-16 is compared with the PE of 2014-15, we get a real GDP growth of 6.6%; it is when we compare the PE of 2015-16 over FRE of 2014-15 that we get a real GDP growth of 7.6% which is officially published and publicised.

Such revisions may be attributed to a variety of data sets resorted to in different phases of estimation. Data sets, for instance, used for estimating manufacturing GVA of private corporate sector, which contributes nearly two-thirds to total manufacturing GVA, is not much different for AE and PE but there are significant differences between PE and FRE and between FRE and SRE (Table 23). Given this, should we consider the latest estimate available for the previous year as the reference point? Given the enormity of revisions arising from taking recourse to different data sets at different points of estimates, we contend that comparing latest estimates of GDP of a given year over the latest estimates of its preceding year may be less desirable; such a comparison would imply comparison of data which are non-comparable.

We are conscious of the fact that with the arrival of firmer data, the quality of estimates improves such that PE results appear better than AE, FRE results are better than PE and SRE results are better than FRE results. When we say better, we emphasise it as significantly better because the improvements of one stage over the other are sizeable such that they cannot be ignored while relating them for the purposes of computing the growth rate. Here, we are also conscious of the fact that the preceding year's data become the benchmark estimates for moving forward the growth estimates. But, such benchmark yardstick becomes valid when the basis of revision does not radically change from one phase of revision to another. But, in the new series, the relevance of the benchmark gets completely negatived, as we shall see presently.

We have concrete evidence for the successive results being significantly different from each other. This evidence is self-explanatory as detailed in the new methodology and data sources used for the new series [MOSPI, 2015a]. In particular, this is relevant for "the non-financial private corporate sector which contributed about 32% of total GVA in the economy for the base year 2011-12" [Sinharay, Kumar and Anant, 2015] and about 76% of the manufacturing GVA. There are two components of this evidence. First, as cited earlier, the filing of accounts by the companies and their use for the NAS is a dynamic process - a process by which the number of companies covered goes on increasing. As per the methodology, there is the necessity of scaling up. It is this size of scaling up that gets reduced as the coverage improves. When a majority of the MCA 21 data are covered, the scaling up is just 15%; this is for the SRE. For the FRE wherein about 3 lakh common companies are covered, the scaling up would be more than 50%. And finally, at the lowest level end of coverage at the AEs and PEs, the scaling up would be around 70% or more. Such differing scaling up would of course have differing contributions to the end results.

The second attribute of the dynamic process of corporate accounts filing relates to the differing growth rates emerging from the nature of companies filing accounts at successive stages. On this a neat set of data has been presented in Sinharay, Kumar and Anant [2015]. It is brought out therein how, for instance, the rates of increases in GVA have been found to be in ascending order in relation to their relative size (23AC/ACA, XBRL non-listed and XBRL listed), that is, smaller companies are growing at a relatively far higher rate than bigger companies.

----- Comparison of apples over apples and not apples over oranges

Therefore, though unconventional, we propose to compare PE of 2015-16 over PE of 2014-15 and contrast it with the usual practice of taking PE over FRE (Table 24). A difference in

the growth rate of real GDP, by about one percentage point, is noticed from 7.6% to 6.6% if we use PE of 2015-16 over PE of 2014-15. So is the case with real GVA, the growth of which gets corrected from 7.2% to 6.1%. Such a change is discernible across-the-board except in agriculture and public administration. Real GVA of manufacturing sector (constituting 17.5% of total GVA) wherein the corporate sector blowing-up is the most important, witnessed a steep decline from 9.3% to 2.3% if we consider PE over PE, whereas in the case of construction sector growth improves from 3.9% to 11.7%. Sectors such as trade, hotel, etc., contributing 19.2% to the economy-wide GVA, also record a dip from 9.0% growth to 4.9%. Considering the sizeable nature of differences in the growth indicators from phase to phase, it is advisable to compare what may be said to be a comparison of apples over apples rather than of apples over oranges.

-----"Bench Mark Indicator" method for data revisions

We are aware that the above proposition of comparing PE of one year over PE of the previous year for working out annual growth rates instead of comparing PE against FRE of the preceding year as done now by the CSO, has been questioned by Anant [2016c]. He has done so on the ground that, based on "Bench Mark Indicator" method as a procedure recommended by the UN SNA for the revision of SNA series, the benchmark estimates are the previous year's First Revised Estimates. Thus, according to Anant, "Comparing PE of the current year with PE of previous year is therefore methodologically inappropriate as the benchmark estimates on which the indicator growth is applied are different.³¹ Further, use of non-standard approaches is inconsistent with the fundamental principles of official statistics". This is an important statement as periodic revisions have to be undertaken to provide continuous and timely time series. But, our contention is that if the new data sources used at the stages of PE are far removed from, and inconsistent with the firm final data set, the intervening results may have serious questions of credibility. With a view to examining the issue raised by Anant [2016c] closely, we have delved into a number of authoritative sources, such as the Eurostat and European Central Bank,³² OECD and Eurostat,³³ International Monetary Fund (IMF),³⁴ UN SNA 2008³⁵ and the SNA News and Notes³⁶ all of which have provided guidelines broadly on the 'good practices for revision policies' both for short-term and long-term revisions of official statistics, primarily National Accounts; they have discussed at length the 'Bench-Mark Indicator' approach on which Anant [2016c] has based his critique of our proposition.

----- Guidelines on data revisions

We have done this extensive coverage because the issue raised by Anant [2016c] is an important one. In this literature, a number of issues have been posed and guidelines set out for revisions of official statistics. In this respect, the CSO's approach to adopting "revision cycles" should be commended as it has been observing all general principles of good governance in statistics as set out in the IMF Working Paper and the other documents referred to above; its approach has been very transparent in providing advance information on the revision calendars as prescribed by the IMF's special data dissemination standards (SDDS) and general data dissemination system (GDDS). However, the revisions themseleves involved in the latest NAS and the resultant growth rates in GDP disseminated have raised some misgivings when we juxtapose the results against the guidelines contained in the above literature. In the maze of issues that the above literature raises, we identify those that are of direct relevance to the justification of the proposition made by us here.

First, as part of the OECD/Eurostat study referred to above, a case study of the revisions of Dutch estimates of GDP volume growth was made. That study had the following distinct question posed:

"It is an interesting question, whether estimates before and after a benchmark revision should or should not be compared to each other. On the one hand, it may be argued that comparing estimates based on different definitions or concepts is like comparing apples and oranges; on the other hand, one may argue that users are still interested in the continuity of time series even if there has been a benchmark revision. If benchmarking results in large changes, that will be of concern to the users" [Hoven, 2008, p. 3].

Secondly, in this respect, we reproduce a key principle the IMF Working Paper has set out which may appear common place but very significant in the context of the revisions effected in the CSO's new NAS series. The IMF Paper writes,

On Accuracy:

"Although they [policy makers] want timely data on which to base their decisions, they do not want to take a decision based on data that are likely to change substantially in the next month or next quarter" [Hoven, 2008, p. 10].

It is in this context that, we recall former RBI Governor D. Subbarao's statement as to how he was confronted with the fluctuating GDP numbers and how difficult it was to formulate monetary policy: "The poor quality of data is compounded by frequent and significant revisions, especially in data relating to output and inflation which are at the heart of monetary policy. As Governor Y.V. Reddy put it with his characteristic wit, everywhere around the world, the future is uncertain: in India, even the past is uncertain. It is this data uncertainty under which the Reserve Bank has to make policy; it does not have the luxury of waiting until the past becomes crystal clear".

"...Flawed data was also the culprit behind the 'stagflation' puzzle we had encountered in 2012 when growth moderated steeply from 8.9 per cent in 2010-11 to 6.9 per cent in 2011-12 even as inflation remained elevated. ... It now turns out that there was no puzzle, after all. Subsequent data revisions tell us that growth had not slowed as sharply as indicated by real-time data, which explains both the presence of high inflation and absence of any stagflation" [Subbarao, 2016, Pp. 54-55].

As displayed in the data presented in Tables 22 and 23 earlier, there have been downward revisions in each of the four years, 2011-12 to 2014-15, from AE to FRE in real GDP numbers and more so, in GVA of the manufacturing sector. For instance, if the Reserve Bank of India were to formulate monetary policy based on PE or even FRE, they would assume certain real GDP growth or certain manufacturing growth, which finally turn out to be significantly lower. There is a definitive reason which has contributed to this, that is, the shifting data sources for the GVA estimation of the manufacturing sector, as elucidated earlier.

Finally, the most forceful reason advanced by Anant [2016c] for questioning our proposition of PE over PE, is the 'Benchmark-Indicator Approach'. For this, as cited earlier, Anant has argued that for the PE of 2015-16, "the benchmark estimates are the previous year's First Revised Estimates". We beg to differ here. If the nature of the source data used for the two sets of estimates is qualitatively different, the benchmark estimates do not have to be the previous year's FRE. When the data base for the two sets of results, PE and SRE, are significantly different and when there is a concrete evidence of the end results in terms of the growth rates being different, there is no justification for following that strategy. Our considered view is that when step-by-step revisions are taking place and the finality of estimates for a year are yet to be reached, the CSO should disseminate GDP and sectoral growth rates based on benchmark estimates of comparable data sets rather than non-comparable data sets. In this respect, we have an authoritative guidance set out in an article by BarbroHexeberg of the World Bank in the SNA News and Notes [Issue 11, May 2000] which has deliberated at length precisely on the subject of "the benchmark indicator approach". To quote this source:

"Generally benchmarking means combining a time series of data (indicator) with more reliable level-data from one or several benchmark years for the same variable. In the benchmarking process the benchmark(s) solely determine the overall level of the series, while the indicator determines the (short-term) movements. Thus, only the movements, and not the overall level, of the indicator are of any importance. In the context of conducting major revisions the indicator may be: the old national accounts estimates for the series; the original source data for the series; recompiled source data for the series; ora related series" [Hexeberg, 2000, p. 8].

To elaborate on the proposition made above, the first three attempts of the revision cycle - AE, PE and FRE, are based on data which are conjunctural in nature. The time series arising out of them should be segregated from the time series based on SRE and final estimates. In those conjunctural series, the growth rates to be published and advocated for the use of economic policy formulation should be likes over likes and not apples over oranges. This proposition should be placed as an official arrangement for growth estimates.

II. 6. Need for More Care in Adopting MCA 21 Database:

The use of MCA 21 database, besides aiding to follow enterprise approach, has been perceived to overcome the basic problem associated with building up of population estimates for the private corporate sector, as they contain data of more than 5.5 lakh active companies compared to erstwhile narrow data base of RBI company studies based on a few thousands. The problem lies in the way a company is classified under an industry group or under a state based on Corporate Identity Number (CIN) code and the use of blow-up factors to arrive at population estimates.

The CIN is a 21-digit alpha-numeric code assigned to each of a company by the Registrar of Companies (ROC) at the time of registration. It is a unique code intended to facilitate tracking a variety of information that a company holds with ROC. The first digit of CIN is a character that indicates if a company is listed (L) or unlisted (U). Next five digits provide description of the economic activity (or industry) that a company has been engaged with (belong to). Next two are alphabets denoting the state in which the company is registered (for instance, KL for Kerala). This is followed by four digits of the year of incorporation, usually a calendar year. Next three alphabets denote type of ownership (for instance, GOI for Companies owned by Government of India, SGC for Companies owned by State Government, PLC for Public Limited Company and PTC for Private Limited Company).³⁷ And, finally, the last six

digits is the registration number (ROC code) issued by ROC to a company at the time of its registration. Thus, the CIN reveals several information of a company that is of interest to national income accounting such as industry group or state or ownership type.

The problem is that once a company has been issued a CIN code, it remains unchanged. The ROC may change CIN code provided the company makes a fresh application to that effect. This can pose problems for estimating output and thereby value added of an industry. Consider a company that has been set up as one belonging to the industry of electrical goods or auto components manufacturing. If the company eventually becomes a trading company, its value of output will still be captured under the original industry code. This can potentially complicate the understanding of the structure of the economy.

While CIN code reveals the state in which a company has been registered, it may so happen that most of the company's activities may be spread across the country or concentrated in a state other than where it has been registered. Relying on CIN code for estimating output in these states could be misleading.³⁸ The use of MCA 21 data said, thus poses unprecedented challenges for estimating state domestic products.

Moreover, the use of blow-up factor for uncovered companies could lead to an overestimate if uncovered companies do not exist (and therefore do not comply with the e-filing requirements) and, as pointed out by Nagaraj [2015a], due to the presence of companies, primarily PTC, not actively engaged in economic activities. We concede that it is not the role of the country's statistician's to determine the working status of registered companies, but we cannot ignore the chances of upward bias inherent in the blow-up method. ----- Need to adopt the principle of 'stratified sampling' rather than 'simple random sampling' approach to derive corporate results

These discussions of MCA 21 database in the above two sub-sections, particularly concerning the issues of blowing-up for the uncovered companies, raise an important methodological question. At present, the CSO adopts a method which is derived from the simple random sampling technique. That is, if 85% of the companies based on paid-up capital is covered, the resultant numbers are scaled up by another 1.1765 (100 w 85) irrespective of the size or any other characteristics revealed for the balance companies.³⁹

What is important is to stratify the companies based on at least their sizes. This stratification is possible only based on PUC data as no other data such as output are available; no doubt, even the PUC data belong to historical periods but there is no other option available for want of any other data.. When weights are assigned, based on even such stratification, the eventual results would very likely improve. An important stratification method that the CSO adopted at their FRE for 2014-15 [CSO, 2016] was the use of separate scaling factors for 'public limited companies' and 'private limited companies' in the MCA 21 database instead of a common scaling factor used earlier.

The issue of the private corporate sector calls for a more robust application of the principle of stratified sampling based on the sizes of companies within both the sets of companies rather than the simple random sampling method. This is possible to be adopted as the paid-up capital series are available for the uncovered companies in the same MCA 21 data base. The stratification can be done on the basis of the size of paid-up capital in respect of both covered and uncovered companies separately for private limited and public limited companies; we strongly urge the CSO to adopt this stratification method.

....Adoption of MCA21 Database Calls for an Independent Statistical Audit

As brought out earlier, one of the most conspicuous aspects of the new NAS series has been the use of MCA 21 database in respect of corporate enterprises in a much more comprehensive manner than hitherto. This database has substituted the earlier data uses in two key respects. First, it has replaced the use of RBI sample studies on different types of companies sector generating estimates for certain key components of NAS, particularly corporate savings and investment. Secondly, it has facilitated the application of 'enterprises' approach to the corporate sector replacing, as far as possible, the 'establishment' approach, which is inherent in the data produced by the Annual Survey of Industries (ASI) data.

ASI collects data from individual factories serving as independent 'establishments', whereas companies serve as umbrella 'enterprises' harbouring one or more 'establishments'. When such companies are classified in the MCA 21 data base as 'manufacturing companies' statistically possessing more than 50% of output value from manufacturing activities, their overall level of manufacturing output would be higher than what the ASI data depict. Apart from that, such manufacturing companies also provide postmanufacturing value added generated through marketing or trading as well as other services. As emphasised by the Government [MOSPI, 2015], "This component of value added was earlier being excluded from GDP because it was not covered in ASI, although the concerned enterprises belonged to the manufacturing segment".

-----Intriguing Results

Be that as it may, the manufacturing GVA and their annual growth rates in the new NAS series have produced peculiar results, particularly when they are compared with similar results of 2004-05 series. As may be seen from Table 25, the new series have radically altered the sector's growth scenario. For instance, the earlier reported manufacturing growth in real terms of 1.1% for 2012-13 has been pushed up to 6.2% under the new method or for 2013-14, from (-)0.7% to 5.8%. Or, for the latest two years, when IIP has registered growth rates of 2.8% in 2014-15 and 2.4% in 2015-16, the new NAS series places the manufacturing growth at constant prices for these years at 5.5% and 9.3%, respectively.

When confronted with such scenario, the officials have rightly defended the new official series by arguing that IIP provides growth rates of physical output, whereas the NAS provides such growth rates in value added estimates. Be that as it may, it deserves to be noted that whenever the ASI data were used even in the 2004-05 series, the same were also dependent on value added estimates and not physical output figures.

But, a more important point is that the new series has a few other kinds of improvements which have made a significant difference to the revised estimate, as compared to the previous series. First, the new system captures better the coverage of small and medium industries. With a substantially wider coverage of as many as 5.24 lakh companies, the representation for smaller companies increases. And, as Sinharay, Kumar and Anant [2015] bring out, the inclusion of smaller companies, which have shown higher growth in GVA than larger companAllies, has contributed to an upward revision of manufacturing growth. Secondly and more importantly, the services rendered by head offices of manufacturing enterprises are captured through MCA 21 data unlike in the ASI.

All these changes have a strong statistical reason, but the moot question is: do they justify such metamorphic alterations in the growth rates as 1.1% becoming 6.2% or (-)0.7% becoming 5.8% (Table 25). We have attempted a tentative analysis of these data, as shown in Table 26.⁴⁰ In it we have tried to make an estimate of the possible size of GVA attributable to Head Office (HO) operations, that is, the post- manufacturing marketing or trading and other services produced by the enterprises. These estimates show that such GVA contributions have not only been very large - as much as ranging from 26% to 38% of the pure manufacturing GVA, but also their proportions have jumped from 25.9% in 2011-12 to 35.3% in 2012-13 and further to 38.6% in 2013-14. This further implies that the growth rates in such contributions have been phenomenal, that is, by 40.4% in the first year and by another15% in the next year.

These suggest that not only the level of aggregate GVA including head office operations appear much higher than the GVA generated as per ASI data but also the contributions of such Head Office operations grow at phenomenally high rates. It is these contributions that catapult the manufacturing GVA growth rate, in the examples given here based on ASI data availability. from 3.1% to 10.8% in 2012-13 and from 5.7% to 8.3% in 2013-14. On the face of it, such upward revisions not only in the levels of GVA but also in successive growth rates appear unrealistic. They appear unrealistic because the estimated contributions of head offices gyrate like this: a rise of 40.4% in 2012-13 followed by a rise of 15.5% in 2013-14. The question is: how come they can persistently rise like that? Hence, it is necessary for the CSO to take a fresh look at these data, if necessary by undertaking a special independent audit of the MCA 21 database and the way it has been used for NAS estimates, which have contributed to these misgivings.

II.7. Summing Up

Undoubtedly, the latest revision exercise has been very commendable and the methodological changes and changes in the coverage of data are indeed praiseworthy. The changes have been innumerable: vastly expanded coverage of the private corporate sector, improvements in the coverage of the local bodies under the public sector, inclusion of data sets for the capital market and supervisory institutions in the financial sector, use of effective labour input method for the GVA estimation of the unorganised sector, and adoption of the "enterprise" approach as against "establishment" approach for mining and manufacturing sectors, and revision in the estimation of FISIM component of output of banking and other financial intermediaries, are some of the crucial changes that stand out. Likewise, conceptual changes like the introduction of GVA at basic prices at the aggregate as well as sectoral levels and the adoption of GDP at market prices as GDP instead of GDP at factor cost at the aggregate level, classificatory changes at the sectoral level, and publishing of GVA and other macro numbers for institutional sectors for the first time, are the other sets of changes that are very striking.

While examining these changes, we have discerned some important questions which we think call for fresh scrutiny at the official level.

First, at the conceptual level, the appropriate measure to derive growth rate in the national economy appears to be real GVA at basic prices and not GDP at market prices (or GDP). Simultaneously, it is necessary to publish data on GVA at factor cost, which has distributional value at an analytical level. No doubt, we recognise that for India, GVA at basic prices and GVA at factor cost are quite close to one another, because indirect taxes and subsidies on production are quite small at present. In fact, due the prevalence of very high level of production subsidies, production taxes net of production subsidies have reached negative numbers thus: (-) 9,652 crore in 2013-14, (-) Rs. 23,589 crore in 2014-15, and (-) Rs. 27,413 crore in 2015-16.

Second, changes effected at successive rounds of GVA revisions lead to the question of what should be considered as the reference estimates for arriving at growth rates for later periods. We believe that while operating in a revision cycle before second revised estimates or final estimates are put in place, growth rates should be measured by comparing likes over likes, that is, AE over AE and PE over PE and not PE over FRE.

Third, the tenability of the implied use of 'simple sampling technique' for scaling up purposes in respect of the private corporate sector results appears suspect; it calls for adoption of stratified sampling procedures as the sizes of companies matter.

Fourth, private corporate sector and its data, especially those attributed to the activities of the Head Offices, call for a closer examination. One cannot overlook the corporates' proclivities for window dressing of sales 'and profits through various devices such as tax avoidances, transfer pricing and focus on share market image building. There 'are reports of huge numbers of fictitious or shell companies getting registered. Influence of these factors will impact corporate accounting and hence there is need for scrutinising the content and quality of MCA 21 database providing results at the enterprises level as compared with the results at the establishment level.

Fifth, the dichotomy between the declining trends in savings and investment rates on the one hand, and rising growth rate on the other, complicate the understanding of the emerging macro-economic relationships under the new series. They do not tie up. Reconsideration of the reference estimate for working out growth rates provides some solace in that such an approach to deriving growth rates based on comparable estimation resolves this issue to some extent; but the database for the domestic saving and capital formation estimations may call for a fresh look. As explained in Section II.2.E.iv earlier, the entire set of the acquisition of "valuables" gets included as part of GCF. In our view, "valuables" by no stretch of imagination can be considered as constituting part of productive capital.

Sixth, the use of WPI with old weighing diagram as deflators undermines its appropriateness. Every time the NAS is rebased, price indices should be also rebased. More so, given the fact that GDP measures output at market prices, WPI may be irrelevant and inappropriate as a contributor to GDP deflator. A way to overcome these problems is by advancing the construction of a producer price index or PPI.

And finally, the misgivings about the nature of the new estimates arise from a number of other concerns such as the need for the application of double deflation method in manufacturing, and the method of reconciling production-side and consumption-side estimates The statistical establishment is now admittedly engaged in producing what are called Back Series of National Accounts for which it would apply the same method and data sources with which many academicians have become uncomfortable. Therefore, we are constrained to suggest the appointment of an independent expert group to examine afresh all the issues that have arisen in the recent revision of National Accounts and to offer recommendations to set the matters right.

Part III

Special Coverage of Two Sectors

II.1. Banking and Other Financial Services

Even though the financial sector's contribution to the economy's overall GVA is not large, just less than 6%, its role in mobilisation of savings and financing current production as well as long-term investment and generally stimulating economic activities, is widely recognised to be quite significant. The sector also consists of vastly diversified sets of institutions entailing innovative methods of measuring their contribution to national income or GVA. In the processes of modernisation and globalisation, vast changes are taking place in the sector in terms of the infusion into the system of a number of new institutions and financial instruments - all calling for special methods for capturing their output activities.

III.1.A. Coverage of Financial Institutions and the Methodology of their GVA Estimation - Some Significant Changes in the New Series

Broadly, the SNA 2008 has recommended the sub-sectoring of the financial corporations into nine sub-sectors (para 4.102). In Box III.A, we present these sub-sectors and their corresponding Indian institutions which are now covered in the new NAS:

Box III.A Various Categories of financial Institutions as per SNA 2008 and their corresponding Indian Counterparts	
Sub-Sectors [SNA, 2008]	Indian Counterparts
(i) Central Bank	(i) Reserve Bank of India (RBI)
(ii) Deposit-taking corporations except the Central Bank	(ii) Public sector banks, private sector banks, RRBs, foreign banks, cooperative banks and Post Office Savings bank
(iii) Money market funds (MMF)	(iii) 27 Money market mutual funds for which SEBI has supplied the consolidated revenue accounts and balance sheet data
(iv) Non-MMF investment funds	(iv) 42 non-MMM Funds similarly registered with SEBI and for which data are supplied by it.
(v) Other financial intermediaries except insurance corpo- rations and pension funds (ICPF)	(v) The series of long-term financial institutions at the Central and States levels like IFCI, IRFC, NHB, NABARD, SIDBI, EXIM Bank, SFCs, HUDCO, STCI and all NBFCs in loan finance categories;
(vi) Financial auxiliaries	(vi) Financial auxiliaries are those that were not involved in direct risk taking such as supervisory bodies like SEBI, IRDA, and PFRDA; these also cover, stock exchanges, stock brokers, insurance agents & Asset Management Companies (AMCs) of Mutual Funds and other miscella- neous NBFCs
(vii) Captive financial institutions and money lenders	(vii) Money lenders and captive institutions like Self-help groups (SHGs) and other unincorporated institutions (they are captive because they transact within a narrow group of units or beneficiaries)
(viii) Insurance corporations (IC)	(viii) Insurance companies; all public sector and private sector insurance companies in life and non-life (general) insurance business
(ix) Pension funds (PF)	(ix) Pension Funds, Employees' Provident Fund Organisa- tion (EPFO) three other pension funds in the public sector, and eight private pension funds registered under the PFRDA

Not all of the financial institutions were covered in the 2004-05 or earlier series. The bulk of the new additions incorporated for the first time pertain to capital market and money market institutions. Amongst mutual funds, only the Unit Trust of India (UTI) was covered earlier; in the new series all other mutual funds numbering about 69 in the public and private sectors are comprehensively covered for the first time. In addition, the activities of the following institutions have been incorporated in the new series: stock brokers and stock exchanges; financial regulatory authorities, namely, SEBI, IRDA and PFRDA; and finally, the Pension Funds. Under Pension Funds, all 12 registered under the PFRDA are now covered. In addition, in the new series, some classificatory changes have also been made. Earlier insurance agents were part of the insurance sector; now they are relegated to the financial auxiliaries category. Similarly, Asset Management Companies (AMCs), as a separate category managing assets of mutual funds, are treated as part of financial auxiliaries.

Second, the methods of measuring the output and GVA of RBI, output and GVA of moneylenders as well as holding companies and other unorgansied or captive segments have been introduced in the new series. These have brought about significant changes in the relative importance of individual sub-categories within the financial sector (More on it later).

III.1.A.i Importance of FISIM (Financial Intermediation Services Indirectly Measured)

The first change relates to the changes in the methodology of computing FISIM. Adoption of FISIM as a method of measuring the output of banks and other related financial institutions has a novel logic. Financial intermediaries render two kinds of services to their customers: first, they render the service of financial intermediation, that is, accepting deposits and advancing loans, and second, they render auxiliary financial services such as money transfers, currency exchange, manage safe deposit vaults, share depository services and serve as investment advisors and merchant bankers. For the second set of services, the actual service charges in the form of fees or commissions are levied, which measure one component of output. But, for the first set of services in the form of financial intermediation, no explicit individual customer level charges are made or possible. There is no one-to-one link between individual deposits and loans. Such operations of a bank are done collectively. A bank depositor receives the same amount of interest whether his deposit funds are lent or not and a borrower pays the same amount of interest irrespective how the bank has financed his loan. Therefore, each of the two parties is impliedly paying a common fee to the bank for the service provided. This is notional, an imputed fee and for this the UN-SNA system has devised this novel concept of FISIM, an indirect measure that both the depositors and borrowers are shown to pay as

total fee, that is, as collective users of bank services; it helps to obviate the need to charge depositors and borrowers individually for the intermediation services provided, unlike in the case of service charges for the second set of services referred to at the outset.

FISIM thus constitutes an important output component of a bank, the other being service charges cited above. The resulting net receipts of income facilitate not only the sustaining of banking business but also the generation of an operating surplus after adjusting for intermediate consumption. This, in turn, augments the quantum of value added. As FISIM measures output, it also leads to providing this GDP component. As in the case of other services, GDP of banking and financial sectors too is estimated by income method for each of the sub-sectors listed above. Apart from operating surplus, there would be other factor payments such as compensation to employees and rents, as also consumption of fixed capital.

----- FISIM Measured Through a Reference Rate

In conformity with the recommendations of SNA 2008, a significant change has been affected in the way FISIM is measured in the new series. Earlier, FISIM was estimated based on the difference between total property receipts (dividend + interest + net profit on sale of investments) and total interest payments by the banking sector. While such FISIM measures one component of output, the other component of auxiliary services is measured by the actual service charges. As referred to above, the resulting net receipts of income net of intermediate consumption generates an operating surplus for a banking institution. But, a banking institution may have a third set of receipts in the form of pure property income consisting of "interest receipts on investments and debt securities, interest paid on borrowings and debt securities and net profit on sale of investments (POSI) - all of which will not be considered for computation of FISIM" [CSO, 2015a, p. 36]. Even the above third set of receipts normally constitute part of the banking sector's GVA, but the SNA/CSO do not include them as part of the central bank's GVA when only non-market output is considered in the revised series, FISIM is computed based only on loans and deposits of a bank or a financial institution, while other property receipts are treated separately as property income of the banking or financial sector as the case may be. For working out FISIM in the revised series, the concept of a Reference Rate has been devised. As stated above, both the depositors and borrowers pay a fee to the bank as collective users of banking services. The fee paid by the depositors is implicitly measured by the spread between the Reference Rate (RR) and the deposit rate (DR), while the service charge paid by the borrowers is measured by the spread between the loans rates and the Reference Rate. The Reference Rate is a rate mid-way between bank interest rates on deposits and bank interest rates on loans. It is to be derived for the banking system as a whole by taking harmonic mean of lending rates and deposit rates. Bankers pay less rate of interest for depositors and charge more for borrowers. The difference between the loan rate (LR) and RR multiplied by the average amount of loans is the total imputed charges (FISIM) measured for the borrowers. Likewise, the excess of RR over deposit rate multiplied by the average amount of deposits is the FISIM amount imputed for the depositors. The total FISIM for a bank as a whole for its deposits and loans together is the sum of these two FISIMs. Thus,

 $\begin{aligned} \text{Total FISIM} = (\text{LR-RR}) \text{ x Average amount of loans} \\ + (\text{RR-DR}) \text{ x Average amount of deposits} \end{aligned}$

[where RR = Harmonic mean of deposit and loan rates of interest]

Operationally, the RR is derived for the financial system as a whole. First, information on interest amount received on loans and interest paid on deposits by each of the financial intermediaries during a year are collected. Second, average loans provided and average deposits received (average of opening and closing stock) are estimated for each institution. Finally, the averages of loan and deposit interest rates are derived foreach of the institutions and combining them for all institutions, a composite value of RR is derived by taking the harmonic mean of average deposit and loan rates for the financial system as a whole.

III.1.A.ii Radical Change in the Estimate of RBI's Output and GVA

Traditionally, the RBI operations were always divided between the Issue Department and the Banking Department. This was carried forward into the NAS estimations as well. The currency issue function depicted in the Issue Department balance sheet was considered as non-market and was even kept outside the Financial Sector, that is, as part of the general government. Only the Banking Department operations were considered as market operations and part of the financial sector.

In the new series, the entire operations of the RBI have been treated as non-market and the value of its output has been derived as the sum of costs (that is, employee cost, other factor costs, consumption of fixed capital and intermediate consumption). This is as per the SNA 2008 recommendations. SNA classified the central bank services into these groups, namely, mone-tary policy services, financial intermediary services, and supervisory services but in the Indian case, such disaggregated accounts are not available for these services of the RBI. Also, SNA 2008 had also opined that a distinction ought to be made between market and non-market output, but realised that in practice it could be very

expensive to do so; therefore it said that "the whole of the output of the central bank should be treated as non-market and valued at the sum of costs" [*ibid*, p. 114]. Apparently, a United Nations survey had suggested such an approach [Shyam and Das, 2005, Pp. 40-45]. Even though the central bank is thus a non-market producer, SNA is categoric that as a separate institutional unit, it should always be "allocated to the financial corporations sector" [*ibid.*, p. 451] and not treated as part of the general government.

The SNA and accordingly, the CSO, have restricted, by definition, the value of output of the RBI only 'as equivalent to just the sum of costs which summarily ignores the profits earned. Hence, what is included in India's NAS is only that restricted level of figures which are far from being equivalent to any value added amount generated in the central banking activities in India.

III.1.A.iii GVA of Money Lenders and Other Unorganised Financial Enterprises

Yet another major change effected in the new series relates to the GVA of private money lenders and other unorganised financial services. In the earlier series, in the absence of concrete data, GVA of these together was placed at one-third of the GVA of organised financial sector. This has now been replaced by piecing together the results of the NSSO's survey data - AIDIS 2013, BSR of RBI, and 67th round Survey on Unincorporated Enterprises.

Also, for the NBFCs, the earlier sample studies of RBI have been replaced by the financial data of top 195 NBFCs obtained from the RBI with the earlier system of using the population estimates of paid-up capital for blowing-up purposes [CSO, 2015, p. 37].

III.1.B. Effects on GVA Estimates

----- on RBI's GVA.

As a result of these changes in the GVA estimation, there has occurred a sizeable reduction in the value added estimates for the RBI as per the new series *vis-à-vis* the 2004-05 series (Table 27).

CSO has not published the GVA component of the Issue Department of RBI as per the 2004-05 series. Thus, the GVA component of the Issue Department of RBI in the 2004-05 series was explicitly included in the general government but not stated revealed anywhere. The figures published by the CSO in NAS publications related only to the Banking Department component. The methodology used for this compilation was known.⁴¹ A large component of the GVA for the years 2011-12 and 2012-13, for instance, related to the profits generated in RBI operations (Rs 16,010 crore and Rs 33,010 crore, respectively). Exclusion of this profit component from the 2011-12 series has considerably diluted the RBI's output estimation included as part of GDP in the new series.] This is indeed questionable, as we elaborate below. No doubt, profits arise from domestic operations as well as external operations, but the external operations are directly linked to the requirements of domestic operations, namely, as a back up to the currency issues.

As a critique, Bhuyan [2016] has attempted a detailed study of the official estimate of RBI's contribution to GVA based on the revised series. Earlier, Shyam and Das [2005] had also examined this issue. This calls for a closer examination of the issues raised by Bhuyan [2016] and others which involves an elaborate exercise. For the present, we advance our view rather briefly. In our view, SNA 2008 and in turn the CSO have greatly erred in deriving the GVA by excluding its profit or operating surplus component from the RBI's operations. The CSO has blindly taken the SNA definition of the Central banking GVA as equivalent to output measured as equivalent to

costs (defined above). In Bhuyan's presentation, there is a mix-up between gross output and gross value added. In presenting the expenditure components of RBI in Table 5 of his paper, Bhuyan has stopped short of explaining the implications of the apparently sizeable output amount for arriving at the GVA numbers. Printing of notes would have sizeable intermediate costs.

Being a service organisation, RBI's GVA is best estimated by combining factor incomes including profit or operating surplus. As per SNA 2008 (p. 111), even non-market producers may have operating profit. When done so, the GVA estimate of RBI would be much higher than what has been presented in the new series by the CSO. That the CSO's GVA estimates for the RBI are far lower than the operating profits generated by the institution, is evident from data presented in Table 27.

To dilate a little more on the estimates of the RBI's GVA, we may fall back upon the discussions in SNA 2008, page 110-111 and page 114. From these discussions, it is clear that central banking services have both market and nonmarket components. Second, even the nonmarket component of RBI services involve a substantial amount of market operations such as the holdings of government securities as well as foreign securities and other foreign assets, which constitute some back up for the currency issues. An example that the SNA 2008 cites is that of non-market collective services such as education, health and other similar series provided to individual households, in this case, to the community at large. The SNA 2008 opines that "it is not uncommon for similar kinds of services to be produced on a market basis and sold alongside the non-market services" (p.111).

Taking these factors into account, it is desirable to estimate the RBI's value added as consisting of the following factor incomes:

- (i) Compensation of employees;
- (ii) Consumption of fixed capital;
- (iii) Other taxes (less subsidies) on production; and
- (iv) Operating profit

When done so, the RBI's GVA would work out as presented in Part A of Table 28.

When RBI's GVA is measured thus, the total works out to Rs 70,196 crore for 2014-15 for which the CSO's figures under the new series are available; the latter is placed only at about Rs. 4,300 crore, or just about 6% of the proposed estimation which we have presented above.

In our above exercise, the bone of contention would be the treatment of RBI's surplus or equivalent to the operating surplus, which is excluded in the CSO's estimates. Such an exclusion of the operating surplus generated in the central banking activities happens because of an obviousflaw in the approach adopted in the SNA 2008, which has been accepted in the Indian NAS.

To elaborate the above point, to begin with, the SNA 2008 has defined the 'value of nonmarket output provided without charge to households' as the sum of costs of production. As enumerated above, these costs of production are exclusive of operating surplus [SNA, 2008, 111]. And, the SNA (page 114) dilates at length on the way the output of the central bank should be derived. It rightly classifies the central banking services into three categories as hinted at earlier, namely, (i) monetary services which are collective in nature and which thus represent nonmarket output; (ii) financial intermediation services which should be treated as market output; and (iii) the supervisory services which lies on the borderline and may be classified as market or non-market services depending upon whether sufficient fees are charged to cover the costs. When the SNA notices the practical difficulties in making a clear distinction between market and non-market output, it avoids the complications by concluding that "the whole of the output of the central bank should be treated as non-market and valued as the sum of costs" (p. 114).

It seems to us that the above approach appears to be too simplistic. First, in our view, while monetary services are collective in nature, they should not nevertheless be equated with collective services like public administration and defence. In the monetary services rendered by the central bank, there are two sides: first, they are services provided to the community at large as well as to financial intermediaries, which are non-market in nature; second, there is a counterpart to these non-market operations which involves significant amount of market operations. In matters of currency issues, for instance, there is an equivalent amount of assets-domestic securities, gold and foreign assets - which involve full market operations. There are prices of assets and their yields or interest rates. Similarly, in respect of monetary policy operations, central banking instruments such as repo and reverse repo which have market-related interest rate counterparts. In fact, the art of central banking lies in appropriately focusing on the market - at times giving a lead to it, at other times countering the market tendencies. Thus, there is nothing in the central banking operations which are devoid of the influences of the market. Their goals may be collective in nature like public administration and defence, but all of their operations are market dependent. It is necessary to emphasise that the central bank's link with the market is totally different from the public administration's link with the market. The entire profit of the central bank here comes from its operations in the market, unlike the revenues of the government. To emphasise it differently, the central bank is indeed a pivotal institution having coveted collective or societal responsibilities but that by itself should not catapult it into a non-market institution when

its activities are deeply involved in market operations. Hence, it does not qualify to be a pure non-market operator.

- I. Also, as the SNA 2008 itself emphasises, a central bank, as a separate institutional unit, is "always to be included in the financial institution sector and never in general government" (p. 114). Taking this as well as the above factors into account, the operations of the central bank deserve to be treated distinctly different from non-market or collective institutions for measuring its value added. RBI operations are very substantial and merely treating its output as non-market and valuing it as the sum of costs, ignoring profits, considerably underestimates its part in contributing to economic activities which is best measured by an appropriate measure of GVA. Thus, for GVA purposes, objectively speaking, it deserves to be treated as any other financial institution. If this proposition is accepted as we think it is appropriate, the estimation of Reserve Bank's value added would involve the following steps:
 - I. Estimation of FISIM for the operations involving financial intermediation;
- II. Estimation of earnings in the form of exchange, commission, etc.
- III. Estimation of intermediate costs, and
- IV. Estimation of receipts in the form of property income consisting of "interest receipts on investments and debt securities, interest paid on borrowings and debt securities and net profit on sale of investments (POSI) - all of which will not be considered for computation of FISIM" [CSO, 2015a, p. 36], as described earlier.

The estimation of RBI's GVA with the help of these steps should broadly correspond to the results presented in Part A of Table 28 earlier. If this is not done, to emphasise again, the RBI operations which are substantial in nature, would get considerably undermined in the GVA estimations as the new NAS series have done. We admit that the proposed estimation of RBI's GVA presented in Table 28 above is a rough and ready picture of the numbers for individual years and that is intended to bring out the vast extent of underestimation of RBI GVA that CSO's official estimates portray. We confess that for want of required amount of data, which earlier the RBI was providing to the CSO on all its operations, we are unable to make any systematic estimation of the total GVA generated in the central bank. These can be easily corrected and the exact sets of estimates arrived at, once the RBI provides the required sets of data enumerated above. The details of these data are obviously available in the RBI books unlike the disaggregated accounts for the separate three components of services monetary policy, intermediation, and supervisory services - as required for segregating them into market and non-market operations and deriving their respective output categories. Such disaggregation of the RBI accounts is redundant when we treat RBI as any other financial sector institution and derive its GVA broadly by the income method.

III.1.C. Totality of Financial Services - a Summary

Table 29 presents the share of financial services (formerly banking and insurance) in total GDP under three NAS series. It is interesting that the ratios have generally remained at about a little less than 6% (at current prices). As explained subsequently, the constant price ratios are somewhat higher than the current prices ratios essentially because of lower levels of deflators for financial services category than the GDP deflators.

This aggregate picture hides significant inter-category differences in the revised GVA estimates under the new series though overall there is hardly any difference. Some examples of these differences are depicted in Table 30. In terms of absolute amount, the largest revision worth Rs. 26,630 crore (or 148%) has occurred under the unorganised sector including moneylenders. The survey results have considerably altered the importance of unorganised financial sector including moneylenders; it has increased three fold. Likewise, the role of NBFCs including freshly covered capital market institutions has expanded by Rs 2,318 crore or by 34%. Because of revised FISIM method based on RR arrangement, the operating profits of Post Office Savings Bank and Cooperative Credit societies have shot up. But, in the case of commercial banks, the net receipts from sales of investments have been excluded from FISIM and hence, their operating profits have been reduced and consequently GVA (Such receipts are capital appreciation). Studies have shown that banking institutions with high credit-deposit ratios and relatively higher lending rates like commercial banks, RRBs and cooperative banks have benefited from the new FISIM calculations, given the single RR, (i.e., LR - RR being higher the FISIM would be higher). In the case of the insurance sector, the loss in GVA in Table 30 is essentially because of the transfer of insurance agents, now considered as part of auxiliary institutions falling under the unogranised sector or NBFCs, both of which have shown large increases.

III.1.C.i Classification of New Series and the Absence of Similar Data Disaggregation for the 2004-05 Series

Table 31 presents the latest data published by the CSO as per the new series with a new classification of financial service institutions which is somewhat different from the classification provided in Table 30 and also different from that provided under the earlier 2004-05 series. We are, therefore, unable to make an accurate comparison of the data from the two series except to the extent such a comparison has been provided in Table 30.

Nevertheless, a comparison of the data in Tables 30 and 31 provides the following brief assessment. First, despite the absence of any significant revision overall, there has been some diversification in the financial structure. The dominant monetary financial institutions had 62% of the total GVA of financial services sector in the 2004-05 series; it has declined somewhat mildly to about 58% in the new series. The insurance sector, which was the next in importance in the old series at about 20%, has also lost some ground, to about 14%, partly because of the shifting of insurance agents elsewhere. It is a moot point if such fine classification misses the nuances of functional classification. Significantly, the areas to gain in importance are the NBFCs and the unorganised sectors, from a total share of about 18% as per the 2004-05 series to 28% as per the new series (both for the same year 2011-12).

The second important revelation is summarised in Table 32, that is, in the form of a comparison of the behaviour of GDP deflators vis-à-vis the deflators for 'banking and finance'. Here it should be clarified that there has not been any change in the method of deriving deflators for the 'banking and finance' sector between the 2004-05 series and new series. In all the national income series, the deflators of financial services have considerably lagged behind in annual increases compared with GDP deflators, implying that the implicit deflators generally used for various segments of the financial services are more moderate. This has happened because commodity prices have always increased at faster paces than the service deflators.

III.1.C.ii Changes in Allocation of FISIM

It is important to note that FISIM provided in the banking and financial sector serves as an input for the user industries. These get deducted from the gross output of those industries; otherwise there would be double counting in the NAS. Utilising the sector-wise loan and/or deposit for each of the banks and financial institutions as an indicator, total FISIM is allocated to different users based on an estimation of their shares of loans and deposits; the user could be an intermediate user or a final user.

1. There are two distinct changes in the allocation of FISIM in the new series. First, the financial intermediaries themselves produce FISIM. Therefore, FISIM cannot be considered as being consumed by the financial corporations. Second, the RBI has apparently clarified that it keeps the accounts of all Governments, both Central and State, as a banker to the Government. Thus, it is assumed by the RBI that the Government sector does not consume any FISIM; in the NAS the FISIM is allocated to all sectors other than financial intermediaries (which themselves produce FISIM) and the government. To quote the CSO [2015, p. 134],

"Keeping in view the abovementioned facts, in the new series, allocation of FISIM, generated as an output by the financial corporations, has been made to all the industries in proportion to the aggregate of credits and deposits of these industries, except for two institutional sectors, namely, General Government and Financial Corporations".

The industry-wise allocation of FISIM in the old & new series is presented in the Table 33.

III. 2. External Sector Transactions

External transactions account (ETA) in the NAS has always been based on the RBI's balance of payments (BOP) data. This account, constructed as per the IMF's Balance of Payments

Manuals, is already integrated with the SNA. As the RBI's BOP Manual (September 2010) explains, the SNA covers the transactions between "residents" and "residents" and between "residents" and "non-residents". BOP is a summary statement presenting economic transactions between residents and non-residents as flows during a given time period.

SNA is a closed system as both ends of every transaction are recorded; each transaction is recorded as a use for one part of the system and as a resource for another part. 'Users' and 'resources' for non-resident entities are captured through the NAS section christened as the "Rest of the World Account" (Table 34). Under this, imports of goods and services are a "resource" and "exports of goods and services" are a "use".

The source of data for the ETA in the NAS is the RBI's BOP produced regularly on a quarterly and annual basis and as they have not been affected by the revisions in NAS series, there is not much scope for comparing the BOP data as per the new NAS series and the older ones. Just to point out how the BOP data as shown in different NAS series have remained the same, we present the relevant data in Table 35 (Part A), which reproduces to a brief extent from the "Sequence of Accounts - Rest of the World".

As this is not the occasion to review the details of current and capital account transactions of BOP, we do not address any of the trends or other nuances of the external transactions account here. Nevertheless, we cite one set of data from the latest NAS to pinpoint that there has not been any revision in the new series. This concerns the data on net factor income from "Rest of the World" Account (earlier Table 34).

Measure of the Size of the External Account

Just to bring out the nature of changes in the role of the external sector in the Indian economy,⁴²

we present the key external sector transactions as percentage of GDP in Table 35 (Part B). These ratios do indicate that the size of the external sector as measured by exports plus imports as percentage of GDP has steady increased from 25.3% in 1999-2000 to 54.7% in 2012-13 as per the earlier two NAS series.

Now, as per the new 2011-12 series, despite the export-import data remaining unchanged, exports *plus* imports as a proportion of GDP stands revised upwards from 54.1% as per the 2004-05 series to 55.6%. This is no sign of any expansion of the size of the external sector due to the NAS revision. This upward revision has come about because the denominator, namely, GDP has been revised downwards (that is, from Rs 9,009,722 crore to Rs 8,736,039 crore or by about 3% for the base year 2011-12).

NOTES

1. "Production tax or production subsidy is paid/received on the factors of production - land, labour or capital, irrespective of the volume of production. For instance, land revenue and stamp tax are treated as production taxes, while the input subsidies to farmers, some mining industries, dredging subsidies to Kolkata Prot Trust, etc., have been treated as production subsidies". See Central Statistics Office [2015a] Sections 3.34-3.35 and Annexure 3.2. A clear distinction between production taxes net of subsidies and product taxes net of subsidies has been brought in Sections II.2.B.i and II.2.B.ii below.

2. This section (Part II) is largely reproduced from Rajakumar and Shetty [2017].

3. In the 1999-2000 base year revision, the item 'valuables' was included as a new category in gross capital formation (GCF) but outside gross fixed capital formation (GFCF). In the 2004-05 series, some more changes were effected, such as revising the life tables of assets, using the user cost approach in estimating the services of owner occupied houses, and using the construction component and machinery/transport outlay of Defence capital account as capital formation.

4. These sub-committees covered: a) System of Indian National Accounts (Chairman: Dr. A C Kulshreshtha); b) Agriculture and Allied Sectors (Chairman: Prof. S Mahendra Dev); c) Private Corporate Sector Including PPPs (Chairman: Prof. B N Goldar); d) Unorganised Manufacturing & Service Sectors (Chairman: Prof. K Sundaram); and, e) Private Final Consumption Expenditure (Chairman: Prof. A K Adhikari).

5. Elucidation of changes introduced and their implications have been discussed in a series of recent research contributions, particularly in the reputed social journal Economic and Political Weekly: EPW Research Foundation [2015], Goyal [2015], and Rajakumar, Sawant and Shetty [2015]. Adoption of GDP at market prices in place of erstwhile GDP at factor cost for measuring real growth has been questioned by Shetty [2015]. Besides, a number of issues had been discussed such as, data sets and method of blowing-up related to estimates of corporate sector [Nagaraj, 2015a; Rajakumar, 2015; Rao, 2015]; size of manufacturing output [Goldar, 2015; Nagaraj, 2015a; Mazumdar, 2015]; size of unorganised sector's output [Nagaraj, 2016]; possibility of using double deflation method [Rajakumar and Shetty, 2015; Dholakia, 2015]; size of revision in NAS successive rounds [Rajakumar, 2016; Rajakumar and Shetty, 2016a, b]; and size of output of Reserve Bank of India [Bhuyan, 2016].

6. Alagh [2015], who was then the Minister of Statistics in the mid-nineties, noted that the CSO at that time was less dynamic and had opposed adopting global standards. However, we do not have fuller details of the debate he has had with the official statisticians then.

7. "The difference between the rate paid to banks by borrowers and the reference rate plus the difference between the reference rate and the rate actually paid to depositors represents charges for financial intermediation services indirectly measured (FISIM)." United Nations [2008, p. 115]. "The SNA recommends that FISIM should be calculated with respect to a reference rate that containsno service element and reflects the risk and maturity structure of deposits and loans. Different reference rates may be needed for domestic and foreign financial institutions. "United Nations [2008, p. 606]. This issue has been further elucidated in Part III.1 of the paper dealing with 'Banking and Other Financial Services'.

8. For instance, see Rajakumar [2003]; Nagaraj [2009], and Rangarajan HLC Report [2009].

9. It is called thus because MCA has the objective of covering all registered companies under the programme by 2021.

10. Vide MCA Circular No. 16/2012 dated 06/07/2012. MCA 21 has several dimensions of taxonomy for filing based on the revised Schedule IV to the Companies Act [Ministry of Corporate Affairs, 2014].

11. While Form 23ACA collects information relating to profit and loss account, the Form 23CA collects from balance sheets [MOSPI 2015a].

12. RBI works out coverage based on the population paid-up capital supplied by the Ministry of Corporate Affairs (formerly by Department of Company Affairs).

13. At the time of release of NAS new series in January 2015, CSO had used a single blow-up factor for both NGNF PLC and NGNF PTC. Rajakumar [2015], besides pointing out

how such procedure could give rise to overestimates, argued in favour of working out estimates separately for NG PLC and NG PTC using separate blow up factors and then combine them to arrive at the population estimates. Also see, Rao [2015]. This procedure has now been followed in the first revised estimates for 2014-15 released in January 2016 [CSO, 2016].

14. See also CSO [2015, Pp. 87-88].

15. The autonomous institutions are those set up by various Ministries/Departments of Central and State Governments for different purposes, whose activities and transactions out of resources raised by them outside budgeted grants, need to be separately accounted for. See CSO [2015a, Pp. 40-43]. Their substantial resources obtained through budgetary grants are reflected in the government budgets themselves.

16. Setting out the new methodology as recommended by the SNA 2008, the CSO [2015a, p. 6] writes thus: "The head office has 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 corporations sector. 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".

17. Sectors covered by the ELI method include the unorganised manufacturing as a whole, mechanized road transport, services incidental to transport, courier services, cable operators, professional, scientific &technical activities, activities of membership organisations and all categories of personal services.

18. The conversion of owner and helper in terms of hired worker has been made using relative marginal productivities captured by fitting a nested Cobb-Douglas function. Nagaraj (2016) pointed out that such procedure could give rise to underestimates, as the estimation assumes away contribution of capital. Further, see our comment at a later stage.

19. Such as education, health, water transport, storage, real estate, renting of machinery, computer & related services, legal and accounting services.

20. This includes trade & repair services, hotels and restaurants and non-mechanized road transport and telecommunication.

21. The above methodology appears valid even when "the GVA adjusted for labour productivity (effective GVA) was computed as the product of L1 from EUS and GVA per effective worker from ES" [MOSPI, 2015a, p. 10]. The question of marginal contribution of capital does not come in the present context when the objective is to work out the average of total GVA per worker; in the case of new NAS, it is effective worker size.

22. Notably, the CSO reduced the life of 'road and bridges'

to 60-100 years under 2011-12 series from 200-400 years under 2004-05 series, and lives of 'transport equipment' to 8-15 years from 10-20 years, 'information and communication technology equipment' to 5 years and 'other equipment' to 10-30 years from 15-25 years.

23. 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".

24. Goldar [2015] noted that manufacturing GDP of a year used to be upwardly revised in every successive rounds with the use of better data such as ASI and thus such higher manufacturing GVA growth should not be "a big surprise". However, Nagaraj [2015a] contended that such higher growth rates could be a result of overestimates arising from the use of corporate accounts data and Mazumdar [2015] pointed out to slower growth in the relative prices of inputs. Further, Rajakumar and Shetty [2015] observed a fall in the manufacturing GDP growth rate when double deflation method was used by taking into account only commodity input prices, whereas Dholakia [2015] did not find any marked change by additionally using implicit deflators of construction and services.

25. The quasi-corporations have not played any role in this because, as per CSO [2015a, p. 132], "Estimates of financial savings of households are compiled by RBI. Separate information on financial savings of quasi-corporations is not available. Therefore, household savings in the form of financial assets continues to include financial savings of quasi-corporations". Independent estimates of savings of quasi-corporates are placed just at: 9% of GNDI [see Rajeswari and Singh, 2015, Pp. 147-153.

26. This system of differences in "discrepancies" has continued even in the latest First Advance Estimates released for the first time on 6th January 2017 in respect of the current year 2016-17. As per current pries such "discrepancies" are just 0.6% of GDP (at Rs. 97,422 crore) in contrast to those in the constant price estimates of 2.0% of GDP (Rs. 241,919 crore) [CSO, 2017].

27. These two paragraphs have been a verbatim summary of ideas contained in our earlier study, namely, in Rajakumar and Shetty [2016b].

28. In the latest SUT built for 2011-12 and 2012-13, "the balancing exercises were undertaken till the discrepancy

between *supply* and use was reduced to around 3%" [CSO, 2016]. Thereafter, there is no option but to adopt what has come to be known a RAS (automatic row-column prorate adjustments) and thus equalise the production and expenditure sides.

29. This is done in the absence of a Producers Price Index (PPI) which is universally accepted as the correct measure for deflation and which is said to be CSO's ultimate goal.

30. The release date for Advance Estimates has been advanced by a month in 2016 in view of advancing of presentation of the Union Budget. It has just been released on January 6, 2017. CSO [2017] have described 7.1% as a 0.5% fall from the previous year. In fact, with higher growth in agriculture (4%), etc., etc., the growth could not have been lower. It is lower because, for 2015-16 (PE), they have taken the growth over FRE of 2014-15. If we take it over PE of 2014-15 (PE), it works out to 6.5%. Hence, their present estimate, without taking into account the effects of demonetisation, stands higher and not lower.

31. Here benchmark estimates refer to estimates of the base data to which the indicator growth is applied. In the CSO's scheme of things, the base data belong to the latest estimate available.

32. See, for instance, Branchi et. al., [2007].

33. For details, see McKenzie (undated) and a number of websites listed therein.

34. See Carson et. al., [2004].

35. See Paragraphs 15.45 to 15.50, 18.11 to 18.13, 18.33 and 18.37 to 18.39 of UN SNA [2008].

36. SNA News and Notes is an information service of the Inter-Secretariat Working Group on National Accounts (ISWGNA). In the SNA News and Notes of May 2000, there was a sub-section on "Implementing the 1993 SNA: how to deal with revisions". In it, there is a detailed description of the "Bench-Mark Indicator" approach. See Hexeberg [2000].

37. Other abbreviations used in the CIN code include the following: FLC for Financial Lease Company as Public Limited; FTC for Subsidiary of a Foreign Company as Private Limited Company; GAP for General Association Public; GAT for General Association Private; NPL for Not For Profits License Company; ULL for Public Limited Company with Unlimited Liability and ULT for Private Limited Company with Unlimited Liability.

38. Barman [2016] has pointed out the need for collating data even at the district level.

39. We had pointed out this small arithmetical error: 15% as against the actual of 17.65% [Rajakumar, 2015]. It is hoped that this correction has been carried out now in estimating the official series.

40. As explained in Table 26, the coverage in two sets of data used as "population" for blowing up purposes is vastly different. For the ASI, the "population" figures for the three years quoted in the table stand around 2.18 lakh to 2.25 lakh factories, whereas the corresponding "population" figures for the manufacturing sector was about 1.36 lakh live companies as per the MCA 21 data given for private corporations [CSO, 2015a]. The latter number is based on the "enterprises" approach and hence the numbers covering the manufacturing 'establishments' may be quite different, but we have no way of knowing the actual number.

41. CSO [April 1980] writes thus: "The details of factor incomes of Banking Department are obtained directly from the RBI. On the advice of the RBI, rental income and consumption of fixed capital are allocated to the Banking Department".

"To obtain the profits and dividends of the Banking Department of RBI the total of all other components of factor income (obtained independently) and intermediate consumption is deducted from the income of the Banking Department. Intermediate consumption of the Banking Department is estimated by considering each item of expenditure separately and allocating [it] to either the Banking Department or the Issue Department according to the advice of the RBI. Thus the total expenditures on law charges; agency charges and repairs and maintenance are allocated to the Banking Department while expenditures on remittance of treasure and on security printing to Issue Department. The other items of expenditures such as those on stationery, postage and telegraphs charges, taxes, insurance, lighting and auditors fees are allocated to both the departments on the basis of the ratio of their total establishment expenses" (p. 47).

42. We thank Prof. Vikas Chitre for pointing out how we failed to highlight this in our earlier version of the Paper.

REFERENCES

- Alagh, Y.K., 2015; "The alarming investment slide", *Business Line*, 10 June.
- Anant, T C A, 2015; "Don't Compare New GDP Data Series with Old", *The Economic Times*, 14 April.
- Anant, T C A, 2016; "Government making efforts to reduce discrepancies in GDP data", *The Economic Times*, 3 June.
- Anant, T C A, 2016a; "Discrepancies are inherent part of expenditure side of GDP as of now", *Business Standard*, 2 June.
- Anant, T C A, 2016b; "IIP has limitations as a representative of aggregate growth in manufacturing", *The Hindu*, 20 June.

- Anant, T C A, 2016c; "Discrepancies in GDP Data", A reply to the EPW Editorial on the latest data on India's GDP Series, *Economic and Political Weekly*, Vol. 51, No. 30, 23July
- Barman, R. B., 2016; "Rethinking Economics, Statistical System and Welfare: A Critique with India as a Case", *Economic and Political Weekly*, Vol. 51, No. 28, 9 July.
- Bhuyan, P., 2016; "Measurement of Central Bank Output Methodological Issues for India", *RBI Working Paper Series WPS (DEPR): 06, 2016, Reserve Bank of India,* Mumbai.
- Branchi, M., H C Dieden, W Haine, C Horvath, A Kanutin and L Kezbere, 2007; Analysis of Revisions to General Economic Statistics, *Occasional Paper Series No. 74*, October. European Central Bank, Frankfurt.
- Carson, C S., S Khawaja, and T K Morrison, 2004; 'Revisions Policy for Official Statistics: A Matter of Governance', *IMF Working Paper No. WP/04/87*, May
- Central Statistics Office, 1980; National Accounts Statistics: Sources and Methods, Department of Statistics, Ministry of Planning, New Delhi, April
- Central Statistics Office, 2012; *National Accounts Statistics Sources and Methods 2012*, Ministry of Statistics and Programme Implementation, New Delhi.
- Central Statistics Office, 2014; *National Accounts Statistics*, Ministry of Statistics and Programme Implementation, New Delhi.
- Central Statistics Office, 2015; "No Room for Doubts on New GDP Numbers", *Economic and Political Weekly*, Vol. 50, No. 16, 18 April.
- Central Statistics Office, 2015a; Changes in Methodology and Data Sources in the New Series of National Accounts: Base Year 2011-12, Ministry of Statistics and Programme Implementation, New Delhi, 26 June.
- Central Statistics Office, 2016; "First Revised Estimates of National Income, Consumption Expenditure, Saving and Capital Formation 2014-15", Press Note, 29 January
- Central Statistics Office, 2016a; "Advance Estimates of National Income 2015-16 and Quarterly Estimates of Gross Domestic Product for the Third Quarter (Q3) 2015-16", Press Note, 8 February.
- Central Statistics Office, 2016b; "Provisional Estimates of Annual National Income, 2015-16 and Quarterly Estimates of Gross Domestic Product for the Fourth Quarter (Q4) 2015-16", Press Note, 31 May.
- Central Statistics Office, 2017; "First Advance Estimates of National Income 2016-17", Press Note, 6 January.

- Dholakia, R. H., 2015; "Double Deflation Method and Growth of Manufacturing A comment", *Economic and Political Weekly*, Vol. 50, No. 41, 10 October.
- EPW Research Foundation, 2015; "New Series of National Accounts: A Review", *Economic and Political Weekly*, Vol. 50, No. 7, 14 February.
- Expert Group on Non-sampling Errors, (MOSPI), 2005; Report on Cross-Validation Study of Estimates of Private Consumption Expenditure Available from Household Survey and National Accounts, Part - I, Savekeshana, Journal of National Sample Survey Organisation, 88th Issue, Vol. XXV No. 4 & Vol. XXVI, No. 1 October, New Delhi.
- Goldar, B., 2015; "Growth in Gross Value Added of Indian Manufacturing 2011-12 series vs 2004-05 series", *Economic and Political Weekly*, Vol. 50, No. 21, 23 May.
- Government of India, 1982; Capital Formation and Saving in India 1950-51 to 1979-80, Report of the Working Group on Savings (Chairman: Prof. KN Raj), Reserve Bank of India, Bombay.
- Goyal, A., 2015; "Measuring Indian Growth Why the data should be doubted less", *Economic and Political Weekly*, Vol. 50, No. 32, 8 August.
- Greenspan, A., 2000; "Remarks" in Bureau of Economic Analysis, at the Press Conference, *January 2000 Survey* of Current Business, "GDP: One of the Great Inventions of the 20th Century", at the http://www.bea.gov/scb/pdf/ BEAWIDE/2000/0100od.pdf
- Kumar, Sanjay and N.K. Sharma, 2007; "Divergence Between the Estimates of Consumption Expenditure in the National Accounts and the NSS: A Perspective on NSS Data", *The Journal of income and wealth*, (www.iarniw.org), Vol. 29, No. 2, July-December.
- Kuznets, S., 1951; "Government Product and National Income" in Erik Lundberg (Ed) (1951): *Income and Wealth* - Series I, International Association for Research in Income and Wealth, Bowes & Bowes, Cambridge.
- Kuznets, S., 1959; *Six Lectures on Economic Growth*, The Free Press of Glencoe, New York.
- Hexeberg, B., 2000; "Implementing the 1993 SNA: Backward Revision of National Accounts Data", SNA News and Notes, Number 11, May.
- Hoven, L., 2008; "Using results from revisions analysis to improve compilation methods: a case study on revisions of Dutch estimates of GDP volume growth", *Contribution* to the joint OECD/Eurostat Task Force on "Performing"

Revisions Analysis for Sub Annual Economic Statistics,May30.Accessedatthehttps://www.oecd.org/std/40309550.pdf

- McKenzie, R (undated); "OECD / Eurostat Guidelines on Revisions Policy and Analysis", *Summary report of the OECD/Eurostat Task Force on "Performing Revisions Analysis for Sub-Annual Economic Statistics"*. Accessed at the http://www.oecd.org/std/40315564.pdf
- Mazumdar, S., 2015; "Manufacturing Growth in the New GDP Series", *Economic and Political Weekly*, Vol. 50, No. 24, 13 June.
- Ministry of Statistics and Programme Implementation, (MOSPI), 2009; *Report of the High Level Committee on Estimation of Saving and Investment* (Chairman Dr. C. Rangarajan), Government of India, New Delhi.
- Ministry of Statistics and Programme Implementation, (MOSPI), 2015; "New Series Estimates of National Income, Consumption Expenditure, Saving and Capital Formation (Base year 2011-12)", Press Note dated 30 January.
- Ministry of Statistics and Programme Implementation, (MOSPI), 2015a; "Understanding the New Series of National Accounts: Frequently Asked Questions", Accessed from www.mospi.gov.in
- Ministry of Corporate Affairs, 2014; 58th Annual Report on the Working & Administration of the Companies Act, 1956 Year ended March 31, 2014, Government of India, New Delhi.
- Nagaraj, R., 2009; "Is Services Sector Output Overestimated? An Inquiry", *Economic and Political Weekly*, Vol. 44, No. 5, 31 January.
- Nagaraj, R., 2015; "Growth in GVA of Indian Manufacturing", *Economic and Political Weekly*, Vol. 50, No. 24, 13 June.
- Nagaraj, R., 2015a; "Size and Structure of India's Private Corporate Sector: Implications for the New GDP Series", *Economic and Political Weekly*, Vol. 50, No. 45, 7 November.
- Nagaraj, R., 2016; "Unorganised Sector Output in the New GDP Series: Why Has It Shrunk?", *Economic and Political Weekly*, Vol. 51, No. 14, 2 April
- Nagaraj, R. and T. N. Srinivasan, 2016; "Measuring India's GDP Growth: Unpacking the Analytics & Data Issues behind a Controversy that Refuses to Go Away", *India Policy Forum 2016*, National Council of Applied Economic Research, New Delhi, 12-13 July.
- National Statistical Commission, 2001; Report of the National Statistical Commission, (Chairman Dr. C. Rangarajan), Government of India, New Delhi, 5 September http://mospi.nic.in/Mospi_New/upload/css_12.html.
- Rajakumar, J Dennis, 2003; "How Real Are Estimates of Corporate Investment?", *Economic and Political Weekly*, Vol. 38, No. 22, 31 May - 6 June.
- Rajakumar, J Dennis, 2015; "Private Corporate Sector in New NAS Series Need for a Fresh Look", *Economic and Political Weekly*, Vol. 50, No. 29, 18 July.
- Rajakumar, J Dennis, 2016; "Estimates of High GDP growth in 2015-16 Not Entirely Convincing", *Economic and Political Weekly*, Vol. 51, No. 26&27, 25 June.
- Rajakumar, J Dennis and S.L. Shetty, 2015; "Gross Value Added Why Not the Double Deflation Method for Estimation?", *Economic and Political Weekly*, Vol. 50, No. 33, 15 August.
- Rajakumar, J Dennis and S.L. Shetty, 2016; "Some Puzzling Features of India's Recent GDP Numbers", *Economic and Political Weekly*, Vol. 51, No. 2, 9 January.
- Rajakumar, J Dennis and S.L. Shetty, 2016a; "Continuous Revisions Cast Doubts on GDP Advance Estimates", *Economic and Political Weekly*, Vol. 51, No. 10, 5 March.
- Rajakumar, J Dennis and S.L. Shetty, 2016b; *What makes the changes in the new NAS series so radical?*, 16 November. Accessed at the http://www.ideasforindia.in/article.aspx ?article_id=1722
- Rajakumar, J Dennis and S.L. Shetty, 2017; 'New National Accounts Series: An Exposition and Key Issues in the Debate', in S Mahendra Dev (Ed.), *India Development Report 2017*, Indira Gandhi Institute of Development Research (IGIDR), Mumbai.

- Rajakumar, J Dennis, V B Sawant, and A Shetty, 2015; "New Estimates of Saving and Capital Formation: Larger Number in a Declining Trend", *Economic and Political Weekly*, Vol. 50, No. 12, 21 March.
- Rajeswari, T and Reena Singh, 2015; "Estimates of Savings of Quasi Corporates", *The Journal of income and wealth* (www.iarniw.org), Vol. 37, No. 2, July-December.
- Rao, S K G K, 2015; "Mystery of Private Corporate Sector Saving", *Economic and Political Weekly*, Vol. 50, No. 22, 30 May.
- Sen, P., 2015; "The three unanswered questions in GDP data" Interview in Live Mint, 2 September.
- Shetty, S. L., 2015; "Factor Cost Basis of GDP is Fundamental for Measuring Real Growth and Not GDP at Market Prices", A paper presented at the 34th Annual Conference of the Indian Association for Research in National Income and Wealth held during November 20-21, 2015 at IGIDR, Mumbai.
- Shyam, Radhey and Abhiman Das, 2005; "Central Banks Output in GDP: Issues and Measurement", *The Journal of income and wealth* (www.iarniw.org), Vol. 27, Nos. 1 & 2, January-December.
- Sinharay, A, A Kumar and T C A Anant, 2015; "Decoding the GVA growth rate", *Business Standard*, 29 July.
- Subbarao, D., 2016; Who Moved My Interest Rate?: Leading the Reserve Bank of India Through Five Turbulent Years, Penguin Books, Gurgaon
- United Nations, 1968; A System of National Accounts 1968, Studies in Methods, Series F No. 2, Rev. 3, United Nations
- United Nations, 1993; A System of National Accounts 1993, United Nations
- United Nations, 2008; A System of National Accounts 2008, United Nations

		2004-05 Series	2011-12 Series	Difference %
(1)	(2)	(3)	(4)	(5)
1.	Gross Capital Formation	3,278,332	3,438,834	4.9
	of which, Valuables	246,673	253,033	2.6*
	* Estimational difference, otherwise the same			
2.	Domestic Savings	2,824,459	2,993,926	6.0
	of which, Valuables by Households	Nil	33,635	-

Table 1. Treatment of "Valuables" for 2011-12

Source: CSO (2015b), pp.118 and 133

Item	2004-05 Series	2011-12 Series	Difference %
(1)	(2)	(3)	(4)
1. Gross Savings	2824459	2993926	6
2. Net Capital Inflow from ROW	376174	376171	-
3. GCF (1+2)	3200633	3370097	5.3
4. Total GCF Derived Sector-Wise By Commodity Flow Method	3031658	3185801	5.1
5. Adjustment Factor (3-4)	168975	184296	9.1

Table 2. Gross Capital Formation From Flow of Funds, 2011-12 (Rupees, Crore)

Source: CSO 2015.

Aggregates	2004-	2004-05 series over 1999-2000 series				2011-12 series over 2004-05 series		
	2004-05	2005-06	2006-07	2007-08	2011-12	2012-13	2013-14	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
GDP at factor cost	3.3	3.3	4.6	6.0	-3.5	-2.0	-0.9	
NDP at factor cost	4.0	4.3	5.8	7.5	-4.4	-2.8	-1.2	
GNP at factor cost	3.3	3.3	4.5	6.2	-3.5	-2.1	-1.0	
NNP at factor cost	4.1	4.3	5.7	7.6	-4.4	-2.9	-1.4	
GDP at basic prices					-5.0	-3.7		
NDP at basic prices					-6.1	-4.6		
GDP at market prices	2.9	3.0	4.0	5.6	-3.0	-1.6	-0.7	
NDP at market prices	3.6	3.8	5.0	6.8	-3.8	-2.3	-1.1	
GNP at market prices	3.0	3.0	4.0	5.7	-3.1	-1.6	-0.8	
NNP at market prices	3.6	3.9	4.9	7.0	-3.9	-2.3	-1.2	
Gross national disposable income	2.9	2.9	4.0	5.6	-3.0	-1.6	-0.7	
Net national disposable income	3.5	3.7	5.0	6.8	-3.7	-2.2	-1.0	
Private final consumption expen-	4.2	4.6	7.3	9.4	-4.5	-1.8	0.4	
diture								
Govt. final consumption expendi-	4.9	6.9	5.2	7.1	-5.6	-10.7	-14.0	
ture								
Gross domestic capital formation	5.2	0.6	0.6	3.0	5.5	8.5	9.5	
Net domestic capital formation	9.1	2.7	2.6	6.0	5.9	10.2	13.1	
Exports of goods & services	0.0	0.0	-1.3	1.9	-0.3	0.5	1.3	
Imports of goods & services	0.0	0.0	-0.2	4.4	-0.2	0.0	-1.1	
Gross domestic saving	5.3	0.6	0.7	3.2	7.2	10.6		
Net domestic saving	9.3	2.8	2.8	6.4	8.5	13.7		
Consumption of fixed capital	-2.8	-4.4	-4.2	-4.9	4.2	4.3	2.1	
Gross fixed capital formation	3.9	0.7	0.0	2.3	4.8	8.1	11.0	
Changes in stock	35.7	10.0	35.0	18.3	21.3	24.1	-3.7	
Valuables	0.0	0.0	0.0	0.0	2.6	2.7	-4.4	

 Table 3. Percentage differences in national income aggregates (at current price)

Aggregates	2004-05 se	ries over 1999-	2011-12 series over 2004-05 series		
	2005-06	2006-07	2007-08	2012-13	2013-14
(1)	(2)	(3)	(4)	(5)	(6)
		At cur	rent prices		
GDP at factor cost	0.0	1.5	1.6	1.7	1.4
NDP at factor cost	0.3	1.6	1.9	1.8	1.8
GNP at factor cost	0.0	1.4	1.8	1.7	1.3
NNP at factor cost	0.3	1.5	2.1	1.8	1.7
GDP at basic prices				1.6	
NDP at basic prices				1.7	
GDP at market prices	0.0	1.2	1.7	1.7	1.0
NDP at market prices	0.3	1.3	2.0	1.8	1.4
GNP at market prices	0.0	1.1	1.9	1.7	0.9
NNP at market prices	0.3	1.2	2.2	1.8	1.3
Gross national disposable income	0.0	1.3	1.7	1.6	1.0
Net national disposable income	0.2	1.4	2.0	1.8	1.4
Private final consumption expenditure	0.4	2.9	2.2	3.2	2.4
Govt. final consumption expenditure	2.2	-1.8	2.0	-6.3	-4.2
Gross domestic capital formation	-5.6	0.1	2.8	3.1	0.9
Net domestic capital formation	-7.7	-0.1	4.1	4.2	2.5
Exports of goods & services	0.0	-1.7	3.6	0.9	0.9
Imports of goods & services	0.0	-0.2	5.1	0.3	-1.1
Gross domestic saving	-5.5	0.2	2.9	3.4	
Net domestic saving	-7.5	0.0	4.3	5.0	
Consumption of fixed capital	-1.9	0.2	-0.8	0.1	-2.4
Gross fixed capital formation	-3.8	-0.8	2.7	3.4	2.8
Changes in stock	-30.4	26.1	-19.3	2.3	-24.4
Valuables	0.0	0.0	0.0	0.2	-4.5

Table 4. Point differences in growth rates between latest and previous series at current prices

Aggregates	2004-05 se	ries over 1999-	2000 series	2011-12 series ov	2011-12 series over 2004-05 series	
	2005-06	2006-07	2007-08	2012-13	2013-14	
(1)	(2)	(3)	(4)	(5)	(6)	
		At cons	stant prices			
GDP at factor cost	0.0	-0.2	0.3	0.9	1.7	
NDP at factor cost	-0.1	-0.2	0.3	1.0	2.1	
GNP at factor cost	-0.2	-0.3	0.4	1.5	1.8	
NNP at factor cost	-0.2	-0.3	0.5	1.7	2.2	
GDP at basic prices				0.9		
NDP at basic prices				0.9		
GDP at market prices	0.0	-0.4	0.7	0.9	1.6	
NDP at market prices	-0.1	-0.4	0.8	1.0	1.9	
GNP at market prices	-0.2	-0.5	0.9	0.9	1.5	
NNP at market prices	-0.2	-0.6	0.9	1.0	1.8	
Private final consumption expenditure	1.5	2.2	0.9	0.3	1.9	
Govt. final consumption expenditure	2.7	-1.7	2.2	-5.6	-3.4	
Gross domestic capital formation	-3.3	0.2	3.5	1.8	1.4	
Net domestic capital formation	-5.4	0.2	4.6	2.5	2.6	
Exports of goods & services	8.5	-0.8	3.8	1.8	-0.7	
Imports of goods & services	-8.5	-3.0	3.3	-0.6	-5.6	
Consumption of fixed capital	0.2	-0.2	0.2	0.5	-0.4	
Gross fixed capital formation	-1.4	-0.7	3.3	4.1	3.5	
Changes in stock	-35.3	26.2	-20.3	5.2	-20.2	
Valuables	0.6	-1.3	0.2	-33.1	-10.6	

Table 5. Point differences in growth rates between latest and previous series, at constant prices	;
---	---

Aggrevgates	2004-05 se	ries over 1999-	2000 series	2011-12 series over 2004-05 series	
-	2005-06	2006-07	2007-08	2012-13	2013-14
(1)	(2)	(3)	(4)	(5)	(6)
GDP at factor cost	0.1	1.5	1.1	0.7	-0.5
NDP at factor cost	0.3	1.6	1.4	0.7	-0.4
GNP at factor cost	0.2	1.5	1.2	0.0	-0.6
NNP at factor cost	0.5	1.7	1.5	-0.1	-0.6
GDP at basic prices				0.6	
NDP at basic prices				0.7	
GDP at market prices	0.1	1.4	0.9	0.7	-0.7
NDP at market prices	0.3	1.6	1.1	0.7	-0.6
GNP at market prices	0.2	1.5	0.9	0.7	-0.7
NNP at market prices	0.4	1.6	1.1	0.8	-0.6
Private final consumption expenditure	-1.0	0.6	1.2	2.8	0.3
Govt. final consumption expenditure	-0.6	0	-0.3	-0.2	-0.5
Gross domestic capital formation	-1.8	-0.1	-0.7	1.1	-0.6
Net domestic capital formation	-1.7	-0.2	-0.6	1.5	-0.2
Exports of goods & services	-7.2	-0.7	-0.4	-0.9	1.5
Imports of goods & services	5.9	2.4	1.5	0.8	5.3
Consumption of fixed capital	-1.9	0.3	-1.0	-0.4	-1.8
Gross fixed capital formation	-2.0	-0.1	-0.6	-0.9	-0.9
Changes in stock	3.6	-1.9	1.2	-3.6	-3.2
Valuables	-0.6	1.2	-0.2	25.9	9.4

Table 6. Point differences in the annual variations in deflators: Latest series over previous series

Sectors	2004-05 series over 1999-2000 series				2011-12 series over 2004-05 series		
	2004-05	2005-06	2006-07	2007-08	2011-12	2012-13	2013-14
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agriculture, forestry & fishing	2.4	1.9	5.4	6.9	3	5.2	2.6
Mining & quarrying	0.3	-0.1	0.7	6.3	15.7	27.7	31.6
Manufacturing	-0.1	0.4	2.8	3.9	13	18.2	26.2
Electricity, gas & water supply	4.6	5.5	8.1	10.2	41.5	40.8	28.5
Construction	7.5	1.7	1.0	3.4	12.1	10.9	13.2
Trade, hotels & restaurant	3.5	6.0	7.8	8.9	-40.1	-35.9	-31.6
Transport, storage & communication	2.3	1.8	0.7	-1.3	-11	-11.6	-9.0
Financing, insurance, real estate &	7.9	9.0	11.9	16.4	8	7.3	5.4
business services							
Banking & insurance	1.9	2.0	2.1	4.1	-0.3	-2.3	
Real estate, ownership of dwellings	12.2	13.6	18.6	24.8	12.5	12.3	
& business services							
Community, social & personal ser-	2.1	1.9	-0.7	-0.8	-11.4	-13.6	-14.3
vices							
Public administration & defence	0.7	-0.1	-2.2	0.6	-1.4	-4.0	
Other services	3.1	3.4	0.3	-1.8	-18.9	-20.7	
GDP at factor cost/basic prices	3.3	3.3	4.6	6.0	-3.5	-2.0	-0.8
Agriculture	2.4	1.9	5.4	6.9	3	5.2	2.6
Industry	2.3	1.1	2.4	4.3	14.7	18.3	22.8
Services	4.1	5.0	5.6	6.7	-14.6	-13.8	-12.2

Table 7. Percentage differences in sectoral GDP (at current prices)

Sectors	2004-05 se	ries over 1999-	2011-12 series ov	2011-12 series over 2004-05 series	
	2005-06	2006-07	2007-08	2012-13	2013-14
(1)	(2)	(3)	(4)	(5)	(6)
		At cur	rent prices		
Agriculture, forestry & fishing	-0.5	3.7	1.6	2.4	-2.9
Mining & quarrying	-0.4	0.9	6.1	10.4	3.0
Manufacturing	0.5	2.9	1.3	4.9	6.9
Electricity, gas & water supply	0.9	2.6	2.1	-0.6	-11.3
Construction	-6.8	-0.8	2.7	-1.2	2.3
Trade, hotels & restaurant	2.8	2.1	1.1	7.7	7.3
Transport, storage & communication	-0.6	-1.3	-2.2	-0.8	3.2
Financing, insurance, real estate & busi-	1.1	3.1	4.5	-0.8	-2.1
ness services					
Banking & insurance	0.0	0.2	2.1	-2.3	
Real estate, ownership of dwellings &	1.5	5.1	5.9	-0.2	
business services					
Community, social & personal services	-0.1	-3.0	-0.1	-2.9	-0.9
Public administration & defence	-0.8	-2.3	3.1	-2.9	
Other services	0.3	-3.5	-2.4	-2.6	
GDP at factor cost	0.0	1.5	1.6	1.7	1.4
Agriculture	-0.5	3.7	1.6	2.4	-2.9
Industry	-1.4	1.6	2.2	3.4	4.0
Services	1.0	0.6	1.2	1.1	2.0

Table 8. Point differences in the sectoral growth between latest and previous series, at current prices

Sectors	2004-05 s	eries over 1999	-2000 series	2011-12 series ov	2011-12 series over 2004-05 series	
	2005-06	2006-07	2007-08	2012-13	2013-14	
(1)	(2)	(3)	(4)	(5)	(6)	
	А	t constant pric	es			
Agriculture, forestry & fishing	-0.7	0.2	0.9	0.2	-0.7	
Mining & quarrying	-3.6	-1.4	0.4	2.4	3.9	
Manufacturing	1.0	2.5	2.1	5.1	6.5	
Electricity, gas & water supply	2.0	4.0	3.0	0.3	-1.9	
Construction	-3.4	-1.5	0.7	-0.5	3.1	
Trade, hotels & restaurant	1.9	0.7	0.0	5.7	6.9	
Transport, storage & communication	-3.1	-3.7	-3.0	0.9	2.6	
Financing, insurance, real estate &	1.2	0.2	0.2	-1.4	-2.1	
business services						
Banking & insurance	1.6	0.3	1.3			
Real estate, ownership of dwellings &	1.4	0.9	-0.1			
business services						
Community, social & personal ser-	0.0	-2.9	0.1	-1.3	-1.1	
vices						
Public administration & defence	-0.6	-2.1	3.4			
Other services	0.5	-3.4	-2.2			
GDP at factor cost	0.0	-0.2	0.3	0.9	1.8	
Agriculture	-0.7	0.2	0.9	0.2	-0.7	
Industry	-0.5	1.2	1.6	2.7	4.7	
Services	0.3	-1.2	-0.6	0.9	1.5	

2004-05 se	ries over 1999-	2000 series	2011-12 series over 2004-05 series		
2005-06	2006-07	2007-08	2012-13	2013-14	
(2)	(3)	(4)	(5)	(6)	
0.3	3.4	4.0	1.9	0.0	
3.2	5.3	10.7	7.8	6.8	
-0.5	-0.4	-1.2	-0.4	-0.2	
-1.1	-2.4	-3.3	-0.8	-7.8	
-2.6	-1.9	-0.3	-0.6	-1.5	
0.7	1.8	2.8	1.3	1.3	
2.2	4.5	5.3	-1.6	-1.1	
-0.1	2.4	6.3	0.6	0.8	
-1.3	-1.4	-0.7	0.0		
0.1	3.6	9.1	0.4		
-0.1	0.0	-0.2	-1.4	-1.1	
-0.2	-0.2	-0.7	-0.8		
-0.2	0	0.0	-1.7		
0.1	1.5	2.6	0.6	0.2	
0.3	3.4	4.0	1.9	0.0	
-0.8	-0.5	-0.1	0.4	-0.4	
0.6	2.2	3.8	0.1	0.5	
	2004-05 se 2005-06 (2) 0.3 3.2 -0.5 -1.1 -2.6 0.7 2.2 -0.1 -1.3 0.1 -0.1 -0.2 -0.2 0.1 0.3 -0.8 0.6	2004-05 series over 1999- 2005-06 2006-07 (2) (3) 0.3 3.4 3.2 5.3 -0.5 -0.4 -1.1 -2.4 -2.6 -1.9 0.7 1.8 2.2 4.5 -0.1 2.4 -1.3 -1.4 0.1 3.6 -0.1 0.0 -0.2 -0.2 -0.2 0 0.1 1.5 0.3 3.4 -0.8 -0.5 0.6 2.2	2004-05 series over 1999-2000 series 2005-06 2006-07 2007-08 (2) (3) (4) 0.3 3.4 4.0 3.2 5.3 10.7 -0.5 -0.4 -1.2 -1.1 -2.4 -3.3 -2.6 -1.9 -0.3 0.7 1.8 2.8 2.2 4.5 5.3 -0.1 2.4 6.3 -1.3 -1.4 -0.7 0.1 3.6 9.1 -0.1 0.0 -0.2 -0.2 -0.2 -0.7 -0.2 0 0.0 0.1 1.5 2.6 0.3 3.4 4.0 -0.8 -0.5 -0.1 0.6 2.2 3.8	2004-05 series over 1999-2000 series 2011-12 series over 2005-06 2006-07 2007-08 2012-13 (2) (3) (4) (5) 0.3 3.4 4.0 1.9 3.2 5.3 10.7 7.8 -0.5 -0.4 -1.2 -0.4 -1.1 -2.4 -3.3 -0.8 -2.6 -1.9 -0.3 -0.6 0.7 1.8 2.8 1.3 2.2 4.5 5.3 -1.6 -0.1 2.4 -0.7 0.0 0.1 3.6 9.1 0.4 -0.1 0.0 -0.2 -1.4 -0.1 0.0 -0.2 -1.4 -0.2 -0.2 -0.7 -0.8 -0.2 0 0.0 -1.7 0.1 1.5 2.6 0.6 0.3 3.4 4.0 1.9 -0.8 -0.5 -0.1 0.4 0.6	

Table 10. Point differences in the annual variations in deflators: Latest series over previous series

Sectors		2004-05		2011-12			
	1999-2000 series	2004-05 series	Difference	2004-05 series	2011-12 series	Difference	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Agriculture, forestry & fishing	19.2	19.0	-0.2	17.9	19.1	1.2	
Mining & quarrying	2.9	2.9	-0.1	2.7	3.2	0.5	
Manufacturing	15.8	15.3	-0.5	14.7	17.2	2.5	
Electricity, gas & water supply	2.1	2.1	0.0	1.6	2.4	0.8	
Construction	7.4	7.7	0.3	8.2	9.5	1.3	
Trade, hotels & restaurant	16.0	16.1	0.0	17.4	10.8	-6.6	
Transport, storage & communica-	8.5	8.4	-0.1	7.3	6.8	-0.6	
tion							
Financing, insurance, real estate &	14.1	14.7	0.6	16.5	18.4	2.0	
business services							
Banking & insurance	5.8	5.8	-0.1	5.7	5.9	0.2	
Real estate, ownership of dwellings	8.2	9.0	0.7	10.7	12.5	1.8	
& business services							
Community, social & personal ser-	14.0	13.8	-0.2	13.8	12.6	-1.1	
vices							
Public administration & defence	6.0	5.9	-0.2	5.9	6.1	0.1	
Other services	8.0	8.0	0.0	7.8	6.6	-1.3	
GDP at factor cost	100.0	100.0	0.0	100.0	100.0	0.0	
Agriculture	19.2	19.0	-0.2	17.9	19.1	1.2	
Industry	28.2	27.9	-0.3	27.2	32.3	5.1	
Services	52.6	53.0	0.4	54.9	48.6	-6.3	

Table 11. Sectoral shares (in%) in total GDP at current prices, in 2004-05 and 2011-12

Correlation between sectoral shares in 2004-05 series and 1999-2000 series = 0.999Correlation between sectoral shares in 2011-12 series and 2004-05 series = 0.901Source: Based on data extracted from Respective CSO Series

Sectors	2004-05	2011-12
(1)	(2)	(3)
Agriculture, forestry & fishing	58.5	48.9
Mining & quarrying	0.6	0.5
Manufacturing	11.7	12.6
Electricity, gas & water supply	0.3	0.5
Construction	5.6	10.6
Trade, hotels & restaurant	10.3	9.3
Transport, storage & communication	3.8	6.5
Financing, insurance, real estate & business services	1.5	2.32
Banking & insurance	0.6	0.9
Real estate, ownership of dwellings & business services	0.9	1.4
Community, social & personal services	7.8	8.75
Public administration & defence	1.8	1.7
Other services	6	7.1
Total	100	100
Agriculture	58.5	48.9
Industry	18.2	24.3
Services	23.4	26.9

Table 12. Sectoral share in employment (in%)

Note: Based on all workers (ps+ss) Source: Employment and Unemployment situation in India 2004-05 (Part II) and 2011-12, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, GOI.

Sr.	Sectors	At constant (2011-12)		-12)	At currentprices			Deflators					
INO.		2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
		-12	-13	-14	-15	-12	-13	-14	-15	-12	-13	-14	-15
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	Agriculture, forestry and fishing	18.5	17.8	17.5	16.3	18.5	18.2	18.3	17.4	100.0	110.3	119.8	125.9
2	Mining and quarrying	3.2	3.0	2.9	3.0	3.2	3.1	2.9	2.7	100.0	110.0	110.7	102.7
3	Manufacturing	17.4	17.5	17.4	17.1	17.4	17.1	16.5	16.1	100.0	105.2	108.5	110.7
4	Electricity, gas, water supply and other utility services	2.3	2.2	2.2	2.2	2.3	2.3	2.5	2.5	100.0	112.3	127.4	133.2
5	Construction	9.6	9.2	9.0	8.8	9.6	9.2	9.0	8.8	100.0	108.3	113.8	117.5
6	Trade, repair, hotels and restau- rants	10.9	11.5	11.6	12.0	10.9	11.5	11.5	11.8	100.0	107.6	113.9	116.3
7	Transport, storage, communication & services related to broadcasting	6.5	6.7	6.8	6.9	6.5	6.6	6.7	6.9	100.0	107.1	111.7	117.5
8	Financial services	5.9	6.2	6.1	6.1	5.9	5.8	5.8	5.7	100.0	102.0	109.2	109.4
9	Real estate, ownership of dwelling and professional services	13.0	13.4	14.2	14.9	13.0	13.5	14.3	14.9	100.0	108.2	114.5	118.3
10	Public administration and defence	6.1	5.8	5.7	5.8	6.1	5.9	5.9	6.2	100.0	109.1	118.3	125.2
11	Other Services	6.6	6.7	6.6	6.9	6.6	6.7	6.7	7.2	100.0	108.6	116.4	123.5
12	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	107.8	114.3	117.9
	Agriculture, forestry and fishing	18.5	17.8	17.5	16.3	18.5	18.2	18.3	17.4	100.0	110.3	119.8	125.9
	Industry	32.5	31.9	31.6	31.2	32.5	31.7	30.8	30.0	100.0	107.1	111.6	113.4
	Services	49.0	50.2	51.0	52.5	49.0	50.0	50.9	52.6	100.0	107.3	114.1	118.1

Table 13. A Comparison of Relative Shares in the New Series at Constant and Current Prices, and Also Relative Deflators

Sources: Based on data extracted from CSO (2016a)

Items		2004-05		2011-12		
	1999-2000 series	2004-05 series	Differences	2004-05 series	2011-12 series	Differences
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Private Final Consumption Expendi- ture	58.4	59.1	0.7	57.1	56.2	-0.9
Government Final Consumption Expenditure	10.7	10.9	0.2	11.4	11.1	-0.3
Gross Capital Formation	31.6	32.5	0.8	36.4	39.6	3.2
Gross Fixed Capital Formation	28.4	28.7	0.3	31.8	34.3	2.6
Changes in stocks	1.9	2.5	0.6	1.9	2.4	0.5
Valuables	1.3	1.3	0.0	2.7	2.9	0.2
Exports of goods and services	18.1	17.6	-0.5	23.9	24.5	0.7
Less Imports of goods and services	19.9	19.3	-0.6	30.2	31.1	0.9
Discrepancies	1.0	-0.8	-1.8	1.5	-0.3	-1.8
Total	100.0	100.0	0.0	100.0	100.0	0.0

Table 14. Expenditure components of GDP at current prices (in %), in 2004-05 and 2011	-12
---	-----

Table 15. Percentage differences in savings and capital formation (at current prices)

Institutions	2	2004-05 series (2011-12 series over 2004-05 series						
	2004-05	2005-06	2006-07	2007-08	2011-12	2012-13			
(1)	(2)	(3)	(4)	(5)	(6)	(7)			
			Gross Fixed	Capital Forma	ation				
Public Sector	11.0	8.3	8.2	2.0	0.3	-11.6			
Private Corporate Sector	-1.4	2.1	1.1	12.3	15.5	36.8			
Household Sector	4.4	-5.1	-6.3	-8.6	0.2	1.9			
Total	3.9	0.7	0.0	2.3	4.8	8.1			
	Gross Capital Formation								
Public Sector	10.9	7.9	8.2	3.0	-5.4	-12.7			
Private Corporate Sector	-1.1	1.8	2.1	15.1	26.7	46.2			
Household Sector	9.1	-2.9	-0.4	-9.8	-2.3	-2.1			
Total	5.9	1.4	2.6	3.8	5.7	9.0			
		Gross Savings							
Public Sector	8.0	2.5	10.9	17.1	20.8	17.7			
Private Corporate Sector	0.2	0.2	-1.1	12.5	25.6	39.1			
Household Sector	6.5	0.5	-0.1	-2.8	0.5	1.0			
Financial saving	3.3	4.1	0.3	4.9	-1.1	-0.7			
Saving in physical assets	9.1	-2.9	-0.4	-9.8	-4.7	-4.6			
					-(2.3)	-(2.1)			
	5.3	0.6	0.7	3.2	6.0	9.4			
					(7.2)	(10.6)			

Figures in brackets percentage changes including valuables Source: Based on data extracted from Respective CSO Series

Items		2004-05		2011-12				
	1999-2000 series	2004-05 series	Differences	2004-05 series	2011-12 series	Differences		
(1)	(2)	(3)	(4)	(5)	(6)	(7)		
		A. As % o	of Gross Nation	al Disposabl	e Income (GN	DI)		
Public Sector	2.1	2.2	0.1	1.2	1.5	0.3		
Private Corporate Sector	6.6	6.4	-0.2	7.1	9.2	2.1		
Household Sector	22.3	23.1	0.8	22.2	23	0.8		
Financial Saving	9.9	9.9	0.0	6.8	7.2	0.3		
Saving in Physical Assets	12.4	13.2	0.8	15.4	15.5	0.1		
Total	31.0	31.7	0.7	30.6	33.8	3.2		
(Household savings in Valuables)					0.4			
Č ,	B. As percentage to total savings							
Public Sector	6.9	7.1	0.2	3.9	4.4	0.5		
Private Corporate Sector	21.2	20.2	-1.0	23.3	27.3	4.0		
Household Sector	71.8	72.7	0.8	72.7	68.2	-4.5		
Financial Saving	31.8	31.2	-0.6	22.4	21.2	-1.2		
Saving in Physical Assets	40.0	41.5	1.5	50.4	45.9	-4.5		
Total	100.0	100.0	0.0	100.0	100.0	0.0		
(Household savings in Valuables)					1.1			

Table 16. Gross savings rate (at current prices)

Source: Based on data extracted from Respective CSO Series

Table 17. Investment rate (at current prices)

Items		2004-05		2011-12				
	1999-2000 series	2004-05 series	Differences	2004-05 series	2011-12 series	Differences		
(1)	(2)	(3)	(4)	(5)	(6)	(7)		
		1	A. As % of GI	DP at market	prices			
Gross Fixed Capital Formation					-			
Public Sector	6.4	6.9	0.5	7.1	7.3	0.2		
Private Corporate Sector	9.5	9.1	-0.4	9.4	11.2	1.8		
Household Sector	12.5	12.7	0.2	15.2	15.7	0.5		
Total	28.4	28.7	0.3	31.8	34.3	2.6		
Gross Capital Formation								
Public Sector	6.9	7.4	0.5	7.7	7.5	-0.2		
Private Corporate Sector	10.8	10.3	-0.4	10.1	13.2	3.1		
Household Sector	12.7	13.4	0.8	15.8	15.9	0.1		
Total	30.3	31.2	0.9	33.6	36.7	3.0		
	B. As nercentage to total							
Gross Fixed Capital Formation								
Public Sector	22.5	24.1	1.5	22.3	21.4	-0.9		
Private Corporate Sector	33.5	31.8	-1.7	29.7	32.7	3.0		
Household Sector	44.0	44.2	0.2	48.0	45.9	-2.1		
Total	100.0	100.0	0.0	100.0	100.0	0.0		
Gross Capital Formation								
Public Sector	22.7	23.8	1.1	23.0	20.5	-2.4		
Private Corporate Sector	35.5	33.1	-2.4	30.1	36.1	6.0		
Household Sector	41.8	43.1	1.3	46.9	43.4	-3.6		
Total	100.0	100.0	0.0	100.0	100.0	0.0		

	Table 18: Varyin	g Pictures of "Discre	pancies''	(Rupees, Crore)					
A. Comparisons of 2004-05 & 2011-12 Estimates									
	2011-12	2012-13	2013-14	2014-15					
2004-05 Series	135,220	324,505	266,992	-					
2011-12 Series	(-) 28,667 (SRE)	80,227 (SRE)	40,206 (SRE)	44,168 (FRE)					

Table 18: Varying Pictures of "Discrepancies"

B. Discrepancies at Different Stages of Estimation (New Series at Current Prices)

	2011-12	2012-13	2013-14	2014-15
2011-12 Series	(-) 28,667 (SRE)	80,227 (SRE)	40,206 (SRE)	44,168 (FRE)
	(-)1,13,242 (SRE)	63,439 (SRE)	(-)58,373 (FRE)	(-) 98,678 (PE)
	-	-	-	(-)146,174 (AE)

C. Discrepancies at Current and Constant Prices (New Series)

2011-12 Series (Latest)	2011-12	2012-13	2013-14	2014-15	2015-16
Current Prices	(-) 28,667	80,227	40,206	44,168	9,135 (PE)
Constant Prices	(-) 28,667	70,586	(-)44,117	(-)35, 284	214,843 (PE)

		At Consta	nt (2011-	12) Price	s		At C	Current P	rices	
Item	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
GVA at factor cost		5.4	Gro 6.5	wth Rate 7.1	s		13.5	12.9	10.6	
GVA at basic prices		5.4	6.3	7.1	7.2		13.6	12.7	10.5	7
Taxes on Products		9.5	5.3	8	7.5		18.9	13.5	12.4	19.4
Subsidies on Products		12.7	-7.9	4.8	-5.6		21.5	-2.3	8.1	-5.7
GDP at market prices		5.6	6.6	7.2	7.6		13.9	13.3	10.8	8.7
Consumption of Fixed Capital		10	9.2	8.3	7.2		15.6	13.1	11.2	8.7
Private final consumption exp.		5.3	6.8	6.2	7.4		15.5	14.8	10.5	12.3
Govt. final consumption exp.		0.5	0.4	12.8	2.2		9.6	8.6	18.4	5.4
Gross capital formation		6.8	-1.9	6.3			12.9	1.8	9.3	
Gorss fixed capital formation		4.9	3.4	4.9	3.9		10.8	7.3	7.9	3.3
Exports of goods and services		6.7	7.8	1.7	-5.2		13.8	17	0.2	-5.4
Imports of goods and services		6	-8.2	0.8	-2.8		14.5	2.6	1.3	-5.6
GNDI							13.6	13.2	10.6	8.5
Gross Saving							11.2	10.7	10.5	
Net Saving							9.3	9.6	10.2	
		As	% of GD	P at marl	ket price	5				
GVA at factor cost	92.7	92.5	92.4	92.3		92.7	92.4	92.1	91.9	
GVA at basic prices	92.8	92.6	92.3	92.2	91.9	92.8	92.6	92.1	91.9	90.4
Taxes on Products	10.2	10.6	10.4	10.5	10.5	10.2	10.6	10.7	10.8	11.9
Subsidies on Products	3	3.2	2.8	2.7	2.4	3	3.2	2.7	2.7	2.3
Consumption of fixed capital	10.5	10.9	11.2	11.3	11.3	10.5	10.7	10.6	10.7	10.7
Private final consumption exp.	56.2	56	56.1	55.6	55.5	56.2	57	57.7	57.6	59.5
Govt. final consumption exp.	11.1	10.6	9.9	10.4	9.9	11.1	10.7	10.2	10.9	10.6
Gross capital formation	39	39.4	36.2	35.9		39	38.6	34.7	34.2	
Gorss fixed capital formation	34.3	34.1	33	32.3	31.2	34.3	33.4	31.6	30.8	29.3
Valuables	2.9	2.8	1.5	1.6	1.5	2.9	2.8	1.4	1.5	1.4
Exports of goods and services	24.5	24.8	25.1	23.8	20.9	24.5	24.5	25.3	22.9	19.9
Imports of goods and services	31.1	31.2	26.9	25.2	22.8	31.1	31.2	28.3	25.9	22.5
Discrepancies	-0.3	0.8	-0.4	-0.3	1.9	-0.3	0.8	0.4	0.4	0.1
Gross Saving to GNDI						33.8	33	32.3	32.3	
PFCE to NNI	63.4	63.8	64.1	63.5	63.4	63.4	64.6	65.5	65.3	67.5

Table 19. Key	aggregates of	of national	accounts	(Base	Year 2011-12)
	00 0				

Sources: Based on data extracted from CSO (2016a)

Year	GVA at basic prices	GDP	Taxes on Products	Subsidies on Products	Private Final Consum- ption expendi- ture	Govern- ment Final Consum- ption Expendi- ture	Gross Fixed Capital Forma- tion	Changes in stock	Valuables	Exports of goods and services	Imports of goods and services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
2012-13	7.8	7.9	8.6	7.8	9.7	9.0	5.7	6.7	5.4	6.6	8.0
2013-14	6.0	6.2	7.8	6.0	7.5	8.2	3.8	4.1	3.0	8.6	11.8
2014-15	3.2	3.3	4.0	3.2	4.0	5.0	2.9	1.8	2.4	-1.4	0.5
2015-16	-0.5	1.0	13.0	-0.5	4.8	2.9	-1.6	0.4	-4.2	-0.3	-0.1
	(-0.1)	-1.1									

Table 20. Annual percentage variations in implicit deflators of selected NAS aggregates

Source: Rajakumar and Shetty [2016b].

Table 21:GDP by Expenditure and Production Approahces from Supply and Use Tables (SUT)

	Approalees from Suppry and		(Rupees, Crore)
	2011-12	2012-13	Increase in Per cent
(1)	(2)	(3)	(4)
Reconciled Data			
Output	17,822,309	19,916,206	
Intermeidate Consumption	9,654,721	10,644,823	
Product Taxes			
Less Subsidies	485,987	577,765	
Import Duty	143,396	163,556	
Total Indirect Taxes	629,383	741,321	7
GDP	8,796,971	10,012,704	13.8
GVA	8,167,588	9,271,383	13.5
As % of NAS (2016) given below			
GDP	100.7	100.62	
GVA	100.75	100.69	
Earlier Reported Estimates (NAS 20	16)		
GDP	8,736,039	9,951,344	13.9
GVA	8,106,656	9,210,023	13.6

Source: CSO (2016)

Table 22. Phase-wise Data Availability for Manufacturing Sector

Type of Estimates		Data Sources			
	2004-05 series	2011-12 series			
(1)	(2)	(3)			
Advance Estimates (AE)	Index of Industrial Production (IIP)	IIP + Advance filing of corporate accounts			
Provisional Estimates (PE)					
1st Revised Estimates (FRE)	IIP	IIP + MCA 21			
2nd Revised Estimate (SRE)	Annual Survey of Industries (ASI)	MCA 21 + Non-corporate ASI			

Source: MOSPI (2015a)

					(Rupees, Crore)
		201	1-12		GVA of Manufacturing
Date of Revision	Total	GVA	Total	GDP	(Current Frices)
	Current	Constant	Current	Constant	_
(1)	(2)	(3)	(4)	(5)	(6)
Jan-2015	8,195,546	8,195,546	8,832,012	8,832,012	1,482,158
Feb-2015	8,195,546	8,195,546	8,832,012	8,832,012	
January 2016 (SRE)	8,106,656	8,106,656	8,736,039	8,736,039	1,409,986
	(-0.99)	(-0.99)	(-0.99)	(-0.99)	(-4.9)
		201	2-13		
	GV	VA	Gl	OP	
	Current	Constant	Current	Constant	_
Jan-2015	9,252,051	8,599,224	9,988,540	9,280,803	1,654,084
February 2015 (FRE)	9,252,051	8,599,224	9,988,540	9,280,803	
January 2016 (SRE)	9,210,023	8,546,552	9,951,344	9,226,879	1,573,632
	(-1.00)	(-0.99)	(-1.00)	(-0.99)	(-4.9)
		201	3-14		
	GV	VA	Gl	OP	
	Current	Constant	Current	Constant	_
Jan-2015	10,477,140	9,169,787	11,345,056	9,921,106	1,808,370
February 2015 (FRE)	10,477,140	9,169,787	11,345,056	9,921,106	
January 2016 (SRE)	10,380,813	9,084,369	11,272,764	9,839,434	1,714,730
	(-1.0)	(-1.0)	(-1.0)	(-1.0)	(-6.2)
		201	4-15		
	GV	VA	Gl	DP	
	Current	Constant	Current	Constant	_
February 2015 (AE)	11,689,705	9,857,672	12,653,762	10,656,925	1,991,191
May 2015 (PE)	11,550,240	9,827,089	12,541,208	10,643,983	19,84,173
	(-1.2)	(-0.3)	(-0.9)	(-0.1)	(-0.4)
January 2016 (FRE)	11,472,409	9,727,490	12,488,205	10,552,151	1,845,541
	(-0.7)	(-1.0)	(-0.4)	(-0.9)	(-7.0)

Table 23. GVA and GDP Estimates at Different Stages of Revisions

Note: Figures in brackets are percentage variations over the preceeding stage. Source: Based on data extracted from Respective CSO Series "Tabulated by the authors from the CSO's Respective Press Releases~

_

(Rupees, Crore)

Sr. No.	Sectors	At contst	ant Prices	At curre	nt prices	As % of total
		2015-16 PE over 2014-15PE	2015-16 PE over 2014-15 FRE	2015-16 PE over 2014-15PE	2015-16 PE over 2014-15 FRE	at current prices
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Agriculture, forestry and fishing	1.3	1.2	6.5	4.9	15.4
2	Mining and quarrying	12.5	7.4	15.5	4.7	3.1
3	Manufacturing	2.6	9.3	0.5	8.1	17.5
4	Electricity, gas, etc	1.2	6.6	14.9	10.8	2.2
5	Construction	11.7	3.9	9.5	1.3	8.5
6	Trade, hotels, etc	4.9	9.0	3.5	6.6	19.2
7	Financial services, real estate, etc	11.6	10.3	6.8	7.4	21.6
8	Public administration	6.1	6.6	11.6	12.1	12.6
9	GVA at Basic Price	6.1	7.2	6.3	7.0	100.0
	GDP at market price	6.6	7.6	8.3	8.7	

Table 24. Comparison of growth rate using different reference estimates

Full nomenclatures:

Fun indirectivity, gas, water supply and other utility services
Electricity, gas, water supply and other utility services
Trade, hotels, etc, comprised: Trade, hotels, transport, communication and services related to broadcasting.
Financical services, real estate, etc, comprises: Financial, real estate and professional services.
Public administration includes: Public administration, defence and other services
Source: Based on data extracted from CSO (2015b and 2016b)

Table 25. Manufacturing GVA: New Series Compared with 2004-05 Series

	Growth a	Growth at Current Prices		at Constant Prices	GVA Sha	GVA Share in Total GDP	
	2004-05 Series	2011-12 Series	2004-05 Series	2011-12 Series	2004-05 Series	2011-12 Series	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
2011-12 2012-13 2013-14	6.9 2.2	11.6 9.3	1.1 (-) 0.7	6.2 5.8	14.7 14.1 12.9	18.1 17.9 17.3	

Source: MOSPI [2015]

Table 26. GVA of the Manufacturing Sector

						· · · · · · · · · · · · · · · · · · ·
Part A: GVA of Organised Manufacturing						Part B: GVA of Total
Year	Public Sector ¹	Private Corporations ²	Total Corporate Sector [2+3]	ASI (GVA at Current Prices) ³	Derived GVA on Account of Head Office Operations [4-5]	(Organised plus Unorganised)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2011-12	1,31,973	10,98,467	12,30,440	9,76,939	2,53,501	14,09,986
2012-13	1,32,864	12,30,222	13,63,086	10,07,280	3,55,806	15,73,632
	(0.7)	(12.0)	(10.8)	(3.1)	(40.4)	(11.6)
2013-14	1,38,184	13,37,727	14,75,911	10,65,111	410,800	17,14,730
	(4.0)	(8.7)	(8.3)	(5.7)	(15.5)	(9.0)

1. These cover general government, Departmental Enterprises (DE) and Non-Departmental Enterprises (NDE)

2. These include Quasi-Corporations (QC)

3. Includes public & private limited companies, NDEs, proprietary & partnership factories, Hindu Undivided Families (HUFs) & Khadi and Village Industries Commission (KVIC), etc. Notes: (i) Figures in round brackets are annual percentage increases (ii) Figures in square brackets are col. (6) as a proportion of col.

(5), that is, Head Office (HO) operations are as percentage of ASI GVA. Source: NAS 2016 and Annual Survey of Industries.

Year	GVA in 200	4-05 Series	GVA in 2011-12 Series
	Banking Department RBI	Of which Possible Surplus Profit\$	GVA in 2011-12 Series (4) - - 3,236 (200)
(1)	(2)	(3)	(4)
2004-05	(-) 3,156	5,400	-
2009-10	1,058	18,759	-
2010-11	9,435	15,009	-
2011-12	26,122	16,010	3,236
2012-13	46,756	33,010	6,099
2013-14	-	52,679	4,590

Table 27. GVA Estimates for the RBI: New Series Compared with 2004-05 Series (At Current Prices)	
(Rupees,	Crore)

Source: CSO (2014) & CSO (2015): Data on surplus profit are from RBI Annual Reports \$ including foreign income sources

Т	able 28. P	roposed 1	Estimatio	n of RBI'	s GVA vi	s-à-vis N⊿	AS Estima	ation (at o	current p	rices) (Rupe	es, Crore)
			Part A					Pa	rt B		
		Proposed	Estimatio	n of GVA		NAS I	Estimation	(Revised	Series)	NAS Es (2004-0	timation 5 Series)
	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Employee Cost	2,993	5,860	4,324	4,058	4,477						
Depreciation	242	239	266	242	220						
Surplus	16,010	33,010	52,679	65,896	65,876						
Total GVA	19,245	39,109	57,269	70,196	70,573	3,236	6,099	4,590	4,300	26,122	46,756

Source: (i) RBI Income and Expenditure Accounts (ii) National Accounts Statistics 2016 (iii) National Accounts Statistics 2014

Table 29. Banking & Insurance as % of GDP at Factor Cost or basic Prices

		At Current Prices		ŀ	At Constant Price	s
	1999-2000 series	2004-05 series	2011-12 series\$	1999-2000 series	2004-05 series	2011-12 series\$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2005-06	5.8	5.8		5.9	5.8	
2006-07	5.5	5.4		6.1	6.1	
2007-08	5.6	5.5		6.7	6.7	
2008-09	5.6	5.5		7.1	7.2	
2009-10		5.6			7.6	
2010-11		5.4			7.8	
2011-12		5.7	5.9		8.3	5.9
2012-13		5.7	5.8		8.7	6.2
2013-14			5.8			6.1
2014-15			5.7			6.1

Refered as Financial Services under 2011-12 series Source: Derived by us from Respective CSO Series

	prices of the maneual corporation	ono for the year 2011 12	(Rupees, Crore)
		For 2011-12	
Sub-sectors of financial services	2004-05 series	2011-12 series	% Difference
(1)	(2)	(3)	(5)
RBI	26122	3236	-87.6
	(5.4)	(0.7)	
SCBs (incl. Regional Rural Banks)	254602	246452	-3.2
	(52.9)	(51.3)	
Post Office Savings Bank (POSB) #	2907	4316	48.5
	(0.6)	(0.9)	
NBFIs	68226	91344	33.9
	(14.2)	(19.0)	
Co-operative credit society	14889	23854	60.2
(includes Cooperative Banks) #			
-	(3.1)	(5.0)	
Unorganised	18033	44663	147.7
	(3.7)	(9.3)	
Insurance	95742	65392	-31.7
	(19.9)	(13.6)	
Life	64611	40487	-37.3
	(13.4)	(8.4)	
Non-Life	31131	24905	-20
	(6.5)	(5.2)	
Pension Fund	974	975	0.1
	(0.2)	(0.2)	
Financial Services (Total)	481495	480232	-0.3

 Table 30. GVA at current prices of the financial corporations for the year 2011-12

These will be merged with Scheduled Commercial Banks in the publication, NAS. Note: New series estimates are at basic prices while the estimates in the old series at factor cost. Estimates of GVA at factor cost for the new series for the year 2011-12 is estimated at Rs. 4,79,860 crore. Source: CSO (2015)

Table 31. Value Added from Financial Services (2011-12)

Current Prices		Rupees	s, Crore			As %	to total	
Major Heads	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Monetary Financial Institutions (S-121 to S-123)	277858	297114	338296	359090	57.9	55.3	56.2	55.2
Central Bank (S-121)	3236	6099	4590	4300	0.7	1.1	0.8	0.7
Deposit Taking Corporations excluding Central Bank (S-122) & Money Market Funds (S-123)	274622	291016	333705	354790	57.2	54.2	55.4	54.6
Other Financial Corporations (S-124 to S-127)	136014	156478	177606	195384	28.3	29.1	29.5	30
Other Financial Inter mediaries except ICPF (S- 125) and Non MMF Investment Funds (S-124)	57303	62646	73266	87141	11.9	11.7	12.2	13.4
Financial auxiliaries (S-126)	34041	42590	44686	42162	7.1	7.9	7.4	6.5
Captive Financial Institutions (S-127)	44670	51241	59655	66080	9.3	9.5	9.9	10.2
Insurance Corporation and Pension Funds (S- 128 to S-129)	66354	83227	86312	95886	13.8	15.5	14.3	14.7
Life Insurance (S-128)	40478	48752	46496	51652	8.4	9.1	7.7	7.9
Non-Life Insurance (S-128)	24902	33388	38648	42956	5.2	6.2	6.4	6.6
Pension Funds (S-129)	974	1087	1168	1277	0.2	0.2	0.2	0.2
GVA (S-12): Financial services	480226	536819	602214	650360	100	100	100	100
GVA: All India	8106656	9210023	10380813	11472409	5.9	5.8	5.8	5.7

(Contd.)

Table 31. (Concld.)

Constant Prices

Major Heads		Rupees	s, Crore			As %	to total	
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
Monetary Financial Institutions (S-121 to S-123)	277858	296137	314324	333022	57.9	56.3	57	56
Central Bank (S-121)	3236	6109	4273	4004	0.7	1.2	0.8	0.7
Deposit Taking Corporations excluding Cen- tral Bank (S-122) & Money Market Funds (S-123)	274622	290028	310051	329018	57.2	55.1	56.2	55.3
Other Financial Corporations (S-124 to S-127)	136014	152504	160968	174514	28.3	29	29.2	29.3
Other Financial Inter mediaries except ICPF (S-125) and Non MMF Investment Funds (S-124)	57303	69871	75256	86958	11.9	13.3	13.7	14.6
Financial auxiliaries (S-126)	34041	35189	33683	31708	7.1	6.7	6.1	5.3
Captive Financial Institutions (S-127)	44670	47444	52030	55848	9.3	9	9.4	9.4
Insurance Corporation and Pension Funds (S-128 to S-129)	66354	77516	75966	87156	13.8	14.7	13.8	14.7
Life Insurance (S-128)	40478	42536	38800	48521	8.4	8.1	7	8.2
Non-Life Insurance (S-128)	24902	33991	36197	37635	5.2	6.5	6.6	6.3
Pension Funds (S-129)	974	988	968	1000	0.2	0.2	0.2	0.2
GVA (S-12): Financial services	480226	526156	551258	594691	100	100	100	100
GVA: All India	8106656	8546552	9084369	9727490	5.9	6.2	6.1	6.1

Note: Sub-group codes are as per NAS 2011-12 publication Source: NAS 2016

Table 32. A Comparison of GDP Deflators vis a vis Deflators for Banking and Finance

]	Banking and Finan	ce	GDP a	at Factor Cost/Basi	c Prices
	1999-2000 series	2004-05 series	2011-12 series\$	1999-2000 series	2004-05 series	2011-12 series\$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2004-05	119.9	100.0		120.5	100.0	
2005-06	112.9	92.9		125.5	104.2	
2006-07	110.6	90.9		131.6	110.9	
2007-08	108.8	90.1		138.1	117.6	
2008-09		94.1			127.5	
2009-10		93.7			135.3	
2010-11		100.9			147.4	
2011-12		104.9	100.0		159.9	100.0
2012-13		107.0	102.0		171.3	107.8
2013-14			109.2			114.3
2014-15			109.4			117.9

\$ refered as Financial Services under 2011-12 series Source: Derived by us from the Respective CSO Series

Sr. No.	Industry	2004-05 series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)	(5)
1	Agriculture	19,536	31,543	61.5
2	Live Stock	352	216	-38.6
3	Forestry	343	215	-37.3
4	Fishing	23	15	-36.9
5	Mining & Quarrying	1,508	1,634	8.4
6	Manufacturing	55,507	64,377	16.0
6.1	Registered	55,123	59,250	7.5
6.2	Un-registered	384	5,127	1,234.1
7	Construction	32,520	26,514	-18.5
8	Electricity	17,613	17,306	-1.7
9	Gas	399	272	-31.7
10	Transport	5,542	5,019	-9.4
11	Storage	37	28	-26.2
12	Trade & Repair Services	21,723	26,017	19.8
13	Hotels & Restaurants	2,111	2,508	18.8
14	Business and Service	5,933	7,059	19.0
15	Financial	24,612	0	-100.0
16	Personal (Household)	105,038	157,787	50.2
17	Government	45,427	0	-100.0
18	Railways	1,138	393	-65.4
19	Other Services	8,949	10,702	19.6
20	Miscellaneous	0	0	
21	Foreign	4,351	4,648	6.8
22	Communication	2,871	3,352	16.7
	TOTAL	355,536	359,606	1.1

Table 33. Industry-Wise FISIM at current prices, 2011-12

Source: CSO June 2015: 135

Table 34. Net Factor Income from Rest of the World, 2011-12 to 2013-14

		(Rupees, Crore)
	At Current Prices	
2004-05 Series	New Series	Difference
(2)	(3)	(4)
-76830	-76824	6
-116766	-116763	3
NA	-139887	NA
	2004-05 Series (2) -76830 -116766 NA	At Current Prices 2004-05 Series New Series (2) (3) -76830 -76824 -116766 -116763 NA -139887

Source: CSO June 2015:106

Year		19	99-2000 ser	ies			2(004-05 serie	S			2(011-12 serie	S	
	Export of Goods and Services	Merchandi se f.o.b.	Imports of goods & services	Merchandi se c.i.f.	Export and Import / GDP	Export of Goods and Services	Merchandi se f.o.b.	Imports of goods & services	Merchandi se c.i.f.	Export and Import / GDP	Export of Goods and Services	Merchandi se f.o.b.	Imports of goods & services	Merchandi se c.i.f.	Export and Import / GDP
(1)	(2)	(3)	(4)	(5)	(9)	(1)	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1999-00	227697	159561	265702	215236	1952036										
2000-01	278126	203571	297523	230873	2102314										
2001-02	290757	209018	311050	245200	2278952										
2002-03	355556	255137	379981	297206	2454561										
2003-04	417425	293367	436878	359108	2754620										
2004-05	569051	375340	625945	501065	3149407	569051	375340	625945	501065	3242209					
2005-06	712087	456418	813466	660409	3586743	712087	456418	813466	660409	3693369					
2006-07	916804	571779	1042263	840506	4129174	904872	571779	1040535	840506	4294706					
2007-08	999441	640172	1167786	964850	4723400	1018907	655864	1219109	1012312	4987090					
2008-09						1328765	840755	1614040	1374436	5630063					
2009-10						1298780	845534	1647139	1363736	6477827					
2010-11						1710193	1142920	2050182	1683470	7784115					
2011-12						2150326	1465959	2721947	2345463	9009722	2143931	1465959	2715554	2345463	8736039
2012-13						2426807	1634320	3108430	2669160	1E+07	2439707	1634320	3108428	2669160	9951344
2013-14											2854713	1905010	3190352	2715430	11000000
2014-15											2861066	1896350	3233123	2737090	1200000

Table 35. Export and Import Data Part A: Export and import of goods and services (Rs Crore)

VOL. 29 NO. 1

129

Year		199	99-2000 seri	es			20	04-05 serie:				5)11-12 serie	~	
	Export of Goods and Services	Merchandi se f.o.b.	Imports of goods & services	Merchandi se c.i.f.	Export and Import / d GDP	Export of Goods and Services	Merchandi se f.o.b.	Imports of goods & services	Merchandi se c.i.f.	Export and Import / GDP	Export of Goods and Services	Merchandi se f.o.b.	Imports of goods & services	Merchandi se c.i.f.	Export and Import / GDP
(1)	(2)	(3)	(4)	(5)	(9)	(7)	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1999-00	11.7	8.2	13.6	11	25.3										
2000-01	13.2	9.7	14.2	11	27.4										
2001-02	12.8	9.2	13.6	10.8	26.4										
2002-03	14.5	10.4	15.5	12.1	30										
2003-04	15.2	10.6	15.9	13	31										
2004-05	18.1	11.9	19.9	15.9	37.9	17.6	11.6	19.3	15.5	36.9					
2005-06	19.9	12.7	22.7	18.4	42.5	19.3	12.4	22	17.9	41.3					
2006-07	22.2	13.8	25.2	20.4	47.4	21.1	13.3	24.2	19.6	45.3					
2007-08	21.2	13.6	24.7	20.4	45.9	20.4	13.2	24.4	20.3	44.9					
2008-09						23.6	14.9	28.7	24.4	52.3					
2009-10						20	13.1	25.4	21.1	45.5					
2010-11						22	14.7	26.3	21.6	48.3					
2011-12						23.9	16.3	30.2	26	54.1	24.5	16.8	31.1	26.8	55.6
2012-13						24	16.2	30.7	26.4	54.7	24.5	16.4	31.2	26.8	55.8
2013-14											25.3	16.9	28.3	24.1	53.6
2014-15											22.9	15.2	25.9	21.9	48.8

P at market prices
5
of
%
as
services :
and
goods
of
import
and
Export
В
Part

Source: Respective CSO Series.

CRITIQUE OF RECENT REVISIONS WITH BASE YEAR CHANGE FOR ESTIMATION OF STATE INCOME IN INDIA

Ravindra H. Dholakia* and Manish B. Pandya**

In the present paper, we have critiqued recent revisions made in the estimation of state income in India consequent upon the change in the base year of the National Accounts from 2004-05 to the new base of 2011-12. We have pointed out 10 major limitations of the whole exercise. The revisions associated with the new base 2011-12 series have serious implications on national and regional accounts estimation compared to the past. We have argued with concrete illustrations drawn from the experience of the Gujarat state that most of these impacts are negative on the quality, reliability, valid usage, interpretation and meaningful analysis of long term trends of sectors and the economy at the state level in the country. These revisions are perhaps not well thought out, careful and consistent with the fundamental desirable characteristics of descriptive statistics and estimation of aggregates. In some cases they seem to be carried out hurriedly without paying attention to their likely impact on the whole system, processes and personnel involved in collection, compilation and generation of critical estimates at regional level. Our final recommendation is that the recent revisions associated with the new base of 2011-12 series should be abandoned for implementation at the state and district levels in the country till further revision of the base year takes place. In the interim period, let the old base of 2004-05 with the methodology continue at the state level.

I. PERIODIC REVISION OF ESTIMATES

The National Accounts Division (NAD) of Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation (MoSPI), Government of India [GoI], is the apex body in charge of estimating and publishing the National Accounts Statistics (NAS) including various measures of the national income and related aggregates such as consumption, saving, capital formation, exports, imports and so on. Since a developing economy like India experiences significant structural transformation, rapid technical progress and substantial compositional changes over relatively short time span, the measurement of these aggregates also need to cope up continually. In order to provide more relevant, reliable and useful estimates of these aggregates, CSO therefore undertakes periodic revisions in their estimates on a regular basis. Such revisions are in terms of one or more of the following: 1. Changing the base year of the series; 2. Changing the basic sources for quantitative data; 3. Replacing old surveys with recent surveys; 4. Updating ratios and proportions used in

estimation; 5. Changing definitions of basic activities; 6. Changing the scope of sector and sub-sector classification; and 7. Changing the concept of the aggregates measured if required. Most of these changes are usually carried out when the base year revision takes place periodically to avoid non-comparability of estimates over medium term. However, generating comparable time series over a long time period invariably involves assumptions and hence some compromise in a strict sense.

In the past, National Accounts Statistics in India were revised decennially changing the base to a year that coincided with the Population Census. The importance of the Population Census was very high in the estimation of the Gross Domestic Product (GDP) by sectors because the informal/unorganised sectors played an overwhelming role in the Indian economy, where the work force estimates especially in the unorganised sector provided the basis for income estimation through the indirect income approach. This practice continued up to the series with base year 1980- 81 in India, because the Census years

^{*} Ravindra H. Dholakia is Professor, IIM Ahmedabad. Email: rdholkia@iima.ac.in

^{**} Manish B. Pandya is Jt. Director, DE&S, GoG, Gandhinagar. Email: mannpandya@gmail.com

Disclaimer: Views expressed here are those of the authors and not necessarily of the organizations where they work.

1960-61, 1970-71 and 1980-81 were normal years satisfying the selection criteria for a good base year. However, 1990-91 was not a normal year for the Indian economy and it could not satisfy the selection criteria for a good base year. The relative price structure prevailing in 1990-91 could not be considered a representative average for the years to follow, a requirement to minimize the impact of the statistical 'index number problem'. Hence, the year 1993-94 was selected as the new base year instead of 1990-91.

132

Since the base 1993-94 series, the CSO started using the work force estimates from the results of Quinquennial Employment and Unemployment Surveys of National Sample Survey Organisation (NSSO) instead of the Population Census, and consequently started revising the base years of national accounts statistics once in every five years coinciding with the years for which the NSSO conducts the Quinquennial Employment and Unemployment Surveys (EUS). The National Statistical Commission (NSC) has also recommended that all economic indices should be rebased at least once in every five years [GoI, 2001] considering the nature and the rate of dynamic changes taking place in the economy.

Table 1. Revision of Base Year in National Accounts Statistics in India	
---	--

Old Base Year	To New Base Year	Date of Revision	Linked To
(1)	(2)	(3)	(4)
1948-49	1960-61	August 1967	1961 Census
1960-61	1970-71	January 1978	1971 Census
1970-71	1980-81	February 1988	1981 Census
1980-81	1993-94	February 1999	1993-94 EUS
1993-94	1999-2000	January 2006	1999-00 EUS
1999-2000	2004-05	January 2010	2004-05 EUS
2004-05	2011-12@	January 2015	2011-12 EUS@

@ The NSSO quinquennial survey of 2009-10 was available but was not considered appropriate since the year 2009-10 was not normal and representative.

Basic Source: CSO, MoSPI website: Publication: Changes in Methodologies and Data Source in New Series of National Accounts, Base Year 2011-12, June 2015.

It can be seen from Table 1 that the frequency of periodic revision of NAS increased since 1993-94 by linking it to the quinquennial NSSO EUS. In this context, it is relevant to note that not all NSSO quinquennial surveys conducted since 1993-94 have been equally well received by critics and users. Sample surveys of 1999-2000 and 2009-10 have not been considered equally reliable and usable [see, Shaw, 2013; Kijima and Lanjouw, 2003]. Moreover, 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 also apply for selecting the base year at the state level. It is most unlikely that the same year would turn out to be normal and representative year for relative price structure in all the state economies. Hence, revising the base year uniformly for all states would most likely introduce an element of unknown error, bias and interstate non-comparability. However, this issue is common to all the base year revisions in the country so far.

When a base year is revised, revisions are carried out in the following manner: Revision type 1: Updating and changing of data sources with more recent NSS and other relevant surveys/studies and source material

Revision type 2: Changes in methodologies Revision type 3: Capturing newly emerged economic activities; and

Revision type 4: Re-grouping of economic activities (and/or changing their scope and definitions)

The previous two revisions of 2004-05 and 1999-2000 largely confined to the revision type 1 and 3. For the current base year revision of 2011-12, apart from updating data sources and capturing newly emerging economic activities (Revision type 1 & 3), substantial revisions have been made in respect of methodology and regrouping of economic activities (Revision type 2 & 4).

On account of all these revisions in 2011-12 at the national level, there are several major issues any state economy is likely to encounter. Moreover, the nature of these revisions also raises concerns about the desirability and hence the quality and the outcome of the whole exercise. In the present paper, we discuss these limitations and issues with actual data and illustrations drawn from Gujarat state to substantiate the arguments. Each one of the following issues/limitations is discussed in the next section separately before we present concluding remarks in the last section:

- 1. From dis-aggregation to aggregation
- 2. Increased use of allocation of national aggregates
- 3. Absurdity in estimation of production growth with allocation method
- 4. Limitations for estimation of District Domestic Product
- 5. Unintended and unjustified structural changes
- 6. Issue of new data sources not capturing the whole sector
- 7. Limitation of MCA 21 data sets
- 8. Limitation of effective labour inputmethod
- 9. Inappropriate regrouping of sectors
- 10. Issue of preparing comparable back series

II. LIMITATIONS AND ISSUES IN RECENT REVISION

There are some well-defined norms and properties considered very desirable for any periodic revisions in the NAS aggregates. For instance, revisions should ensure that more and more ground level or grass-root or granular data are used for estimation of aggregates. The new data sources should also have these characteristics if they have to replace the old ones. The proportion of estimates based on assumptions of constancy of ratios and proportions should ideally decline. More disaggregated classifications are considered better than aggregated treatment of activities. Similarly, allocation of national level aggregates based on a few selected indicators should be replaced with actual data for the sectoral or regional units. Methods of estimation based on indicators should also ensure that the indicators selected for the purpose should not run counter to the common perception and should reflect the well-perceived trends. Recent revisions accompanying the change of base year to 2011-12 have serious problems with several of these desirable norms and properties. Let us discuss them one by one.

1. From Dis-aggregation to Aggregation

The Central Statistics Office (CSO) in the Ministry of Statistics and Programme Implementation is the nodal authority for bringing out the National Industrial Classification in India. This classification is used in all types of censuses and sample surveys conducted in India. The first classification was NIC-62 followed by NIC-70, NIC-87, NIC-98, NIC-2004 and NIC-2008.

The National Industrial Classifications have followed the desirable norms and accordingly over the years provided more detailed and disaggregated classification of economic activities. On the basis of these classifications, NSS survey rounds were framed to capture the economic output for estimation of value addition in Gross State Domestic Product.

As an illustration, we consider the case of Other Services Sector. For the last three base revisions, i.e., 1993-94, 1999-2000 and 2004-05, 'the other services' industrial group was covering the following eleven activities and estimates were prepared for each activity separately through NSS data, based on National Industrial Classification:

- 1. Education Services
- 2. Human Health activity
- 3. Sewage & Refuge disposal
- 4. Activities of membership organisations.
- 5. Recreation including T.V. & Radio
- 6. Washing & Cleaning of textiles
- 7. Hair dressing
- 8. Tailoring services
- 9. Funeral & related activity
- 10. Private Household with employed person
- 11. Extra Territorial Organisation& bodies

As per the National Industrial Classification, specific 4 Digit NIC codes have been assigned to Washing services (9601), Hair dressing (9602), Funeral & Related activities (9603) and Extra Territorial Organisations' activities (9990) and accordingly separate estimates were prepared for all these activities. Besides, Activities of membership organisations was assigned a separate division (division 94).

However, in the new series with 2011-12 base, 'the other services' sector is curtailed from 11 sub-sectors to only four sub-sectors: Education services, Health services, activities of Private Households, and remaining other services; despite the fact that NSS data are separately available for all the 11 sub-sectors. Thus, the recent revision clearly violates the norm concerning the desirability of more disaggregate classifications.

In the series with the previous base 2004-05, the sub-sectors Washing services (9601), Hair dressing (9602), Funeral & Related activities (9603) and Extra Territorial Organisations' activities (9990) and Activities of membership organisations were collectively adding the value to the tune of Rs 6579 crore in the year 2011-12 in Gujarat. The same sub-sectors clubbed together in the new series with the base 2011-12 account for Rs 5245 crore with a downward revision of 20.3% in the group of "Remaining other services". On the one hand, we have a distinct storage sector contributing only Rs. 400 crore estimated separately. It is ironical that in the new series we have an unnecessarily aggregated sub-sector of 'remaining other services' contributing a minimum of 13 times the amount of a distinct subsector of storage!! Similar unnecessary and illogical aggregation is also observed in the Real Estate group where the separate estimates previously available for the sub-sectors of legal services and accounting & book-keeping services are now clubbed as professional services.

This would not only limit the scope of properly capturing the output of these sub-sectors but would also restrict the feasibility of preparing comparable back series estimates.

2. Increased use of Allocation of National Aggregates

Historically in India, estimation of NAS began with national aggregates and slowly and gradually after about a decade, the state level aggregates started getting estimated. As a result, in some supra-regional sectors and in those sectors where data at the state level were not reliably available, allocation of All India estimates was used for estimation of the state income. Such allocations were invariably based on appropriate physical indicators and uniformly applied to all states to ensure interstate comparability. The proportion of GSDP (Gross State Domestic Product) based on such allocations was consciously targeted to reduce over time with periodic base year revisions. In the previous revision with base of 2004-05, about 30% of the GSDP in Gujarat was based on such allocations and it was expected that with increased computerisation and availability of more granular data, this proportion would further decline. In the recent revision of 2011-12, however, this proportion has substantially gone up to about 74.4% rather than showing the expected reduction!! Table 2 shows details of such allocations by sectors for the two series with 2004-05 base and

2011-12 base. It can be seen from the table that the secondary and tertiary sectors have undergone substantial unexpected revision respectively from 18.4% to 93.6% and 53.9% to 89.1%! In otherwords, except the primary sector, electricity sector and general government services, all the remaining sector estimates have now been largely based on allocation of All India estimates! In the earlier series, i.e., 1993-94, 1999-2000 and 2004-05, state specific data sets in the form of workforce and value added per worker were considered for estimation in the respective sectors.

Table 2. GSDP in Gujarat for the year 2011-12 by Sectors with Two Alternative Base Series and Corresponding Allocations of National Aggregates. (Rs. Lakhs)

Sr.No.	Industry Group	Base 2011-12 Series		Base 2004-05 Series			
		GSDP	Allocated GSDP	%	GSDP	Allocated GSDP	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.1	Agriculture (Crops + Livestock)	10027607	0	0.0	11316696	0	0.0
1.3	Forestry and logging	673300	461200	68.5	698300	5821008	3.4
1.4	Fishing and aquaculture	323600	0	0.0	323600	0	0.0
2.	Mining & Quarrying	1862157	1862157	100.0	1221446	0	0.0
	Sub-total : Primary	12886664	2323357	18.0	13560042	582100	4.3
3.	Manufacturing	16398547	16398547	100.0	15594521	0	0.0
4.	Electricity, Gas, Water Supply &	2430262	1232420	50.7	1844916	609255	33.0
	Other utility services						
5.	Construction	4428149	4133078	93.3	4422261	3416377	77.3
	Sub-total : Secondary	23256958	21764045	93.6	21861698	4025632	18.4
6.	Trade, Repair Services And	5918121	5863144	99.1	10594998	2935536	27.7
	Hotels & Restaurants						
7.1	Railways	329273	329273	100.0	331527	331527	100.0
7.2.	Transport by means other than	2080034	1982107	95.3	2798422	2634992	94.2
	Railways						
7.3.	Storage	36399	31562	86.7	20143	19943	99.0
7.4.	Communication & Services	774907	774907	100.0	560389	560389	100.0
	related to broadcasting						
8.	Financial Services	2942781	2942781	100.0	2790274	2790274	100.0
9.	Real estate, Ownership of	3571690	3562568	99.7	3763359	739856	19.7
	dwelling & Professional services						
10.	Public Administration	1479525	673715	45.5	1449666	643856	44.4
11.	Other Services	2062698	935906	45.4	2966386	2966386	100.0
	Sub-total : Tertiary	19195427	17095962	89.1	25275164	13622759	53.9
12.	Gross State Value Added at Basic	55339049	41183364	74.4	60696904	18230491	30.0
	prices						

Source: Calculations by the authors from the basic work-sheets using data from CSO and Department of Economics and Statistics, Govt. of Gujarat.

The recent revision of 2011-12 with heavy emphasis on allocation method has weakened the state estimates as it does not give realistic picture of the state economy. Very often, the indicators used for allocating national aggregates to states are not reflecting the current changes taking place in the state economy. Sometimes the indicators like the effective labour inputs are confined to the base year surveys only. As a result, the estimates based on allocation of national aggregates cannot capture the dynamic changes taking place in states compared to the grass-root data collected from each state separately. It would fail to capture variation within a state over time, and captures the variation across states only to a limited extent - the one existing in the base year or to the extent the indicators capture the prevailing conditions. In the context of the NITI Avog promoting competition among states based on their performance (see, www.livemint.com, dated 9th August 2016) and Finance Commissions using the states' performance in relevant fiscal ratios to GSDP for recommending allocations of resources among states, such inadequate estimates of GSDP of states can prove absolutely counter-productive. Moreover, it has a very damaging effect on the state statistical bureau because their GSDP division would not have much work now and once their systems, processes and data sources are dysfunctional and dismantled, it would take a long time to reconstruct them and build the necessary competence.

3. Absurdity in Estimation of Production Growth with Allocation Method

Conceptually and in practice the estimates at constant prices are prepared first, based on physical improvement in output and then, the same would be inflated with suitable price indicators to obtain the current price estimates. However, with the pre-dominance of allocation method of estimation followed in the new base 2011-12 series, the current price estimates are allocated first among states and the constant price estimates are prepared subsequently with the help of physical indicators in several sectors. As a result, very paradoxical trends are obtained at sub-sector levels. For instance, in the Road Transport Sector in Gujarat, the income at current prices in the new base 2011-12 series rises from Rs. 16967 crore in 2013-14 to Rs. 17935 crore in 2014-15 implying a growth of only 5.7%. However, during the same period, the number of registered vehicles in Gujarat has increased from 171 lakh to 187 lakh implying a growth of 9.5% (source: data provided by the CSO on allocation and Directorate of Economics & Statistics, Government of Gujarat). Thus, a very counterintuitive result follows that state income in Road Transport in Gujarat grew at a higher rate at constant 2011-12 prices than at current prices during 2013-14 to 2014-15. It would imply that the inflation in the state in the sector would be negative, which is absurd!

Similar problem arises in the estimation of GSDP from Financial Service Sector in the years 2013-14 and 2014-15. At current prices, the allocation method suggested by the CSO provides the estimate of 8.6% growth, whereas the credit growth shows 12.6% rise. The worst illustration is from the Agricultural Sector. The central allocation method forces the Gujarat state to accept a 5.7% increase in the agricultural inputs used in the food grain production during 2013-14 to 2014-15 when the state has experienced unprecedented fall of 20.8% in the area under food grains! Such absurdities in estimation would not only make the official data unreliable and incredible, but can potentially misdirect public policies and mislead polity.

4. Limitations for Estimation of District Domestic Product

In the context of 73rd and 74th Constitutional amendments, states have been directed to prepare the District Domestic Product (DDP) estimates.

One of the key issues was estimation of supraregional sectors at district level due to noncoterminous boundaries and thereby allocation of either the All India estimates or the State estimates to the districts on the basis of appropriate physical indicators.

Since the proportion of allocation for state series has substantially increased from 30% in the previous base 2004-05 series to 74% in the new base 2011-12 series, the DDP should also be estimated to a large extent by allocating the national estimates directly for the sake of consistency. Otherwise, the probability of incomparability among the district aggregates, state aggregates and All India estimates would prevail to a larger extent. Also, the Committee on Regional Accounts (1976) and National Statistical Commission [GoI, 2001] have pleaded for the bottom up approach for estimation of incomes as the desirable characteristic. Use of direct and ground level data for DDP estimates is recommended rather than allocating the state level estimates to districts on suitable physical indicators. Under such circumstances, allocation of All India estimates to states and to districts is neither logical nor consistent. Moreover, such allocation based estimation can defeat the very

purpose of generating the estimates of DDP as an important performance measure for the local self-government institutions.

5. Unintended and Unjustified Structural Changes

Increased use of the allocation method has, moreover, led to some unintended and unjustified structural changes in the series, which are not consistent with the previous base year revisions. The prominent structural changes are observed in Education, Trade, Transport and Construction sectors. As an illustration, we consider the Education and Trade sectors in detail here.

In the education sector, the estimates for the year 2011-12 by the new and the previous base year for Gujarat are compared in Table 3. It is observed that there is a distinct decline in the aggregate value of education sector in the new base year as compared to the previous one. The estimates for the year 2011-12 have declined from Rs 14,561.27 crore as per the previous base 2004-05 series to Rs 9,426.57 crore in the new base 2011-12 series, implying a sharp decline of 35.3%.

 Table 3. Estimates of GSDP in the Education Sector in 2011-12 in Gujarat - Comparison of 2011-12 Base Series and

 2004-05 Base Series

2004-05 Base Series			2011-12 Base Series			
Sub sector	Value in Rs Crores	% to Total	Sub sector	Value in Rs Crores	% to Total	
(1)	(2)	(3)	(4)	(5)	(6)	
Public	7,565.96	51.96	Public (General Government)	8,191.54	86.90	
Private including coaching	6,995.31	48.04	Private Corporate	458.04	4.86	
Total Education	14,561.27	100	Un-incorporated Total	776.99 9,426.57	8.24 100.00	

Source: CSO and DE&S, GoG

Further, it may be observed from Table 3 that the share of private educational services has also substantially declined in new base 2011-12 series compared to the previous base 2004-05 series for the same year. Such a significant structural difference within the education sub-sector arising only out of periodic revision for the same year is thoroughly unjustified and unwarranted. Moreover, the General Government services subsector contributes almost 87 per cent of the total educational services in the new series against only 52% in the old series. In the state of Guiarat, on the other hand, even a casual observer would find that private coaching activities alongwith private self-finance schools and colleges have increased manifold over the last decade. Such revisions would, therefore, erode the credibility of the official statistics and lose confidence of users.

This is evident when we consider the distribution of number of teachers based on public and private institutions. On the basis of Education Statistics, 2011-12 for intermediate/secondary/higher secondary/upper primary schools and colleges as available on the website of Ministry of Human Resources Development, Government of India, the proportion of teachers in public segment in Gujarat is about 58.3%, while the same for private part works out to 41.7%. Keeping this distribution in view, it may be pointed out that the private sector value added from education sector should approximately be Rs 3,931.09 crore (@ 41.7 per cent); which is quite higher than what is estimated at Rs 1,235.03 (= 458.04+776.99) crore. Further, if the workforce engaged in private coaching is added, the estimates of public and private sector may work out to be almost 52-48 as in the base 2004-05 series against 87-13 as per the new base 2011-12 series! Such a substantial structural change in the Education sector in the state only on account of periodical revisions in the estimates is difficult to justify and defend.

Similarly, in the trade sector, the private organised sector that comprised about 26.79% of aggregate trade sector in the previous base 2004-05 series has declined to mere 5.9 per cent in the new base 2011-12 series for the same year in Gujarat. In absolute value terms, this decline is from Rs. 25,737.20 crore in 2011-12 in the base 2004-05 series to only Rs. 3,203.42 crore in the new base 2011-12 series.

 Table 4. Estimates of GSDP in the Trade Sector in 2011-12 in Gujarat - Comparison of 2011-12 Base Series and 2004-05 Base Series (Rs. in Crores)

Sub Sector	Base 2004-05 Series			Base 2011-12 Series		
	2011-12	% Share	- Sub Sector	2011-12	% Share	
(1)	(2)	(3)	(4)	(5)	(6)	
Public NDE@ Private Organized Private Un-organised	419.09 25737.20 69892.87 96065.51	0.44 26.79 72.76 100	Public DE# Public NDE@ Private Corporate Private Unincorporated	7.90 533.11 3203.42 50583.93 54328.36	0.01 0.98 5.9 93.11 100	

@ Non-Departmental Enterprise; # Departmental Enterprise Source: DE&S, GoG

The substantial decline in the trade sector value addition in Gujarat as seen from Table 4 could only partly be on account of the reclassification and redefinition of trade activities by corporations in the new series. A large part of the downward revision seems to be on account of the methodological revision of shifting away from the state level hard data from grass-root to allocating the national estimates using some inappropriate indicators not capturing the ground realities. This is evident to even a casual observer because against the Maharashtra figure of Rs.

17,000 crore of value added from the Organised Trade, Gujarat figure turns out to be only Rs. 3,200 crores as per the new base 2011-12 series. Given the similarity of the two state economies, such a huge difference in the Organised Trade income is inexplicable! In order to verify the estimates, we attempted direct estimation by considering the data from the Office of Commercial Tax Commissioner and culled out 399 exclusive trading enterprises from an exhaustive list of more than two lakh enterprises. Taking the net output of these 399 enterprises as sales minus purchases in the year 2011-12 (Rs. 15,413 crore) and a conservative 80% of it as the value added, the estimate works out at Rs. 12,330 crore. This should be considered the minimum estimate of income from the private corporate trade in Gujarat which is far more plausible when compared to Rs. 17,000 crore in Maharashtra in the same year. This raises doubts about the methodology, indicators for allocation and the nature of reclassification used in the new base series.

On account of similar methodologies and classification of activities among sectors, the previous series, i.e., 1993-94, 1999-2000 and 2004-05 were consistent, while the present series deviates significantly in some sectors. This would lead to considerable problems in linking the present series to the previous base series. Moreover, it would also create problems of interpretation and measuring the performance of important sub-sectors over time.

6. Issue of New Data Sources Not Capturing the Whole Sector

In the new base revision, the CSO shifted the data base from the old source to the new and modern source without ensuring whether the new one is a superset of the old one. This has been the case with MCA-21 and ASI for manufacturing. Similarly, it has shifted from the data base of state

geology and mining department to that of Indian Bureau of Mines for estimating GSDP from Mining Sector.

While attempting estimates of mining sector from the data base as available on the IBM website: http://ibm.nic.in/writereaddata/files/10 252016172810MSMP_March2016.pdf, it was found that production and values of only the following 10 minerals are available:

- 1. Lignite
- 2. Natural Gas
- 3. Petroleum (Crude)
- 4. Bauxite
- 5. Manganese Ore
- 6. Limestone
- 7. Marl
- 8. Molding sand
- 9. Perlite
- 10. Sulphur

In the above list, several minerals that play important role in different state economies are missing. For instance, dolomite is missing from the list that can lead to serious underestimation of value addition in the sector in Gujarat.

However, till 2004-05 base, the states used data from state geology and mining department, and accordingly, data from the following 24 minerals were available.

- 1. Bentonite
- 2. Bauxite
- 3. Laterite
- 4. Calcite
- 5. China Clay (Crude & Refined)
- 6. Dolomite
- 7. Fire Clay
- 8. Fluorspar (Crude)
- 9. Limestone,
- 10. Gypsum,
- 11. Manganese Ore,
- 12. Ochre,
- 13. Quartz
- 14. Silica/Glass Sand

- Steatite (Soap Stone)
 Lignite
 Chalk
 Clay (Others)
 Ball Clay
 Molding Sand
 Perlite
 Pozonic Clay
 Petroleum Crude
- 24. Natural Gas (Utilized)

Moreover, the production and value of most of the minerals are understated on the IBM website, because not all mines existing in a state are reported on its website. The number of reported mines in Gujarat at IBM website is 211, whereas it is 410 as per the state geology and mining department. This is obviously a case of serious underestimation due to revision in the data source without taking due care! This problem gets further compounded because in the new base 2011-12 series, the CSO directly provides allocated data on Gross Value Added (GVA) from minerals to the states for adoption, limiting any scope of independent estimation of GVA from mining sector by the State! The net effect of the change of basic source and methodology is surprisingly a substantial upward revision in the GVA from mining sector from Rs. 12.214 crore in base 2004-05 series to Rs. 18,622 crore (Table 2 above)! It is surprising because Lignite, which is an important mineral in Gujarat, is removed from Mining sector to the Electricity sector in the new base 2011-12 series, apart from the omission of a number of important minerals, as pointed out above.

7. Limitation of MCA 21 Data Set

The Final Report of the Sub-Committee on Private Corporate Sector including PPPs [GoI, 2015] has already stated several limitations of the MCA data used now as an important source replacing the Annual Survey of Industries (ASI) data for estimating income from manufacturing. The additional limitations of these data for the GSDP estimation are: (1) MCA-21, based as it is on the enterprise rather than the establishment approach, does not provide Income Statements of the companies by geographical locations of their activities and plants; (2) there is only one CIN allotted to a company irrespective of the variety of products it may produce. As a result, if a multi-product company produces chemicals in one state, computers in another and textiles in the third state, it gets classified only in one sector in all the three states! And its value addition in the three states is allocated only at the aggregate level based on the ASI data! Industrial composition of the value added at the state level is, therefore, not reflected by the MCA-21 data set. For the State level estimation, the utility of replacing ASI by MCA-21 is not clear. Moreover, MCA-21 data set would be even more problematic for estimating DDP.

8. Limitation of Effective Labour Input Method

In all the previous base series, the estimates of service sectors are based on the NSS data; mainly the workforce and value added per worker (Productivity). And the same estimates have been moved to further years based on the work force growth observed between the two quinquennial rounds, i.e., present and the next. Thus, the estimates are based on state specific data base.

Now in the new base 2011-12 series, the CSO has used the data on enterprises as available through MCA-21 (Ministry of Corporate Affairs) by allocating to States on the basis of state specific *Effective Labour Input* (ELI) method. As noted earlier, the estimates of MCA-21 are available for the All India level only and no disaggregated data for the states are available.

The new method addresses differential labour productivity issue by assigning weights to the different categories of workers engaged in an
economic activity based on their productivity, i.e. the productivity of an employer, a casual wage worker, and a family worker. However, it does not take into account the productivity of the state per say. In other words, it considers variations in the labour productivity by the category of workers (composition or quality) but ignores the variation in labour productivity across states by assuming that the labour productivity of a particular category of worker (say, employer or casual worker or family worker) remains the same across all states.

For instance, the productivity of economic activity of freight transport services of Gujarat would necessarily be different from that of Arunachal Pradesh or Madhya Pradesh on account of many obvious factors, for example, differences in terrain, volume and composition of economic activities and availability of physical infrastructure. This aspect, however, is ignored completely in the ELI method. On the other hand, a national average productivity estimate is obtained for the employer and for the casual worker and for the family worker in the sector. The same is then assumed to remain constant for each state and applied to the respective numbers of the employers, casual workers and family workers to get the overall estimate of the income at the state level. This methodological change in the new base 2011-12 series cannot be considered necessarily superior to the old method of taking the labour productivity in the specific sector at the state level as the basis. In the latter (previous base series), the category-wise labour productivity differential was not explicitly considered but state specific productivity is explicitly considered; whereas in the former (new base series), category-wise labour productivity differentials are explicitly considered but the interstate productivity differentials are ignored. In this context, it should be recognised that in the old method, the category-wise labour productivity differentials are implicit in the state specific average itself. The

only thing missing there is the likely effect of changes in the structure of labour within the sector over time. However, in the new method of ELI, interstate variation in the labour productivity is totally ignored. Thus, the new method on purely theoretical consideration is inferior to the old method. Therefore, there is hardly any convincing justification to replace the old method with the new ELI method in the new base 2011-12 series.

9. Inappropriate Regrouping of Sectors

Sewage and disposal services are re-grouped under the electricity, gas and water supply group as a new service: Remediation Services in the new base 2011-12 series. The group of Electricity, Gas and Water Supply (EG&WS) is a part of the Secondary Sector, while sewage and disposal activities are genuinely the part of the Services or Tertiary Sectors. The shift of these sub-sectors to the Secondary Sector by regrouping them with EG&WS sector appears inappropriate and illogical. In this context, however, we need to recognise that the existing grouping of EG&WS sector itself is not satisfactory. Water Supply activities should not be clubbed with the manufacturing activities since they are mainly service oriented activities, but the Electricity and Gas are largely production activities.

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.

10. Series

Since inception, the GSDP estimates have been prepared only at factor cost, i.e., income earned by the factors engaged in the production process. These factors are land, labour, capital and entrepreneurship. However, in the new base 2011-12 series, the National Accounts Division of CSO prescribed two new concepts on the lines of System of National Accounts (SNA) 2008. These are GSDP at Basic Prices and GSDP at Market Prices. At the same time, however, the old GSDP at Factor Cost estimates have been discontinued.

As per the concept, GSDP at basic prices is arrived at by adding the production taxes and subtracting production subsides to GSDP at Factor Cost. In the new series, no estimate of GSDP at factor cost is prepared. The States have prepared the estimates of GSDP at basic prices with the same traditional methodology used for estimation of GSDP at factor cost: which is now termed as GSDP at basic prices! While by itself, it may have little or no impact on the estimates of aggregate GSDP, there could be unknown margin of error in the estimate of the sectoral distribution of GSDP at basic prices taken from the distribution at factor cost. Given that the new base series at the state level is largely (around 74%) based on allocation received from the CSO, the GSDP estimates at the state level represent a curious mix of basic prices and factor costs in the new series. This has limited the scope to study trends in the volume of GSDP at factor cost because States used to follow the practice of linking the new base series with previous base series and prepare the back series to study trends in the volumes in a meaningful manner. The current revision has restricted the scope of linking the new base

Issue of Preparing Comparable Back 2011-12 series with the previous ones and thus it made difficult to prepare the comparable back series.

III. CONCLUDING REMARKS

In the present paper, we have critiqued recent revisions made in the estimation of state income in India consequent upon the change in the base year of the National Accounts from 2004-05 to the new base of 2011-12. We have pointed out 10 major limitations of the whole exercise. There can be many more relatively minor but significant limitations of these revisions that we have not discussed here. From whatever we have discussed above, it is clear that the revisions associated with the new base 2011-12 series are not routine ones in any sense of the term and have serious implications on national and regional accounts estimation compared to the past. What we argue here with concrete illustrations drawn from the experience of the Gujarat state is that most of these impacts are negative on the quality, reliability, valid usage, interpretation and meaningful analysis of long term trends of sectors and the economy at the state level in the country.

These revisions are perhaps not well thought out, careful and consistent with the fundamental desirable characteristics of descriptive statistics and estimation of aggregates. In some cases they seem to be carried out hurriedly without paying attention to their likely impact on the whole system, processes and personnel involved in collection, compilation and generation of critical estimates at regional level. In a vibrant federal democracy like India, the role of regional income statistics should not be underplayed and ignored. They cannot be relegated to derived numbers by allocating the national totals without properly reflecting the ground realities. As discussed above in the paper, these recent revisions are likely to seriously damage not only the statistical system and processes at regional level but also reliability, credibility and usage of such statistics in crucial public policy debates and quality of polity.

We hope and strongly recommend that the recent revisions associated with the new base of 2011-12 series be abandoned for implementation at the state and district levels in the country. Let the old base of 2004-05 continue at the state level till further revision of the base year takes place. For the future revisions, we need to be very careful and meticulous to avoid all these limitations so that the official estimates of national and regional accounts can perform their expected role efficiently and satisfactorily.

REFERENCES

- GOI, 1976; Final Report of the Committee on Regional Accounts, Central Statistical Organization, New Delhi.
- GOI, 2001; *Report of the National Statistical Commission*, New Delhi.
- GOI, 2011-12; Education Statistics, 2011-12 for intermediate/secondary/higher secondary/upper primary schools and colleges, Ministry of Human Resources Development website.
- GOI, 2015; Final Report of the Sub-Committee on Private Corporate Sector including PPPs, CSO, MoSPI website.
- GOI, 2015; Report on Changes in Methodologies and Data Source in New Series of National Accounts, Base Year 2011-12, June 2015, CSO, MoSPI website.
- GOI, 2016; Report on monthly returns on mineral production, Indian Bureau of Mines website.
- Kijima, Y. and P. F. Lanjouw, 2003; "Poverty in India during the Nineties - A regional Perspective", *World Bank Policy Research Working Paper*, July 29, DECRG.
- Shaw, Abhishek, 2013; "Comparing NSSO's Employment Surveys - A methodological Note", *EPW*, vol. 48, no. 30, July 27.

SOME UNSETTLED QUESTIONS ABOUT INDIAN MANUFACTURING GDP ESTIMATION

Amey Sapre* and Pramod Sinha**

We discuss some unsettled questions about the GDP estimation process in the manufacturing sector. We further the debate on the use of Paid-Up Capital based blow up method of GVA and highlight the problem of possible overestimation. Based on previous evidence, we also highlight problems with measures of output and cost and identification of manufacturing firms for purposes of GVA estimation. We argue that the recourse lies in finding an alternative to the Paid-Up Capital blow up factor and that identification of firms remains a crucial problem to solve.

Keywords: National Accounts, GDP, Manufacturing, value addition, India JEL Codes: E00, E01

I BACKGROUND

In this paper, we deal with some unsettled questions on estimation of value addition in the manufacturing sector. The ongoing debate on the manufacturing sector estimates has touched various aspects, and several questions regarding data and methods have been explored. A meaningful literature on the subject can be found in Sapre & Sinha [2016], Nagaraj [2015a, 2015b], CSO [2015], Shetty [2015], Rao [2015]. In a new series of papers on the subject, Shetty and Rajakumar [2017] and Manna [2017] further the debate on changes in methodologies in the new series. In particular, Manna [2017] presents brief details of the Paid-Up Capital factor based blow up of Gross Value Addition (GVA) and argues that the data coverage in MCA21 is adequate for estimation purposes and that separate blow up factors are appropriate for different size classes of Paid-Up Capital. In this paper, we explore these two aspects in the light of previous findings and also summaries some unsettled questions relating to the computation of GVA.

It has been well documented that since the release of the 2011-12 series, large and unexpected revisions in subsector and aggregate GDP led to question the reliability of the estimates and also prompted a series of commentaries and papers on decoding the growth figures in the manufacturing sector. Nevertheless, key questions about computation and data sources remained unanswered. In Sapre & Sinha [2016], we conduct a detailed analysis of the estimation process for the set of firms that file in the XBRL format in MCA21. By recreating the estimation process using CMIE Prowess database for firms that file in the XBRL format, we show some inconsistencies that can distort value addition, and present an inaccurate picture of the state of the sector. In doing so, we narrow the set of problems into three key questions:

- 1. Are output and intermediate consumption appropriately measured in the GVA formula?
- 2. Are manufacturing firms correctly identified in the computation process?
- 3. Does the existing Paid-up Capital based Blow-up method lead to an overestimation of value addition?

To further build on the questions, in this paper, we first deal with the question of blow up using the Paid-Up Capital method. In summarizing the literature on this 3 question, one has to take recourse to available information in CSO [2015b], Nagaraj [2015a, 2015b] and Rajakumar [2015]. Conceptually, as is understood, blow-up

^{*}Amey Sapre is at the Indian Institute of Technology, Kanpur. amey@iitk.ac.in

^{**} Pramod Sinha is at the National Institute of Poeniese, margar and Policy, New Delhi. pramod.sinha@nipfp.org.in The authors are thankful to Dr. Vikas Chitre, Dr. R.H. Dholakia, Dr. G.C. Manna and Dr. Mahendra Dev for helpful discussions. The views are of the authors and not of their respective institutes.

of GVA is an imputation method to account for data of companies that were unavailable at the time of data extraction. The existing Paid-Up Capital (PUC) based blow-up method relies on the assumption that PUC and GVA have a oneto-one, or a linear relation and that this relation is the same for companies which have filed financials in MCA21 (available companies) and those which have not (unavailable companies). Under these assumptions, in the absence of data, Paid-up Capital of available companies can be used to infer the value addition done by unavailable companies. Several variants of the method are possible, such as; blow-up for each range of Paid-up Capital, blow-up by industry group, by ownership type of company, among others. Some of these variants have been pointed out in Shetty [2015] and Manna [2017]. However, details of the procedure have not been widely documented in official publications.

II PROBLEMS WITH PAID-UP CAPITAL BASED BLOW-UP METHOD

To conceptualise the method and visualize its effect, one has to resort to a sample based exercise using comparable data such that it mimics the actual process. In Sapre & Sinha [2016], we replicate the blow-up process by constructing an available and active set of XBRL companies based on random samples that give different Paid-up Capital coverage.¹ Upon replication, several inconsistencies become visible. First, the basic assumption of a linear relation between PUC and GVA does not hold as per the size distribution of Paid-Up Capital. The same cannot be inferred with certainty for any time period as levels of economic activity and value addition can vary significantly across industries. Since business activity is driven by economic conditions faced by firms across industries, one cannot draw

sufficient and reliable inferences about a firm's value addition by looking at its Paid-up Capital value.

In Table 1, using a sample of comparable firms, we tabulate the Paid-Up Capital and GVA of firms for various class sizes of PUC. Comparing columns 3 and 4, the distribution does not clearly establish a one-to-one correspondence between PUC and GVA, particularly for the larger companies.² The distribution also shows negative values of GVA for all PUC classes which rules out the case for a one-to-one correspondence between PUC and GVA. A firm registers negative GVA in a loss making situation, i.e., when the intermediate costs are higher than value of output. This is a genuine concern at the firm level, but the same is not visible when GVA is aggregated for various classes of PUC.

In our previous work, we have shown that firms have negative GVAs in all classes of PUC, and even if a separate blow-up factor is used for all PUC classes, it still leaves a possibility of over-estimation as the method uses PUC, instead of GVA. This is due to the fact that the Paid-Up Capital value of a firm is always positive, and in terms of blow-up, the PUC method will always contribute positively, irrespective of the actual contribution of the unavailable firm.

The extent of variation in GVA for any class size of PUC is also of importance. If we compare the extent of variation given in column 8 in Table 1, it indicates that a single PUC factor even within a class interval may not be representative of the value addition contributed by firms in this paid-up capital class interval.

PUC Range (Rs. Cr.)	N Firms	PUC (Rs. Cr.)	GVA (Rs. Cr.)	Min (GVA) (Rs. Cr.)	Max (GVA) (Rs. Cr.)	Avg. (GVA) (Rs. Cr.)	SD (GVA)
1	2	3	4	5	6	7	8
Up to 0.01	82	0.82	23.63	-2.56	20.81	0.29	2.46
Above 0.01 -0.05	274	13.43	1977.39	-113.89	1854.66	7.22	112.48
Above 0.05 -0.1	86	7.18	216.18	-436.37	186.5	2.51	55.23
Above 0.1 -0.25	156	30.97	603.32	-103.01	186.59	3.87	18.27
Above 0.25 -0.5	182	74.74	1569.92	-4.92	133.56	8.63	18.87
Above 0.5 -1	298	235.06	4523.46	-17.85	495.56	15.18	41.27
Above 1 -2	328	507.71	5975.45	-29.9	585.74	18.22	47.63
Above 2 -5	902	3287.48	23002.44	-85.37	2515.77	25.5	101.99
Above 5 -10	835	6030.89	42062.43	-189.58	2758.8	50.37	130.38
Above 10 -25	971	15347.17	98608.91	-514.77	2048.36	101.55	181.88
Above 25 -50	387	13329.87	98477.74	-876.5	5008.28	254.46	521.86
Above 50 -100	202	14464.75	97073.49	-1088.1	7019.1	480.56	890.06
Above 100 -250	115	17381.03	102984.1	-955.91	10215.99	895.51	1750.28
Above 250 -500	40	13252.39	112373.9	-2.53	21144.37	2809.35	4186.68
Above 500 -750	19	11140.56	17675.16	-266.67	8392.07	930.27	1886.55
Above 750 -1000	8	6759.58	46366.18	-15.59	20625.66	5795.77	7600.25
Above 1000	14	38449.23	113777.4	-49.82	47787	8126.95	13462.05
Total	4899	140312.9	767291				

Table 1. Distribution of Paid-Up Capital and GVA of firms

Notes: Computed from CMIE Prowess, Source: Sapre & Sinha [2016]

To further our understanding about the PUC based blow up, Manna (2017) presents a brief summary of PUC and GVA distribution of an active set of firms for 2012-13. Using the same analogy, we compute the cumulative distribution and shares of each size class of PUC from values given in Table 1. The values are presented in Table 2.

Comparing the cumulative distributions and shares (columns 5 and 8) of PUC and GVA,³ we can note that they do not represent a relation that is sufficient to infer about the GVA contribution of firms. As the blow up formula linearly scales GVA by the PUC factor, the method overlooks the fact that PUC and GVA distributions are not identical.⁴ For instance, a one-to-one correspondence would also imply that in their respective distributions, 50% of aggregate PUC should correspond to 50% of aggregate GVA. However, given wide variations even within a class interval, the similarity of trend between PUC and GVA does not build an appropriate case for using the PUC factor for blow up. Manna [2017] also presents the statistics of the GVA/PUC ratio, which is declining for increasing class intervals of PUC. While this is true and expected on account of rising Paid-Up Capital in each class interval, the ratio does not provide enough evidence to conclude a systemic or identical distribution of PUC and GVA. In turn, the share or the ratio both critically depend on the number of available companies and as previously, variations in annual filings considerably limit the scope of such statistic to be used for blow up of GVA.

PUC Range (Rs. Cr.)	N Firms	PUC (Rs. Cr.)	GVA (Rs. Cr.)	Min (GVA) (Rs. Cr.)	Max (GVA) (Rs. Cr.)	Avg. (GVA) (Rs. Cr.)	SD (GVA)
1	2	3	4	5	6	7	8
Up to 0.01	82	0.82	0.82	0.001	23.63	23.63	0.003
Above 0.01 -0.05	274	13.43	14.25	0.010	1977.39	2001.02	0.261
Above 0.05 -0.1	86	7.18	21.43	0.015	216.18	2217.2	0.289
Above 0.1 -0.25	156	30.97	52.4	0.037	603.32	2820.52	0.368
Above 0.25 -0.5	182	74.74	127.14	0.091	1569.92	4390.44	0.572
Above 0.5 -1	298	235.06	362.2	0.258	4523.46	8913.9	1.162
Above 1 -2	328	507.71	869.91	0.620	5975.45	14889.35	1.941
Above 2 -5	902	3287.48	4157.39	2.963	23002.44	37891.79	4.938
Above 5 -10	835	6030.89	10188.28	7.261	42062.43	79954.22	10.420
Above 10 -25	971	15347.17	25535.45	18.199	98608.91	178563.1	23.272
Above 25 -50	387	13329.87	38865.32	27.699	98477.74	277040.9	36.106
Above 50 -100	202	14464.75	53330.07	38.008	97073.49	374114.4	48.758
Above 100 -250	115	17381.03	70711.1	50.395	102984.1	477098.4	62.180
Above 250 -500	40	13252.39	83963.49	59.840	112373.9	589472.3	76.825
Above 500 -750	19	11140.56	95104.05	67.780	17675.16	607147.4	79.129
Above 750 -1000	8	6759.58	101863.6	72.598	46366.18	653513.6	85.172
Above 1000	14	38449.23	140312.9	100.000	113777.4	767291	100.000
Total	4899	140312.9	767291				

Table 2. Distribution and Share of Paid-Up Capital and GVA of Firms

Notes: Cum. PUC is cumulative Paid-Up Capital, Cum. GVA is cumulative Gross Value Added, Share denotes the value of each class size (col. 5 for PUC and col. 8 for GVA) as a proportion of the sum total value of PUC and GVA, respectively.

To visualise this limitation in detail, it has been shown in Sapre & Sinha [2016] that the blow-up factor increases as Paid-Up Capital coverage declines, and with annual variations, the extent of blowup remains unpredictable. The PUC based method also lacks a qualitative aspect in scaling up GVA. The method is numeric in nature and does not adequately capture the economic conditions faced by the firms as the blow up factor depends only on the extent of PUC coverage of available firms, and not on the actual GVA contribution of unavailable firms. Other alternatives of using fixed assets as proposed in Manna [2017] or use of representative industry growth rate as attempted in Sapre & Sinha [2016] could be considered and modified to replace the existing method.

III SOME UNSETTLED QUESTIONS

Other than the blow up issue, we also summarise some unsettled questions about the computation process. First, under the erstwhile establishment approach, "Sales" was a measure of output. In the current enterprise approach formula, several disaggregated components of revenues from products, services, operating revenues, financial services, rental income, revenues from brokerage & commission and other non-operating incomes are part of output. In CSO [2015b], there is a limited discussion on the inclusion or exclusion of several revenue fields in GVA computation. However, it is evident from the output composition that value addition is not solely accruing from manufacturing activities, but also from several related/ancillary activities. This leads to inflated GVA levels as the component of output is now similar to the total income of the company, and not industrial sales. For instance, revenues from financial services, rents, non-operating incomes are now included in the measure of output.

Second, identifying components of intermediate consumption at the enterprise level is equally difficult. Conventionally, subtracting the cost items (related to production) from output provides a measure of value addition entirely from manufacturing activities. However, with large and diversified enterprises, identifying cost items from financial data fields can pose significant challenges. A close scrutiny of the XBRL fields shows omission of important cost components, such as Power & Fuel expenses advertisement and marketing related expenses.⁵ These are sizeable components and their omission can underestimate costs, thereby overestimating GVA. Since diversified companies can have both manufacturing and trading incomes, it is essential to segregate them for the purpose of computing value addition solely from manufacturing activities.

The next important question is on identification of manufacturing firms. The answer available in public domain is that the CSO primarily relies on ITC-HS codes for identifying companies. The ITC-HS is an 8 digit coding system that identifies a commodity for the purpose of import/export and domestic movement of goods. In the MCA21 forms, a company is required to furnish product codes of their three top revenue generating products. However, compliance on this requirement has been a major issue. From CSO [2015b], one can infer that in 2011-12 only 59% of the total XBRL companies reported their product codes. This deficiency prompted an alternative strategy of using the NIC digits contained in the Company Identification Number (CIN) for identification. However, in absence of the ITC-HS codes, using CIN code for identification can potentially lead to a misclassification of companies. It is known that CIN, which contains the NIC classification, does not undergo a change once it has been created for a company. Over time, a company may change the nature of its business activity or diversify into any other sector. While doing so, the change of business activity is not reflected in the CIN code of the company. Thus, using CIN can be potentially misleading for identifying the nature of business of a company since its top revenue generating activity might be different from the one mentioned in its CIN code.

Also, in the manufacturing sector, it is common to find that several companies operate as wholesale trading, financing, renting or as service providers in the name of manufacturing. Thus, registration details of a company are typically insufficient to infer the nature of its business activity. Similarly, a reverse problem could also exist, wherein companies registered in other economic activities may undertake manufacturing activities. Such instances complicate the process of identification and will require alternative solutions. At present, the distortion in GVA due to the misclassification problem is unknown. Since ITC-HS codes identify a product and not an economic activity, it does not ensure that value addition specifically of manufacturing firms is being captured. Identification of the business activity remains a pre-requisite. It is undeniable that wrongly classified trading and manufacturing companies will show an incorrect GVA contribution of different sub-sectors. On the aggregate, both manufacturing and services sector will show a distorted picture. These difficulties are compounded while using the deflator for converting nominal to real values.

Solving the problem of identifying contribution of manufacturing activity from trading or other activities is a complex task. At present, no clear solution exists, especially when companies have to be identified on a yearly basis. As firms may have different sources of revenue and may even change their business model, their top revenue generating activity would have to be identified so as to correctly classify them as either manufacturing or service sector companies. What can be a way forward in this regard? A possible solution can be conceived as follows. Currently, section II in the Form No. MGT-7, [pursuant to section 92 (3) of the Companies Act, 2013, and Rule 12(1) of the Companies (Management and Administration) Rules, 2014] requires companies to furnish up to ten principal business activities. Broadly, the information collected is; main activity group, activities with respective codes and their share in total turnover. Under this arrangement, the main activity has 21 different codes from A to U, each representing a particular activity. For example, a company reporting code C indicates a manufacturing concern, while code G shows trading. The MGT-7 form is filed by companies on a regular basis. Thus, the information on the products can be obtained on a regular basis and the same can be used to identify the nature of business activity, i.e., trading and production. However, when non-reporting takes place, these codes alone will not solve the problem. A scrutiny of product schedules and financial statements is still needed.

To aid the scrutiny of the financial statements, a simple statistical analysis of ratios can help in identifying the characteristics of the manufacturing sector, and can be used to classify firms. A set of financial ratios can be applied to ascertain the highest revenue contribution on a yearly basis and at the same time allow a cross-check with reported codes and declaration under Form No. MGT-7. For instance, certain rules of thumb can be implemented to identify the characteristics of firms and the information can be cross checked with reported codes of business activity. Consider two possible cases.

For a trading firm: Typically, for a trading company, from the revenue side, the income from trading to total turnover ratio would be higher than income from manufacturing. From the expenditure side, the ratio of purchase of finished goods to total expenses would be higher than the expenses on manufacturing.

For a manufacturing firm: In this case, from the revenue side, the ratio of income from sales to total turnover would be much higher than the ratio of trading income to total turnover. Similarly, from the expenditure side, the ratio of purchase of raw materials to total expenses would be much higher than expenses on trading. Also, for a manufacturing company, excise duty would form a significant part of the indirect tax payments.

The approach provides an objective mechanism to tackle the identification on a large scale. Given that several imperfections exist in identifying the nature of business activity, an objective method can be used to minimize the extent of misclassification, and at the same time builds a cross-checking mechanism to corroborate with other reported details. Lastly, the overall estimate of the manufacturing sector is an aggregation of value addition computed from the MCA21 and ASI data set. Presently, a mapping of firms in the MCA21 and the ASI dataset is not available. Since both datasets offer different perspective, i.e., of enterprise and establishment, it requires a reconciliation of the value addition statement. We believe that such an approach is difficult to pursue as the data fields in MCA21 comprise financial data from profit and loss and balance sheet, while ASI data is based on volume based production.

IV CONCLUSION

The 2011-12 series has thrown up several conceptual and methodological questions. While new sources and methods have improved the coverage and quality of the national accounts, they have also changed our view about estimating and understanding value addition, particularly in the manufacturing sector. Building on our findings in Sapre & Sinha [2016], detailed investigation into the computation process shows several areas of concerns about measuring outputs, costs, overestimation due to blow-up of GVA in case of unavailable data and identification of manufacturing companies. While there is a possibility of overestimation of GVA due to the use of blowup factors based on coverage by the Paid-Up Capital, the issue is of finding a suitable replacement to the PUC factor. As we further the debate about problems in estimation, the remedy lies in understanding the actual MCA21 data, the annual filing process and a detailed scrutiny of the fields that are used in computation. As more qualitative information becomes available, it is surely the case that most of contentious issues can be resolved by improving on the sources and methods of GDP estimation.

NOTES

1. Using data from CMIE Prowess, the blow up factor was computed by making a set of active and available set of companies that qualified for filing in the XBRL format. Based on the formula, the blow-up factor was computed as the inverse of the ratio of PUC of active to available companies, i.e., 1/.../

2. The argument of a stable PUC-GVA for all PUC classes presupposes a well-defined relationship. We argue that this relation does not hold. At a firm level, GVA can be negative, while PUC will always be positive, hence using PUC at the aggregate (or for any PUC class) as a blow-up factor can be misleading and will over-state the GVA contribution for firms that have registered negative value addition. Second, if the PUC representation for larger companies is close to 100 per cent, then there is no need to blow-up for that PUC class. Since by definition, if the PUC ratio of available to active is 1, (i.e., 100%), then the GVA need not be blown up, even if there are unavailable companies. The problem, as we understand, is that there is no historic data to analyse the trend of PUC and GVA contribution of MCA21 set of firms. Thus, the stability of the relation cannot be verified. We also argue that since the blow-up is done at some level of aggregation, the method overlooks the fact that PUC and GVA contribution at the firm level can be very different from the aggregate picture.

3. It may be that these depend upon the number of firms in each size class of PUC and it may be necessary to normalise the PUC and GVA for each class by the number of firms in each class. We had initially considered this approach, but in absence of any historical information on number of firms, their aggregate PUC and GVA, we did not pursue this approach. We believe that PUC coverage is largely determined by the number of firms in the 'active' set. Since the active set considers firms that have filed at least once in the past three financial years, it is difficult to adopt a normalising technique for a year on year basis. We agree that number of firms in each PUC class matter, but the blow-up method only takes into account the value of PUC and not the number of firms. Thus, in any given year, a smaller number of firms can contribute to a higher PUC coverage, hence, there is no unique way of normalising the PUC and GVA contributions.

4. We believe that a linear relation alone is not sufficient to conclude on the usability of PUC ratio as a blow-up factor. It is obvious that the blow-up factor will vary from year to year, primarily on two counts; (i) changing active set and (ii) PUC coverage. At present, there is no evidence to show that the PUC based blow-up is close to the actual contribution of the unavailable firms. In our paper, Sapre & Sinha [2016], we have shown that the addition due to blow-up is unpredictable and is much larger in some cases when compared with the actual contribution of the unavailable firms. Thus, by using any version of the PUC based blow-up, the possibility of overestimation cannot be ruled out. 5. Data on Advertisement and marketing related expenses is available in the XBRL form. However, we were unable to find the specific fields in the formula given in the Goldar Committee report.

REFERENCES

- CSO, 2015a; "No room for doubts on new GDP numbers", *Economic and Political Weekly*, Vol. L, No. 16, April 18th.
- CSO, 2015b; Final Report of the Sub-Committee on Private Corporate Sector including PPPs, National Accounts Division, Ministry of Statistics and Programme Implementation, Government of India, New Delhi
- Manna, G.C., 2017; "An investigation into some contentious issues of GDP estimation", *Journal of Indian School of Political Economy*, Forthcoming.

- Nagaraj, R., 2015a; "Seeds of doubt on new GDP numbers Private corporate sector overestimated?", *Economic and Political Weekly*, Vol. L, No. 13, March 28th.
- Nagaraj, R., 2015b; "Seeds of doubt remain: A reply to CSO's rejoinder", *Economic and Political Weekly*, Vol. L, No. 18, May 8th.
- Shetty, S.L. and Dennis Rajakumar, 2017; "New National Accounts series: A review and highlights of critical issues for debate", *Journal of Indian School of Political Economy*, Forthcoming
- Sapre, Amey and Pramod Sinha, 2016; "Some areas of concern about Indian manufacturing sector GDP estimation", National Institute of Public Finance and Policy (NIPFP) Working Paper, No. 172/2016.

COMMENTS

Dilip Nachane

This seminar has been an extremely interesting experience and fairly educative for many in the audience (including myself).

I will confine myself to what I believe are two major comments on the seminar proceedings. These are not directed at any particular presentation, but are rather general and of a methodological nature.

I

Most official CPI statistics are based on the Laspeyres index (or its variants the Young and Lowe indexes). The Laspeyres index is a measure of the change in cost of living (COLI) between a "reference period" b (to be defined below) and the current period t.

Let the number of commodities in the basket be n, and let the *base period* (defined below as the year in which the household survey is conducted) prices and quantities be denoted by $p_i^{(b)}, q_i^{(b)}$ respectively, while $p_i^{(t)}, q_i^{(t)}$ denote the corresponding current period prices and quantities. Then the Laspeyres price index may be denoted by

$$CPI = \sum_{i=1}^{n} \frac{p_i^{(t)} q_i^{(0)}}{p_i^{(b)} q_i^{(b)}} = \sum_{i=1}^{n} S_i^{b} \left(\frac{p_i^{(t)}}{p_i^{(b)}}\right)$$
(1)

where $S_i^b = \frac{p_i^{(b)}q_i^{(b)}}{\sum_{j=1}^n p_j^{(b)}q_j^{(b)}}$ is simply the share of good

i in the total expenditure in the base period b.

The quantities S_i^b , i=1... n are based on a household expenditure survey conducted in the *base period*. There is usually a substantial lag between the conduct of the household survey and the use of these weights in the price index. In official statistics a distinction is therefore made between the base (or survey period) and the

reference period which corresponds to the first use of the index. Using the superscript 0 to denote the reference period we can modify (1) slightly to obtain two variants of the Laspeyres index, viz., the Laspeyres-Young index denoted by

$$CPI(LY) = \sum_{i=1}^{n} S_{i}^{b} \left(\frac{p_{i}^{(t)}}{p_{i}^{(0)}} \right)$$
(2)

(where S_i^b , is as defined in (1)).

And the Laspeyres-Lowe index denoted by

$$CPI(LL) = \sum_{i=1}^{n} S_{i}^{0} \left(\frac{p_{i}^{(t)}}{p_{i}^{(0)}} \right)$$
(3)

where
$$S_i^0 = \frac{p_i^{(b)} q_i^{(b)} \left(\frac{p_i^{(0)}}{p_i^{(b)}}\right)}{\sum_{j=1}^n [p_j^{(b)} q_j^{(b)}] \left(\frac{p_i^{(0)}}{p_i^{(b)}}\right)}$$
 (4)

Thus in the Laspeyres-Young index the prices are updated to the reference period from the base period while the weights continue to be as in the Laspeyres index, whereas in the Laspeyres-Lowe index the expenditure shares are also computed with a price updating from the base to the reference period. (Of course the base year quantities are not adjusted since these are based on the base period household survey which can only be conducted at periodic intervals).

Let us now turn to the situation in India. Traditionally the COLI was sought to be measured in India by three separate indices, viz., the CPI for industrial workers (CPI-IW), the CPI for agricultural labour (CPI-AL) and the CPI for rural labour (CPI-RL) which were released by the Ministry of Labour and Employment (Government of India). With effect from January 2015, the Central Statistical Office (CSO) has started publishing a new series of CPI Urban (CPI_U),

D.M. Nachane is Honorary Professor at Indira Gandhi Institute of Development Research Mumbai, and Chancellor, University of Manipur. He was formerly Director and Emeritus Professor of Indira Gandhi institute and member of the Economic Advisory Council to the Prime Minister.

CPI Rural (CPI_R) and CPI Combined (CPI_C). It is this group of indices which will be the subject matter of this paper, as it seems likely that they will constitute the basis for inflation measurement for policy purposes (most notably monetary policy) in lieu of the hitherto used measure of "headline inflation" the Wholesale Price index (WPI). We will term this group as the "New CPI".

These New CPI indices are based on the 68th Round of the National Sample Survey Organisation (NSSO) Consumer Expenditure Survey conducted in 2011-12. The total number of households surveyed (rural and urban) is 1,01,651 (Rural = 59,683; Urban = 41,968). As per the ILO (2004) definition, the computed CPI is a Laspeyres-Young index, though the official publications of the Indian government prefer the term "modified Laspeyres". When there is no scope for confusion we will simply use the term Laspeyres index.

As is evident from the above discussion the Laspeyres-Lowe index represents some improvement over the Laspeyres-Young index. One scope for improvement is then to move over to a Lapeyres-Lowe type of index for the Indian CPI.

The Boskin Commission [see Boskin, et.al., 1996], one of the most thorough reviews of the US CPI notes several other sources of dissatisfaction with the Laspeyres-Lowe-Young (LLY) types of CPI indexes such as the *quality change* bias, outlet substitution bias, new products bias, etc. Additionally these indexes are not superlative [see Diewert, 1976, Pp. 115-145] in the sense that they do not reflect exactly the changes in COLI over a specific period. [See Afriat and Milana, 2006, for a detailed treatment of exact/superlative index numbers. Mathematically speaking a superlative index number can be viewed as a second-order approximation to a homothetic utility function [see Armknecht and Silver, 2012, p. 4 footnote]].

There is a considerable literature devoted to the search for superlative index numbers. I mention only two such. One is the Tornqvist superlative index defined as follows. Let the superscripts (b), (t) and (0) refer to the base year, current year and reference year, respectively, and S_i^b , S_i^0 defined as in (1) and (3) above, while the current period weights are defined by

$$S_{i}^{(t)} = \frac{p_{i}^{(t)}q_{i}^{(t)}}{\sum_{i=1}^{n} p_{i}^{(t)}q_{i}^{(t)}}$$
(5)

Then the Tornqvist superlative index is defined by

$$CPI(T) = \prod_{i=1}^{n} \left[\frac{p_i^i}{p_i^0} \right]^{\left(S_i^0 + S_i^1\right)/2}$$
(6)

if a Laspeyres-Lowe index is available, or as

$$CPI(T) = \prod_{i=1}^{n} \left[\frac{p_i^i}{p_i^0} \right]^{\left(S_i^b + S_i^i\right)/2}$$
(7)

if only the Laspeyres-Young index is being used.

Very often, if the current expenditure shares are not available in real time, then under certain assumptions, CPI (T) can be approximated by

$$CPI(T) = \prod_{i=1}^{n} \left[\frac{p_i^{t}}{p_i^{0}} \right]^{S_i^{b}}$$
(8)

$$CPI(T) = \prod_{i=1}^{n} \left[\frac{p_i^i}{p_i^0} \right]^{S_i^0}$$
(9)

as the case may be.

Other superlative index numbers suggested in the literature are those by Lloyd-Moulton [see Lloyd, 1975, Pp. 301-313; and Moulton, 1996] and Lent and Dorfman [2009, Pp. 129-149], etc. Further details may be found in Biggeri and Ferrari [2010], apart from ILO [2004]. In national income accounting a distinction is generally made between functional and personal income distribution. Functional income distribution considers national income distribution between three classes, viz., workers, capitalists and rentiers; whereas personal income distribution refers to the distribution of national income among individuals or households.

Most countries currently follow the SNA system of the UN, which is focused on personal income distribution and the much used Keynesian national income identity.

For macroeconomic purposes especially for studying issues of macroeconomic stability and income inequality the functional income approach is very relevant.

At the core of the functional approach is the Levy-Kalecki [see Kalecki, 1954] profits equation, which may be stated as follows:

$$W_{AT} + P_{AT} + T = C_C + C_W + I + G + CE$$
(10)

Where W_{AT} and P_{AT} are wages and profits (both after tax), **T** is total taxes (direct and indirect), C_C and C_W are the consumption of capitalists and workers, I is gross private investment, G is government expenditure (both on current and capital account) and *CE* is the current account surplus.

With some rearrangement this can be put in the form

$$P_{AT} = C_C + I - S_G - S_W + CE \tag{11}$$

Where S_G and S_W are government surplus and workers' savings, respectively.

[See Levy, 2001, Pp. 17-30, for details of the derivation.] Put in this way, we get several new

insights into macroeconomic mechanisms. The above expression says that macroeconomic business gross profits (after taxes), are equal to capitalists' consumption, plus gross investment, minus (plus) government surplus (deficit), plus (minus) external surplus (deficit) minus workers' saving.

This way of looking at the national accounts is becoming increasingly popular. It has already been adopted in the US and in some European countries like Spain. Its various applications may be found in Giovannoni and Parguez [2005, Pp. 1-31], Godley [1999], López et.al., [2013, Pp. 28-47], etc.

At some stage India should also think of adopting a twin-track approach using both personal income accounting and functional income accounting.

REFERENCES

- Afriat, S.N. & C. Milana, 2009; *Economics and the Price Index*, New York: Routledge.
- Armknecht, P. & M. Silver, 2012; "Post-Laspeyres: The Case for a New Formula for Compiling Consumer Price Indexes". IMF working Paper No. WP/12/105, Washington DC: IMF.
- Biggeri, L. and G. Ferrari, (eds.), 2010; Price Indexes in Time and Space, Contributions to Statistics, Springer-Verlag Berlin Heidelberg.
- Boskin, M. J., E. Dulberger, R. Gordon, Z. Griliches, & D. Jorgenson, 1996; "Toward a More Accurate Measure of the Cost of Living". Final Report to the Senate Finance Committee, December, 4.
- Diewert, W.E., 1976; "Exact and superlative index numbers", Journal of Econometrics, Vol. 4, No. 2.
- Giovannoni, O. and A. Parguez, 2005; What Drives Profits? An Inquiry into the Profit Paradox, *Eastern Economic Association Conference*, New York.
- Godley, W., 1999; Seven Unsustainable Processes: Medium-Term Prospects and Policies for the United States and the World, Levy Economics Institute of Bard College Special Report.
- International Labour Organisation, 2004; Consumer Price Index Manual: Theory and Practice, Geneva: ILO.
- Kalecki, M., 1954; *Theory of Economic Dynamics*, Allen and Unwin, London.

- Lent, J. and A. H. Dorfman, 2009; "Using a Weighted Average of Jevons and Laspeyres Indexes to Approximate a Superlative Index", *Journal of Official Statistics*, Vol. 25, No. 1.
- Levy, J., 2001; "Profits: the views of Jerome Levy and Michal Kalecki", *Journal of Post Keynesian Economics*, Vol. 24, No. 1.
- Lloyd, P.J., 1975; "Substitution effects and biases in non-true price indices", *The American Economic Review*, Vol. 65.
- López M.F., C. Davila and B.J. López, 2013; "Profits and extraordinary profits in the Spanish economy during the 2000's", AESTIMATIO, The IEB International Journal Of Finance, Vol. 7.
- Moulton, B.R., 1996; *Constant Elasticity Cost-Of-Living Index In Share-Relative Form*, Mimeo, Washington, DC: Bureau of Labor Statistics.

RECENT GDP REVISIONS - DATA ISSUES AND BEYOND

R.B. Barman

The recent controversy on GDP estimates for FY16 using revised base raised many methodological and data quality issues. Many of these issues were discussed in the Symposium on Recent GDP Revisions organised by Indian School of Political Economy. The note picks up some of these issues and offers suggestions for our attempt to resolve these issues, as far as possible. Use of corporate sector accounts for the new series was a bold attempt and a major departure from the past. This shift has many advantages. But there are other serious issues which need to be addressed satisfactorily. The improvement of data quality, timeliness, coherence and auditability enhancing credibility, calls for use of advanced information technology. The development of information system through bottom up approach is a way for modernisation and revamping of official statistics. This modernisation will go a long way in enhancing quality, credibility and usefulness of official statistics as public good.

First of all, I am thankful to the Indian School of Political Economy for the honour of inviting me as Chief Guest for the symposium on an issue of highly topical interest in the context of present public concern on credibility of GDP estimate for FY16 released by Central Statistics Office (CSO). We have in our midst very eminent economists and statisticians looking for explanation on the issues being discussed in the professional media. This is a perfect ambiance for a serious discussion on the issues at hand.

The new series of national accounts statistics with base year 2011-12 was introduced by CSO on 30 January, 2015, based on a comprehensive review of methodology and database. On 26 June 2015, the CSO released a publication titled "Changes in Methodology and Data Sources in the New Series of National Accounts: Base Year 2011-12". This is the seventh series on the ongoing attempt to revise national accounts statistics from time to time ever since 1949 and incorporates, to the extent possible, international guidelines set in the System of National Accounts 2008. The methodological revision was carried out under the guidance of the Advisory Committee on National Accounts Statistics, a committee of experts in the field.

The major improvements in coverage in new series relate to (1) corporate non-financial and

financial accounts (2) local bodies and autonomous accounts and (3) new surveys and censuses. There have been several methodological revisions on valuation, quasi-Corporations, financial intermediary services, harmonisation between SNA and Balance of Payments Manual 6, etc., including "Effective Labour Input Method" for unincorporated enterprises.

The estimates of national income for the financial year 2015-16 have been severely criticised on several grounds. Many of these criticisms have been published in national dailies and the Economic and Political Weekly. There were round table discussions.¹

Major Issues Raised on GDP for FY16

The Major areas of criticism of FY16 GDP estimates mainly relate to use of corporate accounts, effective labour input method for unincorporated enterprises and deflator used for converting current price data into constant price. There are other issues also. However, I will offer my suggestions on these three aspects:

Corporate Sector Statistics

Corporate sector is a very important component of institutional classification of GDP. Its share in GDP is over a third. As corporate entities

R. B. Barman is Chairman, National Statistical Commission.

are regulated under Companies Act, 2013 (current), these entities have to mandatorily file their annual accounts with the Registrars of the respective Companies. The online reporting system developed under MCA21 has made it possible to get data on companies in digital form. In the revised series for the years 2011-12 and 2012-13, accounts of about 5 lakh companies, accounting for about 85 per cent of paid up capital, have been analysed and incorporated in the estimation of GVA. This is a very major improvement in coverage in comparison with the past series. However, this has resulted in certain other problems, briefly touched upon later.

The estimates of saving and investment have been based on institutional classification of composition of GDP i. e. Government, Corporate - financial and non-financial and households, not-for-profit institutions (NPI) being a small group. The estimates for the households including NPI were arrived at as residual subtracting government and corporate saving from the total arrived at following the commodity flow method. The major improvement in the coverage of corporate sector consequently results in improvement of household saving estimate.

There are a few other issues about corporate sector estimates. These are: (1) industrial classification of companies; (2) estimation in respect of those companies which have not submitted their accounts; (3) expenses of head office of companies not directly attributable to manufacturing; and (4) non availability of the accounts of multi-state units of a company separately, as required for allocation of income for a state. We need to address these issues appropriately to improve estimation of State Domestic Product. I have a few suggestions below to take this exercise forward:

Industrial Classification of Companies

The classification of companies by industry is not as sharp as those of Annual Survey of Industries (ASI). As we conduct ASI on an annual basis collecting detailed information on products, we would need to map them on to corporate entities to sort out the issue of industrial classification for the matched companies to the extent possible. If a company has multiple products and adds or omits product lines over time and space, this can be effectively taken care of using defined concepts and methods, identities as part of master data combining CIN, ASI classification, PAN and other identities and data repository with versatility we envisage with state-of-the-art technology. Methodologically certain data mining techniques can possibly be explored using information from the Data Lake,² a well known Big Data terminology, including text, audio and video data. The companies which have submitted their accounts but not covered in ASI may be approached either through a survey or through a return prescribed under regulatory requirement for their appropriate industrial classification. There could also be a provision for treating diversified companies as a separate group. However, ASI will exist like at present on account of its own importance for input-output and product classification.

Companies Not Submitting Accounts

Companies which default on submission of annual accounts are many. However, these companies are generally small when it comes to their contribution to GDP. The appropriate way for estimation in respect of these companies is to conduct a well designed sample survey at periodic intervals and use these results for building estimates for this segment. As we can have a frame based on registration of companies, we have a good basis for undertaking such a survey, as suggested.

Expenses of Head Office of Companies Not Directly Attributable to Manufacturing

This is usually a small amount in the total income/expenditure. However, if a company is also involved in non-manufacturing business as a minor activity, the amount could be substantial. There can be a provision in the questionnaire to record such activity or activities along with related amounts separately to take care of such a possibility.

Non-Availability of Detailed Breakup by State of Multi-State Units of a Company

There are a large number of multi-state companies with sizeable business. Though in terms of number, these companies may not be more than a few thousands, they may account for a large share of GDP covering key industries. In case of manufacturing, most of them are expected to form parts of the Census sector. As ASI is expected to cover these units, it may be possible to map ASI with MCA21 data to satisfactorily account for allocation of MCA21 data into different states. However, for the non-overlapping segment of the two, it may be necessary to undertake specialised Survey to apportion the amount by state. If we assign geo-code to each unit by its location, it will be possible to build estimate even at district level. Almost all large companies rely on Enterprise Resource Planning (ERP) as computerised system for detailed information on inputs and outputs and hence should be able to provide data for each unit under their operation.

In respect of companies engaged in services sector, the issue will be more complicated. This will be inspite of regularly conducted Annual Survey of Services Sector companies being proposed. For example, for a pure marketing company or a road transport company it may be difficult to apportion revenue and expenditure by geography. This may be an important difficulty. In such cases, it may be desirable to undertake one or more type study to understand the nature of complexity and find an appropriate method for allocation, industry by industry. In any case we can not avoid allocation for supra regional enterprises like railways, airlines, etc.

Use of Double Deflation Method

The use of double deflation method for proper estimation of value added is an important issue. For this, the input and output need to be deflated by their respective indices recorded separately, failing which real GDP may be either inflated or underestimated depending on the circumstances. The developed countries generally use double deflation to arrive at GDP. There are, of course, debatable issues on double deflation. We have to examine this issue to consider whether to graduate to the same standard.

The use of appropriate deflator(s) for arriving at constant price estimate(s) is another important issue. We know that for many of the services WPI is used as a proxy for deflator in the absence of appropriate services price index. However, as WPI diverged from the CPI and the overall growth rate thereon became negative in 2015-16 due to oil prices becoming less than half internationally, this time tested deflator seriously impacted services sector GVA for FY16. We need price indices for various services to overcome this shortcoming. This work is underway and needs to be completed early. The services price indices for major service sectors like banking and finance, trade, transport, communication, real estate, construction, health and education are expected to be covered.

Ravindra H Dholakia and Manish B Pandya raised many concerns (10 in all) for estimation of state income arising out of base year change. A very major issue relates to proportion of allocation in respect of Gujarat going up from 30 per cent in 2004-05 series to 74 per cent in the new series. Another issue is on the use of estimates based on labour input method introduced in the new series which does not consider state specific labour productivity difference across states. There is a need to find satisfactory solutions to these issues to substantially reduce the proportion of allocation.

Improvement of Systems and Processes

India has a long tradition of maintenance of high quality statistics based on professional excellence. Our systems and processes are also transparent and are backed by expert committees on methodology in conformity with international standards. We need to scrupulously guard this well earned reputation. In my view, we need to absorb advanced technology for modernisation of systems and processes which can be a major source of strength and a powerful mechanism for providing support for an independent assessment of the quality of official statistics enhancing credibility. However, technology can only be used as an aid, a powerful aid.

The revolution in ICT has opened up immense possibility for developing very powerful systems for building intelligence using huge volume and variety of data which also get accumulated with high velocity. Some of the leading national statistical systems have embraced this approach for modernisation of their statistical system, including Data Warehousing/Big Data and sophistications of data science.

A recent example of the advocacy of this powerful approach is the Independent Review of U.K. Economic Statistics (Chairman: Professor Sir Charles Bean), March 2016, which sets the vision for the future provision of economic statistics for them. The report considers the challenges on capacity building both in economic methodology and the ability to handle and integrate large data sets on issues of measuring the modern economy (needs), the capacity of U.K. Statistical System in delivering these statistics using relevant data and emerging data science techniques (capability), and governance framework for production of world class economic statistics (governance).

The absorption of technology to modernise our statistical system is required on several counts. In the large federal structure of ours, regional development in a balanced manner is critical. The 73rd and 74th amendments to constitution emphasise development at local levels. We have a great deal of divergence in resource availability, climatic conditions and social practices. We need to have data to measure these regional variations effectively. In short, we need to take up on priority the modernisation of our statistical system adopting a bottom up approach for collection of data, geo-coding of granular data helping estimation of various parameters, including income from district, upwards. However, the requirements on core areas of statistics and methodological issues thereon will have to be based on top down approach for consistency, uniformity and conformity with international standards. In short, the improvement in systems and processes using advancement in ICT has to be pursued with high priority along with methodological prescriptions as required.

We need to put in place a strong Data Governance practice, as will be explained, allowing for effective checks and balances for quality audit on collected data. With the tracing of data going into various aggregates using metadata, mapping data right from primary level of collection and collation till the final aggregation for each sector constituting GDP will go a long way in the improvement of estimates. This is no doubt a very challenging task. For a country of India's size, apart from available technology, we need to gear up the entire machinery right from village panchayat level and entire regulatory system under e-governance to partly address the issue of data collection through web based systems, with validation checks at the time of reporting of data being built into the system. The unorganised sector along with households would still remain a difficult area for collection of relevant data. The problem will ease out with present momentum on absorption of ICT getting further acceleration in the next few years. However, we would need to have a well thought out strategy and the road map for a much better integrated system of data repository and processing including data mining as part of Analytics/Business Intelligence.

In my view, Government and Corporate sector accounting for about 54 per cent of GDP should be our priority for building data repository using Data Warehouse/Big Data technology initially. In respect of households, we would have to lean heavily on sample surveys. There should be a system of cross checking these data using audio and video features as parts of data collection, wherever possible.

The sample size of NSSO surveys can give reasonable estimates for the all India and State levels. However, we should ideally target district as base level for survey results. This is also required for Human Development Index prepared at the district level. With the matching sample being collected by States along with NSSO surveys, we need to tabulate these data to not only have more precise estimate at the State level, but also to get a reasonably precise estimate for a district in stages using small area survey concepts.

There are states having well organised machinery up to block level. Recently, I was at Udaipur for 75th round of NSSO Survey. The Deputy Director in charge of the district informed me that Rajasthan State Statistical Organisation has a reach up to block level with qualified manpower. They are also in the process of implementing systems for Application Programming Interface (API) based collection of data from blocks. We need to take advantage of this kind of machinery to develop an integrated system for a much deeper insight on the socioeconomic development and its dynamics over time and space [Barman, 2016].

Code of Practice for Statistics and Data Governance

An authoritative assessment of the quality, consistency and coherence of GDP estimate requires going deep into methodology and data right from collection, collation, compilation along with data governance practices. We will briefly explain the importance of data governance for enhancing confidence in the published data, including GDP, and transparency in the entire process of data management including audit, following a clearly laid code of Practice required for enhancing credibility of official statistics. While the methodology for compilation of GDP is in the public domain, the micro data going into estimation of GDP is a massive exercise and we need to have an integrated system amenable to rigorous checking of data quality and consistency as parts of validation of estimates. This is possible if we get data from various sources flowing into a distributed, but connected, repository of data adhering to common standards and methods for measurement and aggregation. Data validation rules can be developed for ensuring data quality at the time of submission of primary data through web based systems, and during aggregation at different levels. As for consistency checks for data validation, the circular flow of product and income we are taught as part of national accounting is an example. We have not been able to follow all the three approaches based on production, income and expenditure suggested for national accounting because of challenges on collection of appropriate data on many of the components. Illustratively, we have major challenges on reconciliation of consumption estimated based on NSSO surveys and CSO estimates as reported in national accounts. Similarly, we have differences on trade data between DGCI&S and RBI, which was solved by methodology but not reconciliation of data populating the two sources. The development of an integrated system with possibility of relating one set of data with another is the demand of the time. In its absence it will be difficult to assess the quality in terms of consistency and coherence of the produced statistics.

Data in proper context becomes information. If one person earns rupees ten thousand per month and the other earns rupees one lakh, the two are data, but not information. If the first person is a primary worker and the second a manager, it becomes information with a context. If external information on wage pattern of the industry is available for comparison, it gives an insight about wage structure of the industry. Information with such insight becomes knowledge. The information follows certain patterns and dependencies. For example, people engaged in real estate and financial services in India generally get much higher salary than those in agriculture or mining and quarrying. Each industry has a pattern in the salary structure and a distribution. The low or high salary depends on skills, investments, returns, risks, etc, in each industry. This is an analytical issue. In view of this, it is necessary to examine estimates by relating them to other relevant estimates. For example, there is a wide divergence between IIP and GVA for manufacturing. While there are reasons for this divergence, the market perception is formed with IIP as a leading/coincident indicator. With a view to shedding more light on the reasons for this divergence, we need to have a way of going into differences in the composition and coverage of the two series. This can be checked effectively, if there is a data repository which allows for seamless access of related sets of data from a distributed network of DWs or Data Lake, mentioned earlier. The systems should have capability for integration for multi-dimensional view of data along with end-to-end metadata to undertake such an exercise.

Metadata describes the structure of and basic information about data and helps understand the meaning of the data, thereby contributing to their effective use. It explains data definitions, components, sources along with life history of data from the origin till the present. This leaves a very powerful trail for verification of quality of data in a transparent manner along with a lasting memory. It has many advantages including effective external audit on quality of generated statistics.

We have adopted Ten United Nations Fundamental Principles of Official Statistics for which a Government notification was issue on 15 June 2016. The principle 2 states, "To retain trust in official statistics, the statistical agencies need to decide according to strictly professional considerations, including scientific principles and professional ethics, on the methods and procedures for the collection, processing, storage and presentation of statistical data. "With this notification, these principles have become guiding principles for production of official statistics and their dissemination. There is a need for introducing regular audit to check whether these principles are scrupulously followed by official data generating agencies.

Data Governance

We need to have systems and processes conforming to specified code of practice on data governance to effectively deal with such issues. Data governance relates to policy, standards, and rules for maintenance of data for integrity, privacy and security of data. It also includes processes followed for management of data as organisational resource, systems and methods for checking of consistency, coherence and usability of data along with accountability based on set governance principles. Modern information system not only explains processes involved in sourcing the data as inputs, processing them for generation of outputs, software and hardware used for entire operation including networked systems and storage, but also roles and responsibilities of people involved in the entire process.

On the Issue of Credibility

The Report of the National Statistical Commission headed by C. Rangarajan submitted its report in August 2001 highlighting some of the deficiencies of the statistical system and the remedies thereon. An independent National Statistical Commission was set up, as an apex policy making authority, to enhance the credibility of official statistics. It may be desirable to examine and review the progress made during the last one and a half decade and its relevance in the present context.

In this context, it may be useful to assess developments in official statistical systems of a few countries. I mention here the progress made in UK on modernisation of statistical system as a truly independent organisation. UK statistical system has been evolving in the past thirty years for making the system independent along with commensurate powers to promote and safeguard the production and publication of official statistics as public good sets a very high standard. Under the UK Statistics and Registration Service Act 2007, the Statistics Board with majority of non-executive members, acting at arm's length from Ministries, is a pilar of great strength for a vibrant democracy. The Board has the responsibility to prepare, adopt and publish a Code of Practice for Statistics³ which lays standards against which National Statistics is assessed. The assessment by the Head of Assessment, enjoying status equivalent to National Statistician of U.K., provides a very powerful mechanism for independent assessment of official statistics.

The systematic approach to the compilation of GDP as the most important barometer of the economy originated in the work of Richard Stone,

though many others, for example, Simon Kuznets, Ragner Fish, James Meade, contributed richly. We need to keep in view that national income is not a "primary fact" but an "empirical construct". There are many theoretical and empirical issues in the measurement of GDP still to be dealt with comprehensively. It is the expert judgement on methodology based on objective assessment of facts, guided by internationally accepted concepts and definitions, that forms the basis of our compilation. There are compromises to be made on considerations of availability and practicability. Given this, it is the integrity of systems and processes, code of best practices and credibility established though professionalism and transparency that matter.

Concluding Remarks

We need to have granular data on entities and transactions, wherever possible, for building mechanisms for micro-macro linkages as parts of management of information system. The organisation of official statistics in an integrated system of this type can be useful for analysis on productivity, equity and allocative efficiency at appropriate levels as major focus of economic analysis. This will help in gauging the forces of economic changes for a much deeper insight on different dimensions of the economy over space and time. The issue of regional development taking advantage of human and material resources for, what we call, demographic dividend can be served much better through such a system.

The government at the centre has set a target of doubling the agricultural income in the next seven years. There is also a policy of 'Make in India'. How do we achieve these macro targets unless we know well how to make best use of resources at our command, a demand creating technology and the market infrastructure to support and sustain these challenging objectives? How do we evaluate progress and decide on interventionist government policy to support and supplement operations?

We explained briefly about some of the possible courses of action for development of appropriate methodology to not only effectively respond to some of the criticisms but also go beyond to enhance credibility of our statistical system. It is not only GDP but many other aspects including sustainable development goals set by the UN which need to be considered. China had double digit GDP growth from 1990 onwards for next two decades or so, thus becoming an economic powerhouse following a strategy. If we have to pursue a high growth strategy to reap the demographic dividend, we must build up an efficient information system by setting goals right from the district level and their evaluation based on empirical reality. This is very much in the realm of our capability.

In sum, the bottom up approach based on single version of the truth, making good use of modern technology, is required for our official statistical information system as rich repository of high quality data. This will help in better informed planning and execution by government, enterprises and the people and, as a result, the market economy is expected to function more efficiently. In such a case we can aim at higher trajectory of inclusive growth with social justice for a virtuous cycle of growth through structural transformation supported by productivity, competitiveness and widespread efficient market mechanism.

NOTES

1. I attended the seminar held in the Indira Gandhi Institute of Development Research (IGIDR) and the present one. S Mahendra Dev, Director, IGIDR, Vikas Chitre, President, (ISPE), S L Shetty and Dennis Rajkumar, EPW, participated in both the discussions. Their papers along with an unpublished paper of Rajashree Sengupta, (presented at the IGIDR Roundtable) and Ravindra H. Dholakia (in the present Symposium) cover most of the issues relating to FY16 GDP estimates. Amey Sapre went deeper on corporate sector estimates pointing out a number of issues concerning data and the methodological aspects. The papers published in the present volume cover these issues with their justification. G. C. Manna, Director General, CSO touched upon specific aspects relating to manufacturing sector of GDP.

2. A Data Lake is a highly scalable platform for storing huge volumes of multistructured data from disparate sources with centralised data management services. (Sourced from Internet).

3. The first Code of Practice for Official Statistics in U.K. was published in January 2009. The principles include 1. Meeting user needs 2. Impartiality and objectivity 3. Integrity 4. Sound methods and assured quality 5. Confidentiality, as major prescription. This code provides a benchmark of good practice for all bodies producing official statistics.

REFERENCES

- Barman, R. B., 2016; Rethinking Economics, Statistical System and Welfare: A Critique with India as a Case, *Economic and Political Weekly*, 9 July issue.
- Bean, Sir Charles, 2016; Independent Review of U.K. Economic Statistics, March.
- Code of Practice for Official Statistics, January, 2009; UK Statistics Authority.
- Statistics and Regulation Service Act, 2007; and UK Statistics Act Explanatory Notes, the Crown, UK, 26th July.
- The Sustainable Development Goals Report, 2016; United Nations (UN).

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:

- 1. The Poverty and Un-British Rule in India, Dadabhai Naoroji
- 2. System of National Accounts 2008 European Commission, International Monetary Fund, Print

We are thankful to Dr. S.L. Shetty, Dr. J. Dennis Rajakumar and Shri Abhay Tilak for valuable suggestions about material to be included in the Documentation section of this issue.

Stock SNA EA 2008 001 Organisation for Economic Co-operation and Development OECD Code 302009191P1 United Nations, Sales No. E.08.XVII.29, document symbol ST/E-SA/STAT/SER.F/2/Rev.5 World Bank, Chapters 5 & 6.

- Central Statistics Office (2015): Changes in Methodology and Data Sources in the New Series of National Accounts: Base Year 2011-12, Ministry of Statistics and Programme Implementation, New Delhi, 26 June Extract from Section 1, 2, 3, 4 and 6.
- 4. Discrepancies in GDP Data, T C A Anant
- 5. Government of India Ministry of Statistics and Programme Implementation Understanding the New Series of National Accounts, Frequently Asked Questions
- 6. Government Product and National Income, Simon Kuznets

THE POVERTY AND UN-BRITISH RULE IN INDIA*

Dadabhai Naoroji

CONTENTS THE POVERTY OF INDIA

Total Production of India, 2 - Calcutta Statistical Committee, Agricultural Tables, 2-Fallacy of its statistics, 3-How Statistics should be Compiled, 4-Central Provinces, Food Produce, etc., 4-Punjab, Do., 5-North-West Provinces, Do., 8-Bengal, Do. 12-Madras, Do., 15-Bombay, Do.; 17-Oudh, Do. 22 summary, 23 necessary Consumption, 25 Cost of Subsistence, 127 - subsistence per head 28 - Proportion of Children to Adults, 30 - Production Compared with Cost of Living, 31

The following material shown in the contents has not been included here

- Deficit of Imports Compared with Exports, 32 - The Drain to England, 33 - Increase of the Drain 34. Small Amount of Imports from England, 36 - India's Tribute, 36 - The Elements of the Drain, 38 - Official Opinion of the Drain 38 - Bengal, 38 - Bombay, 43 - Madras 47 - Punjab, 48 - North West Provinces, 49 - Central Provinces, 50 - India, 50 - Condition of England under a similar Drain, 51 - Drain through Investment of English Capital, 54 The Moral Drain, 56 - Pressure of Taxation, 58 - A Fair Comparison with other Nations, 59 - Not True Free Trade, 61 - Prices 62 - Causes of High Prices, 63 - Fluctuation in Price of Cotton, 64 - Price of Coffee, 65 - of Indigo, 65 - of Rice, 66 - of Silk, 67 - of Sugar, 67 - of Linseed, 68 - of Rapeseed, 68 - of Wool, 68 - of Indian Tea, 68 -Causes of Local Rise in Prices, 69 - Normal Decrease in Prices under British Rule, 72 - Average Prices, 79 - Higher Prices due to Scarcity, 80 - due to Famine, 81 - Wages 82 - in Bengal, 82 - in Bombay 83 - in Punjab 84 - in Central Provinces, 84-Bullion, 85-Export of Bullion, 89-Non-fulfillment of Solemn Promises, 90-Macaulay on Employment of Native Indians, 91-The Duke of Argyll's Promises, 94-Suspension of the Nine Scholarships, 100-The Covenanted Service, 103-The Engineering Service, 105-Madras, 110-Roorkee Engineering College, 111-Bengal, 114-The Native Medical Service, 116-Telegraph and Forest Services, 123-Reply to Criticisms on The Poverty of India, 126.

THE CONDITION OF INDIA

Prefatory Note, 145-Letter to the Marquis of Hartington, 147-Administration Report of Punjab, 1876-7, 148-Memorandum and Criticism of India Office Figures and Statistics, 178- Railways, 193-Foreign Trade, 196-The Moral Poverty of India, 203.

^{*} LONDON, SWAN SONNENSCHEIN & CO., LIM, PATERNOSTER SQUARE, 1901.

SIR M. E. GRANT DUFF'S VIEWS ABOUT INDIA, 231. Poverty of India, 233-Trade Statistics of India, 251.

SPEECHES IN THE HOUSE OF COMMONS.

East India Revenue Account, 275 - Amendment to the Address, 294.

ROYAL COMMISSION ON THE ADMINISTRATION OF EXPENDITURE IN INDIA

Letters to Lord Welby: No. I, 307; No. 2, 321; No. 3, 322- Production and Distribution, 323-Crops under Cultivation, 327-Letters to Lord Welby: No. 4, 343; No. 5, 365; No. 6, 380-Appendix: "Indian Affairs" (*Times*, Oct. 5, 1896), 395-Letter to Lord Welby, No. 7, 398-Summary, 458-Appendix: Simultaneous Examinations, 466-Correspondence with the War Office, 487-Correspondence with the Admiralty, 505-Expenditure on Wars beyond the Frontier, 522-Cost of the Forward Policy, 526-Indian Currency, 529-No. I, Statement submitted to the Indian Currency Committee of 1898, 530-Indian Exchange, 548-The Currency Question, 560-No. 2, Statement submitted to the Indian Currency Committee of 1898, 563-The State and Government of India under its Native Rulers, 577-Further Opinions on the Subject of Native Rulers and British Rule, 614.

A SELECTION FROM ADDRESSES

No. 1, Address at Manchester, 627-No. 2, The Condition of India (Westbourne Park Chapel), 636-No. 3, "India must be Bled" (United Methodist Free Church, Walthamstow), 643-No. 4, Address at Plumstead, 648-NA. 5, The Indian Famine (Kennington), 654.

POVERTY OF INDIA

Papers READ BEFORE THE BOMBAY BRANCH OF THE EAST INDIA ASSOCIATION OF LONDON IN 1876

WHILE pointing out in these notes one of the unfavourable results of the present system of British administration, I do not for a moment mean to ignore the very bright side of British rule, and the many blessings of law and order which it has conferred on India. On the latter subject I have already expressed my sentiments on several occasions.

My object at present is to show in greater detail what I have already stated before, that, under the present system of administration, India is suffering seriously in several ways, and is sinking in poverty. In my humble opinion, this is the question, or rather the most serious question, of the day. Whether I am right or wrong will be for you to judge, after hearing what I have to say. If I am right, I shall have discharged a duty as a loyal subject to urge upon our rulers to remedy this most serious evil. If, on the other hand, I am shown to be wrong, none will rejoice more than myself; and I shall have equally done a duty, as a wrong feeling of a serious character will be removed.

These notes were written two to three years ago.¹ I lay them before you as they are. If necessary, I shall consider hereafter any modification that the light of subsequent events may suggest, either in confirmation or refutation of the views expressed in them. There will be a few repetitions from my former papers, but they are necessary in order to make these notes complete. I have endeavoured to avail myself as much as possible of the weight of official or other great authorities, and facts from official records; hence I shall have more quotations than might be thought suitable in an address before an audience; and my notes may prove dull, but I only hope they may be found of some importance to atone for such dullness. I may propose here that any discussion upon the notes may be deferred till they are all read, and my whole argument placed before you, or otherwise there will be confusion in the discussions.

TOTAL PRODUCTION OF INDIA

In July, 1870, I made a rough estimate, in my paper on "The Wants and Means of India," placed before the East India Association, as follows:-

"The whole produce of India is from its land. The gross land-tax is put down for 1870-71 a little above £21,000,000. Now, I suppose I shall be within the mark if I say that Government takes for this land-tax, on an average, one-eighth of the gross produce, if not more. This gives for the gross production of the country, say, about £168,000,000; add to this-gross opium revenue about £7,000,000; gross salt revenue, £6,000,000; gross forest, £600,000. The total, thus, of the raw produce of the country amounts to under £182,000,000 - to be on the safe side, let us say £200,000,000, to include the produce of half a million tons of coal, of alienation lands, or anything else there may be. Now, the population of the whole of British India is nearly 150,000,000; giving, therefore, less than 27s a head for the annual support of the whole people."

I then further raised the production from $\pounds 200,000,000$ to $\pounds 300,000,000$, to include the value of manufacturing industries, excise on spirits, and a large margin for any omissions, making 40s a head for the gross production of India as a high estimate.

^{1.} These notes in their original draft were placed before the Select Committee on Indian Finance in 1873. They were taken, but not published with the Report, as they did not suit the views of the Chairman (Mr. Ayrton), and I was led to suppose, also of Sir Grant Duff, who was then the Under-Secretary of State for India.

Since then I have endeavoured to work out the same problem directly, as far as the official data 1 could get enabled me to do so.

CALCUTTA STATISTICAL COMMITTEE -AGRICULTURAL TABLES

Parliament requires a yearly report of the moral and material progress of India; and a Statistical Committee is formed at Calcutta to supply the necessary information. This Committee has prescribed certain tables to be filled up by the different Governments in their administration reports.

The Central Provinces and Burmah reports are the only, two complete in their agricultural tables as far as practicable. Four others (Madras, North-West Provinces, Punjab, and Oudh) give them imperfectly. Bengal and Bombay gave the least, or none, up to 1869-70. For what I could not get from the reports I applied to the India Office, which naturally replied they could not give what they did not get from India. It will be seen, therefore, that I have been obliged to work out the production under much difficulty. Not only is the quantity of information insufficient, but the quality even of such as is given is defective. For instance, in the tables of prices of produce in the different districts of the Central Provinces, in order to get an average the prices are added up together, and the total is divided by the number of the districts. This principle is generally adopted by the returns made by all the Governments with respect to average of produce or prices. The principle, however, is altogether fallacious. In taking the average of prices, the quantities of produce sold at the different prices are altogether lost sight of. In the same way, in taking the average produce per acre, the extent of land yielding different quantities is overlooked.

FALLACY OF ITS STATISTICS

The result, therefore, is wrong, and all arguments and conclusions based upon such averages are worthless. Taking the instance of the Central Provinces in the administration report of 1867-8, the average price of rice is made out to be Rs. 2-12-7 per maund, when in reality the correct average will be only Rs. 1-8 per maund. Again, the table for the produce of rice per acre gives the average as 579 lbs., when in reality it is 759 lbs. Now, what can be the worth of conclusions drawn from these wrong averages? These averages are not only worthless, but mischievous. It is a pity that, with large Government establishments, more accurate and complete information should not be given. I sincerely trust that future reports will not only work averages upon correct principles, but also work out the total production of their respective provinces. Then only we shall know the actual condition of the mass of the people. All "I thinks" and "my opinions" are of no use on important subjects. The whole foundation of all administration, financial and general, and of the actual condition of people, rests upon this one fact - the produce of the country, the ultimate result of all capital, labour and land. With imperfect materials at command, and not possessed of the means to employ a staff to work out all the details as they ought to be, I can only give approximate results.

HOW STATISTICS SHOULD BE COMPILED

On the question of taking proper averages and supplying complete information, I addressed a letter, in February, 1871, to the India Office, which I have reason to believe has been forwarded to the Governments in India. I hope that some attention will be paid to the matter. As a specimen of the correct principle of averages, I have worked out table A of the averages of price and produce of some of the principal productions of the Central Provinces. From this will be seen that the correct average price for rice is Rs. 1-8, instead of Rs. 2-12-7, as stated above; also that the correct average of produce is 759, and not 579 lbs. of rice per acre. I have explained, in the following calculations for the different provinces, the mode I have adopted for each. Though working with insufficient and defective materials, and without the means and time to work out details, I have endeavoured to calculate above the mark, so that, whatever my error, it will be found on the safe side, of estimating a higher produce than the reality.

The principle of my calculations is briefly this. I have taken the largest one or two kinds of produce of a province to represent all its produce, as it would be too much labour for me to work out every produce, great and small. I have taken the whole cultivated area of each district, the produce per acre, and the price of the produce; and simple multiplication and addition will give you both the quantity and value of the total produce. From it, also, you can get the correct average of produce per acre and of prices for the whole province, as in this way you have all the necessary elements taken into account.

CENTRAL PROVINCES

The total area of cultivated land (Table 2 of Fiscal Report, 1867-8-an average *good season* year) is 12,378,215 acres. The price of produce per acre, as worked out in Table A for the important articles rice, wheat, other food-grains, oil-seeds, and cotton is Rs. 11-13-5-say Rs. 12.¹ The total value of agricultural produce will be acres 12,378,215 X Rs. 12 = Rs. 14,85,38,580. To this is to be added the produce of Sumbulpore; but the acreage of that district is not given. Making some allowance for it, I increased the produce to, say, Rs. 6,00,00,000, or £16,000,000, for a population of 9,000,000.

I have lately met with an unexpected confirmation of my views. The *Times of India* Summary of 6th June, 1873, takes from the *Englishman* some particulars from Mr. Pedder's reply to the Viceroy's circular on local funds. Mr. Pedder makes out, as the value of produce in the Nagpore district, about Rs. 8 per acre, and my estimate of the whole of the Central Provinces is Rs. 12 per acre. I do not know whether Mr. Pedder has avoided the wrong principles of averages whether he calculates for an average good season, and whether any allowance is made for bad seasons.

PUNJAB

The administration report of 1867-8 gives all the necessary agricultural tables, except one, viz., the produce per acre of the different kinds of crops. I take this year (1867-8) as a better season, and with a larger extent of cultivation than that of 1868-9.

The chief crops are wheat and other inferior grains-the former nearly 20, and the latter 50 per cent, of the whole cultivation. The price of wheat is higher than that of other inferior grains; and as I take the prices of first-class wheat, I think the average price of the produce of one acre of wheat, applied to the whole cultivated acreage, will be very much above the actual value of the production, and my estimate will be much higher than it ought to be.

Summary					
	Acres	Rs.			
Rice	2,938,328	4,18,43,575			
Wheat	3,313,677	3,51,77,956			
Other Food Grains	4,197,516	4,70,63,760			
Oil Seeds	697,100	1,04,42,854			
Cotton	643,390	50,28,838			
Total	11 790 011	139 556 983			

1. The Table A is too large for insertion.

Average, Rs. 11-13-5 per acre.

As the administration reports of both 1867-8 and 1868-9 do not give the produce of crops per acre, I ascertain it from other sources.

In the administration report of the Punjab for the year 1850-51 (published in 1854 by the Court of Directors), drawn up by Mr. (now Sir Richard) Temple, a detailed table, dated Jullundhur, 25th October, 1851, gives the produce per acre. The table gives fourteen instances of first-class lands, which, by the rough process of adding up and dividing by the number of instances, gives $14\frac{1}{7}$ maunds = 1,160 lbs. (a maund equals 82 lbs.-Report 1855-6); for the *sacond class* from eight

Report 1855-6); for the *second class* from eight instances, I find the average $13\frac{1}{2}$ maunds, or 1,107

lbs.; and for the third class from six instances, I find 11 maunds, or 902 lbs. From this table I have taken all at to maunds or upwards as representing irrigated land, and the second class, representing the bulk of it, as producing 1,100 lbs. per acre. For unirrigated land I have not sufficient data. I adopt 600 lbs. per acre, for reasons I have stated under heading "North-West Provinces."

After I had made my following calculations on the above basis, I was favoured with a loan from the Record Department of the India Office of the administration report for 1869-70. The produce per acre is given in this report, but the average is taken on the objectionable principle of adding up the produce of all districts and dividing by the number of districts, without reference to the extent of cultivation in each district. According to this, the average of the produce of wheat per acre of all the districts is given in the report as only 624 lbs. The highest produce in three districts included in this average is 1,044, 1,066, and 1,000 lbs.; so that my assumption of 1,100 lbs. per acre for *all* irrigated land is much above the mark. Again, even making allowance for the drought of the years 1868-9 and 1869-70, my assumption, of 600 lbs. of wheat per acre of all unirrigated land only, is also above the mark.

I take the calculated area of 1867-8, which is also the largest of the three years 1867-8, 1868-9, 1869-70; and I take prices for 1867-8, that having been an average good season. The prices of 1868-9 and 1869-70 are scarcity-prices. The year 1867-8 is a fair test for the produce of the Punjab in an average favourable season.

The report for 1867-8 does not give prices of produce for all districts separately, but only of a few important towns, viz., Delhi, Umballa, Lahore, Sealkote, Mooltan, and Peshawur (page ciii.); and as I take these prices to represent not only those of the whole of the districts of these towns, but of all the districts of the Punjab, I evidently assume a much higher price than actually must have been the case. My results, therefore, will be affected in a double way, (viz., firstly, in taking first-class wheat to represent all produce; and secondly, in taking the prices in the principal towns to represent all Punjab); and will show then the total value of the production of all Punjab much higher than the reality. I therefore think I shall not be unfair in deducting 10 per cent as some correction of this double error; and even then I shall be above the mark. The prices given in the report for 1867-8 are as follows (in E. J. Statement, showing the prices of produce in the Punjab for the year 1867-8):-

		Price in Seers for One Rupee					
	1st June 1866	1st Jan. 1867	1st June 1867	1st Jan. 1868	Average	-	
(1)	(2)	(3)	(3)	(4)	(5)	(6)	
Delhi	$21\frac{1}{2}$	20	$19\frac{1}{2}$	25	$21\frac{1}{2}$		
Umballa	25	20	$20\frac{1}{4}$	$20\frac{1}{2}$	$21\frac{1}{2}$		
Lahore	23	20	22	17	$20\frac{1}{2}$	The Seer is 2 lbs.	
Sealkote	24	20	22	16	$20\frac{1}{2}$		
Mooltan	16	$17\frac{1}{2}$	16	$13\frac{1}{2}$	$15\frac{3}{4}$		
Peshawur	$24\frac{3}{4}$	22	$20\frac{3}{4}$	15	$20\frac{1}{2}$		
						I	

I take the above averages of the towns to whole of the Punjab in the following calculation represent their whole districts, and then the (wheat first sort is taken to represent all average of the six districts to represent the produce):--

District	Irrigated Land	Produce per Acre	Total Produce	For Re. 1	Total Value
(1)	(2)	(3)	(4)	(5)	(6)
	Acres	lbs.	lbs.	lbs.	Rs.
Delhi	200,955	1,100	221,050,500	43	51,40,709
Umballa	96,328	1,100	105,960,800	43	24,64,204
Lahore	447,295	1,100	492,024,500	41	1,20,00,597
Sealkote	394,227	1,100	433,649,700	41	1,05,76,821
Mooltan	505,750	1,100	556,325,000	$31\frac{1}{2}$	1,76,61,111
Peshawur	249,144	1,100	274,058,400	41	66,84,351
Total	1,893,699	-	-	-	5,45,27,793

The average value of produce per acre of the Rs. 28-7;9 per acre, will give Rs. 17,69,73,224 as irrigated land of the six districts will, therefore, be Rs. 28-7-9.

I now apply this to all irrigated land of the Punjab.

the total value of the produce of irrigated land of the Punjab for 1867-8.

I now calculate the value of the produce of unirrigated land (wheat first sort is taken to

Total irrigated acres are 6,147,038, which, at represent all produce):-

District	Unirrigated Land	Produce per Acre	Total Produce	For Re. 1	Total Value
(1)	(2)	(3)	(4)	(5)	(6)
Delhi Umballa Lahore Sealkote	Acres 307,690 856,701 557,882 425,440	lbs. 600 600 600 600	lbs. 184,614,000 514,020,600 334,729,200 255,264,000	lbs. 43 43 41 41	Rs. 42,93,348 1,19,53,967 81,64,126 62,25,951
Mooltan	118,684	600	71,210,400	$31\frac{1}{2}$	22,60,647
Peshawur	456,661	600	273,996,600	41	66,82,843
Total	2,723,058				3,95,80,882

The average value of produce of one acre of unirrigated land of the six districts is Rs. 14-5-3. Applying this to the unirrigated land of the whole of the Punjab, the result will be as follows:- Total unirrigated acres 14,810,697, at Rs. 14-5-3 per acre, will give Rs. 21,51,99,427 as the value of the produce of all unirrigated land of the Punjab for 1867-8.

Adding up the value of the produce of irrigated and unirrigated land, the total will be Rs. 39,21,72,651. From this I deduct to per cent for reasons stated above, which will leave Rs. 35,29,54,800 for a population of 17,593,946, or say £36,000,000 for a population of 17,500,000.

NORTH - WEST PROVINCES

I take the figures of 1867-8, being an average good season. The subsequent ones, 1868-9 and 1869-70, have been bad.

The administration report does not give the distribution of chief crops, but I find in the Statistical Reporter of the *Indian Economist* (page 136) of 15th March, 1871, a table of the crops for 1868-9. From this it will be seen that, out of a total of about 22,000,000 acres, rice, jowari, bajri, wheat, and barley make up-

Rice	2,479,874
Jowari and Bajri	4,302,890
Wheat and Barley	7,257,873
	Acres 14,040,637 or nearly $\frac{2}{3}$

As I cannot get the prices of all the above kinds of produce, except wheat and barley, if I take wheat to represent all, I shall be above the mark. In the administration report of 1868-9 there is a table given of prices of wheat and barley. I take the prices for the months of April, May, and June as those of the good season of 1867-8. The subsequent prices are affected by drought. I should have preferred to take the prices for January to June, 1868; but the table does not give the earlier months. These prices are of some of the chief markets only, so that, taking the prices to represent the whole of the respective districts, and then taking the average of these few districts to represent the whole of the North-West Provinces, the result will be much higher; so, as in the case of the Punjab, I deduct 10 per cent as some correction for these errors of excess.

The prices given in the report of 1868-9, pages 29, 30, are as follows:- "The following table gives the prices at the close of each month for the year in the chief markets of the provinces. The figures denote seers and chittacks.

The administration reports give no table of produce per acre of different crops. I adopt the same scale as given in the case of the Punjab, for the following additional reasons:-1 Captain Harvey Tuket's estimate in the year 1840, from 2,000 experiments, of which 512 were for wheat, made by the Government of the North-West Provinces, gives the average produce of wheat per acre at 1,046 lbs. The late Mr. Thornton, formerly Secretary to that Government, has recorded that, judging from his own experience, be should say that 1,200 lbs. per acre was a high average for irrigated land, and 700 lbs. for that of which a considerable portion is dry.² Mr. Maconochi, in his recent settlements of Oonah (Oudh), gives for irrigated land-

^{1.} The "Agricultural Gazette of India" of the ladies Economist, 15th August. 1870. No. 1.

^{2.} See also Parliamentary Return No. 999 of 1853 Page 471.

Districts		Wheat								My Remarks	
		April		May		June	Average				—
(1)		(2)		(3)		(4)		(5)		(6)	(7)
	s.	c.	s.	с	s.	с	s.	c.	lb.	oz.	
Saharunpore	22	6	25	14	25	14	24	11	49	6	The report does not say which seer this is.
Meerut	26	0	27	0	27	8	26	13	53	10	Formerly I 1 seer is given equal
Moradabad	26	1	25	1	24	0	25	$8\frac{2}{3}$	51	1	to 25 81 51 I 2.057 lbs.
Bareilly	25	1	27	8	25	0	26	0	52	0	(Parliamentary Return No. 29 of 1862 page 5)
Muttra	24	0			24	0	24	0	48	0	1002, page 5.)
Agra	23	0	23	0	24	0	23	5	46	10	I take this seer= 2lb.
											16 chittacks = 1 seer.
Cawnpore	23	0	23	0	22	0	22	11	45	6	The report also does not say
Allahabad	18	4	18	0	17	0	17	12	35	8	whether these quantities were got for one rupee, but it evi-
Mirzapore	18	0	18	0	27	0	17	$10\frac{2}{3}$	35	6	dently appears to be meant so.
Benares	17	5	18	5	18	0	17	$15\frac{1}{3}$	35	14	

1st class 21 bushels = 1,218 lbs. (at 58 lbs. per bushel.) 2nd class 16 bushels = 928 lbs. (at 58 lbs. per bushel.) 3rd class 9 bushels = 522 lbs. (at 58 lbs. per bushel.)

and for unirrigated land-

1st class 11 bushels = 638 lbs. 2nd class 9 bushels = 522 lbs.

3rd class 7 bushels = 406 lbs.

Taking second class as representing the bulk, the average for irrigated land may be considered as 928 lbs., and for unirrigated 522 lbs. From all the above particulars it will be seen that the estimate I have adopted, of 1,100 lbs. per acre for irrigated and 600 lbs. for unirrigated land, is something above a fair average. A Settlement Officer of the North-West Provinces, in a letter to the *Indian Economist* of 15th February, 1871 ("Agricultural Gazette," page 171) sums up all that is known to him on the subject of the produce of wheat per acre in those Provinces. It will be too long an extract to insert here; but, making allowance for the "mischievous fallacy" of all official documents alluded to by this writer, about which I have already complained to the India Office, and which vitiates averages for a number of years or places, I think the average I have adopted above-is something more than a reasonable one. When administration reports will give, as they ought, correct particulars for each district every year, accurate estimates of the actual produce of the Provinces could be easily made. I give the calculations below. The table of cultivated land, given at page 45 of the appendix to the administration report of 1867-8, does not give the irrigated and unirrigated extent of land separately for the Moradabad, Tarrae, Mynpoorie, Banda and Ghazipore districts.

I find that the totals of irrigated and unirrigated land bear nearly the proportion of two-fifths and three-fifths respectively of the whole total cultivated land. I assign the same proportion to the above districts in the absence of actual particulars.

Districts	Irrigated Land	Produce per Acre	Total Produce	For	1 Re.	Total Value	
(1)	(2)	(3)	(4)		(5)	(6)	
	Acres	lbs.	lbs.	lbs.	ozs.	Rs.	
Saharunpore	160,058	1,100	176,063,800	49	6	35,65,849	
Meerut	577,346	1,100	635,080,600	53	10	1,17,26,444	
Moradabad	806,930	1,100	787,623,000	51	1	1,73,83,069	
Bareilly	344,662	1,100	379,128,200	52	1	72,82,174	
Muttra	332,542	1,100	365,796,200	48	0	89,22,837	
Agra	434,166	1,100	477,582,600	46	10	1,02,43,058	
Cawnpore	397,396	1,100	437,135,600	45	6	96,33,842	
Allahabad	345,624	1,100	380,186,400	35	8	1,07,09,476	
Mirzapore	198,823	1,100	218,705,300	35	6	61,82,481	
Benares	238,971	1,100	262,868,100	35	14	75,01,549	
Total	3,836,518					9,31,50,779	

Wheat

The average value of the produce of one acre Rs. 24-2-8 = Rs. 24,38,93,814. will be Rs. 24-2-8.

In a similar manner, the total value of the

Applying the average of the above districts to the whole of the irrigated area of the North - West Provinces, the result will be-acres 10,045,050 x

Districts	Districts Unirrigated Land		Total Produce	For	1 Re.	Total Value
(1)	(2)	(3)	(4)		(5)	(6)
	Acres	lbs.	lbs.	lbs.	ozs.	Rs.
Saharunpore	621,382	600	372,829,200	47	6	75,50,960
Meerut	453,694	600	272,216,400	53	10	50,76,288
Moradabad	484,158	600	290,494,800	51	1	56,88,992
Bareilly	768,283	600	460,957,800	52	1	88,53,920
Muttra	406,153	600	243,691,800	48	0	50,76,912
Agra	374,976	600	224,985,600	46	10	48,25,424
Cawnpore	436,636	600	261,981,600	45	6	57,73,696
Allahabad	644,594	600	386,756,400	35	8	1,08,94,544
Mirzapore	614,658	600	368,794,800	35	6	1,04,25,280
Benares	202,818	600	121,690,800	35	14	33,92,064
Total	5,007,352					6,75,58,080
The average value of wheat per acre of unirrigated land is, therefore, Rs. 13-4-9.

Applying this average to the whole unirrigated land of the North-West Provinces, we get - acres $14,132,111 \times Rs. 13-4-9 = Rs. 19,06,42,177$. The grand total of the value of the produce of irrigated and unirrigated land will be-

Irrigated	10,045,050 acres	Rs. 24,38,93,814
Unirrigated	14,132,111 acres	Rs. 19,06,42,177
Total	24,177,161 acres	Rs. 434,535,991

Deducting to per cent for reasons stated above, the remainder will be Rs. 39,20,82,392 for a population of 30,086,898, or say #40,000,000 for a population of 30,000,000.

BENGAL

The administration reports till 2869-70 give no information required by the Statistical Committee, except the area of districts in square miles and acres (report 1869-70). For information for cultivated area, distribution, produce of crops, and prices, I have to look out elsewhere, or make a rough estimate.

First with regard to the extent of cultivated land, I adopt the following plan as the best I can. The total area of the North-West Provinces is about 50,000,000 acres, of which about 25,000,000 are cultivated. The population of those Provinces is, by the late census of 1865, about 30,000,000, so we have the total area 5 acres to 3 persons, and of cultivated area five-sixths of an acre per head. Now, assuming Bengal to be at least as thickly populated as the North-West Provinces, and the total area, as given in the administration report of 1869 - 70 (appendix, page xxi), being about 105,000,000 acres, the population of Bengal will be about 63,000,000; and I am encouraged to adopt this figure instead of 36,000,000 of the report of 1869-70, as the Englishman of 25th June, 1872, states that the

census of Bengal, as far as the figures are made up, leads to an estimate of about 65,000,000. Again, as in the North-West Provinces, I allow five-sixths of an acre of cultivated land per head, and take, therefore, 54,000,000 acres of cultivated land for a population of 65,000,000.

With regard to produce, coarse rice is the chief produce of Bengal, and in taking it to represent the whole produce, I shall be near enough the mark. For the produce of rice per acre, I take a table given in the report of the Indigo Commission (Parliamentary Return No. 72,1 of 1861, page 292), in which produce of paddy per beegah is given for a number of districts. The rough average, without reference to the quantity of land in each district, comes to about nine maunds per beegah.

The maund I take is the Indian maund of 82 lbs. The quantity of produce per beegah given in the table is evidently for rice in husk; for, though not so stated, this would be apparent by comparing the money values of these quantities given in the same table, with the prices for 1860 given in the table at page 291.

The beegah I find explained, at page lxi of the same return, at about one-third of an acre. Thacker's Bengal Directory for 1872, page- 2, gives the following table for "Bengal square or land measure":-

1 chittack = 45 square feet or 5 square yards.

16 chittack = 1 cottah = 720 sqr. ft. or 80 sqr. yds.

20 cottah = 1 beegah = 14,400 sqr. ft. or 1,600 sqr. yds.

Thus gives a little more than 3 beegahs to an acre.

Mr. Cowasjee Eduljee, the manager of the Port Canning rice mills and lands, thinks, that for an average of all lands, or say for standard land, seven maunds of paddy per beegah will be a very fair calculation. I take eight maunds. Mr. Cowasjee further says, as the out-turn of his mills, that paddy yields 55 per cent of rice at the outside.

For the price of rice I take the season 1867-8. Itake the rough average of the weekly prices given in the Calcutta Gazette for the months of January to March, 1868, as fairly representing the effect of the season of 1867-8. This average is taken by simply adding up the prices and dividing by the number of districts, and not on the correct principle of taking the quantities of the produce of each district into account (as in specimen table A I have given for the Central Provinces). The average, therefore, which I have adopted, must be much higher than the actual one, and will require some reasonable deduction. I shall deduct only 10 per cent as some correction for this, and to make up for any error in the produce per acre. Besides, the prices given in the *Gazette* are retail prices, and are therefore higher than the prices all over the country : so my deduction of 10 per cent will be but a very small correction for all the errors of my rough calculation. I cannot get the extent of cultivated land for each district. I give below the calculations. Since writing these notes, I have seen the late census report, which gives the population as 66,856,859, or say 67,000,000. The approximate area of cultivated land will be, say, five-sixths of 67,000,000 or 56,000,000 acres. The produce per acre, taken as 24 maunds paddy per acre, will give about 13 maunds of clean rice, or 1,066 lbs., say 1,100 lbs. The total produce of 56,000,000 acres will be 616,000,000 lbs., which, at 58 lbs. per rupee (as obtained by the rough average of the weekly prices of the three months of January, February, and March, 1868), will give Rs. 1,06,00,000, or £106,000,000. Deducting to per cent will give £95,400,000, or say £96,000,000, for a population of 67,000,000. This will amply cover the higher price of some of the articles, such as silk, indigo, cost price of opium, tea, etc., or any double crops, etc. The percentage

of these products is a small one ; the total value for all these will be under 10 per cent of the whole produce, while the average of price I have taken for rice as representing the whole produce of the Presidency will be found much above the actuals. On the whole, I cannot help thinking that the total value of all productions of the Bengal Presidency will be found much under, than above, my estimate. It is very desirable, however, to get a correct result, and the Statistical Committee or Agricultural Department should give it.

MADRAS

I take the administration report of 1868-9 as I have not been able to get an opportunity of studying that of 1867-8. Besides, as prices have not much altered, the later report is the better. I am obliged to ascertain the produce per acre from other sources: the report does not give the information. I take paddy to represent the produce of wet, and cumboo for dry land, as they form the bulk of the produce of the country.

Mr. H. Newill, the Director of Settlements for South Arcot, in his letter of 27th August, 1859 (Selections of the Madras Government, No. 24, of 186g, Appendix Y, from page 142), gives an elaborate table of produce per acre of the principal grains, as ascertained by a large number of experiments and general enquiry; and the result of his investigations gives, for the different classes of soils, the following produce, from which 5 per cent is to be deducted for numerous ridges for regulating irrigation channels, exterior boundaries, etc.:-

Description of Soils	Value assigned for Good Crops per Acre H. C. (Bazar Hurls Cullum)	Description of Soils	Value assigned for Good Crops per Acre H. C. (Bazar Hurls Cullum)
(1)	(2)	(3)	(4)
1	45	10	30
2	40	11	25
3	35	12	20
4	30	13	18
5	28	14	
6	40	15	15
7	35		
8	30	Average	30
9	28		

Produce of Wet Land per acre for "Good Crop" first grade Land-

Deducting 5 per cent for ridges, etc.,
$$3O-1\frac{1}{2} =$$

 $28\frac{1}{2}$ H. C.

which I do not; so that the produce calculated by me is for "good crop," or in "good season," as in all other cases. Taking second grade as the bulk of the land, I take $24\frac{1}{4}$ H. C. as the average of all wet land.

For second grade land, deduct 15 per cent, which will give $24\frac{1}{4}$ H. C. For third grade deduct

20 per cent, which will give 22.8 H. C. For bad seasons Mr. Newill deducts to per cent more,

For dry land for cumboo (page 150), Mr. Newill gives the produce per acre as follows:-

Descriptions of Soils	H.C.	Descriptions of Soils	H.C.	Descriptions of Soils	H.C.
(1)	(2)	(3)	(4)	(5)	(6)
1 2 3 4 5	21 18 17 16 14	6 7 8 9 10	17 15 13 12 14	11 12 13 14 15	12 10 10 9 8
				Average say	13.73 14 H.C.

The next thing necessary is to ascertain the correct average price. I take the average price as given in the administration report (calculated on the wrong principle referred to by me before), bearing in mind that the correct average, as worked out according to specimen table A, would be very likely found lower. Again, taking the rough average of first and second-class paddy, the price comes to Rs. 180 per garce; and as second class paddy must be the bulk of the produce, the correct average price in this respect also must be lower. In taking, therefore, Rs. 180 per garce, some reasonable allowance will have to be made. I shall make it only 10 per cent for all kinds of excess. It is tool much work for me to calculate as in table A. Wet land under cultivation (except South Canara and Malabar, where areas under cultivation are not given), is, for 1868-9, 2,957,748 acres at $24\frac{1}{4}$ H.C. produce per acre (and $133\frac{1}{2}$ H. C. = 1 garce¹) will give 511,490 garces, which, at Rs. 180 per garce, will give Rs. 9,68,53,500 - the total value of the produce of wet land.

Dry cultivated land (except South Canara and Malabar) is 13,560,329 acres, and with produce at 14 H.C. per acre (and 133 H.C. = 1 garce), will give 1,427,403 garces. I take the rough average price as given in the table - Rs. 188 per garce - in the administration report of 1868-9. This will be an over-estimate, as quantities in each district are not taken into account. The total value will be -1,427,403garces at Rs. 188 = Rs. 26,83,51,764. Total produce of wet and dry lands will be Rs. 36,52,05,264; adding 10 per cent for South Canara and Malabar, the total for all the Madras Presidency will be a little above Rs. 400,000,000. From this is to be allowed 10 per cent as a correction for errors of high, averages, which will leave, say, £36,000,000 for a population of 26,539,052 (Parliamentary Return No. (c. 180, 1870), or say 26,500,000.

BOMBAY

The season 1867-8 was a favourable one (Bombay administration report, 1867-8, page 59) ; that for 1868-9 unfavourable (report for 1868-9, page 65). I take the former to ascertain the produce of a fair good season. I am sorry that the administration reports give no agricultural information. I therefore take the necessary particulars from other sources. The Revenue Commissioner's reports for 1867-8 give the total area under cultivation for the Northern Division at 5,129,754 acres and 1,263,139 beegahs, in which are included for grass and fallow-land 611,198 acres and 226,708 beegahs. The actual cultivated land will, after deducting this, be 4,518,556 acres, and 1,036,431 beegahs = 609,842 acres, or total acres, 5,128,398. Out of this, bajri, jowari, rice, and cotton make up nearly two-thirds, or above 60 per cent, as follows:-

	Acres	Beegahs
Bajri	985,427	56,857
Jowari	676,377	224,210
Rice	616,802	94,306
Cotton	519,058	319,572
	2,797,664	694,945 = 408,791 acres
		or total acres 3,206,455

Similarly for the Southern Division, out of the total acres, 13,985,892, jowari, bajri, rice, and cotton make up above 60 per cent as follows:-

Jowari	4,906,073	
Bajri	2,715,719	
Rice	504,015	
Cotton	704,629	
	8,830,436	

I take, therefore, these four articles to represent the produce of the whole Presidency, though this will give a higher estimate. Neither the administration nor the Revenue Commissioner's reports give produce per acre or prices. I take these two items as follows. From selections of the Bombay Government, Nos. 10 and 11 of 1853, I get the following estimate of produce:-

^{1. 24} Madras measures = 1 Huris Cullum.

 $^{133\}frac{1}{2}$ Huris Cullum = 1 Madras Garce.

⁽Selection of the Madras Government, No. XIV of 1869, page 16)

Sele	ction	Districts Reported upon	Bajri with Kuthole	Jowari with Kuthole	Sathi or Coarse Rice	Kupas, or uncleaned Cotton	Remarks
No.	Page		lbs.	lbs.	lbs.	lbs.	
Х.	15	Prant of Husore -					Cleaned Cotton as per
		Morassa & Bayar Pergunnah in Ahmedabad Collectorate	680	700 1,020 Jowari in fallow land	1,020		under order of Mr. Saunders, Resident of Hyderabad, in Bassein district of Berar -
	106	Duskroee Per- gunnah -					average of 8 acres giv- ing $31\frac{3}{4}$ lbs. of clean
		Greatest	1,700	1,500	1,360	410	Cotton and $83\frac{1}{2}$ lbs. of
XI	15	Least Dholka -	270	210	410	200	Seed. (Agricultural Gazette of India of
		Greatest	1,700	1,500	1,360	410	21st Aug. 1871, page
		Least	270	210	410	200	3) This would give 82 lbs. for 305 lbs. of kupas
		Rough average	924	856	912	305	•

Produce per Acre in Pounds

The above averages belong to a fertile part of the Northern Division, so that if I put down 900 lbs. for bajri, jowari, and rice per acre, and 80 lbs. of cotton for the whole of that Division, I shall be making a high estimate.

The next thing to settle is the prices. I take them from the *Government Gazette* weekly prices for the months of January to May, 1868, as fairly representing the effect of the average favourable season of 1867-8. These are retail prices of the chief markets of the respective districts, and it will be necessary to deduct 10 per cent to make a fair average for the whole of the Division. For cotton I take the export prices from the Prices Current of the Bombay Chamber of Commerce for January to May, 1868. This gives an average of Rs. 181 per candy. The export prices I have taken represent more than the average value of the whole crop of the Presidency, as the above average is for Fair Dhollera and Bhownuggur, which necessarily give a higher figure than the average of all the different varieties. Again, the bulk of the cotton is not "fair," but "mid-fair"; so, to make a fair allowance for all these circumstances, I take the price for 1867-8 as Rs. 170 per candy of 784 lbs.

The Southern Division - As a whole, this Division is not as fertile as the Northern. I shall take, however, only so lbs. less for bajri, jowari, and rice; and for cotton I take 60 lbs. per acre - a high average for the whole of the Division; for Mr. J. B. Smith, M.P., in his paper of 1857 read before the Society of Arts, quotes Mr. Vary, the then late Superintendent of Government Cotton Experiments in Sattara and Sholapore, to the effect that "40 lbs. of clean cotton per acre is considered a fair crop." For rice, I take Rutnagherry as exceptional in its produce. If I give 1,700 Gazette in the same way as for the Northern out in the manner described above:-

lbs. per acre for the whole district, it will be a high Division, and a similar reduction of 10 per cent average.¹ I take the prices from the *Government* will have to be made. I give below a table worked

Collectorates	Cultivated Area	Total Produce (at 900 lbs. per Acre)	Price per 1 Re.	Total Value
(1)	(2)	(3)	(4)	(5)
	Acres	lbs.	lbs.	Rs.
Ahmedabad	129,365 ¹	116,428,500	33.6	34,65,134
Cerala	150,841	135,756,900	30.0	45,25,230
urat	27,217	24,495,300	25.5	9,60,600
Chandeish	711,447	640,302,30	27.6	2,31,99,359
`anna				
Total	1,018,870			32,150,323
		850 lbs. per Acre)		
oona	834,325	709,176,250	34.7	2,04,37,356
dmednuggur	1,152,316	979,468,600	34.3	2,85,55,936
Kulladghee	240,165	204,140,250	64.4 ²	31,69,880
lutnagherry				
Belgaum	76,228	64,793,800	59.2	10,94,489
Dharwar	14,108	11,991,800	69.0	1,73,795
attara	398,573	338,787,050	52.9	64,04,292
Total	2,715,715			59,835,748

Bajri

^{1.} The Statistical Reporter of the Indian Economist of 22nd January, 1872, gives a table, on official authority, of the total produce of the Bombay Presidency. The figures given for Rutnagherry are evidently wrong. For 113,296 acres the produce of rice is given as 10,110,964 maunds of 82 lbs., which will be above 7,200 lbs. per acre. The best land may produce as much as 3,000, but 7,200 lbs. is simply out of the question. In the Pardy settlement (Indian Economist of 15th July 1871, page 330, an acre of rice "in embanked land receiving full supply of water for a crop of rice," is put down as producing 3,400 lbs. Even in Bengal and Burmah - rice-producing countries-there is no such production as 7,000 lbs. per acre. For the rest of the Presidency (excepting Canara), the total produce is given as follows:-

Rice -	Produce, maunds
Acres.	of 82 lbs.
822,218	9,197,713, giving an average of 917 lbs.
Jowari sad Bajri-	Produce, maunds
Acres	of 82 lbs.
9,476,687	44,557,600, giving an average of 385 lbs.

Now, the year 1869-70 is reported to have been an average favourable season, in which case my adopting goo lbs. for the Northern and 850 for the Southern Division for all grains, is very much higher than the real average. For cotton the figures are: acres, 1,937,375; = maunds 3,264,464 giving an average of 168 maunds, or 136 lbs. It is not stated whether this is cleaned or seed cotton. Anyway, this cannot be correct. It is, however, remarked by the official who supplies these statistics "The figures in Table III, giving the weight of produce, are not, it is feared, very reliable, but now that attention is being given to the subject they will become more so every year." I earnestly hope that it will be so; correct statistics of this kind are extremely important.

Jowari

Acres Ahmedabad 119,679 Karrela 44,526	lbs. 107.711.100	lbs.	Rs.
Ahmedabad 119,679	107.711.100		
Vam1a 44.526	,,	42.4	25,40,356
Kerala 44,550	40,082,400	42.4	9,45,339
Surat 178,839	160,955,100	27.1	59,39,302
Khandeish 465,198	418,678,200	40.4	1,03,63,322
Tanna 10	9,000	26.8	336
Total 808,262			19,788,655
	850 lbs. per Acre)		
Poona 1,487,816	1,264,643,600	49.5	2,55,48,355
Admednuggur 852,232	724,397,200	45.6	1,58,85,903
Kulladghee 1,162,582	988,194,700	70.0	1,41,17,060
Rutnagherry			
Belgaum 426,542	362,560,700	66.0	54,93,344
Dharwar 511,389	434,680,65	83.8	51,87,120
Sattara 465,509	395,682,650	52.6	75,22,487

1. Gujerat, in Northern Division; the cultivated area is given partly in acres and partly in beegahs. The beegahs are converted into acres, as 1.7 beegahs = 1 acre.

2. Bhagalkote price is taken.

Collectorates	Cultivated Area	Total Produce (at 900 lbs. per Acre)	Price per 1 Re.	Total Value
(1)	(2)	(3)	(4)	(5)
	Acres	lbs.	lbs.	Rs.
Ahmedabad	31,902	28,711,800	14.0	20,50,843
Kerala	51,443	46,298,700	12.2	37,94,975
Surat	108,348	97,513,200	11.27	86,52,458
Khandeish	12,081	10,872,900	20.1	5,40,940 ¹
Tanna	468,499	421,649,100	20.1^2	2,09,77,567
Total	672,273			36,016,783
		850 lbs. per Acre)		
Poona	108,643	92,346,550	22.2	41,59,754
Admednuggur	28,922	24,583,700	12.3	19,98,674
Kulladghee	5,496	4,671,600	20.9	2,23,521
Rutnagherry	130,403	221,685,100	27.0	82,10,559
		(1,700 lbs. per Acre)		
Belgaum	70,889	60,255,650	29.0	20,77,781
Dharwar	91,840	78,064,000	27.1	28,80,590
Sattara	67,820	57,647,000	22.4	25,73,527
Total	504,013			22,124,406

Rice

	Cotton					
	Acres	lbs.	lbs.		Rs.	
Ahmedabad Kerala Surat Khandeish Tanna	707,041	80	56,563,280	170	1,22,64,997	
Poona Admednuggur Kulladghee Rutnagherry Belgaum Dharwar Sattara	704,629	60	42,277,740	170	91,67,367	

1. Average of Tanna and Alibaug.

2 Price at Dhoolia being not given, I have taken the same with Tanna.

SUMMARY

Northern Division

	Acres	Rs.	Rs.	Rs.
Bajri	1,018,870	3,21,50,323		
Jowar	808,262	1,97,88,655		
Rice	672,273	3,60,16,783		
			— 8,79,55,761 - 10 per cent =	7,91,60,185
Cotton	707,041			1,22,64,997
Total	3,206,446			9,14,25,182

Average per acre . . . Rs. 28.51

Southern Division

	Acres	Rs.	Rs.	Rs.
Bajri	2,715,715	5,98,35,748		
Jowar	4,906,070	7,37,54,269		
Rice	504,013	2,21,24,406		
			- 15,57,14,423 - 10 per cent =	14,01,42,981
Cotton	704,629			91,67,367
Total	8,830,427			149,310,348

Average per acre . . . Rs. 17

	Total Cultivated Area		
	Acres		Rs.
Northern Division	5,128,221 at Rs. 28.51 =		14,62,05,580
Southern Division	13,985,892 at Rs. 17 $=$		23,77,60,164
		Total	38,39,65,744

This gives for the whole of the Bombay Presidency the total value as Rs. 38,39,65,744, or say £40,000,000 for a population of 11,000,000.

About two or three months ago I came across an unexpected confirmation of my calculations. I was able to get from my friend, Mr. Nowrojee Furdoonjee, a few notes from Colonel Prescott's reports on the settlement of Akleshwar Taluka-I suppose an average Gujerat taluka. Colonel Prescott has made the value of gross produce (excluding straw) about Rs. 24 per acre. Why, my estimate for the ' whole of the Northern Division is above Rs. 28 per acre.

OUDH

The administration report does not give the agricultural tables, but they are given in the revenue report. Wheat forms the most important produce in Oudh, as in the North-West Provinces. I take it to represent the whole produce. In the revenue report ending 30th September, 1868, the

average produce per acre is given at 892 lbs.-say 900 lbs. Now, in Oudh, irrigated land is nearly within 10 per cent of unirrigated land. I shall give the above produce per acre for both, as the table also gives this as the average of all land. The year 1867-8 was somewhat below an average good season, and the prices, therefore, higher than they would be for an average good season year. I take them, however, as they are. The average for wheat, first quality, is given at Rs. 1-9-7 per maund of 80 lbs., and for second quality Rs. 1-8-4-the average will be about Rs. 1-9. As a small correction for the prices being of an inferior season, the average being on the usual wrong principle, and the second quality being the largest quantity, I shall deduct only to per cent. The total cultivated area is 12,486 square miles, or 7,991,040 acres. The total produce, at 900 lbs. of wheat per acre, will be 7,191,936,000 lbs.; and the total value, at the rate of Rs. 1-9 per maund of 80 lbs., will be Rs. 14,04,67,500. This, less to per cent, will be Rs. 12,64,20,750, or say £13,000,000, for a population of 9,500,000.

Provinces	Value of the Produce of Cultivated Land	Population	Produce per head	
(1)	(2)	(3)	(4)	
	£		Rs.	
Central Provinces	16,000,000	9,000,000	18	
Punjab	36,000,000	17,500,000	21	
North-West Provinces	40,000,000	30,000,000	14	
Bengal	96,000,000	67,000,000	15	
Madras	36,000,000	26,500,000	14	
Bombay	40,000,000	11,000,000	30	
Oudh	13,000,000	9,500,000	14	
Total	277,000,000	170,500,000		

SUMMARY

Such is the produce of India for a good season year, in which any second crops will be fully included. I have not taken the produce of grazing-land, or straw, or kurby, though the cattle required for cultivation and stock need not only all these grazing-lands, but also a portion of the produce of the cultivated land, such as some grains, fodder, and other produce. From the above total of £277,000,000 it is necessary to deduct for seed for next year, say, only 6 per cent, that is, allowing sixteen-fold for produce of the land. The balance will be about £260,000,000 as the produce of cultivation, during a good season, for human use and consumption for a year. If the Government of India would calculate this production correctly, it would find the total a good deal under the above figures.

OTHER ITEMS OF INDIA'S WEALTH

I have next to add for annual produce of stock for consumption, annual value of manufacturing industry, net opium revenue, cost of production of salt, coals, and mines, and profits of foreign commerce.

Salt, opium, coal, and profits of commerce will be about £17,000,000. For annual price of manufacturing industry or stock, I have not come across full particulars. The manufacturing industry in the Punjab-where there are some valuable industries, such as shawls, silks, etc., to the total estimated value of the "annual out-turns of all works "-is put down as about £3,774,000. From this we deduct the value of the raw produce; and if I allow this value to be doubled by all the manufactures, I shall be making a good allowance. Say, then, that the value of the industry is about £2,000,000, including the price of wool; the manufactures of other parts of India are not quite as valuable. Therefore, for the population of all British India, which is about ten times that of the Punjab, if I take £15,000,000 for the value of manufacturing industry, I shall not be far from the mark. The total for Central Provinces for 1870-I for all manufactures is about £1,850,000. There

are no very valuable industries; allow, therefore, £850,000 for the value of the industry for a population of 9,000,000. In this proportion, the total value for India will be about, say, £17,000,000. For the annual produce of stock, and fish for human consumption, as milk or meat, I can hardly get sufficient data to work upon. I hope Government will give the particulars more fully, so that the annual production of stock for consumption, either as milk or meat, may be known. I set it down as £15,000,000 as a guess only.

All this will make up a total of about £307,000,000. I add for any contingencies another £30,000,000, making at the utmost £340,000,000 for a population of 170,000,000, or 4os. a head for an average *good season*. I have no doubt that, if the Statistical Department worked out the whole correctly and fully, they would find the total less. Again, when further allowance is made for bad seasons, I cannot help thinking that the result will be nearer 3os. than 4os. a head. One thing is evident-that I am not guilty of any under-estimate of produce.

INCOME PER HEAD

Adding this additional £63,000,000 in proportion of population, that is to say 7s. 5d. per head, the total production per head of each province will be as follows:- Central Provinces, 43s. 5d.; Punjab, 49s. 5d.; N. W. Provinces, 35s. 5d.; Bengal, 37s. 5d.; Madras, 35s. 5d.; Bombay, 79s. 5d.; Oudh, 35s. 5d.-Average, 4os.

NECESSARY CONSUMPTION

I now consider what is necessary for the bare wants of a human being, to keep him in ordinary good health and decency.

I have calculated production chiefly for the year 1867-8. I shall take the same year for ascertaining the necessary consumption.

Surgeon S. B. Partridge, Government Medical Inspector of Emigrants, in a statement dated Calcutta, 26th March, 1870,¹ proposes the following as a scale of diet to supply the necessary ingredients of nourishment for the emigrant coolies during their voyage, living in a state of quietude:-

The administration report of Bengal for 1870-1 gives in appendix II D_2 , the following "scale of provision for ships carrying Indian emigrants to British and foreign colonies west of the Cape of Good Hope."

Rice Diet for One Man		For Flour Die	et
	ozs.		ozs.
Rice	20.0	Flour	16.0
Dhal	6.0	Dhal	4.0
Preserved Mutton	2.5	Preserved Mutton	2.5
Vegetables	4.27	Vegetables	4.27
Ghee	1.0	Ghee	1.5
Mustard Oil	0.5	Mustard Oil	0.5
Salt	1.0	Salt	1.0
Total	35.27	Total	29.77

"Daily Allowance to each statute Adult [Children above two and under ten years of age to receive half rations.]"

Class	Article	s		Remarks
(1)	(2)			(3)
Grain	Rice Flour	oz. 20 16	drs. 0 0	
	Dhal for rice eaters for flour eaters	6 4	$\begin{array}{c} 0 \\ 0 \end{array}$	(Four kinds of dhals make up this quantity)
Oil	Ghee for rice eaters for flour eaters	1 1	0 8	Half an ounce extra allowance of ghee to each adult for every day that dried fish is supplied
Meats, &c.	Mustard Oil Preserved Mutton	0 2	8 8	In lieu of preserved mutton to be supplied at scale rate, dried fish for 2 to 3 weeks. Fresh mutton (sheep) 1
Vegetables	1 oz. pumpkins or yams 2 oz. potatoes 2 oz. onions	5	0	week. In liude of fresh potatoes, a sufficient quantity of preserved potatoes to allow 2 oz. twice a week to each adult, or about 5 weeks' supply at scale rate.
Curry Stuff &c.	Garlic	0	$0\frac{1}{2}$	Sector Sector Sector
	Mustard Seed	0	$0\frac{1}{2}$	
	Chillies	0	$0\frac{1}{2}$	
	Black Pepper	0	$0\frac{1}{2}$	
	Coriander Seed Turmeric Tamarind Salt	0 0 0 0	2 4 8 8	
Narcotic.	Prepared tobacco Leaf Firewood	0 2	7 3 0	Or in lieu of firewood, its equivalent in coal for half the quantity.

1. The Indian Economist of 15th October, 1870, Statistical Reporter, page 45.

Besides the above there is an allowance for dry provision to be used at the discretion of the surgeon, for medical comforts, medicine, instruments, and appliances for hospital and dispensary. Again, for confirmed opium-eaters or *ganja*-smokers, the surgeon superintendent is to see a proper quantity supplied. Surgeon Partridge's scale is absolutely necessary to supply the necessary ingredients of nitrogen and carbon; not the slightest luxury-no sugar or tea, or any little enjoyment of life, but simple animal subsistence of coolies living in a state of quietude. I have worked out below the cost of living according to Surgeon Partridge's scale for the year 1867-8 at Ahmedabad prices. The scale in the Bengal administration report provides curry-stuff and narcotics in addition, which have not calculated in this table, though it can hardly be said that they are not necessaries to those poor people.

Cost of necessary living at Ahmedabad prices, on 30th January, 1868, as given in the "Bombay Government Gazette".

		Rs.	
Rice, second sort, 20 ozs. per day, or $37\frac{1}{2}$ lbs. per month, at 15 lbs. per rupee	2	8	0
Dhal 6oz. per day, or $11\frac{1}{2}$ lbs. per month, at 20 lbs. ¹ per rupee	0	9	0
Preserved mutton 2.50 oz. per day, or 4 lbs. 11 oz. per month, at $6\frac{1}{2}$ lbs. ² per rupee	0	11	7
Vegetable 4.27 oz. per day, or 8 lbs. per month, at 20 lbs. ³ per rupee	0	6	5
Ghee 1 oz. per day, or 1 lb. 14 oz. per month, at 2 lbs. 1 oz. per rupee	0	11	0
Mustard oil 0.5 oz. per day, or 1 lb. 8 oz. per month, at 6 lbs. ⁴ per rupee.	0	4	0
Salt 1 oz. per day, or 1 lb. 14 oz. per month, at 38 lbs. ⁵ per rupee.	0	0	10
Per Month	5	2	10

The annual cost of living, or subsistence only, at Ahmedabad prices, is thus Rs. 62.2.

The following is an estimate of the lowest -absolute scale of necessaries of a common agricultural labourer in the Bombay Presidency annually, by Mr. Kazee Shahabudin:-

COST OF SUBSISTENCE

Food-

$1\frac{1}{2}$ lbs. Rice per day, at Rs. 2 Rs. 2 to Rs. 2.8 per maund of 40 lbs., say	Rs.	28	8
Salt, including waste, about 1 oz. a day	Rs.	1	0
lb. Dhal	Rs.	9	0
Vegetables	Rs.	0	0
Food-oil	Rs.	5	0
Condiments, chillies, &c.	Rs.	0	0
Говассо	Rs.	5	0
	Rs.	48	8

^{1.} There are three kinds of dhal: Oorud, Moong, and Toor. I take an average.

^{2.} I don't find price of preserved mutton. I have taken of mutton.

^{3.} No price is given for vegetables. I take it the same as dhal.

^{4.} No price of mustard oil is given. I have taken for teal, which is the cheapest among the four kinds of oil given in the table.

^{5.} This is the price 431 common sea salt, which would require to be taken more than a as. to make up for the oz. of good salt required. Also there is some wastage or loss.

Clothing-

3 Dhotees a year 1 pair champal (shoes) $\frac{1}{2}$ a turban			Rs. 3 Rs. 0 Rs. 1	0 12 8
 Bundee (jacket) Kamlees (blankets) Rumal (handkerchief) Rain-protector 			Rs. 1 Rs. 1 Rs. 0 Rs. 0 Rs. 8	0 8 2 4 2
The dress of the female of the house-				
$l_{\frac{1}{2}}^{1}$ Saree (dress)	Rs.	3	12	
1 Cholee (short jacket) Oil for head Bangrees (glass bangles) $\frac{1}{2}$ Champal (shoes)	Rs. Rs. Rs. Rs.	0 1 0 0	12 8 6 4	
Extras Rs.	Rs. Rs.	1 7	0 10	

The old members of the family will require as much.

Lodging-

Hut (labour taken as his own)	R	25	0
Hut repairs (bamboos, &c.),	per s.	4	0
annum	R	0	$\frac{1}{4}1$
Oil for lamp, per day	s.	0	12
Barber per month	R	0	
Domestic utensils per annum	s.		
	R		
	s.		
	R		
	s.		

Say altogether Rs. 12 to Rs. 15 for the family.

SUBSISTENCE PER HEAD

further on, to calculate the cost per head of family, the result will be-

Taking one-quarter less, for reasons stated

Food	Rs. 36	
Clothing	Rs. 6	Without any provision for social and religious wants, letting alone
Lodging	Rs. 3	luxuries, and anything to spare for bad seasons.
	Rs. 45	

The report of the Bombay Price Commission lowest servants of Government (pages 85-86), gives the following particulars of the wants of the supplied from the Poona District:-

Articles	Quantities	Cost per 18	month in 363	Remarks		
	Seers	Rs.	a.			
Rice	12	1	8			
Bajri	12	1	4	It will be observed t	that simple living and	
Toor Dhal, &c.	4	0	12	clothing are here ex	hibited, and nothing	
Ghee	$0\frac{3}{4}$	0	10	is taken into accoun	t for support of	
Vegetables		0	6	dependent members	s of family, servants,	
Oil	$1\frac{1}{4}$	0	6	religious and other	domestic expenses.	
Firewood		0	8			
Salt	1	0	1			
Mussala		0	2			
Chillies	$0\frac{1}{2}$	0	2			
Milk	4	0	8			
Betelnut-leaves		0	8			
	Rs.	6	11	_		
Clothing -						
				Cost per Month		
Turbans				Rs. 0	8	
Dhotee				Rs. 0	10	
Puncha				Rs. 0	2	
Rumal				Rs. 0	$0\frac{1}{2}$	
Coats				Rs. 0	3	
Waistcoat				Rs. 0	2	
Shoes				Rs. 0	$1\frac{1}{2}$	
	Total			Rs. 1	11	
	Grand Total			Rs. 8	6 per month	

For Poona the above scale is calculated to cost Rs. 6-11 per month, or Rs. 80-4 per annum, at the high prices of 1863, while my estimate, according to Surgeon Partridge's scale for 1867-8, is Rs. 5-2-10 per month, or Rs. 62-2 per annum- nearly 24 per cent less, as prices have gone lower. For clothing, the estimate for 1863 is Rs. 1-11 per

month, or Rs. 20-8 per annum, while Mr. Shahabudin's estimate is only Rs. 8-2 in 1868. Even allowing for fall in price Mr. Shahabudin's estimate is lower, and calculated on a very low scale for an agricultural labourer in the poorest districts, while that of 1863 is for the lowest class of Government servants. Upon the whole, there-

fore, the estimate given for 1867-8, as for the bare necessaries of a common agricultural labourer, is evidently under the mark.

Lately I found the following in the "Statement of the Moral and Material Progress of India" for 1871-2 :- "The best account of the Bombay peasantry is still probably that by Mr. Coats, written fifty years ago. The clothes of a man then cost about 128. and the furniture of his house about £2." - (Parliamentary Return No. 172 of 28th April, 1873.)

I have not been able to work out the details of cost of living in other parts of India. For the present I give the following approximate comparison for 1867-8:-

Provinces	Со	Cost of Living		Cos	Cost of Clothing			Total		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	
Central Provinces	25	8	0	5	8	0	31	0	0	
Punjab	23	6	0	3	13	0	27	3	0	
North-West Provinces	18	8	0	3	5	0	21	13	0	
Bengal ¹	28	3	0	3	8	0	31	11	0	
Madras	49 ²	2	7	3	15	9	53	2	4	
Bombay	41	13	0	5	10	0	47	7	0	
Oudh										

PROPORTION OF CHILDREN TO ADULTS

109 of the appendix, gives the percentage of

Now, the Bengal Census Report of 1872, page population according to age as follows:-

Males		Fema	les	
Not exceeding 12 Years	Above 12 Years	Not exceeding 12 Years	Above 12 Years	_
18.8	31.3	15.7	34.2	The Census of the N.W. Provinces gives nearly the same result. Above 12 years, adults, 64.4 per cent; under 12, 35.6 per cent (see Administra- tion Report for 1871-72, page 55; Census Report, Vol. 1, page 31)

The total adults, that is, above 12 years, are 65.5 per cent, and infants or children under 12 years, 34.5 per cent, which gives the proportion of two adults to each child, or one child to every three persons.

PRODUCTION COMPARED WITH COST OF LIVING

From taking the cost of adults per head to be a, and cost of the mass per head to be x, and supposing that, out of 34 per cent of children

Administration Report of jails for 1871. page 39 of Appendix.
 This appears to be a very large expenditure. Besides, the average is taken on the wrong principle, without taking the number of the prisoners in each district into account. The correct average will be above Rs 50.

under 12, only 17 per cent cost anything, say one-half of the adult (though the Bengal provision is half for children from two to ten years), while the other 17 cost nothing at all, the problem will be-

$$66a + 17\frac{a}{2} + 17x0 = 100x$$
$$x = \frac{74\frac{1}{2}a}{100}, \text{ or } \quad \operatorname{say}\frac{75a}{100} \text{ or } \quad \frac{3}{4}a;$$

i.e., the cost outside jail, or for the whole mass per head, will be about three-fourths of inside the jail, allowing the jail for adults only. Thus, taking the cost of three persons in the jail, or of three adults to four persons outside, or of the mass, it comes to this:-

	Production per Head	Three-fourths of Jail cost of Living, or Cost per head out- side Jail			
Central Provinces	Rs. $21\frac{3}{4}$ or say Rs. 22	Rs. 23			
Punjab	Rs. $24\frac{3}{4}$ or say Rs. 25	Rs.20			
North-West Provinces	Rs. $17\frac{3}{4}$ or say Rs. 18	Rs. 16			
Bengal	Rs. $17\frac{3}{4}$ or say Rs. 18	Rs. 41			
Madras	Rs. $18\frac{3}{4}$ or say Rs. 19	Rs. 23.12			
Bombay	Rs. $39\frac{3}{4}$ or say Rs. 40	Rs. 35			
Oudh	Rs. $17\frac{3}{4}$ or say Rs. 18				

It will be seen, from a comparison of the above figures, that, even for such food and clothing as a criminal obtains, there is hardly enough of production even in a good season, leaving alone all little luxuries, all social and religious wants, all expenses of occasions of joy and sorrow, and any provision for bad season. It must, moreover, be borne in mind that every poor labourer does not get the full share of the average production. The high and middle classes get a much larger share, the poor classes much less, while the lowest cost of living is generally above the average share. Such appears to be the condition of the masses of India. They do not get enough to provide the bare necessaries of life.

On the subject of necessary consumption, I shall be very glad if some members of this Association, or others who possess or can ascertain the necessary information, will supply it, as I have not been able to make such minute and extended enquiries myself as I could wish.

SYSTEM OF NATIONAL ACCOUNTS, 2008 European Commission International Monetary Fund, Print Stock SNA EA 2008 001 Organisation for Economic Co-operation and Development OECD Code 302009191P1 United Nations, Sales No. E.08.XVII.29, document symbol ST/ESA/STAT/SER.F/2/Rev.5 World Bank

CHAPTER 5: ENTERPRISES, ESTABLISHMENTS AND INDUSTRIES

A. Introduction

5.1 Institutional units are defined in chapter 4. The present chapter is concerned with production activities and the units that undertake them, starting with institutional units and then considering parts of institutional units. An enterprise is the view of an institutional unit as a producer of goods and services. The term enterprise may refer to a corporation, a quasi-corporation, an NPI or an unincorporated enterprise. Since corporations and NPIs other than NPISHs are primarily set up to engage in production, the whole of their accounting information relates to production and associated accumulation activities. Government, households and NPISHs necessarily engage in consumption and may engage in production also; indeed government and NPISHs always engage in production and many, but not all, households do. As explained in chapter 4, whenever the necessary accounting information exists, the production activity of these units is separated from their other activities into a quasicorporation. It is when this separation is not possible that an unincorporated enterprise exists within the government unit, household or NPISH. It is thus possible to define an unincorporated enterprise as follows. An unincorporated enterprise represents the production activity of a government unit, NPISH or household that cannot be treated as the production activity of a quasi-corporation.

5.2 The majority of enterprises by number engages in only one sort of production. The majority of production, though, is carried out by a relatively small number of large corporations that undertake many different kinds of production, there being virtually no upper limit to the extent of diversity of production in a large enterprise. If enterprises are grouped together on the basis of their principal activities, at least some of the resulting groupings are likely to be very heterogeneous with respect to the type of production processes carried out and also the goods and services produced. Thus, for analyses of production in which the technology of production plays an important role, it is necessary to work with groups of producers that are engaged in essentially the same kind of production. This requirement means that some institutional units must be partitioned into smaller and more homogeneous units, which the SNA defines as establishments. An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added. Further, the SNA defines industries in terms of establishments. An industry consists of a group of establishments engaged in the same, or similar, kinds of activity. In the SNA, production accounts and generation of income accounts are compiled for industries as well as sectors.

5.3 This chapter first discusses productive activity and its classification in order to lay the ground for defining establishments and subsequently industries. All enterprises require some basic, routine services to support their production activities. When they are provided in house they are called ancillary activities. The recording of ancillary activities follows a number of conventions depending on exactly how they are provided. Ancillary activities are described in section D.

5.4 The definitions that emerge, as well as the underlying definitions of kinds of activities and of statistical units other than establishments, are consistent with the definitions in *ISIC*, *Rev. 4*. Any slight differences in wording between this chapter and the "Introduction" to the ISIC are noted and explained in the appropriate places below. Here and elsewhere reference is also made to the CPC 2, which is the classification of products used in the SNA.

B. Productive activities

5.5 Production in the SNA, as will be discussed in detail in chapter 6, consists of processes or activities carried out under the control and responsibility of institutional units that use inputs of labour, capital, goods and services to produce outputs of goods and services. Any such activity may be described, and classified, with reference to various characteristics, for example:

- a. Type of goods or services produced as outputs,
- b. Type of inputs used or consumed,
- c. Technique of production employed,
- d. Ways in which the outputs are used.

The same goods or services may be produced using different methods of production. Certain types of goods may be produced from quite different inputs; for example, sugar may be produced from sugar cane or from sugar beet, or electricity from coal, oil, nuclear power stations or from hydroelectric plants. Many production processes also produce joint products, such as meat and hides, whose uses are quite different.

1. The classification of activities in the SNA

5.6 The classification of production activities used in the SNA is *ISIC* (Rev. 4). The criteria used in ISIC to delineate each of its four levels of the classification are complex. The structure consists of 21 Sections, 88 Divisions, 238 Groups and 419 Classes. At the Division and Group levels, substantial weight is placed on the nature of the good or service that is produced as the principal product of the activity in question by referring to the

physical composition and stage of fabrication of the item and the needs served by the item. This criterion furnishes the basis for grouping producer units according to similarities in, and links between, the raw materials consumed and the sources of demand for the items. As well, two other major criteria are considered at these levels: the uses to which the goods and services are put, and the inputs, the process and the technology of production.

5.7 While it is not necessary for purposes of this chapter to explain the concept of an activity in any detail, it is necessary to clarify the fundamental distinction between principal and secondary activities on the one hand and ancillary activities on the other.

2. Principal and secondary activities

Principal activities

5.8 The principal activity of a producer unit is the activity whose value added exceeds that of any other activity carried out within the same unit. (The producer unit may be an enterprise or an establishment as defined below.) The classification of the principal activity is determined by reference to ISIC, first at the highest level of the classification and then at more detailed levels. The principal activity of an enterprise consists of the principal product and any by-products, that is, products necessarily produced together with principal products. The output of the principal activity must consist of goods or services that are capable of being delivered to other units even though they may be used for own consumption or own capital formation.

Secondary activities

5.9 A secondary activity is an activity carried out within a single producer unit in addition to the principal activity and whose output, like that of the principal activity, must be suitable for delivery outside the producer unit. The value added of a secondary activity must be less than that of the principal activity, by definition of the latter. The output of the secondary activity is a secondary product. Most producer units produce at least some secondary products.

3. Ancillary activities

5.10 As its name implies, an ancillary activity is incidental to the main activity of an enterprise. It facilitates the efficient running of the enterprise but does not normally result in goods and services that can be marketed. For enterprises that are relatively small and have only a single location, ancillary activities are not separately identified. For larger enterprises with multiple locations, it may be useful to treat ancillary activities in the same way as a secondary or even a principal product. A detailed discussion of the recording of ancillary activities is given in section D after the discussion on the recording of primary and secondary production is complete.

C. Partitioning enterprises into more homogeneous units

5.11 Although it is possible to classify enterprises according to their principal activities using the *ISIC* and to group them into "industries", some of the resulting "industries" are likely to be very heterogeneous because some enterprises may have several secondary activities that are quite different from their principal activities. In order to obtain groups of producers whose activities are more homogeneous, enterprises have to be partitioned into smaller and more homogeneous units.

1. Types of production units

Kind-of-activity units

5.12 One way to partition an enterprise is by reference to activities. A unit resulting from such a partitioning is called a kind-of-activity unit (KAU). *A kind-of-activity unit is an enterprise*,

or a part of an enterprise, that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added. Each enterprise must, by definition, consist of one or more kind-of-activity units. When partitioned into two or more kindof-activity units, the resulting units must be more homogeneous with respect to output, cost structure and technology of production than the enterprise as a whole.

Local units

5.13 Enterprises often engage in productive activity at more than one location, and for some purposes it may be useful to partition them accordingly. Thus, *a local unit is an enterprise, or a part of an enterprise, that engages in productive activity at or from one location.* The definition has only one dimension in that it does not refer to the kind of activity that is carried out. Location may be interpreted according to the purpose, narrowly, such as a specific address, or more broadly, such as within a province, state, county, etc.

Establishments

5.14 The establishment combines both the kind-of-activity dimension and the locality dimension. An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added. Establishments are sometimes referred to as local kind-of activity units (local KAUs).

5.15 Although the definition of an establishment allows for the possibility that there may be one or more secondary activities carried out, they should be on a small scale compared with the principal activity. If a secondary activity within an enterprise is as important, or nearly as important, as the principal activity, then that activity should be treated as taking place within a separate establishment from that in which the principal activity takes place.

5.16 Thus, establishments are designed to be units that provide data that are more suitable for analyses of production in which the technology of production plays an important role. However, it may still be necessary to transform the resulting data subsequently for purposes of input-output analysis, as explained briefly below in describing the unit of homogeneous production and in more detail in chapter 28.

5.17 In practice, an establishment may usually be identified with an individual workplace in which a particular kind of productive activity is carried out: an individual farm, mine, quarry, factory, plant, shop, store, construction site, transport depot, airport, garage, bank, office, clinic, etc.

2. Data and accounts for establishments

5.18 The only data that can meaningfully be compiled for an establishment relate to its production activities. They include the following:

- a. The items included in the production account and the generation of income account;
- b. Statistics of numbers of employees, types of employees and hours worked;
- c. Estimates of the stock of non-financial capital and natural resources used;
- d. Estimates of changes in inventories and gross fixed capital formation undertaken.

5.19 The compilation of a production account and a generation of income account implies that it must be feasible to calculate output and intermediate consumption and thus value added and also compensation of employees, taxes on production and imports, subsidies and the operating surplus or mixed income. In principle, it must be feasible to collect at least the above kinds of statistics for an establishment, even if they may not always be available, or needed, in practice.

3. Application of the principles in specific situations

5.20 The application of the principles given above for partitioning an enterprise into establishments is not always straightforward. This section discusses several situations in which the organization of production is such that the application is particularly difficult.

Establishments within integrated enterprises

5.21 A horizontally integrated enterprise is one in which several different kinds of activities that produce different kinds of goods or services for sale on the market are carried out simultaneously using the same factors of production. This definition is consistent with ISIC Rev. 4 which reads in part:

Horizontal integration occurs when an activity results in end-products with different characteristics. This could theoretically be interpreted as activities carried out simultaneously using the same factors of production. In this case, it will not be possible to separate them statistically into different processes, assign them to different units or generally provide separate data for these activities. Another example would be the production of electricity through a waste incineration process. The activity of waste disposal and the activity of electricity production cannot be separated in this case.

5.22 Within the SNA, a separate establishment should be identified for each different kind of activity wherever possible.

5.23 A vertically integrated enterprise is one in which different stages of production, which are usually carried out by different enterprises, are carried *out in succession by different parts of the same enterprise*. The output of one stage becomes an input into the next stage, only the output from the final stage being actually sold on the market. ISIC describes vertically integrated enterprises as follows:

Vertical integration of activities occurs where the different stages of production are carried out in succession by the same unit and where the output of one process serves as input to the next. Examples of common vertical integration include tree felling and subsequent on-site sawmilling, a clay pit combined with a brickworks, or production of synthetic fibres in a textile mill.

5.24 In *ISIC* Rev. 4, vertical integration should be treated like any other form of multiple activities. A unit with a vertically integrated chain of activities should be classified to the class corresponding to the principal activity within this chain, that is, to the activity accounting for the largest share of value added, as determined by the top-down method. This treatment has changed from previous versions of *ISIC*. It should be noted that the term "activity" in this context is used for each step in the production process that is defined in a separate *ISIC* class, even though the output of each step may not be intended for sale.

5.25 If value added or substitutes for the individual steps in a vertically integrated process cannot be determined directly from accounts maintained by the unit itself, comparisons with other units (for example, based on market prices for intermediate and final products) could be used. The same precautions for using substitutes as listed above apply here. If it is still impossible to determine the share of value added for the different stages in the chain of production activities, default assignments for typical forms of vertical integration can be applied. *The Companion Guide to ISIC and CPC* (United Nations (forthcoming)) provides a set of examples for such cases.

5.26 While the procedure for the treatment of vertically integrated activities could be applied to any unit, it should be noted that the SNA recommends that when a vertically integrated enterprise spans two or more sections of *ISIC*, at least one establishment must be distinguished within each section. With such a treatment, activities of units engaged in vertically integrated activities will not cross section boundaries of *ISIC*.

5.27 From an accounting point of view it can be difficult to partition a vertically integrated enterprise into establishments because values have to be imputed for the outputs from the earlier stages of production which are not actually sold on the market and which become intermediate inputs into later stages. Some of these enterprises may record the intra-enterprise deliveries at prices that reflect market values, but others may not. Even if adequate data are available on the costs incurred at each stage of production, it may be difficult to decide what is the appropriate way in which to allocate the operating surplus of the enterprise among the various stages. One possibility is that a uniform rate of operating surplus be applied to the costs incurred at each stage.

5.28 Despite the practical difficulties involved in partitioning vertically integrated enterprises into establishments, it is recommended in the SNA, as noted in the section of *ISIC* quoted above, that when a vertically integrated enterprise spans two or more sections of the *ISIC*, at least one establishment must be distinguished within each section. ISIC sections correspond to broad industry groups such as agriculture, fishing, mining and quarrying, manufacturing, etc.

Establishments owned by general government

5.29 Government units, especially central governments, may be particularly large and complex in terms of the kinds of activities in which they engage. The principles outlined above have to be applied consistently and systematically to government units. The procedures to be followed when dealing with the main kinds of producer units owned by government may be summarized as follows.

5.30 If an unincorporated enterprise of government is a market producer and there is sufficient information available to treat it as a quasi-corporation, it should be treated as a publicly controlled unit in the non-financial or financial corporations sectors as appropriate. The usual conventions about distinguishing different establishments within the quasi-corporation apply.

5.31 An example of an unincorporated market enterprise that can be treated as a quasicorporation is a municipal swimming pool that is independently managed and whose accounts permit its income, saving and capital to be measured separately from government so that flows of income, or capital, between the unit and government can be identified.

5.32 If an unincorporated enterprise of government is a market producer and there is insufficient information to treat it as a quasi-corporation, or if the unincorporated enterprise is a non-market producer, then it remains within the general government sector but it should be treated as an establishment in its own right and allocated to the appropriate industry.

5.33 Non-market producers such as public administration, defence, health and education providing final goods or services should be partitioned into establishments using the activity classification given in Sections O, P and Q of ISIC Rev. 4. Agencies of central government may be dispersed over the country as a whole in which case it will be necessary to distinguish different establishments for activities that are carried out in different locations.

5.34 When a government agency supplies goods to other government agencies it should be treated as a separate establishment and classified under the appropriate heading of *ISIC*. This applies to the production of munitions or weapons, printed documents or stationery, roads or other structures, etc. A government that produces its own weapons to supply to its own armed forces is, in effect, a vertically integrated enterprise that spans two or more sections of *ISIC*. Therefore, at least one separate establishment should be distinguished in each heading. The same argument applies to a government printing office and other goods producers owned by government.

D. Ancillary activities

5.35 As noted in section B. ancillary activities require special consideration because of the different ways of recording that are recommended depending on circumstances. As a preliminary step, though, it is as well to review exactly what is meant by an ancillary activity. Essentially, they are the basic services that every enterprise needs to have in order to operate effectively. The sorts of services referred to include keeping records, files or accounts in written form or on computers; providing electronic and traditional written communication facilities; purchasing materials and equipment; hiring, training, managing and paying employees; storing materials or equipment: warehousing; transporting goods or persons inside or outside the producer unit; promoting sales; cleaning and maintenance of buildings and other structures; repairing and servicing machinery and equipment; and providing security and surveillance.

5.36 These types of services can be produced in house or can be purchased on the market from specialist service producers though, in practice, the requisite services may not be readily available in the right quantities on local markets. When the services are produced in house, they are termed ancillary activities. *An ancillary activity is a*

198

supporting activity undertaken within an enterprise *in order to create the conditions within which the principal or secondary activities can be carried out.* In addition, ancillary activities have certain common characteristics related to their output. These additional characteristics include:

- a. The output of an ancillary activity is not intended for use outside the enterprise.
- b. Ancillary activities typically produce outputs that are commonly found as inputs into almost any kind of productive activity;
- c. Ancillary activities produce services (and, as exceptions, goods that do not become a physical part of the output of the principal or secondary activity) as output;
- d. The value of ancillary activity output is likely to be small compared with that of the principal or secondary activities of an enterprise.

5.37 The defining characteristics that ancillary activities support the principal and secondary activities of an enterprise and are used within the enterprise are by no means sufficient to identify an ancillary activity. There are many kinds of activities whose outputs are entirely consumed within the same enterprise but which could not possibly be considered as ancillary. Goods are not commonly used as inputs in the same way as services such as accounting, transportation or cleaning. For example, an enterprise may produce milk, all of which is processed into butter or cheese within the same enterprise. However, milk production cannot be considered an ancillary activity, because milk is a particular kind of input found only in special types of productive activity. In general, goods that become embodied in the output of the principal or secondary activities are not outputs of ancillary activities.

5.38 Certain activities, although common, are not so common as to be considered ancillary. Many enterprises produce their own machinery and equipment, build their own structures and carry out their own research and development. These activities are not to be treated as ancillary, whether carried out centrally or not, as they are not found frequently and extensively in all kinds of enterprises, small as well as large.

Recording (or not) the output of ancillary activities

5.39 An ancillary activity is not undertaken for its own sake but purely in order to provide supporting services for the principal or secondary activities with which it is associated. If all the ancillary activity is undertaken in the establishment where its output is used, the ancillary activity is regarded as an integral part of the principal or secondary activities with which it is associated. As a result:

- a. The output of an ancillary activity is not explicitly recognized and recorded separately in the SNA. It follows that the use of this output is also not recorded.
- b. All the inputs consumed by an ancillary activity, materials, labour, consumption of fixed capital, etc., are treated as inputs into the principal or secondary activity that it supports.

In this case it is not possible to identify the value added of an ancillary activity because that value added is combined with the value added of the principal or secondary activity.

5.40 When the production of an enterprise takes place in two or more different establishments, certain ancillary activities may be carried out centrally for the benefit of all the establishments collectively. For example, the purchasing, sales, accounts, computing, maintenance or other departments of an enterprise may all be the responsibility of a head office located separately from the establishments in which the principal or secondary activities of the enterprise are carried out.

5.41 If an establishment undertaking purely ancillary activities is statistically observable, in that separate accounts for the production it undertakes are readily available, or if it is in a geographically different location from the establishments it serves, it may be desirable and useful to consider it as a separate unit and allocate it to the industrial classification corresponding to its principal activity. However, it is recommended that statisticians do not make extraordinary efforts to create separate establishments for these activities artificially in the absence of suitable basic data being available.

5.42 When such a unit is recognized, the ancillary activity is recognized as a primary output. The value of its output should be derived on a sum of costs basis, including the cost of the capital used in the unit. The output will be deemed to be non-market output when the parent enterprise is a non-market enterprise and market otherwise. If the output is treated as non-market, the cost of capital should be replaced by the consumption of fixed capital when summing costs to determine the value of output. The output of the ancillary unit is treated as intermediate consumption of the establishments it serves and should be allocated across them using an appropriate indicator such as the output, value added or employment of these establishments.

5.43 It is appropriate to treat specialized agencies serving central government as a whole, for example, computer or communications agencies, which tend to be large, as separate establishments.

5.44 Even when an ancillary activity is undertaken in the establishment where it is used, it may grow to the point that it has the capacity to provide services outside the enterprise. For example, a computer processing unit may develop in-house capabilities for which there is an outside demand. When an activity starts to provide a proportion of its services to outsiders, the part of the output that is sold has to be treated as secondary rather than ancillary output.

The role of ancillary activities in the SNA

5.45 The production accounts of the SNA do not provide comprehensive information about the production of services treated in some cases as ancillary services. It is therefore difficult to obtain information about their role in the economy. For example, it is difficult to know how much output is produced, how many persons are engaged in such activities, how many resources are consumed, etc. This may be regarded as a serious disadvantage for certain purposes, such as analysing the impact of "information technology" on productivity when the processing and communication of information are typical ancillary activities or when looking at the role of freight transport. For some purposes, a satellite account may be compiled that makes estimates of all activities of a certain type regardless of whether they are ancillary or not. The overall measure of value added does not alter because both output and intermediate consumption increase by the same amount but a more inclusive picture of the role of the activity in the economy can be obtained. There is a discussion on the role of satellite accounts in chapter 29.

E. Industries

5.46 Industries are defined in the SNA in the same way as in ISIC: an industry consists of a group of establishments engaged in the same, or similar, kinds of activity. At the most detailed level of classification, an industry consists of all the establishments falling within a single Class of ISIC. At higher levels of aggregation corresponding to the Groups, Divisions and, ultimately, Sections of the ISIC, industries consist of a number of establishments engaged on similar types of activities.

1. Market, own account and non-market 5.50 The relationship between an activity and a producers product classification is exemplified by that

5.47 The term "industry" is not reserved for market producers. An industry, as defined in the ISIC and in the SNA, consists of a number of establishments engaged in the same type of production, whether the institutional units to which they belong are market producers or not. The distinction between market and other production is a different dimension of production and economic activity. For example, the health industry in a particular country may consist of a number of establishments, some of which are market producers while others are non-market producers. Because the distinction between market and other kinds of production is based on a different criterion from the nature of activity itself, it is possible to cross-classify establishments by type of activity and by whether they are market producers, non-market producers or producers for own final use.

2. Industries and products

5.48 As already mentioned, a one-to-one correspondence does not exist between activities and products and hence between industries and products. Certain activities produce more than one product simultaneously, while the same product may sometimes be produced by using different techniques of production.

5.49 When two or more products are produced simultaneously by a single productive activity they are "joint products". Examples of joint products are meat and hides produced by slaughtering animals or sugar and molasses produced by refining sugar canes. The by-product from one activity may also be produced by other activities, but there are examples of by-products, such as molasses, that are produced exclusively as the by-products of one particular activity.

product classification is exemplified by that between the ISIC and the CPC. The CPC is a classification based on the physical characteristics of goods or on the nature of the services rendered, while the ISIC also takes into account the inputs in the production process and the technology used in the production process. In the development of the CPC, it is intended that each good or service distinguished in the CPC is defined in such a way that it is normally produced by only one activity as defined in ISIC. However, due to different types of criteria employed, this is not always possible. An example would be the product of mushrooms, which can be produced by controlled growing, that is, an activity classified in Agriculture in ISIC, or by simply gathering wild growing mushrooms, an activity classified in Forestry. More detailed national classifications may distinguish different forms of energy production in ISIC, based on different technologies, resulting in separate activities for the operation of hydroelectric power plants, nuclear power plants etc. The output of all these activities, however, would be the single product electricity.

5.51 Conversely, each activity of the ISIC, no matter how narrowly defined, will tend to produce a number of products as defined in the CPC, although they are often clustered within the CPC structure and could be perceived as one "type" of product. As far as practically possible, an attempt is made to establish a correspondence between the two classifications, by allocating to each category of the CPC a reference to the ISIC class in which the good or service is mainly produced. However, due to the reasons outlined above, this typically does not result in a one-to-one correspondence. The majority of links between ISIC and CPC will tend to be one-to-many links, with a few cases requiring many-to-one links. It is possible to force this correspondence into a stricter relationship by selecting one link out of the many-to-one correspondence. This selection may facilitate data conversion, but is not a real description of the link between the two classifications.

F. Units of homogeneous production

5.52 In most fields of statistics the choice of statistical unit, and methodology used, are strongly influenced by the purposes for which the resulting statistics are to be used. For purposes of input-output analysis, the optimal situation would be one in which each producer unit were engaged in only a single productive activity so that an industry could be formed by grouping together all the units engaged in a particular type of production without the intrusion of any secondary activities. Such a unit is called a "unit of homogeneous production".

5.53 Although the unit of homogeneous production may be the optimal unit for purposes of of certain kinds analysis. particularly input-output analysis, it may not be possible to collect directly from the enterprise or establishment the accounting data corresponding to units of homogeneous production. Such data may have to be estimated subsequently by transforming the data supplied by enterprises on the basis of various assumptions or hypotheses. Units that are constructed by statistical manipulation of the data collected by the agency are called analytical units.

5.54 If a producer unit carries out a principal activity and also one or more secondary activities, it will be partitioned into the same number of units of homogeneous production. If it is desired to compile production accounts and input-output tables by region, it is necessary to treat units of homogeneous production located in different places as separate units even though they may be engaged in the same activity and belong to the same institutional unit.

5.55 Chapter 28 discusses the estimation of

analytical units for use in an input-output context.

CHAPTER 6: THE PRODUCTION ACCOUNT

A. Introduction

6.1 The production account is the starting point for the sequence of accounts for institutional units and sectors displaying how income is generated, distributed and used throughout the economy. Activities defined as production therefore determine the extent of GDP and the level of income for the economy. In concept, the economy-wide production account is the aggregation of a similar account for each production unit. Importantly, while production accounts can be compiled for an individual institutional unit as well as for sectors, they can also be compiled for establishments and thus for industries. It is this feature that allows the study of industrial activity in the economy and permits the compilation of supply and use tables and input-output tables.

6.2 The production account is linked to the definition of production. *Production is an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services.* The production account shows the output of production and the various inputs to it. To do this, three concepts need clarifying.

6.3 The first concept to be clarified is what constitutes production within the SNA. This delineation is referred to as the production boundary of the SNA. Thereafter several key types of production need to be identified depending on whether production is for sale, for own use or is made available to others at little or no cost.

6.4 The next concept to be addressed is how output is to be valued. Key to this question is the

role played by the various types of taxes imposed by (and subsidies given by) government on products and on the activity of production.

6.5 The third major concept to be considered is how the production process adds to the value of goods and services and leads to the generation of income. Does the whole contribution of labour and capital add to the value of these goods and services or should the fact that most capital declines in value as it is used need to be taken into account?

6.6 The general format of an account in the sequence of accounts is to show how resources are received and, after uses are deducted, a balancing item is left. Because the production account is the first in the sequence of accounts, it is the first time the concept of a balancing item appears. The importance of balancing items in general and the one in this account in particular is also discussed before considering each of the entries of the production account in turn.

6.7 The production account for institutional units and sectors is illustrated in table 6.1. It contains only three items apart from the balancing item. The output from production is recorded under resources on the right-hand side of the account. This item may be disaggregated to distinguish different kinds of output. For example, nonmarket output should be shown separately from market output and output for own final use in the sector accounts, when possible. The uses recorded on the left-hand side of the account consist of intermediate consumption and consumption of fixed capital. Both of these may also be disaggregated.

6.8 The balancing item in the production account is value added. It can be measured either gross or net, that is, before or after deducting consumption of fixed capital:

- a. Gross value added is the value of output less the value of intermediate consumption;
- b. Net value added is the value of output less the values of both intermediate consumption and consumption of fixed capital.

6.9 As value added is intended to measure the value created by a process of production, it ought to be measured net, since the consumption of fixed capital is a cost of production. However, as explained later, consumption of fixed capital can be difficult to measure in practice and it may not always be possible to make a satisfactory estimate of its value and hence of net value added. Provision has therefore to be made for value added to be measured gross as well as net. It follows that provision has also to be made for the balancing items in subsequent accounts of the SNA to be measured either gross or net of the consumption of fixed capital.

B. The concept of production

1. Production as an economic activity

6.10 Production can be described in general terms as an activity in which an enterprise uses inputs to produce outputs. The economic analysis of production is mainly concerned with activities that produce outputs of a kind that can be delivered or provided to other institutional units. Unless outputs are produced that can be supplied to other units, either individually or collectively, there can be no division of labour, no specialization of production and no gains from trading. There are two main kinds of output, namely goods and services, and it is necessary to examine their characteristics in order to be able to delineate activities that are productive in an economic sense from other activities. Collectively, goods and services are described as products.

6.11 In the SNA, it is seldom if ever necessary to make a clear distinction between goods and services but in making the link to other data sets it is often necessary to understand which products have been treated as goods and which as services.

6.12 Industrial classifications, such as ISIC, identify a group of manufacturing industries. However, many of these industries also produce services. For example, some aircraft engine manufacturers may both fabricate aircraft engines and repair and service existing engines. When goods dispatched to another unit for processing do not change ownership, the work done on them constitutes a service even though it may be undertaken by a manufacturing industry. The fact that the processing is classified as a service does not prevent the processor from being classified within manufacturing.

6.13 Similarly, some service-producing industries may produce products that have many of the characteristics of goods. For convenience, the products of these industries are described in the SNA as knowledge-capturing products.

6.14 *Products are goods and services (including knowledge-capturing products) that result from a process of production.*

Goods

6.15 Goods are physical, produced objects for which a demand exists, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets. They are in demand because they may be used to satisfy the needs or wants of households or the community or used to produce other goods or services. The production and exchange of goods are quite separate activities. Some goods may never be exchanged while others may be bought and sold numerous times. The production of a good can always be separated from its subsequent sale or resale.

Services

6.16 The production of services must be confined to activities that are capable of being carried out by one unit for the benefit of another. Otherwise, service industries could not develop and there could be no markets for services. It is also possible for a unit to produce a service for its own consumption provided that the type of activity is such that it could have been carried out by another unit.

6.17 Services are the result of a production activity that changes the conditions of the consuming units, or facilitates the exchange of products or financial assets. These types of service may be described as change-effecting services and margin services respectively. Change-effecting services are outputs produced to order and typically consist of changes in the conditions of the consuming units realized by the activities of producers at the demand of the consumers. Change-effecting services are not separate entities over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed, they must have been provided to the consumers.

6.18 The changes that consumers of services engage the producers to bring about can take a variety of different forms as follows:

Uses									
Transactions and bal- ancing items	Non- financial corpora- tions	Finan- cial corpora- tions	General go vernment	Households	NPISHs	Total econ- omy	Rest of the world	Goods and services	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Output								3604	3604
Market output								3077	3077
Output for own final use								147	147
Non-market output								380	380
Intermediate consump- tion	1477	52	222	115	17	1883			1883
Taxes on products								141	141
Subsidies on products (-)								- 8	- 8
Value added, gross / Gross domestic prod- uct	1331	94	126	155	15	1854			1854
Consumption of fixed capital	157	12	27	23	3	222			222
Value added, net / Net domestic product	1174	82	99	132	12	1632			1632

Table 6.1: The production account - uses

									resources
Transactions and bal- ancing items	Non- financial corpora- tions	Finan- cial corpora- tions	General go vernment	Households	NPISHs	Total econ- omy	Rest of the world	Goods and services	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Output	2808	146	348	270	32	3604			3604
Market output	2808	146	0	123	0	3077			3077
Output for own final use	0	0	0	147	0	147			147
Non-market output			348		32	380			380
Intermediate consump- tion	1477	52	222	115	17			1883	1883
Taxes on products						141			141
Subsidies on products (-)						-8			- 8

- Changes in the condition of the consumer's goods: the producer works directly on goods owned by the consumer by transporting, cleaning, repairing or otherwise transforming them;
- b. Changes in the physical condition of persons: the producer transports the persons, provides them with accommodation, provides them with medical or surgical treatments, improves their appearance, etc.;

c. Changes in the mental condition of persons: the producer provides education, information, advice, entertainment or similar services in a face to face manner.

6.19 The changes may be temporary or permanent. For example, medical or education services may result in permanent changes in the condition of the consumers from which benefits may be derived over many years. On the other hand, attending a football match is a short-lived experience. In general, the changes may be presumed to be improvements, as services are produced at the demand of the consumers. The improvements usually become embodied in the persons of the consumers or the goods they own and are not separate entities that belong to the producer. Such improvements cannot be held in inventories by the producer or traded separately from their production.

6.20 A single process of production may provide services to a group of persons, or units, simultaneously. For example, groups of persons or goods belonging to different institutional units may be transported together in the same plane, ship, train or other vehicle. People may be instructed or entertained in groups by attending the same class, lecture or performance. Certain services are provided collectively to the community as a whole, or large sections of the community, for example, the maintenance of law and order, and defence.

6.21 Margin services result when one institutional unit facilitates the change of ownership of goods, knowledge-capturing products, some services or financial assets between two other institutional units. Margin services are provided by wholesalers and retailers and by many types of financial institutions. Margin services resemble change-effecting services in that they are not separate entities over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed they must have been provided to the consumers.

Knowledge-capturing products

6.22 Knowledge-capturing products concern the provision, storage, communication and dissemination of information, advice and entertainment in such a way that the consuming unit can access the knowledge repeatedly. The industries that produce the products are those concerned with the provision, storage, communication and dissemination of information, advice and entertainment in the broadest sense of those terms including the production of general or specialized information, news, consultancy reports, computer programs, movies, music, etc. The outputs of these industries, over which ownership rights may be established, are often stored on physical objects (whether on paper or on electronic media) that can be traded like ordinary goods. They have many of the characteristics of goods in that ownership rights over these products can be established and they can be used repeatedly. Whether characterized as goods or services, these products possess the essential common characteristic that they can be produced by one unit and supplied to another, thus making possible division of labour and the emergence of markets.

2. The production boundary

6.23 Given the general characteristics of the goods and services produced as outputs, it becomes possible to define production. A general definition of production is given first, followed by the rather more restricted definition that is used in the SNA. Following this there is a discussion of the production boundary as it affects household activities and non-observed activities.

The general production boundary

6.24 Economic production may be defined as an

206

activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital, and goods and services to produce outputs of goods or services. There must be an institutional unit that assumes responsibility for the process of production and owns any resulting goods or knowledgecapturing products or is entitled to be paid, or otherwise compensated, for the change-effecting or margin services provided. A purely natural process without any human involvement or direction is not production in an economic sense. For example, the unmanaged growth of fish stocks in international waters is not production, whereas the activity of fish farming is production.

6.25 While production processes that produce goods can be identified without difficulty, it is not always so easy to distinguish the production of services from other activities that may be both important and beneficial. Activities that are not productive in an economic sense include basic human activities such as eating, drinking, sleeping, taking exercise, etc., that it is impossible for one person to employ another person to perform instead. Paying someone else to take exercise is no way to keep fit. On the other hand, activities such as washing, preparing meals, caring for children, the sick or aged are all activities that can be provided by other units and, therefore, fall within the general production boundary. Many households employ paid domestic staff to carry out these activities for them.

The production boundary in the SNA

6.26 The production boundary in the SNA is more restricted than the general production boundary. For reasons explained below, activities undertaken by households that produce services for their own use are excluded from the concept of production in the SNA, except for services provided by owner-occupied dwellings and services produced by employing paid domestic staff. Otherwise, the production boundary in the SNA is the same as the more general one defined in the previous paragraphs.

6.27 The production boundary of the SNA includes the following activities:

- a. The production of all goods or services that are supplied to units other than their producers, or intended to be so supplied, including the production of goods or services used up in the process of producing such goods or services;
- b. The own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation;
- c. The own-account production of knowledge-capturing products that are retained by their producers for their own final consumption or gross capital formation but excluding (by convention) such products produced by households for their own use;
- *d.* The own-account production of housing services by owner occupiers; and
- e. The production of domestic and personal services by employing paid domestic staff.

The production boundary within households

The exclusion of most services produced for own use by households

6.28 The production of services by members of the household for their own final consumption has traditionally been excluded from measured production in national accounts and it is worth explaining briefly why this is so. It is useful to begin by listing those services for which no entries are recorded in the accounts when they are produced by household members and consumed within the same household:

- a. The cleaning, decoration and maintenance of the dwelling occupied by the household, including small repairs of a kind usually carried out by tenants as well as owners;
- b. The cleaning, servicing and repair of household durables or other goods, including vehicles used for household purposes;
- c. The preparation and serving of meals;
- d. The care, training and instruction of children;
- e. The care of sick, infirm or old people;
- f. The transportation of members of the household or their goods.

6.29 In most countries a considerable amount of labour is devoted to the production of these services, and their consumption makes an important contribution to economic welfare. However, national accounts serve a variety of analytical and policy purposes and are not compiled simply, or even primarily, to produce indicators of welfare. The reasons for not imputing values for unpaid domestic or personal services produced and consumed within households may be summarized as follows:

a. The own-account production of services within households is a self-contained activity with limited repercussions on the rest of the economy. The decision to produce a household service entails a simultaneous decision to consume that service. This is not true for goods. For example, if a household engages in the production of agricultural goods, it does not follow that it intends to consume them all. Once the crop has been harvested, the producer has a choice about how much to consume, how much to store for future consumption or production and how much to offer for sale or barter on the market. Indeed, although it is customary to refer to the own-account production of goods, it is not possible to determine at the time the production takes place how much of it will eventually be

consumed by the producer. For example, if an agricultural crop turns out to be better than expected, the household may dispose of some of it on the market even though it may have originally supposed it would consume it all. This kind of possibility is non-existent for services; it is not possible to produce a service and then decide whether to offer it for sale or not.

- b. As the vast majority of household services are not produced for the market, there are typically no suitable market prices that can be used to value such services. It is therefore extremely difficult to estimate values not only for the outputs of the services but also for the associated incomes and expenditures that can be meaningfully added to the values of the monetary transactions on which most of the entries in the accounts are based.
- c. With the exception of the imputed rental of owner-occupied dwellings, the decision to produce services for own consumption is not influenced by and does not influence economic policy because the imputed values are not equivalent to monetary flows. Changes in the levels of household services produced do not affect the tax yield of the economy or the level of the exchange rate, to give two examples.

6.30 Thus, the reluctance of national accountants to impute values for the outputs, incomes and expenditures associated with the production and consumption of services within households is explained by a combination of factors, namely the relative isolation and independence of these activities from markets, the extreme difficulty of making economically meaningful estimates of their values, and the adverse effects it would have on the usefulness of the accounts for policy purposes and the analysis of markets and market disequilibria.

208

6.31 The exclusion of household services from the production boundary has consequences for labour force and employment statistics. According to International Labour Organization (ILO) guidelines, economically active persons are persons engaged in production included within the boundary of production of the SNA. If that boundary were to be extended to include the production of own-account household services, virtually the whole adult population would be economically active and unemployment eliminated. In practice, it would be necessary to revert to the existing boundary of production in the SNA, if only to obtain meaningful employment statistics.

Own-account production of goods

6.32 Although services produced for own consumption within households fall outside the boundary of production used in the SNA, it is nevertheless useful to give further guidance with respect to the treatment of certain kinds of household activities which may be particularly important in some developing countries. The SNA includes the production of all goods within the production boundary. The following types of production by households are included whether intended for own final consumption or not:

- a. The production of agricultural products and their subsequent storage; the gathering of berries or other uncultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;
- b. The production of other primary products such as mining salt, cutting peat, etc.;
- c. The processing of agricultural products; the production of grain by threshing; the production of flour by milling; the curing of skins and the production of leather; the production and preservation of meat and fish products; the preservation of fruit by drying, bottling, etc.; the production of

dairy products such as butter or cheese; the production of beer, wine, or spirits; the production of baskets or mats; etc.;

- Other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear; the production of pottery, utensils or durables; making furniture or furnishings; etc.;
- e. The supply of water is also considered a goods-producing activity in this context. In principle, supplying water is a similar kind of activity to extracting and piping crude oil.

6.33 It is not feasible to draw up a complete, exhaustive list of all possible productive activities but the above list covers the most common types. When the amount of a good produced within households is believed to be quantitatively important in relation to the total supply of that good in a country, its production should be recorded. Otherwise, it may not be worthwhile trying to estimate it in practice.

Services of owner-occupied dwellings

6.34 The production of housing services for their own final consumption by owner occupiers has always been included within the production boundary in national accounts, although it constitutes an exception to the general exclusion of own-account service production. The ratio of owner-occupied to rented dwellings can vary significantly between countries, between regions of a country and even over short periods of time within a single country or region, so that both international and inter-temporal comparisons of the production and consumption of housing services could be distorted if no imputation were made for the value of own-account housing services. The imputed value of the income generated by such production is taxed in some countries.

Production of domestic and personal services by employing paid domestic staff

6.35 Although paid domestic staff produce many of the services excluded from the production boundary of the SNA when undertaken by household members, paying a person who comes to the house to wash, cook or look after children, for example, is as much a market activity as taking clothes to a laundry, eating at a restaurant or paying a nursery to care for children. By convention, though, only the wages of the domestic staff are treated as the value of output. Other materials used in their work are treated as household consumption expenditure because of the difficulty of identifying what is used by the staff and what by household members. Nor are payments to other household members treated as payments for services even if the payments are nominally for the performance of chores, for example pocket-money paid to children.

"Do-it-yourself" decoration, maintenance and small repairs

6.36 "Do-it-yourself" repairs and maintenance to consumer durables and dwellings carried out by members of the household constitute the own-account production of services and are excluded from the production boundary of the SNA. The materials purchased are treated as final consumption expenditure.

6.37 In the case of dwellings, "do-it-yourself" activities cover decoration, maintenance and small repairs, including repairs to fittings, of types that are commonly carried out by tenants as well as by owners. On the other hand, more substantial repairs, such as replastering walls or repairing roofs, carried out by owners, are essentially intermediate inputs into the production of housing services. However, the production of such repairs by an owner-occupier is only a secondary activity of the owner in his capacity as a producer of housing services. The production accounts for the

two activities may be consolidated so that, in practice, the purchases of materials for repairs become intermediate expenditures incurred in the production of housing services. Major renovations or extensions to dwellings are fixed capital formation and recorded separately.

The use of consumption goods

6.38 The use of goods within the household for the direct satisfaction of human needs or wants is not treated as production. This applies not only to materials or equipment purchased for use in leisure or recreational activities but also to foodstuffs purchased for the preparation of meals. The preparation of a meal is a service activity and is treated as such in the SNA and ISIC Rev. 4. It therefore falls outside the production boundary when the meal is prepared for own consumption within the household. The use of a durable good, such as a vehicle, by persons or households for their own personal benefit or satisfaction is intrinsically a consumption activity and should not be treated as if it were an extension, or continuation, of production.

The "non-observed" economy

6.39 There is considerable interest in the phenomenon of the non-observed economy. This term is used to describe activities that, for one reason or another, are not captured in regular statistical enquiries. The reason may be that the activity is informal and thus escapes the attention of surveys geared to formal activities; it may be that the producer is anxious to conceal a legal activity, or it may be that the activity is illegal. Chapter 25 discusses measurement of the informal economy within households.

6.40 Certain activities may clearly fall within the production boundary of the SNA and also be quite legal (provided certain standards or regulations

are complied with) but deliberately concealed from public authorities for the following kinds of reasons:

- a. To avoid the payment of income, value added or other taxes;
- b. To avoid the payment of social security contributions;
- c. To avoid having to meet certain legal standards such as minimum wages, maximum hours, safety or health standards, etc.;
- d. To avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.

6.41 Because certain kinds of producers try to conceal their activities from public authorities, it does not follow that they are not included in national accounts in practice. Many countries have had considerable success in compiling estimates of production that cover the nonobserved economy as well as the ordinary economy. In some industries, such as agriculture or construction, it may be possible by using various kinds of surveys and the commodity flow method to make satisfactory estimates of the total output of the industry without being able to identify or measure that part of it that is not observed. Because the non-observed economy may account for a significant part of the total economy of some countries, it is particularly important to try to make estimates of total production that include it, even if it cannot always be separately identified as such.

6.42 There may be no clear borderline between the non-observed economy and illegal production. For example, production that does not comply with certain safety, health or other standards could be described as illegal. Similarly, the evasion of taxes is itself usually a criminal offence. However, it is not necessary for the purposes of the SNA to try to fix the precise borderline between non-observed and illegal production as both are included within the production boundary in any case. It follows that transactions on unofficial markets that exist in parallel with official markets (for example, for foreign exchange or goods subject to official price controls) must also be included in the accounts, whether or not such markets are actually legal or illegal.

- 6.43 There are two kinds of illegal production:
 - The production of goods or services whose sale, distribution or possession is forbidden by law;
 - b. Production activities that are usually legal but become illegal when carried out by unauthorized producers; for example, unlicensed medical practitioners.

6.44 Examples of activities that may be illegal but productive in an economic sense include the manufacture and distribution of narcotics, illegal transportation in the form of smuggling of goods and of people, and services such as prostitution.

6.45 Both kinds of illegal production are included within the production boundary of the SNA provided they are genuine production processes whose outputs consist of goods or services for which there is an effective market demand. The units that purchase smuggled goods, for example, may not be involved in any kind of illegal activities and may not even be aware that the other party to the transaction is behaving illegally. Transactions in which illegal goods or services are bought and sold need to be recorded not simply to obtain comprehensive measures of production and consumption but also to prevent errors appearing elsewhere in the accounts. The incomes generated by illegal production may be disposed of quite legally, while conversely, expenditures on illegal goods and services may be made out of funds obtained quite legally. The failure to record illegal transactions may lead to significant errors within the accounts if the consequences of the activity are recorded in the financial account and the external accounts, say, but not in the production and income accounts.

6.46 Regular thefts of products from inventories are not included in the value of output. Suppose a shop suffers regular theft from inventories. In calculating the value of output of the shop, part of the margin on the goods sold must cover the cost of the goods stolen. Thus the margin is calculated as the value received for the goods sold less the cost of both the goods sold and the goods stolen. If the stolen products are sold elsewhere, for example on a street stall, the value of the output of the street trader is still calculated as the difference between the value received for the goods and the value paid for them. In this case, though, if nothing is paid for the goods, the whole of the sales value appears as the margin.

6.47 Illegal production does not refer to the generation of externalities such as the discharge of pollutants. Externalities may result from production processes that are themselves quite legal. Externalities are created without the consent of the units affected and no values are imputed for them in the SNA.

6.48 Although non-observed and illegal activities require special consideration, it is not necessarily the case that they are excluded from normal data collection processes.

C. Basic, producers' and purchasers' prices

6.49 More than one set of prices may be used to value outputs and inputs depending upon how taxes and subsidies on products, and also transport charges, are recorded. Moreover, value added taxes (VAT), and similar deductible taxes may also be recorded in more than one way. The methods of valuation used in the SNA are explained in this section.

6.50 The detailed discussion of taxes related to production appears in section C of chapter 7 but it is important in the context of discussing alternative price measures to make the distinction between taxes (and subsidies) on products and other taxes (and subsidies) on production. As the name implies, taxes on products are payable per unit of the product. The tax may be a flat amount dependent on the physical quantity of the product or may be a percentage of the value at which the product is sold. Other taxes on production are taxes imposed on the producer that do not apply to products nor are levied on the profits of the producer. Examples include taxes on land or premises used in production or on the labour force employed. The distinction between subsidies on products and other subsidies on production is made on similar grounds.

1. Basic and producers' prices

6.51 The SNA utilizes two kinds of prices to measure output, namely, basic prices and producers' prices:

- a. The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.
- b. The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.

Neither the producer's nor the basic price includes any amounts receivable in respect of VAT, or similar deductible tax, invoiced on the output sold.
6.52 Unlike the basic price, the producer's price includes taxes on products (taxes payable per unit of output) and excludes subsidies on products (subsidies receivable per unit of output). The producer's price is the price, excluding VAT, that the producer invoices to the purchaser. The basic price measures the amount retained by the producer and is, therefore, the price most relevant for the producer's decision-taking. It is becoming increasingly common in many countries for producers to itemize taxes separately on their invoices so that purchasers are informed about how much they are paying to the producer and how much as taxes to the government.

6.53 Basic prices exclude any taxes on products the producer receives from the purchaser and passes on to government but include any subsidies the producer receives from government and uses to lower the prices charged to purchasers.

6.54 Both producers' and basic prices are actual transaction prices that can be directly observed and recorded. Basic prices are often reported in statistical inquiries and some official "producer price" indices actually refer to basic prices rather than to producers' prices as defined here.

VAT and similar deductible taxes

6.55 Many countries have adopted some form of VAT. VAT is a wide-ranging tax usually designed to cover most or all goods and services. In some countries, VAT may replace most other forms of taxes on products, but VAT may also be levied in addition to some other taxes on products, such as excise duties on tobacco, alcoholic drink or fuel oils.

6.56 VAT is a tax on products collected in stages by enterprises. Producers are required to charge certain percentage rates of VAT on the goods or services they sell. The VAT is shown separately on the sellers' invoices so that purchasers know the amounts they have paid. However, producers are not required to pay to the government the full amounts of the VAT invoiced to their customers because they are usually permitted to deduct the VAT that they themselves have paid on goods and services purchased for their own intermediate consumption, resale or gross fixed capital formation. Producers are obliged to pay only the difference between the VAT on their sales and the VAT on their purchases for intermediate consumption or capital formation, hence the expression value added tax. The percentage rate of VAT is liable to vary between different categories of goods and services and also according to the type of purchaser. For example, sometimes goods purchased by visiting non-residents, which count as exports, may be exempt from VAT.

6.57 Other tax regimes exist, not called VAT, that operate in a similar manner. Within the SNA, the term VAT is used to apply to any similar deductible tax scheme even if the scope is narrower than a full system of VAT.

6.58 The following terminology needs to be defined:

- a. Invoiced VAT is the VAT payable on the sales of a producer; it is shown separately on the invoice that the producer presents to the purchaser.
- b. Deductible VAT is the VAT payable on purchases of goods or services intended for intermediate consumption, gross fixed capital formation or for resale that a producer is permitted to deduct from his own VAT liability to the government in respect of VAT invoiced to his customers.
- c. Non-deductible VAT is VAT payable by a purchaser that is not deductible from his own VAT liability, if any.

Thus, a market producer is able to recover the costs of any deductible VAT payable on his own purchases by reducing the amount of his own VAT liability in respect of the VAT invoiced to his own customers. On the other hand, the VAT

paid by households for purposes of final consumption or fixed capital formation in dwellings is not deductible. The VAT payable by non-market producers owned by government units or NPISHs may also not be deductible.

Gross and net recording of VAT

6.59 There are two alternative systems that may be used to record VAT, the "gross" or "net" systems. Under the gross system, all transactions are recorded including the amounts of any invoiced VAT. Thus, the purchaser and the seller record the same price, irrespective of whether or not the purchaser is able to deduct the VAT subsequently.

6.60 While the gross system of recording seems to accord with the traditional notion of recording at "market" prices, it presents some difficulties. Practical experience with the operation of VAT over many years in a number of countries has shown it may be difficult, if not impossible, to utilize the gross system because of the way business accounts are computed and records are kept. Sales are normally reported excluding invoiced VAT in most industrial inquiries and business surveys. Conversely, purchases of goods and services by producers are usually recorded excluding deductible VAT. Although the gross system has been tried in some countries, it has had to be abandoned for these reasons. Further, it can be argued that the gross system distorts economic reality to the extent that it does not reflect the amounts of VAT actually paid by businesses. Large amounts of invoiced VAT are deductible and thus represent only notional or putative tax liabilities.

6.61 The SNA therefore requires that the net system of recording VAT should be followed. In the net system:

 Outputs of goods and services are valued excluding invoiced VAT; imports are similarly valued excluding invoiced VAT; b. Purchases of goods and services are recorded including non-deductible VAT.

Under the net system, VAT is recorded as being payable by purchasers, not sellers, and then only by those purchasers who are not able to deduct it. Almost all VAT is therefore recorded in the SNA as being paid on final uses, mainly on household consumption. However, small amounts of VAT may be paid by businesses in respect of certain kinds of purchases on which VAT may not be deductible.

6.62 The disadvantage of the net system is that different prices must be recorded for the two parties to the same transaction when the VAT is not deductible. The price recorded for the producer does not include invoiced VAT whereas the price recorded for the purchaser does include the invoiced VAT to the extent that it is not deductible. Thus, in aggregate, the total value of the expenditures recorded for purchasers must exceed the total value of the corresponding sales receipts recorded for producers by the total amount raised as non-deductible VAT.

6.63 The producer's price thus defined is a hybrid that excludes some, but not all, taxes on products. The basic price, which does not include any taxes on the product (but includes subsidies on the product) becomes a clearer concept in these circumstances and is the preferred method for valuing the output of producers.

2. Purchasers' prices

6.64 The purchaser's price is the amount paid by the purchaser, excluding any VAT or similar tax deductible by the purchaser, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place. 6.65 When a purchaser buys directly from the **a summary** producer, the purchaser's price may exceed the producer's price by:

- a. The value of any non-deductible VAT, payable by the purchaser; and
- b. The value of any transport charges on a good paid separately by the purchaser and not included in the producer's price.

It follows that the purchaser's price may exceed the basic price by the amount of the two items just listed plus the value of any taxes less subsidies on the product (other than VAT).

6.66 If purchasers buy output not from the producer directly but from a wholesaler or retailer, it is necessary to include their margins in the difference between basic and purchasers' prices also.

6.67 For certain purposes, including input-output analysis, it may be convenient to consider that the purchase of a product consists of two separate transactions. The first of these is the purchase of the product from the producer and the second is the margin paid to the wholesaler or retailer of the product. The margin represents the difference between the price paid by the final purchaser of a product after it has passed through the wholesale and retail distribution chains and the producer's price received by its original producer.

6.68 The traditional concept of the "market" price becomes somewhat blurred under a system of VAT or similar deductible taxes because there may be two different prices for a single transaction: one from the seller's point of view and another from the purchaser's, depending upon whether or not the tax is deductible. It is recommended in the SNA that the term "market prices" should be avoided when referring to value added and the price basis used, (basic, producers' or purchasers'), be specified to avoid ambiguity.

3. Basic, producers' and purchasers' prices -

6.69 Figure 1 gives an overview of the essential differences between basic, producers' and purchasers' prices.





D. Value added and GDP

1. Gross and net value added

6.70 The balancing item of a current account is the excess of resources over uses. The rationale for dividing transactions into sets of accounts is that the balancing item of each account is of economic interest. The balancing item of the production account is value added, so called because it measures the value created by production. Because a production account may be compiled for an institutional unit or sector, or establishment or industry, so value added may be derived for any of these. Value added is of analytical interest because when the value of taxes on products (less subsidies on products) is added, the sum of value added for all resident units gives the value of gross domestic product (GDP).

6.71 Value added represents the contribution of labour and capital to the production process. Once the amount of value added appropriated by government in the form of other taxes on production is deducted from value added and the value of subsidies is added, the compensation of labour and capital is revealed. However, capital in the form of fixed capital has a finite life length. Some part of value added should therefore be regarded as the reduction in value of fixed capital due to its use in production. This allowance is called consumption of fixed capital.

6.72 Consumption of fixed capital is one of the most important elements in the SNA. In most cases, when a distinction is drawn between "gross" and "net" recording, "gross" means without deducting consumption of fixed capital while recording "net" means after deducting consumption of fixed capital. In particular, all the major balancing items in the accounts from value added through to saving may be recorded gross or net, that is, before or after deducting consumption of fixed capital. It should also be noted that consumption of fixed capital is typically quite large compared with most of the net balancing items. It may account for 10 per cent or more of GDP.

6.73 Consumption of fixed capital is one of the most difficult items in the accounts to define conceptually and to estimate in practice. Further, consumption of fixed capital does not represent the aggregate value of a set of transactions. It is an imputed value whose economic significance is different from entries in the accounts based mainly on market transactions. For these reasons, the major balancing items in national accounts have always tended to be recorded both gross and net of consumption of fixed capital. This tradition is continued in the SNA where provision is made for balancing items from value added through to saving to be recorded both ways. In general, the gross figure is the easier to estimate and so may be more reliable, but the net figure is usually the one that is conceptually more appropriate and relevant for analytical purposes.

6.74 As stated above:

- a. Gross value added is defined as the value of output less the value of intermediate consumption;
- b. Net value added is defined as the value of output less the values of both intermediate consumption and consumption of fixed capital.

To avoid repetition, only gross value added will be cited in the following sections when the corresponding conclusions for net value added are obvious.

2. Alternative measures of value added

6.75 In the SNA, intermediate inputs are valued and recorded at the time they enter the production process, while outputs are recorded and valued as they emerge from the process. Intermediate inputs are normally valued at purchasers' prices and outputs at basic prices, or alternatively at producers' prices if basic prices are not available. The difference between the value of the intermediate inputs and the value of the outputs is gross value added against which must be charged consumption of fixed capital, taxes on production (less subsidies) and compensation of employees. The positive or negative balance remaining is the net operating surplus or mixed income.

6.76 As indicated above, alternative measures of gross value added may be obtained by associating different sets of prices with a set of quantities of inputs and outputs. The various measures that may be derived using the different sets of prices recognized in the SNA are considered below.

Gross value added at basic prices

6.77 Gross value added at basic prices is defined as output valued at basic prices less intermediate consumption valued at purchasers' prices. Although the outputs and inputs are valued using different sets of prices, for brevity the value added is described by the prices used to value the outputs. 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 that is particularly relevant for the producer.

Gross value added at producers' prices

6.78 Gross value added at producers' prices is defined as output valued at producers' prices less intermediate consumption valued at purchasers' prices. As already explained, in the absence of VAT, the total value of the intermediate inputs consumed is the same whether they are valued at producers' or at purchasers' prices, in which case this measure of gross value added is the same as one that uses producers' prices to value both inputs and outputs. It is an economically meaningful measure that is equivalent to the traditional measure of gross value added at market prices. However, in the presence of VAT, the producer's price excludes invoiced VAT, and it would be inappropriate to describe this measure as being at "market" prices.

6.79 Both this measure of gross value added and that described in the previous section use purchasers' prices to value intermediate inputs. The difference between the two measures is entirely attributable to their differing treatments of taxes or subsidies on products payable on outputs (other than invoiced VAT). By definition, the value of output at producers' prices exceeds that at basic prices by the amount, if any, of the taxes on products, less subsidies on products so that the two associated measures of gross value added must differ by the same amount.

Gross value added at factor cost

6.80 Gross value added at factor cost is not a concept used explicitly in the SNA. Nevertheless,

it can easily be derived from either of the measures of gross value added presented above by subtracting the value of any taxes on production, less subsidies on production, payable out of gross value added as defined. For example, the only taxes on production remaining to be paid out of gross value added at basic prices consist of "other taxes on production". 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 thus be derived from gross value added at basic prices by subtracting other taxes on production, less subsidies on production.

6.81 The conceptual difficulty with gross value added at factor cost is that there is no observable set of prices such that gross value added at factor cost is obtained directly by multiplying this set of prices by the sets of quantities of outputs. By definition, other taxes or subsidies on production are not taxes or subsidies on products that can be eliminated from the input and output prices. Thus, despite its traditional name, gross value added at factor cost is not strictly a measure of value added; it is essentially a measure of income and not output. It represents the amount remaining for distribution out of gross value added, however defined, after the payment of all taxes on production and the receipt of all subsidies on production. It makes no difference which measure of gross value added is used to derive this income measure because the alternative measures of value added considered above differ only in respect of the amounts of the taxes or subsidies on production that remain payable out of gross value added.

3. Gross domestic product (GDP)

6.82 The underlying rationale behind the concept of gross domestic product (GDP) for the economy as a whole is that it should measure the total gross value added from all institutional units resident in the economy. However, while the concept of GDP is based on this principle, GDP as defined in the SNA is such that an identity exists between a measure built on value added, a measure built on income and one based on final expenditures. To achieve this, it is important that the same contribution to GDP is made by taxes on production under all three measures. The expenditure measure of GDP includes all taxes on production and taxes on imports since ultimately these are included in the purchasers' prices of the final users.

6.83 Given this definition of GDP, the following identities hold when the summations are taken over all resident producers:

a. GDP = the sum of the gross value added at producers' prices, *plus* taxes on imports, *less* subsidies on imports, *plus* non-deductible VAT.

b. GDP = the sum of the gross value added at basic prices, *plus* all taxes on products, *less* all subsidies on products.

c. GDP = the sum of the gross value added at factor cost *plus* all taxes on products, *less* all subsidies on products, *plus* all other taxes on production,

less all other subsidies on production.

In cases (b) and (c), the items taxes on products and subsidies on products includes taxes and subsidies on imports as well as on outputs.

4. Domestic production

6.84 GDP measures the production of all resident producers. This does not necessarily coincide with all production taking place within the geographical boundary of the economic territory. Some of the production of a resident producer may take place abroad, while some of the production taking place within the geographical boundary of the economy may be carried out by non-resident producer units. For example, a resident producer may have teams of employees working abroad temporarily on the installation, repair or servicing of equipment. This output is an export of a resident producer and the productive activity does not contribute to the GDP of the country in which it takes places. Thus, the distinction between resident and non-resident institutional units is crucial to the definition and coverage of GDP. In practice most of the productive activity of resident producers takes place within the country in which they are resident. However, producers in service industries that typically have to deliver their outputs directly to their clients wherever they are located are increasingly tending to engage in production in more than one country, a practice that is encouraged by rapid transportation and instantaneous communication facilities. Geographical boundaries between adjacent countries are becoming less significant for mobile service producers, especially in small countries bordered by several other countries.

E. The measurement of output

1. Production versus output

6.85 Production is an activity carried out by an establishment. It may not always be clear whether an establishment is producing a good or is providing a service. For example, an oil refinery processing crude oil that it owns is producing a good (refined petroleum); if the same refinery processes crude oil belonging to another unit, then it is providing a refinery service to that unit. This lack of clarity may often appear for goods passing between establishments of the same enterprise and it is important to know when to record the output of a good and when of a change-effecting service. When the establishments belong to different enterprises (that is to different institutional

units), the defining principle is that of economic ownership. If an establishment has no discretion about the level of production, the price to be charged for the good or the destination of the good, there is evidence that the establishment has not taken economic ownership of the goods being processed and the value of the output should be treated as the processing element only. This is the case for the refinery service cited above.

6.86 When the establishments involved belong to the same enterprise, there is no change of ownership since both establishments have the same owner. However, the principle of transferring risk, which accompanies change of ownership, can still be applied. Suppose, for example, that an establishment receives coal from another establishment in the same enterprise, uses it to generate electricity and then sells the electricity on the open market. The electricity generator has discretion about the amount of coal it demands, the amount of electricity to be generated and the prices to be charged. In such a case, the value of electricity generated should be measured including the cost of the coal consumed in the process even though there is no legal change in ownership given that both establishments belong to the same enterprise.

6.87 In general, all goods and services that are produced and used by the same establishment are excluded from the measure of output. However, there are exceptions here also. For example, output is recorded if the goods and services being produced are used for capital formation of the establishment. Similarly output is recorded for products entering inventories even if eventually they are withdrawn from inventories for use as intermediate consumption in the same establishment is a household unincorporated enterprise growing maize, the value of maize produced includes maize kept for household consumption.

6.88 An establishment may produce goods and services that are used as its own intermediate consumption. An example is unglazed china that is only delivered to other units after glazing. In general the unglazed china is not recorded as output but if there is some china remaining unglazed at the end of the production period, it should be recorded as being produced and entering inventories. In the subsequent period, the unglazed china is withdrawn from inventories and the act of glazing constitutes output in the second period.

6.89 Although production is related to activities and thus the output of one production process is one set of products, output is measured for an establishment and may include the output of several production processes. Thus *output is defined as the goods and services produced by an establishment,*

- a. excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production, and
- b. excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation (fixed capital or changes in inventories) or own final consumption.

2. Time of recording

6.90 The output of most goods or services is usually recorded when their production is completed. However, when it takes a long time to produce a unit of output, it becomes necessary to recognize that output is being produced continuously and to record it as "work-in-progress". For example, the production of certain agricultural goods or large durable goods such as ships or buildings may take months or years to complete. In such cases, it would distort economic reality to treat the output as if it were all produced at the moment of time when the process of production happens to terminate. Whenever a process of production extends over two or more accounting periods, it is necessary to calculate the work-inprogress completed within each of the periods in order to be able to measure how much output is produced in each period.

6.91 On the other hand, goods and services may be completed in an accounting period but not delivered (sold) to a user in that period. Output is recorded when the work is completed and not when sold. There is thus a significant difference between the value of output in a period and the value of sales, the difference being accounted for by changes in inventories of finished goods and work-in-progress.

3. Valuation of output

6.92 Goods and services produced for sale on the market at economically significant prices may be valued either at basic prices or at producers' prices. The preferred method of valuation is at basic prices, especially when a system of VAT, or similar deductible tax, is in operation. Producers' prices should be used only when valuation at basic prices is not feasible.

6.93 Output produced by market producers for own final use should be valued at the average basic prices of the same goods or services sold on the market, provided they are sold in sufficient quantities to enable reliable estimates to be made of those average prices. If not, the output should be valued by the total production costs incurred, including consumption of fixed capital, plus any taxes (less subsidies) on production other than taxes or subsidies on products, plus a net return on the fixed capital and natural resources used in production. The concept of the net return to capital is introduced in section H and discussed more fully in chapter 20. 6.94 The non-market output produced by government units and NPISHs that is supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole is valued by total production costs, including consumption of fixed capital, plus taxes (less subsidies) on production other than taxes or subsidies on products. By convention, no net return to capital is included for non-market production. Similarly, no net return to capital is included in the estimates of production for own final use by non-market producers when these are estimated as the sum of costs.

4. Market output, output for own final use and non-market output

6.95 A fundamental distinction is drawn in the SNA between market output and non-market output because of the way the output of each is valued. Market output is the normal situation in a market economy where producers make decisions about what to produce and how much to produce in response to expected levels of demand and expected costs of supply. The determining factor behind production decisions is that economically significant prices prevail. *Economically significant prices are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. These prices normally result when:*

- a. The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and
- b. Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged.

6.96 There is further discussion on economically significant prices in chapter 22.

6.97 Non-market output is output undertaken by general government and NPISHs that takes place in the absence of economically significant prices. A price is said to be not economically significant when it has little or no influence on how much the producer is prepared to supply and is expected to have only a marginal influence on the quantities demanded. It is a price that is not quantitatively significant from the point of view of either supply or demand. Such prices are likely to be charged in order to raise some revenue or achieve some reduction in the excess demand that may occur when services are provided completely free, but they are not intended to eliminate such excess demand. Once a decision has been taken on administrative, social or political grounds about the total amount of a particular non-market good or service to be supplied, its price is deliberately fixed below the equilibrium price that would clear the market. The difference between a price that is not economically significant and a zero price is, therefore, a matter of degree. The price merely deters those units whose demands are the least pressing without greatly reducing the total level of demand.

6.98 Non-market output may be produced for two reasons:

- a. It may be technically impossible to make individuals pay for collective services because their consumption cannot be monitored or controlled. The pricing mechanism cannot be used when transactions costs are too high and there is market failure. The production of such services has to be organized collectively by government units and financed out of funds other than receipts from sales, namely taxation or other government incomes;
- b. Government units and NPISHs may also produce and supply goods or services to individual households for which they could charge but choose not to do so as a matter of social or economic policy. The

most common examples are the provision of education or health services, free or at prices that are not economically significant, although other kinds of goods and services may also be supplied.

Market output

6.99 *Market output consists of output intended for sale at economically significant prices.* The value of market output is determined as the sum of the following items:

- a. The value of goods and services sold at economically significant prices;
- The value of goods or services bartered in exchange for other goods, services or assets;
- c. The value of goods or services used for payments in kind, including compensation in kind;
- d. The value of goods or services supplied by one establishment to another belonging to the same market enterprise to be used as intermediate inputs where the risk associated with continuing the production process is transferred along with the goods;
- e. The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;
- f. The margins charged on the supply of goods and services, transport margins, margins on the acquisition and disposal of financial assets, etc.

Recording of sales

6.100 The times at which sales are to be recorded are when the receivables and payables are created: that is, when the ownership of the goods passes from the producer to the purchaser or when the services are provided to the purchaser. Goods or services are valued at the basic prices at which they are sold. If valuation at basic prices is not feasible, they may be valued at producers' prices instead. If it is necessary to value the sale of goods at producers' prices rather than basic prices, then the implicit value of margin services should also include any applicable taxes on products. For some margin services, especially those concerning financial assets, the value of the service provided may be implicit.

6.101 The values of sales are determined by the amounts receivable and payable by the producers and purchasers, suitably adjusted for trade and transport margins. The amounts receivable and payable do not always coincide with the amounts actually received and paid. The amount payable should be shown in the production account and the difference between amounts payable and paid should be shown as accounts payable or receivable in the financial account. Subsequent payments of these amounts outstanding are recorded as financial transactions and not as part of the production account. If payments made in advance or in arrears attract interest charges, these should be shown as separate transactions and not included in the value of sales.

Recording of barter

6.102 Barter occurs when goods and services are exchanged for other goods, services or assets. The value of goods or services bartered should be recorded when the ownership of the goods is transferred or the services are provided. The output of goods bartered is valued at the basic prices that would have been received if they had been sold.

Recording of compensation in kind or other payments in kind

6.103 Goods or services provided to employees as compensation in kind, or used for other payments in kind, should be recorded when the legal ownership of the goods is transferred or the services are provided. They should be valued at the basic prices that would have been received if they had been sold.

Recording of intra-enterprise deliveries

6.104 Intra-enterprise deliveries are recorded only when the establishment receiving the goods assumes responsibility for making the decisions about the levels of supply and prices at which their output is delivered to the market. When incoming deliveries are recorded, they should be valued at the basic prices that would have been received if they had been sold.

Changes in inventories of finished goods

6.105 The basic principle underlying the measurement of changes in inventories of finished goods is that output should be recorded at the time it is produced and valued at the same price whether it is sold, otherwise used or entered into inventories for sale or use later. In effect, goods only enter inventories when they are not immediately used for sale or other use in the period they are produced. Similarly, goods are withdrawn from inventories when the demand for the goods exceeds the amount produced in a period. No output is recorded when goods produced previously are withdrawn from inventories and sold or otherwise used unless a storage activity as described below in section F takes place.

6.106 Inventories of finished goods therefore explain the difference between production and sales (or other use) in a single period. It follows that entries into inventories must be valued at the basic prices prevailing at the time of entry, while withdrawals must be valued at the prices at which they are then sold. This method of valuing changes in inventories, which may be described as the "perpetual inventory method" or PIM, is not always easy to implement in practice, however, and it sometimes leads to results that may be counter intuitive. 6.107 When prices are stable, the measurement of changes in inventories is relatively simple. However, when there is inflation (or deflation), significant price increases (decreases) may occur while goods are held in inventories. Holding gains (losses) accruing on goods held in inventories after they have been produced must not be included in the value of output. It follows from the valuation method used that, when prices are changing, goods entering and leaving inventories at different times are valued at different prices, even within the same accounting period (as also are goods sold at different times). This requires that, in principle, all entries to, and withdrawals from, inventories be recorded continuously as they occur, and helps explain the complexity of the perpetual inventory method. The perpetual inventory method ensures their exclusion by valuing goods withdrawn from inventories at the prices prevailing at the time they are withdrawn and not at the prices at which they are entered, or their "historic costs". This method of valuation can lead to much lower figures for both output and profits in times of inflation than those obtained by business accounting methods based on historic costs. Further discussion on the valuation of inventories appears in chapter 10.

6.108 It follows from the general principles outlined in the previous section that:

- a. Goods entering inventories are valued at the basic prices prevailing at that time: that is, at the prices at which they could have been sold when first produced;
- b. Goods withdrawn from inventories are valued at the basic prices prevailing at that time: that is, at the prices at which they can then be sold.

6.109 Goods held in inventories are subject to deterioration through the passage of time and are at risk from theft or accidental damage. Recurrent losses due to normal rates of wastage, theft and accidental damage are treated in the same way as withdrawals from inventories and thus reduce the

value of output. This practice is followed even if the losses are high relative to output as long as they are recurrent. The total value of the changes in inventories of finished goods recorded within a specified accounting period is then given by:

the sum of the values of all goods entering inventories

less the sum of the values of all goods withdrawn from inventories

less the value of any recurrent losses of goods held in inventories.

Changes in inventories of work-in-progress

6.110 When the process of production takes a long time to complete, output must be recognized as being produced continuously as work-inprogress. As the process of production continues, intermediate inputs are continually being consumed so that it is necessary to record some corresponding output. Otherwise, recording the inputs and outputs as if they took place at different times, or even in different accounting periods would give meaningless figures for value added. Work-in-progress is essentially incomplete output that is not yet marketable: that is, output that is not sufficiently processed to be in a state in which it can easily be supplied or sold to other institutional units. It is essential to record such output whenever the process of production is not completed within a single accounting period so that work-in-progress is carried forward from one period to the next. In this case, the current value of the work-in-progress completed up to the end of one period is recorded in the closing balance sheet, which also serves as the opening balance sheet for the next period.

6.111 Work-in-progress may need to be recorded in any industry, including service industries such as the production of movies, depending upon the length of time it takes to produce a unit of output. It is particularly important in industries with long gestation periods, such as certain types of agricultural production or durable producers' goods production, where the period of production may extend over several years.

6.112 Work-in-progress is treated in the SNA as one component of inventories of outputs held by producers. However, the borderline between inventories of partially completed buildings and structures and gross fixed capital formation may not always be clear. Gross fixed capital formation is undertaken by users of fixed assets so gross fixed capital formation cannot be recorded until the legal ownership of the assets is transferred from their producers to their users. This transfer does not usually occur until the process of production is completed. However, when a contract of sale has been concluded in advance, the transfer of legal ownership may be deemed to occur in stages as value is put in place. In such cases, stage payments made by the purchaser can often be used to approximate the value of the gross fixed capital formation although stage payments may sometimes be made in advance or in arrears of the completion of the stage, in which case short-term credits are also extended from the purchaser to the producer, or vice versa. In the absence of a contract of sale, the output produced must be treated as additions to the producer's inventories, that is, as work-in-progress, however large the partially completed structure may be. When the production process is terminated, the whole of the work-in-progress accumulated up to that point is effectively transformed into inventories of finished product ready for delivery or sale. When a sale takes place, the value of the sale must be cancelled by a withdrawal from inventories of equal value so that only the additions to workin-progress recorded while production was taking place in the period in question remain as measures of output. In this way, the output is distributed over the entire period of production.

6.113 Additions to, and withdrawals from, work-in-progress are treated in the accounts in the same way as entries to, and withdrawals from, inventories of finished goods. They must be recorded at the times they take place and at the basic prices prevailing at those times. However, further explanation is needed of the valuation in view of the special characteristics of work-inprogress. This explanation appears in chapter 20.

Output for own final use

6.114 Output for own final use consists of products retained by the producer for his own use as final consumption or capital formation. The value of output for own final use is determined as the sum of the following:

- a. The value of goods produced by an unincorporated enterprise and consumed by the same household;
- b. The value of services provided to households by paid domestic staff;
- c. The value of the imputed services of owner-occupied dwellings;
- d. The value of the fixed assets produced by an establishment that are retained within the same enterprise for use in future production (own-account gross fixed capital formation);
- e. The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;
- f. In exceptional cases, as described later in this section, there may be output for own intermediate use.

Goods produced by households

6.115 All goods produced by households are within the production boundary and those that are not delivered to other units should be treated as either being consumed immediately or stored in inventories for later use.

Services of domestic staff

6.116 Paid domestic staff (child minders, cooks, gardeners, chauffeurs, etc.) are formally treated as employees of an unincorporated enterprise that is owned by the household. The services produced are consumed by the same unit that produces them and they constitute a form of own-account production. By convention, any intermediate costs in the production of the domestic services are treated not as intermediate consumption of the output of the domestic services but as final consumption expenditure of the household. Thus the value of the output produced is deemed to be equal to the compensation of employees paid, including any compensation in kind such as food or accommodation.

Services of owner-occupied dwellings

6.117 Households that own the dwellings they occupy are formally treated as owners of unincorporated enterprises that produce housing services consumed by those same households. When well-organized markets for rented housing exist, the output of own-account housing services can be valued using the prices of the same kinds of services sold on the market in line with the general valuation rules adopted for goods or services produced on own account. In other words, the output of the housing services produced by owner occupiers is valued at the estimated rental that a tenant would pay for the same accommodation, taking into account factors such as location. neighbourhood amenities, etc. as well as the size and quality of the dwelling itself. The same figure is recorded under household final consumption expenditures. In many instances, no wellorganized markets exist and other means of estimating the value of housing services must be developed.

Own gross fixed capital formation

6.118 Goods or services used for own gross fixed

capital formation can be produced by any kind of enterprise, whether corporate or unincorporated. They include, for example, the special machine tools produced for their own use by engineering enterprises, or dwellings, or extensions to dwellings, produced by households. A wide range of construction activities may be undertaken for the purpose of own gross fixed capital formation in rural areas in some countries, including communal construction activities undertaken by groups of households. In addition, intellectual property products such as R&D and software products may be produced on own account.

Changes in inventories

6.119 Additions to work-in-progress on structures intended for own use are treated as acquisitions of fixed assets by their producers. Goods or services produced for own final use may be placed in inventories of finished products for use later. They are valued at the basic prices of similar products sold on the market at the time they enter inventories or by their costs of production if no suitable basic prices are available.

Own intermediate consumption

6.120 It is unusual to record goods and services used as intermediate consumption within the same establishment but there are occasions where it may be desirable. If such recording is made, the goods and services in question add to both intermediate consumption and output so value added is unaffected by this practice.

6.121 If an activity such as delivery services is of particular interest and there is a diversity of practice about whether it is treated as secondary output (that is, is charged for) or as being for own use (not charged for) then it may be desirable to show all delivery services as if they were secondary products with the output shown as own intermediate consumption where appropriate. 6.122 As explained in paragraph 6.104 if a product is delivered by one establishment to another within the same enterprise, the delivery is recorded as output of the first establishment and intermediate consumption of the second only when the second establishment assumes the responsibility for making the decisions about the level of supply and prices at which the output is delivered to the market. When this is not the case, the output of the first establishment is shown as entering inventories while the second establishment delivers a processing service and charges for it. If a production account is being compiled for the enterprise, in the first case it may be preferable to show the product as both output and intermediate consumption of the enterprise rather than to consolidate it out. In the second case, the output of the enterprise will be the value of the product as produced by the first establishment plus the processing fee for the second.

6.123 In some cases, part of the current output may be placed in inventories for use as intermediate consumption in future. An example is agriculture where some of the current crop may be used for seed in future.

Valuation of output for own final use

6.124 Output for own final use should be valued at the basic prices at which the goods and services could be sold if offered for sale on the market. In order to value them in this way, goods or services of the same kind must actually be bought and sold in sufficient quantities on the market to enable reliable market prices to be calculated for use for valuation purposes. The expression "on the market" means the price that would prevail between a willing buyer and willing seller at the time and place that the goods and services are produced. In the case of agricultural produce, for example, this does not necessarily equate to the prices in the local market where transportation costs and possibly wholesale margins may be included. The nearest equivalent price is likely to

be the so-called "farm-gate" price; that is, the price that the grower could receive by selling the produce to a purchaser who comes to the farm to collect the produce.

6.125 When reliable market prices cannot be obtained, a second best procedure must be used in which the value of the output of the goods or services produced for own final use is deemed to be equal to the sum of their costs of production: that is, as the sum of:

- a. Intermediate consumption;
- b. Compensation of employees;
- c. Consumption of fixed capital;
- d. A net return to fixed capital;
- e. Other taxes (less subsidies) on production.

By convention, no net return to capital is included when own-account production is undertaken by non-market producers.

6.126 For unincorporated enterprises, it may not be possible to estimate compensation of employees, consumption of fixed capital and a return to capital separately in which case an estimate of mixed income, covering all these items, should be made.

6.127 It will usually be necessary to value the output of own-account construction on the basis of costs as it is likely to be difficult to make a direct valuation of an individual and specific construction project that is not offered for sale. When the construction is undertaken for itself by an enterprise, the requisite information on costs may be easily ascertained, but not in the case of the construction of dwellings by households or communal construction for the benefit of the community undertaken by informal associations or groups of households. Most of the inputs into communal construction projects, including labour inputs, are likely to be provided free so that even the valuation of the inputs may pose problems. As unpaid labour may account for a large part of the inputs, it is important to make some estimate of its value using wage rates paid for similar kinds of work on local labour markets. While it may be difficult to find an appropriate rate, it is likely to be less difficult than trying to make a direct valuation of a specific construction project itself. The fact that an imputation is made for the value of labour input is a means to approximate the market price for the construction. It does not imply that these labour costs should also be treated as compensation of employees. As explained in chapter 7, when labour is provided on a voluntary basis to a producer unit other than the labourer's own household, no imputation for compensation of employees is made. If labour is provided for a nominal payment, only the nominal payment is recorded as compensation of employees. The other labour costs are treated as mixed income.

Non-market output

6.128 Non-market output consists of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that are supplied free, or at prices that are not economically significant, to other institutional units or the commu*nity as a whole.* Although this output is shown as being acquired by government and NPISHs in the use of income account, it should not be confused with production for own use. The expenditure is made by government and by NPISHs but the use of individual goods and services is by households, and the use of collective services by households or other resident institutional units. Thus nonmarket output should never be confused with output for own use where the producer unit not only has imputed expenditure on the output but also actually uses the output. Chapter 9 discusses the difference between expenditure and use in more detail.

6.129 As explained above, government units or NPISHs may engage in non-market production because of market failure or as a matter of deliberate economic or social policy. Such output is recorded at the time it is produced, which is also the time of delivery in the case of non-market services. In general, however, it cannot be valued in the same way as goods or services produced for own final consumption or own capital formation that are also produced in large quantities for sale on the market. There are no markets for collective services such as public administration and defence, but even in the case of non-market education, health or other services provided to individual households, suitable prices may not be available. It is not uncommon for similar kinds of services to be produced on a market basis and sold alongside the non-market services but there are usually important differences between the types and quality of services provided. In most cases it is not possible to find enough market services that are sufficiently similar to the corresponding non-market services to enable their prices to be used to value the latter, especially when the non-market services are produced in very large quantities.

6.130 The value of the non-market output provided without charge to households is estimated as the sum of costs of production, as follows:

- a. Intermediate consumption;
- b. Compensation of employees;
- c. Consumption of fixed capital;
- d. Other taxes (less subsidies) on production.

6.131 If the output is made available at nominal cost, the prices are not economically significant prices and may reflect neither relative production costs nor relative consumer preferences. They therefore do not provide a suitable basis for valuing the outputs of the goods or services concerned. The non-market output of goods or services sold at these prices is valued in the same way as goods or services provided free, that is, by their costs of production. Part of this output is

purchased by households, the remainder constituting final consumption expenditures by government units or NPISHs.

6.132 Government units and NPISHs may be engaged in both market and non-market production. Whenever possible, separate establishments should be distinguished for these two types of activities, but this may not always be feasible. Thus, a non-market establishment may have some receipts from sales of market output produced by a secondary activity: for example, sales of reproductions by a non-market museum. However, even though a non-market establishment may have sales receipts, its total output covering both its market and its non-market output is still valued by the production costs. The value of its market output is given by its receipts from sales of market products, the value of its non-market output being obtained residually as the difference between the values of its total output and its market output. The value of receipts from the sale of non-market goods or services at prices that are not economically significant remains as part of the value of its non-market output.

Market and non-market producers

6.133 Market producers are establishments, all or most of whose output is market production. Non-market producers consist of establishments owned by government units or NPISHs that supply goods or services free, or at prices that are not economically significant, to households or the community as a whole. These producers may also have some sales of secondary market output whose prices are intended to cover their costs or earn a surplus: for example, sales of reproductions by non-market museums. Though government and NPISHs may have establishments undertaking market production, including own account capital construction, most of their activity will be undertaken on a non-market basis. 6.134 When production for own final use is undertaken by a unit in the general government or NPISHs sector it is treated as being undertaken by a non-market producer. It may also be undertaken by market producers or by units outside general government and NPISHs who produce only for own final use.

F. The output of particular industries

1. Introduction

6.135 The rules governing the recording and valuation of output are not sufficient to determine the way in which the output of certain kinds of industries, mostly service industries, such as wholesale and retail trade and financial institutions, is measured. The following sections provide further information about the measurement of the output of a number of specific industries. For convenience, the industries concerned are given in the same order as they appear in the *ISIC*.

2. Agriculture, forestry and fishing

6.136 The growth and regeneration of crops, trees, livestock or fish which are controlled by, managed by and under the responsibility of institutional units constitute a process of production in an economic sense. Growth is not to be construed as a purely natural process that lies outside the production boundary. Many processes of production exploit natural forces for economic purposes, for example, hydroelectric plants exploit rivers and gravity to produce electricity.

6.137 The measurement of the output of agriculture, forestry and fishing is complicated by the fact that the process of production may extend over many months, or even years. Many agricultural crops are annual with most costs incurred at the beginning of the season when the crop is sown and again at the end when it is harvested. However, immature crops have a value depending on their closeness to harvest. The value of the crop has to be spread over the year and treated as work-in-progress. Often the final value of the crop will differ from the estimate made of it and imputed to the growing crop before harvest. In such cases revisions to the early estimates will have to be made to reflect the actual outcome. When the crop is harvested, the cumulated value of work-in-progress is converted to inventories of finished goods that is then run down as it is used by the producer, sold or is lost to vermin.

6.138 Some plants and many animals take some years to reach maturity. In this case, the increase in their value is shown as output and treated as increases in fixed capital or inventories depending on whether the plant or animal yields repeat products or not. (There is more discussion of this distinction in chapter 10.) The value of the increase in the plants or animals should take account of the delay before the yield from them is realized as explained in chapter 20. Once the plant or animal has reached maturity, it will decline in value and this decline should be recorded as consumption of fixed capital.

3. Machinery, equipment and construction

6.139 The production of high value capital goods such as ships, heavy machinery, buildings and other structures may take several months or years to complete. The output from such production must usually be measured by work-in-progress and cannot be recorded simply at the moment in time when the process of production is completed. The way in which work-in-progress is to be recorded and valued is explained in chapter 20.

6.140 When a contract of sale is agreed in advance for the construction of buildings and structures, but not for other production spreading over several periods, the output produced each period is treated as being sold to the purchaser at the end of each period, that is, as a sale rather than work-in-progress. In effect, the output produced by the construction contractor is treated as being

sold to the purchaser in stages as the latter takes legal possession of the output. It is recorded as gross fixed capital formation by the purchaser and not as work-in-progress by the producer. When the contract calls for stage payments, the value of the output may often be approximated by the value of stage payments made each period. In the absence of a contract of sale, however, the incomplete output produced each period must be recorded as work-in-progress of the producer. Dwellings built speculatively (that is, without a prior contract of sale) remain in the inventories of the construction company until sold, changing status within inventories from work-in-progress to finished products if they remain unsold on completion.

4. Transportation and storage

Transportation

6.141 The output of transportation is measured by the value of the amounts receivable for transporting goods or persons. In economics a good in one location is recognized as being a different quality from the same good in another location, so that transporting from one location to another is a process of production in which an economically significant change takes place even if the good remains otherwise unchanged. The volume of transport services may be measured by as tonne-kilometres indicators such or passenger-kilometres, which combine both the quantities of goods, or numbers of persons, and the distances over which they are transported. Factors such as speed, frequency or comfort also affect the quality of services provided.

Storage

6.142 Although the production of storage for the market may not be very extensive, the activity of storage is important in the economy as a whole as it is carried out in many enterprises. During storage the inventories of goods have to be

physically stored somewhere. Many goods have to be stored in a properly controlled environment and the activity of storage can become an important process of production in its own right whereby goods are "transported" from one point of time to another. In economics, it is generally recognized that the same goods available at different times, or locations, may be qualitatively different from each other and command different prices for this reason. The increase in price of a product due to the fact that it has been in storage and storage costs have been incurred is a production process. However, it is important that the increase in price due to storage is clearly distinguished from holding gains and losses, which must be excluded from the value of production in the case of storage as in other activities.

6.143 When goods are first produced, they may be held in store for a time in the expectation that they may be sold, exchanged or used more advantageously in the future. If the increase in value simply reflects a rise in price with no change in quality resulting from being held in storage, then there is no further production during the period in addition to the costs of storage just described. However, there are three reasons why the increase in value can be construed as further production. The first is that the production process is sufficiently long that discounting factors should be applied to work put in place significantly long before delivery. The second reason is that the quality of the good may improve with the passage of time (such as wine). The third reason is that there may be seasonal factors affecting the supply or the demand for the good that lead to regular, predictable variations in its price over the year, even though its physical qualities may not have changed otherwise. In all these circumstances, storage can be regarded as an extension of the production process over time. The storage services become incorporated in the goods, thereby increasing their value while being held in store. Thus, in principle, the values of additions to inventories should include not only

the values of the goods at the time they are stored but also the value of the additional output produced while the goods are held in store.

6.144 However, most manufactured goods are produced and sold continuously throughout the year and are not subject to regular changes in supply or demand conditions. Nor do they "mature" while being stored. Changes in the prices of such goods while in inventories cannot be treated as additions to work-in-progress. In order to estimate the increase in the value of goods stored over and above the storage costs, use may be made of the expected increase in value over and above the general rate of inflation over a predetermined period. Any gain that occurs outside the predetermined period continues to be recorded as a holding gain or loss. Further explanation of the calculation of the value of storage and its separation from holding gains and losses is given in the annex to this chapter.

6.145 This inclusion of output due to storage applies only to goods that take a long time to complete, those that have an established annual seasonal pattern or those where maturing is part of the regular production process. It does not apply to holding financial assets, valuables or other non-financial assets including land and buildings. Even if anticipated increases in value result in these cases, the motive for holding the items is speculation. The increases in value are treated as holding gains and not as part of the production process.

5. Wholesale and retail distribution

6.146 Although wholesalers and retailers actually buy and sell goods, the goods purchased are not treated as part of their intermediate consumption when they are resold with only minimal processing such as grading, cleaning, packaging, etc. Wholesalers and retailers are treated as supplying services to their customers by storing and displaying a selection of goods in convenient locations and making them easily available for customers to buy. Their output is measured by the total value of the trade margins realized on the goods they purchase for resale. A trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of. The margins realized on some goods may be negative if their prices have to be marked down. They must also be negative on goods that are never sold because they go to waste or are stolen.

6.147 The standard formula for measuring output has to be modified for wholesalers or retailers by deducting from the value of the goods sold or otherwise used the value of the goods that would need to be purchased to replace them. The latter includes the additional goods needed to make good recurrent losses due to normal wastage, theft or accidental damage. In practice, the output of a wholesaler or retailer is given by the following identity:

the value of output = the value of sales,

plus the value of goods purchased for resale and used for intermediate consumption, compensation of employees, etc.,

minus the value of goods purchased for resale,

plus the value of additions to inventories of goods for resale,

minus the value of goods withdrawn from inventories of goods for resale,

minus the value of recurrent losses due to normal rates of wastage, theft or accidental damage.

6.148 The following points should be noted:

a. Goods sold are valued at the prices at which they are actually sold, even if the trader has to mark their prices down to get rid of surpluses or avoid wastage. Allowance should also be made for the effect of reductions in price due to loyalty programmes or other schemes to offer reduced prices to certain customers in certain circumstances.

- b. Goods provided to employees as remuneration in kind should be valued at the current purchasers' prices payable by the traders to replace them; that is, the realized margins are zero. Similarly, goods withdrawn by the owners of unincorporated enterprises for their own final consumption should be valued at the current purchasers' prices payable by the traders to replace them.
- c. Goods purchased for resale should be valued excluding any transport charges invoiced separately by the suppliers or paid to third parties by wholesalers or retailers: these transport services form part of the intermediate consumption of the wholesalers or retailers.
- d. Additions to inventories of goods for resale should be valued at the prices prevailing at the time of entry into inventories.
- e. The value of goods withdrawn from inventories of goods for resale depends on whether the goods were acquired with the intention of making a real holding gain over a given period in storage. In the general case, when the goods being resold were not expected to realize a real holding gain while in storage, the value of the goods on withdrawal from inventories should be the cost to the wholesaler or retailer at the time of the withdrawal of acquiring exactly similar replacement goods for later sale. This valuation is necessary to exclude holding gains and losses from the measurement of output, as is the general rule in the SNA. However, when the goods have been stored for reasons of seasonal variation in prices or as part of the maturing process, the expected real holding gain over the anticipated period is deducted from the replacement value of goods

withdrawn from inventories. This deduction is fixed in value at the time the goods enter storage and is not altered in the light of actual holding gains, real or nominal.

f. The value of recurrent losses due to wastage, theft or accidental damage; goods lost are valued in the same way as goods withdrawn from inventories. For this reason, the two terms are often combined.

6.149 The costs of storage incurred by wholesalers and retailers are not added to the value of the goods when they are withdrawn from inventories but are treated as part of intermediate consumption.

6.150 The margins realized on goods purchased for resale thus vary according to their eventual use. The margins realized on goods sold at the full prices intended by the traders could be described as the normal margins. In fixing these margins, traders take account not only of their ordinary costs such as intermediate consumption and compensation of employees but also of the fact that some goods may ultimately have to be sold off at reduced prices while others may go to waste or be stolen. The margins realized on goods whose prices have to be marked down are obviously less than the normal margins and could be negative. The margins on goods used to pay employees as compensation in kind or withdrawn for final consumption by owners are zero because of the way these goods are valued. Finally, the margins on goods wasted or stolen are negative and equal to the current purchasers' prices of replacements for them. The average margin realized on goods purchased for resale may be expected to be less than the normal margin, possibly significantly less for certain types of goods such as fashion goods or perishable goods.

6. Output of the central bank

6.151 Before discussing financial services more generally, it is helpful to discuss the output of the

central bank. There are three broad groups of central bank services. These are monetary policy services, financial intermediation and borderline cases. Monetary policy services are collective in nature, serving the community as a whole, and thus represent non-market output. Financial intermediation services are individual in nature and in the absence of policy intervention in the interest rates charged by the central banks, would be treated as market production. The borderline cases, such as supervisory services may be classified as market or non-market services depending on whether explicit fees are charged that are sufficient to cover the costs of providing the services.

6.152 In principle, a distinction should be made between market and non-market output but in practice the possible resource intensiveness of the exercise and the relative importance of making the distinction should be considered before implementing the conceptual recommendations. In cases where market output is not separated from non-market output, the whole of the output of the central bank should be treated as nonmarket and valued at the sum of costs.

Borderline cases such as supervisory services

6.153 Central banks frequently provide supervisory services overseeing the financial corporations. One could argue that this is for the benefit of society in general and the national accounts should record them as government final consumption. In support of this view, one could draw a parallel with government performing market regulation policies, which it also may entrust to a specialized agency, or to government providing for roads, dams and bridges. From this point of view, surveillance services are collective services and should be recorded as government consumption expenditure. 6.154 However, one could also argue that government's regulatory services are to the benefit of the financial intermediaries, because these services contribute to the functioning and financial performance of these institutions. From this perspective, they are comparable to regulatory services of government such as quality control on food and drugs, which the national accounts record as intermediate consumption of producers. The fact that financial intermediaries pay a fee for these services in some countries (for example in a number of countries in Latin America) supports this view. Following this reasoning, surveillance services are not collective services but should be recorded as intermediate consumption of financial intermediaries. However, even if the view is taken that supervisory services are market output because a fee is charged, if the fees are not sufficient to cover the supervisory costs incurred by the bank, then the services should be treated as non-market output and part of government consumption expenditure.

Provision of non-market output

6.155 As long as it can be identified as a separate institutional unit, the central bank is always included in the financial institutions sector and never in general government. The collective consumption represented by monetary policy services is recorded as expenditure by general government but government does not incur the costs incurred by the central bank. Therefore a current transfer of the value of the non-market output should be recorded as payable by the central bank and receivable by the general government to cover the purchase of the non-market output of the central bank by government. This is described in paragraph 8.130.

Provision of market output

6.156 If the financial intermediation services provided by the central bank are significant, and

if it is possible and worthwhile to compile data for a separate establishment providing them, these services should be shown as payable by the units to whom they are delivered. Supervisory services treated as market output are recorded similarly.

7. Financial services other than those associated with insurance and pension funds

6.157 A comprehensive discussion of the contribution of financial assets and liabilities to the generation and distribution of income and changes in wealth in an accounting period is given in part 4 of chapter 17. What follows is a summary of the main aspects affecting the measurement of the output of financial services. There are three types of financial activities; financial intermediation, the services of financial auxiliaries and other financial services. Financial services include monitoring services, convenience services, liquidity provision, risk assumption, underwriting and trading services.

6.158 Financial intermediation involves financial risk management and liquidity transformation, activities in which an institutional unit incurs financial liabilities for the purpose of acquiring mainly financial assets. Corporations engaged in these activities obtain funds, not only by taking deposits but also by issuing bills, bonds or other securities. They use these funds as well as own funds to acquire mainly financial assets not only by making advances or loans to others but also by purchasing bills, bonds or other securities. Auxiliary financial activities facilitate risk management and liquidity transformation activities. Financial auxiliaries, which are the units primarily engaged in auxiliary financial activities, typically act on behalf of other units and do not put themselves at risk by incurring financial liabilities or by acquiring financial assets as part of an intermediation service.

6.159 Financial services are produced almost exclusively by financial institutions because of the usually stringent supervision of the provision of those services. Similarly, financial institutions rarely produce other services. If a retailer wishes to offer credit facilities to its customers, for example, the credit facilities are usually offered by a subsidiary of the retailer, the subsidiary being treated as a financial institution in its own right regardless of the classification of the parent. Financial institutions may also create subsidiaries dealing with only particular forms of financial services. For example, a credit card operation may be associated with a given bank but may be institutionally separate.

6.160 Financial services may be paid for explicitly or implicitly. Some transactions in financial assets may involve both explicit and implicit charges. Four main ways in which financial services are provided and charged for may be considered:

- a. Financial services provided in return for explicit charges;
- b. Financial services provided in association with interest charges on loans and deposits;
- c. Financial services associated with the acquisition and disposal of financial assets and liabilities in financial markets;
- d. Financial services associated with insurance and pension schemes.

The following sections look at each of these in turn. In chapter 17 there is an overview of the transactions and other flows associated with each type of financial instrument. The recording of investment income is described in chapter 7 and the acquisition and disposal of financial assets and liabilities in chapter 11. Changes in the value of financial assets and liabilities not arising from transactions are described in chapter 12.

Financial services provided in return for explicit charges

6.161 Many services come under this heading

and may be provided by different categories of financial institutions. Deposit taking institutions, such as banks, may charge households to arrange a mortgage, manage an investment portfolio, give taxation advice, administer an estate, and so on. Specialized financial institutions may charge non-financial corporations to arrange a flotation of shares or to administer a restructuring of a group of corporations. However, the most pervasive and probably largest direct fee is likely to be that charged by credit card issuers to the units that accept credit cards as a means of payment for the goods and services they provide. The charge is usually calculated as a percentage of the sale; in the case of retailers the sale value corresponds to turnover and not output. Although the percentage is usually small in absolute terms, maybe one or two percent, the fact that it is applied to such large totals means that the total value of the charge is very large. The charge represents output of the credit card companies and intermediate consumption of the corporations that accept credit cards as means of payment. Ignoring the role of the credit card company does not affect the measurement of the expenditure (usually final consumption or exports) on the goods and services concerned but does underestimate the costs of the provider of goods and services and the output of the credit card company. This in turn leads to a misallocation of value added from the credit card company to the provider of the goods and services paid for by credit card.

6.162 The example of the credit card company is one that clearly demonstrates that a financial corporation may provide services that are paid for by different means by different customers or in different circumstances. The fee charged to the corporations accepting a credit card as means of payment has just been discussed. A card holder may also be charged an explicit fee, usually each year, for holding the card. In addition, if a card holder uses the credit facilities offered by the card, he will pay indirect charges associated with interest payable on the outstanding credit (which is treated as a loan in the SNA).

Financial services provided in association with interest charges on loans and deposits

6.163 One traditional way in which financial services are provided is by means of financial intermediation. This is understood to refer to the process whereby a financial institution such as a bank accepts deposits from units wishing to receive interest on funds for which the unit has no immediate use and lends them to other units whose funds are insufficient to meet their needs. The bank thus provides a mechanism to allow the first unit to lend to the second. Each of the two parties pays a fee to the bank for the service provided, the unit lending funds by accepting a rate of interest lower than that paid by the borrower, the difference being the combined fees implicitly charged by the bank to the depositor and to the borrower. From this basic idea the concept emerges of a "reference" rate of interest. The difference between the rate paid to banks by borrowers and the reference rate plus the difference between the reference rate and the rate actually paid to depositors represent charges for financial intermediation services indirectly measured (FISIM).

6.164 However, it is seldom the case that the amount of funds lent by a financial institution exactly matches the amount deposited with them. Some money may have been deposited but not yet loaned; some loans may be financed by the bank's own funds and not from borrowed funds. However, the depositor of funds receives the same amount of interest and service whether or not his funds are then lent by the bank to another customer, and the borrower pays the same rate of interest and receives the same service whether his funds are provided by intermediated funds or the bank's own funds. For this reason an indirect service charge is to be imputed in respect of all

loans and deposits offered by a financial institution irrespective of the source of the funds. The reference rate applies to both interest paid on loans and interest paid on deposits so that the amounts of interest recorded as such in the SNA are calculated as the reference rate times the level of loan or deposit in question. The difference between these amounts and the amounts actually paid to the financial institution are recorded as service charges paid by the borrower or depositor to the financial institution. For clarity the amounts based on the reference rate recorded in the SNA as interest are described as "SNA interest" and the total amounts actually paid to or by the financial institution are described as "bank interest". The implicit service charge is thus the sum of the bank interest on loans less the SNA interest on the same loans plus the SNA interest on deposits less the bank interest on the same deposits. The service charge is payable by or to the unit in receipt of the loan or owning the deposit as appropriate.

6.165 By convention within the SNA, these indirect charges in respect of interest apply only to loans and deposits and only when those loans and deposits are provided by, or deposited with, financial institutions. The financial institutions in question need not be resident; nor need the clients of the financial institution be resident. Thus imports and exports of this type of financial service are possible. Nor need the financial institution necessarily offer deposit-taking facilities as well as making loans. The financial subsidiaries of retailers are examples of financial institutions that make loans without accepting deposits. A money lender who has sufficiently detailed accounts to be treated as an actual or quasi-corporation may receive this sort of charge; indeed since money lenders usually charge especially high rates of interest, their service charges may exceed the SNA interest payments by significant amounts.

6.166 The reference rate to be used in the calculation of SNA interest is a rate between bank interest rates on deposits and loans. However, because there is no necessary equality between the level of loans and deposits, it cannot be calculated as a simple average of the rates on loans or deposits. The reference rate should contain no service element and reflect the risk and maturity structure of deposits and loans. The rate prevailing for inter-bank borrowing and lending may be a suitable choice as a reference rate. However, different reference rates may be needed for each currency in which loans and deposits are denominated, especially when a non-resident financial institution is involved. For banks within the same economy, there is often little if any service provided in association with banks lending to and borrowing from other banks.

6.167 Banks may offer loans that they describe as being fixed interest loans. This is to be interpreted as a situation where the level of bank interest is fixed but as the reference rate changes, the level of SNA interest and the service charge will vary.

6.168 When an enterprise acquires a fixed asset under the terms of a financial lease, a loan is imputed between the lessor and the lessee. Regular payments under the lease are treated as being payments of interest and repayment of capital. When the lessor is a financial institution, the interest payable under the terms of a financial lease corresponds to bank interest and should be separated into SNA interest and financial service charge as for any other loan.

6.169 Even when a loan is described as nonperforming, interest and the associated service charge continue to be recorded in the SNA. There is discussion on the treatment of non-performing loans in chapter 13.

Financial services associated with the acquisition and disposal of financial assets and liabilities in financial markets

6.170 Debt securities such as bills and bonds are other forms of financial assets that give rise to interest payments, interest being payable to the owner of the security by the issuer. As described in chapter 17, some of these interest charges may themselves be imputed from changes in the value of securities as they approach maturity. When a financial institution offers a security for sale, a service charge is levied, the purchase price (or ask price) representing the estimated market value of the security plus a margin. Another charge is levied when a security is sold, the price offered to the seller (the bid price) representing the market value less a margin.

6.171 Prices of securities may change rapidly and to avoid including holding gains and losses in the calculation of the service margins, it is important to calculate the margins on sales and purchases in terms of mid-prices. The mid-price of a security is the average at a given point in time between the bid and ask price. Thus the margin on the purchase of a security is the difference between the ask price and mid-price at the time of the purchase and the margin on a sale is the difference between the mid-price and the bid price at the time of the sale.

6.172 It is important when measuring interest as the increase in value of a security between the date it is purchased and the date it matures (or is subsequently sold) to measure from one midpoint value to another and to treat the differences between mid-point price and bid or ask price at the time of purchase, sale or redemption as a service margin. Ignoring the margins understates the value of output of financial institutions and may understate interest payments also. 6.173 Equities and investment fund shares or units give rise to property income other than interest but, like debt securities, they are offered for sale and purchase at different prices. The difference between the buying price and midprice and the mid-price and selling price should be treated as the provision of financial services as in the case of securities. The same principles as for securities apply for the same reason.

6.174 Although no property income flows are involved, margins between buying and selling prices also apply to purchases of foreign currencies (including transactions denominated in foreign currencies such as payments for imports and exports as well as the acquisition of physical notes and coins of a foreign currency). Again these margins should be treated as the provision of financial services in a manner similar to that described for securities.

8. Financial services associated with insurance and pension schemes.

6.175 Five types of activities are covered under this heading:

Non-life insurance;

Life insurance and annuities;

Reinsurance; Social insurance schemes;

Standardized guarantee schemes.

6.176 All these schemes lead to redistribution of funds, which are recorded in either the secondary distribution of income account or the financial account. For non-life insurance and standardized guarantee schemes, most of the redistribution takes place between different units in the same period. Many client units pay relatively small policy premiums or fees and a small number of them receive relatively large claims or payments. For life insurance, annuities and pension schemes, the redistribution is primarily, though not entirely, between different periods for a single

client. In fulfilling their responsibilities as managers of these funds, insurance companies and pension funds are involved in both risk management and liquidity transformation, the prime functions of financial institutions.

6.177 Non-life insurance provides cover to the policyholder against loss or damage suffered as a result of an accident. A premium is paid to the insurance corporation and a claim is paid to the policyholder only if the event insured against occurs. If the event occurs then the maximum amount to be paid is specified in the policy so that the uncertainty concerns whether a payment will take place, not the amount of it.

6.178 Under a life insurance policy, many small payments are made over a period of time and either a single lump sum or a stream of payments is made at some pre-agreed time in the future. There is little conditionality involved in life insurance, usually the fact that a payment will be made is certain but the amount may be uncertain.

6.179 Annuities are offered by insurance corporations and are a means for an individual person to convert a lump sum into a stream of payments in the future.

6.180 Just as an individual may limit their exposure to risk by taking out an insurance policy, so may insurance corporations themselves. Insurance between one insurance corporation and another is called reinsurance. (Insurance other than reinsurance is called direct insurance.) Many reinsurance transactions are with specialized institutions in a few international financial centres. Reinsurers may also take out a further reinsurance policy. This practice is known as "retrocession".

6.181 A social insurance scheme is one where a third party, usually an employer or the government, encourages or obliges individuals to participate in a scheme to provide benefits for a

number of identified circumstances, including The production account pensions in retirement. Social insurance schemes have much in common with direct insurance and may be run by insurance corporations. This is not necessarily the case, however, and there are special variations in how the payment of contributions (corresponding to premiums in the case of direct insurance) and benefits are recorded.

6.182 In some circumstances a unit, possibly but not necessarily within general government, may offer very many guarantees of very similar nature. One example is export guarantees and another is student loans. Because the guarantees are very similar and numerous, it is possible to make robust statistical estimates of the number of defaults the guarantor will have to cover and so these also are treated in a manner similar to direct non-life insurance.

6.183 The detailed recording for each of these activities, including the measurement of output, the recording of flows between the insurance corporations or pension funds on the one hand and policyholders or beneficiaries on the other, and the implications for changes in the balance sheets of both sets of institutions are described in part 3 of chapter 17. What follows is a summary of the key features of measuring output for the various activities listed above.

Non-life insurance

6.184 Under a non-life insurance policy, the insurance company accepts a premium from a client and holds it until a claim is made or the period of the insurance expires. In the meantime, the insurance company invests the premium and the property income is an extra source of funds from which to meet any claim due. The property income represents income foregone by the client and so is treated as an implicit supplement to the actual premium. The insurance company sets the level of the actual premiums to be such that the

sum of the actual premiums plus the property income earned on them less the expected claim will leave a margin that the insurance company can retain; this margin represents the output of the insurance company. Within the SNA, the output of the insurance industry is determined in a manner intended to mimic the premium setting policies of the insurance corporations.

6.185 The basic method for measuring non-life insurance output is the following:

Total premiums earned,

plus premium supplements,

less adjusted claims incurred.

6.186 The actual premium is the amount payable to the direct insurer or reinsurer to secure insurance cover for a specific event over a stated time period. Cover is frequently provided for one year at a time with the premium due to be paid at the outset, though cover may be provided for shorter (or longer) periods and the premium may be payable in instalments, for example monthly.

6.187 The premium earned is the part of the actual premium that relates to cover provided in the accounting period. For example, if an annual policy with a premium of 120 units comes into force on April 1 and accounts are being prepared for a calendar year, the premium earned in the calendar year is 90. The unearned premium is the amount of the actual premium received that relates to the period past the accounting point. In the example just given, at the end of the accounting period there will be an unearned premium of 30, intended to provide cover for the first three months of the next year. A claim (benefit) is the amount payable to the policyholder by the direct insurer or reinsurer in respect of an event covered by the policy occurring in the period for which the policy is valid. Claims normally become due when the event occurs, even if the payment is made some time later. (The exception to this time of recording is described in paragraph 8.121.) Claims that become due are described as claims incurred. In some contested cases the delay between the occurrence of the event giving rise to the claim and the settlement of the claim may be several years. *Claims outstanding cover claims that have not been reported, have been reported but are not yet settled or have been both reported and settled but not yet paid.*

6.188 The insurance corporation has at its disposal reserves consisting of unearned premiums and claims outstanding. These reserves are called technical reserves and are used by the insurance company to generate investment income. Because the technical reserves are a liability of the insurance corporation to the policyholders, the investment income they generate is treated as being attributed to the policyholders. However, the amounts remain with the insurance corporation and are in effect a hidden supplement to the apparent premium. This income is therefore treated as a premium supplement paid by the policyholder to the insurance corporation.

6.189 In setting the level of premiums, which obviously the insurance corporation must do ex ante, it makes an estimate of the level of claims it expects to be faced with. Within the SNA there are two ways in which the appropriate level of claims (described as adjusted claims) can be determined. One is an ex ante method, described as the expectation method, and estimates the level of adjusted claims from a model based on the past pattern of claims payable by the corporation. The other means of deriving adjusted claims is to use accounting information. Within the accounts for the insurance corporations there is an item called "equalization provisions" that gives a guide to the funds the insurance corporation sets aside to meet unexpectedly large claims. Adjusted claims are derived ex post as actual claims incurred plus the

change in equalization provisions. In circumstances where the equalization provisions are insufficient to bring adjusted claims back to a normal level, some contribution from own funds must be added also.

6.190 On occasion, the levels of technical reserves and of equalization provisions may be altered in response to financial regulation and not because of changes in the expected patterns of premiums and claims. Such changes should be recorded in the other changes in the volume of assets account and excluded from the formula to determine output.

6.191 In circumstances where information is not available for either approach to deriving adjusted claims, it may be necessary to estimate output instead by the sum of costs including an allowance for normal profits. Life insurance

6.192 A life insurance policy is a sort of saving scheme. For a number of years, the policyholder pays premiums to the insurance corporation against a promise of benefits at some future date. These benefits may be expressed in terms of a formula related to the premiums paid or may be dependent on the level of success the insurance corporation has in investing the funds.

6.193 The insurance corporation cumulates premiums paid until the promised date when benefits become payable and in the meantime uses the reserves to produce investment income. Some of the investment income is added to the life insurance reserves belonging to the policyholders to meet benefits in future. This allocation is an asset of the policyholders but is retained by the insurance corporation which continues to invest the amounts until benefits become payable. The remainder of the investment income not allocated to the policyholders is retained by the insurance corporation as its fee for the service they provide. 6.194 The method of calculating output for life insurance follows the same general principles as for non-life insurance but because of the time interval between when premiums are received and when benefits are paid, special allowances must be made for changes in the technical reserves.

6.195 The output of life insurance is derived as: Premiums earned,

plus premium supplements,

less benefits due,

less increases (*plus* decreases) in life insurance technical reserves.

6.196 Premiums are defined in exactly the same way for life insurance as for non-life insurance.

6.197 Premium supplements are more significant for life insurance than for non-life insurance. They consist of all the investment income earned on the reserves of the policyholders. The amount involved is earnings forgone by the policyholders by putting the funds at the disposal of the insurance corporation and are thus recorded as property income in the distribution of primary income account.

6.198 Benefits are recorded as they are awarded or paid. There is no need under life insurance to derive an adjusted figure since there is not the same unexpected volatility in the payment due under a life policy. It is possible for the insurance corporation to make robust estimates of the benefits due to be paid even years in advance.

6.199 Life insurance technical reserves increase each year because of new premiums paid, new investment income allocated to the policyholders (but not withdrawn by them) and decrease because of benefits paid. It is thus possible to express the level of output of life insurance as the difference between the total investment income earned on the life insurance technical reserves less the part of this investment income actually allocated to the policyholders and added to the insurance technical reserves.

Reinsurance

6.200 The method of calculating the output of reinsurance is exactly the same as for non-life insurance, whether it is life or non-life policies that are being reinsured.

Social insurance schemes

6.201 There are four different ways in which social insurance may be organized.

- Some social insurance is provided by government under a social security scheme;
- b. An employer may organize a social insurance scheme for his employees;
- c. An employer may have an insurance corporation run the scheme for the employer in return for a fee;
- d. An insurance corporation may offer to run a scheme for several employers in return for any property income and holding gains they may make in excess of what is owed to the participants in the scheme. The resulting arrangement is called a multiemployer scheme.

The output for each of these modes of running a social insurance scheme is calculated in a different manner.

6.202 Social security schemes are run as part of the operation of general government. If separate units are distinguished, their output is determined in the same way as all non-market output as the sum of costs. If separate units are not distinguished, the output of social security is included with the output of the level of government at which it operates. 6.203 When an employer operates his own social insurance scheme, the value of the output is also determined as the sum of costs including an estimate for a return to any fixed capital used in the operation of the scheme. Even if the employer establishes a segregated pension fund to manage the scheme, the value of output is still measured in the same way.

6.204 When an employer uses an insurance corporation to manage the scheme on his behalf, the value of the output is the fee charged by the insurance corporation.

6.205 For a multiemployer scheme, the value of output is measured as for life insurance policies; it is the excess of the investment income receivable by the schemes less the amount added to the reserves to meet present and future pension entitlements.

Standardized guarantee schemes

6.206 If a standardized guarantee scheme operates as a market producer, the value of output is calculated in the same way as non-life insurance. If the scheme operates as a non-market producer, the value of output is calculated as the sum of costs.

9. Research and development

6.207 Research and development is creative work undertaken on a systematic basis to increase the stock of knowledge, and use this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production. Research and development is not an ancillary activity, and a separate establishment should be distinguished for it when possible. The research and development undertaken by market producers on their own behalf should, in principle, be valued on the basis of the estimated basic prices that would be paid if the research were subcontracted commercially, but in practice is likely to have to be valued on the basis of the total production costs including the costs of fixed assets used in production. Research and development undertaken by specialized commercial research laboratories or institutes is valued by receipts from sales, contracts, commissions, fees, etc. in the usual way. Research and development undertaken by government units, universities, non-profit research institutes, etc. is non-market production and is valued on the basis of the total costs incurred. The activity of research and development is different from teaching and is classified separately in ISIC. In principle, the two activities ought to be distinguished from each other when undertaken within a university or other institute of higher education. although there may be considerable practical difficulties when the same staff divide their time between both activities. There may also be interaction between teaching and research which makes it difficult to separate them, even conceptually, in some cases. The treatment of R&D as capital formation is discussed in chapter 10.

10. The production of originals and copies

6.208 The production of books, recordings, films, software, tapes, disks, etc. is a two-stage process of which the first stage is the production of the original and the second stage the production and use of copies of the original. The output of the first stage is the original itself over which legal or de facto ownership can be established by copyright, patent or secrecy. The value of the original depends on the actual or expected receipts from the sale or use of copies at the second stage, which have to cover the costs of the original as well as costs incurred at the second stage.

6.209 The output of the first stage is a fixed asset that belongs to the producer of the original (author, film company, program writer, etc.). It may be produced for sale or for own-account gross fixed capital formation by the original producer. As the asset may be sold to another institutional unit the owner of the asset at any given time need not be the original producer, although they are often one and the same unit. If the original is sold when it has been produced, the value of the output of the original producer is given by the price paid. If it is not sold, its value may be estimated on the basis of its production costs with a mark-up. However, the size of any mark-up must depend on the discounted value of the future receipts expected from using it in production, so that it is effectively this discounted value, however uncertain, that determines its value.

6.210 The owner of the asset may use it directly to produce copies in subsequent periods. The value of the copies made is also recorded as production separately from the production involved in the making of the original. Consumption of fixed capital is recorded in respect of the use of the asset in the making of the copies the same way as for any other fixed asset used in production.

6.211 The owner may also license other producers to make use of the original in production. The latter may produce and sell copies, or use copies in other ways, for example, for film or music performances. The copier undertakes production in making the copies. Part of the cost of making the copies is the fee paid by the licensee to the owner or licensor. This fee represents both intermediate consumption of the licensee and output of the owner that is recorded as a service sold to the licensee. The payments made for the licences may be described in various ways, such as fees, commissions or royalties, but however they are described they are treated as payments for services rendered by the owner.

6.212 In certain circumstances the licence to make copies may also be treated as an asset,

distinct from the original. The conditions under which this applies and the consequences are discussed in greater detail in chapter 17.

G. Intermediate consumption

1. Coverage of intermediate consumption

6.213 Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital. The goods or services may be either transformed or used up by the production process. Some inputs re-emerge after having been transformed and incorporated into the outputs, for example, grain may be transformed into flour which in turn may be transformed into bread. Other inputs are completely consumed or used up, for example, electricity and most services.

6.214 Intermediate consumption does not include expenditures by enterprises on valuables consisting of works of art, precious metals and stones and articles of jewellery fashioned out of them. Valuables are assets acquired as stores of value: they are not used up in production and do not deteriorate physically over time. Expenditures on valuables are recorded in the capital account. Intermediate consumption also does not include costs incurred by the gradual using up of fixed assets owned by the enterprise: the decline in their value during the accounting period is recorded as consumption of fixed capital. However, intermediate consumption does include the rentals paid on the use of fixed assets, whether equipment or buildings, that are leased from other institutional units under an operating lease, and also fees, commissions, royalties, etc., payable under licensing arrangements, as explained above.

6.215 Where ancillary services are not shown as the output of a separate establishment, intermediate consumption includes the value of all the goods or services used as inputs into ancillary activities such as purchasing, sales, marketing, accounting, data processing, transportation, storage, maintenance, security, etc. In this case, the goods and services consumed by these ancillary activities are not distinguished from those consumed by the principal (or secondary) activities of a producing establishment. When a unit provides only ancillary services, it continues to be shown as a separate unit as long as the necessary information is available. There is more discussion of the treatment of ancillary activities in chapter 5.

2. The timing and valuation of intermediate consumption

6.216 The intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producer. In practice, establishments do not usually record the actual use of goods in production directly. Instead, they keep records of purchases of materials and supplies intended to be used as inputs and also of any changes in the amounts of such goods held in inventories. An estimate of intermediate consumption during a given accounting period can then be derived by subtracting the value of changes in inventories of materials and supplies from the value of purchases made. Changes in inventories of materials and supplies are equal to entries less withdrawals and recurrent losses on goods held in inventories. Thus, by reducing the value of changes in inventories, recurrent losses increase intermediate consumption. Even if they are consistently large, as long as they occur regularly, losses are treated as increasing intermediate consumption. Goods entering and leaving inventories are valued at the purchasers' prices prevailing at the times the entries, withdrawals or recurrent losses

take place. This is exactly the same method as that used to value changes in inventories of goods produced as outputs from the production process. Thus, the earlier discussion of the properties and behaviour of the PIM applies to inventories of inputs.

6.217 A good or service consumed as an intermediate input is normally valued at the purchaser's price prevailing at the time it enters the process of production; that is, at the price the producer would have to pay to replace it at the time it is used. As explained in more detail in section C, the purchaser's price can be regarded as being composed of three elements:

- a. The basic price received by the producer of the good or service;
- b. Any transportation costs paid separately by the purchaser in taking delivery of a good at the required time and location plus the cumulative trade margin on a good that passes through the chain of wholesale or retail distribution;
- c. Any non-deductible tax on the product payable on the good or service when it was produced or while in transit to the purchaser less any subsidy on the product.

For purposes of the input-output tables, it may be necessary to distinguish all three elements but this is not necessary in the accounts for institutional sectors or the central supply and use table.

6.218 Intermediate inputs treated as being acquired from other establishments belonging to the same enterprise should be valued at the same prices as were used to value them as outputs of those establishments plus any additional transport charges not included in the output values.

6.219 When goods or services produced within the same establishment are fed back as inputs into the production within the same establishment, they are only recorded as part of the intermediate consumption if they have been recorded as part of the output of that establishment. There is discussion on when this might be appropriate in section E. Deliveries of goods and services between different establishments belonging to the same enterprise are recorded as outputs by the producing establishments and intermediate inputs by the receiving establishments only when the receiving establishment effectively assumes all risks for completing the production process.

3. The boundary between intermediate consumption and compensation of employees

6.220 Certain goods and services used by enterprises do not enter directly into the process of production itself but are consumed by employees working on that process. In such cases it is necessary to decide whether the goods and services are intermediate consumption or, alternatively, remuneration in kind of employees. In general, when the goods or services are used by employees in their own time and at their own discretion for the direct satisfaction of their needs or wants, they constitute remuneration in kind. However, when employees are obliged to use the goods or services in order to enable them to carry out their work, they constitute intermediate consumption.

6.221 It is immaterial to the employer whether they are treated as intermediate consumption or compensation of employees because they are both costs from the employer's viewpoint and the net operating surplus is the same. However, reclassifying such goods and services from remuneration in kind to intermediate consumption, or vice versa, changes value added and balance of primary incomes, and hence GDP as a whole.

6.222 The following types of goods and services provided to employees must be treated as part of intermediate consumption:

a. Tools or equipment used exclusively, or mainly, at work;

- Clothing or footwear of a kind that ordinary consumers do not choose to purchase or wear and which are worn exclusively, or mainly, at work; for example, protective clothing, overalls or uniforms;
- c. Accommodation services at the place of work of a kind that cannot be used by the households to which the employees belong: barracks, cabins, dormitories, huts, etc.;
- d. Special meals or drinks necessitated by exceptional working conditions, or meals or drinks provided to servicemen or others while on active duty;
- e. Transportation and hotel services including allowances for meals provided while the employee is travelling on business;
- f. Changing facilities, washrooms, showers, baths, etc. necessitated by the nature of the work;
- g. First aid facilities, medical examinations or other health checks required because of the nature of the work.

Employees may sometimes be responsible for purchasing the kinds of goods or services listed above and be subsequently reimbursed in cash by the employer. Such cash reimbursements must be treated as intermediate expenditures by the employer and not as part of the employee's wages and salaries.

6.223 The provision of other kinds of goods and services, such as ordinary housing services, the services of vehicles or other durable consumer goods used extensively away from work, transportation to and from work, etc. should be treated as remuneration in kind, as explained more fully in chapter 7.

4. The boundary between intermediate consumption and gross fixed capital formation

6.224 Intermediate consumption measures the value of goods and services that are transformed or entirely used up in the course of production during the accounting period. It does not cover the costs of using fixed assets owned by the

244

enterprise nor expenditures on the acquisition of fixed assets. The boundary between these kinds of expenditures and intermediate consumption is explained in more detail below.

Small tools

6.225 Expenditures on durable producer goods that are small, inexpensive and used to perform relatively simple operations may be treated as intermediate consumption when such expenditures are made regularly and are very small compared with expenditures on machinery and equipment. Examples of such goods are hand tools such as saws, spades, knives, axes, hammers, screwdrivers, and so on. However, in countries where such tools account for a significant part of the stock of producers' durable goods, they may be treated as fixed assets.

Maintenance and repairs

6.226 The distinction between maintenance and repairs and gross fixed capital formation is not clear-cut. The ordinary, regular maintenance and repair of a fixed asset used in production constitute intermediate consumption. Ordinary maintenance and repair, including the replacement of defective parts, are typical ancillary activities but such services may also be provided by a separate establishment within the same enterprise or purchased from other enterprises.

6.227 The practical problem is to distinguish ordinary maintenance and repairs from major renovations, reconstructions or enlargements that go considerably beyond what is required simply to keep the fixed assets in good working order. Major renovations, reconstructions, or enlargements of existing fixed assets may enhance their efficiency or capacity or prolong their expected working lives. They must be treated as gross fixed capital formation as they add to the stock of fixed assets in existence. 6.228 Ordinary maintenance and repairs are distinguished by two features:

- a. They are activities that owners or users of fixed assets are obliged to undertake periodically in order to be able to utilize such assets over their expected service lives. They are current costs that cannot be avoided if the fixed assets are to continue to be used. The owner or user cannot afford to neglect maintenance and repairs as the expected service life may be drastically shortened otherwise;
- b. Maintenance and repairs do not change the fixed asset or its performance, but simply maintain it in good working order or restore it to its previous condition in the event of a breakdown. Defective parts are replaced by new parts of the same kind without changing the basic nature of the fixed asset.

6.229 On the other hand, major renovations or enlargements to fixed assets are distinguished by the following features:

- a. he decision to renovate, reconstruct or enlarge a fixed asset is a deliberate investment decision that may be undertaken at any time and is not dictated by the condition of the asset. Major renovations of ships, buildings or other structures are frequently undertaken well before the end of their normal service lives;
- b. Major renovations or enlargements increase the performance or capacity of existing fixed assets or significantly extend their previously expected service lives. Enlarging or extending an existing building or structure obviously constitutes a major change in this sense, but a complete refitting or restructuring of the interior of a building, or ship, also qualifies.

Research and development

6.230 Research and development is treated as capital formation except in any cases where it is clear that the activity does not entail any economic benefit for its owner in which case it is treated as intermediate consumption.

Mineral exploration and evaluation

6.231 Expenditures on mineral exploration and evaluation are not treated as intermediate consumption. Whether successful or not, they are needed to acquire new reserves and so are all classified as gross fixed capital formation.

Military equipment

6.232 Expenditures on military equipment, including large military weapons systems, are treated as fixed capital formation. Expenditure on durable military goods such as bombs, torpedoes and spare parts are recorded as inventories until used when they are recorded as intermediate consumption and a withdrawal from inventories.

5. Services provided by government to producers

6.233 Government may provide services to producers. To the extent that a charge is made for these services, the charges form part of the intermediate consumption of the producer. However, when the charge does not represent an economically significant price, the value of the service to the producer is greater than the cost. However, no estimation of this benefit is made and the costs of the services not covered by the charges made are included in collective consumption of government.

6. Social transfers in kind

6.234 Expenditures by government or NPISHs on goods or services produced by market pro-

ducers that are provided directly to households, individually or collectively, without any further processing constitute final consumption expenditures by government or NPISHs and not intermediate consumption. The goods and services in question are treated as social transfers in kind and enter into the actual consumption of households.

6.235 By convention, non-financial and financial corporations do not make social transfers in kind, nor engage in final consumption.

7. Services of business associations

6.236 Non-profit institutions in the form of business associations that exist to protect the interests of their members and are financed by them are market producers. The subscriptions paid by the businesses constitute payments for services rendered. These services are consumed as intermediate inputs by the members of the association and are valued by the amounts paid in subscriptions, contributions or dues.

8. Outsourcing

6.237 It is increasingly common for producers to change the way in which a production activity is completed. Different stages in the process or different support activities such as office cleaning or assembly of electronic components may be contracted out to another producer, in the same country or abroad. This changes the pattern of intermediate inputs even though the underlying technology may be the same. The impact of this on input-output tables is discussed in chapters 14 and 28.

9. Leasing fixed assets

6.238 The decision to rent buildings, machinery or equipment under an operating lease, rather than purchase them, can have a major impact on the ratio of intermediate consumption to value added and the distribution of value added between

producers. Rentals paid on buildings or on machinery or equipment under an operating lease constitute purchases of services that are recorded as intermediate consumption. However, if an enterprise owns its buildings, machinery and equipment, most of the costs associated with their use are not recorded under intermediate consumption. The consumption of fixed capital on the assets forms part of gross value added while interest costs, both actual and implicit, have to be met out of the net operating surplus. Only the costs of the materials needed for maintenance and repairs appear under intermediate consumption. Decisions to rent rather than purchase may be influenced by factors quite unrelated to the technology of production, such as taxation, the availability of finance, or the consequences for the balance sheet.

6.239 There is a significant difference between rentals of fixed assets under an operating lease and the acquisition of an asset under a financial lease. Under an operating lease, the lessor has a productive activity that involves the equipment in question and is responsible for the production risks associated with the operational status of the asset. Payments by the lessee are treated as payments for a service. Under a financial lease, the lessee accepts all risks and rewards associated with the use of the asset in production. A financial lease is thus treated as a loan by the lessor to the lessee and purchase of the equipment by the lessee. Subsequent payments are treated as payments of interest and repayments of principal by the lessee to the lessor. Further details on the treatment of operating and financial leases are given in chapter 17.

H. Consumption of fixed capital

1. The coverage of consumption of fixed capital

6.240 Consumption of fixed capital is the

decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage. The term depreciation is often used in place of consumption of fixed capital but it is avoided in the SNA because in commercial accounting the term depreciation is often used in the context of writing off historic costs whereas in the SNA consumption of fixed capital is dependent on the current value of the asset.

6.241 Consumption of fixed capital is calculated for all fixed assets owned by producers, but not for valuables (precious metals, precious stones, etc.) that are acquired precisely because their value, in real terms, is not expected to decline over time. Fixed assets must have been produced as outputs from processes of production as defined in the SNA. Consumption of fixed capital does not, therefore, cover the depletion or degradation of natural assets such as land, mineral or other deposits, coal, oil, or natural gas, or contracts, leases and licences.

6.242 The value of assets may decline not merely because they deteriorate physically but because of a decrease in the demand for their services as a result of technical progress and the appearance of new substitutes for them. In practice, many structures, including roads and railway tracks, are scrapped or demolished because they have become obsolete. Even though the estimated service lives may be very long for some structures, such as roads, bridges, dams, etc., they cannot be assumed to be infinite. Thus, capital consumption needs to be calculated for all types of structures, including those owned and maintained by government units, as well as machinery and equipment.

6.243 Losses of fixed assets due to normal or expected levels of accidental damage are also included under consumption of fixed capital; that

is, damage caused to assets used in production resulting from their exposure to the risk of fires, storms, accidents due to human error, etc. When these kinds of accidents occur with predictable regularity they are taken into account in calculating the average service lives of the goods in question. For an individual unit, or group of units, any difference between the average and the actual normal accidental damage within a given period is recorded in the other changes in the volume of assets account. However, at the level of the economy as a whole, the actual normal accidental damage within a given accounting period may be expected to be equal, or close, to the average.

6.244 On the other hand, losses due to war or to major natural disasters that occur very infrequently, such as major earthquakes, volcanic eruptions, tidal waves or exceptionally severe hurricanes, are not included under consumption of fixed capital. There is no reason for such losses to be charged in the production account as costs of production. The values of the assets lost in these ways are recorded in the other changes in the volume of assets account. Similarly, although consumption of fixed capital includes reductions in the value of fixed assets resulting from normal, expected rates of obsolescence, it should not include losses due to unexpected technological developments that may significantly shorten the service lives of a group of existing fixed assets. Such losses are treated in the same way as losses due to above average rates of normal accidental damage.

2. Consumption of fixed capital and rentals on fixed assets

6.245 It is possible to draw a comparison between consumption of fixed capital and rental of assets under an operating lease. The rental is the amount payable by the user of a fixed asset to its owner, under an operating lease or similar contract, for the right to use that asset in production for a specified period of time. The rental

needs to be large enough to cover (i) any direct costs incurred by the owner including the costs of maintaining the asset, (ii) the reduction in the value of the asset over that period (the consumption of fixed capital) and (iii) the interest costs on the value of the asset at the start of the period. The interest costs may consist either of actual interest paid on borrowed funds or the loss of interest incurred as a result of investing own funds in the purchase of the fixed asset instead of a financial asset. Whether owned or rented, the full cost of using the fixed asset in production is measured by the actual or imputed rental on the asset and not by consumption of fixed capital alone. When the asset is actually rented under an operating lease or similar contract, the rental is recorded under intermediate consumption as the purchase of a service produced by the lessor. When the user and the owner are one and the same unit, the direct costs are recorded as intermediate consumption. The consumption of fixed capital represents the second element of the cost of using the asset. The third part of the cost, referred to above as the interest cost, is also known as the return to fixed capital. Like consumption of fixed capital, the return to capital is part of value added. The sum of the consumption of fixed capital and the value of the return to capital is known as the capital services rendered by the asset. Capital services are discussed in more detail in chapter 20.

6.246 The value of a fixed asset to its owner at any point of time is determined by the present value of the future capital services (that is, the sum of the values of the stream of future rentals less operating costs discounted to the present period) that can be expected over its remaining service life. Consumption of fixed capital is measured by the decrease, between the beginning and the end of the current accounting period, in the present value of the remaining sequence of expected future benefits. The extent of the decrease will be influenced not only by the amount by which the efficiency of the asset may
have declined during the current period but also by the shortening of its service life and the rate at which its economic efficiency declines over its remaining service life. The decrease is expressed in the average prices of the current period for an asset of exactly the same quality and should exclude holding gains and losses. When the flow of future benefits that determines the present values used to derive consumption of fixed capital is expressed in terms of flows that include an element of inflation, then the discount factor should be nominal. When the flows are expressed in terms of current period prices, then a real discount rate should be used. Either procedure results in a present value expressed in current period prices.

6.247 Consumption of fixed capital is a forward-looking measure that is determined by future, and not past, events namely, the benefits that institutional units expect to derive in the future from using the asset in production over the remainder of its service life. Unlike depreciation as usually calculated in business accounts, consumption of fixed capital is not, at least in principle, a method of allocating the costs of past expenditures on fixed assets over subsequent accounting periods. The value of a fixed asset at a given moment in time depends only on the remaining benefits to be derived from its use and consumption of fixed capital must be based on values calculated in this way.

3. The calculation of consumption of fixed capital

6.248 Fixed assets may have been purchased in the past at times when both relative prices and the general price level were very different from prices in the current period. In order to be consistent with the other entries in the same production account, consumption of fixed capital must be valued with reference to the same overall set of current prices as that used to value output and intermediate consumption. Consumption of fixed capital should reflect underlying resource costs and relative demands at the time the production takes place. It should therefore be calculated using the actual or estimated prices and rentals of fixed assets prevailing at that time and not at the times the goods were originally acquired. The "historic costs" of fixed assets, that is, the prices originally paid for them, become quite irrelevant for the calculation of consumption of fixed capital as prices change over time.

6.249 For these reasons, depreciation as recorded in business accounts may not provide the right kind of information for the calculation of consumption of fixed capital. If data on depreciation are used, they must, at the very least, be adjusted from historic costs to current prices. However, depreciation allowances for tax purposes have often been grossly manipulated in quite arbitrary ways to try to influence rates of investment and are best ignored altogether in many cases. It is recommended that independent estimates of consumption of fixed capital should be compiled in conjunction with estimates of the capital stock. These can be built up from data on gross fixed capital formation in the past combined with estimates of the rates at which the efficiency of fixed assets decline over their service lives.

6.250 Whenever possible, the initial value of a new fixed asset should be that prevailing on the market when the asset is acquired. If assets of all ages and specifications were regularly traded on markets, these prices should be used to value every asset as it ages. However, there is scarce information on the prices of second-hand assets and faced with this lack, a more theoretical approach to determining the price of an asset as it ages must be adopted.

6.251 Conceptually, market forces should ensure that the purchaser's price of a new fixed asset is equivalent to the present value of the future benefits that can be derived from it. Given the initial market price, therefore, and knowledge of the characteristics of the asset in question, it is possible to project the stream of future benefits and continually update the remaining present value of these. This method of building up estimates of the capital stock and changes in the capital stock over time is known as the perpetual inventory method, or PIM. Estimates of consumption of fixed capital are obtained as a byproduct of the PIM.

4. The perpetual inventory method

6.252 A brief explanation of how consumption of fixed capital may be calculated as a by-product of the perpetual inventory method of calculating the capital stock is given in this section. An overview of the link between the calculation of consumption of fixed capital, the return to capital and the stock of assets is given in chapter 20. Much more guidance on the way to calculate capital stock estimates appears in the manual Measuring Capital. (OECD, 2009).

Calculation of the gross capital stock

6.253 The perpetual inventory method requires an estimate to be made of the stock of fixed assets in existence and in the hands of producers. The first step is to estimate how many of the fixed assets installed as a result of gross fixed capital formation undertaken in previous years have survived to the current period. Average service lives, or survival functions, based on observations or technical studies may be applied to past investments for this purpose. Fixed assets purchased at different prices in the past have then to be revalued at the prices of the current period by utilizing appropriate price indices for fixed assets. The construction of suitable price indices covering long periods of time raises difficult conceptual and practical problems, but these technical problems of price measurement must be faced in any case in developing balance sheet values of assets. The stock of fixed assets surviving from past investment and revalued at the purchasers'

prices of the current period is described as the gross capital stock. The gross capital stock can also be measured at the prices of a given base year if it is desired to have annual time series for the gross capital stock in volume terms.

Relative efficiencies

6.254 The inputs into production obtained from the use of a given fixed asset tend to diminish over time. The rate at which the efficiency declines may vary from one type of asset to another. The simplest case to consider is one where the efficiency of the asset remains constant until it disintegrates, like a light bulb. Other simple cases include the case where the efficiency declines linearly or exponentially over its life. Other methods employ a hyperbolic rate of efficiency loss with relatively little decline in the initial years but increasingly steeper decline as time progresses. However, in practice calculations are not undertaken asset by asset individually but for cohorts of assets of similar ages and characteristics. Individual assets within the cohort will retire at different moments but the efficiency-retirement profile for the cohort as a whole is typically convex to the origin.

6.255 The efficiency profiles of fixed assets determine the profiles of the benefits they command over their service lives. Once the profiles of the benefits over the service lives of the fixed asset have been determined, it becomes possible to calculate the consumption of fixed capital, period by period.

Rates of consumption of fixed capital

6.256 Consumption of fixed capital is derived as the reduction in the present value of the remaining benefits, as explained earlier. This reduction, and the rate at which it takes place over time, must be clearly distinguished from the decline in the efficiency of the capital assets themselves. Although the efficiency, and hence the benefit, of an asset with the efficiency characteristics of a light bulb may remain constant from period to period until it disintegrates, the value of the asset declines over time. It also follows that the consumption of fixed capital is not constant. It can easily be shown in this case that the decline in the present value of the remaining benefits from period to period is considerably lower earlier in the life of the asset than when the asset is approaching the end of its life. Consumption of fixed capital tends to increase as the asset gets older even though the efficiency and benefits remain constant to the end.

Values of consumption of fixed capital

6.257 Consumption of fixed capital should not be estimated in isolation from the derivation of a set of capital stock data. Such data are needed for the balance sheet and, as shown in chapter 20, trying to identify consumption of fixed capital in isolation from the level of the stock of the asset and its patterns of price and efficiency decline is likely to be error prone.

CENTRAL STATISTICS OFFICE (2015): CHANGES IN METHODOLOGY AND DATA SOURCES IN THE NEW SERIES OF NATIONAL ACCOUNTS: BASE YEAR 2011-12, Ministry of Statistics and Programme Implementation, New Delhi, 26 June

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS (BASE YEAR: 2011-12)

1. Introduction

1.1. The first set of estimates of national income for the entire Indian Union was compiled by the 'National Income Committee', a High Powered Expert Committee set up by the Government of India under the Chairmanship of Prof. P.C. Mahalanobis in 1949. The estimates of national income and details of methodology adopted by the Committee were published in the First and Final reports of the National Income Committee brought out in April 1951 and February 1954 respectively (available on MOSPI's website http://mospi.gov.in).

1.2. Following the methodology recommended by the National Income Committee, the Central Statistics Office, earlier called the Central Statistical Organisation (CSO) prepared the first official estimates of national income with base year 1948-49 at constant prices. The CSO published these estimates at constant (1948-49) prices alongwith the corresponding estimates at current prices and the accounts of the Public Authorities in the publication, "Estimates of National Income" in 1956. 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 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.

Alongwith the shifting of base years of national accounts series, the CSO also had been making improvements in the compilation of national accounts series, in terms of coverage of activities, incorporation of latest datasets and latest international guidelines.

1.3. 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 through macro aggregates like Gross Domestic Product (GDP), National Income, consumption expenditure of Government and individuals, capital formation etc. For examining the performance of the economy in real terms, estimates of these macro-economic aggregates are prepared at the prices of selected year known as base year. The estimates at the prevailing prices of the current year are termed as "at current prices", while those prepared at base year prices are termed as "at constant prices". The comparison of the estimates at constant prices, which means "in real terms", over the years gives the measure of real growth.

1.4. In Section 2 of the Brochure, the guiding principles behind the changes made in the compilation of national accounts in the New Series, including the reasons for choosing 2011-12 as the base year, have been spelt. The details of changes made in each of the institutional sectors - General Government, Non-Financial Corporations, Financial Corporations and Households - are given in Section 3. Other changes in industry/item

level in the industry-wise estimates of Gross Value Added (GVA) and expenditure aggregates of Gross Domestic Product (GDP) have been presented in Sections 4 and 5 respectively. After Section 5, few important statements of the new series of national accounts have been presented. Wherever possible, a comparison of estimates with the old series (base year 2004-05) has been provided in this Brochure.

1.5. The brochure presents, in brief, the changes made from the earlier series, and therefore, it does not dwell much on the details of the compilation procedure, especially in cases where no changes have been made in the new series. For a more detailed explanation of the sources and methods used in all such cases, users are requested to refer to the publication, "National Accounts Statistics: Sources and Methods, 2012", which is available on the website of the Ministry of Statistics and Programme Implementation at http://mospi.gov.in.

SECTION 2 GUIDING PRINCIPLES FOR THE NEW SERIES

2.1. The three major components influencing the present revision exercise include (i) revision of base year to a more recent year (for meaningful analysis of structural changes in the economy in real terms), (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 and (iii) to the extent feasible, implementing the international guidelines on the compilation of national accounts, the System of National Accounts (SNA), 2008 prepared under the auspices of the Inter Secretariat Working Group on National Accounts comprising of the European Communities (EUROSTAT), International Monetary Fund (IMF), Organisation for Economic Cooperation and Development (OECD), United Nations and the World Bank.

Choice of 2011-12 as the Base Year

2.2. In the past, National Accounts Statistics were revised decennially changing the base to a year, which ends with 1. With the informal/unorganised sector playing a major role in the Indian economy, this was primarily because in the base year estimates of national accounts aggregates, the work force estimates especially that for the unorganised sector were obtained from the Population Census conducted decennially in the years ending with 1. This practice continued upto the series with base year 1980-81.

2.3. Since the 1993-94 series, the CSO started using the work force estimates from the results of Quinquennial Employment and Unemployment Surveys of National Sample Survey Organisation (NSSO), which are conducted once in every five years, and consequently started revising the base years of national accounts statistics once in every five years coinciding with the years for which the NSSO conducts the Quinquennial Employment and Unemployment Surveys (EUS). The National Statistical Commission has also recommended that all economic indices should be rebased at least once in every five years.

2.4. The NSS 61st Round Quinquennial EUS conducted in the year 2004-05, on which the previous series of national accounts was based, was followed by a quinquennial EUS in 2009-10. However, the year was not considered a "normal" year since it succeeded the global slowdown of 2008. Therefore, a fresh EUS was conducted in 2011-12. The results of this survey have been used

for the compilation of the estimates in the new series with base year 2011-12, released on 30th January, 2015.¹

Improvements in coverage

2.5. Corporate Sector - In the 2004-05 series, the Private Corporate Sector was being covered using the RBI Study on Company Finances, wherein estimates were compiled on the basis of financial results of around 2500 companies. 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. Accounts of about 5 lakh companies have been analysed and incorporated for the years 2011-12 and 2012-13, while the number of common companies (companies for which accounts are available for the year 2012-13) is around 3 lakh for the year 2013-14.

2.6. *Financial Corporations* - Financial corporations in the private sector, other than banking and insurance, in the earlier series was 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.

2.7. 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 ^V 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.

Use of results of recent surveys and censuses and type studies

2.8. In the new series, efforts have been made to make use of as much current data as possible. Further, the results of 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;
- (v) House-listing and Housing Census, 2010 and 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; and
- (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

2.9. The Advisory Committee on National Accounts Statistics (ACNAS) under the chairmanship of Prof.K.Sundaram, constituted the following sub-committees to look into the issues

^{1.} Press Release on the New Series of National Accounts, released on January 30, 2015 http://mospi.nic.in/Mospi_New/upload/nad_press_release_30jan15.pdf

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 Chairman: Prof. K. Sundaram
- b) Sub-Committee on Agriculture and Allied Sectors Chairman: Prof. S. Mahendra Dev
- c) Sub-Committee on Private Corporate Sector including PPPs Chairman: Prof. B.N. Goldar
- d) Sub-Committee on System of Indian National Accounts Chairman: Dr. A.C. Kulshreshtha
- e) Committee on Private Final Consumption Expenditure Chairman: Prof. A.K. Adhikari

2.10. The reports of the above-mentioned Sub-Committees are available on the website of the Ministry, http://mospi.gov.in.

Implementation of 2008 SNA

2.11. 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 are available. 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.
- 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 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 quasicorporations. Some examples of quasi-corporations in the Indian context are proprietorship and partnership enterprises, maintaining accounts.
- v. The head office has 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 corporations sector. 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 capitalised in Government, Public Corporations and Private Corporations and hence has become part of capital formation.
- viii. Financial Intermediation Services Indirectly Measured (FISIM) has been calculated using a reference rate for units engaged in financial intermediation.
- ix. Output of central bank (RBI) is measured at cost.
- x. Non-financial assets in the earlier series were classified as 'construction' and 'Qmachinery'. 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 BPM in respect of the external sector transactions has been achieved since RBI has adopted BPM6 in its compilation.

2.12. In view of the implementation of the above-mentioned recommendations of SNA 2008, specifically those stated at (ii), (iii) and (iv) above, the classification of enterprises in the new series has undergone change. The details of the institutional sector classification are given below: I. Organised Sector

- a. General Government
- b. Public Financial/Non-Financial Corporations
 - 1. Departmental Enterprises (DE) or Departmental Commercial Undertakings (DCU)
 - 2. Non-Departmental Enterprises (NDE) or Non-Departmental Commercial Undertakings (NDCUs)
- c. Private Financial/Non-Financial Corporations
 - 1. Private Incorporated Enterprises
 - 2. Quasi-corporations

These include -

- i. Crop production in plantations, other than those covered in private corporate sector
- ii. Unincorporated Enterprises covered in Annual Survey of Industries
- Unincorporated enterprises of manufacturing that are not covered under ASI but maintain accounts

- iv. Co-operatives providing nonfinancial services
- v. Unincorporated enterprises providing non-financial services maintaining accounts
- vi. Unorganised financial enterprises

The following points need to be noted with reference to this categorization of organised sector-

- In the earlier series, only quasicorporations under (i), (ii) and (iv) above were included in the organised sector.
- 'Registered Manufacturing' in the national accounts earlier referred to DEs and all factories registered under the Factories Act under Section 2m(i) & 2m(ii) employing more than 10 workers with power or 20 workers without power. Therefore, apart from factories of the Incorporated Enterprises, it also included factories of unincorporated enterprises which were registered under the Factories Act. The organised manufacturing sector in this series is a super-set of the registered sector.

II. Households or Unorganised sector

a. Enterprises not covered in **'I'** above, i.e., all non-Government Unincorporated Enterprises that have not been classified as quasicorporations - *Includes Non-Profit Institutions Serving Households (NPISH)*

2.13. The estimates of GVA at basic prices, by industry and by institutional sector, are given at **Annexure 2.1.**

Methodological Changes in Compilation Estimation of GVA for the unincorporated manufacturing and non-financial enterprises

2.14. In the absence of annual enterprise surveys, the GVA estimates in respect of unorganised segments of manufacturing and services sectors are compiled indirectly through Labour Input

Method (LI Method) using the benchmarkindicator procedure. In this procedure, the benchmark GVA estimates are initially prepared at detailed activity level for the base year of national accounts series using the estimated labour input (which is the total of principal and subsidiary activity of workers engaged in the activity) and the value added per worker (VAPW) in the activity. For subsequent years, the GVA is estimated by extrapolation using appropriate indicators relevant to the economic activity. Therefore, for estimation of GVA for these unorganised segments of economy, data on labour input and VAPW are required for the base year. It is pertinent to mention here that the labour input used in the national accounts relates to the number of jobs performed in the economic activities, rather than the number of persons employed. This means that a person performing two jobs is counted twice in the labour input procedure. This labour input corresponds conceptually to the labour input used in estimating the value added per worker from the NSS enterprise surveys.

2.15. In the national accounts statistics, the estimates of value added are compiled at detailed activity level, known as 'compilation categories'. These compilation categories are determined by regrouping the economic activities at different levels described in the National Industrial Classification (NIC), 2008, which, in turn, follows the International Standards Industrial Classification of All Economic Activities, Rev.4 (ISIC Rev.4) of the United Nations. The complete list of compilation categories of national accounts in the new (2011-12) series is given in Annexure 2.2. There are some differences in compilation categories in 2011-12 from 2004-05 due to change of NIC from NIC, 2004 to NIC, 2008. Major differences are given below:

i. The activities, 'Recycling of metal waste and scrap + non-metal waste and scrap', which was earlier part of manufacturing and 'Sewerage and other waste management services' have been clubbed to form the category 'Remediation and other utility services', and will be reflected in the group 'Electricity, gas, water supply and other utility services'.

- 'Repair of computers', which was earlier part of computer related activities, to be a part of "Repair of personal and household goods" and reflected in 'Trade & Repair Services'.
- iii. 'Recording, Publishing and Broadcasting Services' to form a new category, and reflected in the group 'Communication & Services related to broadcasting'.
- Sewage activities removed from services sector and made a part of Electricity, Gas, Water Supply and Utility Services.

2.16. In the new series, a new method called *"Effective Labour Input Method"* (ELI Method) has been adopted for the following enterprises:

- * All unincorporated manufacturing enterprises, except those covered under the Annual Survey of Industries
- * Unincorporated service enterprises, except those of 'Trade & Repair Services', 'Hotels and Restaurants', 'Non-mechanized Road transport' and 'Telecommunication'.

2.17. In the Labour Input Method (LI Method), as was being used in the earlier series, while compiling GVAPW from the Enterprise Survey, it is assumed that there is equal contribution from all categories of workers engaged in an economic activity i.e. the productivity of an employer, a casual wage worker, or a family worker is equal. The new method addresses differential labour productivity issue by assigning weights to the different categories of workers engaged in an economic activity based on their productivity. The weights were compiled using the data on establishments covered in the NSS 67th round Survey on Unincorporated Enterprises, 2010-11 (hereinafter referred to as ES). A nested Cobb-Douglas function has been used for computing the weights of different categories of workers.

2.18. After taking the natural log of eq. 1 and adding a dummy variable representing the sector (rural, urban),

 $Log Y = Log A + \beta Log K + \alpha Log [L2 + \delta 1L1 + \delta 2L3] + YS$

Where, Y = GVA

- K = capital
- L1 = Owner
- L2 = Hired worker (formal + informal)

L3 = Helper

S = Dummy variable for sector (Rural = 0, Urban = 1)

2.19. The coefficients of labour terms, $\delta 1$ and $\delta 2$, in this equation give the relative marginal productivities which are used as conversion factors for conversion of "owners" and "helpers" in terms of hired worker for computation of "effective labour input".

2.20. $\delta 1$ and $\delta 2$ in equation (2) are the conversion factors (or relative marginal productivity) of the owner and helper categories of workers respectively in terms of hired worker. For e.g. $\delta 1 = 0.5$ implies that 10 owners are equivalent to 5 hired workers.

2.21. δ 1 and δ 2 were used for computing the GVA per effective worker = GVA from 67th round/ [L2 + δ 1L1 + δ 2L3]. The same conversion factors were used on the number of different types of workers as estimated from NSS 68th round Employment and Unemployment Survey (EUS) (duly adjusted for population, as per Population Census, 2011) for getting the effective LI engaged in that activity/category.

2.22. The NSS 67th round ES collected, inter alia, data on employment for four categories of labour viz. i) working owner-801; ii) formal hired worker-802; iii) informal hired worker-803; iv) other worker/helper-804. The NSS 68th round EUS classifies the status of workers as - "worked

in h.h. enterprise (self-employed): own account worker - 11, employer-12, worked as helper in h.h. enterprise (unpaid family worker) -21; worked as regular salaried/ wage employee -31, worked as casual wage labour: in public works-41, in other types of work-51".

2.23. The concordance between the codes given for workers in the 68th round EUS (2011-12) and the 67th round ES (2010-11) is given as under:

Sl.No.	Description	Code in EUS	Code in ES
1.	working owner	11 & 12	801
2.	formal hired worker	31	802
3.	informal hired worker	51	803
4.	other worker/helper	21	804

2.24. The GVA adjusted for labour productivity (Effective GVA) was then computed as the product of Effective LI from EUS and GVA per effective worker from ES. This method, referred to as *"effective LI method"* was adopted for the unorganised manufacturing as a whole. Effective LI method was used for the unincorporated enterprises of mechanized road transport, services incidental to transport, courier services, cable operators, professional, scientific & technical activities, activities of membership organisations and all categories of personal services.

2.25. The Effective LI method based on establishment was modified in a few categories of non-financial services, namely, education, health, water transport, storage, real estate, renting of machinery, computer & related services, legal

...(1)

... (2)

and accounting services, by using effective LI and the GVA per effective worker (GVAPEW) of rural establishments and urban directory establishments, as the case may be. This method would be referred to as *"modified effective LI method"*.

GVA = Effective LI (Rural) x GVAPEW (Rural Establishments) + Effective LI (Urban) x GVAPEW (Urban Directory Establishments)

2.26. In some other categories, namely, Trade & repair services, Hotels and Restaurants and Non-mechanized Road transport, telecommunication, where it was felt that the productivity of different categories of labour may not have a significant impact on GVA, especially in the unorganised segment, the "*LI method*" was used as below:

GVA = LI (Rural) x GVAPW (Rural Establishments) + LI (Urban) x GVAPW (Urban Directory Establishments)

2.27. It may be worthwhile to note that in urban areas GVAPW/GVAPEW for Directory Establishments (having 6 or more workers) has been used since most of the establishments in urban areas are Directory Establishments. This is also in consonance with the practice adopted in previous series.

2.28. The estimates of GVAPW and LI for the unorganised manufacturing and nonfinancial service sector enterprises for the base year 2011-12, which have been computed using either of the above-mentioned methods, are given in *Annexure 2.3.*

2.29. The enterprise survey collects information on whether the enterprise is maintaining books of accounts or not. As recommended by SNA 2008, all these unincorporated enterprises have been classified as quasi-corporations, if they are

maintaining accounts, otherwise as household enterprises. Estimate of GVA from quasicorporations have been added to GVA of incorporated enterprises in case of nonfinancial corporations.

2.30. The list of indicators used for estimation of GVA in the subsequent years for the enterprises of manufacturing is given in *Annexure 2.4*, while those for the unorganised non-financial services is given in *Annexure 2.5*.

Other changes in the compilation procedure

2.31. Some of the other key changes that have been incorporated in the new series of national accounts are described in the following paragraphs.

(1) FISIM

2.32. In the earlier series, Financial Intermediation Services Indirectly Measured (FISIM), which gives an estimate of the 'net interest margin' of the financial corporations, was based on the difference between total property receipts (dividend+ interest+ net profit on sale of investments) and total interest payments by the financial corporations. In the new series, as recommended in the SNA 2008, the estimates of FISIM have been compiled, using the Reference Rate (RR) approach.²

(2) Output of RBI

2.33. The estimates of GVA of the Central Bank, i.e., the Reserve Bank of India (RBI), in the earlier series were computed using a mix of market and non-market approach. The issue department of the RBI was considered as non-market and a part of the General Government. The banking operations of the RBI were considered as market operations. In the new series, the entire operation

^{2.} See Paragraph 3.20 for more details.

of the RBI has been considered as non-market, as recommended in the SNA 2008 and the value of its output has been computed using the cost approach.³

(3) Unorganised financial enterprises (other than insurance agents)

2.34. In the financial services, in the 2004-05 series, the GVA of the unorganised sector was estimated as a fixed ratio (1/3rd) of the GVA of Government Companies and the Non-Government Non-Banking Financial Companies (NGNBFCs). This sector consisted of private moneylenders and unincorporated financial enterprises. In the new series, the estimates for private moneylenders have been derived using the information available from the NSS 70th round All India Debt and Investment Survey (AIDIS), 2013, RBI's annual publication - Basic Statistical Returns of Scheduled Commercial Banks in India, RBI's "Report of the Technical Group to review legislations on moneylenders", 2007 and NSS 67th round Survey on Unincorporated Enterprises, 2010-11. For the remaining unorganised financial enterprises, the estimates of GVA have been derived from NSS 67th round Survey on Unincorporated Enterprises, 2010-11.

(4) Sand

2.35. The estimate of 'extraction of sand' as part of minor minerals in the earlier series was found to be negligible as compared to its apparent use in construction. Therefore, in the new series, an indirect estimate of the value of output of 'ex-

traction of sand' at basic prices has been derived through the value of commodities used for 'construction'.

(5) Inclusion of construction materials as basic materials

2.36. Two new construction materials, namely, bitumen & bitumen mixtures and glass & glass products have been included in the list of basic materials used for estimation of value of output of construction activity. The output for these items has been derived from the Annual Survey of Industries, 2011-12. In addition, for the output of glass & glass products, information has also been taken from the manufacturing enterprises covered in NSS 67th round Survey on Unincorporated Enterprises, 2010-11. Due adjustments are then made on these estimates of output for excise duty, net imports and import duty, as also the value of these products used in the manufacturing sector as inputs, to derive the estimates of these two materials as used in construction.

(6) Use of Consumer Price Indices - Rural/ Urban/Combined

2.37. Price indices are used for compiling the estimates in two cases - (i) as a deflator when current price estimates are available through firm data sources, (e.g., annual financial reports) and (ii) for converting the constant price estimate to that at current prices, when quantum indicators are used in compilation. In the earlier series, CPI-AL/IW was being used as an indicator for the movement in retail prices. In the new series, these have been replaced by the more broad based CPI-Rural/Urban/Combined, which have since become available.

²⁶⁰

^{3.} See Paragraph 3.21 for more details.

ANNEXURE 2.1 GVA AT BASIC PRICES FOR THE YEAR 2011-12 By Industry and Institutional Sector

							(Rs. crore)
S. No.	Item	GG	DE	NDE	Pvt. Corp	HH	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Agriculture, forestry and fishing		40171	2077	37002	1426330	1505580
1.1	Crops		31678	1130	34751	919045	986604
1.2	Livestock				1159	322854	324013
1.3	Forestry and logging		8493	926	174	119512	129105
1.4	Fishing and aquaculture			21	918	64919	65858
2.	Mining and quarrying			161810	43508	57495	262813
3.	Manufacturing		27344	105779	1169029	180006	1482158
3.1	Food Products, Beverages and Tobacco		984	11334	115240	36653	164211
3.2	Textiles, Apparel and Leather Prod- ucts			63	101673	47959	149695
3.3	Metal Products		3093	19436	246017	26281	294827
3.4	Machinery and Equipment		18057	28541	254695	15193	316486
3.5	Other manufactured Goods		5210	46405	451404	53920	556939
4.	Electricity, gas, water supply & other utility services	19166	10058	111072	48060	6047	194403
5.	Construction	42781	11758	3455	131547	584552	774093
6.	Trade, repair, hotels and restaurants		255	20430	367055	495217	882957
6.1	Trade & repair services		255	19797	327650	445294	792996
6.2	Hotels & restaurants			634	39404	49924	89962
7.	Transport, storage, communication & services related to broadcasting		76692	52552	193297	207622	530163
7.1	Railways		59928	1255	27		61210
7.2	Road transport		3004	17646	44846	195392	260888
7.3	Water transport		655	454	5054	1029	7193
7.4	Air transport		50	980	3424		4454
7.5	Services incidental to transport		369	9975	50247	2982	63573
7.6	Storage			1935	2589	768	5292
7.7	Communication & services related to broadcasting		12686	20307	87109	7451	127553
8.	Financial services		5627	244178	230427		480232
9.	Real estate, ownership of dwelling & professional services	1704		3385	459268	594985	1059342
10.	Public administration and defence	492405					492405
11.	Other services	238919		617	165067	126796	531398
	TOTAL GVA at basic prices	794975	171905	705356	2844259	3679050	8195546

ANNEXURE 2.2 COMPILATION CATEGORIES ADOPTED IN NEW SERIES (B.Y. 2011-12) AND THEIR CONCORDANCE WITH NIC 2008

Sl. No.	Compilation Category	NIC 2008
(1)	(2)	(2)
1.	Agriculture, forestry & fishing	
1.1.	Crops & Livestock	01
1.2.	Forestry	02
1.3.	Fishing & aquaculture	03
2.	Mining & quarrying	05-09
3.	Manufacturing	
3.1.	Manufacturing of food products, beverages and tobacco	
3.1.1.	Production, processing and preservation of meat, fish, fruit, vegetables, oils and fats	101-104
3.1.2.	Manufacture of dairy products	105
3.1.3.	Manufacture of grain mill products, etc. and animal feeds	106 + 108
3.1.4.	Manufacture of other food products	107
3.1.5.	Manufacture of beverages	11
3.1.6.	Manufacture of tobacco products	12
3.2.	Manufacturing of textiles, apparel & leather products	
3.2.1.	Manufacture of textiles + cotton ginning	13+01632
3.2.2.	Manufacture of wearing apparel, except custom tailoring	14-14105
3.2.3.	Manufacture of leather and related products	15
3.3.	Manufacturing of metal products	
3.3.1.	Manufacture of Basic Iron and Steel + Casting of iron and steel	241+2431
3.3.2.	Manufacture of basic precious and non-ferrous metals + Casting of non- ferrous metals	242+ 2432
3.3.3.	Manufacture of fabricated metal products, except machinery and equipment	25
3.4.	Manufacturing of machinery and equipment	
3.4.1.	Manufacture of electronic component, consumer electronics, magnetic and optical media	261+264+268
3.4.2.	Manufacture of computer and peripheral equipment	262
3.4.3.	Manufacture of communication equipment	263
3.4.4.	Manufacture of optical and electronics products n.e.c	265+266+267
3.4.5.	Manufacture of Electrical equipment	27
3.4.6.	Manufacture of machinery and equipment n.e.c	28
3.4.7.	Manufacture of Transport	29+30
3.5.	Manufacturing of other goods	
3.5.1.	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting material	16
3.5.2.	Manufacture of paper and paper products	17
3.5.3.	Printing and reproduction of recorded media except publishing	18
3.5.4.	Manufacture of coke and refined petroleum products	19
3.5.5.	Manufacture of chemical and chemical products except pharmaceuticals, medicinal and botanical products	20
3.5.6.	Manufacture of pharmaceutical; medicinal chemicals and botanical products	21
3.5.7.	Manufacture of rubber & plastic products	22
3.5.8.	Manufacture of other non-metallic mineral products	23
3.5.9.	Manufacture of furniture	31
3.5.10.	Other Manufacturing	32
3.5.11.	Repair and installation of machinery and equipment	33
4.	Electricity, gas, water supply and other utility services	
4.1.	Electricity	351
4.2.	Gas - Manufacture & distribution	352+353
4.3.	Water Supply	36
4.4.	Sewerage, waste management and remediation activities	37,38,39

262

ANNEXURE 2.2 (Concld.)

Sl. No.	Compilation Category	NIC 2008
(1)	(2)	(2)
5.	Construction	Industry divisions 41 42 43
6.	Trade, repair, hotels & restaurants	,,
6.1.	Trade & repair services	
6.1.1.	Trade and repair of motor vehicles (including motor cycles) and retail sale of automotive fuel	45+473
6.1.2.	Wholesale trade except of motor vehicles and motor cycles + Wholesale of lottery tickets	46+92001
6.1.3.	Retail trade except of motor vehicles and motor cycles + retail sale of lottery tickets	47-473+92002
6.1.4.	Repair of computers and personal and household goods	95
6.2.	Hotels & Restaurants	55,56
7.	Transport, storage, communication & services related to broadcasting	
7.1.	Transport	
7.1.1.	Transport via Railways	491
7.1.2.	Road Transport	492
7.1.2.1.	Mechanized Road Transport	492-49226-49232
7.1.2.2.	Non-mechanized Road Transport	49226+49232
7.1.3.	Water Transport	50
7.1.4.	Air Transport	51
7.1.5.	Services incidental to transport	522
7.2.	Storage	521
7.3.	Communication & services related to broadcasting	
7.3.1.	Postal activities	531
732	Courier activities	532
7.3.3.	Activities of cable operators	61103
734	Telecommunication	61-61103
735	Recording Publishing and Broadcasting services	58 59 60
8	Financial Services	64 65 66
9.	Real estate, ownership of dwellings and professional services	,,
9.1.	Real estate and ownership of dwellings	68
911	Real Estate activities	68 - 681 (n)
912	Ownership of dwellings	681 (n)
9.2	Professional services	001 (p)
921	Computer and information related services	62 63
9.2.1	Professional scientific and technical activities (including R&D)	70 to 75
923	Administrative & support service activities and other professional activities	10 10 15
9231	Legal activities	691
9232	Accounting & book keeping activities	692
9233	Rental and leasing services	77
9234	Administrative and support services excluding rental and leasing services	78 to 82
10	Public Administration and defence	84
10.	A upice Administration and defence	04
11.1	Education (including coaching and tuition)	85
11.1.	Human health activities and care services with/without accommodation	86 87 88
11.2.	Recreational, cultural and sporting activities	90,91,92 (-92001,
11.4	Activities of membership organisations	94
11.4.	Personal Services & Other Services p.e.c.	74
11.5.	Washing & cleaning of textiles and fur products	0601
11.3.1.	Washing & cleaning of textiles and full products Hair dressing and other heauty treatment	9602
11.5.2.	Custom tailoring	1/105
11.3.3.	Other personal complex activities	14103
11.J.4. 11 <i>4</i>	Oner personal service activities Private households with ampleved persons	9009, 9003
11.0.	i nvate nousenoius with employed persons	71

Annexure 2.3 Estimates for the base year for Unincorporated Enterprises of Manufacturing and Non-financial Services

2.3.1 Estimates of Unincorporated Manufacturing for the Base Year 2011-12 derived using effective LI method GVA = Effective LI x GVA per Effective Worker (GVAPEW)

Sl. No.	Activity	Effective LI (Number)	Effective GVAPW (Rupees)
(1)	(2)	(3)	(4)
1.	Cotton ginning, cleaning and baling	36743	99752
2.	Production, processing and preservation of meat, fish, fruit vegetables, oils and fats	497592	193866
3.	Manufacture of dairy product	115027	130753
4.	Manufacture of grain mill products, etc. and animal feeds	1035359	132323
5.	Manufacture of other food products	1411621	91511
6.	Manufacture of beverages	139125	114838
7.	Manufacture of tobacco products	1246466	65662
8.	Spinning, weaving and finishing of textile+ Other textiles+ Knitted and crocheted fabrics and articles	4747232	105886
9.	Wearing apparel, except fur apparel and tailoring	1169420	91728
10.	Dressing and dyeing of fur; manufacture of articles of fur and tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	930792	104729
11.	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plating materials	1738745	112971
12.	Manufacture of furniture	1316920	135545
13.	Manufacture of Paper And Paper Products and publishing, printing and reproduction of recorded media	870685	139744
14.	Manufacture of coke, refined petroleum products and nuclear fuel and rubber and plastic products	544142	108649
15.	Manufacture of chemical and chemical products	824971	89253
16.	Manufacture of other non-metallic mineral products	3926903	74233
17.	Manufacture of Basic Iron & Steel+ Casting of iron and steel	497674	170256
18.	Manufacture of basic precious and nonferrous metals+ Cast- ing of non-ferrous metals	69254	88923
19.	Recycling of metal waste and scrap+ nonmetal waste and scrap	368141	87457
20.	Manufacture of fabricated metal products, except machinery and equipment	2071843	115431
21.	Manufacture of machinery and equipment n.e.c + office, accounting and computing machinery	639241	125067
22.	Electrical machinery and apparatus n.e.c.+ radio, television and communication equipment and apparatus	663128	113192
23.	Manufacture of medical, precision and optical instruments, watches and clocks+ Manufacturing n.e.c	2392901	80872
24.	Manufacture of motor vehicles, trailers and semi-trailers+ manufacture of other transport equipment	446654	143210

2.3.2 Estimates of Unincorporated Non-financial Services for the Base Year 2011-12 derived using LI method

LI Method: GVA =LIR x GVAPWR(Est)	+ LIU x GVAPWU(Directory Establishment)
-----------------------------------	---

Sl. No.	Compilation Category	LI (Number)		GVAPW (Rupees)	
		Rural	Urban	Rural (Est.)	Urban (DE)
(1)	(2)	(3)	(4)	(5)	(6)
1.	Maintenance and repair of motor vehicles and motor cycles	727422	1688196	73559	90982
2.	Sale of motor vehicles	227743	669317	357360	218259
3.	Whole sale trade except of motor vehicles	1738747	3678356	96490	191436
4.	Repair of personal and household goods	1492616	1471320	45926	71139
5.	Retail trade (except motor vehicle)	17682870	19842156	101884	191015
6.	Hotel & Restaurants	2979529	4908952	69283	104105
7.	Other non-scheduled passenger land transport	1197822	746105	72871	49942
8.	Freight transport other than by motor vehicles	632143	511749	86216	71929
9.	Other communication	53798	193699	32130	275232

2.3.3 Estimates of Unincorporated Non-financial Services for the Base Year 2011-12 derived using effective LI method

GVA = Effective LI x GVA per Effective Worker (GVAPEW)

Sl. No.	Compilation Category	Effect. LI (Number)	Effect. GVAPW (Ru- pees)
(1)	(2)	(3)	(4)
1.	Scheduled passenger land transport	1097186	260483
2.	Non-scheduled passenger land transport by motor vehicles	3554937	231756
3.	Freight transport by motor vehicles	4394989	216125
4.	Services incidental to transport	795790	168063
5.	Courier activities	164002	112566
6.	Cable operator	154745	134293
7.	Professional, scientific and technical activities (including R&D)	1999441	141299
8.	Activities Of Membership Organisations n.e.c.+ Social work with accommodation	527049	119164
9.	Recreational, cultural and sporting activities	1068650	170725
10.	Washing and cleaning of textile and fur products	441101	129476
11.	Hair dressing and other beauty treatment	1071007	118551
12.	Custom Tailoring	3240627	96049
13.	Funeral and related activities	1782189	135856

2.3.4 Estimates of Unincorporated Non-financial Services for the Base Year 2011-12 derived using modified effective LI method

 $GVA = Effective\,LI\,(rural)\,x\,GVAPEW\,(rural\,establishment) + LI\,(urban)\,x\,GVAPEW\,(urban\,directory\,establishment)$

Sl. No.	Compilation Category	Effective LI (Number)		GVAPEW (Rupees)	
		Rural	Urban	Rural (Est.)	Urban (DE)
(1)	(2)	(3)	(4)	(5)	(6)
1.	Water Transport	65200	356971	20405	26554
2.	Storage	80736	150968	101557	53132
3.	Real Estate Activities	110972	435604	205832	540849
4.	Renting of machinery & equipment without operator, personal / household goods	62521	88157	249304	287894
5.	Computer and Related activities	82364	197529	77131	606262
6.	Legal activities	106022	692120	150029	441462
7.	Accounting, book-keeping	138657	228116	36682	259623
8.	Coaching centres + Activities of the individu- als providing tuition	41609	359832	664541	848240
9.	Education excluding (Coaching centres + Activities of the individuals providing tuition)	75821	94201	1668175	2287797
10.	Human health activities	106059	167162	704927	1344153
11.	Sewerage And Refuse Disposal, Sanitation And Similar Activities	84592	112315	106721	74572

Annexure 2.4

2.4.1 List of indicators used for estimating Value Added in the Manufacturing Sector in the Old Series (B.Y. 2004-05) and in the New Series (B.Y. 2011-12) - Current Prices

S. No.	Institution	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
1.	Factories Registered Under Facto- ries Act (covered by ASI)	Compilation category wise IIP & WPI till ASI result available	Now classified under the respective institutional sector as described below
2.	Quasi corporate - Proprietory, Part- nerships, KVI- from ASI	-do-	Compilation category wise IIP & WPI till ASI result available
3.	DEs (incl Railway Workshops)	Revised Estimates from Budget followed by Actual Estimates	Revised Estimates from Budget followed by Actual Estimates
4.	NDEs	Not taken separately	Growth from accounts of common Companies, applied to all Compan- ies till final accounts become avail- able
5.	Private Corporate	Not taken separately	-do-
6.	Unorganised	Estimates compiled compilation categorywise by using IIP and WPI	Estimates compiled compilation category-wise by using IIP and WPI, till ASI data becomes avail- able

S. No.	Institution	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
1.	Factories Registered Under Facto- ries Act (covered by ASI)	Current price estimates deflated by relevant WPI	Now classified under the respective institutional sector as described below
2.	ASI (Quasi corporate) - Propri- etory, Partnerships, KVI	-do-	Actual estimates of current price deflated by relevant WPI
3.	DEs (incl Railway Workshops)	-do-	-do-
4.	NDEs	Not taken separately	-do-
5.	Private Corporate	Not taken separately	-do-
6.	Unorganised	Benchmark estimates moved using IIP	-do-

2.4.2 List of indicators used for estimating Value Added in the Manufacturing Sector in the Old Series (B.Y. 2004-05) and in the New Series (B.Y. 2011-12) - Constant Prices

ANNEXURE 2.5

2.5.1: List of indicators used for estimating Value Added for each Compilation Category in the Unorganised Non-Financial Services Sector in the Old Series (B.Y. 2004-05) and in the New Series (B.Y. 2011-12) - Current Prices

S. No.	Compilation Category	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
1.	Maintenance and repair of motor vehicles and motor cycles	GTI index	Motor vehicles Sales growth * WPI
2.	Sale of motor vehicles	GTI index	Total sales tax converted to turnover and adjusting for private corporate and NDEs give turnover for sales tax paying unorganised sector. Growth is used as an indicator
3.	Wholesale trade except of motor vehicles and motor cycles + Whole- sale of lottery tickets	GTI index	As in 2
4.	Retail trade except of motor vehicles and motor cycles + retail sale of lot- tery tickets	GTI index	As in 2
5.	Repair of computers and personal and household goods*	GTI index	Service tax growth
6.	Hotels & Restaurants	GTI index	Corporate growth
7.	7. Scheduled passenger land transport	Growth in registered vehicles * WPI	
8.	Non-scheduled passenger land trans- port by motor vehicles		
9.	Freight transport by motor vehicles		Growth in registered vehicles * CPI (Transport & Communication)
10.	Other non-scheduled passenger land transport	LI method	
11.	Freight transport other than by motor vehicles	LI method	

(Contd.)

S. No.	Compilation Category	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
12.	Water Transport	Index of cargo handled at major and minor ports X WPI	Index of cargo handled at major and minor ports X WPI
13.	Storage and warehousing	LI method	Corporate growth
14.	Services incidental to transport*	Combined growth of Road, Water and Air transport	Combined growth of Road & Water Transport
15.	Courier activities	LI method	Service tax growth
16. 17.	Cable operator Telecommunication #	LI method Growth in subscribers/minutes of usage & Implicit price deflator of Private corporate	Service tax growth
18.	Recording, Publishing and Broad- casting services^		Corporate growth
19.	Real Estate Activities	LI method	I
20.	Computer and information related	Private corporate growth	
21.	Professional, scientific and techni-	LI method	
	cal activities (including R&D)*		Commente anna th
22.	Administrative & support service activities excluding rental and leas- ing services*	LI method	Corporate growth
23.	Rental and leasing services	LI method	
24.	Legal activities	LI method	
25.	Accounting, book-keeping	LI method	
26.	Ownership of dwellings	Rural : User cost approach Urban : Gross rentals - R&M	Same as in earlier series.
27.	Coaching centres + Activities of the individuals providing tuition	LI method	Growth in consumer expenditure
28.	Education excluding (Coaching centres + Activities of the individu- als providing tuition)	Growth in consumer expenditure	Growth in consumer expenditure
29.	Human health activities and care services with/without accommoda- tion*	Growth in consumer expenditure	
30.	Sewage And Refuse Disposal, San- itation And Similar Activities	LI method	Now a component of utilities sector
31.	Activities Of Membership Organi- sations*	LI method	Service tax growth
32.	Recreational, cultural and sporting activities*	LI method	Growth in non-food consumer expenditure
33.	Washing and cleaning of textile	LI method	-do-
34.	and fur products Hair dressing and other beauty	LI method	Service tax growth
35.	treatment Custom Tailoring	LI method	Growth in non-food consumer
36. 37.	Other personal services Private households employing staff	Population Growth LI method	-do- LI method

Earlier classified as Other Communication. ^ New category * Modified category

S. No.	Compilation Category	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
1.	Maintenance and repair of motor vehicles and motor cycles	GTI index	Motor vehicles Sales growth
2.	Sale of motor vehicles	GTI index	
3.	Wholesale trade except of motor vehicles and motor cycles + Wholesale of lottery tickets	GTI index	
4.	Retail trade except of motor vehicles and motor cycles + retail sale of lottery tickets	GTI index	Current prices deflated using WPI/CPI
5.	Repair of computers and personal and household goods*	GTI index	
6.	Hotels & Restaurants	GTI index	
7.	Scheduled passenger land transport	Growth in registered vehicles	
8.	Non-scheduled passenger land transport by motor vehicles	Growth in registered vehicles	
9.	Freight transport by motor vehicles	Growth in registered vehicles	Moved using growth in registered vehicles.
10.	Other non-scheduled passenger land transport	Moved using LI growth	
11.	11. Freight transport other than by motor vehicles		
12.	Water Transport	Index of cargo handled at major and minor ports	Moved using Index of cargo han- dled at major and minor ports.
13.	Storage and warehousing	Moved using LI growth	Current prices deflated using WPI
14.	Services incidental to transport*	Combined growth of Road, Water and Air transport	Moved using combined growth of Road & Water Transport
15.	Courier activities	Moved using LI growth	Current prices deflated using CPI (Transport & Communication)
16.	Cable operator		
17.	Telecommunication #	Growth in subscribers	Moved using growth in minutes of usage
18.	Recording, Publishing and Broad- casting services		Current prices deflated using CPI (Transport & Communication)
19.	Real Estate Activities		
20.	Computer and information related services*		
21.	Professional, scientific and techni- cal activities (including R&D)*	Moved using LI growth	Current prices deflated by CPI (misc. services)/WPI
22.	Administrative & support service activities excluding rental and leas- ing services*		
23.	Rental and leasing services^		
24.	Legal activities		
25.	Accounting, book-keeping		

2.5.2: List of indicators used for estimating Value Added for each Compilation Category in the Unorganised Non-Financial Services Sector in the Old Series (B.Y. 2004-05) and in the New Series (B.Y. 2011-12) - Constant Prices

(Contd.)

S. No.	Compilation Category	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
26.	Ownership of dwellings	Rural: current price deflated by CPI (AL) Urban: Using growth in no. of dwellings	Current price deflated by CPI (R) Same as in earlier series.
27.	Coaching centres + Activities of the individuals providing tuition		Current prices deflated by CPI (Education)
28.	Education excluding (Coaching centres + Activities of the individu- als providing tuition)		
29.	Human health activities and care services with/without accommoda- tion*	Moved using LI growth.	Current prices deflated by CPI (Health)
30.	Sewage And Refuse Disposal, San- itation And Similar Activities		Now a component of utilities sector
31.	Activities Of Membership Organi- sations*		Current prices deflated by CPI (misc. services)
32.	Recreational, cultural and sporting activities*		Current prices deflated by CPI (recreation)
33.	Washing and cleaning of textile and fur products	•	Current prices deflated by CPI (misc. services)
34.	Hair dressing and other beauty treatment		
35.	Custom Tailoring		
36.	Other personal services	Population Growth	
37.	Private households employing staff	Moved using LI growth	Current prices deflated by CPI (general index)

Earlier classified as Other Communication.

^ New category

* Modified category

SECTION 3. Changes in the institutional sectors

3.1. The changes made in the new series in the institutional sectors have affected the estimates across industries. These changes have been discussed in this Section.

Public Financial and Non-Financial Corporations

3.2. There has been no change in the methodology adopted for compilation of estimates in the Departmental and Non-Departments Enterprises. However, the following changes in respect of NDEs have been incorporated in the new series-

- Use of the latest list of Central Public Sector Undertakings from the Annual Report of the Department of Public Enterprises;
- (ii) Incorporation of the estimates of NDEs for the compilation of mining and manufacturing industries -

In the new series, 'enterprise approach' has been adopted for compiling the estimates of mining and manufacturing sectors. Therefore, the estimates of the Non Departmental Enterprises (NDEs), both Central and State, as compiled from their Annual Report, are being used for compilation of the estimates pertaining to these industries. However, care has been taken to ensure that NDEs have been excluded while using data from the Annual Survey of Industries (ASI) and the XBRL/ MCA 21 data of the Ministry of Corporate Affairs, to avoid double counting.

3.3. Changes have also been made in two Departmental Enterprises - Railways and Department of Posts. These are described as under:

			(Rs. crore)
Type of Service	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Postal Service	10172	12686	24.71
PL Insurance	336	336	0
POS Bank	2907	4316	48.47
Total	13415	17338	29.24

(1) Railways

3.4. Estimates of Railways have three components - Administration, Manufacturing and Transport. No changes have been made in Railway Administration and Rail Transport. As regards railway manufacturing, in the earlier series, the block account of 5 production units of Indian Railways - Chittaranjan Locomotive Works, Diesel Locomotive Works, Integral Coach Factory, Rail Wheel Factory and Rail Coach Factory - were being analysed for compiling the estimates of capital formation. In the new series, apart from these 5 production units, block accounts of two more production units -Railway Electrification, Allahabad and Diesel Modernisation Component Work, Patiala - have also been analysed.

(2) Department of Posts

3.5. Estimates of Communication are prepared by analysing Demand for Grants of D/o Post. Estimates are prepared for three components namely: Postal Services, Post Office Savings Bank (POSB) and Postal Life Insurance (PLI). In the 2004-05 series, GVA of POSB was computed as a fixed percentage of receipts. In the new series, actual data of POSB, which is available in the Demand for Grants of D/o Posts have been used to estimate GVA.

3.6. Comparative estimates of GVA for the year 2011-12 (at current prices) for the three components are given below:

Private Non-Financial Corporations

3.7. Significant change has been made in terms of coverage of private non-financial corporations. In the earlier series, estimates for these corporations were prepared using the RBI Study on Company Finances. The data sources and methodology used in the new series for this sector are given in the following paragraphs.

3.8. Non-financial private corporate sector consists of

- (i) Non-financial Private Companies registered with Ministry of Corporate Affairs (MCA) under the Companies Act, 1956,
- (ii) Limited Liability Partnerships registered with MCA under LLP Act, 2008 and
- (iii) Quasi-corporate sector which are enterprises not registered under companies but maintain accounts.

This section discusses compilation procedure alongwith data sources in respect of (i) and (ii). The methodology for (iii) is the same as that for household enterprises and has been provided in Section 2, Paras 2.13 to 2.28.

Definition and data source: (i) Non-financial private companies registered with Ministry of Corporate Affairs under the Companies Act:

3.9. For new series (Base Year 2011-12), estimates for the non-financial private companies have been prepared using the database created under an e-governance project, called MCA21,

by the Ministry of Corporate Affairs. Under MCA21 project, a database of the annual financial reports is created every year by online data submission by the companies registered under Companies Act under two web platforms namely, (i) Form 23 AC/ACA and (ii) Form 23 AC/ACA-XBRL (Extensible Business Reporting Language).

3.10. Companies falling in the following categories file their Balance Sheet and Profit & Loss Account using Extensible Business Reporting Language (XBRL) taxonomy for financial year commencing on or after 01.04.2011:

- all companies listed with any Stock Exchange(s) in India and their Indian subsidiaries; or
- b. all companies having paid up capital of Rupees five crore and above; or
- c. all companies having turnover of Rupees one hundred crore and above; or
- d. all companies who were required to file their financial statements for FY 2010-11, using XBRL.

However banking companies, power companies, non-banking financial companies and insurance companies are exempted from compulsory XBRL filing as of now.

Companies not falling in the above categories are required to file balance sheet and Profit & Loss information in the summarized form in 23 AC/ACA format.

3.11. Each company is having a Company Identification Number (CIN) which is a 21 digit number given by Registrar of Companies, MCA at the time of registration. CIN includes the information on economic activity at five digit level of NIC 2004 and codes indicating whether the company is a government company or a Section 25 company (coded as 'NPL') or a private company.

MCA has shared the financial data for 23AC/ACA and XBRL companies with CSO for compilation of national accounts statistics. Estimates of output for NPL companies are prepared separately by cost method (where Output = Compensation of Employees + Intermediate Consumption + Consumption of Fixed Capital + Production taxes less Production subsidies) and output for private companies is estimated as "Sale + Miscellaneous Income - (Product tax - Product subsidies)."

(ii) Limited Liability Partnership Companies (LLPs) registered with MCA under LLP Act, 2008:

3.12. MCA has also shared the financial reports for LLPs. LLPs are not registered under Companies Act but registered under LLP Act, 2008. The enterprises registered under LLP Act, 2008 are also not covered by the NSS 67th round Survey on Unincorporated Enterprises, 2010-11. Estimates for LLPs are prepared by production approach.

Size of the non-financial private corporate sector:

3.13. Table 1 shows the industry-wise number of companies for which the estimates were prepared based on the data made available by MCA.

Sl. No.	Compilation Category	Number of MCA 21 companies in 2011-12 as on 15.12.2014		Number of Sec- tion 25 (NPL) Companies	Number of LLPs	
		23AC/ACA	XBRL	Total	p	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Agriculture, forestry & fishing	11671	258	11929	31	116
1.1.	Crops & Livestock	10712	177	10889	28	113
1.2.	Forestry	361	2	363	2	1
1.3.	Fishing & aquaculture	598	79	677	1	2
2.	Mining & quarrying	6472	249	6721	3	42
3.	Manufacturing	123120	12682	135802	93	665
4.	Electricity, gas, water sup- ply and other utility ser- vices	5402	850	6252	20	74
4.1.	Electricity	3856	756	4612	3	54
4.2.	Gas - Manufacture & dis- tribution	233	30	263	0	0
4.3.	Water Supply	1081	10	1091	6	17
4.4.	Sewerage, waste manage- ment and remediation acti- vities	232	54	286	11	3
5.	Construction	55804	3617	59421	40	938
6.	Trade, repair, hotels & res- taurants	90888	4787	95675	30	751
6.1.	Trade & repair services	80117	4005	84122	27	623
6.1.1.	Trade and repair of motor vehicles (including motor cycles) and retail sale of automotive fuel	2895	62	2957	0	30
6.1.2.	Wholesale trade except of motor vehicles and motor cycles + Wholesale of lot- tery tickets	63962	3253	67215	24	398
6.1.3.	Retail trade except of motor vehicles and motor cycles + retail sale of lot- tery tickets	13260	690	13950	3	195
6.2.	Hotels & Restaurants	10771	782	11563	3	128
7.	Transport, storage, com- munication & services related to broadcasting	15540	1472	17312	28	121
7.1.	Transport	11316	852	12468	14	106
7.1.1.	Transport via Railways	0	7	7	0	0
7.1.2.	Road transport	2180	158	2338	2	15
7.1.3.	Water Transport	520	59	579	1	3
7.1.4.	Air Transport	0	63	363	0	0
7.1.5.	Services incidental to transport	8616	565	9181	11	88
7.2.	Storage	1648	30	1678	0	0
7.3.	Communication & services related to broadcasting	2576	590	3166	14	15

Table 1: Industry wise number of companies / LLPs

(Contd.)

Sl. No.	Compilation Category	Number of MC as	Number of MCA 21 companies in 2011-12 as on 15.12.2014		Number of Sec- tion 25 (NPL) Companies	Number of LLPs
		23AC/ACA	XBRL	Total	I to the	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
7.3.2.	Courier activities	356	12	368	0	0
7.3.4.	Telecommunication	299	251	550	2	15
7.3.5.	Recording, Publishing and Broadcasting services	1921	327	2248	12	0
9.	Real estate, ownership of dwellings and professional services	131621	4236	135587	381	3822
9.1.	Real estate and ownership of dwellings	39527	1829	41356	18	1012
9.1.1.	Real Estate activities	39527	1829	41356	18	1012
9.2.	Professional services	92094	2407	94501	363	2810
9.2.1.	Computer and information related services	32457	1217	33674	17	910
9.2.2.	Professional, scientific and technical activities (incl- uding R&D)	59371	1150	60521	345	2193
9.2.3.	Administrative & support service activities and other professional activities	266	40	306	1	7
11.	Other Services	54103	979	55082	1771	662
11.1.	Education (including coaching and tuition)	4906	180	5086	470	135
11.2.	Human health activities and care services with/without accommoda- tion	8559	375	8934	474	99
11.3.	Recreational, cultural and sporting activities	2667	259	2926	77	82
11.4.	Activities of membership organisations	225	12	237	355	9
11.5.	Personal Services	4995	153	5149	395	337
Total No	on-financial Corporations	32750 494621	29130	32750 524051	2397	7191

Table 1: (Concld.)

Note to Table 1: Financial Services, Postal Services, Repair Services and Public Administration are not shown in the table since they do not belong to the 'Nonfinancial Corporations' Sector.

Comparison of GVA for non-financial private corporate enterprises

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. More detailed estimates have been given at

estimated gross value added (GVA) for non-

3.14. Table 2 shows the comparison between Annexure 3.1.

				(13: 61016)
S. 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 pro- fessional services	321750	397932	23.7
11.	Other Services	143796	74001	-48.5
	Total Non-financial Corporations	1773031	1946989	9.8

 Table 2: GVA for non-financial private corporate sector excluding quasicorporate sector in 2011-12

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.

Financial Corporations

3.15. In the new series of national accounts, the following information has been incorporated for the first time-

- (i) Annual accounts of the Mutual Funds (excluding UTI MF) registered with the Securities and Exchange Board of India (SEBI);
- (ii) Annual accounts of the stock brokers and stock exchanges registered with SEBI (who are also registered under the Companies Act);
- (iii) Annual accounts of the financial regulatory authorities, like SEBI, IRDA and PFRDA; and
- (iv) Annual accounts of the Pension Funds registered with the Pension Fund Regulatory and Development Authority (PFRDA).

3.16. Further, the financial corporations have been sub-sectored as recommended by SNA 2008. The sub-sectors are:

1. Central Bank

- 2. Deposit-taking corporations except the Central Bank
- 3. Money market funds (MMF)
- 4. Non-MMF investment funds
- 5. Other financial intermediaries except insurance corporations and pension funds (ICPF)
- 6. Financial auxiliaries
- 7. Captive financial institutions and money lenders
- 8. Insurance corporations (IC)
- 9. Pension funds (PF)

3.17. Adoption of sub-sectorisation has effected some changes in classification. These include, classifying the insurance agents under financial auxiliaries; disaggregation of the mutual funds into Money-Market Funds (MMF), non-MMF and Asset Management Companies (AMCs) and treating the AMCs as financial auxiliaries. In the earlier series, insurance agents were under the insurance sub-sector and entire NBFCs were treated together.

Improvement in coverage of mutual funds

3.18. Estimates pertaining to mutual funds in the

earlier series were compiled using the annual accounts of the Unit Trust of India (UTI). In the new series, both public and private mutual funds have been comprehensively covered. Further, these have been segregated into Money Market Funds (MMF), non-MMF and Asset Management Companies (AMCs), as per the recommendations of SNA 2008.

3.19. The estimates of GVA for financial services have changed due to two reasons, namely, methodological changes made in computation of the value of output of financial services, specifically Financial Intermediation Services Indirectly Measured (FISIM), output of Central Bank (RBI), GVA of moneylenders and incorporation of additional data from the MCA 21 and regulatory agencies, like the SEBI, IRDA and the PFRDA.

FISIM

3.20. In the previous base, the FISIM component of the output of financial intermediaries was based on the difference between total property receipts (dividend+ interest+ net profit on sale of investments) and total interest payments by the banking sector. In the present base, the FISIM has been computed only on loans and deposits, using the Reference Rate (RR) approach, as recommended in the SNA 2008. In short, it is (LR-RR)* average stock of loans + (RR-DR) * average stock of deposits. The RR = harmonic mean of lending rate and deposit rate for the banking sector. Moreover, FISIM, under the present method, does not include interest receipts on investments and debt securities, interest paid on borrowings and debt securities and net profit on sale of investments (POSI). These components have been considered as property income, which come directly under the gross savings of the financial corporations. Exclusion of receipts like POSI from the FISIM computation has also reduced the GVA of the banking sector.

Output and GVA of RBI

3.21. In the earlier series, GVA of the Central Bank, that is, the Reserve Bank of India (RBI) was computed using a mix of market and nonmarket approach. The issue department of the RBI was considered as non-market and a part of the general Government. The banking operations of the RBI were considered as market operations. SNA 2008 recommends classifying the operations of Central Bank into three components monetary policy services; intermediary services; and supervisory services. Monetary policy services are non-market in nature, while the intermediary services are market services. It further recommends that in cases where market output is not separated from non-market output, the whole of the output of the central bank should be treated as non-market and valued at the sum of costs.

3.22. In the Indian context, disaggregated accounts are not available for RBI separately for the three services. Therefore, in the new series, the entire operation of the RBI has been considered as non-market and the value of its output has been computed using the cost approach. It may also be noted that, as the net profit on sale of investments (in case of the RBI, net profit on sale of securities) is not a part of FISIM computation in the new series, its contribution no longer remains a part of the output, irrespective of the approach followed for computation of the value of output, and, consequently, the GVA.

GVA of unorganised financial enterprises (excluding insurance agents)

3.23. In the 2004-05 series, the GVA of this sector was estimated as one-third of the GVA of Government Financial Companies and the NGNBFCs (including HDFC). This sector included private money lenders and the remaining unorganised financial services, which in the new series, has been estimated separately as under:

* For the private money lenders, the following steps are followed to compute the GVA

- * The quantum of loan advanced by the money lenders to the households has been estimated using the data from the NSS 70th round AIDIS, 2013 and RBI's annual publication - Basic Statistical Returns of Scheduled Commercial Banks in India, which gives the loans advanced to households.
- * Interest rates charged by private money lenders have been taken from RBI's "Report of the Technical Group to review legislations on moneylenders", 2007.
- * FISIM calculated by RR method has been taken to be equivalent to the output.
- * The ratio of intermediate consumption to the total interest receipts, as estimated from NSS 67th round Survey on Unincorporated Enterprises, 2010-11, has been used to estimate intermediate consumption, and hence, GVA.
- * For the remaining unorganised segment, the estimate of GVA has been prepared from the NSS 67th round Survey on Unincorporated Enterprises, 2010-11.

3.24. In the base 2004-05, the estimates of Non-Government Non-Banking financial companies

(NGNBFC) were compiled using the sample study of NGNBFCs conducted by RBI and then blowing up that figure using the Paid-Up Capital (PUC) of the NGNBFCs (i.e., ratio of PUC of all NGNBFCs to that of covered NGNBFCs). As the samples were drawn independently each year, the coverage of these units used to vary. To overcome this, a three-year average was used in the base 2004-05. In the present base, the financial data of top 195 NGNBFCs was obtained from the RBI, for each of these years. The blowing up procedure has been kept the same.

3.25. Finally, in the present base, financial data of some more companies have been brought under the ambit of analysis. This include, private mutual funds and their Asset Management Companies (AMCs), whose list as well as data has been provided by the SEBI; private pension funds, whose list and data has been provided by the PFRDA and the three regulatory agencies, namely, the SEBI, IRDA and PFRDA.

3.26. The effect on the above-mentioned changes in the GVA of the financial corporations for the year 2011-12 can be seen in the Table 3.

Sub-sectors of financial services	2004-05 series	2011-12 series	% Difference
(1)	(2)	(3)	(4)
RBI	26122	3236	-87.6
SCBs (incl. Regional Rural Banks)	254602	246452	-3.2
Post Office Savings Bank (POSB)	2907	4316	48.5
NBFIs	68226	91344	33.9
Co-operative credit society (includes Cooperative Banks)	14889	23854	60.2
Unorganised	18033	44663	147.7
Insurance	95742	65392	-31.7
Life	64611	40487	-37.3
Non-Life	31131	24905	-20.0
Pension Fund	974	975	0.1
Financial Services (Total)	481495	480232	-0.3

 Table 3. GVA at current prices of the financial corporations for the year 2011-12

These will be merged with Scheduled Commercial Banks in the publication, NAS.

Note: New series estimates are at basic prices while the estimates in the old series at factor cost. Estimates of GVA at factor cost for the new series for the year 2011-12 is estimated at Rs.4,79,860 crore.

(Rs crore)

General Government

3.27. There has been no change in the methodology adopted for compilation of estimates of General Government. However, two changes in the sector are

- (i) RBI's Issue Department which was earlier included in the Government, is now treated as part of Financial Corporations; and
- (ii) Improvement in the coverage of this sector in the new series in local bodies and autonomous institutions.

1. Local Bodies (LB)

3.28. As per recommendations of the Thirteenth Finance Commission (TFC), one of the milestones to be achieved by the States' Directorate of Economics and Statistics (DES), is the economic and purpose classification of expenditure of Local Bodies (LB) by collecting their receipt and payment accounts. Under TFC, DES of eleven States - Uttar Pradesh, Tamilnadu,

Meghalaya, Maharashtra, Kerala, Karnataka, Himachal Pradesh, Delhi, Chandigarh, Andhra Pradesh and Telangana - have collected the accounts of local bodies, analysed them for the economic and purpose classification of their expenditure. On the basis of this information, which accounts for about 60% of the transfers to all local bodies, national level estimates are compiled. Estimates for the States, where accounts of local bodies have not been analysed, the national level estimates are apportioned to the State based on the share of the transfers received by the State, after making due adjustments for the actual estimates of the above-mentioned eleven States.

3.29. As a result of the changes mentioned above, the estimates for the base year 2011-12 have undergone change. A comparative picture of changes in the estimates of LBs is given in Table 4.

Table 4. Comparison of estimates of NVA and GFCF of Local Bodies for the year 2011-12 for the old (2004-05) series and new (2011-12) series

I. Net Value Addition by activity			(Rs. crore)
Activity	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Construction	3029	2645	-12.7
Water Supply	4151	2966	-28.5
Education	22096	24109	9.1
Medical	7227	7000	-3.1
Sanitation	7692	5344	-30.5
Public Admn & Defence	33362	33531	0.5
Total	77557	75595	-2.5

II. Gross Fixed Capital Formation by Activity

			(Rs. crore)
Activity	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Construction	93	127	36.6
Water Supply	4419	7467	69
Education	7236	5359	-25.9
Medical	1658	2583	55.8
Sanitation	0	2609	N.A.
Public Admn & Defence	101428	70021	-31
Total	114,834	88,166	-23.2

278

2- Autonomous Institutions (AI)

3.30. A large number of Autonomous Institutions (AIs) have been set up by various Ministries/Departments of Central and State Governments for different purposes and substantial grants are released to them every year. These grants have a significant share in the government current expenditure, and are reflected in the government budgets. In addition to the grants, the recipient institutions also generate additional resources on their own to meet their expenditure for payment of salaries, pension, office expenses and acquisition of fixed assets. Details of such expenses are not available in the budget documents. Therefore, it becomes imperative to analyse the accounts of AIs for compilation of estimates of value added, capital formation and consumption expenditure. In the 2011-12 series, the coverage of Central Government AIs has been improved.

3.31. In the 2004-05 series, the accounts of seven major Central AIs were analysed and estimates were projected on the basis of grants given to the Central AIs. In 2011- 12 series, the Central Government's AIs have been classified under two

groups. One group pertains to AIs engaged in R&D activities and another group pertains to AIs engaged in non R&D activities. This has been done to take into account SNA 2008 recommendation that expenditure on Research and Development (R&D) should be treated as fixed capital formation. The accounts of 27 AIs engaged in Research and Development (R&D) and 55 AIs engaged in activities other than R&D have been analysed. Moreover, the non-R&D AIs have been further classified into homogeneous groups like Indian Institute of Technology, Indian Institute of Management, Central Universities and other AIs. Estimates compiled for each of these homogeneous groups have been projected separately on the basis of total grants. These analysed AIs cover almost 60% of total grantsin-aid given to all Central AIs. A comparative picture of changes in the estimates of Central AIs for the year 2011-12 is given in Table 5.

3.32. After implementing the above mentioned changes, the changes in the estimates of General Government for the year 2011-12 are given in Table 6.

 Table 5. Comparative estimates of NVA and GFCF of Autonomous Institutions for the year 2011-12 in the old (2004-05) series and new (2011-12) series

I. Net Value Added by Activity

			(Rs. crore)
Activity	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Education	20005	23984	19.9
Medical	5363	1719	-67.9
Public Admn & Defence	24648	13055	-47
Total	50016	38758	-22.5

II. Gross Fixed Capital Formation by Activity

			(Rs. crore)
Activity	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Education Medical Public Admn & Defence Total	4150 2242 10394 16786	8056 503 13424 21983	94.1 -77.6 29.2 31.0

Table 6. Comparative estimates of NVA and GFCF of General Government for the year 2011-12 in the old (2004-05) series and new (2011-12) series

I. Net Value Added by Activity

			(Rs. crore)
Activity	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Construction	17016	16743	-1.6
Water Supply	9751	8564	-12.2
Education	173328	179770	3.7
Medical	51026	51397	0.7
Sanitation	8049	5712	-29
Real estate and ownership of dwelling	27	27	0
Public Admn & Defence	440604	407207	-7.6
Total	699801	669420	-4.3

Note: NVA in the case of 'public administration & defence' is the same at 'basic prices' and 'at factor cost' since there are no production taxes or production subsidies in this case.

II. Gross Fixed Capital Formation by Activity

			(Ks. crore)
Activity	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Construction	404	345	-14.6
Water Supply	11858	14926	25.9
Education	20632	21241	3
Medical	8215	6914	-15.8
Sanitation	841	3455	310.8
Real estate and ownership of dwelling	8746	8926	2.1
Public Admn & Defence	252268	261995	3.9
Total	302965	317803	4.9

3.33. The decline in the NVA of local bodies and Autonomous Institutions is also reflected in the downward revision of Government Final Consumption Expenditure (GFCE) for the year 2011-12, which has reduced from Rs. 10,25,895 crore in the old (2004-05) series to Rs. 9,87,220 in the new (2011-12) series.

Classification of Taxes and Subsidies:

3.34. In the earlier series, the indirect taxes, such as customs, excise, sales tax and service tax, were classified as 'product' taxes and the remaining indirect taxes and land revenue were treated as 'production taxes'. In the case of subsidies, the total subsidies were netted of the production subsidies as given in the annual reports of NDEs, to obtain the product subsidies. However, as per

SNA, both taxes and subsidies should be classified as product and production, depending on whether they are paid/received on the factors of production or on per unit of output. This recommendation has been implemented in the new series of national accounts. A list of production taxes, production subsidies, product taxes and product subsidies is given in *Annexure 3.2*.

Production tax/ Production subsidy

3.35. Production tax or production subsidy is paid/received on the factors of production - land, labour or capital, irrespective of the volume of production. For instance, land revenue and stamp tax are treated as production taxes, while, the input subsidies to farmers, some mining industries, dredging subsidies to Kolkata Port Trustetc.

have been treated as production subsidies.

3.36. In respect of the Departmental Enterprises (DEs) of the Government, which are engaged in market operations, these enterprises function despite regular losses because of financial support given by the Government (Central or State, as the case may be). D/o Post, Delhi Milk Scheme and Chandigarh (UT) Transport Undertaking are some of Central DEs. The Department of State Transport, Haryana is one of the state DEs. The losses to these DEs are treated as production subsidies.

Product tax/ Product subsidy

3.37. Product tax or product subsidy is paid/ received on per unit of output. Some examples are - excise tax, sales tax or subsidies on LPG cylinder, subsidy given to Food Corporation of India (FCI), subsidy provided to banks for providing cheap loans to beneficiaries, subsidy given to insurance corporations for providing insurance at subsidised rates.

3.38. A comparative statement on the values of production/product taxes and subsidies is given in Table 7.

			(1(3. 61010)
Item	Old 2004-05 Series	New 2011-12 Series	% Difference
(1)	(2)	(3)	(4)
Product Taxes	819733	886969	8.2
Product Subsidies	345398	250503	-27.5
Production Taxes	147923	85020	-42.5
Production Subsidies	4227	95873	2168.1

 Table 7. Taxes and Subsidies on Production/Product for the year 2011-12

3.39. Further, subsidies given to Food Corporation of India (FCI), which are primarily product subsidies, in the earlier series, were shown as subsidies given to Agriculture sector in Classification of Functions of Government (COFOG). However, since the major economic activity of FCI is that of trade, the subsidy to FCI in the new series will be shown as subsidies given to Trade sector in COFOG classification. Consequently, in the new series, the agricultural subsidies would be reduced in COFOG classification.

Households (including NPISH)

3.40. The major change in the estimate of GVA for this sector is due to the adoption of *effective LI method* and latest Survey on Unincorporated Enterprises, the details of which have been given in Section 2, Paras 2.13 to 2.28. Comparative estimates for household sector at current prices are given in Table 8. It may be noted that the

estimates are not strictly comparable since in the 2004-05 series, household sector included quasi-corporations whereas in the new (2011-12) series, these have been included in corporate sector and hence not included in this sector.

3.41. In the earlier series, expenditure of households on purchase of gold and silver ornaments was treated as consumption expenditure and included in PFCE. In the new series, gold and silver ornaments acquired by the households are treated as savings of households in the form of valuables. This has been estimated using information available from NSS 68th round Consumer Expenditure Survey (CES) for the base year. For the subsequent years, this has been estimated using information on corresponding output in the manufacturing sector, duly adjusted by their imports and exports.

(Rs crore)

	(
S. No.	Item	2004-05 Series	2011-12 Series	% Difference	
(1)	(2)	(3)	(4)	(5)	
1.	Agriculture, forestry & fishing	1420165	1426330	0.4	
1.1.	Crops*	1231323	919045	0.9	
1.2.	Livestock		322854		
1.3.	Forestry and logging	122005	119512	-2.0	
1.4.	Fishing & aquaculture	66837	64919	-2.9	
2.	Mining & quarrying	28040	57495	105.0	
3.	Manufacturing	350634	180006	-48.7	
4.	Electricity, gas, water supply and other utility services	3800	6047	59.1	
5.	Construction	437835	584552	33.5	
6.	Trade, repair, hotels & restaurants	1170752	495217	-57.7	
6.1.	Trade & repair services	1084321	445294	-58.9	
6.2.	Hotels & Restaurants	86431	49924	-42.2	
7.	Transport, storage, communication & services related to broadcasting	398210	207622	-47.9	
7.1.	Transport by means other than railway	361903	199403	-44.9	
7.2.	Storage	2833	768	-72.9	
7.3.	Communication & services related to broadcas- ting	33474	7451	-77.7	
8.	Financial services	43526	**	-	
9.	Real estate, ownership of dwellings and pro- fessional services	578549	594985	2.8	
10.	Other Services	274148	126796	-53.7	
11.	TOTAL GVA	4705659	3679050	-21.8	

Table 8. Gross Value Added for the year 2011-12 from Household Sector at Current Prices
(At factor cost for old series and at basic prices for new series)

* included livestock in 2004-05 series ** In new series, all the unincorporated enterprises in the Financial Services, including moneylenders, have been classified as quasi-corporations.

	Estimates of GVA for	stimates of GVA for The Non-Financial Private Corporate Sector for the year 2011-12					(Rs. crore)	
Sl. No.	Compilation Category		GROSS V	ALUE AD	DED (GV	A)		
		23AC/A CA	XBRL	NPL	LLP	Total	2004-05 series	% diff
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.	Agriculture, forestry & fishing	5173	3678	18	9	8878	35591	-75.1
1.1.	Crops & Livestock	4735	3026	17	9	7787		
1.2.	Forestry	105	68	0	0	173		
1.3.	Fishing & aquaculture	333	584	0	0	917		
2.	Mining & quarrying	4946	34203	1	9	39159	23001	70.2
3.	Manufacturing	138522	841623	26	281	980452	761593	28.7
4.	Electricity, gas, water supply and other util- ity services	31674	20177	3	397	52252	19658	165.8
4.1.	Electricity	30330	15376	1	391	46098		
4.2.	Gas - Manufacture & distribution	302	4267	0	0	4569		

Annexure 3.1 Estimates of GVA for The Non-Financial Private Corporate Sector for the year 2011-12

(Contd.)

broadcasting

vices

Courier activities

Telecommunication

Recording, Publishing

and Broadcasting ser-

875

252

2414

1569

66097

10169

7.3.2.

7.3.4.

7.3.5.

Sl. No. GROSS VALUE ADDED (GVA) **Compilation Category** 23AC/A XBRL NPL LLP Total 2004-05 % diff CA series (1)(2)(3) (4) (5) (6) (7) (8) (9) Water Supply 4.3. 755 234 1 6 996 4.4. Sewerage, waste man-287 300 1 0 588 agement and remediation activities 5. 102415 101355 Construction 35357 16 454 138242 36.4 582 100578 274582 Trade, repair, hotels 29234 70743 19 -63.4 6. & restaurants 6.1. Trade & repair ser-21565 59104 17 567 81253 vices 1679 0 2 6.1.1. Trade and repair of 2018 3699 motor vehicles (including motor cycles) and retail sale of automotive fuel 6.1.2. Wholesale trade except 17281 46970 17 484 64753 of motor vehicles and motor cycles + Wholesale of lottery tickets 6.1.3. Retail trade except of 2605 10116 0 81 12802 motor vehicles and motor cycles + retail sale of lottery tickets 6.2. **Hotels & Restaurants** 7669 11639 2 15 19325 35578 108 47 155495 91705 69.6 7. Transport, storage, 119763 communication & services related to broadcasting 7.1. Transport 30666 41547 93 46 72351 7.1.1. Transport via Railways 0 0 27 0 27 8910 7.1.2. Road transport 7130 22 11 16072 7.1.3. Water Transport 1434 3591 0 5093 68 3476 7.1.4. Air Transport 0 3476 0 0 7.1.5. Services incidental to 22102 25543 3 35 47683 transport 7.2. Storage 1371 381 0 0 1752 7.3. 3541 77835 **Communication &** 15 81392 1 services related to

0

0

14

0

1

0

2444

66350

12597

Annexure 3.1 (Contd.)

(Rs. crore)

(Contd.)

								(Rs. crore)
Sl. No.	Compilation Category		GROSS VA	ALUE AD	DED (GV	A)		
		23AC/A CA	XBRL	NPL	LLP	Total	2004-05 series	% diff
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
9.	Real estate, ownership of dwellings and pro- fessional services	122190	274384	234	1124	397932	321750	23.7
9.1.	Real estate and owner- ship of dwellings	21088	12499	12	560	34160		
9.1.1.	Real Estate activities	21088	12499	12	560	34160		
9.1.2.	Ownership of dwellings					0		
9.2.	Professional services	101102	261885	222	564	363773		
9.2.1.	Computer and informa- tion related services	42826	183750	4	189	226769		
9.2.2.	Professional, scientific and technical activities (including R&D)	57762	69875	198	373	128208		
9.2.3.	Administrative & sup- port service activities and other professional activities	514	8260	19	2	8795		
11.	Other Services	54470	18163	1204	164	74001	143796	-48.5
11.1.	Education (including coaching and tuition)	3243	3149	354	8	6754		
11.2.	Human health activities and care services with/without accommo- dation	10065	9290	169	31	19555		
11.3.	Recreational, cultural and sporting activities	2449	3515	93	4	6061		
11.4.	Activities of member- ship organisations	151	264	108	1	523		
11.5.	Personal Services	3823	1945	481	120	6369		
11.6.	Other Services n.e.c	34738				34738		
Total Nor	-financial Corporations	457144	1485149	1628	3067	1946989	1773031	9.8

Annexure 3.1 (Concld.)

Note: Financial Services, Postal services, Repair Services and Public Administration are not shown in the table since they do not belong to the 'Non-financial Corporations' Sector.

Annexure 3.2 Classification of Taxes and Subsidies as Production/Product

3.2.1 List of Taxes treated as Product Taxes

Major Head	Minor Head	Description of Product Tax	

Major Head 0023: Hotel Receipts Tax

0023 101 Collections from Hotels which are companies

0023 102 Collections from Hotels which are non-companies

Major Head 0024: Interest Tax

0024 102 Collection under the Interest Tax Act
Major Head 0028: Other Taxes on Income & Expenditure				
0028	109	Expenditure Tax Act, 1987		
Major H	ead 0037:	: Customs		
0037	101	Imports		
0037	102	Exports		
0037	103	Cesses on Exports		
0037	108	Safeguard Duty		
0037	109	Additional Duty of Customs on Tea And Tea Waste		
0037	504	Primary Education Cess		
0037	505	Secondary & Higher Education Cess		
Major H	ead 0038:	: Union Excise Duties		
Sub Majo	or Head (11: Shareable Duties		
0038	101	Basic Excise Duties		
0038	102	Auxiliary duties of Excise		
0038	103	Additional Excise Duties on Mineral Products		
0038	700	Deceipts under Kar Vivad Samadhan Schame 1008		
6h M	700	2. Derties ander Kar vivad Samadhan Schenic, 1998		
Sub Majo	or Head (22: Duties assigned to State		
0038	101	Additional Excise Duties in lieu of Sales Tax		
0038	102	Excise Duty on Generation of Power		
Sub Majo	or Head (J3: Non-Shareable Duties		
0038	101	Regulatory Excise Duties		
0038	102	Auxiliary Duties of Excise		
0038	103	Special Excise Duties		
0038	104	Additional Excise Duties on Textiles and Textile Articles		
0038	105	Additional Excise duty on T.V Sets		
0038	106	Additional Excise Duties on indigenous Motor Spirit		
0038	107	Additional Excise Duty on High Speed Diesel Oil		
0038	108	National Calamity Contingent Duty		
0038	109	Special Additional Duty of Excise on Motor Spirit		
0038	110	Additional Duty of Excise on Tea & Tea waste		
0038	111	Additional Duty of Excise on Pan Masala & certain Tobacco Product		
0038	112	Clean Energy Cess		
0038	504	Primary Education Cess		
0038	505	Secondary & Higher Education Cess		
0038	700	Receipts under Kar Vivad Samadhan Scheme, 1998		
Sub Majo	or Head (04: Cesses on Commodities		
0038	101	Cess on Coal and Coke		
0038	102	Cess on Jute		
0038	103	Cess on Tea		
0038	104	Cess on Copra		
0038	105	Cess on Oil and Oil Seeds		
0038	106	Cess on Cotton		
0038	107	Handloom Cess on Rayon and Artsilk Fabs		
0038	108	Handloom Cess on Woollen Fabrics		
0038	109	Handloom Cess on Cotton Fabrics		
0038	110	Cess on Iron Ore		
0038	111	Cess on MICA		
0038	112	Cess on Limestone and Dolomite		
0038	113	Cess on Salt		
0038	114	Cess on Bidi		

0038 115 Cess on Tobacco

0038	116	Cess on Rubber		
0038	117	Cess on Crude Oil		
0038	118	Cess on Coffee		
0038	119	Cess on Sugar		
0038	120	Cess on Condenser		
0038	121	Cess on Manganese		
0038	122	Cess on Cardamom		
0038	123	Handloom Cess on Manmade Fabrics		
0038	124	Cess on Paper		
0038	125	Cess on Straw Board		
0038	126	Cess on Electricity		
0038	127	Cess on Vegetable Oils		
0038	128	Cess on Automobiles		
0038	129	Cess on Textiles and Textile Machinery		
0038	130	Cess on Feature Films		
0038	131	Cess on Matches		
0038	200	Cess on Other Commodities		
Major He	ead 0039:	: State Excise		
0039	101	Country Spirit		
0039	102	Country Fermented Liquor		
0039	103	Malt Liquor		
0039	104	Liquor		
0039	105	Foreign Liquors and spirits		
0039	106	Commercial and denatured spirits and medicated wines		
0039	107	Medicinal and toilet preparations containing alcohol, opium etc.		
Major He	ead 0040:	: Taxes on Sales, Trade etc.		
0040	101	Receipts under the Central Sales Tax Act		
0040	102	Receipts under State Sales Tax Act		
0040	110	Trade Tax		
Major He	ead 0041	: Taxes on Vehicles		
0041	102	Receipts under State Motor Vehicle Taxation Act		
Major He	ead 0042:	: Taxes on Goods & Passengers		
0042	103	Tax Collections-Passenger Tax		
Major He	ead 0043:	: Taxes & Duties on Electricity		
0043	101	Taxes on consumption and sale of Electricity		
Maior He	ead 0044	: Service Tax		
0044	101	Tax on Telephone Billing		
0044	102	Tax on General Insurance Premium		
0044	102	Tax on Stock Brokerage Commission		
0044	103	Advertising Services		
0044	104	Adventising Services		
0044	105	Dadia and Daring Complete		
0044	106	Radio and Paging Services		
0044	107	Custom House Agent Services		
0044	108	Steamer Agent Services		
0044	109	Air Travel Agent Services		
0044	110	Mandap Keeper Services		
0044	111	Clearing and Forwarding Agent Services		
0044	112	Rent a cab scheme operator Services		
0044	113	Outdoor Caterers Services		
0044	114	Pandal or Shamiana Contractor Services		

0044	115	Consulting Engineer Services
0044	116	Manpower Recruitment Services
0044	117	Tour Operator Services
0044	118	Goods Transport Operator Services
0044	119	Architect Services
0044	120	Interior Decoration/Designers Services
0044	121	Mechanised Slaughter House Services
0044	122	Under Writer Services
0044	123	Credit Rating Agency Services
0044	124	Chartered Accountant Services
0044	125	Cost Accountant Services
0044	126	Company Secretary Services
0044	127	Real Estate Agent/ Consultant Services
0044	128	Security/ Detective Agency Services
0044	129	Market Research Agency Services
0044	130	Management Consultant Services
0044	131	Scientific and Technical Consultancy Services
0044	132	Photography Services
0044	133	Convention Services
0044	134	Leased Circuit Services
0044	135	Telegraph Services
0044	136	Telex Services
0044	137	Facsimile Services
0044	138	Online Information and Database Access and/or Retrieval Services
0044	139	Video Tane Production Services
0044	140	Sound Recording Services
0044	141	Broadcasting Services
0044	142	Insurance Auxiliary Services
0044	143	Banking and other Financial Services
0044	144	Port Services
0044	145	Service on Renair Provided by Authorised Service Station for Motor Car and Two Wheeled Vehicles
0044	146	Life Insurance Services including Insurance Auxiliary Services
0044	147	Cargo Handling Services
0044	148	Storage and Warehouse Services
0044	149	Event Management Services
0044	150	Rail Travel Agent Services
0044	151	Health club and Fitness Centres Services
0044	152	Beauty Parlour Services
0044	153	Fashion Designing Services
0044	154	Cable Operator Services
0044	155	Dry cleaning Services
0044	156	Business Auxiliary Services
0044	157	Commercial Training and Coaching Centre
0044	158	Commissioning and Installation Agency
0044	159	Franchise Services
0044	160	Internet Cate Maintanance and Danair Services
0044	101	

- 0044 162 Technical Testing and Analysis-Technical Inspection and Certify
- 0044 163 Business Exhibition Services
- 0044 164 Airport Services

0044	165	Transact of Cools by Dool
0044	105	Transport of Goods by Road
0044	160	Transport of Goods by Air
0044	16/	Survey & Exploration of Minerals
0044	168	Opinion Poll Services
0044	169	Intellectual Property Services other than copyright
0044	170	Forward Contract Services
0044	1/1	IV Radio Programme Production
0044	172	Construction Services in respect of Commercial or Industrial Buildings and Civil Structures
0044	173	Travel agents (other than AIR/Travel Agents)
0044	174	Transport of Goods through Pipeline etc.
0044	175	Site formation & Clearance, Excavation &Earth moving & Demolition Services other than those provided to Agriculture, Irrigation & Water shade Development
0044	176	Dredging Service of River, Port, Harbour, Backwater Estuary
0044	177	Survey & Map making other than those by Govt. Deptt.
0044	178	Cleaning Services other than in relation to Agriculture, horticulture
0044	179	Membership of Club or Association with specified exclusions
0044	180	Packaging Services 0044 181 Mailing List Compilation and Mailing
0044	182	Construction of Residential Complex having more than Twelve Houses
0044	183	Service provided by a registrar to an issue
0044	184	Service provided by a share transfer agent
0044	185	ATM operations, maintenance or management
0044	186	Service provided by a recovery agent
0044	187	Sale of space or time for advt. other than print media
0044	188	Sponsorship services provided to anybody, corporate, firm other than sponsorship of sports events
0044	189	Transport of passengers embarking on international journey by air, other than economic class passengers
0044	190	Transport of goods in container by rail by any person
0044	191	Business support services
0044	192	Auctioneer services other than auction of property
0044	193	Public relations service
0044	194	Ship management services
0044	195	Internet telephony services
0044	196	Transport of persons by cruise ship
0044	197	Credit /debit card_change card or payment card related services
0044	198	Services provided by a telegraph authority in relation to telecom
0044	199	Services provided by a telegraph administry in relation to teleform
0044	200	Services provided in relation to renting of immovable property for use in course of further some of business
0044	200	or commerce
0044	201	Services provided in relation to execution of work contract
0044	202	Services provided in relation to development, supply of content for use in telecom services, advertising agency services and database access or retrieval services
0044	203	Services provided to any person except banking company or FI including NBFC or any other body, corporate or commerce concerned in relation to asset management including portfolio management and all forms of fund management
0044	204	Services provided in relation to design services
0044	205	Professional Services
0044	206	Services Provided by an Insurer on Life Insurance Business in Relation to Management of Investment.
0011	2007	Under Unit Link Insurance Business, Commonly Known as Unit Linked Insurance Plan-Ulip Scheme
0044	207	Services Provided by a Recognized Stock EX. in Relation to Assisting, Regulating or Controlling the Business or Dealing in Securities
0044	208	Services Provided by a Recognized/Registered Association in Relation to Assisting, Regulating or Controlling

0044	209	Services Provided by a Processing and Clearing House in Relation to Processing, Clearing and Settlement of Transaction in Securities
0044	210	Services Provided by any Person in Relation to Supply of Tangible Goods including Machinery, Equipment and Appliances for use
0044	211	Cosmetic Surgery or Plastic Surgery Service
0044	212	Transport of Coastal Goods & Goods Through National Waterways
0044	213	Legal Consultancy Service
0044	214	Services of Promoting, Marketing or organizing of Games of Chance including Lottery, Bingo or Lotto
0044	215	Health Services Like (A) Health check up undertaken by Hospitals on Medical Establishment for employees
0044	216	Services provided maintenance of medical records of Employee business entity
0044	217	Services of promoting brand of goods services events business entity
0044	218	Services of permitting commercial use of exploitation of any event organised by person or organisation
0044	219	Services provided by Electricity exchange
0044	220	Services related to (A) transferring temporarily or (B) permitting the use or enjoyment of any copy right
0044	221	Special services provided by a builder etc. to the prospective buyers such as providing preferential
0044	222	Services of Airconditioned Restaurants
0044	223	Services of providing of accommodated in Hostels/Inns/Clubs/Guesthouse/Camp site for continuous period of less than 3 months
0044	224	All taxable Services
0044	225	Other Taxable Services
0044	504	Primary Education Cess
0044	505	Secondary & Higher Education Cess
0044	700	Receipts Under Kar Vivad Samadhan Scheme, 1998
Major H	ead 0045	: Other Taxes & Duties on Commodities & Services
0045	101	Entertainment Tax

3.2.2 List of Taxes treated as Production Taxes

Major	Head	Minor Head	Description of Product Tax	
Majo	r Head 0026	5: Fringe Benefit	Tax	
0028	107	Taxes on Profes	ssions, Trades, Callings and Employment	
Major	r Head 0029	: Land Revenue		
0029 0029	101 103	Land Revenue Rates and Cesse	Гах es on land	
Major	r Head 0030): Stamps & Reg	istration fees	
0030	101	Court fees reali	sed in Stamps	
0030	102	Sale of stamps		
0030	103	Duty on Impres	sing of Documents	
0030	104	Fees for registering documents		
Major	r Head 0031	: Estate Duty		
0031	101	Ordinary Collections		
Major	r Head 0036	6: Banking Cash	Transaction Tax	
0036	101	Collection under Banking Cash Transaction Tax		
Major	r Head 0041	: Taxes on Vehi	cles	
0041	101	Receipts under	the Indian Motor Vehicles Act	
Majo	r Head 0045	5: Other Taxes &	Duties on Commodities & Services	

0045 1	05	Luxury Tax
0045 1	10	Receipts under Water(Prevention and Control of Pollution) Cess Act
0045 1	12	Receipts for Cesses under other Acts
0045 1	17	Receipts under Research and Development Cess Act, 1986

3.2.3 List of Subsidies treated as Production Subsidies

Major Head	Minor Head	Sub Head/Description of Production Subsidy
-	-	Losses of Departmental Enterprises (Imputed Production Sub- sidy)
Major H	ead 2401: Crop Husbandry	
2401	103: Seeds	23: Expenditure on seeds
2401	105:Manures and Fertilisers	16: Distribution of Fertilizers
2401	107: Plant Protection	02: Plant Protection Scheme
2401	108: Commercial Crop	03: Coconut
Major H	ead 2402: Soil and Water Conservation	
2402	001: Direction and Administration	02: Soil Conservation Unit
Major H	ead 2408: Food Storage & Warehousing	
2408	800: Other Expenditure	01: Subsidy for maintenance of Buffer Stocks of Sugar
2408	800: Other Expenditure	08: Scheme for Extending Financial Assistance to Sugar undertaking 2007
2408	902: Amount met from sugar Development Fund	03: Subsidy for maintenance of Buffer stocks of Sugar
Major H	ead 2435: Other Agricultural Programme	
2435	800: Other Expenditure	04: High Yielding Programme
Major H	ead 2552: North-Eastern Areas	
2552	223: Tea- Other Expenditure	01: Assistance to Tea growers and others
2552	224: Coffee- Other Expenditure	01: Assistance to Coffee growers and others
2552	225: Rubber- Other Expenditure	01: Assistance to Rubber growers and others
2552	318: New and Renewable Energy Grid Inter- active and Distributed Renewable Power	01: Grid Interactive Renewable Power
2552	236: Village and Small Industries small Scale Industries	21: Other Grants
2552	475: Spices- Other Expenditure	01: Assistance to Spice growers and others
Major H	ead 2810: Non-Conventional Sources of Energy	7
2810	101: Grid Interactive and Distributed Renew- able power	01: Grid Interactive Renewable Power
2810	101: Grid Interactive and Distributed Renew- able power	02: Off Grid/ Distributed and Decentralized Renewable Power
2810	102: Renewable Energy for Rural Applications	02: Renewable Energy for all villages
2810	103: Renewable Energy for Urban, Industrial and Commercial Applications	01: ST, SPV and other RE Systems
Major H	ead 2852: Industries	
2852	202: Textiles	16: Procurement of cotton by cotton corporation of India under price support

04: Jute

2852 600: Others

290

Major He	ad 3051: Port and Light Houses	
3051	108: Assistance to Port Trusts	01: Maintenance and dredging in Haldia Channel by Calcutta Port Trust
3051	108: Assistance to Port Trusts	02: River Dredging and Maintenance of river Hooghly and Haldia channel by Calcutta Port Trust
Major He	ad 3053: Civil Aviation	
3053	191: Schemes for NE Region	01: Payment for Helicopter Services in North Eastern Region
Major He	ad 3075: Other Transport Services	
3075	101: Subsidy to Railways towards Dividend relief	01: Payment to Railway
3075	101: Subsidy to Railways towards Dividend relief	02: Reimbursement of losses to Railways on operating strategic Railway lines
Major He	ad 3451: Secretariat Economic Services	
3451	090: Secretariat	07: Essential Air services to Remote & Inaccessible areas
Major He	ad 3453: Foreign Trade and Export Promotio	n
3453	194: Assistance for Export Promotion and Market Development	03: Assistance to Export Promotion and Market Development Organisations
3453	800: Other Expenditure	08: Marine Products Export Development Authority
Major He	ad 3456: Civil Supplies	
3456	195: Assistance to Consumer Cooperatives in Rural Areas	01: Managerial Subsidy

3.2.4 List of Subsidies treated as Product Subsidies

Major Head	Minor Head	Sub Head/Description of Production Subsidy
Major H	ead 2235: Social Security & welfare	
2235	800: Other Expenditure	09: Payment to Public Sector General Insurance Co. for com- munity based Universal
2235	800: Other Expenditure	10: Payment to Life Insurance Corporation of India for Pension Plan for Senior Citizens
Major H	ead 2401: Crop Husbandry	
2401	105: Manures and fertilizers	14: Payment for concessional sale of Indigenous decontrolled fertilizers
2401	105: Manures and fertilizers	15: Payment for concessional sale of imported decontrolled fertilizers
2401	106: Import of fertilizers	02: Import of Urea
2401	129: Issue of special bonds to fertilizers com- panies as compensation towards fertilizers subsidy	04: Compensation for loss on Account of sale of fertilizer bonds for concessional sale of imported decontrolled fertilizers
2401	800: Other Expenditure	06: Comprehensive Crop Insurance
Major H	ead 2408: Food Storage & Warehousing	
2408	102: Food Subsidy	09: Subsidy for meeting losses on import of pulses
2408	102: Food Subsidy	02: Subsidy payable to food corporation of India and others on food grains transactions
2408	102: Food Subsidy	04: Sugar subsidy payable to FCI and others on account of levy sugar, Import of sugar etc.
2408	102: Food Subsidy	07: Subsidy for Imported Edible Oils for distribution through States/ UTs Govt.
2408	800: Other Expenditure	03: Departmental Canteen National Sugar Institute

2408	800: Other Expenditure	06: Re imbursement of Internal Transport and freight charges to sugar factories on export shipment and payment of other permissible claims
2408	902: Amount met from Sugar Development Fund	06: Re imbursement of Internal Transport and freight charges to sugar factories on export shipment and payment of other permissible claims
Major Hea	d 2416: Agricultural Financial Institutions	
2416	800: Other Expenditure	02: InterestSubventionforprovidingshorttermcredittoFarmers
Major Hea	d 2552: Development of North Eastern Regio	n
2552	238: Development of backward areas subsidies	01: Transport Subsidy
Major Hea	d 2802: Petroleum	
2802	102: Subsidy to Oil Marketing Cos.	01: Subsidy on domestic LPG and PDS Kerosene
2802	102: Subsidy to Oil Marketing Cos.	02: Freight subsidy on retail products for far flung areas
2802	102: Subsidy to Oil Marketing Cos.	04:Subsidy to oil cos for supply of Natural Gas to North Eastern Region
2802	103: Payment to Oil Marketing Companies as compensation for under recoveries in their domestic LPG and Kerosene (PDS) operations	01: Govt. of India Special Bonds to oil Marketing companies
Major Hea	d 2803: Coal and Lignite	
2803	101: Assistance to Coal & Lignite Companies	03: Payment against collection of cess on coal and coke
Major Hea	d 2851: Village and Small Industries	
2851	105: Khadi and Village industries	07: Janshree Bima Yojana for Khadi artisans
Major Hea	d 2852: Industries	
2852	101: Fertilizer Subsidy	01: Payment under fertilizers Retention Price scheme
2852	129: Issue of special bonds to fertilizers com- panies as compensation towards fertilizers subsidy	02: Payment under fertilizer Freight subsidy scheme
2852	102: Transport Equipment Industries	10: Ship Building Subsidy
2852	102: Transport Equipment Industries	21: Subsidy to non-Central PSU Shipyards and private sector shipyards
Major Hea	d 2885: Other Outlays on Industries & Miner	rals
2885	101: Assistance to Industrial Financial Institu- tions	06: 1% interest subvention on Housing Loans
2885	800: Other Expenditure	03: Subsidy in lieu of concession in the rate of interest on Loans
2885	101: Subsidies	03: Transport subsidies to industries
2885	101: Subsidies	09: Transport Subsidy
2885	101: Subsidies	12: Investment Subsidy-Old
Major Hea	d 3053: Civil Aviation	
3053	800: Other Expenditure	06: Subsidy for operation of Haj Charters
Major Hea	d 3056: Inland Water Transport	
3056	800: Other Expenditure	03: Interest Subsidy to Banks/ Financial Institutions for loans to IWT entrepreneurs
Major Hea	d 3453: Freight Trade and Export Promotion	1
3453	107: Export Subsidy	04: Interest Subvention to Schd. Commercial Banks
Major Hea	d 3456: Civil Supplies	
3456	103: Consumer Subsidies	01: Transport Subsidy

4.118. Following is the step-wise description of the methodology in the new series:

- (i) Rebasing of the price indices at 2011-12, i.e., making it 100 for the year 2011-12;
- (ii) Revision of average life of assets, due to changes in technology or some other reasons on the basis of information from various organizations;
- (iii) Incorporating the latest estimates of Gross Fixed Capital Formation for the year 2011-12 as per the new series;
- (iv) Estimating the stocks and GFCF, by disaggregated assets, for the back years using splicing techniques. The splicing is suitably done upto the year from which the change has taken place;
- (v) Calculation of CFC and NFCS following the declining balance method.

Comparison between estimates in the Old and New Series

Level of GDP

4.119. Normally, when the base year of national accounts statistics is changed, there is some change in the levels of GDP estimates. This happens due to widening the coverage and inclusion of latest survey results. Table 34 illustrates the changes in the levels of GDP due to the introduction of the new series of national accounts in India. The effect of the change in base year and the changes made in the new series ranges from -2% in 2011-12 to -0.1 per cent in 2013-14.

Table 34. GDP at current market prices, 2011-12 to 2013-14

			(Rs. crore)
Year	2004-05 Series	2011-12 Series	% Difference
(1)	(2)	(3)	(4)
2011-12	9009722	8832012	-2.0
2012-13	10113281	9988540	-1.2
2013-14	11355073	11345056	-0.1

Growth rates

4.120. There are notable changes in the overall growth rates of GDP as well as industry level GVAs with the change in the base year. The change in the growth rates of real GDP in the new and old series is given in Table 35.

Table 35. Growth Rates of GDP at constant market prices, 2011-12 to 2013-14

				(Rs. crore)
Year	2004-05 Series	2011-12 Series	Growth	Rate (%)
			2004-05 Series	2011-12 Series
(1)	(2)	(3)	(4)	(5)
2011-12 2012-13 2013-14	5633050 5899847 6195842	8832012 9280803 9921106	- 4.7 5.0	- 5.1 6.9

4.121. The growth rates at industry level show some major changes, which are on account of changes in procedures, methodology and data sources and use of latest data from survey results, the details of which have been explained in the previous paragraphs. Table 36.1 and 36.2 show growth rates at current and constant prices in the old and new series, during 2012-13 and 2013-14, at industry level.

S. No.	Industry	201	2-13	201	3-14
		2004-05 Series	2011-12 Series	2004-05 Series	2011-12 Series
(1)	(2)	(3)	(4)	(5)	(6)
1.	Agriculture, forestry & fishing	9.7	10.8	15.9	12.7
1.1.	Crops	7.4	9.5		14.2
1.2.	Livestock	13.6	13.4		10.5
1.3.	Forestry and logging	13.5	10.7		1.3
1.4.	Fishing & aquaculture	16.7	18.5		24.1
2.	Mining & quarrying	-0.1	8.4	0.1	4.8
3.	Manufacturing	6.9	11.6	2.2	9.3
4.	Electricity, gas, water supply and other utility services	15.8	10.0	29.2	14.2
5.	Construction	10.2	3.6	7.7	8.3
6.	Trade, repair, hotels & restaurants	10.9	18.5	7.0	20.2
6.1.	Trade & repair services	11.2	19.3		21.2
6.2.	Hotels & Restaurants	7.1	11.0		10.2
7.	Transport, storage, communication &				
	services related to broadcasting	15.3	15.9	10.2	12.1
7.1.	Railways	12.6	18.3		10.2
7.2.	Transport by means other than railways	15.8	16.3		8.7
7.3.	Storage	17.3	18.2		9.4
7.4.	Communication & services related to broadcasting	14.5	13.5		22.4
8.	Financing, insurance, real estate & busi- ness services	17.1	17.4	19.9	14.8
8.1.	Financial Services	14.1	13.8	N.A.	11.5
8.2	Real estate, ownership of dwellings & pro- fessional services	18.6	19.1	N.A.	16.2
9.	Community, social & personal services	16.2	13.4	13.5	16.8
9.1.	Public administration and defence	13.8	12.6		13.7
9.2.	Other Services	18.1	14.1		19.6
10.	TOTAL GVA	11.9	12.9	11.5	13.2

Table 36.1. Growth rates of GVA at industry level at current prices (At factor cost for old series and at basic prices for new series)

S. No.	Industry	201	2-13	201	3-14
		2004-05 Series	2011-12 Series	2004-05 Series	2011-12 Series
(1)	(2)	(3)	(4)	(5)	(6)
1.	Agriculture, forestry & fishing	1.4	1.2	4.7	3.7
1.1.	Crops	-0.4	-0.1		3.3
1.2.	Livestock	4.4	5.1	N.A.	5.5
1.3.	Forestry and logging	2.9	-0.7		0.3
1.4.	Fishing & aquaculture	7.1	5.5		5.8
2.	Mining & quarrying	-2.2	-0.2	-1.4	5.4
3.	Manufacturing	1.1	6.2	-0.7	5.3
4.	Electricity, gas, water supply and other	2.3	4.0	5.9	4.8
_	utility services				
5.	Construction	1.1	-4.3	1.6	2.5
0.	Trade, repair, noteis & restaurants	4.5	10.3	1.0	13.3
6.1.	Trade & repair services	4.8	11.1		14.3
6.2.	Hotels & Restaurants	0.5	3.3	N.A.	3.9
7.	I ransport, storage, communication &	0.0	8.4	0.1	7.3
7.1	services related to broadcasting	0.2	10.0		0.2
7.1.	Railways	0.3	18.0		9.3
7.2.	I ransport by means other than railways	6.6	7.4		4./
7.3.	Storage	8.6	12.0		1.4
7.4.	broadcasting	6.5	6.3		13.4
8.	Financing, insurance, real estate & busi-	10.9	8.8	12.9	7.9
	ness services				
8.1.	Financial Services	11.8	6.7		6.4
8.2	Real estate, ownership of dwellings & pro-	10.0	9.8	N.A.	8.5
	fessional services				
9.	Community, social & personal services	5.3	4.7	5.6	7.9
9.1.	Public administration and defence	3.4	3.2		4.9
9.2.	Other Services	6.8	6.2	N.A.	10.7
10.	TOTAL GVA	4.5	4.9	4.7	6.6

Table 36.2 Growth rates of GVA at industry level at constant prices (At factor cost for old series and at basic prices for new series)

two Series

4.122. The weighting pattern of various activities in the GVA in the old and new series for the year 2011-12 also influences to some extent the overall growth rate in GVA. The composition of the various activities in the old and new series, may be seen in Table 37. Marked changes have been observed in the shares of two major industries, namely, 'manufacturing' and 'trade'. In the case of manufacturing, with the availability of the MCA21 database, coverage of the activities other than manufacturing in the companies has improved significantly. Estimates of 'trade and

Composition of various activities between the repair services' has become lower than in the old series because of two reasons-

- Trade carried out by manufacturing com-(i) panies, which has now become part of 'manufacturing', was earlier covered in ^Qtrade^R because of establishment approach;
- In 2004-05, no recent survey of unorga-(ii) nised trade enterprises was available for incorporation and hence the estimates were based on the survey conducted in 1999-2000. This has now been updated with the survey on 'Unincorporated Enterprises' conducted by NSS in

2010-11.

undergone change due to adoption of the latest data sources.

4.123. Share of the other sectors have also

Table 37. We	ghts of various sectors at current prices in the new and old series, 2011-12
	At factor cost for old series and at basic prices for new series)

S. No.	Industry	2004-05 Series	2011-12 Series
(1)	(2)	(3)	(4)
1.	Agriculture, forestry & fishing	17.9	18.4
1.1.	Crops	11.4	12.0
1.2.	Livestock	4.1	4.0
1.3.	Forestry and logging	1.6	1.6
1.4.	Fishing & aquaculture	0.8	0.8
2.	Mining & quarrying	2.7	3.2
3.	Manufacturing	14.7	18.1
4.	Electricity, gas, water supply and other utility services	1.6	2.4
5.	Construction	8.2	9.4
6.	Trade, repair, hotels & restaurants	17.4	10.8
6.1.	Trade & repair services	15.9	9.7
6.2.	Hotels & Restaurants	1.5	1.1
7.	Transport, storage, communication & services related to broadcas-	7.3	6.5
71	ung Boilwovs	0.7	0.7
7.2	Transport by means other than railways	5.4	4.1
7.3.	Storage	0.1	0.1
7.4.	Communication & services related to broadcasting	1.1	1.6
8.	Financial Services	5.7	5.9
9.	Real Estate, ownership of dwellings & professional services	10.7	12.9
10.	Public administration and defence	5.9	6.0
11.	Other Services	7.8	6.5
12.	TOTAL GVA	100.0	100.0

Net Domestic Product and National Income

4.124. Table 38 presents the estimates of GDP, Net Domestic Product (NDP), Net National Income (NNI) (also known as National Income) and per capita income at market prices for the period, 2011-12 to 2013-14 in the 2004-05 series and new series. The estimates are presented in the table at current prices, for the sake of comparison in the levels of estimates between the two series in various aggregates. Also presented in this table

are the growth rates alongwith the estimates.

4.125. For assessing the performance of the economy, growth rates at constant prices are used, as they are free from price fluctuations and present the year to year changes in volume terms. For the sake of comparison in growth rates at constant prices between the old and new series, estimates of various aggregates have been provided in Table 39, alongwith the estimates.

Year	GDP (Rs.	lakh crore)	NDP (Rs.	lakh crore)	NNI (Rs. 1	akh crore)	Per Capita I	ncome (Rs.)
	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
	Series	Series	Series	Series	Series	Series	Series	Series
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2011-12	90.10	88.32	81.30	79.23	80.53	78.47	66997	64316
2012-13	101.13	99.89	90.97	89.58	89.80	88.42	79791	71593
2013-14	113.55	113.45	101.82	101.96	100.53	100.57	81535	80388
Growth rates	(%)							
2012-13	12.2	13.1	11.9	13.1	11.5	12.7	10.1	11.3
2013-14	12.3	13.6	11.9	13.8	11.9	13.7	10.5	12.3

Table 38. Estimates of GDP, NDP, NNI and Per Capita Income at current market prices

SUMMA	SECTION 6 ARY OF ESTIMATION PROCEDURE USED FOR COMPILATION OF NATIONAL ACCOUNTS IN THE NEW SERIES	6.2.	Private final consumption Expenditure (PFCE)
Est	imation procedure adopted in base year 2011-12 and procedure	6.3.	Government Final consumption Expenditure (GFCE)
adopted in a tabu adopted	I for both current and constant prices is presented in this section alar format. The tables also provide the assumptions made/ratios in the present series. These tables are divided into six sub-	6.4.	Saving
sections		6.5.	External Transaction Account
6.1.	Gross Value Added (GVA) at basic prices	6.6.	Capital Formation

6.1. Gross Value Added At Basic Prices

Item	Data: Source	Method	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
 Agriculture (Crop Sector) (a) Value of output (1) Major and minor crops 				
(i) Major crops	* Production: Directorate of Econo- mics and Statistics, Ministry of Agriculture (DESAg) * Prices: State DESs	Value of output = current year production * current year price	Value of output = current year production * base year price	
(ii) Minor Crops	* Production: Horticulture Statistics Division (DAC, M/o Agriculture) & 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

Item	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(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 = 0.85* weighted average price of arhar, urad, moong, masur and horsegram in reference year
(2) Commercial Crops (i) Tea	* Production of processed tea: Tea Board * Prices: State DESs	Value of output = current year production of Raw tea * current year price	Value of output = current year production of Raw tea * base year price	Production of Raw tea = processed tea / 0.225
(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	V alue of output = current year production * base year price	
(iv) Cashew Nuts And Cocoa	* Production: Directorate of Cashewnut and Cocoa Development 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 Statistics Division (DAC, M/o Agriculture) * 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	

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

299

Item	Data: Source	Method o:	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(vii) Arecanut	* Production: Directorate of Areca- nut 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 Statistics Division (DAC, M/o Agriculture) * 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 * value per hectare (VPH)	Value of output = area * base year value per hectare	Value per hectare = weighted aver- age 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	V alue of output = area $*$ value per hectare	Value of output = area $*$ value per hectare	V alue per hectare = 0.90* VPH of the crop sugarcane in reference year
(iii) Other Oilseeds (excluding Tara- mira)	* * Area: LUS from DES Ag / State DESs	Value of output = area * value per hectare	Value of output = area * value per hectare	V alue per hectare = 0.85* weighted average of value per hectare of linseed, sesamum, castorseed, nigerseed and safflower in reference year
(iv) Other Fibres	* Area: LUS from DES Ag / State DESs	Value of output = area * value per hectare	Value of output = area * value per hectare	Value per hectare = 0.90* weighted average of value per hectare of san- hemp and mesta in reference year
				(Contd.)

300

(' ,	
Con	
6.1. (

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(v) Other Drugs and Narcotics	* Area: LUS from DES Ag / State DESs	Value of output = area * value per hectare	Value of output = area * value per hectare	Value per hectare = 0.90* weighted average of value per hectare of opium (Madhya Pradesh & Rajas- than) 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 * value per hectare	Value of output = area * 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 Statistics Division (DAC, M/o Agriculture)	Value of output = current year pro- duction * 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.
(viii) Other Vegetables	* Production: Horticulture Statistics Division (DAC, M/o Agriculture)	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	* Production of tobacco leaves: DES Ag / State DESs * Prices of tobacco leaves: State DESs	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	* MPCE of Toddy: NSS 68th Round CES, 2011-12 * Rural and urban population: Pop- ulation Census 2011	Value of output= estimate atconstant price * (WPI (non-food articles) cur- rent/ WPI (non-food articles) base)	Value of output= value of consump- tion of toddy per annum per person in the base year * population in the current year	

301

1)				
1)		At current prices	At constant (2011-12) prices	
	(2)	(3)	(4)	(5)
xi) Fodder	* Total and irrigated area under fod- der crops: DES Ag and State DESs * Prices: State DESs	Value of output = current year pro- duction *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)
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* mis- cellaneous tree crops + 2* culturable waste + 2* fallo w 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-	* 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.	Value of output = area *Value per hectare in 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 * (WPIcurren/WPI reported year) of respective cr	Value of output = area * Value per hectare in base year as per CCS 2011-12	

302

Contd.)
6.1. (

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(5) Other products (i) Gur	* Production and Seed Rates: DESAg DESAg aduatity of sugar cane crushedby factories: Dte. of Sugar, Ministry of Consumer Affairs, Food and Public Distribution * Quantity of sugarcane used in manufacture of khandsari in man- ufacturing sector: ASI & NSS Sur- vey of manufacturing enterprises(non-ASI) * Prices: State DESs	Value of output = current yearcur- rent year production of Gur * curve- price	Value of output = current year pro- duction of Gur *base year pricelState-wise percentage of sugarcane used for	Rates assumed- * State-wise percentage (9-10%) of quantity of sugar cane retained for gur making * State-wise percentage of sugar cane used for chewing * State-wise quantity of sugar cane used for seed based on latest CCS * State-wise percentage of sugarcane used for manufacture of khandsari Quantity of sugarcane retained for gur making = total sugarcane pro- duction - sugarcane used for chew- ing, seed, crushed by factories and Khandsari
(ii) Palmyra	* Production and prices: State DESs	Value of output = current year production *current year price	Value of output = current year production * base year price	
(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 farming (kitchen garden, i.e., Homestead land raising for crop and having area less than 0.01 H)	* Net sown area: LUS from DES Ag / State DESs	Value of output = Area under Fore- yard and Backyard farming (kitchen garden) * value of output per hectare of fruits and vegetables in current year	Value of output = Area under Fore- yard 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 andBackyard farming (kitchen garden) = 0.21% of net sownarea

303

ltem	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(b) Inputs (Crop*Sector) (1) Seed (i) Wheat, Jowar, Bajra, Barley, Maize, Ragi, Small Millets, Gram, Arhar, Urad, Moong, Masoor, Linseed, Sesamum, Groundnut, Rapeseed & Mustard, Castor, Black Pepper and Turmeric	* Seed rate, seed replacement rate, area: CCS from DESAg * Area under the crop, prices: State DESs	Value of Seed = Value ofimproved variety of Seed + Value of harvested Grains retained for Seed	Value of Seed inputs= Value of improved variety of Seed at base year prices + Value ofharvested 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 usedfor extrapolation till CCS becomes available
(ii) Paddy, Sugarcane and Potato	* Seed Rate, Seed Price: CCS from DESAg	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 hect- are of current year = Value per hect-	Value of Seed inputs= Area * VPH (Seed Rate*CCS Seed Price) for base year.	Value of harvested Grains retained for Seed= Seed Rate* {Irrigated Area* (100-Seed Replacement Rate) + Un-irrigated area} *Farm Harvest Price of respective crop for cur- rent/base year
(iii) Other cereals, other condiments & spices, coconut, miscellaneous food crops	 * VPH of seed: Study conducted by Directorate of MarketingInspection (DMI), M/o Agriculture * Area: State DESs 	are of reported year from CCS * (WPI current/WPI reported year) of respective crop. Value of seed = Estimate in col.(4) * relevant WPI current/ WPI base	Value of inputs = area under thecrop in the current year valueof seed per hectare in the base year	

304

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(iv) Misc. Non-Food Crops, Tapi- oca, Fodder, Guar Seed. Cotton, Dry Chillies, Other Vegetables & Dry-ginger	* Value per Hectare (VPH): Bench- mark study conducted by State DESs * Area: State DESs	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	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	* Average cost of Repair and	Benchmark/ Base year estimates	Benchmark/ Base year estimates	
Crop Sector	Maintenance on (i) Orchards & Plantation Resources, (ii) Wells & Irrigation, (iii) Agricultural Machin- ery &Implement and (iv) Transport Equipment: All India Debt and Investment Survey (AIDIS), 2013	(as derived from AIDIS, 2013) moved with the estimates of capital stock of farm business at current prices	(as derived from AIDIS, 2013) moved with the estimates of capital stock of farm business at constant prices	
(4) Electricity	* Consumption of electridity for agri- cultural purposes and prices: Central Electricity Authority	Value of electricity inputs = electric- ity consumption in the urrent year * current year price	Value of electricity inputs = electric- ity consumption in the current year * base year price	
(5) Chemical Fertilisers	* Consumption and Prices: Fertiliser Association of India	Value of inputs = quantityconsumed in the current year * current year price	Value of inputs = quantity consumed in the current year * base year price	

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

305

	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
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 die- sel engine and per tractor: CCS from DESAg	Value of inputs = no. of diesel engi- nes/tractors in the current year* con- sumption in value terms per diesel engine/tractor in the current year	Value of inputs = no. of dieselengi- nes/tractors in the currentyear * con- sumption in valueterms per diesel engine/tractorin the base year	Number of diesel engines/tractors for the years beyond the survey year has been calculated usinginter- survey/inter- censal growth rate.
7) Irrigation charges	* Gross irrigated area: State DESs * Receipts of Government from sale of water: State Government Budget	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
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 Fod- der and Concentrates: CCS from DESAg	Value of Feed = Per animal annual Consumption rates of Adult Male Cattle & Adult Male Buffalo * Cur- rent Year price * population of these categories Current Year price = Base Year Prices of Roughages and Concen- trates inflated with growth rate of WPI of Fodderand food grains	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 DryFodder, Green Fodder andConcentrates by CCS	Per animal annual Consumption rates of Adult Male Cattle & Adult Male Buffalo have been derived using the study on "India's Live- stock Feed Demand: Estimates and Projection" by Centre of Economics and Social Research, New Delhi and National Centre for Agricultural Economics and Policy Research, New Delhi

306

Item	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
 Irrigation System (i) Operation of Govt . Irrigation system 	* Central & State Govt. Budget documents	Estimates of GVA at current prices estimated using income approach.	Base year estimates are moved with the index of area irrigated through government canals	
3. Livestock Products (a) Value of Outnut				
(i) Milk (Cattle, Buffalo and Goat), Eggs and Woolgg	* Production: DADF (Integrated Sample Survey (155) for MLP) * Prices: State DESs	V alue of output = current year production *current year price	Value of output = current year production * base year price	
(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 IPrices: State DESs	V alue of output = current year production *current year price	Value of output = current year production * base year price	States where ISS does not cover he eggs Production = 3.5% of hen egg in case of Gujarat Production = 3% of hen eggs in case of Goa, Madhyi Pradesh, Mizoram, Daman & Diu, Dadra & Nagar Haveli, Delhi
(iv) Meat (Registered + Unregis- tered)	* Production: ISS from DADF and State DESs * Prices: State DESs	V alue of output = production (after adjusting the quantity produced in manufacturing sector)* current year price	Value of output = production (after adjusting the quantity produced in manufacturing sector)* base year price	

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

307

Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(v) Meat (Products and by- products (includes fats, edible offals & glands, hides & skins, heads & legs of slaughtered animals)	3	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)
(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 forthe current price estimates, but the prices used are the respective base year prices	 (a) chickens & ducklings killed = total poutry of current year (chicks survived + 50% of hens & cock population + 50% of ducks & drakes population + population of chickens & ducklings + 62.5 % of other poultry), with the second poultry of next year (population of hens + ocks + ducks + drakes + chickens + other poultry), where (population of hens + ocks + ducks + drakes to the egg production) (b) adult fowls killed = 50% of population of ducks survived = 1/3:6 % of population of hens & cocks + ducks + drakes + chickens + other poultry), where (chicks survived = 1/3:16 of eggs kept for hatching (eggs kept f
				(Contd.)

308

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

JAN-JUNE 2017

td.)	
(Con	
6.1.	

Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(vii) Fats from Fallen Animals (only 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	
(viii) Cattle hides, Buffalo hides, Goat skin and Sheep skin (fallen ani- mals)	* 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	
(ix) Camel hair/Goat hair /Pig bristles	* 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 155 gm per pig per year.
 (x) Dung and Droplet (a) Dung Fuel (b) Dung Manure* 	* Population: 1LC, 2003, 2007 and 2012 from DADF * rices, evacuation rate for dung, uti- lization rate for dung cake & dung manure: State DESs	Production of dung = population of cattle, buffalo, sheep and goat * evacuation rate (a) dung fuelvalue of output = 0.4 *utilisation rate for estimating dung used for making cakes * dung pro- duction * current year price (b)dung manure value of output = utilisation rate for estimating dung usedc for manure purpose * dung production * current year price	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 con- ducted by Central Institute for Research on Goats and National Centre for Agricultural Economics and Policy Research, New Delhi, during 2013, on "Positive Environ- mental Externalities of Livestock in Mixed Farming Systems of India"

VOL. 29 NOS. 1&2

309

Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(xi) Other Products Silk Ere, Tasar, Muga, Honey and Bee Wax	* Production and prices of silk: Cen- tral 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 live- stock population during the year * current year price	Value of output = additions to live- stock population during the year * base year price	
(b) Inputs -Livestock				
 Repair and maintenance for live- stock and operational costs 	* Average cost of Repair and Main- tenance on(i) Barns; (ii) Animal Sheds and (iii) other miscellaneous 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 cur- rent 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 con- stant prices	Value of Operational Cost = 0.25 % of value of output at current/ con- stant prices of (poultry meat, silk, wool, hides and increment in livestock)
(2) Market charges for Live stock	 * Number of slaughtered animals: ISS from DADF * Municipal charges per slaughtered 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.

JC

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

310

Item	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(3) Feed of livestock for Livestock Sectori	* Age-wise Species-wisePopulation: LC, 2003, 2007 and 2012 from DADF * State-wise average price for Dry Fodder, Green Fodder and Concen- trates: CCS from DESAg	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 feed Consumption value for base year (except Adult Male Cattle & Adult Male Buffalo) * Species-wise and Category-wise population	Per animal annual Consumption rates have been derived using the study on "India's Livestock Feed Demand: Estimates and Projection" by Centre of Economics and Social Research, New Delhi and National Centre for Agricultural Economics and Policy Research, New Delhi
4. Forestry				
(1) Industrial wood from Forests	* Production and Prices: State DESs	Recorded: Value of output = production * cur- rent year price	Recorded: Value of output = production * base year price	Value of output of unrecorded pro- duction = 0.1 * value of output of recorded production
		Total = 1.1* Value of output of recorded production	Total = 1.1* Value of output of recorded production	
(2) Industrial Wood from Trees out- side forest	* Growing Stock: India State of For- est Report (ISFR), 2011 and 2013 from Forest Survey of India	Value = Estimated production (Pro- jection using potential production 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 Industrial Wood from Forests)	Value= = Estimated production (Projection using potential produc- tion 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

Item	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
1)	(2)	(3)	(4)	(5)
(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 industrialpur- poses: ASI -2011-12 * Prices: State DESs	Value of Output: (Total Value of Firewood at Current Price - Value of agricultural by products used as fire- wood 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 Price)*1.0764	Total Value of Firewood = Monthly Per Capita quantity of firewood con- sumed * Population*(365/30)* Price in the reference year ii) 1.0764 = Factor of adjustment for contribution of firewood for Indus- trial and Religious purposes
(3) Non Timber Forest Products				
(i) Minor forest products	* Value of Output: State DESs	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 dependent on forest for fodder: India State of Forest Report (ISFR), 2013 from FSI	 Value of Roughages (as estimated for feed of livestock in crops & live- stock sectors) at current year price* Percentage of Livestock dependent on forest for fodder 	Value of Koughages at base year pri- ce* Percentage of Livestock depen- dent on forest for fodder	
(b) Inputs of forestry	* Central & State Govt. Budget doc- uments	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
5. Fishing (1) Merine fish, inland fish and prawns	* 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 * current 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	
				(Contd.)

312

ltem	Data: Source	Method of	festimation	Assumption
		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 sub- sistence fish * Current price	Value of output = Production of sub- sistence fish * Base year price	Production of subsistence fish = 0.125 * production of Inland fish (for the States where production of subsistence fish is not available)
(b) inputs(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
(3) Fish salting/sun dried/subsistence		Value of inputs = 0.01 * value of output of (Let out of salted fish/Let out of sundried/subsistence fish) at current prices	Value of inputs = 0.01 * value of Value of (Let out of salted fish/ Let out of sundried/subsistence fish) at base year prices	Fixed input rates
6. Mining & Quarrying	* A second Discover of Dishio Conter			
(1) coal & lignite	* Annual respons of Public Sector Companies * MCA21 database for the annual reports of Private Sector Companies * Ministry of Commerce and Indus- try for WPI	* Estimates of GVA at current prices are estimated by the production approach.	Current year estimates are deflated using WPI	
				(Contd.)

VOL. 29 NOS. 1&2

IIIaII	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(2) crude petroleum and natural gas	* Annual Reports of Public Sector Companies * MCA21 database for the annual reports of Private Sector Companies * Ministry of Commerce and Indus- try for WPI	* Estimates of GVA at current prices are estimated by the production approach.	Current year estimates are deflated using WPI	
(3) other major minerals				
Major minerals other than salt and atomic minerals.	* Annual Reports of Public Sector Companies * MCA21 database for the annual reports of Private Sector Companies	* Estimates of GVA at current prices are estimated by the production approach in the case of public and private sector companies	Constant price estimates are derived using deflators compiled from the IBM data on production, prices and input rates.	
Salt	* Output: Salt Commissioner's Office * Input rates: Hindustan Salt Limited	* Estimate of 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 Hin- dustan Salt Limited are used.	Same as above	
Atomic Minerals	* Dept. of Atomic Energy * Indian Rare Earths Limited	* For atomic minerals, estimates of value added as obtained from the analysis of Indian Rare Earths Lim- ited is extrapolated for the total pro- duction of atomic minerals as obtained from Department of Atomic Energy	Same as above	

314

(1) inor minerals except sand * State G value of c * IBM fo	(2) ieological Departments for	At current prices		
(1) inor minerals except sand * State G value of o * IBM fo	(2) ieological Departments for		At constant (2011-12) prices	
inor minerals except sand * State G value of c * BM fo	eological Departments for	(3)	(4)	(5)
	ourput rates	* Value of output estimates are directly available at current year price * Input rates are directlyavailable from IBM	Constant price estimates are derived using deflators compiled from the IBM data onproduction, prices and input rates of non-metallic minerals.	
* Results * Input ra	i of CBRI Study ates: IBM	* Value of output = 8.2% of value of material inputs in construction, adjusted for TTM * Intermediate consumption and Value Added derived using the input rate obtained from IBM	Constant price estimates are derived using deflators compiled from the IBM data on production, prices and input rates of non-metallic minerals.	Based on the CBRI study, the value of sand used in the construction is estimated as 8.2% of the total value of inputs used for the activity. Since inputs are valuated at purchasers' prices, suitable adjustments of trade transport margins (taken as 224% based on the TTM of minor minerals as derived from Input Output Tables, 2007-08) were made to arrive at the value of output for sand from the corresponding annual estimate of the value of inputs in construction.
nufacturing				
corporations * Annual Companio * Budget * Budget mental Ei those of F * Ministr try for the	Reports of Public Sector es Documents of the Depart- nierprises (DEs), including Railways Workshops y of Commerce and Indus- e WPI	* Estimates of GVA compiled using production approach in the case of Public Sector Companies and income approach in case of DEs.	Current price estimates are deflated with the relevant WPL.	

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

315

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Private Corporations	* Annual Survey of Industries (ASI) * MCA21 database for the annual reports of Private Sector Companies * NSS 67th Round ES, 2010-11 (for quasi-corporations) and 68th Round EUS, 2011-12 * Index of Industrial Production (IIP) * Ministry of Commerce and Indus- try for the WPI	* Estimates of GVA compiled using production approach in the case of Private Sector Companies. * Estimates of output, material inputs and GVA for the quasi corpo- rations covered under ASI are obtained from the results of ASI. Till ASI becomes available estimates of the preceding year are extrapolated using IIP and WPI	Current price estimates are deflated with the relevant WPI.	
Households	* NSS 67th Round ES, 2010-11 (for enterprises excluding quasi- corpora- tions) and 68th Round EUS, 2011-12 * IIP * Ministry of Commerce and Indus- try for WPI	* Benchmark estimates of GVA for the year 2011-12 = effective value added per worker (VAPW) * num- ber of effective workers * The benchmark compilation category-wise estimates are moved to subsequent years using the ASI growth.	Current price estimates are deflated with the relevant WPI.	
		* For the year when ASI is not avail- able the preceding year estimates are moved using IIP and WPI		
				(Contd.)

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
8. Electricity, gas, water supply and o	ther utility services			
(1) electricity	* Annual Reports of Public Sector Companies * MCA21 database for the annual reports of Private Sector Companies * Budget Documents of the Depart- mental Enterprises	* Estimates of GVA compiled using production approach in the case of Public and Private Sector Compan- ies and Departmental Enterprises.	Base year estimate moved with the index of quantum sales of electricity	
(2) gobar gas	* No. of bio gas plants: Ministry of Non-Conventional Energy * Value of production: Khadi & Vil- lage Industries Commission (KVIC)	* GVA is calculated as Value of pro- duction at current prices,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) gas (other than gobar gas)	* Annual Reports of Public Sector Companies * MCA21 database for the annual reports of Private Sector Companies	* Estimates of GVA compiled using production approach	Base year estimate moved with the index of quantum sales of gas.	
(4) water supply - organised	* Annual Reports of Public Sector Companies * MCA21 database for the annual reports of Private Sector Companies * Budget Documents of the Depart- mental Enterprises * CPI	* Estimates of GVA compiled using production approach	Current price estimates are deflated with the CPI	

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(5) water supply unorganised	* NSS 68th Round EUS, 2011-12 * CPI	* For the base year, the stimate of GVA is calculated as Wage per day * Number of working days * For the subsequent years the growth of Pvt. Corporate is used	Current price estimates are deflated with the CPI	
(6) remediation (recycling)	* ASI * Index of Industrial Production (IIP) * Ministry of Commerce and Indus- try for WPI * NSS 67th Round ES, 2010-11 and 68th Round EUS, 2011-12 (for the unorganised portion of recycling)	* Value of output material inputs and GVA are obtained from the results of ASI. * For the year when ASI is not avail- able, the previous year estimates are moved using IIP and WPI. * Benchmark estimates of GDP for the year 2011-12 for the unorganised recycl9ing portion = effective value added per worker (VAPW) * num- ber of effective workers. * 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.	
				(Contd.)

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(7) remediation (sewerage)	* MCA21 database for the annual reports of Private Sector Companies * Budget Documents of the Depart- mental Enterprises * NNS 67th Round ES, 2010-11 and 68th Round EUS, 2011-12 results * CPI	* Estimates of GVA compiledusing production approach inthe case of Private Sector Companies and Departmental Enterprises. * Benchmark estimates of GVA for the year 2011-112 for the unorganised sewerageportion = effective value added per worker (VAPW) * num- ber of effective workers. * For the subsequent years, the growth rate of Private Corporate Sector in this category is used.	Current price estimates are deflated with the CPI	
9. Construction				
Pucca Dwellings, Other Buildings and Structures (DOBS)				
Value of Output	i. Estimates compiled from the avails ii. Value of basic materials, i.e., cemt fittings, available for construction est iii. Total Value of construction mater iv. Factor inputs estimated as 53.9% (iii. Value of Output = (total value of iv. The total value of output is then ad	abi ity of basic materials through the con ent iron & steel, bricks & tiles, timber & timated. rials estimated as Total value of basic mu of value of construction materials. construction materials + factor inputs) djusted for own account construction as	modity flow method. c roundwood, bitumen and glass and their p aterials/0.7496 included in the output of enterprises with n	roducts as also fixtures & ajor economic activity other
	than 'construction'. Item-wise Details given below -			
Basic Materials (seven groups)			Current price estimates are deflated by index of general pucca construc- tion	

VOL. 29 NOS. 1&2

319

Assumption		(5)			
mation	At constant (2011-12) prices	(4)			
Method of esti	At current prices	(3)	Cement available for construction * price of cement + trade and transport margin (TTM) + value of cement products covered through ASI inclu- sive of excise duty + TTMs	Value of iron & steel used in con- struction + excise duty + net imports used in construction + import duties on the value of imports used in con- struction + value of iron & steel used in construction in unorganised sector + TTMs	Value of bricks & tiles produced in unorganised sector + Value of bricks & tiles produced in organised sector inclusive of excise duty and TTMs
Data: Source		(2)	 i. Cement production: Index of Eight Core Industries from Office of Eco- nomic Adviser, DIPP) for growth in cement production ii. Cement consumption from Cement Manufacturers Association, 2010-11 iii. Ex-factory value of output of ement products: ASI 2011-12 iiv. Prices of cement: State DESs v. Excise Duty on cement products: CBEC 	 i. Ex-factory value of output of iron & steel products: ASI 2011-12 ii. Inports & exports: EXIM data bank, M/o Commerce iii. Excise & customs duties: CBEC 	 i. Ex-factory value of output of bricks & tiles: PSI 2011-12 ii. Corresponding value of output of bricks & tiles from unorganised manufacturing sector: NSS 67th Round ES, 2010-11 iii. Excise Duties: CBEC
Item		(1)	Cement & Cement Products	Iron & Steel	Bricks & Tiles

320
Item	Data: Source	Method of es	timation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Timber & Roundwood	i. ex-factory value of output of tim- ber & roundwood: ASI 2011-12 ii. Production of industrial wood and price of timber used in construction: State DESs State DESs iii. Net imports of veneer & ply- wood: EXIM databank iv. Excise & customs duty: CBEC	Total value of timber & roundwood used in construction + value of veneer and plywood inclusive of net imports, excise & imports duty and TTMs		
Bitumen & Bitumen Products/Mix- tures	 i. Ex-factory value of output of bitumen & bitumen products/mixtures: ASI 2011-12 ii. Net imports: EXIM databank iii. Excise & customs duty: CBEC 	Total value of bitumen & bitumen mixtures inclusive of net imports, excise duty, customs duty and TTMs		
Glass & Glass Products	i. Ex-factory value of output of glass& glass products: ASI 2011-12 ii. Corresponding value of output of glass & glass products from unorga- nised manufacturing sector: NSS ofth Round ES, 2010-11 iii. Net imports: BUM databank iii. Excise & customs duty: CBEC	Total value of glass & glass products from unorganised and organised sec- tor inclusive of netimports, excise duty, customs duty and TTMs		
Fixtures & Fittings	i. Ex-factory value of output offix- tures & fittings: ASI 2011-12	Value of fixtures & fittings used in construction + TTMs		

IIIOII	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Other Materials used in construction and service charges	e	Value of other materials & service charges used in construction (assum- ing that it consists of 25,04% of total value of construction material) = total value of construction materials in pucca DOBS - total value of basic materials		The proportion of 25.04% has been derived from a study on inputs used in construction conducted by CBRI
Gross Value Added (GVA) from Pucca DOBS (Oli factor inputs/pay- ments)		53.9% of total value of construction materials in pucca DOBS at current prices	53.9% of total value of construction materials in pucca DOBS at base year prices	The proportion of 53.9% has been derived from a study on inputs used in construction conducted by CBRI
Kutrha D0BS Value of Output	Sum of kutcha DOBS in GG, Public	: Corporations & Households		
General Government and Public Corporations	Budget documents for general gov- ernment and DEs	Value of total expenditure on kutcha DOBS as per budget documents	Deflated by index of rural unskilled labour	
Private Corporations	No kutcha DOBS constructed by Pri-	ivate Corporations		
Household Sector		Total output=sum of RRB, URB and Item-wise details given below	NRB/OCW	
Rural Residential Buildings (RRB) · New construction and Repair & Maintenance (R&M)	 i. All India Debt & Investment Sur- vey (AIDIS) 2013, for investment in rural and urban residential buildings 	 17% of total expenditure (including n mew & R&M) on RRB is assumed to be for Kutcha DOBS 	Estimate in col. (3) deflated using Index of rural housing	
Urban Residential Buildings	ii. Population Census for number of dwellings	2% of total expenditure	Estimate in col. (3) deflated	

322

	Data: Source		estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
URB) - New construction and &M	iii. NSS 65th Round Housing Con- dition Survey, 2008-09	(including new & R&M) on URB is assumed to be for Kutcha DOBS	using Index of urban housing	
ural/Urban Non-residential Build- gs & OtherConstruction Works &U NRB &OCW) - New onstruction and R&M	i. All India Debt & Investment Survey (AIDIS) 2013, for investment in rural and urban residential buildings	Expenditure (including new & R&M) on development of land, barns & animal sheds and other con- struction by households engaged in farm business and development of land under non-farm business is assumed to constitute kutcha part of NRB&OCW.	Estimate in col. (3) deflated using Index of R/U construction NRB&OCW (Kutcha)	
JVA from Kutcha DABS		75% of total value of output of Kutcha DOBS at current prices	75% of total value of output of Kutcha DOBS at base year prices	Proportion of 75% derived on the basis of information in the budget documents and NSS Survey on Housing Conditions in India.
'lantation /alue of Ourput		Total output=sum of GG, Public & P. Item-wise details given below Currer (R)	rivate Corporations and Households nt price estimates deflated with CPI	
ceneral Government (GG) and Pub- c Corporations	 i. Budget documents and Annual Reports 	Expenditure as per budget document and annual reports	Current price estimates deflated with CPI (R)	
rivate Corporations	MCA21 database for the annual reports of Private Sector Companies	Asper fixed asset block information of private corporations from MCA21 database	Current price estimates deflated with CPI (R)	

VOL. 29 NOS. 1&2

323

	Data: Source	Method c	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Households	i. Cost structure from NABARD ii. Increment in area under cultiva- tion from States' DES/NHB	Total capital expenditure on planta- tions is derived as product of cost and increment in area under cultivation. Value ofOutput in the household sector isworked out by residual approach.	Current price estimates deflated with CPI (R)	
GVA from Plantations		75% of total value of output of Plan- tations at current prices	75% of total value of output of Plan- tations at base year prices	Proportion of 75% derived on the basis of the cost structurereceived from NABARD.
Mineral Explorations Value of Output		Total output=sum of Public & Pri- vate Corporations Mineral Explorations are not undertaken by GG and Households <i>Item-wise details given below</i>		
General Government	No mineral explorations are unde	rtaken by General Government		
Public Corporations.	Annual Reports of NDEs	Expenditure as per annual reports.	Current price estimates deflated with CPI	
Private Corporations	MCA21 database for the annual reports of Private Sector Companies	As per balance sheet information from MCA21 database	Current price estimates deflated with CPI	
Households	No mineral explorations are unde	rtaken by households		

324

ltem	Data: Source	Method o	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
GVA from Mineral Explorations	GVA to GVO ratio from MCA21 database and annual reports of pub- lic corporations	Fixed proportion of output of Min- eral Explorations		
10. Trade				
Public Corporations	* Budget documents of DEs * Annual reports of NDEs * WPI from M/o Commerce and Industry	Estimates of GVA compiled using income approach in case of DEs and production approach in case of NDEs	Current price estimates aredeflated using WPI	
Private Corporate (excluding quasi Pvt. Corporate Units	i-corporations) * MCA21 database for the annualre- ports of Private Sector Companies	Estimates of GVA at current prices compiled using production annroach		
	* WPI from Mk) Commerce and Industry			
Co-operative Units	NABARD publication, "StatisticalS- tatements Relating to Cooperative- Movement in India, 2004-05"			
 Private unincorporated sector Quasi-corporations and house- hold sector) covers Maintenance and repair of motor vehicles and motor vydes Sale of motorvehicles Sale of motorvehicles Whole sale trade except of motor vehicles (i) Repair of personal (v) Retail trade (except motor vehicle) 	 * NSS 68th Round EUS, 2011-12 and population Census 2011 * NSS 67th Round ES, 2010-11 * WPI from Ministry of Commerce and Industry * CPI * Service tax from M/o Finance 	Base year GVA as described in Para 2.3.2 in Annexure 2.3. For subsequent years current prices estimates are obtained (i) by inflating estimates at constant price by WPI (ii), $\&$ (v) by using index of sales tax turn overs (iv) by using service tax growth (iv) by using service tax growth	(i) For subsequent years the base year estimates are moved with sales growth of motor vehicles. (ii), (iii), (iv) & (v) Current price estimates are deflated by WPI/CPI	

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
11. Hotels and Restaurants				
(i) Public Corporations	* Budget documents of DEs * Annual reports of the NDES * WPI from Ministry of Commerce and Industry	Estimates of GVA compiled usin- gincome approach in case of DEs and production approach in case of NDEs	Current price estimates are deflated using WPI.	
(ii) Private Corporate(excluding quasi- corporations)	* MCA21 database for the annual reports of Private Sector Companies * Cooperatives projected from 63rd Round ES, 2006-07 * WPI from Ministry of Commerce and Industry	Estimates of GVA compiled using production approach	Current price estimates aredeflated using WPI.	
(iii) Private unincorporated sector (Quasi-corporations and household sector)	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11 * WPI from Ministry of Commerce and Industry	Base year GVA as described in para 2.3.2 in Annexure 2.3.For subse- quent years, current prices estimates moved using growth in the corporate sector	Current price estimates deflated using WPI.	
12. Railways				
Railways	* Annual Railway Budget * Annual reports of the NDEs * MCA21 database for the annual reports of Private Sector Companies	Estimates of GVA compiled using income approach in case of DEs and production approach in case of NDEs and Private Corporate Com- panies	Base year estimate moved with combined indicator of passenger kilometres and net tonne kilometres, combined with their earnings in the base year as weights.	
				(Contd.)

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
 Transport other than Railway Public Corporations Land Transport 	's * Budget documents of DE * Annual reports of the NDEs	Estimates of GVA compiled using income approach in case of DEs and	Base year estimates are moved using Volume index of transport	
(ii) Water Transport	* Motor Transport Statisticsfrom Mo Transport for registered vehides.	production approach in case of NDEs	Base year esthetes are moved using index of cargo handled	
(iii) Air Transport	* M/0 Civil Aviation for Cargo han- dled and passenger data.		Base year estimates are moved using air volume index	
(iv)Storage & warehousing			Base year estimates are moved using storage index	
(v)Services incidental to transport			Combined Growth of GVA of water+air+land transport at constant prices	
Private Corporate (exduding qua	si-corporations)			
(vi) Land Transport	* MCA21 database for the annual reports of Private Sector Companies		Base year estimates are moved using index of registered vehides	
(vii) Water Transport	* NSS 63rd Round ES, 2006-07 for Cooperatives (for land and water transport)		Base year estimates are moved using index of cargo handled	
(viii) Air Transpoft	* M/o Transport for registered vehides.	Estimates of GVA compiled using production approach	Combined growth of passengers and cargo handled by private airlines	
(ix) Storage & wa rehousing	* M/o Civil Aviation for Cargo han- dled and passenger data.		Base year estimates movedusing storage index	

VOL. 29 NOS. 1&2

6.1. (Contd.)

Item	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(x) Services incidental to transport	* M/o Shipping for Cargo handled at ports.		Combined growth of (water- +air-land transport) at constant prices	
Private unincorporated sector (Qu	iasi-corporations and household sect	or)		
(i) Land Transport	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11. * WPI from Ministry of Commerce and Industry	Constant price estimates are inflated using CPI (Transport & communica- tion).	Base year GVA as described in para 2.3.2 in Annexure 2.3 used for freight transport other than motor vehicles, while method as described in para 2.3.3 used for non-scheduled passenger land transport. For years after base year estimates are moved using growth in regd. vehicles.	
(ii) Water Transport	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11. * WPI from Ministry of Commerce and Industry	Constant price estimates are inflated using WPI.	Base year GVA as described in para 2.3.4 in Annexure 2.3. For years after base year, baseyear estimates =Net usingindex of cargo handled.	
(iii) Air Transport	No household enterprises in this indu	ıstry		

328

		6.1. (Contd.)		
Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(iv) Storage & warehousing	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11. * WPI from Ministry of Commerce and Industry	Base year GVA as described in para 2.3.3 in Annexure 2.3. For subsequent years, previous year's current price estimate is moved using Corporate Growth.	Current price estimates are deflated using WPI.	
(v) Services incidental to transnort	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round FS 2010-11	Base year GVA as described in para 2.3.3 in Annexure 2.3.	Base year GVA as described in para 2.3.3 in Annexure 2.3.	
	* WPI from Ministry of Commerce and Industry	Combined growth of (water+ land transport) at current prices used to extrapolate the base year estimates.	Combined growth of (water+land transport) at constant prices used to extrapolate the base year estimates.	
14. Communication & Services rel	lated to broadcasting			
Public corporations	* Budget document of Department of Posts * Annual reports of BSNL & MTNL (NDE)	Estimates of GVA compiled using production approach	Current prices estimates are deflated using CPI (transport and communi- cation)	
Private Corporate (excluding quas	si-corporations)			
Courier activities, Cable operators, Telecommunication and Recording, publishing & Broadcasting services	* MCA21 database for the annual reports of Private Sector Companies * NSS 63 Round ES, 2006-07 for Cooperatives (for telecommunica- tion)	Estimates of GVA compiled using production approach	Current prices estimates are deflated using CPI (transport and communi- cation)	

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

329

(1) (2) (3) (4) (5) Privat unincorporated sector (Quesi-corporations and household sector) (3) (4) (5) (5) Confer activities * NSS for Nound EUS, 2011-12 23.2 in Amexure 2.3. (4) (5) (5) Confer activities * NSS for Nound EUS, 2011-12 23.2 in Amexure 2.3. Mercure prices estimates are ant Propulation Census 2011-12 23.2 in Amexure 2.3. (4) (5) (5) Cable operators * NSS for Nound EUS, 2011-12 23.2 in Amexure 2.3. Mercure 2.3. Mercure 2.3. Mercure 2.3. Mercure 2.3. Mercure 2.3. Cable operators * NSS for Nound EUS, 2011-12 23.2 in Amexure 2.3. Mercure 2.3.	Item	Data: Source	Method of	f estimation	Assumption
(1) (2) (3) (4) (4) (5) Private unincorporated sector (Quusi-corporations and household exciting and Population Census 2011 . NSS 68th Rond EUS, 2011-12 and Population Census 2011 . NSS 68th Rond EUS, 2011-13 . More tablequent years, estimates are and Population Census 2011 . NSS 68th Rond EUS, 2011-112 . 23.2 in Amesure 2.3. the relevant service. Current prices estimates are deflated ender . NSS 68th Rond EUS, 2011-112 . 23.2 in Amesure 2.3. the relevant service. (1) Ease year GV A as described in para the relevant service. (2) (1) (2)			At current prices	At constant (2011-12) prices	
Private unincorporated sector (Ousie corporations and house) Private unincorporation sector (Ousie corporations and house) Private unit of the private sector back of the private back of the priva	(1)	(2)	(3)	(4)	(5)
Counter activities * NSS 68th Round EUS. 2011-12 Base year GVA as described in para and Population Crawsus 2011 Current prices estimates are deflated and Population Crawsus 2011 Cable operators * Mo Finance for Service Tax Current prices estimates are using CPI (transport and communi- moved using growth inservice tax of and Population Census 2011 Base year GVA as described in para and Population Census 2011 Felecommunication * NS 64th Round EUS. 2011-12 Base year GVA as described in para and Population Census 2011 Base year GVA as described in para and Population Census 2011 Recording, publishing & Broades- * NSS 64th Round EUS. 2011-12 Base year GVA as described in para ing services Base year GVA as described in para ind probation Census 2011 Recording, publishing & Broades- * NSS 64th Round EUS. 2011-12 Base year GVA as described in para ind service. Base year GVA as described in para ind the relevant service. Recording, publishing & Broades- * NSS 64th Round EUS. 2011-12 Base year GVA as described in para ind services. Current prices estimates are deflated ind communi- tion of the relevant service. Recording, publishing & Broades- * NSS 64th Round EUS. 2010-11 Para services. Current prices estimates are deflated ind communi- tion of the relevant service. Recording, publishing & Broades- * NSS 64th Round ES. 2010-11 Para secrites related to brow as the relevant service. Current prices estimat	Private unincorporated sector (Quasi-corporations and ho	usehold sector)			
Cable operators * Mo Finance for Service Tax moved using growth inservice. Telecommunication * NSS 68th Round EUS. 2011-12 Base year GVA as described in para * No Finance for Service Tax * NSS 67** Round EUS. 2011-12 Base year GVA as described in para * No Finance for Service Tax * No Finance for Service Tax Base year estimates are moved using growth in service. * Mo Finance for Service Tax * NSS 67** Round EUS. 2011-12 Ease year GVA as described in para * Mo Finance for Service Tax of the relevant service. Base year estimates are moved using growth in service. Recording, publishing & Broadeas. * NSS 67** Round EUS. 2011-12 Base year GVA as described in para Current prices estimates are folded ing services and Population Census 2011 2.3.3 in Amexure 2.3. current prices estimates are deflated is services * NSS 67th Round ES, 2010-11 Base year GVA as described in para current prices estimates are deflated ing services * NSS 67th Round ES, 2010-11 Ever subscuence growth in Consent growth in Consecont Cleareral Growerments of DBs and <	Courier activities	* NSS 68th Round EUS, 2011-12 and Population Census 2011 * NSS 67th Round ES, 2010-11	Base year GVA as described in para 2.3.2 in Annexure 2.3. For subsecuent vears, estimates are	Current prices estimates are deflated using CPI (transport and communi-	
Telecommunication * NSS 68th Round EUS, 2011-12 Base year GVA as described in para and Population Census 2011 Base year of the ansa control and Population Census 2011 * Mo Finance for Service Tax * Mo Finance for Service Tax Base year estimates are moved using movin in service tax Recording, publishing & Broadcas * NSS 68th Round EUS, 2011-12 2.3.2 in Annexure 2.3. Base year estimates are moved using movin in service tax Recording, publishing & Broadcas * NSS 68th Round EUS, 2011-12 2.3.3 in Annexure 2.3. Date population Census 2011 * Recording, publishing & Broadcas * NSS 68th Round EUS, 2010-11 Base year GVA as described in pars Current prices estimates are deflated using CPI (transport and communi-criton) * Recording, publishing & Broadcast * NSS 67th Round ES, 2010-11 Date super services variances are moved using CPI (transport and communi-criton) * NSS 67th Round ES, 2010-11 For subsequent years, estimates are deflated using CPI (transport and communi-criton) Date super services variances are moved using CPI (transport and communi-criton) * Sector (General Government and Professional Services * Annual accounts of DIS and brodesting variances related to broadcasting variances of DIS and brodesting variances are deflated using communi-critons of DIS and Budge documents of DIS and brodesting variances of DIS	Cable operators	* M/o Finance for Service Tax	moved using growth inservice tax of the relevant service.	cation)	
* NSS 67". Round ES, 2010-11 For subsequent years, estimates are * Mo Finance for Service Tax Base year estimates are moved using minutes of usage. Recording, publishing & Broadcas. * NSS 68th Round EUS, 2011-12 Base year GVA as described in pars of the relevant service. Base year GVA as described in pars unites of usage. Recording, publishing & Broadcas. * NSS 68th Round EUS, 2011-12 Base year GVA as described in pars and Population Census 2011 Base year GVA as described in pars using CPI (transport and communi- cation) * NSS 67th Round ES, 2010-11 For subsequent years, estimates are using CPI (transport and communi- cation) For subsequent years, estimates are using CPI (transport and communi- cation) 15. Real estate, Ownership of Dwellings and Professional Services * Annual accounts of ONEs and Budget documents of DIs For subsequent years, estimates are deflated incom 16. Real estate and Professional Services * Annual accounts of DIs Estimates of GVA compiled using is CPI (general) index	Telecommunication	* NSS 68th Round EUS, 2011-12 and Population Census 2011	Base year GVA as described in para 2.3.2 in Annexure 2.3.		
Recording, publishing & Broadcas- * NSS 68th Round EUS, 2011-12 Base year GV A as described in pars and Population Census 2011 Current prices estimates are deflated using CPI (transport and communication) and Population Census 2011 2.3.3 in Annexure 2.3. using CPI (transport and communication) * NSS 67th Round ES, 2010-11 Reveluent years, estimates are using Corporate growth in Cable and Services related to broadcasting' using CPI (transport and communication) 15. Real estate, Ownership of Dwellings and Professional Services * Annual accounts of NDEs and Services related to broadcasting' Protent and Public Corporations) (1) Real estate and Professional Services * Annual accounts of NDEs and services related to broadcasting' Current year estimates are deflated using 's Current services related to broadcasting' (1) Real estate and Professional Services * Annual accounts of NDEs and 's CPI (general) index 's CPI word approach in case of DEs and 's using CPI (general) index 's CPI word approach in case of DEs and 's using CPI (general) index 's CPI word approach in case of DEs and 's corp in the case of DEs and 's case of DEs and's case of DEs and's case of DEs and 's case		* NSS 67" Round ES, 2010-11 * M/o Finance for Service Tax	For subsequent years, estimates are moved using growth in service tax of the relevant service.	Base year estimates are moved using minutes of usage.	
* NSS 67th Round ES, 2010-11 For subsequent years, estimatesare invoid using Corporate growth in Cable and Services related to moved using Corporate growth in Cable and Services related to 15. Real estate, Ownership of Dwellings and Professional Services "Cable and Services related to Public Sector (General Government and Public Corporations) "Cable and Services related to (i) Real estate and Professional Services Estimates of GVA compiled using Services Budget documents of DEs and using CPI (general) index * CPI NDEs	Recording, publishing & Broadcas- ting services	* NSS 68th Round EUS, 2011-12 and Population Census 2011	Base year GVA as described in pars 2.3.3 in Annexure 2.3.	Current prices estimates are deflated using CPI (transport and communi- cation)	
15. Real estate, Ownership of Dwellings and Professional Services broadcasting' Public Sector (General Government and Public Corporations) (i) Real estate and Professional * Annual accounts of NDEs and Budget documents of DEs and using CPI (general) index * CPI NDEs		* NSS 67th Round ES, 2010-11	For subsequent years, estimatesare moved using Corporate growth in 'Cable and Services related to		
Public Sector (General Government and Public Corporations) Public Sector (General Government and Public Corporations) (i) Real estate and Professional * Annual accounts of NDEs and Estimates of GVA compiled using Current year estimates are deflated income approach in case of DEs and using CPI (general) index * CPI NDEs production approach in case of DEs and using CPI (general) index	15. Real estate. Ownershin of Dwe	llings and Professional Services	broadcasting'		
(i) Real estate and Professional * Annual accounts of NDEs and- Estimates of GVA compiled using Current year estimates are deflated Services Budget documents of DEs income approach in case of DEs and using CPI (general) index * CPI NDEs production approach in case of NDEs	Public Sector (General Governme	nt and Public Corporations)			
	(i) Real estate and Professional Services	* Annual accounts of NDEs and- Budget documents of DEs * CPI	Estimates of GVA compiled using income approach in case of DEs and production approach in case of NDEs	Current year estimates are deflated using CPI (general) index	

330

(1) (1) (ii) (1) (iii) Ownership of dwellings * Budget documer Private Corporate (excluding quasi-corporations) * MCA21 databas Real Estate and Professional Ser- * MSX 6344 Doute to the set of t	(2)	At current prices		
(1) (1) (1) (ii) Ownership of dwellings * Budget documer Private Corporate (excluding quasi-corporations) * Real Estate and Professional Ser- * MCA21 database vices * NSC 6244 Douver	(2)		At constant (2011-12) prices	
 (ii) Ownership of dwellings * Budget documen Private Corporate (excluding quasi-corporations) Real Estate and Professional Ser- * MCA21 databas vices * NSC 6244 Douvet 		(3)	(4)	(5)
Private Corporate (excluding quasi-corporations) Real Estate and Professional Ser- * MCA21 databas vices * NSC 6344 Douver	ments	Estimates of GVA compiled using income approach	Current year estimates are deflated using CPI (general) index	
CPI CONTRACTOR CONTRAC	these for the annual ate Sector Companies ound ES, 2006-07 for	Estimates of GVA compiled using production approach	Estimates at current prices are deflated using CPI (misc. services)	
Private unincorporated sector (Quasi-corporations and household sector)				
Real Estate Activities * NSS 68m Round and Population Ce * NSS 67th Round	und EUS, 2011-12 1 Census 2011 nund ES. 2010-11	Base year GVA as described in para 2.3.4 in Annexure 2.3 except in the case of R & D etc. for which method	Estimates at current prices are	
Administrative and support servi- * CPI ces+ Renting ofmachinery & equip- ment without operator, personal / household goods		as described in para 2.3.3 is used. For the subsequent years	deflated using CPI (misc. services)	
Information & Computer Related activities		estimates are moved using Corpo- rate Growth (same as in organised sector)		
Legal activities Accounting, book-keeping Research and development & Other Professional Services +veterinary				
acu viics				(Con

VOL. 29 NOS. 1&2

6.1. (Contd.)

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Ownership of dwellings	The GVA for the ownership of dwe cost of repairs and maintenance. Details for rural & urban dwellin,	lings is equivalent to gross rental of the s are alven below:	e residential census houses less the	
Irban dwellings	* Population Census 2011 for num- ber of residential houses * CPI (R) & CPI (U) * NSS 68th Round CES, 2011-12 for rent per household	Gross rental=no. of censushouses (urban) * 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 extrapolated using the index of house rent (urban areas)	Estimates of Urban GVA are obtained by moving the base year estimate with inter censal growth rate of dwellings.	In the absence of updated informa- tion on the number of dwellings, the inter-censal growth rate is assumed to be valid till the next Population Census.
ural dwellings	* Capital Stock of rural residential buildings as estimated through annual capital formation * CPI (R)	Gross rental is estimated through user cost approach, using the capital stock of rural residential buildings.	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 (intermediate consumption and consumption of fixed capital) are added to the imputed net operating surplus to obtain the imputed rent.

332

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

JAN-JUNE 2017

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
 16. Financial Services (1) Deposit taking corporations 	* Annual accounts from all the Nationalised Banks. For RRBs, for- eign banks and OSCBs and Co- op. Banks data contained in different RBI publications.	Estimates of GVA at current prices are estimated by the production approach.	Index of deflated credits and depos- its of All Scheduled Commercial Banks. For cooperative banks Combined Index of membership and deposits.	
(2) Central Bank	* RBI for data on income and expenditure	Estimates of GVA at current prices are estimated by the production approach - cost method has been used	Current price estimates deflated by implicit deflator of commercial banks	
(3) Post Office Saving bank (POSB)	* Budget Documents	Estimates of GVA at current prices are estimated by the production approach.	Current price estimates deflated with CPI (IW)	
(4) Other Financial Intermediaries except Insurance Corporations and Pension Funds	* Annual reports of Non-depart- mental Non-banking financial com- panies and corporations containing their annual accounts * Data received from RBI for top companies 195 companies in the case of base year.	Estimates of GVA at current prices are estimated by the production approach for non-departmental financial companies and corpora- tions, For private non-banking financial companies the data on income and expenditure for the top companies supplied by RBI is blown up with the total paid up capital of non- government non-banking financial companies.	Index of deflated net receipts.	

VOL. 29 NOS. 1&2

Item	Data: Source	Method of	festimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(5) Financial auxiliaries	* SEBI, MCA and annual accounts of Insurance companies (for Insur- ance Agents)	Data has been received for share brokers, AMCs and stock exchanges from MCA and for insurance agents, data on commission paid to agents, is available in the annual reports of insurance companies	Index of deflated net receipts.	
(6) Captive financial institutions and mortey lenders	* For companies and corporations annual accounts data has been used. * For money lenders, NSS 67th Round ES, 2010-11 along with AIDIS 2012	A combination of NSS 67th Round Survey, AIDIS ratios for loans and stock of loans of commercial banks has been used for estimation of this segment.	Index of Net Receipts of corpora- tions and money lenders.	
(7) Life Insurance (including PLJ)	* Annual reports of 1_IC and private life insurance companies	Estimates of GVA at current prices are estimated by the production approach.	For LIC, base year estimates are moved with the average of deflated indices of life fund and sum assured. For private life insurance, current price GVA has been deflated with WPL	
(8) Postal Life Insurance	* Budget Documents	Estimates of GVA at current prices are estimated by the production approach.	Current price estimates deflated with CPI (IW)	
				(Conte

334

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
(9) Non-life insurance	* Annual Reports of public and pri- vate Insurance Companies for eco- nomic classification	Estimates of GVA at current prices are estimated by the production approach.	Base year estimates are moved with the deflated index of 'Gross pre- mium less claims', for non-life insurance other than ESIC. For ESIC, the current price estimates are deflated with the WPI. For private insurance companies current price GVA has been deflated with WPI.	
(8) Pension Fund	* Annual Financial Reports	Estimates of GVA at current prices are estimated by the income approach.	Current price estimates deflated with CPI (IW)	
17. Public administration and defe	ence * Budaet documents from centrel	Estimates of GVA at current micros	Current mice estimates deflated hv	
central and state Governments, Local Bodies	* bugget documents from central and state governments, annual accounts of local bodies	Estimates of GVA at current prices compiled using production approach	current price estimates deriated by the CPI (Combined)	
Autonomous Institutions	* Annual Financial Accounts of sampled Central Autonomous Insti- tutions	Gross Value Added is worked out from the production approach of the sample autonomous institutions for the base year and these benchmark estimates have been projected with the help of total grants given to all autonomous institutions.	Current price estimates deflated by the CPI (Combined)	

VOL. 29 NOS. 1&2

335

Item	Data: Source	Method	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
18. Other Services Public Sector (General Governme) Education, Health and Recreation	tt and Public Corporations) * Budget documents of DEs & autonomous institutions	Estimates of GVA compiled usin- gincome approach in case of DEs	Current price estimates are deflated using CPI index for Education	
	* Annual reports of the NDEs * CPI	and autonomous institutions and production approach in case of NDEs	and Health in the case of GVA of Education & Health Services and CPI (Miscellaneous) in the case of GVA of Recreation	
Private Corporate (excluding quas Coaching centres + Activities of the individuals providing tuition + Edu- cation excluding Coaching	<pre>si-corporations) * MCA21 database for the annual reports of Private Sector Companies * NSS 63rd Round ES, 2006-07 for Co-operatives * CPI</pre>	Estimates of GVA compiled using production approach	Current price estimates deflated using CPI (education)	
Human health activities+ care ser- vices	* MCA21 database for the annual reports of Private Sector Companies * NSS 63 Round ES, 2006-07 for Co-operatives * CPI	Estimates of GVA compiled using production approach	Current price estimates deflated using CPI (health)	
Activities Of Membership Organisa- tions n.e.c.				
Recreational, cultural and sporting activities	* MCA21 database for the annual reports of Private Sector Companies	Estimates of GVA compiled using production approach	Current price estimates deflated using CPI (Miscellaneous)	
				(Conte

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

336

		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Washing and cleaning of textile and fur products	* NSS 63rd Round ES, 2006-07 for Co-operatives			
Hair dressing and other beauty treatment	* CH			
Custom Tailoring				
Other personal Services				
Private unincorporated sector (Quasi-corporations and ho	usehold sector)			
Coaching centres + Activities of the individuals providing tuition + Edu- cation excluding Coaching	* NSS 68th Round EUS, 2011-12 * NSS 61st and 68th Rounds CES,2004-05 & 2011-12, respec- tively * Population Census 2011 * NSS 67th Round ES, 2010-11 *CPI	Base year GVA as described in para 2.3.4 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using inter-survey growth inconsumer expenditure in education.	Current price estimates deflated using CPI (education)	
Human health activities+ care ser- vices	 * NSS 68th Round EUS, 2011-12 * NSS 61st and 68th Rounds CES, 2004-05 & 2011-12, respectively * Population Census 2011 * NSS 67th Round ES, 2010-11 * CPI 	Base year GVA as described in para 2.3.4 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using inter-survey growth in consumer expenditure in health.	Current price estimates deflated using CPI (health)	

VOL. 29 NOS. 1&2

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Activities Of Membership Organisa- tions n.e.c.	* NSS 68th Round EUS, 2011-12 * Population Census 2011 * NSS 67th Round ES, 2010-11 * CPI * Service Tax from M/o Finance	Base year GVA as described in para 2.3.4 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using service tax growth.	Current price estimates deflated using CPI (misc. services)	
Recreational, cultural and sporting activities	* NSS 68th Round EUS, 2011-12 * NSS 61st and 68th Rounds CES, 2004-05 & 2011-12, respectively * Population Census 2011 * NSS sr Round ES, 2010-11 * CPI	Base year GVA as described in para 2.3.3 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using inter- survey non-food consumer expenditure growth.	Current price estimates deflated using CPI (recreation)	
Washing and cleaning of textile and fur products	* NSS 68th Round EUS, 2011-12 * NSS 61st and 68th Rounds CES, 2004-05 & 2011-12, respectively * Population Census 2011 * NSS 67th Round ES, 2010-11 * CPI	Base year GVA as described in para 2.3.3 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using non-food inter-survey consumer expenditure growth.	Current price estimates deflated using CPI (misc. services)	
				(Contd.)

-
_ * _
~
2
-
<u> </u>
()
~
\sim
•
_
<u> </u>
<u>_</u>

Item	Data: Source	Method o	of estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Hair dressing and other beauty treat- ment	 * NSS 68th Round EUS, 2011-12 * Population Census 2011 * NSS 67th Round ES, 2010-11 * CPI * Service Tax from M/o Finance 	Base year GVA as described in para 2.3.3 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using service tax growth.	Current price estimates deflated using CPI (misc. services)	
Custom Tailoring & Other personal activities	* NSS 68th Round EUS, 2011-12 * NSS 68th Rounds CES, 2004-05 & 2011-12, respectively * Population Census 2011 * NSS 67th Round ES, 2010-11 * CPI	Base year GVA as described in para 2.3.3 in Annexure 2.3. For years after the base year,previ- ous year's estimate movedusing non-food inter-survey consumer expenditure growth.	Current price estimates are deflated using CPI (misc.services)	
Private Households with employed persons	* NSS 68th Round EUS, 2011-12 * Population Census 2011	Base year GVA as described in para 2.3.3 in Annexure 2.3. For years after the base year, pre- vious year's estimate moved using population growth and CPI (misc. services)	Previous year's estimate moved using population growth.	
GVA estimated by production app GVA estimated by income approac	roach: ch:	GVA = Output - Materi GVA = Compensation o	ial Inputs of Employees + Operating Surplus + C	Ų

VOL. 29 NOS. 1&2

6.1. (Concld.)

339

Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Primary Goods				
Food grains - cereals and pulses:	Production :- Same as for GVA	Ouantity of item wise consumption	Same method as adopted for current	See Annexure 6.2
Meat, fish and seafood;	Wastages :- CIPHET Study, 2009	is estimated in two steps:	price estimates, but the prices used	
Milk and eggs;	Quantity retained for own consump-	(i) Out of total production of food	are the base year prices	
Oils and fats;	tion: NSS 68th Round CES,	grains in a year, quantity retained for	•	
Fruits and vegetables; Sugarcane for	2011-12.	seed, feed (based on fixed rate),		
chewing & gur;	Seed & Feed: As calculated for the	wastages at various stages and quan-		
Non-alcoholic beverages - Coffee,	compilation of GVA of crops	tity retained for own consumption		
tea, cocoa; and Narcotics - Areca nut	Inter Industry Consumption: IOTT	are subtracted to arrive at marketable		
and opium.	and ASI	surplus;		
	Imports & Exports: DGCI&S, Min-	(ii) To arrive at net market supplies		
	istry of Commerce	from marketable surplus, estimated		
	Government consumption:	inter-industry consumption, PDS		
	Government's annual budget docu-	quantity and government consump-		
	ments.	tion are subtracted. Then quantity of		
	PDS Quantity, where applicable:	net imports (imports minus exports)		
	M/o Consumer Affairs, Food and	and net change in stock are added.		
	Public Distribution	Valuation: (a) quantity retained for		
	Retail Prices: Prices from NSS 68th	own consumption is evaluated at ex-		
	Round CES, 2011-12 (base year)	farm price. (b) Net marketable sup-		
	moved with CPI	plies are evaluated at retail price and		
		(c) Quantity of PDS supplies for		
		rice, wheat are evaluated at PDS		
	Trade and TransportMargins (TIN)	price. The value of quantity retained,		
	in cases where retail prices are not	PDS supply and net market supplies		
	available: IOTT	available for consumption are added		
		to obtain actimates of DECE		

td.)
(Con
6.2.

Item	Data: Source	Method of e	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Manufactured products Rice products; Bread and biscuits; Milk products; Refined sugar, palm gur and sugar confectionery; Other food products; Non-alcoholic bever- ages - Mineral water and soft drinks; Alcoholic beverages, tobacco for chewing, cigarette, bidi and other tobacco products; clothing and foot- wear; furniture and furnishings, car- pet and other floor coverings; phousehold textile and appliances; glassware and tableware; motor vehicles and parts; audio-visual, photographic and other recreational equipment; newspaper, books and stationeryjewellery, clocks and watches; andother personal goods	 1.0utput/Product & by products:- Same as for GVA Same as for GVA Share of consumable goods: (i) Registered: Detailed ASI results at commodity level. (ii) Un-registered: ratio between organized & unorganized manufac- turing. Excise and Import duty: TRU, M/o Finance Hmports & Exports: DGCI&S 5. Govt. consumption: Ratio from IOTT Capital goods: IOTT Inter-Industry consumption: IOTT Trade and Transport Margins: IOTT Change in stocks: ASI 	The data base for preparation of esti- mates of PFCE for majority of man- uffactured items is same as that for estimating the value added from manufacturing sector. Data on out- put according to compilation cate- gory estimated for compiling GVA by adopting the enterprise approach is utilised. Share of products and by- products for different industries in in ASI. Also from the detailed analysis of ASI, items of final consumption are classified as per Classification of Individual Consumption According to purpose (COICOP) and share of these interns in the total value of products and by-products is com- piled. Applying these shares on the value of products and by-products estimated from the output copiled by the enterprise approach, for enter- prises in Public Sector, Private Cor- porate Sector and Unincorporated Sector, the total value of products of different items and by-products of different items and by-products of different items under this group is estimated. For unorganised manufacturing sec- tor, the base year ratio between out- put of organised and unorganised	Current price estimates are deflated by CPI	See Annexure 6.3

VOL. 29 NOS. 1&2

Item	Data: Source	Method of	estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
		manufacturing for corresponding industry groups has been used. The total output is then supplemented by excise duty, import/import duty and net of change of stock. Further total supply is marked up by trade and transport margin to arrive at total available supply for consumption. Finally exports, government con- sumption, capital formation and inter-industry consumption are subtracted from total availability to arrive at PFCE.		
Other Products				
Other cereals products and pulses products	NSS 68th Round CES, 2011-12.	Other cereals products and pulses products worked out from CES. The growth in per capita consumer expenditure between last two NSS CES along with population is used to work out estimates for other years. Retail price as obtained from CES used is moved forward usi8ng appropriate price indices.	Current price estimates are deflated by CPI	See Annexure 6.2
Salt and spices	NSS 68th Round CES, 2011-12.	Estimates are prepared using the value of per capita consumption	Current price estimates are deflated by CPI	
Pan	NSS 68th Round CES, 2011-12.	Estimates are prepared using the value of per capita consumption	Current price estimates are deflated by CPI	
				(Contd.)

342

Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Services (1) Housing, water supply and misc. services relating to dwelling	Same sources as thoseused for the GVA estimates	Estimated using GVO of 'ownership of dwellings', i.e., expenditure on house rent and repair & maintenance as estimated for both rented dwellings and owner occupied dwellings (imputed rent is taken for owner-occupied dwellings). Water charges are taken for urban areas	By taking GVO at constant (2011-12) prices.	See Annexure 6.4
(2) Health Services	NSS 68th Round CES,2011-12.; Survey on NPIs conducted by CSO	Estimates are prepared using the value of per capita consumption based on the NSS 68th Round CES, 2011-12, duly supplemented by the expenditure incurred by NPISH on health. For subsequent years, base year expenditure has been extrapo- lated by gross value of output on health complied by CSO.	Deflating Current price estimates by CPI	
(3) purchase of transport services & maintenance of personal transport equipment - Rail, air, road transport, water transport and repair of per- sonal transport equipment	Same sources as thoseused for the GVA estimates and IOTT	The estimates of PFCE in respect of road transport, rail transport, air transport and water transport are compiled on the basis of the total passenger earnings in these services.	Current price estimates aredeflated with the help of implicit price indices of GVO estimates.	Proportion of PFCE toPassenger earnings (by type of transport) is assumed to be constant for the series.

VOL. 29 NOS. 1&2

343

TICTI	Data: Source		Countarion	nondmineev
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
4) Communication	Sources as used for GVA	PFCE is estimated as 40 per cent of the total output.	Current price estimates are deflated by implicit price index of GVO	Proportion of PFCE to output is assumed to be constant for the series.
5) Recreational and cultural ser- ices	Indian Public Finance Statistics, Ministry of Finance and sources as those used for the GVA estimates	The estimates of PFCE are built up on the basis of rates of entertainment taxes and revenues of State govern- ments on entertainment taxes.	Deflated by implicit price index of GVO	
5) Education	NSS 68th Round CES, 2011-12., sources as used for GVA; Survey on NPIs conducted by CSO	Base year estimates are based on the NSS 68th Round CES, 2011-12, duly supplemented by the expendi- ture incurred by NPISH on educa- tion. For subsequent years, base year expenditure has been extrapolated by gross value of oupput on educa- tion compiled by CSO.	Same as above.	
f) Hotels and Restaurants	NSS 68th Round CES, 2011-12., sources as used for GVA	The base year estimates have been taken for NSS 68th Round CES, 2011-12 and ratio of PFCE to output worked out for the base year is applied on subsequent years' output to arrive at PFCE estimates.	Same as above	
3) Other miscellaneous services: oomestic services, laundry, hair- ressing, legal services, funeral, usiness, tailoring and religious arvices and other miscellaneous arvices namely, repair of personal ouschold goods, insurance services nd other financial services	Sources as used for GVA and IOTT	The PFCE for these services is estimated as a certain percentage of output. The PFCE on financial services indudes imputed charges (FISIM).	Same as above	

344

Item	Data: Source	Method of	f estimation	Assumption
		At current prices	At constant (2011-12) prices	
(1)	(2)	(3)	(4)	(5)
Electricity, gas and other fuel Electricity	Central Electricity Authority NSS 68th Round CES, 2011-12.	Consumption of electricity and retail price for the base year has been derived from NSS 68th Round CES, 2011-12. For subsequent years, the base year estimates of consumption of electricity has been moved for- ward using CEA data on electricity sold, and base year retail price has been moved forward using appropri- ate price indices.	Base year estimates are moved for- ward using consumption of electric- ity (in terms of electricity sold) as obtained from CEA.	
Gas	Ministry of Petroleum and Natural Gas	Domestithic consumption from Indian Petroleum & Natural Gas Sta- tistics and retail price as obtained from CES has been used. Base year retail price has been moved forward using relevant price indices.	Base year estimates are moved for- - ward using domestic consumption of gas as obtained from IP&NG Statistics.	
Kerosene	Ministry of Petroleum and Natural Gas	Domestic consumption from Indian Petroleum & Natural Gas Statistics and retail price (weighted average price of PDS and non PDS) as obtained from CES has been used. Base year retail price has been moved forward using relevant price indices.	Base year estimates are moved for- ward using domestic consumption of kerosene (PDS & non-PDS) as obtained from IP&NG Statistics.	
Firewood	NSS 68th Round CES, 2011-12.	NSS consumption data used for the base year. Base year value has been moved forward using output of fire- wood at current prices as obtained in the forestry sector.	Base year value has been moved for- ward using output of firewood at constant (2011-12) prices as obtained in the forestry sector.	
				(Contd.)

Item	Data: Source	Method of	estimation		Assumption
		At current prices	At constant (2011-12	.) prices	
(1)	(2)	(3)	(4)		(5)
Charcoal	NSS 68th Round CES, 2011-12. C pt dd 20 20 b b b b b b b b b b b b b b b b b	onsumption of Charcoal and retail ice for the base year has been rived from NSS 68th Round CES, 11.1.2. For subsequent years, the ise year estimates of consumption charcoal has been moved forward ing production data, and base year tail price has been moved forward ing appropriate WPI.	Base year estimates are n ward using production of	charcoal.	
Gobar Gas	KVIC G	obar Gas consumption is taken om the annual report of the KVIC.	Deflated using the implic dex of 'production of gob	sit pricein- bar gas'.	
Dung fuel, Coke and other fuel	Same sources as used for GVA. Free m	or these items, PFCE has been esti- ated as a fixed percentage of out- at at current prices.	The ratios of output to PI been used on the value of constant prices to obtain constant (2011-12) prices	FCE have C f output at p PFCE at I s. 0	Coke - 69.4 % of Disposable Sup- blies Vegetable waste - 98.48% of Disposable Supplies Bagasse- 5.96% ofDisposable Supplies Dung cake = 77.14% of Disposable Supplies
	6.3. Governm	ent Final Consumption Expenditu	ire (GFCE)		
Item	Data: Source		Method of e	stimation	
		At current	t prices	At	constant (2011-12) prices
(1)	(2)	(3)			(4)
GFCE	Budget documents from central and state ge ments, annual accounts of local authorities; Annual Financial Accounts of Central Autonomous Institutions	vern- Sum of compensation of et of goods and services and t capital (no provision is ma ments for consumption of i tral/state governments, locs autonomous institutions. Th and the expected age of van the aggregate level)	nployees, net purchase consumption of fixed de in the budget docu- fixed capital of the cen- al authorities and al authorities and hese of capital stock rious types of assets at	Deflation of cu rately for each by Consumer F goods and com based weightec have been deri	rrrent price estimates is done sepa- of the components. CE is deflated Price Index while net purchase of mnodities is deflated using WPI d price index, where the weights (ved from IOTT

6.2. (Concld.)

346

estimation	At constant (2011-12) prices	(4)	Deflation of current price estimates is done sepa- rately for each of the components. CE is deflated by Consumer Price Index while net purchase of goods and commodities is deflated using WPI based weighted price index, where the weights have been derived from IOTT
Method of	At current prices	(3)	Sum of compensation of employees, net purchase of goods and services and consumption of fixed capital (no provision is made in the budget docu- ments for consumption of fixed capital of the cen- tral/state governments, local authorities and autonomous institutions. These of capital stock and the expected age of various types of assets at the aggregate level)
Data: Source		(2)	Budget documents from central and state govern- ments, annual accounts of local authorities; Annual Financial Accounts of Central Autonomous Institutions
Item		(1)	3FCE

6.3. Government Final Consumption Expenditure (GFCE)

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(5)
(a) Public Corporations	* Budeet documents	Current econiet lace Current evenualities	
(I) DES	Dudget documents	Current recept uss current expenditure	
(ii) NDEs	* Annual Reports	Gross saving is the balancing item of Secondary Distribution of Income Account (in the sequence of accounts for government companies).	
(b) Private Non-financial corporations	* MCA21 database for Non-financial non-governmentcompanies	Gross saving is same as the balancing item of Secondary Distribution of Income Account (in the sequence of accounts for non-financial non-	
	* NABARD for Non-credit societies	government companies) - Keinvested earnings of Toreign companies. In the parlance of business accounts, this is equivalent to retained profit one demonstration environments environce of foreign common	
	* NSS 67th Round ES, 2010-11 for	риз верестатой римплон пшиз гентезке санику от операт-	
	quasi-corporations (unincorporated man- ufacturing and non-financial services)	ii Non-credit societies: oross savino is enual to sum of statutory reserve	
	0	and other reserves	
	* ASI, 2011-12 detailed results for		
	quasi-corporations	iii. Quasi-corporations (unincorporated manufacturing and non-financial	
	(unincorporated manufacturing enter-	services): Capital stock is estimated by multiplying the capital stock to	
	prises covered under ASI)	GVA ratio from NSS 67th round survey for the enterprises maintaining	
		accounts with the G VA estimated for this component. Saving in physical accests i a conital formation is then derived by tabing the difference	
		between the capital stock of two consecutive years.	
		iv. Quasi-corporations (unincorporated manufacturing enterprises covered under ASI) Physical assets, i.e., capital formation for "Individual Propri- etorship, Joint Family (HUF), Partnership, Khadi & Village Industries	
		Commission, handlooms, Others' as derived from ASI.	

Section 6.4. Saving (Estimates are compiled only current prices)

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(5)
Private Financial corporations	* RBI for Non-Government Non- Banking Finance Corporations(NGNBFCs) * MCA21 database for stock brokers and asset managementcompanies (List from SEBI) * RBI for private & foreign banks * Annual Reports of insurancecompanies * NABARD for credit societies * NSS 67th Round ES, 2010 -111 for quasi-corporations (unorganised finan- cial services) in the form of physical assets for money lenders, insurance agents and other unincorporated finan- cial enterprises)	i. Non Govt. Finance companies, private & foreign banks, Insurance companies: gross saving is the balancing item of Secondary Distribution of Income Account (in the sequence of accounts for financial non-government companies). Alternatively, it is same as (GVA at basic pricompensation of Employee-(taxes- subsidies) on production - net property income payment - net current transfer payment - income tax) ii. Credit societies: gross saving is equal to sum of statutory reserve and other reserve and other reserves. iii. Quasi-corporations (unorganised financial services) in the form of physical assets: Capital Formation for quasi-corporations estimated using capital stock to GVA ratio from NSS 67th Round ES, 2010-11 for the financial enterprises and GVA for the corresponding sector.	
General Government	* Budget documents	Current receipt less current expenditure	
Household Sector		Total of Financial Saving for households (including quasi-corporations) and Saving in Physical Assets $\&$ in the form of valuables for households.	
Financial Saving for households (in- ding quasi-corporations)			
Currency, Deposits, Shares and entures and Claims on Govt.	* RBI for financial savings ofhouseholds (including quasi-corporations) for all instruments	Residual method, i.e., Total minus share of Public Sector & Private Corporate Sector.	

Section 6.4. (Contd.)

VOL. 29 NOS. 1&2

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(5)
(b) Provident and Pension Funds	* Provident and Pension Fund Organisa- tions	Provident & Pension Fund = Contribution + Recoveries - Withdrawals + Interest.	
	* Union Government Finance Accounts for Central & State Govt. provident fund and Public provident fund	Central & State Govt. provident fund, Public prdvident fund: Excess of receipts over payments from Union Government Finance Accounts	
(c) Insurance Funds	* LIC annual report	Life insurance from LIC: Increase in Life Fund from UC annual report	
	* Union Government Finance Accounts for postal life insurance, CGEGIS & Sta- te/UT insurance	Postal life insurance, CGEGIS & State/UT insurance: Excess of receipts over payments from Union Government Finance Accounts	
(d) Mutual Funds	* Annual Reports of UTI and other Money Market Funds (MMF) and Non- MMF for savings in mutual funds	Mutual funds: Household savings in mutual funds is taken as 39.77% of gross savings in MMF and non-MMF funds.	The proportion of 39.77% has been derived from the share of net assets held by individual investors in Inv tor accounts of MMF andnon-MMF funds in the base year.
(ii) Saving in physical assets of hou- wholds	* Household Capital Formation	Household investment in fixed assets is derived as residual deducting the corresponding estimates of public and private corporations from the total capital formation plus change in stock derived by industry of use	
(iii) Saving of households in the form of valuables	* NSS 68th Round CES, 2011-12	Expenditure by households on valuables	
2. Net Capital Inflow from abroad	* RBI	Net capital inflow is the deficit of the nation on current account in balance of payment account excluding official transfers	
3. Finances for Gross Capital Forma- tion*		Gross Saving plus Net Capital Inflow from abroad	

Section 6.4. (Contd.)

dity-flow approacn.

350

Account
Transaction
.5. External

ltem	Data: Source	Method c	festimation
		At current prices	At constant (2011-12) prices
(1)	(2)	(3)	(4)
 Export/Import of Merchandise (including net exports of goods under merchanting) 	* RBI * DGCIS	As received from RBI	Exports and Imports of goods at current prices are deflated by unit value of export index and unit value of import index, respectively.
2. Export/Import of Services	* RBI	As received from RBI	Exports and Imports of services at current prices are deflated by implicit price index of service sec- tor
3. Net Factor Income From Abroad	* RBI	Net receipt of Compensation of Employees and Property & Entrepreneurial Incomes	Current price estimates are deflated by implicit price index of service sector
4. Other Components - Transfers	* RBI	As received from RBI	Not compiled at constant prices

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
GROSS FIXED CAPITAL FO Dwellings, Other Buildings & S	RMATION BY TYPE OF ASSET Structures (DOBS) Asset		
Overall Estimate	Seven basic material groups (viz. Cement & Cement Products, Iron & Steel, Bricks & Tiles, Timber & Roundwood, Bitumen & Bitumen Mixtures/Products Glass &	 Through commodity flow approach for Pucca DOBS using basic materials, other materials & service charges and factor inputs/pay- ments. 	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
	Glass Products and Fixtures & Fitting!) and Other Materials & Service Charges	ii. Through Expenditure approach for Kutcha DOBS.	
		iii. Only New Construction forms part of GFCF (ASI Output adjusted for corresponding output estimated in the man- ufacturing sector by adopting enterprise approach)	
Institution-wise details			
General Government (GG)	Budget documents of Administration Departments and Annual Reports of Autonomous Bodies	New capital outlay on DOBS (both pucca and kutcha) as obtained from the analysis of budget documents & annual reports (by expendi- ture approach)	same as above
Public Corporations	Budget documents of DEs	Same as above	same as above
	Annual Reports of NDEs	GFCF is estimated from fixed asset block of annual reports	same as above
	MCA21 database for the annual reports of Private Sector Companies	Non-government companies: GFCF is derived from MCA21 database and blown up for non-responding companies on the basis of paid up capital	
	RBI for private and foreign banks	Private & Foreign Banks: GFCF is estimated from details of assets and liabilities by RBI	
Private Corporations	Annual reports from insurance companies	Insurance companies: GFCF is estimated from fixed asset block of annual reports	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
	NABARD for co-operative societies	Co-operative Societies: based on the data on fixed assets obtained from NABARD	
			(Contd.)

Section 6.6. Capital Formation

352

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
	NSS 67th Round ES, 2010-11 for quasi- corporations (unincorporated manufactur- ing and services)	Quasi-corporations (unincorporated manufacturing and services): Ini- tially, estimates of GFCF for quasi-corporations are prepared by industry, using ratio of capital stock to GVA derived from NSS 67th Round for enterprises maintaining accounts and applied on GVA for	
Private Corporations (Contd.)		corresponding sector to arrive at the estimates of stocks of fixed assets. The stocks of assets are distributed by assets based on the asset-wise distribution of stocks from NSS 67" Round. GFCF by asset (DOBS) is then estimated as the difference between two successive years' stocks for each asset.	Current price estimates are deflated by WPI-basedcomposite price indices for the relevant asset
	ASI, detailed results for quasi- corpora- tions (unincorporated manufacturing enterprises covered under ASI)	i. ii. iii. iv. v. vi. Quasi-corporations (unincorporated manufacturing enterprises covered under ASI): GFCF for "Individual Proprietorship, Joint Family (HUF), Partnership, Khadi & Village Industries Commis- sion, Handlooms, Others" is derived from ASI.	
Households	Pucca DOSS	GFCF-Pucca DOBS of households = Total value of GFCF-Pucca DOBS - value of new construction in GG, Financial & Non- Financial Public & Private Corporations.	same as above
	Kutcha DOSS i. All India Debt & Investment Survey (AIDIS) 2013, for investment in rural and urban residential buildings ii. Population Census for number of dwellings iii. NSS 65th Round Housing Condition Survey, 2008-09	Estimated using capital expenditure on New Construction per dwelling from AIDIS 2013, number of dwellings and ratios for kutcha and pucca dwellings from NSS 65th round.	same as above

Section 6.6. (Contd.)

VOL. 29 NOS. 1&2

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
Machinery & Equipment (M Overall Estimate	&E) Asset i. Detailed results of ASI for organised sector ii. EXIM databank for net imports iii. CBEC for excise & customs duty iv. NSS 67". Round ES, 2010-11 for un- organised part	Total GFCF in M&E asset = Sum of ex-factory value of capital goods from organised and un-organised sectors + TTMs + excise duty + imports of capital goods + import duty for these items - exports of capital goods (ASI Output adjusted for corresponding output estimated in the man- ufacturing sector by adopting enterprise approach)	same as above
Institution-wise details General Government (GG)	Budget documents of Administration Departments and Autonomous Bodies	Capital expenditure on $M\&E$ obtained from the analysis of budget documents & annual reports (by expenditure approach)	Current price estimates are deflated by WPI-basedcomposite price indices for the relevant asset
Public Corporations	Budget documents of DEs	Same as above	same as above
	Annual Reports of NDEs	GFCF is estimated from fixed asset block of annual reports	same as above
Private Corporations	MCA21 database for the annual reports of Private Sector Companies	Derived from MCA21 database and blown up for non-responding companies on the basis of paid up capital	same as above
	RBI for private and foreign banks	Estimated from details of assets and liabilities by RBI	same as above
	Annual reports from insurance companies	Estimated from fixed asset block of annual reports	same as above
	NABARD for cooperative societies	Estimated on the basis of the data obtained on fixed assets from NABARD	same as above
	NSS 67th Round ES, 2010-11 for quasi- corporations (unincorporated manufactur- ing and services)	Estimates of GFCF for quasi-corporations are prepared by industry, using ratio of capital stock to GVA derived from NSS 67th Round for enterprises maintaining accounts and applied on GVA for correspond- ing sector to arrive at the estimates of stocks of fixed assets. The	same as above

Section 6.6. (Contd.)

354

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

	<u></u>
-	шa.
5	0
1	÷
5	
•	ecu
ζ	2

_

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
		stocks of assets are distributed by assets based on the asset-wise distribution of stocks from NSS 67th Round. GFCF by asset (M&E) is then estimated as the difference between two successive years' stocks for each asset.	
	ASI detailed results for Quasi- corpora- tions (unincorporated manufacturing enterprises covered under ASI)	Derived from the data on "Individual Proprietorship, Joint Family (HUF), Partnership, Khadi & Village Industries Commission, Hand- looms, Others" from ASI.	same as above
Households		Derived as a residual from the total GFCF in $M\&E$ asset	same as above
Cultivated Biological Resources (CBR) Asset Overall Estimate	 Total capital expenditure on plantations (cost structure) from NABARD ii. Increment in area under cultivation from States' DES iii. Increment in livestock from Livestock Census 2012 	Plantation & orchards: using expenditure approach Increment in live- stock (for breeding, dairying and draught animals) used as capital asset has been estimated using Livestock Census 2012	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
Institution-wise details General Government (GG)	Budget documents of Administration Departments and Autonomous Bodies	From the analysis of budget documents $\&$ annual reports (by expenditure approach)	same as above
Public Corporations	Budget documents of DEs	Same as above	same as above
	Annual Reports of NDEs	Estimated from fixed asset block of annual reports	same as above
Private Corporations	MCA21 database for the annual reports of Private Sector Companies	Non-government companies: GFCF-CBR is derived from MCA21 database and blown up for non-responding companies on the basis of paid up capital	same as above

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

355

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
Households		Derived as a residual from the total GFCF in CBR asset	same as above
Intellectual Property Products	(IPP) Asset		
Overall Estimate	i. Total capital expenditure on Research & Development activities (R&D) ii. Mineral Exploration & Evaluation iii. Computer Software & Database	Expenditure Approach is used.	same as above
General Government (GG)	Budget documents of Administration Departments and Autonomous Bodies	From the analysis of budget documents $\&$ annual reports (by expenditure approach)	same as above
Public Corporations	Budget documents of DEs	Same as above	same as above
	Annual Reports of NDEs	Estimated from reported expenditure on IPPs	same as above
Private Corporations	MCA21 database for the annual reports of Private Sector Companies	Derived from MCA21 database and blown up for non-responding companies on the basis of paid up capital	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
	NSS 67th Round ES, 2010-11 for quasi- corporations (unincorporated manufactur- ing and services)	Information is available for only software asset, under IPP, which is compiled using NSS 67th Round Survey	same as above
Households	NSS 67th Round ES, 2010-11, excluding quasi-corporations (unincorporated man- ufacturing and services)	GFCF in households consists of mainly software asset under IPP, which is compiled using NSS 67th Round Survey	same as above
Valuables	i. Production: ASI and IBM ii. BUM databank for net imports	Total availability = Production (adjusted for inter-industry use) + net imports	same as above
			(Contd.)

Section 6.6. (Contd.)
Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
GROSS FIXED CAPITAL FOI	RMATION BY INDUSTRY OF USE - exp	enditure method	
 L Crops (a) Public corporations 	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	same as above
(b) General government	No enterprises of General Government in this industry		
(c) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	same as above
(d) Household sectorOther buildings and structures	AIDIS 2013	Benchmark estimate worked out from AIDIS is moved for other years using output of agriculture.	same as above
* Machinery & equipment	ASI 2011-12	Ex-factory value of agriculture machinery & implements for the base year is taken ASI 2011-12 unit level data for NPCMS codes for this category. Estimate for household sector is obtained by deducting the estimate of GFCF for agricultural machinery from public & private corporations. This is moved for other years using output of agricul- ture.	same as above
* Plantation	* NABARD for cost structure * Increment in area covered under planta- tion	From total capital expenditure in plantation, information on the corresponding asset from the MCA21 database for private corporations and from budgets, annual reports for public corporations, the capital expenditure for the household sector is worked out as a residual.	Current price estimates are deflated b WPI-basedcomposite price indices fo the relevant asset
* Increment in livestock	Livestock Census 2012	From total increment in livestock (fixed asset), information on the corresponding asset from the MCA21 database for private corporations and from budgets, annual reports for public corporations, the increment in livestock for the household sector is worked out as a residual. Increment in livestock in respect of Adult Cattle Male and Adult Buffalo Male are apportioned to crops industry	Same as above

VOL. 29 NOS. 1&2

NEW SERIES OF NATIONAL ACCOUNTS STATISTICS

357

(Contd.)

(1) (2) 2. Livestock (1) (2) (a) General government No enterprises of General Government (b) Public corpeations No Public Corporations in this industry (c) Private corporations MCA21 database for the annual reports of Esprivate Sector Companies (d) Household sector MCA21 database for the annual reports of Eprivate Sector Companies * Other buildings and structures AIDIS 2013 * Increment in livestock Livestock Census 2012 * Increment in livestock Livestock Census 2012 (a) Public corporations Budget documents and AnnualReports of bu (b) General government No enterprises of General Government in this industry (c) Private corporations MCA21 database for the annualreports of Esprivate Sector Companies	Item	Data: Source	Method of estimation At current prices	Assumption
2. Livestock No enterprises of General Government (a) General government No enterprises of General Government (b) Public corpeations No Public Corporations in this industry (c) Private corporations MCA21 database for the annual reports of Esprivate Sector Companies (d) Household sector MCA21 database for the annual reports of Eprivate Sector Companies * Other buildings and structures AIDIS 2013 * Increment in livestock Livestock Census 2012 * Increment in livestock Livestock Census 2012 (a) Public corporations Budget documents and AnnualReports of bu (b) General government No enterprises of General Government in this industry (c) Private corporations MCA21 database for the annualreports of Esprivate Sector Companies	(1)	(2)	(3)	(4)
 (c) Private corporations MCA21 database for the annual reports of Es Private Sector Companies (d) Household sector (d) Household sector (d) Household sector (e) Household sector (f) Household sector (f) Household sector (g) Household sector (h) Household sector (h) Household sector (h) Household sector (i) Phylic corporations (i) General government (i) Private corporations (ii) Private Sector Companies (iii) Private Sector Companies 	Jivestock General government Public corpeations	No enterprises of General Government in this industry No Public Corporations in this industry		
(d) Household sector AIDIS 2013 Be * Increment in livestock Livestock Census 2012 Sa * Increment in livestock Livestock Census 2012 Sa 3. Forestry and logging Budget documents and AnnualReports of bu Cc (a) Public corporations Budget documents and AnnualReports of bu bu (b) General government No enterprises of General Government in this industry No enterprises of General Government in this industry (c) Private corporations MCA21 database for the annualreports of Private Sector Companies M	Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF derived from MCA21 database	Same as above
 * Increment in livestock * Increment in live	Household sector ther buildings and structures	AIDIS 2013	Benchmark estimate worked out from AIDIS is moved for other years with output of agriculture.	Same as above
3. Forestry and logging Budget documents and AnnualReports of Ca (a) Public corporations Budget documents and AnnualReports of Ca (b) General government No enterprises of General Government in this industry (c) Private corporations MCA21 database for the annualreports of Es Private Sector Companies M	icrement in livestock	Livestock Census 2012	Same as methodology for corresponding asset of crops industry. Incre- ment in livestock in respect of animals other than Adult Cattle Male and Adult Buffalo Male are apportioned to livestock industry.	Same as above
 (b) General government No enterprises of General Government in this industry this industry MCA21 database for the annualreports of Es Private corporations 	o restry and logging Public corporations	Budget documents and AnnualReports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Same as above
(c) Private corporations MCA21 database for the annualreports of Es Private Sector Companies M	General government	No enterprises of General Government in this industry		
	Private corporations	MCA21 database for the annualreports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	Current price estimates are deflated by WPI-basedcomposite price indices for the relevant asset
 (d) Household sector Table on "Area by ownership during Pr 2005-06" from Forestry Statistics India pr. 2007, ICFRE 	Household sector	Table on "Area by ownership during 2005-06" from Forestry Statistics India 2007, ICFRE	Private forestry estimate is prepared by applying ratio of ownership of private forests to forests owned by public & corporate bodies (1.53%) from Forestry Statistics India 2007	Same as above

358

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

		Same
Method of estimation At current prices	(3)	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports
Data: Source	(2)	keports of NDEs

Item

(1)	(2)	(3)	(4)	
4. Fishing and aquaculture				
(a) Public corporations	Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	same as above	
(b) Private corporations	MCA21 database for the annualreports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	Same as above	
(c) General government	No enterprises of General Government in this industry			
(d) Household sector	Growth of stock between twolivestock censuses	Fixed stock estimated using inter-censal growth rate. GFCF is estimated as the difference between two successive years' stocks.	Same as above	
5. Mining & quarrying				
(a) Public corporations	Annual Reports	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	same as above	
(b) Private corporations	MCA21 database for the annualreports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	same as above	
(c) General government	No enterprises of General Government in this industry			
(d) Household sector	Capital stock to output ratio for 2011- 12 used in 2004-05 series	Capital stock to output ratio is applied on GVO of minor minerals to get series of fixed stocks. GFCF is estimated as the difference between two successive years' fixed stock.	same as above	
6. Manufacturing				
(a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	same as above	

VOL. 29 NOS. 1&2

Assumption

(Contd.)

(1) MCA21 di MCA21 di Private Set NABARD NABARD	(2)	(3)	(7)
MCA21 da Private Sec NABARD h) Private comorations ASI 2011			(F)
NABARD (h) Private comorations ASI 2011	atabase for the annualreports of ctor Companies	Estimates of GFCF for non-government companies derived from MCA21 database	Current price estimates are deflated by WPI-basedcomposite price indices for the relevant asset
(h) Private connorations ASI 2011		Estimates for Co-operative Societies are based on the data obtained from NABARD	Same as above
(unincorpo	-12 for quasi-corporations orated manufacturing)	Estimates for quasi-corporations are obtained from unit level data of ASI 2011-12 for "Individual Proprietorship, Joint Family (HUF), Partnership, Khadi & Village Industries Commission, Handlooms, Others".	Same as above
NSS 67th corporatio ing)	Round ES, 2010-11 forquasi- ns (unincorporated manufactur-	Estimates for quasi-corporations are prepared using ratio ofcapital stock to GVA derived from NSS 67th round Enterprise Survey for the enterprises maintaining accounts and applied on GVA for corresponding segment to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks	Same as above
(c) General government No enterp in this ind	orises of General Government lustry		
(d)Household sector NSS 67th	Round ES, 2010-11	Estimates for enterprises other than quasi-corporations are prepared using ratio of capital stock to GVA derived from NSS67th round Enterprise Survey for the enterprises not maintaining accounts and applied on GVA for corresponding segment to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above
 8. Electricity, gas, water supply and other 1 (a) Public corporations Reports of 	utility services curnents of DEs and Annual f NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Same as above

360

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
(b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	Same as above
	NSS 67th Round ES, 2010 -11 for quasi- corporations (Remediation & other utility services)	Estimates of quasi-corporations (Remediation & other utility services) are prepared using ratio of capital stock to GV Aderived from NSS 67th round Enterprise Survey for theenterprises maintaining accounts and applied on GVA for corresponding segment to arrive at the estimates of stocks of fixed assets. GPCF is estimated as the difference between two successive years' stocks.	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
(c) General government	Budget documents	Capital outlay on disaggregated assets as obtained from the analysis of Budget documents	Same as above
(d) Household sector	M/o New and Renewable Energy	GFCF for bio gas: Number of bio-gas plants* cost of installation	Same as above
	NSS 67th Round ES, 2010-11 for house- holds (Remediation & other utility ser- vices)	Estimates for enterprises other than quasi-corporations forRemedi- ation & other utility services are prepared using ratio ofcapital stock to GVA derived from NSS 67th round EnterpriseSurvey for the enterprises not maintaining accounts and applied on GVA for corre- sponding segment to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above
9. Construction (a) Public corporations	Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Same as above
(b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	
	NABARD in case of non-credit coopera- tive societies	Co-operative Societies: based on the data obtained from NABARD	Same as above

(Contd.)

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
(c) General government	Budget documents	Capital outlay on disaggregated assets as obtained from the analysis of Budget documents	
(d) Household sector	MCA21 database (about top 400 non- government companies in construction industry, by sales, after removing outliers) for capital stock to output ratio in absence of any survey data	Capital stock to output ratio of non-government construction compan- ies is applied on GVO of construction for the household sector to estimate the fixed stock for construction in household sector. GFCF is estimated as the difference between two successive years' fixed stocks.	Same as above
10. Trade & repair services			
(a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Current price estimates are deflated by WPI-basedcomposite price indices for the relevant asset
(b) Private corporations 1	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	Same as above
	NABARD in case of non-credit coopera- tive societies	Co-operative Societies: based on the data obtained from NABARD	Same as above
	NSS 67th Round ES, 2010-11 for quasi- corporations (trade & repair services)	Estimates of quasi-corporations (trade & repair services) areprepared using ratio of capital stock to GVA derived from NSS67 ^m round Enterprise Survey for the enterprises maintaining accounts and applied on GVA for corresponding segment to arrive at the estimates of stocks of fixed assets. GFCF isestimated as the difference between two successive years' stocks.	Same as above
(c) General government	No enterprises of General Government in this industry		

362

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

(2) (3) (3) (4) Instants Estimates for encrptices other than quasi-corporations for tarde k Same as above reveal framates for encreptical and an exprises Anne as above reveal frame of services are perperied as a policie of CFA Anne as above reveal frame of services are perperied as a policie of CFA Anne as above reveal frame of services are perperied as a policie of CFA Anne as above reveal frame of services are perperied arread frame of services are perperied as a policie of CFA Anne as above reveal frame of services are perperied arread frame of service frames of service frames of service frames of brite sector Companies Anne as above prane as above budges fried as a choice in anneal reports Anneal Reports of Same as above budges fried as a choice frame as a bove budges fried as a choice in anneal reports Anneal Reports of Same as above budges fried as a choice in anneal reports Anneal Reports of Same as above budges fried as a choice in anneal reports Anne as above budges fried as a choice in anneal reports Anne as above Same as above budges fried as a choice in anneal reports Anne as above Same as above budges fried as a choice in anneal reports Anne as above budges fried as a choice in anneal reports Anne as above Same as above budges fried as a choice in anneal reports Anne as above Same as above budges fried as a choice in anneal reports Anne as above Same as above budges fried as a choice in anneal reports Anne as above Same as above Budges fried as a choice in anneal reports Anne as above Same as above Budges of Careeral Coverenchon to a successive preared Budg	em	Data: Source	Method of estimation At current prices	Assumption
NSS 67th Round ES, 2010-11 Estimates for enterprises other than quasi-corporations for trade & same above rejust evolves and PRS 67th round Enterprises where yor the enterprises or maintaining accounts and applied on GVA for corresponding errounds. <i>Sin Sin Sin Sin Sin Sin Sin Sin Sin Sin </i>		(2)	(3)	(4)
Annual Reports of NDEs Capital outlay on disaggregated assets as obtained from the analysis of Same as above budgets/fixed asset block in annual reports. Capital outlay on disaggregated assets as obtained from the analysis of Same as above budgets/fixed asset block in annual reports. MCA21 database for the annual reports Estimates of GFCF for non-government companies derived from the randysis of Same as above budgets/fixed asset block in annual reports. Same as above NCA21 database for the annual reports Estimates of GFCF for non-government companies derived from CCA21 database for the analysis of the relevant same derived from CCA21 database Same as above NS 67th Round ES, 2010-11 for quasi-comporations (hotels & restaurants) are prepared using action of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA derived from NSS 67th Round Survey for the enterprises of nocks of fried assets. Same as above years' stocks. NSS 67th Round ES, 2010-11 Applying ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises not maintaining accounts on GVA for corestive years' produing sector to arrive at the estimates of stocks of fried asset. Dure estimates are deflated averse of assets.		NSS 67th Round ES, 2010-11	Estimates for enterprises other than quasi-corporations for trade & Sa repair services are prepared using ratio of capital stock to GVA derived from NSS 67th round Enterprise Survey for the enterprises not maintaining accounts and applied on GVA for corresponding segment to arrive at the estimates of stocks of fixed assets. GFCF is segment to arrive at the estimates of stocks or stocks.	ne as above
Annual Reports of NDEs Capital outday on disaggregated assets as obtained from the analysis of Same as above budgets/fixed asset block in annual reports Capital outday on disaggregated assets block in annual reports MCA21 database for the annual reports Exinates of GFCF for non-government companies derived from TR21 database Exinates of GFCF for non-government companies derived from TR21 database NSS 67th Round ES, 2010-11 for quasi- corporations (hotels & restaurants) are prepared using ratio of capital stock to GVA derived from NSS 67th Round EVA for sets and so the stock and applied on GVA for sets and and applied on GVA for sets and the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive sets exist. Set is estimated as the difference between two successive sets exist. Set is estimated as the difference between two successive sets exist. Set is estimated as the difference between two successive sets exist. Set is estimated as the difference between two successive sets in the estimates of stocks of fixed asset. NSS 67th Round ES, 2010-11 Applying ratio of capital stock to GVA derived from NSS 67th Round EVA for constraining accounts and applied on GVA for constrained as the difference between two successive years' stocks.				
MC421 database for the annual reports of Private Sector Companies Estimates of GFCF for non-government companies derived from MCA21 database NSS 67th Round ES, 2010-11 for quasi- corporations (hotels & restaurants) Estimates of quasi-corporations (hotels & restaurants) are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed sests. GFCF is estimated as the difference between two successive years' stocks. Same as above to corresponding sector to arrive at the estimates of stocks of fixed sests. GFCF is estimated as the difference between two successive years' stocks. No enterprises of General Government in this industry Applying ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises not maintaining accounts on GVA for corre- sponding sector to arrive at the estimates of stocks of fixed assets.		Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of Sa budgets/fixed asset block in annual reports	ne as above
NSS 67th Round ES, 2010-11 for quasi- corporations (hotels & restaurants) Estimates of quasi-corporations (hotels & restaurants) are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks. Rame as above No enterprises of General fully in this industry No enterprises of traced assets. CFCF is estimated as the difference between two successive years' stocks. Rame as above No enterprises of General fully in this industry No enterprises of traced as the estimates of stocks of fixed as estimates of stocks of fixed as estimates of sector to arrive at the estimates of stocks of fixed assets. Rame as above		MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	
No enterprises of General Government in this industry Applying ratio of capital stock to GVA derived from NSS 67th Round Current price estimates are deflated NSS 67th Round ES, 2010-11 Applying ratio of capital stock to GVA derived from NSS 67th Round Current price estimates are deflated Sourcey for the enterprises not maintaining accounts on GVA for corresting sector to arrive at the estimates of stocks of fixed assets. by WPI-based composite price GFCF is estimated as the difference between two successive years' indices for the relevant asset		NSS 67th Round ES, 2010-11 for quasi- corporations (hotels & restaurants)	Estimates of quasi-corporations (hotels & restaurants) are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	une as above
NSS 67th Round ES, 2010-11 Applying ratio of capital stock to GVA derived from NSS 67th Round Current price estimates are deflated Survey for the enterprises not maintaining accounts on GVA for correstribution by WPI-based composite price Sponding sector to arrive at the estimates of stocks of fixed assets. indices for the relevant asset GFCF is estimated as the difference between two successive years' stocks.		No enterprises of General Government in this industry		
		NSS 67th Round ES, 2010-11	Applying ratio of capital stock to GVA derived from NSS 67th Round C Survey for the enterprises not maintaining accounts on GVA for corre- sponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	rrrent price estimates are deflated WPI-based composite price dices for the relevant asset

VOL. 29 NOS. 1&2

363

(Contd.)

		At current prices	
(1)	(2)	(3)	(4)
12. Railways			
(a) Public corpbrations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of Same a budgets/fixed asset block in annual reports	e as above
(b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from Same MCA21 database	e as above
(c) General government	No enterprises of General Government in this industry		
(d)Household sector	No household enterprises in this indus- try		
13. Road, air, water transpor	t and services incidental to transport		
(a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of Same & budgets/fixed asset block in annual reports	e as above
(b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	
	NSS 67th Round ES, 2010-11 for quasi- corporations	Estimates of quasi-corporations are prepared using ratio ofcapital stock Same to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	e as above

364

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

ntd.
ŝ
6.6
Section

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
ieneral government	No enterprises of General Government in this industry		
lousehold sector	NSS 67th Round ES, 2010-11	Applying ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises not maintaining accounts on GVA for corre- sponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
torage Jblic corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Same as above
ivate corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	
	NSS 67th Round ES, 2010-11 forquasi- corporations (storage)	Estimates of quasi-corporations are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above
eneral government	No enterprises of General Government in this industry		
ousehold sector	NSS 67th Round ES, 2010-11	Applying ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises not maintaining accounts on GVA for corre- sponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above

(Contd.)

	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
5. Communication and ser-	vices related to broadcasting		
a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Current price estimates are deflated by WPI-basedcomposite price indices for the relevant asset
b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database	
	NSS 67th Round ES, 2010-11 forquasi- corporations (communication and services related to broadcasting)	Estimates of quasi-corporations (communication and services related to broadcasting) are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above
c) General government	No enterprises of General Government in this industry		
d) Household sector	NSS 67th Round ES, 2010-11	Applying ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises not maintaining accounts on GVA for corre- sponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above
6. Financial services			
a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Same as above
b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Non-government companies: GFCF is derived from MCA21 database	Current price estimates are deflated by WPI-based composite price indices for the relevant asset

366

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
	RBI for private and foreign banks	Private & Foreign Banks: From details of assets and liabilities by RBI	Same as above
	Annual reports from insurance companies	Insurance companies: GFCF is estimated from fixed asset block of annual reports	Same as above
	NABARD in case of credit cooperative societies	Co-operative Societies: based on the data obtained from NABARD	Same as above
	NSS 67th Round ES, 2010-11 for quasi- corporations (unorganised financial ser- vices)	Estimates of quasi-corporations (unorganised financial services) are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for all financial enterprises and applied on GVA for unorganised financial sector (money lenders, etc.) to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
(c) General government	No enterprises of General Government in this industry		
(d) Household sector	No household enterprises of in this indus- try		
Real estate, ownership of dwell	ings & professional services		
(a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of budgets/fixed asset block in annual reports	Same as above
(b) Private corporations	MCA21 database for the annual reports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database.	Same as above

(Contd.)

Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
	NSS 67th Round ES, 2010-11 for quasi- corporations (real estate & professional services)	Estimates of quasi-corporations (real estate & professional services) are prepared using ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	Same as above
c) General government	Budget documents	Capital outlay on disaggregated assets as obtained from the analysis of Budget documents	Same as above
(d) Household sector	NSS 67th Round ES, 2010-11 for house- holds (real estate & professional services)	Real Estate & professional services: Applying ratio of capital stock to GVA derived from NSS 67th Round Survey for the enterprises not maintaining accounts on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	
	AIDIS, 2013 for ownership of dwellings	Ownership of dwellings: GFCF is estimated using capital expenditure on dwellings estimate for from AIDIS, 2013. This is moved for other years by applying inter censal growth of no. of residential housing stock from population censuses and the WPI of rural and urban hous- ing.	Current price estimates are deflated by WPI-based composite price indices for the relevant asset
(8.Public administration ar	nd defence		
General government	Administration: Budget documents	Capital outlay on disaggregated assets as obtained from the analysis of Budget documents	Same as above
	Autonomous Institutions: annual financial accounts	GFCF is compiled using estimates obtained from sample autonomous institutions. These are blown up on the basis of grants given to all autonomous institutions.	Same as above

368

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

	2.542		
Item	Data: Source	Method of estimation At current prices	Assumption
(1)	(2)	(3)	(4)
19. Other Services (a) Public corporations	Budget documents of DEs and Annual Reports of NDEs	Capital outlay on disaggregated assets as obtained from the analysis of San fixed asset block in annual reports	ne as above
(b) Private corporations	MCA21 database for the annualreports of Private Sector Companies	Estimates of GFCF for non-government companies derived from MCA21 database.	
	NSS 67th Round ES, 2010-11 for quasi- corporations (Other Services)	Estimates of quasi-corporations are prepared using ratio ofcapital stock San to GVA derived from NSS 67th Round Survey for the enterprises maintaining accounts and applied on GVA for corresponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	ne as above
(c) General government	Administration: Budget documents	Capital outlay on disaggregated assets as obtained from the analysis of San Budget documents	ne as above
	Autonomous Institutions: annual financial accounts	GFCF is compiled for each group of autonomous institution (as given San in pars 3.31 of Section 3) using estimates obtained from sample auton- omous institutions. These are blown up (for each group) on the basis of grants given to all autonomous institutions.	ne as above
(d) Household sector	NSS 67th Round ES, 2010-11	Applying ratio of capital stock to GVA derived from NSS 67th Round San Survey for the enterprises not maintaining accounts on GVA for corre- sponding sector to arrive at the estimates of stocks of fixed assets. GFCF is estimated as the difference between two successive years' stocks.	ne as above

DISCREPANCIES IN GDP DATA* (An extract from the original source)

First, on discrepancies in GDP estimation: In India, GDP is calculated by both the production approach and expenditure approach. However, GDP estimates compiled through production approach (GVA [gross value added] at basic prices + Indirect taxes less subsidies) are treated as firmer and more reliable estimates of GDP as more complete data is available for compilation under this approach. The assessment on the expenditure side, based on much more limited data leads to differences, technically termed as "discrepancy" in the expenditure side to match the GDP numbers emanating from the production approach. This practice is consistent with the SNA (System of National Accounts) - 2008. In the past also there have been instances when discrepancies were even higher.

With regard to the questions raised on manufacturing sector, it is important to appreciate the data sources available in the past and at present. In the 2004-05 series, estimates of organised manufacturing sector were compiled using Index of Industrial Production (IIP) data at the stage of provisional and Annual Survey of Industries (ASI) data when it became available in final estimates. The revisions on this account between ASI based Gross Value Added (GVA) and IIP based GVA were substantial. In the 2011-12 series, estimates of GVA are based on accounts of public sector enterprises, accounts of companies, and ASI data for quasi-corporate (proprietorships and and partnerships) and unorganised sector. Thus, in the new series with base 2011-12, "enterprise" level data from annual financial reports for corporate manufacturing is used in place of establishment level information

used earlier. Thus current mismatch in manufacturing sector growth based on national accounts and IIP occurs due to a variety of reasons. These are the consequence of an enterprise based approach in place of establishment approach; IIP measures change in the volume of production while growth rate as per national accounts reflects change in value addition. As is evident changes in output differ from changes in value added because the former does not factor in changes in intermediate costs. Further, IIP being a Laspeyres index based in 2004-05, does not take into account the contribution of new entities or new items coming into production.

Another is the comparison of PE of one year with PE of the previous year. For compiling the PE of any year, constant price industry groupwise estimates are compiled first by using growth rate of relevant indicators to extrapolate the corresponding constant price estimates of the previous year. The constant price estimates so obtained are then converted to current price estimates by using appropriate price deflators. The approach is termed as the "Bench Mark indicator method" and is as per the recommended procedures in the SNA. The benchmark estimates are the previous year's First Revised Estimates. Comparing PE of the current year with PE of the previous year is therefore methodologically inappropriate as the benchmark estimates on which the indicator growth is applied are different. Further, use of non-standard approaches is inconsistent with the fundamental principles of official statistics.

> T C A Anant Chief Statistician of India

^{*} This is an edited version of as original exchange between the Chief Statistician of India and the Editor, EPW, and includes the substantial points of clarification, germane to the readers' understanding of the issues involved - Editor, JISPE

GOVERNMENT OF INDIA MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION Understanding the New Series of National Accounts¹ Frequently Asked Questions

1. Why is Base Revision undertaken?

Base year revisions differ from annual revisions in National Accounts in the nature & coverage of changes. In annual revisions, changes are made only on the basis of updated data becoming available without making any changes in the conceptual framework or using any new data source, to ensure strict comparison over years. Annual updated data is available in a few segments and may not cover all aspects of the value chain also. These gaps are filled by special surveys and studies conducted near to the base year. In case of base year revisions, apart from a shift in the reference year for measuring the real growth & updating surveys and studies, conceptual changes, as recommended by the international guidelines, are incorporated. Further, statistical changes like revisions in the methodology of compilation, adoption of latest classification systems and inclusion of new and recent data sources are also made. Changes are also made in the presentation of estimates to improve ease of understanding for analysis and facilitate international comparability.

2. Why is the GDP estimate for 2011-12 lower than that in the old series?

As noted above, the annual value added data, through annual accounts, is not available in all sectors of the economy. In these cases, value added is estimated through surveys and other current indicators. This is especially true for the unorganised or informal sectors of the economy. One such sector is that of Trade, both Retail and Wholesale. In this segment value added for the unincorporated sector in the base year is estimated from the Enterprise Survey and Employment & Unemployment Survey of NSS. For the 2004-05 base revision, there was no sample survey of unorganised trade available, so the exercise continued with the results of the earlier survey (NSS 55th Round in 1999-2000). In years succeeding the base year, the estimate of value added was moved through some current indicators (more on that later). Trade was again included in the survey of unincorporated sector in 2010-11 (NSS-67th round). Comparing the results of this with the estimates generated for 2010-11, it was found that the indicator based growth had overstated value added by a very large margin. That is why, the 2011-12 estimates in the new series are less than those in the old series.

3. Why did this happen?

In Trade, value added in years subsequent to the base year was derived by reference to a volume indicator, i.e., Gross Trading Income (GTI) Index. The index tracked the growth in volume of tradable goods, in the economy, derived from current estimates of production in agriculture and manufacturing. The underlying assumption was that value added is strongly correlated with the physical volume of goods available for trade. This is a reasonable assumption in short intervals of time; however, when projections are extended over long periods of time, errors build up. This is because in addition to physical volume, value added also depends on levels of intermediation between the producer and consumers; changes in underlying quality of goods; and changes in marketing practises, for instance bundling higher quality value added services with goods like warranties etc. and so on. These get picked up in our surveys as they gather information on all aspects of value added. In the current series, in addition to an updated survey, this has also been partly corrected by changing the underlying

^{1 (}i) Press Release on the New Series of National Accounts, released on January 30, 2015 http://mospi.nic.in/Mospi_New/upload/nad_press_release_30jan15.pdf (ii) Press Release on Advance Estimates of National Income, 2014-15, released on February 9, 2015 http://mospi.nic.in/Mospi_New/upload/nad_press_release_9feb15.pdf

indicator from a volume indicator to one based on value, namely sales tax collections. Since sales taxes are value based, growth in this indicator captures the underlying growth better in value added. A comparison of GTI with sales tax from 2004-05 is in Table-1.²

4. Why is the growth in manufacturing higher in the new series than the old? Or how can such a high growth in manufacturing be accepted when the IIP growth is much less?

To understand the growth in manufacturing, some background is necessary. In the old series the first estimate was derived by applying the IIP growth to estimates of the previous year. These estimates were then updated with the ASI figures when they became available. Both IIP and ASI data are establishment based, i.e., they report output and value added (in case of ASI) for the producing establishment.

The implementation of MCA-21 programme supplemented with the data base of BSE and existing RBI studies, has given us access to corporate financial statistics which have been incorporated in the new series for measuring manufacturing value added. The timelines of data availability in the old series and the new are given in the following table:

Series	Year 1 (Advance & Provisional)	Year 2 (1st Revised Estimate)	Year 3 (2nd Revised Estimate)
(1)	(2)	(3)	(4)
2004-05 series 2011-12 series	IIP IIP + Advance filing of corporate Accounts	IIP IIP + MCA 21	ASI MCA 21 + Non-corporate ASI

This change from establishment to enterprise level data has had significant implication for value added and growth.

In a small entity, there is usually not much difference between establishment and enterprise value added. But for large entities, these differences are significant. The enterprise provides post manufacturing value added, through marketing and other services. This component of value added was earlier being excluded from GDP because it was not covered in ASI, although the concerned enterprise belonged to the manufacturing segment.

During 2013-14, share of corporate sector including NDCUs and DCUs (organized sector) in the manufacturing industry was 73.1% and that of ASI non-corporate, and household sector was 26.9%. The organized sector in 2013-14 was compiled using data derived from actual analysis

of budgets and accounts of public sector enterprises, accounts of MCA Private Corporate Sector database, while the non-corporate sector comprising of ASI (individual, proprietorship and partnership), and household sector have been compiled using the IIP data. Similar trend was observed in the year 2012-13 also.

In 2014-15, the share of public sector was 8.4%, private corporate sector was 66% and the share of non-public and non- corporate sector is 25.6%. The growth of public sector companies has been obtained based on past trends in growth in GVA of public limited companies. Private corporate sector data has been provided by the RBI Sample Study and quarterly results available with Bombay Stock Exchange (BSE). The household sector has been compiled using the growth in Index of Industrial Production (IIP) as was done in 2013-14.

^{2.} Table given at the end of the note - at Page 7

Details are given in the following table:

MANUFACTURING SECTOR SECTORS

	2013-14		2014-15	
	% SHARE	GROWTH	% SHARE	GROWTH
(1)	(2)	(3)	(4)	(5)
(i) Public sector including Public Sector enterprises	7.9	(NDCUs=6.3, DCUs=1.7) ^{&}	8.4	12**
(ii) Private Corporate Sector	65.2	7.9 ^{\$}	66.0	$8.0^{@}$
(iii) ASI (Non- corporate) & Household	26.9	0.7* (IIP growth= (-0.8)	25.6	1.9* (IIP growth=(1.6)

*: Growth is derived from relevant two digit compilation categories. Hence the growth is not the same as total IIP growth.

\$: derived from MCA 21 data base

@: derived from RBI-sample study and BSE data base

**: derived from past trends

&: derived from analysis of accounts of PSU's and government budgets

There is another implication of the above changes. It may be noted that IIP is a Pure Volume Index. Value added data is available from accounts and the ASI. The 2011-12 series captures value addition information based on corporate filing right from the first year and comprehensively from second year as against 2004-05 series where this information was getting captured only in the 3rd year. During 2013-14, high domestic inflation coupled with lower international prices for imported inputs could have helped improve corporate bottom-lines. This improvement would not be apparent through IIP and ordinarily would not be reflected in national accounts in the old series until the 2nd Revised (3rd year) estimates which would have come out in 2016.

5. Why is the overall growth rate higher?

The overall growth rate has been influenced, in part, by the changes in measuring manufacturing value added. In addition, the way valueadded and growth has been derived has also been changed in some segments of the Service Sector. Here, indirect taxes like sales tax and service tax have been used to measure changes in value added. In trade, for instance, the change for a physical volume indicator to a tax based indicator resulted in higher growth rate. A similar story is also seen in those service segments where service tax has been used. Details of the changes in measuring value added in Services are given in Table-2.³

6. Does it mean that our earlier concerns of industrial slow down were misplaced?

This is a complex question and the short answer here is NO. There are two elements in any calculation of value added, one a physical volume dimension and the second a per unit value dimension. The value dimension is influenced by a number of elements relating both to the structure

^{3.} Table given at the end of the note - at Page 8

of the economy and technological change. To illustrate, as we move from generic to branded goods, physical production may not change but the value added can increase. Alternatively in areas where there is product innovation and quality improvement, model changes can increase value added with little or no change in volumes of production. For reasons that have been stated, the new series is more sensitive to such underlying changes in value. But the volume indicators are still important. Some indicators of economic well-being, like employment, can be linked to volume indicators. Similarly, industrial activities as measured by volumes of production are important determinants of the other supporting/network activities such as transport, logistics, etc. Thus, slow growth in production volumes, even if not accompanied by a slowdown in value added, can be a matter of concern.

7. If volume indicators are also important, what sources are available to track these?

The Index of Industrial Production continues to be a high frequency volume series. Steps are underway to revise the base year for this series. In addition, the Annual Survey of Industries gives gross output & employment in the manufacturing sector. Steps are also underway to produce a regular series on employment.

8. Is there a change in estimation of Gross Value Added for agriculture sector? Why is GVA showing a positive growth even when the production of most crops is lower than in the previous year?

Agriculture sector GVA comprises of estimates of GVA from crop production, horticulture, animal husbandry, fishery and forestry. Although there has been decline in agriculture production, production in horticulture and animal husbandry has been increasing resulting in positive growth in agriculture for the year 2014-15.

Further, the new series has adopted data from the latest livestock Census and results of a recent study conducted on the sources of value addition in this sector, which has led to improved and more recent estimates in this segment.

9. Why is growth in current prices in 2014-15 estimated at 11.5 per cent as against 13.6 per cent in 2013-14, though real growth in 2014-15 is 7.4 per cent in 2014-15 against 6.9 per cent in 2013-14?

There has been a reduction in the growth in the underlying price indices, WPI and CPI in 2014-15 as compared to the corresponding growth in 2013-14. WPI and CPI, increased by 3.4 per cent and 6.0 per cent in 2014-15,, as compared to 6.0 per cent and 9.5 per cent in 2013-14. Consequently, the GDP deflator increased by 3.8 per cent in 2014-15 as against 6.2 per cent in 2013-14, leading to a reduced gap between the growth rates of real and nominal GDP.

10. Does this higher growth mean that higher growth will be seen in Government Tax Revenues?

Like the earlier question, the short answer is NO. The new series captures the value chain better, by using enterprise data, where available, and linking growth in value addition in a number of service sectors through value linked indicators of tax collection rather than volume linked indicators. However, this has not changed the underlying tax capacity of these segments. Therefore, tax collection from these segments is likely to continue as per earlier trajectories. The new series will introduce a wrinkle in revenue modelling. To the extent that these models use segment wise value added or growth, they will immediately obvious. now need to take account of the implied endogeneity in these calculations with respect to tax revenue. It is suggested that the underlying econometrics be revisited.

11. How does this affect the Fiscal Deficit of the **Government?**

The fiscal deficit is defined as the excess of Government Expenditure over Revenue; as such these numbers are not affected by the GDP calculation. The reference here is, what should be the fiscal deficit target. This is once again a complex question; the target for fiscal deficit is linked to the issue of prudential behaviour and sustainability of government activities. The earlier norms on fiscal prudence were derived from the old series and its description of the economic reality. The new series captures the reality better, but this is because certain activities that were imperfectly captured earlier are now better described. But this also means that our norms for prudential behaviour should be reviewed. In which direction should they be revised is not

12. In light of the earlier answers, why is the new series better?

GDP as a statistical indicator has a limited purpose, which is to describe and quantify the process of value addition in the economy. This new series does that well. It captures, in large segments of the economy, the value chain more completely; and also updates in other segments, the basis for computing value addition. The more complete corporate database helps us describe corporate value addition in all segments of the economy. The new series also describes growth in value addition better, through its greater use of value linked indicators. This is important because as an economy develops, growth in value added comes from improvements in the per unit value addition rather than in growth of volume. From this perspective, the new series better equips us to understand the changes which are taking place and will take place in the years to come.

				(2004-0.	series at current ritees)
		Sales Tax Index		Gross Trading Income Index	
Years	(Rs. Cr)	Sales Tax Index	rate of growth (%)	GTI	rate of growth (%)
(1)	(2)	(3)	(4)	(5)	(6)
2004-05	117740	100.0		100.0	
2005-06	136446	115.9	15.9	115.5	15.5
2006-07	162382	137.9	19.0	135.8	17.6
2007-08	183422	155.8	13.0	156.0	14.9
2008-09	208166	176.8	13.5	180.3	15.6
2009-10	231859	196.9	11.4	205.5	14.0
2010-11	293198	249.0	26.5	259.3	26.2
2011-12	361205	306.8	23.2	314.4	21.2

Table 1: Comparison of Sales Tax and Gross Trading In	ncome
	(2004 05 series at Current Prices)

S. No.	Compilation Category	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
1.	Maintenance and repair of motor vehicles and motor cycles	GTI Index	Motor Vehicles Sales growth
2.	Sale of motor vehicles	GTI Index	Total sales tax converted to turn- over and adjusting for private cor- porate and NDCUs give turnover for sales tax paying unorganised sector. This residual was used as an index to move the GVA of the base year. Same index is appli- cable to wholesale & retail trade
3.	Whole sale trade except of motor vehicles	GTI Index	As in 2
4.	Repair of personal and household goods	GTI Index	Service tax growth
5.	Retail trade (except motor vehicle)	GTI Index	As in 2
6.	Hotels; camping sites etc.	GTI Index	Corporate growth
7.	Restaurants, bars and canteens	GTI Index	
8.	Scheduled passenger land trans- port	Growth in registered vehicles * Price index	Growth in registered vehicles * Price index
9.	Non-scheduled passenger land transport by motor vehicles	Growth in registered vehicles * Price index	
10.	Freight transport by motor vehicles	Growth in registered vehicles * Price index	
11.	Other non-scheduled passenger land transport	LI method	
12.	Freight transport other than by motor vehicles	LI method	
13.	Water Transport	Index of cargo handled at major and minor ports X CPI	Index of cargo handled at major and minor ports X CPI
14.	Storage and warehousing	LI method	Corporate growth
15.	Supporting & auxiliary transport activities	Combined growth of Road, Water and Air transport	Combined growth of Road & Water Transport
16.	Courier activities	LI method	Service tax growth
17.	Cable operator	LI method	Service tax growth of cable opera- tors
18.	Other communication	Growth in subscribers/minutes of usage & Implicit price deflator of Private corporate	

Table 2: List of Compilation Categories along with indicators used for extrapolating Value Added
in the Unorganised Service Sector in the Old Series (B.Y. 2004-05) and in the New Series (B.Y. 2011-12)

(Contd.)

_

S. No.	Compilation Category	Earlier Indicator (2004-05 series)	Present Indicator (2011-12 series)
(1)	(2)	(3)	(4)
19.	Real Estate Activities	LI method	Corporate growth
20.	Renting of machinery & equip- ment without operator, personal / household goods	LI method	Corporate growth
21.	Computer and Related activities	Private corporate growth	Corporate growth
22.	Legal activities	LI method	
23.	Accounting, book-keeping	LI method	
24.	Research and development + mar- ket research and public opinion polling+ business and management consultancy activi- ties+ architectural, engineering and other technical activities+ advertising+ business activities n.e.c (-) auctioning activities	LI method	
25.	Coaching centres + Activities of the individuals providing tuition	LI method	Growth in consumer expenditure
26.	Education excluding (Coaching centres + Activities of the individ- uals providing tuition)	Growth in consumer expenditure	
27.	Human health activities+ Veteri- nary activities Growth in con- sumer expenditure		
28.	Activities Of Membership Organi- sations n.e.c.+ Social work with accommodation	LI method	Service tax growth
29.	Recreational, cultural and sporting activities	LI method	Growth in non-food consumer expenditure
30.	Washing and cleaning of textile and fur products	LI method	-do-
31.	Hair dressing and other beauty treatment	LI method	Service tax growth
32.	Custom Tailoring	LI method	Growth in non-food consumer expenditure
33.	Funeral and related activities	Population Growth	-do-
34.	Private households employing staff	LI method	Population growth and CPI

Table 2: (Concld.)

Notes:

LI Method: For the purpose of compilation of base year estimates of unorganised services, Gross Value Added per worker was obtained from the enterprise surveys of NSS and Labour Input (which is the total of usual and subsidiary activity of workers engaged in the activity) from employment and unemployment surveys. This LI for each compilation category was projected based on the inter survey growth rate of LI between 1999-2000 and 2004-05.
 GTI Index: Gross Trading Income (GTI) Index is an index of trading income of all commodity producing sectors. The trading income is derived from the marketable surplus of these commodities by applying trade margins.

GOVERNMENT PRODUCT AND NATIONAL INCOME

Simon Kuznets

Professor of Economics of the University of Pennsylvania

This paper deals with the problem of defining the product of government as a component of national income. It inevitably repeats some of the arguments and considerations advanced in my recent writings;¹ but adds more explicit statements and some analytical detail.

The paper falls into two parts. Part I discusses the net product of government, viewed from the approach to national income via final products. Part II deals with the treatment of government in the approach to national income *via* the flow of shares.

I. DEFINING THE NET PRODUCT OF GOVERNMENT

1. The setting of the problem

National production aggregates fall into three different classes. The first includes approximations to the net yield of a nation's economic activity. The second includes measures of the total volume of activity in which the emphasis is on various institutional groups of producers and consumers, and the purpose is to study the interrelations of these groups in the economic process. The third includes combinations of the first two approaches but with the aim on certain policy targets, a casting up of national accounts designed to show attainment of such targets in the past and either expectancies or goals for attainment in the future. For brevity's sake, the first class may be designated measures of net product; the second, measures of production (the process, not product) or of transactions; the third includes what, at least in the United States, are designated national budgets.

The discussion here is of national income as a measure of net product, an approximation to social welfare. I have no quarrel with current practices of measuring the national aggregates if they are viewed as totals of production or transactions, potentially useful in analyzing the interrelations of various institutional groups of producers and transactors. Nor is there any quarrel with the current practices of compiling national budgets for policy purposes. With particular relevance to the government sector, I can easily see the advantage of gauging it by the total volume of commodities and services purchased, with due attention to (although not inclusion of) transfer flows. But attempts to justify the current practices by claiming that they yield a net product in any meaningful sense of the term lead only to confusion; and serve to inhibit both students and laymen from developing measurement and analysis of national income as an approximation to net product or social welfare.

'Net product' and 'social welfare' as used here are closely related. The term 'product' conveys the idea of something positive, so that it is impossible to talk of product as a source of 'illfare'. The term 'net' implies that products are distinguished with reference to some set of goals, whose satisfaction is treated as a positive contribution. If by social welfare we mean a positive contribution to some socially determined set of goals, it is clear that 'net product' is an approximation to net additions to social welfare. I don't mean to imply that national income can be an accurate measure of social welfare; but it must be viewed as an approximation to it, since any measure of *net product* is an approximation to it. And there is no need to dwell further upon the inescapable relation of the concept of 'net product' to some set of goals, since the connection is

^{1.} See particularly: *National Product in Wartime*, National Bureau of Economic Research, New York, 1944, Part I; *National Income: A Summary of Findings*, NBER, New York, 1946, Chapter IV; 'On the Valuation of Social Income', *Economica*, February and May 1948, Pp. 1-16, 116-31; 'National Income: A New Version', *Review of Economics and Statistics*, August 1948, Pp. 151-79.

tautological. Without final goals there is no final or ultimate consumer; nor can any distinction be drawn between final and intermediate products or between net and duplicating (gross) totals.

Two general aspects of this dependence of a net product total upon some set of goals should be stressed before we deal with the problem of defining government net product. First, the goals are not specified in a constitution, charter, or any other basic document. They must be read into the whole set and pattern of values that govern society; and an element of arbitrariness attaches to any attempt to do so. But in considering alternative formulations of such goals, one point must be clearly kept in mind. If comparisons of economies are to be in terms of 'better off' or 'worse off', such sets of goals must be recognized and so formulated as to transcend differences in economic and social organization in time and space. No comparisons are possible if the goals are so narrowly defined as to be conditioned by a highly specific set of economic and social institutions. To illustrate, if the goal is identified with money income, no sensible comparisons can be made between two periods or two places that differ in the extent to which the money mechanism involves all economic activity. The more general and *invariant* the set of goals, the greater its potential efficiency in permitting comparisons of net product magnitudes across space and time.

But a second general implication also follows: in so far as the goals transcend specific existing social and economic institutions, any measure of net product that uses them as criteria must involve a recasting and sometimes violent alteration of the data directly yielded by these institutions. The data actually observed and given directly in information on economic operations yield, at best, totals of transactions among institutions. These transactions and their institutional groupings are never a clear reflection of net final flows, viewed from the standpoint of a relatively invariant set of goals. Retail sales are not a pure measure of flow of goods to ultimate consumers, purchases of goods and services by government are far from a measure of final product, and so on. In fact, the measure of any net product is but a crude approximation. This point must be stressed because scholars responsible for preparation of national income estimates find it comforting to cling closely to the raw data yielded by the economy. But close adherence would result in a set of measures with only the fuzziest relation to any system of economic concepts that transcends the transient boundaries of a given set of economic and social institutions. Even estimates of volumes of transactions or of national budgets are impossible without considerable adjustment and purification. And while one must always ask whether the analytical 'distortion' of the raw data is justified, the inescapable need for such distortion must be faced in deriving an approximation either to net product or to any other set of concepts.

We assume that the goal of economic activity is to satisfy wants of individual consumers who are members of the nation, present and future. This is the only goal that seems to underlie the performance of a variety of economies and the only one that can be associated with the economic aspect of social welfare. If any citations of authorities are needed, it will suffice to refer to Pigou's definition¹ - emphasizing only that the association with the measuring-rod of money is stretched here to the utmost -so that the criterion has the widest validity in terms of economies with different social organizations and levels of technology.

^{1.} Pigou defines economic welfare as 'that part social welfare that can be brought directly or indirectly into relation with the measuring-rod of money.' (*The Economics of Welfare*, third Edition. London, 1929, p. 11.)

With this criterion at hand, the final product of government activity (as distinct from its intermediate product) may be defined as (a) direct services by government to ultimate consumers plus (b) additions by government to capital stock, i.e., to the stock designed to provide services to future ultimate consumers. Questions that arise in attempts to identify these elements in practice are discussed below. Before dealing with them, we consider alternative criteria for distinguishing net product and government's contribution to it; and the several approaches used in the past, all based upon a general set of assumptions similar to those used here.

2. Purchases not for resale (current, official approach)

We begin with the official definition of final product, different from that suggested above, and the resulting definition of net product of government. The criterion or, as the authors prefer to designate it, 'convention' for distinguishing between final and intermediate products, was formulated recently by the scholars associated with the U.S. Department of Commerce in their reply to my review of their national income publication:

We start with the obvious fact that individuals, non-profit institutions serving individuals, and general government are ultimate buyers in the sense that they do not buy for resale in the market. Accordingly, their purchases are not elements of cost in the value . of other output produced for the market. Hence there is a presumption that their purchases should be regarded as final products in any measure which purports to give a complete accounting of the entire output of the nation. Business organizations and government enterprises, on the other hand, are intermediaries in the sense that they produce for sale in the market. Accordingly, their purchases, to the extent used up in further production, are included in the values of goods and services which business sells. Hence there is a presumption that such purchases are intermediate products and should not be included separately in a measure of value of national production.

Since the expenditures of individual consumers and of non-profit institutions serving individuals are incurred largely to meet the needs of individuals, they consist in the main of goods and services that are elements of what is commonly regarded as the standard of living. Government purchases consist essentially of goods and services provided on behalf of the population as a whole, which it has been found better to secure collectively than individually. They should likewise be included in a measure of the total goods and services provided to satisfy the needs of the members of the community. In contrast, the bulk of business purchases of goods and services consists of items that are raw materials in the production process, rather than items that directly satisfy human needs. Their separate count is accordingly not necessary in enumerating the flow of final goods and services.

We believe that this is a realistic description of the general nature of consumer, government, and business purchases and that our conventions for distinguishing between final and intermediate product are accordingly useful for segregating the major types of goods and services provided to satisfy the needs of individuals.¹

The 'convention' just described may seem realistic, but it hardly provides a significant criterion for distinguishing final products. The difficulties emerge if we ask in what sense purchases by individuals for consumption are not for resale within the current time unit. That they are consumed and physically vanish (as is true of many of the goods in question) is no test: the same holds

See The Review of Economics and Statistics, August 1948, p. 183.

for raw material purchases by business firms. Many individual consumers are during the current time unit sellers of labor services: the food, clothing, etc. they buy for themselves and members of their families may, therefore, be classified as bought for resale, since the rendering of labor services is contingent upon life and minimum comfort of the worker and his family.

Clearly, in this criterion of purchase not for resale, the kind of resale by individual consumers just suggested is excluded because the use of the goods is recognized as *ultimate* consumption, rather than consumption in producing the labor force. Such classification is tantamount to saying that the life and happiness of individuals is an end purpose of economic activity; and that any good is final if it contributes to this purpose without further circulation within the economy. In other words, exclusion of resale by ultimate consumers is necessarily a reimportation of the criterion of individuals' welfare as the basis for classifying some goods as final products and others as intermediate.

The next question arises as to the meaning of purchases of goods by government not for resale. Clearly, no process of ultimate consumption occurs in the case of government, except where services are provided to ultimate consumers. Outside of these cases and government capital formation, the purchases of government are not resold in the sense that a full specific price is charged for them; but they are passed on to enterprises and to society at large. Should the fact that no specific price is charged mean that we have no resale, and heme that the corresponding government purchases are final product? If the answer is 'yes', two objections arise. The first is that within the private sector also some purchases are not for resale -in the sense that while the good purchased is passed on to business users, no specific charge for it may be made to the user. This is true of all monopolies that charge discriminatory prices to their customers. In such cases the monopolists purchase some goods or produce them directly, aud then pass them on, to at least some of their business customers, for only a partial quid pro quo. Should we consider the purchases by these monopolists of the goods so passed on as part of 'final product'? And if the answer is that they are in fact sold but the price is paid by someone other than the specific business user, would not the same argument hold in case of government?

The second and more important objection is that failure to resell means 'finality' within the current time unit only if there is no chance of another enterprise using the good in question (or adding it to stock). But if failure to resell means only failure to charge a price and not failure to pass on the good to enterprises, then how can the good be treated as final? It can be used by business and other firms; and it can enter other products, and thus cause duplication. The argument that the specific price of the good in question is zero, or close to zero, is not relevant to the main criterion of 'finality' discussed here, viz., that of 'purchases not for resale'. If we also introduce the criterion of a 'fair' price, we should have to consider the problem of prices inflated by taxes, without a specific quid pro quo.¹

^{1.} More specifically, a good, A, purchased by the government and then passed on *gratis* to a business firm (or to society at large) may have a price of zero to the recipient; but somebody else may be paying for it and including the cost in the price of his commodity or service (B, C,D, or E). In the final product approach we take B, C, D, and E at market prices, thus including the price of A. Hence, so far as A is a product absorbed in uses other than ultimate consumntion, the fact that it was purchased by government not for resale does not prevent duplication if it is included along with B, C, D, and E.

One can see that the linking of 'finality' of a product with 'not for resale', in the sense that it need not be sold for more than a token price, is important in a society where lack of means of payment in the hands of would-be purchasers is an ever present threat; and on the theory that full employment of resources is conditioned by an adequate flow of purchasing power to consumers and of means of credit and existence of confidence on the part of business. The purchases not for resale are final in the sense that, once they have materialized, no further claims upon means of payment at the disposal of society (ultimate consumers, private business, government) are made. In other words, these are final expenditures which, if they can be made, will spell certain monetary levels of gross output. But failure to resell is, for reasons just advanced, clearly an inadequate test for identifying final product.

3. Social framework as end-purpose

It is contended below that most government activities are designed to preserve and maintain the basic social framework and are thus a species of repair and maintenance which cannot in and of itself produce net economic returns. Yet at certain junctures in the life of a country, e.g., in times of a crucial war, this interpretation may seem inadequate: it suggests the subordination of a life and death struggle to the flow of goods to individuals, and thus denies that at such times individuals' current welfare may be less important than survival of the social framework. The argument would lead toward temporary recognition of success in war and preservation of a country's social framework as a purpose at least equal in importance to welfare of individuals. The result would be to recognize all goods flowing into the armed conflict as final products: and to include in national income not only consumers' outlay and

net output of government as defined below, but also all expenditures of government on war purposes.¹

Reasonable as such an approach may seem in the stress and strain of a major war, it can be valid only during these extra-ordinary and necessarily brief intervals in the life of a body social. The elevation of success in war to a position in the hierarchy of social goals equal to the provision of welfare to individuals is warranted only if it can seriously be conceived that failure in the war is likely to result in a complete breakdown of the national economy. Conflicts of so crucial a character cannot obviously occupy more than a limited fraction of the secular run of a national economy's life. One must particularly beware of extending this viewpoint, justified by necessarily temporary crises in the life of a nation, to the common run of public activities involved in a continuous maintenance of the social framework within which the thousand and one economic activities are carried on.

This is not to deny that if a chronic state of crucial struggles ever arrives, there would be need for asserting two end purposes to economic activity: welfare of individuals, and preservation of the social framework. But in that case distribution of resources between the two end purposes would be determined by a variety of factors that cannot be encompassed in economic analysis; and while the results could be measured, a proper interpretation would have to await a new type of economic-political theory. The latter would include not only the factors now considered in the analysis of economic phenomena under conditions of peace and political stability, but also those that determine allocation of resources under conditions of external struggle and extreme pressures upon a nation's political framework.

^{1.} See National Product in Wartime, Pp. 17-19.

It is clear that any change in the definition of end purposes of economic activity has an immediate bearing upon what is included in national income; and hence upon how the net product of public activity is defined. Indeed, choice of end goals as a criterion in defining net product affects even the recognition of factors. Factors are what factors do, and factors are identified by their participation in the creation of final net product. The yield of factors, their aggregate compensation, must equal the net product and hence be governed by the criteria that define the latter. However, there is little need to stress the point further. We return to our basic set of criteria - satisfaction of needs of ultimate consumers, present and future - and consider more closely how the net product of government activity can be distinguished from intermediate product.

4. The three past approaches

All the approaches cited in this section recognize the basic criterion just formulated. They differ, however, in their judgment as to how far the criterion can be applied in practice. They are dealt with briefly, in the way of a survey of the experience prior to the time when the official current estimates 'solved' the problem by raising government to the status of an ultimate consumer.

(a) The first approach may be designated one of total despair, being based on a view that no reliable bases, *in principle*, are available for distinguishing in government activity between final and intermediate output. To use a more neutral term, descriptive of its implications as to the treatment of government activity as a producer, the approach may be designated 'whole-sale' since it involves either a wholesale acceptance of all government product A - (expenditures on commodities and services) as final net output; or wholesale rejection on the ground that none of it is final product. This

viewpoint may best be illustrated from the writings of J. R. Hicks. In an article (joint with U. K. Hicks), we read:

... in the above classification no account has been taken of any deduction from the gross contribution of firms due to their utilisation of the free services of public authorities. In fact, the services of police, justice, and defence do contribute to production, and may be thought of as used in production in the same way as power and fuel. If we decide to give its full weight to this consideration only a fraction of the output of public authorities may have to be reckoned as entering into the final product. And in this case a deduction from our various totals equal to a large proportion of public net income must be made. ...

It is, however, extremely difficult to see how much deduction should be made. The protection of life and limb is presumably a part of final output, so is the use of the roads for pleasure purposes. How do we draw the line between the value of these services and the value of those services which ought to be deducted? The division seems to be entirely arbitrary. Consequently, if we want to measure something and not to arrive at a figure for the national income which is what it is just because we say it is, it seems better to disregard this productive utilisation of public services, and to regard them (by definition) as being reckoned entirely into final output.¹

And in a footnote to this statement the authors add:

It may be noted that our fourth breakdown, by separating out public net income, provides an upper and a lower limit for the national income (with or without public income). It is open to anyone to decide what fraction of public output be considers to be a 'producers' good', and

^{1. &#}x27;Public Finance in the National Income', The Review of Economic Studies, Vol. VI, No. 2, February 1939, p. 150.

having made the necessary deduction, avoid the convention of classifying all public expenditure as final output.¹

In a later article, devoted to a theoretical analysis of the welfare and productivity implications of the valuation of social income, Professor Hicks sees no reasons for changing his position. In discussing Colin Clark's formula, which includes indirect taxes fully, Professor Hicks says:

There is, however, one substantial reason why Mr. Clark's formula must indeed be expected to overestimate the Social Income including public services. Some part of the output of public services is not final output, but plays its part in production by facilitating the production of other goods (maintenance of law and order, roads used for business purposes, and so on). To reckon this as well as the goods whose output is facilitated would involve double counting. I do not see how we can hope to do anything about this in practice, for we have no reliable criterion by which to distinguish that part of the output of public services which is not final output from that which is. We must just be prepared to remind ourselves that the Clark formula has not in fact succeeded in eliminating every sort of double counting.²

Three comments should help to elucidate the meaning of this approach. First, while the discussion is usually in terms of whether or not to add indirect taxes, the problem is being answered in terms of all taxes. Second, it would have been as simple a convention to classify all government activity as yielding indirect output alone, as to classify all of it as final output. If the latter convention is chosen, the implication must be that 'public services' are viewed as being *predominantly* of service to consumers or constituting additions to capital outside of the private sector. Third, while the statistical consequence of the choice of 'convention' here means identity of the measure with that of government product in the current official estimates, the theoretical position is different in principle: it does not accept the recent contention that identifies final products with purchases not for resale, and leaves the way open to a change in procedure when practical circumstances warrant. Indeed, in a recent publication Professor Hicks registers a change in his position:

I have never denied that there is a distinction between those government activities which have to be regarded as a part of final output, and those which (at least in principle) are not. But I used to think that the distinction was too vague to be of much use to the statistician. Later on ... my wife demonstrated to me that the making of a significant classification of public expenditure on these lines was a much less formidable task than I had supposed. The difficult cases are quantitatively of secondary importance, with (I think) the exception of road maintenance.¹

(b) The second approach shares with the first its essential pessimism as to the feasibility of separating in government activity final from intermediate product. But it adopts a different convention as representing a more palatable practical compromise. It may conveniently be designated the tax-payments approach.

In its use in national income measurement, in the past work of both the National Bureau of Economic Research and the U.S. Department of Commerce, this approach has undergone some evolution and has emerged in two variants.

^{1.} Op.cit., p. 151.

^{2. &#}x27;The Valuation of the Social Income', Economica, Vol. VII (new series), No. 26, May 1940, p. 118.

Economica, August 1948, p. 164.

Attention to these two variants serves not only to indicate how different assumptions can be made in interpreting government activity in terms of net output, but also how changing circumstances force revision of assumptions that seemed acceptable at a different time.

(i) The first variant involved two basic assumptions: (a) direct taxes paid by individuals measure the value of services by government to ultimate consumers, and (b) net business taxes, (i.e., net of subsidies) represent full and complete payment for intermediate product of government.² The combination of these assumptions meant that final product of government, not already represented by individuals' taxes, could take the form of additions to government capital alone and could be financed only out of deficit; and that domestic and foreign transfers also could be financed only out of deficit.

The acceptance of these assumptions resulted in a simple formula for national income: national income equals the sum of all income shares gross of direct taxes paid by individuals, the income shares including undistributed net profits or losses of private enterprises after all tax payments. Since additions to government capital could be only out of deficit, they did not have to be added: and neither were domestic transfers to be included. Foreign transfers, which should be subtracted if financed out of deficit, were neglected for the realistic reason that they were practically nonexistent in the United States (war debts resulting from World War I having been classified as true loans). And the whole calculation was in terms of current government accounts, disregarding repayment of debts. Taking the latter into account would not have changed the formula, or the resulting national income total.

This frankly conventional choice of assumptions, with their conveniently simple result, seemed fairly satisfactory during the 1920's and early 1930's in the United States, when the total scope of government as a producer or transfer agency was small relative to the private sector; and, particularly, when transfers and deficits were comparatively small. But when, as a consequence of the drastic depression, huge government deficits and large transfer activities (in the form of relief) made their appearance, it became dangerous to assume a neat correspondence between taxes and government product and a different variant was suggested.¹

(ii) In the second variant (embodied in National Income and Its Composition) the first assumption, the equivalence of direct taxes paid by individuals and services by government to ultimate consumers, was retained. But the second was dropped. Instead, the other part of the final government product was secured directly, by a comparison of real capital formation under government auspices with changes in government debt. The addition of this difference between change in real government capital and change in government debt included such net product of government (outside of services to individuals) as was financed out of taxes, included such repayment of domestic debt as was made out of taxes (which species of domestic transfers should be included); and was necessarily adjusted by also adding all other domestic transfers, (e.g., relief) to the income shares. The final formula for the second variant is: national income equals (sum of income shares gross of direct taxes on individuals) plus (domestic transfers, not in repayment of debt) plus (excess of real capital formation by

^{2.} These were the implicit assumptions of the estimates by the National Bureau of Economic Research, from the first set published in 1921 until the second variant was formulated and presented in *National Income and Its Composition* in 1941. The same was true of the U.S. Department of Commerce estimates of national income until the recent revisions (1947).

^{1.} This is not intended as an accurate description of the motives that led to the change in the assumptions in the National Bureau's estimates in the late 1930's. It is rather n post-facto rationalization of an adaptation of a conventional decision to changed circumstances, which was made out of intellectual discomfort caused by the old convention.

government over change in government debt).¹ As in the Erst variant, foreign transfers were neglected since they were nonexistent or insignificant.

(c) The third approach, while recognizing the difficulties of classifying government activities as final or as intermediate product, calls nevertheless for such segregation. Calling for detailed consideration and analysis of government activities and an allocation of the latter between final and intermediate products, it may properly be designated the 'specific' approach.

It has been used directly in national income estimating in Germany and Sweden; and partially in several attempts to establish fully individuals' share in national product or the share of some economic group.²

The approach involves a direct denial of the judgment of the first two approaches, viz., that government activities are not properly segregable into final and intermediate product because there is no reliable principle on which such segregation can be made.

Naturally, in its practical application the approach also involves conventions. Thus, when in the national income estimates for Sweden the expenditures for a large sector of government activity are apportioned, for lack of adequate basis for a more specific allocation, equally between final and intermediate product, the element of convention enters. But it may be claimed for the specific approach that conventional judgments are applied to a much narrower field than in either of the first two approaches; and that the limitation occurs by virtue of direct recognition of at least some sectors of government activity as belonging distinctly to the final or to the intermediate product category. If wide agreement is possible with reference to this latter step; if no demurrer can be entered against classifying, say, expenditures on health and education as direct government services to ultimate consumers, and expenditures on economic regulation as services to business, the conventions of the third approach are clearly to be preferred to those of the first approach; and even to those of the second approach in its more elaborate variant.

Disregarding for the moment the question whether the improvement in the estimate warrants the additional work involved in the application of the third approach, we may state that, in *theory*, the third approach is the only acceptable one -

^{1.} The controversial question concerning valuation of government services at cost or market basis is no longer an issue, if we accept the assumption that direct taxes paid by individuals measure the value of services by government to individuals as ultimate consumers (see the discussion in Studies in Income and Wealth, Vol. Two, National Bureau of Economic Research, New York, 1932, Pp. 269-316). On this assumption, domestic transfers must be added; and the excess of real capital formation over the change in debt must also be added to derive the correct total of national income as net output, at current market prices. It is true, however that the assumption implies a market (payment) rather than cost basis of valuation of government services to individuals.

^{2.} For treatment in the estimates for Sweden see National Income of Sweden, 1861-1930, by Eric Lindahl, Einar Dahlgren, and Karin Kock, London, 1937, particularly Vol. I, Pp. 226-31; for Germany; Das Deutsche Volkseinkommen vor und nach dem Krlege, Einzelschriften zur Statistik des Deutschen Reiches, im 24, Berlin, 1932, particularly Pp. 14016 and 134-41. Gerhard Colm presented this viewpoint and exemplified its application to the case of the United States for 1932 in his paper, 'Public Revenue and Public Expenditure in National Income', Studies in Income and Wealth, Vol. One (National Bureau of Economic Research 1937, Pp. 173-227). R.W. Nelson and Donald Jackson allocated in fairly detailed fashion the outlays of the federal government for fiscal 1936 between final and intermediate product preparatory to further allocating each between those going to farmers and to nonfarmers, in their paper, 'Allocation of Benefits from Government Expenditure', Studies in Income and Wealth, Vol. Two (1938, Pp. 317-42). In his paper, 'Three Estimates of the Value of the Nation's Output of Commodities and Services - A Comparison', Studies in Income and Wealth, Vol. Three (1939, Pp. 319-80), Clark Warburton estimates government services to individuals qua consumers (see particularly the items on Pp. 352-55). In a frecent study for Great Britain, Redistribution of Incomes Through Public Finance in 1937 (Oxford, 1945). Tibor Barna not only estimates services by government to individuals, but allocates the value of these services for the various groups in the distribution of income by size.

provided that agreement can be established as to principles of classifying government activity between final and intermediate products, principles so applicable to ordinarily available data on government expenditures as to permit a marked narrowing of the area within which purely con*ventional* bases of allocation must be used. Such principles can be formulated, at least in tentative form, as an initial basis from which agreement may evolve. With their formulation, the specific approach to the measurement of final product of government activity is the only one that can and must be followed in estimating net product of economic activity. And to return to the question of practical expediency, recent years have witnessed such enormous expansion of government activity, an expansion likely to persist into the future, that additional work devoted to the improvement of estimates of the final product of government is urgently warranted.

5. Criteria for identifying final product of government

Since final product of government consists of two distinct parts -consumers' outlay and private capital formation - criteria or principles of identification must be set up for each part separately.

The services by government to individuals, by which we mean activity of government that results directly in a flow of goods to ultimate consumers, can be identified with the help of three criteria. The first is that the individual recipient of the service from government pays no price or only a token price. This is to distinguish cases in which government acts in the sense of our analysis from those in which government acts as a business entrepreneur. To illustrate, we are concerned here with *free* public education but not with the activities of the post-office in which the service is rendered for a significant quid pro quo. Only if the price is a token price and only to the extent that services rendered are, therefore, financed out of taxes, deficit, or any other sources except

specific fees paid by consumers, will the activity be classified under government service to individuals.

The second criterion is that the government service be available to the individual only upon his overt initiative, rather than to him as a member of a social group who, as an individual, may be quite unaware of the service. To illustrate: services of a government hospital, available to an individual upon request, would be classified by the criterion as a government service to individuals. But the services of the state legislature, higher judiciary, the army and navy, etc., for the preservation of the social order, and thus for protecting and extending the position of an individual as a member of society - a service which the individual may or may not be aware of, but which he cannot request on his individual initiative - is not recognized as service to individuals as ultimate consumers.

This criterion grapples directly with what is obviously the central difficulty in distinguishing between final and intermediate output of government, viz., the numerous and recently enormous activities designed to maintain the society in internal peace and to preserve its position *vis-à-vis* other countries. It is this difficulty that leads in the first two approaches in section 4 to a denial of the feasibility of reliable identification of net product of government. The criterion resolves the difficulty by classifying all such activities as intermediate rather than final product.

The reason for so doing lies in the recognition that economic activity is contingent upon the existence of a given social framework - a set of working rules and institutions that govern members of society in their relation to each other - as well as a set of practices (unfortunately but few firm rules) that govern the relations of a given national economy to others. National income is a measure of net output of economic activity *within* the given social framework, not of what it would be in a hypothetical absence of the latter. The maintenance and modification of this framework, even though it employs scarce resources that may be secured on business markets, cannot in itself constitute part of the final product of economic activity. One could, if one wished, classify this social framework as a kind of basic capital, but not in the strict sense of economic capital whose increase and decrease can in and of itself enter economic accounting and national income. The activities by government designed to preserve or expand the framework involve economic costs to society at large; but any net returns from them cannot be associated directly with any changes in the framework, certainly not in terms of services to individuals. This does not mean that such changes in the social framework may not facilitate greater production in the future; but then it will be accounted for when such greater production means a greater flow of goods to individuals.¹

In other words, the flow of services to individuals from the economy is a flow of economic goods produced and secured under conditions of internal peace, external safety, and legal protection of specific rights, and cannot include these very conditions as services. To include the latter implies feasibility of national income and of a flow of services to individuals outside the basic social framework within which economic activity takes place. There is little sense in talking of protection of life and limb as an economic service to individuals - it is a pre-condition of such service, not a service in itself.¹

Another important argument forces us to view government activities on internal and external defense and on economic and social regulation as costs rather than net product. One need not be an economic determinist to conclude that the growing magnitude of government activities of the type just mentioned is closely connected with the growing complexity of the economy and the international frictions which inequalities in the rate of economic growth among nations produce. The factors that made for increased economic productivity and increased flow of goods to consumers and to capital stocks - advanced technology with its change in scale of operation and magnitude of fixed capital investments, the increasing size of business enterprises, the better organization of labor, farm, and other groups, the social system that maintains the economic harmony of conflicting groups in a complex society - are the very same factors that made for increased activities by government. The latter are not natural calamities unconnected with the economic system; hence increased government outlays cannot be interpreted as if they were increased production of fuel occasioned by growing severity of climate - a realm beyond social control. On the contrary they are an increased cost of operating the economy, the other side of the shield of economic progress. It is difficult to understand why the net product of the economy should include not only the flow of goods to ultimate consumers, but also the increased cost of government activities necessary to maintain the social fabric within which the flow is realized.

^{1.} The bearing upon government capital formation is noted below, in discussing the criteria for identification of that part of final product of government.

^{1.} This explains why comparisons of economic measures among societies that differ materially in their social framework are so intellectually unsatisfying. Economic measures, by the nature of the case, must reflect results of economic activity proper, with the framework of society taken for granted. But individuals' total welfare, as distinct from economic welfare, reflects these basic conditions of the framework of society. The very fact that no one has as yet seriously proposed including in national income the economic value of individual liberty shows clearly that the services of social framework are not economic services to individuals as ultimate consumers; and should, therefore, be excluded by the criterion just suggested.

It is the acceptance of this view on government activities that lies at the basis of the abandonment of the convention used by the author in the past and described briefly under the second approach (section 4(b), above). One may also note that the criterion suggested would result in a different set of estimates of net output of government from those derived by the estimators who did use the specific approach in the past. In practically all cases, protective and legal services of government were included, at least in part, under services to individuals *qua* ultimate consumers (see references in footnote 1 on p. 190).

However, the second criterion which calls for individuals' initiative and action preceding the receipt of service does not exclude fully all government activities designed to maintain the social fabric. The reason for so formulating this criterion is that many government activities relating to the general social framework can only be undertaken by decision of public bodies. Indeed, where common interests of society are involved, individual action as contrasted with group action is often barred. But this second criterion is, itself, not sufficient. For there are numerous cases when the government acts in response to an individual's initiative, when action follows without any price or only at a token price, and yet no economic service, no final product can be recognized. To illustrate: an individual's appeal to a court resulting in judicial action is not followed by a government service that is classifiable as a final economic good (regardless of whether the verdict is favorable or unfavorable). Creation and destruction of rights is not in itself production of final goods, even though such rights may have high market value for individuals and firms. Yet we have here a case where both the first and the second criterion fail to bar recognition of the government activity as constituting services to individuals as consumers, i.e., as final product.

A third criterion must, therefore, be introduced. It requires, in addition to gratis basis and individual initiative or action, that the services by government to individuals have an analogue in the private markets. Only those government activities directed to satisfy individuals' wants are included which find their parallel, and on a substantial scale, in similar services purchased by individuals on private markets. This permits the inclusion of such services by government as education, which obviously finds its analogue in purchases of private education; medical services, with similar analogues in private medical service; parks, theaters, public tourist centers, amusements, etc. On the other hand, judicial, police, external defense, legislative, and all other similar services are excluded; and so also is excluded the vast network of government activities in the way of economic regulation and information, since any analogues that exist in the private market are constituted of purchases by individuals not in their capacity as ultimate consumers, but in their capacity as members of business firms.

It must be admitted that the third criterion breaks down if stretched too far. If any appearance on private markets is considered as satisfying the test, many government activities will be classified as final product even though they cannot easily be acknowledged as such. People hire bodyguards, and one could, therefore, claim that police activities are economic services to ultimate consumers, whereas one should classify them as intermediate product, costs of maintenance of social order at large. Hence 'widespread' use in private markets is called for; and one could argue that if widespread use of private police is necessary, then the social framework does not recognize an overriding need for internal peace and under such conditions police activities by government should be counted as services to individuals. Yet 'widespread' is an elastic term.

Another difficulty with the criterion becomes apparent when what is obviously a service to an individual as an ultimate consumer becomes so well discharged by government that it ceases to be provided on private markets, (e.g., free government medicine) and is discharged by government without any cost. Yet one could argue that in such a case free medical service has become part of the social framework, like free justice, free right to participate in elections, and free police protection. The examples illustrate that the line of distinction between activities designed for the benefit of society at large, (i.e., as a body) and services designed for individuals as consumers is not constant - it changes with shifts in society's consensus as to the indispensable prerequisite of a satisfactory social framework.

Yet, the combination of the three criteria should provide a workable distinction of those government activities that can be classified as services to individuals as ultimate consumers. The first criterion distinguishes government business from government par excellence. The second excludes such government activities as find a widespread parallel on the private markets (purchases and production of certain types of commodities needed for the benefit of society at large, e.g., military airfields) but which, being for the benefit of society at large rather than the individual as ultimate consumer, do not follow or become available upon an individual's initiating action. The third criterion excludes such government activities as may follow an individual's initiating action, but are only the result of an attempt by the individual to adjust his position within the social framework: actions of the adjudicating, or legislative, or administrative type, which do not find any widespread analogue on private markets for the simple reason that society does not entrust them to private business.

We turn now to the problem of identifying the capital formation component of the final product of government. Here analogy with the private sector is more helpful than in the case of government services to individuals. Net output includes not only goods that become available during the year to ultimate consumers, but also such additions to or drafts upon the stock of capital goods at the disposal of the country's economy as result from current productive activity. These changes in stock of capital goods are included because they mean increase or decrease in potential capacity of the economy to supply goods for consumers in the future - capacity in terms of ability to produce a larger final output with the same costs or the same final output with lower costs. Such changes in capital stock in any single country consist of two distinct parts: additions to or drafts upon the stock of real capital goods

within the country (inventories, durable equipment, construction units, and the like); and change in the net balance of claims of the given country against foreign countries.

In defining and measuring changes in the stock of real capital goods within the country, three basic criteria are used. First, all capital goods are included regardless of their distance, in the customary chain of production relations, from such final goods as satisfy wants of ultimate consumers. Whether the capital good is of a type in which capacity to increase output of consumers' goods in the future may be clearly perceived, (e.g., a residential building) or of a type in which connection with consumers' goods must be traced through several links of production-consumption relations, (e.g., a blast furnace) is of no bearing: changes in both types of capital goods must be included in net output. The same criterion applies also to changes in the stock of real capital goods in the hands of government. Even if government capital is designed for turning out intermediate products alone, (e.g., armament), changes in it should be included, because additions to such stock reduce the future cost of maintaining or extending the social framework which is indispensable for operation in the future, i.e., for the future output of consumers' goods. There is no inconsistency in including in the final product of government changes in the stock of armament, and yet excluding from final product such government activities as are carried on by the country's armed services; as there is no inconsistency in including additions to the stock of blast furnaces in net output, and yet excluding pig iron from the flow of finished goods to the country's

The second criterion uniformly followed in identifying changes in private capital formation is the exclusion of additions to, or drafts upon, stocks of intangibles and claims within the country. Internal claims are excluded simply because an increase in claims of one group is necessarily offset by an increase in obligations of another group. Intangibles are excluded for a somewhat similar reason. When acquired by private business firms, such intangibles are often in the nature of a preferential position vis-à-vis other firms - in the same or in other industries: and to that extent what is a gain to a firm that acquired the intangible is an equal loss to those that have been thereby put in a position inferior to that formerly occupied. Where gain in intangibles call be characterized as nonexclusive, their importance to the future productive capacity of society cannot be denied (consider, e.g., additions to scientific knowledge). Indeed, it may be said that the most important capital stock of society is intangible - consisting of the health, intelligence, and skill of the people who form the body social. But no attempt to measure the economic magnitude of changes in such a stock can even be visualized: only its effects can be, and are, measured in terms of changes in production of tangible goods included under national income. Were it possible to measure changes in the stock of intangibles in economic terms, it might not be necessary to measure and include changes in the stock of tangible capital goods. National income could then be made to comprise the current supply

of consumers' goods and net changes in capacity for the future as reflected in the stoclc of our knowledge and ability, rather than in the stock of commodities.

The same criterion must be applied to measuring changes in the internal stock of capital goods under government auspices. Government activity can add enormously to the stock of intangible capital and can also result in heavy inroads upon the latter. The ability and willingness of members of society to cooperate in maximizing net output are greatly affected by the activities of their government. But there is, in the nature of the case, no way of assigning economic magnitudes to changes in such intangible capital directly: magnitudes can be assigned directly only to the tangible effects, in the form of production of commodities and services. We can, therefore, include under government capital highways, buildings, dams, battleships, etc.; but not intelligence, loyalty, and cooperativeness of citizens, or international prestige and popularity, internal peace, or external freedom.

No particular questions arise concerning the identification of the other segment of capital formation under government auspices, changes in net balance of claims against foreign countries. The inclusion of this item in capital formation, in the private or government sector, assumes that possession of a claim against a foreign country means command over that country's output; and the existence of a claim against one's own country by outsiders represents command by them over the country's goods. When world conditions

^{1.} One may indeed question the usefulness of measuring changes in stock of armaments (and related products) in time of war, when it% quite apparent that the huge additions that may have been made by the end of a given year will be dissipated in the next year of continuing warfare. But the question here lies in the usefulness of a *year* as a unit of net output accounting, in connection with a process like a war that may last several years and which is, therefore, *incomplete* by the end of an annual time span; not in the legitimacy of including net changes in stocks in a given year's net output.

A more important objection to the inclusion of additions to armaments is that they, in fact, do not represent an increase in a country's capacity to maintain or extend its position in the world since they are inevitably offset by additions to armaments of would-be enemies. This argument is unanswerable if one grants the necessary connection between increases in armaments of one country and of its would-beenemy. Yet it can also be argued that, given the present organization of the world, there are many situations in which increase in armaments prevents rather than precipitates a conflict. The case is far from decisive; and under the circumStancesit may be best to admit additions to stock ofarmaments asevidence that current production does contribute to future welfare by reducing future costs of maintaining a country's position in the world.

validate such an assumption, changes in the net balance of claims against foreign countries must be included in current net output of a country's economy.

One important question, however, is still to be raised concerning capital formation by government. Unlike the private sector, in which changes in real stock of capital goods and in balance of claims against foreign countries is a result of economic activity, changes in the stock of goods or claims in the hands of government may result from war - overt military conflict or the hidden war that is often conducted in times of peace by diplomatic means. Should we include such changes, whether tangible (acquisition of land, equipment, etc.), or claims (reparations, etc.), in capital formation under government auspices?

The answer is not easily found. If additions to the stock of armaments are to be included in net product of government, on the ground that they mean an increase in the country's capacity to preserve its position with less drain upon future output, should not acquisitions resulting from war also be included as representing similar increases in the country's capacity to maintain and extend its international position? Yet the parallel is not quite true, since additions to the stock of armaments were assumed to be a result of a country's economic production - use of resources, bought mostly on private markets, to satisfy the everpresent need for protection. The additions to capital discussed here are assumed to be the result of war, a process that can hardly be characterized as economic production; and one in which resources are ordinarily used without strict regard for the rules of the private market. Were war classified as economic activity, we would have to deal with the problem of costs and returns to the members of armed services, mobilized by conscription and paid in terms economically incommensurate with their sacrifices.

The answer thus depends not upon whether or not booty acquired in war is a true addition to the capital stock of a nation: in many cases it definitely is, just as for the country defeated in war it is often a real economic loss. The answer depends upon whether we classify war as an economic activity; and upon whether it is useful in measuring net output of economic activity to throw into one total results of two different types of activity. Even in the private sector, only such changes in capital stock are recorded as result from the process of economic production. Changes due to factors outside the latter, (e.g., the incalculable and uninsurable acts of God, either favorable or unfavorable) are ordinarily excluded. Unless by some unfortunate development of international relations war becomes an important and .regularly practised process for securing economic returns (in which case society would have to undergo drastic changes that are likely to affect the whole theory of national income measurement), it seems best to exclude it from the realm of economic activity; and to exclude war-produced changes in capital stock from government capital formation, from government final product, and from the country's national income.

6. Statistical problems

Even in countries rich in a wealth of statistical data, the application of the criteria just suggested for identifying net product of government will encounter numerous difficulties. Such statistical problems cannot be discussed in general terms since they vary from country to country, and within the same country, from period to period. Nor would an attempt to apply the criteria to a given country for a given period necessarily reveal all the difficulties, or yield solutions of wide validity.

But some general consideration can effectively be given to the *kind* of statistical problem that is likely to be encountered, given the data that
usually are available in the advanced economies of the Western world. The general paths which solution of such problems may follow can be suggested; and some indication given of the reasons for believing that it is possible, by using the criteria suggested above, to reduce to narrow dimensions the area within which conventional allocations of government between final and intermediate product would have to be made. The discussion that follows deals with (a) what is to be included to get the sum total of final products of government activity by adding the cost items ordinarily given in the data; (b) how to allocate joint costs; (c) what basis of valuation to use. These questions are common to the measurement of both government services to individuals and government capital formation. Questions specific to the measurement of the latter arise in (d) passing from gross to net capital formation, i.e., allowing for capital consumption.

(a) Once we identify a sector of government activity as yielding services to individuals or additions to capital, there is often no direct way of securing the economic magnitude of the resulting net product. It is true that when such net product is represented by repayment of government debt held abroad, a full measure of the market price is directly given; and the same holds when the product in question is only paid for by government, but is turned out on a contractual basis by a private firm that can then be confidently expected to charge a full price. In many cases, however, the government acts as its own entrepreneur; and the value of the net product turned out must be derived by adding the various outlays chargeable to the product in question.

Except for allocation problems, to be noted below, and the ever to be considered paucity of data, no particular difficulties arise in securing outlays by government on the purchase of labor services and of commodities. Thus the cost of labor and materials is ordinarily given for an estimate of the value of net product of government; and being given fully, it can be used to measure - for given categories of final product not only the input of direct labor and materials, but also the input of labor and materials on maintenance of whatever capital is used in producing the final product. But one cost item is almost necessarily lacking in the government cost accounting and present in the private firm's accounting: charges on the use of capital. Presumably capital used by government to turn out the final product, like capital used by private firms, yields interest. But while government records payment of interest on its debt, such payment cannot be considered equivalent to the yield of government capital used in turning out net product of government. To make the cost estimate of government's net product complete, interest charges must be imputed.

Whether such imputation is desirable is a practical question, to be answered in terms of labor involved in deriving a defensible estimate and of the desire to make the net product of government fully comparable with private product, if only on a cost basis. One might argue that even the labor and goods costs of government production are not truly comparable to those of the private sector. But if imputed interest on government capital used in the output of final product is to be included, then this interest should appear under the income shares in the analytical cases 1-7 in Part II. For in these cases the value of final net product is not fully covered either out of taxes or out of deficit: part of it is the imputed net yield of government capital already at hand.

(b) In the light of criteria distinguished in section 5, government activity may be divided into five broad classes: (i) yielding only services to individuals as consumers (schools, hospitals, parks, museums, etc.); (ii) yielding only services to business (business information and regulation activity); (iii) yielding only services to society at large (police, army, navy, legislative, etc.); (iv) resulting in additions to tangible government capital (construction of streets, highways, etc.); (v) joint activities, representing a combination of either (i) or (iv) with the others; or of (i) and (iv).

This classification is obviously designed with an eye to the application of the several criteria, and does not represent the way the government accounts are in fact grouped. But it is important to note that many of the institutional categories of government expenditures, usually organized by departments with some distinction between current and capital accounts, can be classified en bloc under (i) or (ii), and (iii) or (iv). This is certainly true of current expenditures on goods and services under such general headings as the military establishment, the economic branches of the government, public education, and public health service. It is thus reasonable to assume that a large proportion of total government activity can be classified under the 'pure' categories (i), (ii), (iii), and (iv); and that the scope of government activity which is joint and subject to further allocation, with possible recourse to conventional bases, is narrowly circumscribed compared with total government expenditure on goods.

Among the activities under (v) are cases of joint administration, typified by one and the same department administering activities representing current services to consumers as well as activities yielding only intermediate products, (e.g., the Executive Offices of the President in the United States); and cases of joint direct activities which should be charged to both final and intermediate product, (e.g., maintenance of highways used by both consumers and business firms). In either case it is easy to visualize data that would reveal the relative magnitude of activities or uses serviced by such joint administration or such joint maintenance. The extent to which allocation can be grounded upon specific information, and to which it must perforce be made in a conventional way, is a practical question answered in terms of balancing the improvement possible with the

available data against the labor involved in so doing. In empirical work, efficiency of effort must be judged in value of marginal yield. All that one can say in general on this question is that, as in all empirical studies, data and more reliable results are in part a consequence of further attempts at utilization, just as effective utilization depends upon better supply of data. And in the last count, the relatively narrow scope of joint activities of government, compared with total scope of government as a producer, permits approximate allocations without the large errors that would follow the more arbitrary procedures involved in the 'wholesale' and 'tax payment' approaches.

(c) The suggested valuation of net product of government is clearly at cost to the government, not at market value as established by purchasers, since the recipients of the net product receive it free. For government capital, the difference between valuation at cost and in the private market sector is, in theory, negligible: like private firms, government either contracts with private producers for capital supply or produces capital with factors under its own management. In either case, the cost of capital additions to government, like the cost of capital additions to private firms, is equivalent to the market price of the capital addition to its purchaser and user. But in case of services to individuals as ultimate consumers, valuation at cost when provided by government is not similar to valuation of consumer goods when provided by private firms: in the latter case they are valued at market prices, which may differ substantially from costs as incurred by government.

This inconsistency cannot be remedied. While government services to individuals are in part distinguished by the existence of a counterpart on private markets, the parallel is as to class and not as to sufficiently specific goods to permit use of specific market prices. Even when some consumers buy a service on the private market because they are barred from government services by a sufficiently high income status, (e.g., medical provisions), one can never be sure that the two services are identical and the market price of one can be substituted for the value of the other; let alone the fact that in such cases private market prices are skewed by the limitation of the demand groups to upper income levels. The inconsistency is there because, by social consent or otherwise, the private market is not allowed to operate freely in the case of the services in question; and the attempt to remedy it by trying to visualize what would happen were it to operate freely is doomed to failure, because our analytical tools and our data are insufficient for a reliable reconstruction of this hypothetical situation.

This need not be fatal to the meaning of national income as a measure of net output, provided that the differences between costs and market values are not so large as to put the two valuation bases on entirely different levels of magnitude. They are not that different on the private markets; and by analogy, we may assume that devotion by society of a certain magnitude of resources measured at cost to a certain aggregate of consumer goods via the government does not mean something very much different, in terms of final product, from an identical cost total of resources in the private sector and hence a corresponding total of final products on the private markets. Just as we accept differences in valuation on the market resulting from differences in extent of monopoly in various private industries, so we may accept the cost basis for valuation of government services to individuals - even though other consumer goods are priced at market values.

(d) The measurement of net capital formation under government auspices involves an estimate of current consumption of durable capital, to be deducted from the gross value of flow of durable equipment to government. While some questions arising in measuring government capital consumption are parallel to those in the estimation of the gross flow, other problems arise.

As in the case of gross capital formation, only tangible goods are to be included; and no depreciation measures are to be applied to the stock of 'loyalty', 'international goodwill', etc. As in the case of gross capital formation, consumption is to be calculated for all capital goods, whether they are used directly for producing services to consumers or are far removed from the latter in the chain of production-consumption relations. But as distinct from gross capital formation, consumption of government capital is to include all capital available at the beginning of the year, whether such capital was yielded by the ordinary use of economic resources in the past or acquired by such extra- economic means as war. The calculation for each time unit must begin with the complete set of resources at the disposal of the economy and in that sense it always begins ab ovo.

A more important difference between gross capital formation and capital consumption is that the former is a current flow that usually passes through the markets and is thus inevitably provided with current valuation; whereas consumption of *durable* capital goods within any limited period, such as a year, is an implicit and non-visible process the economic magnitude of which can only be approximated. The difficulties of arriving at such an approximation even in the private sector are well known; and even in the latter, conventional methods are indispensable if a definite result is to be secured. In the case of government, where the pressure for strict accounting is not as great and the need for estimating consumption of durable capital is not so urgently forced by income tax laws or competitive pressures, the basic data needed for even a conventional estimate of durable capital consumption are rarely available.

Without going into details, which are always determined by the specific characteristics of government accounting in a given country and at a given time, only two general suggestions can be made. First, for government durable capital that is analogous to private durable capital -either with respect to function or regularity of economic use (schools, hospitals, roads, dams, streets, public utility structures, office buildings, etc.) -an estimator would be warranted in borrowing the accounting conventions of private business; and applying, with or without modifications suggested by economic theory, the long-term, simple-curve apportionments of the total value of the durable good over the roughly estimated span of its economic life. In so far as we allow government a modicum of economic rationale in its calculation, it, like private enterprise, will discard a capital item as soon as its economic obsolescence -, i.e., cumulated excessive cost of its further use (compared with a more modern substitute available) -justifies replacement. Granted the difficulty of actually finding the rates in question, as well as the bases (capital values) to which to apply them, such estimates should raise no particular theoretical problems.

The second suggestion bears upon such durable equipment in the hands of government as is not used for ordinary economic processes - notably armaments. In so far as these and other war goods are for an investment in peace, the consumption estimate should be that of current depreciation in the stock of peaceful existence.¹ But interesting as the concept is, it involves an assumption of regular occurrence of armed conflict and introduces the notion of intangible capital which we excluded from national - income estimates. It seems best, therefore, to measure consumption of capital goods of this type only when they are actually discarded as obsolete or are actually destroyed in armed conflict.

7. Concluding comments

There is little need to summarize the essential position taken here in defining national income or net product and the consequent formulation of the net product of government activity. Those interested in the technical details of following through this viewpoint in estimates by flow of income shares will find such an analysis in Part 11. But in concluding this fundamental part of the paper it may be well to comment briefly upon the obvious value for various purposes of a 'grosser' definition of both national production aggregates and government activity.

Even if we are interested in net product proper, the real contribution of the economy to what we consider the goals of economic activity, it is clear that these measures, in and of themselves, are inadequate as a basis for understanding how such net flows are produced; or for analyzing any policies designed to increase them or change their structure. To illustrate: it is difficult, if not impossible, to understand and measure the factors that determine net product originating in agriculture without estimates of the gross product of that industry, the flow of that gross product into various channels, flows from other industries into agriculture (that appear in the latter as costs of production), and the like. Similarly, it is obvious that a policy designed to control the net product from agriculture, (e.g., United States agricultural income parity policy) may be better designed if it acts directly on the gross product of agriculture, (e.g., by way of price floors for certain major agricultural commodities) than by way of direct adjustment of the difficult, and often administratively unascertainable and unmanageable, net product flow. What is true of agriculture is true of all the other sectors of our productive system. or of any other institutional groupings; their overt appearance is in the nature of gross flows, and their accessibility to policy influence, in the way of tariffs, quotas, subsidies, etc., is most often via

^{1.} See the discussion in National Product in Wartime, National Bureau of Economic Research, N.Y. 1944, Pp. 8-10.

gross volume of activity rather than via the refined and elusive net product yield. Net product may thus be viewed as the result of a complicated chain of actions and relationships, which cannot be understood without recognizing and measuring the latter and which cannot be affected efficiently by policy measures except through the impact of such measures upon the gross, clearly perceived forms of economic activity.

These general considerations suggest the great usefulness of defining government product as the U.S. Department of Commerce does, i.e., as all goods and services purchased by the government. When this definition was urged by the pressures of the war production program, the policy problem was not how much net product government activity yields; the question was rather how many commodities and services government needs for the prosecution of the war and how many will remain for other needs, such as indispensable capital formation and minimum supply of goods to ultimate consumers. Likewise, when concern about employment prospects emerged in the early stages of demobilization and government activity was viewed as a source of employment, the question was not as to the net yield of such activity but rather how many goods it meant, and goods in this connection meant how much demand for employment and labor. With government product thus defined, and this definition was indispensable for these and other analytical and policy uses, it was only natural to devise a total of which such government product could be conceived as a proper part.

Clearly, the 'grossification' of government product was justified by the uses for short-term problems that loomed uppermost during the war and the post-war years; and further grossification may well be warranted by other purposes. The major objection here is not to such a definition of government product, but to the claim, in all seriousness, that it is a definition of a component in a final, net product total.

II. TREATMENT OF GOVERNMENT IN THE INCOME SHARES APPROACH

This part discusses the treatment of government in measuring national income as a sum of income shares, i.e., payments to factors of production. While we analyze various categories of government activity as part of such an estimate, the solution in each case cannot be reached except by considering its meaning in terms of national income as a net product aggregate, for which the bases and criteria were laid down in Part I. The discussion thus assumes throughout that the national income as a net product total is *known*; and in the light of such knowledge arrives at decisions as to how various controversial items in the government sector should be treated in deriving national income as a sum of income shares.¹

In estimating national income as the sum of income shares, the practice has been to begin with payments to or income of factors (wages and salaries, dividends, interest, rent, undistributed net profits of enterprises after taxes -all, except undistributed net profits, including direct taxes) and then consider whether or not indirect and direct business taxes should be added. Another question that arises with particular reference to

^{1.} This approach is similar to the one used by Gottfried Haberler and Everett E. Hagen in their paper, 'Taxes, Government Expenditures and National Income', *Studies in Income and Wealth*, Vol. Eight, National Bureau of Economic Research, N.Y., 1946, Pp. 1-33. It is identical with their test of invariance, to the effect that 'The measure of *real* national income should be invariant to all purely institutional, monetary, and price changes.' The conclusions here are similar to those derived by Haberler and Hagen; but the discussion below is more explicit in its treatment and leads to a different interpretation of some of the positions adopted in the past.

government activity, is whether, in counting payments to productive factors, to include what appear to be transfer payments from governments, (e.g., relief). In the present analysis it is preferable to begin with payments or incomes to factors, net of all taxes, direct or indirect; as well as net of all receipts from the government that can in any way be interpreted as transfers.

We are interested here in government whose quintessence is imposing taxes (and other compulsory charges) without necessarily rendering a specific return to the taxpayer; and providing goods to individuals and business, without malting a specific charge to the beneficiaries. In so far as government conducts a business enterprise operated on a basis similar to private business enterprises, we classify it outside of government - with other business enterprises. Likewise, government-operated insurance plans, either fully or partly contributory, are classified with similar private business enterprises. This is not to deny that government business enterprises may not in fact be conducted on principles different from those of private business. To the extent that they are, (i.e., with deficits financed out of general taxes), they belong to the category of government in our analysis and are covered under one or several categories analyzed below. But it would only burden the discussion, without adding to clarity, to include government business enterprises or to segregate their contribution to the magnitude of government par excellence as an institution operating outside ordinary private market rules.¹

With this definition of government and the initial total of income shares excluding all taxes, we are ready to consider the treatment of the following controversial items in the government sector: (1) indirect business taxes; (2) direct business taxes; (3) direct taxes on individuals; (4) government product not financed by taxes -non-inflationary; (5) government product not financed by taxes -inflationary; (6) subsidies to domestic business; (7) transfers to domestic units; (8) foreign transfers.

1. Indirect taxes

The addition of indirect taxes to income shares has been justified on two somewhat related grounds: (i) the differential impact of such taxes on prices when taxes change from one year to the next (and differ from one country to another); (ii) the utility of a net product aggregate at market prices resulting from the inclusion of indirect taxes, as against the net product aggregate at factor costs derived by excluding them.

(i) The first case is stated most clearly by A. C. Pigou who discussed measurement of national income essentially as the sum of income shares approach:

"... the main part of what the Treasury receives in customs and excise duties ought, paradoxical as it may seem, to be counted, in spite of the fact that it is already counted when in the hands of the tax-payers and that it is not paid against any service. The reason is that the prices of the taxed articles are pushed up (we may suppose) by nearly the amount of the duties, and that, therefore, unless the aggregate money of the country is reckoned in such a way that it is pushed up accordingly, this aggregate money income divided by prices, that is to say, the real income

^{1.} The exclusion of government business enterprises (and insurance schemes) means that in our analysis payments to factors exclude taxes, but include compulsory contributions to insurance (whether by beneficiary or firm) and include earnings of funds of such insurance agencies. Likewise, transfers from government to individuals do *not* include payments of insurance but are confined to transfers that are not in the nature of return of contributions previously made.

of the country, would necessarily appear to be diminished by the imposition of these duties even though it were in fact the same as before."¹

To this statement Pigou adds a footnote indicating that only part of indirect taxes should be added, in so far as prices are not raised by the full amount of the tax; and that these taxes may indirectly cause production to decline. Other writers tend to follow the same line of argument, without the qualification added by Pigou (see, e.g., Colin Clark's *National Income and Outlay*, London, 1932, Pp. 11-12, and *Conditions of Economic Progress*, London, 1940, Pp. 30-1).

The validity of the argument depends upon the effect of the imposition of indirect taxes on the output of net product. The effect of such taxes upon prices of taxed articles is no basis for deciding whether they should or should not be added to income shares already recorded. For if the taxes are spent in payment of wages and salaries to government officials whose activity does not add to the net aggregate of final products, their inclusion is not warranted. And if they are included in the current money total of national income, an adjustment for price changes by the usual and relevant price indexes will translate an imposition of indirect taxes into a rise in real national income where no such rise has in fact taken place.

In order to make this argument clear a hypothetical illustration is set forth in detail as Case 1. In this case we assume in time unit I no taxes; and also, to simplify the picture, no government capital that could yield final products. There is thus a complete and easy balance of the sum of income shares with the market value of net product, i.e., of national income or product measured by the income shares and final product approaches. And while the example assumes the extremely simple situation of a single product, this does not affect the argument that follows.

In time unit II government appears on the scene and imposes an excise tax on the article. We assume, again for simplicity, that the tax is shifted completely to the price of the article; and that this rise in prices has no effect on supply and demand. The analysis is unaffected if this simplifying assumption is dropped: the whole case could be restated, with the same consequences, on the assumption of a partial shift of the tax to price and of a corresponding reduction in undistributed net profits.

The magnitude of the real net aggregate produced in time unit II depends upon what the government does with the taxes. We distinguish in Case 1 six possible types of use, all involving the use of either commodities or services; the other possible uses of taxes, (e.g., transfers) are not considered here, but are dealt with under the headings of subsidies and transfers (Cases 6,7, and 8).

Among the six types of government activity concerned with commodities and services are (a) payments to employees (or to already existing capital) for assistance to business. In this case no addition to final product occurs, and yet these payments (equal to indirect taxes) appear under income shares. A second type is (b) use of current production or stocks also to assist business. In this case no addition appears under income shares,

^{1.} The Economics of Welfare, 3rd edition, London, 1929, p. 41.

CASE 1

Indirect Taxes

Time Unit I	
Production, private sector, quantity	100
Market price per unit	10
Value product (market)	1000
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	700
Property income paid out	200
Undistributed net profits	100
Taxes	0
Total value product	1,000
Production and receipts, government sector	0
Assumption: No government capital yielding final product	
Total national product or income, final product approach	1000
Total national production or income, sum of income shares	1000
Time Unit II: Imposition of indirect taxes	
Production, private sector, quantity	100
Market price per unit	12
Value product (market price)	1,200
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	700
Property income paid out	200
Undistributed net profits	100
Indirect taxes	200
Total value product	1,200

Production of government sector, alternative uses of taxes (same assumption as in Time Unit I as to government capital):

(a) Wages and salaries paid to employees assisting private sector, (e.g., business analysts)	200
(b) Purchase of goods (current output or stock) to be used in assisting private sector	200
(c) Wages and salaries paid to employees providing services to individuals, (e.g., medical care)	200
(d) Purchase of goods (current output or stock) to be used for assistance to individuals, (e.g., medicine)	200
(e) Wages and salaries paid to employees who add to government capital, (e.g., build a school)	200
(f) Purchase of goods (current output or stock) to be employed in adding to government capital	200

Total national product or income, final product approach, alternative uses of taxes:

Alternative Uses	Private Sector	Government	Total
(a) Current prices	1,200	0	1,200
Quantity units	100	0	100
(b) Current prices	1,000	0	1,000
Quantity units	83.3	0	83.3
(c) Current prices	1,200	200^{1}	1,400
Quantity units	100	16.7	116.7
(d) Current prices	1,200	0	1,200
Quantity units	100	0	100
(e) Current prices	1,200	200	1,400
Quantity units	100	16.7	116.7
(f) Current prices	1,000	200	1,200
Quantity units	83.3	16.7	100

Total national product or income, by income shares and taxes, alternative uses of taxes:

Wages and Salaries	Property Income	Undistributed Net Profits	Taxes	Total
(a) $700+200 = 900$	200	100	0	1,200
(b) $700+0 = 700$	200	100	0	1,000
(c) $700+200 = 900$	200	100	200	1,400
(d) $700+0 = 700$	200	100	200	1,200
(e) $700+200 = 900$	200	100	200	1,400
(f) $700+0 = 700$	200	100	200	1,200

1. In this and subsequent examples price or cost per unit of government product is assumed equal to price per unit of private product.

and there is no addition to net product either. But the goods used in assisting business come either out of current production 01 out of stocks. In either case they are a draft upon the output of the economy, so that net output must be after subtraction of goods bought with the proceeds of indirect taxes. Consequently, national product, in quantity terms, is, on assumption (b), smaller in time unit II than in time unit I.

In contrast to alternatives (a) and (b), that under (c) involves additions by the government sector to net output of final goods. For on this assumption indirect taxes have been used to hire resources (e.g. employees) that were hitherto not engaged; and they have been put not on activities that do not add to final output (as in alternative (a)), but on activities that are of direct service to individual members of society whose welfare is our basic criterion.

In alternative (d) indirect taxes are used to buy commodities to be used for direct benefit to individuals. Here government does not add to the real net product, but neither does it subtract from it by using up goods in the process of production without additions to current net output. It withdraws some final net products from disposition by individual income recipients and places them under its own control; but the goods are turned back to individuals during the current time period, e.g., the use of indirect taxes to buy medicine and distribute it to supplement incomes of low-level income recipients.

Alternatives (e) and Cf) are parallel to (c) and (d). In (e) we assume as in (c) that government uses the taxes to engage productive factors (previously unemployed) to add to the final net output of the economy - not in the form of services to individuals (as under (c)), but in the form of additions to capital - under government auspices - that would add to the future ability of the economy to provide for the welfare of the country's inhabitants. Alternative (f) differs from (e) in that such additions to productive capital are attained by the consumption of already existing commodities (out of stock or out of current output), so that in fact the drafts upon current output are only balanced by those capital additions and no change in total net output occurs.

If we are clear as to the magnitude of national product, in current prices or in quantities, under these alternative uses of indirect taxes in time unit 11, we can see equally clearly under what assumptions indirect taxes should or should not be added to income shares. Whenever government activity is not used for the direct benefit of individuals or addition to productive capital as in alternatives (a) and (b), taxes should not be added. Whenever it is, as in alternatives (c) through (f), they should be added.

Two general conclusions follow from this analysis. The first is that whether taxes are fully or incompletely shifted is of no relevance to the question whether indirect taxes should be added to income shares.¹ The second is that the decision to add or not to add indirect taxes to income shares is directly determined by the use the government makes of them. Since in practice it is impossible to distinguish various categories of government activity by the sources of their financing, it means - to forestall our final conclusion - that in practical work income shares excluding taxes should be used and augmented by the value of government services to individuals and government additions to productive capital.¹

(ii) The second justification for the indiscriminate inclusion of indirect taxes has been provided in recent years most explicitly in the writing of the national income estimators at the U.S. Department of Commerce. This consists in the statement that the net aggregate product of the economy, if valued at market prices, should include all business taxes (indirect as well as direct, if the latter are not included in income shares or factor payments). The exclusion of indirect taxes means that the same net product aggregate is valued at 'factor costs'.

Perhaps the clearest formulation of this distinction appears in the first article in the *Survey of Current Business* in which what was then a new approach was translated into estimated totals:

The national income . . . measures the net value of current output as the sum of the net returns to the various factors of production in the form of wages, salaries, interest, rents and royalties, and net profits earned. ... There are two major changes which must be made in order to convert national income into a measure of the aggregate of goods and services at market prices. In the first place, a significant proportion of proceeds realized from the sale of privately produced goods and services accrues directly to the Government in the form of corporation income taxes, excise taxes, and other business taxes and docs not ever appear in the income accruing to any of the factors of production. Thus, it does not appear in the national income. The Government, itself, in other words, may be said to be the recipient of a distributive share of the income paid out by business. Clearly, the amount it receives in this fashion must be added to the national income if a total is to be built up which measures the value at market prices of all final output.¹

For a complete understanding of this statement two points must be kept in mind. First, net returns to factors as measured at that time under national income by the U.S. Department of Commerce were net of *direct* business taxes. For this reason the adjustment calls for the addition of all business taxes, not only indirect. The recent change in

^{1.} Thus if we assume that indirect taxes have been shifted only 50 per cent, i.e., value product of the private sector in time unit II is 1,100, distributed; wages and salaries = 700; property income = 200; undistributed net profits = O; indirect taxes = 200, national product under various assumptions as to use of taxes is reduced 100 (in current prices) and remains the same in quantity units; and national product, by income shares and taxes, is also reduced 100 units for each of the various alternatives (with the 100 unit reduction coming out of undistributed net profits). All that happens in this case is that the implicit price index (time unit II to the base of time unit I) is 110 and not 120, as in the assumption of complete shift.

^{1.} Pigou recognizes that where indirect taxes are used to pay for services to business they should not be added (see *The Economics of Welfare*, footnote on P. 42). But seemingly he does not attribute to the whole question of uses of government funds, i.e., the real contents of government activity, its cardinal importance as a criterion for deciding upon inclusion or exclusion of taxes.

^{1.} Milton Gilbert, 'War Expenditures and National Production', Survey of Current Business, March 1942, p. 10. The second adjustment proposed is to add the allowance for consumption of durable capital; thus taking current output gross of such consumption. This adjustment is not discussed here since it is not relevant to the problems at issue.

For another discussion of the distinction between 'earned income' and 'value of product', see John Lindenian, 'Income Measurement as Affected by Government Operations', *Studies in Income and Wealth*, Vol. Six, National Bureau of Economic Research, New York, 1943, Pp. 2-22. The theoretical discussion underlying the distinction provided by J. R. Hicks in his 'Valuation of the Social Income', *Economica*, May 1940, has been critically reviewed by me in the paper in *Economica* referred to in note 1 on p. 178.

practice, agreed upon by the U.S. Department of Commerce and English and Canadian official estimators, will call for adding direct business taxes (such as corporate profit and excess profit taxes) to 'factor costs'. And in this case the difference between net output at factor costs (to be designated, according to the same agreement, 'national income') and the identical net output at market prices (to be designated 'net national product') would be the inclusion of indirect business taxes in the latter.²

The second, and more crucial point, in the present context is that national income, as referred to in the quotation just given, includes returns to all factors of production whether engaged under private auspices or employed by the government. The addition of indirect taxes, to convert a net aggregate product at factor cost into one at market prices, is over and above any government payments to productive factors engaged under its auspices (whether labor, capital, or enterprise).

The distinction between the factor cost and market price valuation in terms of indirect business taxes is at first plausible and useful if one thinks of a specific final product subject to excise taxes. If we assume an integrated plant that uses no products of other business concerns and maintains its capital unchanged, its production of X cigarettes during the year is a net output aggregate. If we value it at factor costs the total will be, let us say, 1 million dollars, consisting of \$700,000 in wages aud salaries, \$200,000 in property income payments, and \$100,000 in undistributed net profits. An imposition of a 100 per cent excise tax will raise the market value of the same volume of cigarettes to 2 million dollars. Here is a distinction between factor cost and market price totals of net output; and here is a basis for inclusion of indirect taxes if one wishes a market value appraisal of the net national product.

But even in this specific case the difference is not that simple. The 1 million dollars of factor costs include only factors engaged within the private firm on the production of cigarettes. But there may be productive factors engaged under government auspices that are also contributing directly and specifically to the production of cigarettes and their distribution to ultimate consumers: e.g., chemists at the Bureau of Standards or the Department of Agriculture working on improvement of the quality of tobacco, on tobacco machinery, etc. Should not part of indirect taxes used for compensation of these factors be assigned to the factor costs of this particular final product? And should not even the less specific services of government to business, in the way of general provisions facilitating production anywhere, be allocated, in some fashion, to the factor costs of the cigarette output total?

Thus even for a specifically defined final product indirect taxes do not in fact measure the difference between costs of factors whose production can reasonably be assigned to the good in question, and the market value of the good at the going prices. Where indirect taxes exist they are likely to exaggerate the excess of market values over the specifically assignable factor costs. Market values of goods free of indirect taxes (on the assumption of no other sources of government revenue and a balanced budget) will fall short of, rather than exceed, the costs of factors that contributed to their production.

However, the fact that, for specific categories of product, factor costs assignable to the final goods differ from the market price values of the latter; or that in some specific groups of final

^{2.} Edward F. Denison, 'A Report on Tripartite Discussion of National Income Measurement', *Studies in Income and Wealth*, Vol. Ten, National Bureau of Economic Research, New York, 1947. This is not the only difference between the two totals; but the major one relevant in the present connection. The tripartite agreement referred to by Denison included official estimators for three countries, but other scholars in the field were not consulted.

products indirect taxes may be used as a rough approximation to such a difference between factor costs and market prices, is of no relevance to the argument in terms of the national product aggregate. In arriving at this aggregate we may use factor costs if we employ the income shares approach and may or may not have to add indirect business taxes. In arriving at this aggregate we use market prices if we employ the final product approach. But we are attempting to measure one and the same real aggregate; and it remains to be demonstrated that the use of factor costs, i.e., including returns to all employed productive factors, will yield a net product aggregate which must fall short by the amount of indirect business taxes of the total derived by using market prices of final products.

Case 1 shows the specific assumption under which this statement is true. Only if the full amount of indirect taxes is used by the government to render services, or to provide finished goods to ultimate consumers, or to add to productive capital in a way that would not be recorded by the private enterprises themselves as additions to their capital, need we add indirect taxes to the payments to secure the net aggregate product, at market prices. Only on these assumptions will factor costs fall short of net product at market values by the amount of indirect taxes. On the other hand, for alternatives (a) and (b) in Case 1, indirect taxes should not be added to factor costs because such addition would result in an exaggerated national product total; and the U.S. Department of Commerce 'net national product' (to use tile new terminology) would contain an element of duplication and inflation that would not be corrected by any adjustment for price changes.

That factor costs and factor costs plus indirect taxes represent the same net aggregate product, but valued on two different bases, only on the restricting assumption that the taxes are used to turn out *final* goods, is a conclusion whose importance cannot be exaggerated. We shall find the same conclusion true of factor costs excluding all taxes (direct or indirect) compared with factor costs plus all taxes. To assume that the huge volume of taxes collected by governments in recent times represents services to individuals or additions to capital outside the private sphere implies an heroic overestimate of the welfare significance of government outlays. It is therefore important from the start to be clear as to the implications in this recent justification for the inclusion of indirect business taxes: that positive significance in terms of welfare or capital formation is attributed to all government expenditures out of taxes, and that none of these expenditures represents costs of operation of society.

2. Direct business taxes

Two arguments have been adduced for including direct business taxes when estimating national income as the sum of income shares. (i) Where such shares, or factor costs, have been taken net of direct business taxes, the argument has been that since these taxes form part of final price they should be added to derive the full market value of net output. To cite Pigou again: 'What the Treasury receives in (the now abolished) excess profit duty and corporation tax, as operated in England, stands, however, on a different footing. It should be counted because the incomes of companies and individuals were reckoned as what was left after these taxes had been paid, so that, if the income represented by them had not been counted when in the hands of the Treasury, it would not have been counted at all.¹ (ii) A second argument called for including them in factor costs - as specified by the official

^{1.} The Economics of Welfare, 3rd edition, 1929, p. 41.

United Kingdom-United States-Canadian agreement mentioned above. The nature of the argument is briefly suggested by the statement that with this inclusion 'national income [using the term in its new meaning] will more accurately reflect factor costs of current production.... The rationale for the inclusion of corporate profits before taxes must rest ultimately, of course, on the incidence of taxes on profits. Although this question probably cannot be settled definitively, the weight of theoretical and statistical evidence is that changes in corporate profit tax rates affect profits after taxes more significantly than prices of output. Certainly, the high proportion of profits taken in taxes during the war period meant a substantial reduction in the income accruing to stockholders.²

In the light of our discussion of indirect business taxes it should be clear that neither argument for inclusion of direct business taxes is acceptable. Whether or not the tax constitutes a cost and thus enters the market price of a good was found to be irrelevant in the case of indirect taxes; and is likewise irrelevant here. It all depends upon the use of the tax, i.e., whether or not the use adds to final net output of the economy. The argument for inclusion under current factor costs rests upon the exact meaning of that term; and whether or not it is used interchangeably with the term 'net returns to factors'. If by factor costs we mean costs to private firms, then surely direct business taxes are to be included; but indirect business taxes are also costs to the private firms, and they may well be costs of factors located elsewhere. If, however, we are trying to get at 'net returns to factors', then obviously there is little ground for including direct business taxes in the factor account.

The point warrants a more explicit statement. The main argument for the specific usefulness of the 'factor cost' and 'market value' bases is that the former provides a total for which factor allocation may be more usefully gauged; and the latter a total for which allocation among various categories of finished output can be more usefully determined. But in measuring the relative magnitude of various factors we should presumably evaluate them in terms of what net returns these factors secure. Their gross costs are of little importance in gauging the relative economic weight, if such gross costs are affected in different ways by taxes, subsidies, etc. The true economic magnitude of factors is the net return, including the net monetary return from the enterprise plus the services provided by government. Adaptation of factors of production to competing uses within the productive system would naturally be to those real returns. In any rational economic calculation a choice among alternative uses of labor and capital is guided not by gross payments expected, but by net returns excluding all taxes and other elements from which no specific benefit is secured. It is for this reason that the discussion of various controversial items in the government sector here begins with the income shares net of all taxes; and then deals with the question of inclusion or exclusion of taxes by the use of criteria of what might be called ultimate productivity.

Once this position is accepted, the case of direct business taxes becomes parallel to that of indirect business taxes except that no rise in market prices results from the imposition of the former. The illustrative analysis is set out as Case 2, with the same six alternative assumptions concerning the use of taxes.

The results are naturally parallel. If taxes are used in rendering services to business - either in the form of labor or commodities

See National Income, Supplement to the Survey of Current Business, July 1947, Pp. 11-12. The other reason given, viz., the difficulty of computing net profit after taxes because of carry-over provisions, is a matter of statistical technique and is neglected here.

CASE 2 Direct Business Taxes

Time Unit I	
Production, private sector, quantity	100
Market price per unit	10
Value product (market)	1,000
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	700
Property income paid out	200
Undistributed net profits	100
Taxes	0
Total value product	1,000
Production and receipts, government sector	0
Assumption: No government capital yielding final product	
Tet last and state in the factor of the second state of the second	1 000
Total national product or income, final product approach	1,000
1 otal national production or income, sum of income shares	1,000
Time Unit II: Imposition of direct business taxes (e.g., corporate profit or excess profit tax)	
Production, private sector, quantity	100
Market price per unit	10
Value product (market)	1,000
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	700
Property income paid out	200
Indistributed net profits	20
Direct husiness tax	80
Total value product	1,000

Same alternative uses of taxes, (a)-(f), as in case 1.

Total national product or income, final product approach, alternative uses of taxes:

Alternative Uses	Pri	vate Sector	Government	Total
(a) Current prices		1,000	0	1,000
Quantity units		100	0	100
(b) Current prices		920	0	920
Quantity units		92	0	92
(c) Current prices		1,000	80	1,080
Quantity units		100	8	108
(d) Current prices		1,000	0	1,000
Quantity units		100	0	100
(e) Current prices		1,000	80	1,080
Quantity units		100	8	108
(f) Current prices		920	80	1,000
Quantity units		92	8	100
Total national product or income, by	income shares and taxes,	alternative uses of ta	axes:	
Wages and Salaries	Property Income	Undistributed Net Profits	Taxes	Total

		Net Profits		
(a) 700+80 = 780	200	20	0	1,000
(b) $700+0 = 700$	200	20	0	920
(c) $700+80 = 780$	200	20	80	1,080
(d) $700+0 = 700$	200	20	80	1,000
(e) $700+80 = 780$	200	20	80	1,080
(f) $700+0 = 700$	200	20	80	1,000

-they should *not* be added to the sum of income shares excluding all taxes. Only if taxes are used for services to individuals - either in the form of labor or of commodities - or for additions to capital beyond the private sphere, should the taxes be added to all factor costs excluding taxes.

One curious implication of the analysis should be noted. The inclusion of direct business taxes in factor costs by the U.S. Department of Commerce may well result in an aggregate net product at factor cost that *exceeds* aggregate net product at market prices. In the extreme case that direct business taxes are the only revenue, that the government expenditures balance revenue, and that the taxes are used for services to business, the national income (the new definition, i.e., at factor cost) will exceed national product at market prices by the full amount of direct business taxes. Direct taxes on individuals are customarily included in income shares in the estimates of national income that use this approach. The usual basis is that such taxes are part of the factor cost of production and of the market prices of goods turned out.

But in the light of the preceding discussion, direct taxes on individuals are in the same category as all other taxes. If our aim is a national income total that represents correctly the market price of final net output, the treatment of any tax is contingent upon the character of government activity financed with it. Consequently, the illustrative analysis of direct taxes on individuals in Case 3 provides an exact parallel to those of indirect and direct business taxes in Cases 1 and 2. Only if direct taxes paid by individuals represent cost of final output

3. Direct taxes on individuals

Time Unit I Production, private sector, quantity Market price per unit Value product (market) Breakdown of value product, private sector, by income shares and	taxes:		100 10 1,000
	Income excl. taxes	Taxes	Income incl. taxes
Wages and salaries	700	0	700
Property income paid out	200	0	200
Undistributed net profits	100	0	100
Indirect Taxes		0	
Total value product			1,000
Production and receipts, government sector Assumption: No government capital yielding final product			0
Total national product or income, final product approach			1,000
Total national production or income, sum of income shares			1,000
Time Unit II: Imposition of direct taxes on individuals (e.g., indiv	idual income taxes)		
Production, private sector, quantity			100
Market price per unit			10
Value product (market prices)			1,000
Breakdown of value product, private sector, by income shares and	taxes:		
Wages and salaries, excluding tax			600

CASE 3 Direct Taxes on Individuals

Property income excluding tax		150
Undistributed profits		100
Direct taxes on individuals		150
	Total value product	1,000

Same alternative uses of taxes, (a)-(f), as in case 1.

Total national product or income, final product approach, alternative uses of taxes:

Alternative Uses	Private Sector	Government	Total
(a) Current prices	1,000	0	1,000
Quantity units	100	0	100
(b) Current prices	850	0	850
Quantity units	85	0	85
(c) Current prices	1,000	150	1,150
Quantity units	100	15	115
(d) Current prices	1,000	0	1,000
Quantity units	100	0	100
(e) Current prices	1,000	150	1,150
Quantity units	100	15	115
(f) Current prices	850	150	1,000
Quantity units	85	15	100

Total national product or income, by income shares and taxes, alternative uses of taxes:

All income shares exclude taxes

Wages and Salaries	Property Income	Undistributed Net Profits	Taxes	Total
(a) $600+150 = 750$	150	100	0	1,000
(b) $600+0 = 600$	150	100	0	850
(c) $600+150 = 750$	150	100	150	1,150
(d) $600+0 = 600$	150	100	150	1,000
(e) $600+150 = 750$	150	100	150	1,150
(f) $600+0 = 600$	150	100	150	1,000

undertaken by the government, i.e., of services and goods flowing to ultimate consumers or of additions to capital not already covered in the business sector, should those taxes be added to income shares in arriving at the national income total. But if they are used to finance indirect output, a far from improbable occurrence, they should not be added to income shares taken net of all taxes.

All the arguments adduced in the previous section are relevant here and need not be repeated. But at this juncture we note a related point of importance in income measurement. If income shares are to be taken net of direct taxes, on the ground that the latter may or may not in fact represent net returns to factors, we should reduce income shares even further by the exclusion of any parts that might represent occupational or business expenses. If a wage includes the cost of work-clothing or personal tools - an amount that varies from one job to another because of different requirements for such purely business equipment - should we not take wages net of these amounts, so as to gauge correctly the net return to factors *qua* factors? The argument for excluding such occupational expense items, when they are not in fact excluded in the statistics of income payments, is valid; and there is correspondingly an argument for excluding such equipment from the aggregate of final net output of the economy. Were the data available, such exclusion should become standard practice in estimating national income.

At any rate, the practical difficulties of refining the totals of income shares, excluding all taxes, so that they do represent clearly the real net returns to factors, are no basis for not excluding taxes. The latter are segregable with the available data; and if, in order to secure a correct estimate of national income, such taxes should be excluded and the net output of government activity estimated directly, there is no reason for not doing so just because the result is only an approximate measure of net final output.

4. Government product out of savings

In discussing treatment of various taxes we dealt with classes of government activity that involve purchase of goods and services. The use of taxes for other types of government expenditures, i.e., transfers (either as subsidies to business, or transfers to individuals and firms within the country, or as subsidies or loans to foreign countries), is still to be considered. Before we pass to these classes of government expenditures we must, however, consider the treatment of government purchases of goods financed out of sources other than taxes.

From the standpoint of the present analysis such non-tax sources fall into two distinct types: government activity financing that causes no inflation, i.e., no rise in the price level, and government activity financing that causes inflation. The former is typified by financing out of borrowing, with funds coming from current savings of individuals and business enterprises; the latter by government financing via the money printing press, under conditions of such relatively full employment of resources that the issue of money more than offsets current idle savings of individuals and business. It should be noted that in reality borrowing by government may represent inflationary, and printing money noninflationary financing. We discuss the non-inflationary financing under Case 4, the inflationary under Case 5.

Since the illustrative analysis uses tile same alternative assumptions concerning government activity, and the same figures concerning the activity in the initial situation in the private sector, the effect of introducing the government as a producer upon the quantity volume of net output is the same in the case of borrowing as it was in the case of taxes. If government uses the proceeds to employ additional resources to turn out final output, the real product increases. If government uses the proceeds to divert part of existing stocks or current output to turn out final products, real product does not change. If government uses the proceeds to divert part of existing stocks or current output to provide intermediate output. there is a corresponding decline in real product. The magnitude of the real product, in our analysis,

CASE 4 Government Product Out of Savings (Borrowing from Individuals and Business)

Time Unit I	
Production, private sector, quantity	100
Market price per unit	10
Value product (market)	1,000
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	700
Property income	200
Undistributed net profits	100
Taxes	0
Total value	product 1,000
Production government sector	0
Assumption: No government capital yielding final product	
Total national product or income, final product approach	1.000
Total national product or income, final product approach	1,000
Total national production or income, sum of income shares	1,000
Time Unit II: Introduction of government production (or purchases) financed out of savings, Assur	mption:
Individuals and business save 200 units and transfer it immediately to government, which proceeds to s and thus put it back into old channels of circulation.	spend it
Production, private sector, quantity	100
Market price per unit	10
Value product private sector	1,000
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	700
Property income	200
Undistributed net profits	100
Taxes	0
Total value	product 1,000

Note that no interest receipts on loans to government are assumed.

Using the same alternatives of use of money by government as in Case 1, we get the following estimates of total national product or income on the final product approach:

Alternative Uses	Private Sector	Government	Total
(a) Current prices	1,000	0	1,000
Quantity units	100	0	100
(b) Current prices	800	0	800
Quantity units	80	0	80
(c) Current prices	1,000	200	1,200
Quantity units	100	20	120
(d) Current prices	1,000	0	1,000
Quantity units	100	0	100
(e) Current prices	1,000	200	1,200
Quantity units	100	20	120
(f) Current prices	800	200	1,000
Quantity units	80	20	100

Wages and Salaries	Property Income	Undistributed Net Profits	Taxes	Total
(a) $700+200 = 900$	200	100	-200	1,000
(b) $700+0 = 700$	200	100	-200	800
(c) $700+200 = 900$	200	100	0	1,200
(d) $700+0 = 700$	200	100	0	1,000
(e) $700+200 = 900$	200	100	0	1,200
(f) $700+0 = 700$	200	100	0	1,000

Total national product or income, by income shares and taxes, different alternative as to government product out of savings:

is determined only by the initial assumptions concerning the private sector (the same for each case) and by the different alternatives concerning the character of government activity as a producer (the same six alternatives for each case); and is not affected by whether the government finances its activity as a producer out of indirect or direct taxes, borrowing, or printing money.

The method of financing does affect the current prices at which - net product must be valued. Thus the introduction of Indirect taxes raised the price level over the initial situation; whereas in the cases of direct taxes and of non-inflationary borrowing or money printing, the prices remain unchanged from time unit I to II.

The methods of financing also affect the analysis in the sense of indicating what particular item in the government sector should be considered for inclusion, in addition to income shares net of all taxes. In financing out of taxes we must consider whether or not to *add* the taxes. In financing out of borrowing, the question, as indicated by the analysis in the illustration, is whether or not to *subtract* the borrowing from the income shares, taken net of all taxes.

If borrowing is used to finance additional net output by government, the income shares, net of all taxes, represent correctly the current market value of output. For in that case any additional employment of resources is matched by additional final output; and any diversion from stocks or current output is matched by final output under government auspices. But if borrowing is used by government to provide intermediate output, i.e., services that do not represent more goods to consumers or more capital, then any additional factors that may have been employed fail to add to final output; while any stocks or current output that have been diverted represent a diminution of current net output, with the same factors, without an offsetting increase in net final output in the government sector. In this case, represented by alternatives (a) and (b), the sum of income shares, net of all taxes, is greater than the current value of net final output - greater by the amount of borrowing that was spent on what, from the standpoint of the current year's output, was an unproductive use of resources. It is for this reason that the amount of borrowing appears with a negative sign, under the heading 'adjustment for unproductive use of resources' in the allocation of national income by shares in illustrative Case 4.

We see here another instance in which national income at 'factor cost', as the term has been used in the current official estimates in the United States and the United Kingdom, may exceed national income at market prices. This will be the case if government expenditures on intermediate output, out of non-inflationary borrowing, are larger than indirect taxes; or, if the government expenditures on intermediate output, out of both non-inflationary borrowing and direct business taxes, are larger than indirect taxes - even though indirect taxes are all spent on final output.

5. Government product out of inflation

Case 5 combines the features of that relating to indirect taxes (Case 1) and the one just discussed relating to financing of government as producer out of non-inflationary borrowing (Case 4). As with indirect taxes, inflationary financing of government results in a rise in prices from time unit I to time unit II. As with borrowing, inflationary financing may result in an unproductive use of resources, in the sense that either factors or goods are diverted without any corresponding increase in total net output of the economy. In the latter situation, exemplified by alternatives (a) and (b), a negative adjustment for unproductive use of resources, equal to the amount of the government's inflationary financing, appears in the distribution of national income by income shares.

As in all the cases discussed, the analysis is oversimplified in that it does not allow for any effects of price changes, or of government's appearance on the scene as a producer, on the supply and demand of factors and of products in the private sector.

CASE 5
Government Product Out of the Printing Press or Money Balances (Inflation)

Time Unit I		
Production, private sector, quantity		100
Market price per unit		10
Value product (market)		1,000
Breakdown of value product, private sector, by income shares and taxes:		
Wages and salaries		700
Property income		200
Undistributed net profits		100
Taxes		0
Total value	product	1,000
Production government sector		0
Assumption: No government capital yielding final product		
Total national product or income, final product approach		1,000
Total national production or income, sum of income shares		1,000
Time Unit II: Introduction of government production financed by printing paper money. Assumption: Ac flow of money is spent as before, with no savings by individuals or business. There is a consequent rise i accruing completely and exclusively to entrepreneurs (undistributed net profits). Hence:	lditional n prices,	
Breakdown of value product, private sector, by income shares and taxes:		700
Wages and salaries		700
Property income		200
Undistributed net profits		300
Taxes		0
	Total	1.200

With the same alternative uses of government money as in Case 1, we get: National product or income, final product approach, alternative uses of government money.

Alternative Uses	Private Sector	Government	Total
(a) Current prices	1,200	0	1,200
Quantity units	100	0	100
(b) Current prices	1,000	0	1,000
Quantity units	83.3	0	83.3
(c) Current prices	1,200	200	1,400
Quantity units	100	16.7	116.7
(d) Current prices	1,200	0	1,200
Quantity units	100	0	100
(e) Current prices	1,200	200	1,400
Quantity units	100	16.7	116.7
(f) Current prices	1,000	200	1,200
Quantity units	83.3	16.7	100

National product or income, by income shares and taxes, different alternatives as to use of money:

Wages and Salaries	Property Income	Undistributed Net Profits	Taxes	Total
(a) $700+200 = 900$	200	300	-200	1,200
(b) $700+0 = 700$	200	300	-200	1,000
(c) $700+200 = 900$	200	300	0	1,400
(d) $700+0 = 700$	200	300	0	1,200
(e) $700+200 = 900$	200	300	0	1,400
(f) $700+0 = 700$	200	300	0	1,200

Since the existence and functions of government as a producer (or in subsequent cases as an agency that redistributes the flow of money payments) have, in fact, substantial effect on the structure of production and of demand, the analysis falls far short of reality. But it is next to impossible, in national income measurement, to estimate the effects of any existing institution, or of changes in the scope of its activity, in all its ramifications. We are concerned here with measurement of final results of economic activity, regardless of what particular factors and causes have tended to produce the result. We are, therefore, interested in the controversial items in the government sector only in so far as they do or do not represent final product; not in so far as they signify forces that may have *caused*, fully or in part, the net output of the economy to attain the magnitude and structure which it in fact attained.

6. Subsidy to business

The five cases considered so far cover the

different possible classes of government financing: taxes and non-inflationary or inflationary non-tax sources. The five classes do not exhaust the great variety of specific types of government revenue, since the latter may include many others ranging from special assessments and fees to confiscation of property. But a great proportion of these non-tax revenues are connected with the government as a business entrepreneur and hence are not relevant to ,government in the special meaning of the term used here. Many others fall under one or another of the five types of financing or represent (as in the case of confiscation) a disguised tax.

But we have discussed so far only such government expenditures as involve the government as a producer. Government, however, is also a transfer agency of substantial dimensions. It may use its revenue to transfer means of payment to the country's business enterprises, with the intention of reducing the prices of the enterprises' product to the purchasers; it may transfer means of payment to individuals or firms in the country without subsidy implications; or it may either lend or give means of payment to foreign countries. Of the list just cited, the only case covered so far is government lending to foreign countries with an expectation of return - a case of genuine loan rather than of gift or subsidy. This type of loan may be treated as an addition to the country's capital, not recorded anywhere within the private business sector as a capital addition; and hence represents a species of alternatives (e) and (f) in the five cases considered so far, - i.e., use of factors or of stocks and current production to add to the country's capital under the government's auspices. We should note, however, that in this case it is not the amount of the loan granted to the foreign country, but the amount of the loan actually drawn upon that should be entered under government expenditures and used in passing from the sum of income shares excluding all taxes to net output at current prices.

The other types of government expenditures, which are in the nature of transfers, are still to be discussed. We may classify them for our analysis into three distinct groups: (i) price reduction subsidies to business firms considered part of the country's economy, i.e., all domestic firms, whether their plant is actually located within the country or abroad (in which case they belong to the country's residents); (ii) transfers to individuals or firms within the country - relief payments, special bonuses, repayment of government debt, or, if one interprets the government debt as a 'deadweight' debt, interest payments on government debt; (iii) transfers to foreign countries free subsidies to foreign governments, to foreign business firms, or to foreign individuals.

In the earlier discussion of treatment of government *revenues* of various types we had to decide the cases on the basis of what the government did with the proceeds, i.e. the type of activity the proceeds were used to finance. Now that we know in advance what government does with the proceeds - in the present case it grants them as a subsidy to domestic business - the analysis must recognize different *sources* of the proceeds. And since we distinguished in our earlier discussion five types of financing, three representing tax and two representing non-tax sources,

Government Subsidy to Domestic	. Dusiness, Alternative	Nicthous of Thanch	goubsidies
(a) Subsi	dy out of indirect busin	ess taxes	
Time Unit I: Assume two industries, X and Y, consector, is then as follows:	mprising the whole eco	nomy. The production of	of the economy, all private
	v	V	Total

CASE 6 Covernment Subsidy to Domestic Business, Alternative Methods of Financing Subsidies

sector, is then as follows.			
	Х	Y	Total
Quantity in units	100	50	150
Market price	10	10	10
Value product	1,000	500	1,500
Breakdown of value product, private sector,	by income shares and taxes:		
Wages and salaries	700	350	1,050
Property income	200	100	300
Undistributed net profits	100	50	150
Taxes	0	0	0
Total	1,000	500	1,500
Total national product or income, final product approach			1,500
Total National product or income, sum of	income shares		1,500

Time Unit It Assume that an indirect business tax of 100 units was imposed on products of industry X and the proceeds used as a subsidy to industry Y; and that the corresponding shift in relative prices of products X and Y has no effect on the relative demand or supply of the two products.

Consequently, the product in Time Unit II will be:

	Х	Y	Total
Quantity in units	100	50	150
Market price	11	8 (weighted mean) 10
Value product	1,100	400	1,500
Breakdown of value product, private sector, by i	ncome shares and taxes:		
Wages and salaries	700	350	1,050
Property income	200	100	300
Undistributed net profits	100	50	150
Indirect Taxes	100	0	100
Subsidy	0	-100	-100
Total	1,100	400	1,500
Total national product or income, final produc	cts approach:		1,100 + 400 = 1,500
Total national product or income, sum of inco	ome shares:		1,050 + 300 + 150 = 1,500

(b) Subsidy out of direct business taxes

Time Unit I: Same as under (a)

Time Unit II: Assume that a direct business tax of 100 units (e.g. corporate profit tax) was imposed on industry X and the proceeds used as a subsidy to industry Y; and that the corresponding shift in relative prices of products X and Y had no effect on the relative demand or supply of the two products.

Consequently, the product in Time Unit II will be:

consequencij, die produce in Time Cine I	i will out		
	Х	Y	Total
Quantity in units	100	50	150
Market price	10	8 (weighted mean)	9.33
Value product	1,000	400	1,400
Breakdown of value product, private sector,	by income shares and taxes:		
Wages and salaries	700	350	1,050
Property income	200	100	300
Undistributed net profits	0	50	50
Direct Business Tax	100	0	100
Subsidy	0	-100	-100
Total	1,000	400	1,400
Total national product or income, final pr	oduct approach:		1,000 + 400 = 1,400.
Total national product or income, sum of	income shares:	1,0	050 + 300 + 50 = 1,400.
(c) Subsidy out of direct taxes on	individuals	

Time Unit I: Same as under (a) - sum of the two industries.

Time Unit II: Assume that a tax of 150 units was imposed on individual income recipients and paid out as a subsidy; and that the corresponding lowering of price had no effect on supply and demand. Consequently, production in Time Unit II will be:

Consequently, production in Time Unit II will be:	
Quantity	150
Market price	9
Value product	1,350

Breakdown of value product, private sector, by income shares and taxes:

Wages and salaries Property income Undistributed net profits Indirect Taxes	Excl. tax 950 250 150 0	Tax 100 50 0 0	Incl. tax 1,050 300 150 0
Total	1,350	150	1,500
Total national product or income, final product approach: Total national product or income, sum of income shares: 950 (wages and salaries excluding tax) +			1,350
250 (property income excl. tax) + 150 (undistributed profits excl. tax)			1,350

(d) Subsidy out of borrowing (savings of individuals and enterprises)

Time Unit I: Same as under (a)-sum of the two industries. Time Unit II. Assume that the government, having induced individuals and enterprises to save 150 and lend it to the government (at no interest), immediately expends it as a subsidy to business; and that the resulting decline in market price has no effect

(at no interest), initialitiely expends it as a subsidy to business, and that the resulting decline	in market price has no effect
on supply and demand. Then production in Time Unit II will be:	
Quantity in units	150
Price	9
Value product (market)	1,350
Breakdown of value product, private sector, by income shares and taxes:	
Wages and salaries	1,050
Property income	300
Undistributed net profits	150
Taxes	0
Subsidy	-150
Т	Total 1,350
Total national income or product, final product approach	1,350
Total national product or income, sum of income shares: $1,050 + 300 + 150 - 150$ (subsidy)	1,350

(e) Subsidy out of printing money (inflation)

Time Unit I: Same as under (a)-sum of the two industries.

Time Unit 1I: Assume that the government prints 150 units and hands them out as a subsidy to business; that the operation has no effect on supply and demand, and that the offsetting price (on account of inflation) and price decline (on account of subsidy) merely result in a corresponding increase of the undistributed net profit. Hence the product account in Time Unit II will be:

Quantity in units		150
Price		10
Value product		1,500
Breakdown of value product, private sector, by income shares, taxes, etc.:		
Wages and salaries		1,050
Property		300
Undistributed net profits		300
Subsidy		-150
	Total	1,500
Total national income or product, final product approach		1,500
Total national income or product, sum of income shares: $1,050 + 300 + 300 - 150$ (subsidy)		1,500

these five types now constitute five alternative other factors) within the country. A subsidy sources out of which subsidies to business may be financed; and are so distinguished in the illustrative analysis of Case 6.

There is no need to repeat here the assumptions and steps in this analysis. We treat directly only the case of subsidies to firms engaged in production at home which directly affect either the prices or undistributed net profit; (or payments to granted to a firm that engages in sales largely abroad, if its major effect is to reduce the price to foreign buyers, is in fact a subsidy to the latter, -i.e., a transfer to a foreign country (Case 8) and does not belong to the analytical case presently under discussion.

With this qualification the conclusions concerning the treatment of business subsidies in

416

estimating national income by sum of income shares (excluding all taxes) can be briefly indicated. If subsidies are financed out of taxes of any kind (whether indirect, direct business, or direct taxes on individuals), they should neither be added to nor subtracted from income shares excluding taxes. Subsidies financed out of nontax funds, whether non-inflationary or inflationary, should be subtracted from the sum of income shares excluding all taxes. To put it differently: if business taxes are to be added to sums of income shares (net of taxes) in order to secure a correct estimate of net output at current prices, the addition of such taxes must always be after subtraction of business subsidies. And to the extent that subsidies are out of non-tax sources, they should be subtracted from the net income shares themselves.

7. Domestic transfers

Domestic business firms may receive payments from the government which are neither subsidies nor payments by government for goods purchased. They may be in the nature of payment on government debt - either interest or principal.¹ Domestic individuals may also receive payments from government that do not represent compensation for any services rendered by them or their capital to the government: repayment of government debt, a payment of interest (in the 'deadweight' interpretation); bonuses, e.g., veterans' bonuses, or relief and assistance payments where no work is required.

These domestic transfers (see Case 7) are analyzed as were subsidies to domestic business. The effects, however, are different, because transfers, unlike subsidies, do not reduce prices of goods produced under business auspices or increase income shares. On the contrary, in two of the alternative sources of financing transfers the transfers raise the market prices of net final output; and in none of the five alternatives does the sum of income shares, net of all taxes, show any increase from time unit I to time unit II.

In consequence, while we had to decide when to *subtract* and when not to subtract business subsidies from the sum of income shares, in the case of transfers to individuals we have to decide when to *add* and when not to add them to the sum of income shares. The general answer is provided by the illustrative case.

^{1.} We do not deal here with the controversial question as to whether interest payments on government debt - particularly war debts -are transfers or factor costs. In fact, in the treatment suggested by the present analysis, the interpretation of interest on war debts, for example, makes no difference *so long* as it is not (as it cannot be) interpreted as final output, - i.e., services to consumers or addition to capital. On that condition, if interest payments are included under income shares, they would not be added if paid out of taxes (see Case 7); or if not included under transfers and would be added if paid out of taxes. If interest payments are out of non-tax sources, (i.e., out of deficit, see section 9 below) they would not appear in the total at all; for whether included under income shares or under transfers, they would in either case be offset by subtraction of deficits.

CASE 7 Domestic Transfers

Time Unit I: Assume private sector coincident with the whole productive economy of the same magnitude, as in Case 6:

Quantity in units		150
Market Price		10
Value product		1,500
Breakdown of value product, private sector, by income shares, taxes, (no taxes at a	all):	
Wages and salaries		1,050
Property income		300
Undistributed net profits		150
Taxes		0
	Total	1,500
Quantity in units		150
Price		10
Value product		1,500
Total national income or product, final product approach		1,500
Total national income or product, sum of income shares		1,500

Time Unit II: Assume that the government pays to domestic individuals and firms 150 units as pure transfers. There follow alternative assumptions concerning the financing of these transfers, the alternatives being similar to those distinguished for Case 6:

(a) Financed out of indirect business taxes.

(b) Financed out of direct business taxes.

(c) Financed out of direct taxes on individuals.

(d) Financed out of borrowing (from individuals and enterprises).

(e) Financed out of inflation.

We also retain the same assumptions as in Case 6 concerning lack of effect of taxation, transfers, and price changes on supply and demand of goods.

National income or product, final product approach, alternative assumptions as to financing of transfers:

	Quantity in Units	Price	National Income or Product
(a)	150	11	1,650
(b)	150	10	1,500
(c)	150	10	1,500
(d)	150	10	1,500
(e)	150	11	1,650

The breakdown of income shares etc. in such a way as to equal national product, by final product approach, is as follows: Total national income or product, sum of income shares, etc., alternative assumptions as to financing of transfers. All income shares given below exclude all taxes.

	Wages and Sala- ries	Property Income	Undistributed Net Profit	Transfers	Total
(a)	1,050	300	150	150	1,650
(b)	1,050	300	0	130	1,500
(c)	950	250	150	130	1,500
(d)	1,050	300	150	0	1,500
(e)	1,050	300	300	0	1,650

Whenever the transfers are so financed as to increase the market prices of the economy's net output, the transfers (or, what is the same thing, the indirect taxes or inflationary sources used to finance them) are to be added to the sum of income shares (net of all taxes) to secure a correct estimate of national income. Whenever the transfers to individuals are so financed as not to increase market prices, (i.e., out of direct business taxes, direct individual taxes, and non-inflationary borrowing), the sun of income shares, without adding the transfers, yields the correct total of national income at current prices. As in the case of business subsidies, the transfers should be counted at the point of actual disbursement of the money by the government to the recipient.

8. Transfers to foreign countries

In the case of government subsidy to a foreign country it makes no difference to the national income accounting of the lender country whether the subsidy is extended to the foreign government, the foreign business firm, or foreign individuals. But it does make a difference how we interpret the subsidy from the viewpoint of the lender country. If it is a matter of free gift, without any consideration of immediate and ultimate benefit for the lender country, the case becomes completely identical with that of transfers to a country's own citizens and residents. In that interpretation the lender country's national income, i.e., net output at market prices, includes also the output that is purchased by foreigners with the means of payment secured by the subsidy; and as will be seen from the illustrative analysis under Case 8, the breakdown of the national income by income shares is identical with that of Case 7 - it must include the subsidy if the latter is financed out of indirect taxes or out of inflationary non-tax sources, and disregard (but not subtract) the subsidy if it is financed out of direct taxes or non-inflationary borrowing.

But it may be more realistic to consider at least some subsidies to foreign countries not gifts free of ulterior considerations, but as designed to assist the foreign country on policies which the lender country considers beneficial to its own position in the world. In that case the subsidy is like an expenditure by the lender country on its own military establishment, i.e., an intermediate product of use in maintaining or expanding the country's

CASE 8 Government Subsidy to Foreign Countries

Time Unit I: Same as under Case 7.

Time Unit II: Assume that the government grants free credit to foreign countries of 150 units as a gift and that foreign countries use the 150 units to import to that amount during Time Unit II. There follow alternative assumptions concerning the financing of this subsidy, the alternatives being the same as for Cases 6 and 7, viz., (a) out of indirect business taxes; (b) out of direct business taxes; (c) out of direct taxes on individuals; (d) out of non-tax sources, non-inflationary; (e) out of inflationary sources. We also retain the same assumptions as in Cases 6 and 7 concerning lack of effects of taxation, transfers, and price changes on supply and demand of goods.

Then national income or product, final product approach, will be:

	Quantity in Units			Net	Output
	Domestic	Given to Foreign Country	Price	Domestic	Given to Foreign Country
(a)	136.4	13.6	11	1,500	150
(b)	135	15	10	1,350	150
(c)	135	15	10	1,350	150
(d)	135	15	10	1,350	150
(e)	136.4	13.6	11	1,500	150

	Wages and Salaries	Property Income	Undistributed net Profits	Foreign Subsidies	Total
(a)	1,050	300	150	0	1,500
(b)	1,050	300	0	0	1,350
(c)	950	250	150	0	1,350
(d)	1,050	300	150	-150	1,350
(e)	1,050	300	300	-150	1,500

Distribution of national income or product by income shares, excluding all taxes, is then:

position *vis-à-vis* other countries. If so, the lender country's national income as a total of net output must exclude the goods that were purchased by the foreign country with the proceeds of the subsidy. And the accounting, as shown in Case 8, becomes on that condition different from Case 7.¹

The subsidy to a foreign country, interpreted as an expenditure on intermediate product, should not be added to the sum of income shares if it has been financed out of taxes; and should be *subtracted* if it has been financed out of sources other than taxes - regardless of whether these non-tax sources are non-inflationary or inflationary.

What is true of the interpretation of subsidy presented in Case 8 is also true of such transfers to foreign countries as represent current payments on legal obligations of a given government to foreign countries. This species of transfers, unlike transfers to domestic firms and individuals, indicates that part of the productive factors operating within the country is owned outside of it. Since national income is net output of a country's economy only to the extent that the productive factors are owned by the country's citizens and residents, it cannot include such part of current output *within* the country as is associated with factors owned outside. Hence, national income must exclude current interest charges on government debt owned abroadwhether, in fact, such payments have been made or were accrued to increase indebtedness abroad.

As distinct from the domestic case and from foreign subsidy, interest obligations by a government to foreign countries should appear in Case 8, whether actually paid or not; and, unlike Case 7, *repayment* of principal to foreign holders of government debt is not a transfer but an addition to government capital, i.e. falls under the alternatives (e) and (f) in Cases 1 to 5.

9. Summary of analysis

We now summarize the analytical cases discussed and observe the treatment of various sectors of government activity in passing from the sum of income shares (net of all taxes) to a correct estimate of national income, taken as net final output at market prices. Cases 1 to 8 are brought together, with foreign subsidy interpreted as expense on intermediate products.

In this summary, which merely restates the conclusions of our discussion, the last three columns cannot be handled in any empirical work, because the decision rests upon source of funds; and it is impossible to say whether, in fact, transfers or subsidies have been made out of taxes or out of other sources. We must therefore restate

^{1.} On this interpretation flow of finished products to consumers or additions to stock in the borrower country would *not* be counted in the final product of the lender country; and might also be excluded from the national income of the borrower country, since it is *not* a product of its economic activity. The strict application of the national viewpoint thus results in omitting from world income elements that unquestionably belong to it as a means of net product flow to world population. This is one of several paradoxes that may be revealed when we try to add the national income estimates into consistent world whole.

the conclusions in columns 6-8 to permit their application in combination with the conclusions as a charge against business taxes, on the cogent in columns 1-5.

To do this we first consider business subsidy ground that net payments

Sum of Income		Government E	xpenditures or	n Goods out of	f:	Transfers:		
all taxes)			Non-tax		Domestic			
	Indirect Taxes (1)	Direct Business Tax (2)	Direct Tax on Ind. (3)	Non-tax Non- inflationay (4)	Inflationary (5)	Business Subsidies (6)	To Individuals (7)	Foreign All (8)
Always add: Wages Salaries Dividends Interest Rent Undist. net profits and losses of business firms	Add if used for final output Otherwise do not add	Add if used for final output Otherwise do not add	Add if used for final output Otherwise do not add	Do not add if used for final outp. Otherwise subtract	Do not add if used for final outp. Otherwise subtract	Do not add if out of bus. taxes Add if out of tax on indivi. Subtract if out of non-tax	Add if out of taxes Do not add if out of non-tax funds	Do not add if out of taxes Otherwise subtract

Summary of Cases 1-8 (The column numbers are identical with the number of the analytical case)

by the whole business sector to government are not the gross total of business taxes, but only the excess over subsidies drawn upon. We also assume, realistically, that business taxes exceed business subsidies; which permits us to treat Case 6, in combination with Cases 1 and 2, as indicating

that business subsidies are not to be added; and that final products out of business taxes are always sufficiently less than those taxes to allow an offset for business subsidies. Next we define several types of government surplus and deficit as follows:

Ι	Surplus or deficit on current and debt repayment accounts.	Excess or shortage of all taxes over all (government outlays, including repayment of debt).
П	Surplus or deficit on total current account.	Excess or shortage of all taxes over all (government outlays, excluding repayment of debt).
Ш	Surplus or deficit 011 domestic current account.	Excess or shortage of all taxes over (government outlays excluding repayment of debt and excluding foreign transfers).
IV	Surplus or deficit on goods account.	Excess or shortage of all taxes over (government outlays on goods and services, i.e., total government outlays excluding repayment of debt, excluding foreign transfers, and excluding domestic transfers).

If there is a surplus on I, there must be a surplus on II, III and IV unless the government receives transfers from foreign countries or domestic sources rather than disburses them. These cases, however, can be treated simply. Transfers from foreign countries represent free additions to goods at the disposal of a given country, but are not a result of the working of its economy and should, perhaps, be excluded from national income. However, if they are to be added to national income, the decision of how much to add depends upon what part of these transfers are used to provide final net output - goods for consumers or additions to capital. When transfers are from domestic sources they have already been accounted for; and as a matter of fact appear in our analysis as non-inflationary or inflationary non-tax sources of government financing. We may therefore proceed with the discussion on the more realistic assumption that transfers are to (rather than from) foreign countries and to (rather than from) domestic firms and individuals.

On that assumption the following situations may be distinguished:

A. There is a surplus under I (and hence surpluses under II, III and IV).

In this case government expenditures on goods are all out of taxes and the entries under columns 4 and 5 in the summary above are 0; domestic transfers (column 7) should be added, since they are out of taxes; and foreign transfers should be neither added nor subtracted. National income is then: (income shares, excluding all taxes) plus (net final output by government, including additions to government capital represented by reduction of foreign held debt) plus (domestic transfers, including repayment of debt). No account is taken of the surplus, since it has not entered the nation's net final output at current prices.

B. There is a deficit under I and a surplus under

II (hence a surplus under III and IV).

In this case some of the repayment of debt is out of deficit; which means that if it is either to foreign countries or domestic holders, that part which is out of deficit should not be added to final product of government or to domestic transfers (see columns 4, 5 and 7). If we include these last two items fully we must make the adjustment by subtracting the deficit. Hence national income equals: (income shares, excluding all taxes) plus (all net final output of government, including reduction of foreign-held debt) plus (domestic transfers, including repayment of debt) minus (deficit under I).

C. There is a deficit under II, but a surplus under III (and hence a deficit under I and a surplus under IV).

Here the treatment is exactly as under B, except that foreign transfers are to be subtracted in so far as they are financed not out of taxes but out of *deficit*. If, therefore, we add income shares, final net output of government, and domestic transfers, we have to subtract the deficit. The formula for national income is then as under B, but subtracting the deficit under I (which is now larger).

D. There is a deficit under III but a surplus under IV (and hence deficits under I and II).

Here the treatment is as under C, except that all foreign transfers are to be subtracted and not all domestic transfers are to be added, since only part of them are out of taxes. This subtraction of foreign transfers and partial exclusion of domestic transfers is obviously accomplished if we reduce the sum of income shares excluding taxes, final net output of government, and domestic transfers by the full deficit under I.

E. There is a deficit under IV (and hence deficits also under I, II and III).

Here the treatment is as under D, except that domestic transfers are to be fully omitted (since they are all out of deficit) and not all government expenditures on goods are to be included, since part of them is out of deficit, (i.e., non-tax sources). In this case (see columns 4 and 5 of the summary) final output is not to be added, and intermediate output is to be subtracted. If we add all final output by government financed out of deficit, then we should subtract the full deficit on goods account and not only that part of it that goes on intermediate product. Hence, in order to subtract all foreign transfers, to omit all domestic transfers, and to subtract only that part of government expenditures on goods that is used to produce intermediate output out of deficit, all we need do is reduce the sum of income shares excluding all taxes, all final net output of government, and all domestic transfers by the full deficit under I.

Thus in each of the possible situations with reference to government surplus and deficit the formula for deriving national income from the sum of income shares is exactly the same. National income equals: (sum of all income shares, excluding all taxes) plus

(final net output of government at cost, including repayment of foreign-held debt) plus (all domestic transfers and subsidies, including repayment of debt) minus

(deficit on total current and repayment account).

Deficit in this formula means shortage of revenues compared with all government outlays, including all transfers and repayment of debt. In case of surplus no addition is made.

If it is desirable to exclude repayment of debt, which means excluding it from government outlays, the formula stands, except that the deficit referred to is replaced by deficit on total current account; repayment of foreign-held debt is excluded from final net output of government; and domestic transfers exclude any payments that represent amortization of domestically held debt.

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

IN	DIAN JOURNAL OF AGRICULTU (Organ of the Indian Society of Agricultu	RAL ECONOMIC	CS
Vol. 72	JANUARY-MARCH 2017	7	No. 1
SUPPLEMEN JULY-SEPI Presidential Add	CONTENTS F TO THE CONFERENCE NUMBER: FEMBER 2016 dress:		
Doubling Farme	ers' Income: Strategy and Prospects	Ramesh Chand	
Conference Key	note Papers		
Disruptive Inno	vations in Food Value Chains and Small Farmers in India	N. Chandrasekhara Rao, Rajib Sutradhar and Thomas Reardon	
Farm Income in	India: Myths and Realities	A. Narayanamoorthy	
Summaries of	Group Discussion		
Agro-Industry, A Trade and In	Agricultural Marketing, Entrepreneurship. Agri-Business. novations	Pramod Kumar	
Agrarian Distres	ss. Family Farming, Land Management and Other Issues	B.V. Chinnappa Reddy	
Farm Income, P	roductivity and methodology of Farm Income Estimation	N.P. Singh	
ARTICLES			
Negative Extern cies Patronag	nalities in Kashmir Lake Fisheries: Transformation in Spe- ge, Use Priorities and Policy	Neha W. Qureshi, M. Krish S.A. Wani, V. Sivaramane & C. Sundaramoorthy	n <i>an,</i> Ind
Sales Practices i	in Pesticides Retails: A Case Study of Kerala	P. Indira Devi, M.G. Jayas A.P. Sarada and Rajesh K I	ree, Raju
RESEARCH N	OTE:		
Livestock Secto	r in Rajasthan: An Appraisal and Performance	V.K. Boyal and Jaya Mehro	1
BOOK REVIEV INDICATIVE CONFERENCE	WS* PUBLICATIONS RE OUTLINES OF SUBJECTS SELECTED FOR DISCUS © OF THE ISAE*	ECEIVED* SSION AT THE 77TH ANI	NUAL
	Annual Subscription Rates		
	Individual Membership Fee: Rs. 1,000.00; £Life Membership Fee: Rs. 10,000; £Institutional Subscription: Rs. 3,000.00; £	50.00; \$ 100.00. 500.00; \$ 1000.00. 75.00; \$ 350.00.	
Please address co Sadguru Complex	prrespondence to the Hon. Secretary & Treasurer, The Indian Soc I, Near Vagheshwari, Gen. A.K. Vaidya Marg, Goregaon (East),	iety of Agricultural Economics, C Mumbai - 400 063 (India).	C-104, First Floor,
Telephone: 022-2	28493723; Fax: 091-022-28493724; e-mail: <u>isae@bom7</u>	.vsnl.net.in website: www.isae	india.org

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

JOURNAL OF EDUCATIONAL PLANNING AND ADMINISTRATION

Editor: Jandhyala B.G. Tilak

Volume XXXI	Number 1	January 2017
Articles	CONTENTS	
Articles		
George Psacharo Financing Prio	poulos, Claudio Montenegro, Harry Anthony Patrinos: Educat prities in Developing Countries	ion 5
Tapan R. Mohan Experience	ty: The Socio-Psychological Context of Private Tuition - The	Indian 17
Rajendra P. Man	ngain: Addressing Unemployment among Educated Youth in I	ndia 29
Aparna Basu: Hi	gher Education in India - Yesterday, Today and Tomorrow	47
Research Abstrac	ct	
Anuradha Bose: - A Study of T	Decentralisation and Institutional Dynamics of Educational Ge hree Schools in Alwar District of Rajasthan	overnance 57
Book Reviews		
Aarti Srivastava: Ulrich TEICHLI Projects, Process Anh DANG (eds Rajput).	Higher Education Studies in a Global Environment (Barbara M ER (eds.)); Garima Malik: Global Regionalisms and Higher es, Politics (Susan L. ROBERTSON, Kris. OLDS, Roger DA)); Harpreet Kaur Jass: Indian Education in Times of Global	. KEHM and 63 Education - LE and Que Change (J.S.
	Ammuel Subserintian Deter	
Individuals: Rs. 150/	US \$ 60 Institut Advertisement Tariff	ions: Rs. 350/US \$ 85
Full Page: Rs. 2,000/	US \$ 100 Half Pa	uge Rs. 1,100/US \$ 55
	National University of Educational Planning and Administration 17-B, Sri Aurobindo Marg, New Delhi 110016 (India)	
	Phone: 91-11-26544819, 26544800; Fax: 91-11-26853041, 26865180 E-mail: Editorial: <i>jepa@nuepa.org;</i> Others: <i>publications@nuepa.org</i> Website: <i>http://www.nuepa.org</i>	

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS (Organ of the Indian Society of Agricultural Economics)

Vol. 72	April-June 201	7	No. 2
ARTICLES	CONTENTS	5	
Crossbred Ca Household Empirical	attle Adoption and its Impact on Income a d Milk Consumption among Dairy Farmer Evidence from Assam	and Baban Bayan and rs: Mrinal Kanti Dutta	
Economics a hynchus m	nd Factors Affecting Rainbow Trout (Ond nykiss) Production in Kashmir	cor- Stanzin Gawa and Na Kumar	ılini Ranjan
What Constr Improve th and Practio	ains Agriculture Credit in India? How to he Outreach? An Essay on Current Approa ces	<i>R. Bhaskaran</i> ach	
BOOK REV	IEWS* PUBLICATIONS	S RECEIVED* ANNOUNC	EMENT*
	Annual Subscription Individual Membership Fee : Rs. 1. Life Membership Fee : Rs. 10 Institutional Subscription : Rs. 3	n Rates ,000.00; £ 50.00; \$ 100.00. 0,000; £ 500.00; \$ 1000.00. ,000.00; £ 75.00; \$ 350.00.	
Please addres Economics, C- (East), Mumba	ss correspondence to the Hon. Secretary & -104, First Floor, Sadguru Complex I, Near Va ai - 400 063 (India). 28493723: Fax: 091-022-28493724: e-mail: isae	Treasurer, The Indian Society of agheshwari, Gen. A.K. Vaidya M	of Agricultural larg, Goregaon

Annual Subscription Rates

Journal of Indian School of Political Economy, Pune

New annual subscription rates effective beginning with issues of Volume XXVII (2015) of the Journal are:

	Print Subscription One Year's Issues	Online Access for One Year's Duration Archieves (including Current Issues)	Print Subscription for One Year's Issues + On Line Access to Archives for One Year's Duration Permitting Discount at 12.5%
For Individuals and Colleges Institutions and Universities Other Countries Individuals Other Countries Institutions	500 1000 50 100	1500 5000 100 200	1750 5250 130 260

Print Subscrption rates for the Block Period of Three years can be availed of at a substantial concession of 20%, as shown below. If you have already remitted the subscription for long term, it will be revised as below only after completion of your present term of subscription.

Subscription Category	Three Years' Subscription
Universities & Institutes	Rs. 2400/-
Individuals & Colleges	Rs. 1200/-

Payments should be made by Demand Draft or cheques, payable to *Indian School of Political Economy, Pune,* payable at par in Pune.

Individual Articles (Print or On-line) will be charged Rs. 1 per page. Kindly send your requirement by e-mail.

Please mail your orders/enquiries to:

The Administrative Officer, **Indian School of Political Economy,** 'Arthabodh', 968/21-22, Senapati Bapat Road, Pune 411 016 (India). Phones: (020) 25657132, 25657210. e-mail: ispe@vsnl.net; Website: ispepune.org.in

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.

INSTRUCTIONS FOR AUTHORS

Please follow the instructions meticulously. It will greatly expedite the editorial process.

SUBMISSION

All manuscripts should have been proof-read before submission. Send (1+2 copies), preferably one ribbon copy and two xeroxes, to the Editor. Mimeographed copies are acceptable if clearly legible. With the manuscript, include a cover letter identifying the author with his present or past position, address and telephone number. Mention any special circumstance concerning the paper, such as its earlier presentation at a meeting or a conference. We will assume that papers submitted to this Journal are not under consideration elsewhere.

FORMAT

All text, including block quotations, footnotes, and table headings, should be double-spaced and typed on one side. Use medium-weight, opaque, bond paper. All pages should be of the same size, preferably 8-1/2" x 11", and unbound. Leave a minimum left-hand margin of one and a half inches, and a minimum right-hand margin of one inch. Number all pages, including footnotes and/or references, consecutively.

SUMMARY

In every paper, there should be a summary strictly not exceeding 100 words.

TEXTUAL DIVISIONS

If a paper is divided into major sections, the introductory section needs no heading. Subsequent sections should be given titles typed in capital letters and placed at the centre of the page. Do not use roman numerals. If there are subsections, the sub-titles should be underlined and placed justified with the left margin.

QUOTATIONS

All quotations should be checked carefully for accuracy, and should be unaltered except for

ellipses and bracketed insertions. Block quotations should be double-spaced and set off from the text by indentation.

FOOTNOTES AND REFERENCES

All footnotes and references should be at the end, first footnotes, then references. In the text, footnotes should be numbered consecutively by superscripts following the punctuation. Reference citations in the text should be enclosed in square brackets, as follows: [Author, 1965, p. 9]. References listed at the end should be arranged alphabetically by author and should include the following information: for articles - author, year of publication, title, name of journal (underlined), volume and issue number; and for books - author, year of publication, title (underlined), publisher and place of publication, in the following format. We convert underlining into italics.

Maital, S., 1973; 'Public Goods and Income Distribution', *Econometrica*, Vol. XLI, May, 1973.

Chakravarty, S. 1987; *Development Planning: The Indian Experience*, Clarendon Press, Oxford.

If a Reference is cited in a Note, the Note may use the shortened reference form:

4. For a critique of recent industrial policy proposals, see Marshall [Marshall, 1983, Pp. 281-98].

The full name of any organization or government agency should be spelt out first if subsequent reference is to be by acronym.

MATHEMATICAL AND TABULAR MATERIAL

All tables, graphs, figures, and illustrations should be numbered and amply spaced on separate sheets of paper indicating in a marginal note in the text where such material is to be incorporated. Mathematical equations should be typed on separate lines and numbered consecutively at left margin, using Arabic numerals in parentheses. Use Greek letters only when essential. The word *per cent*, not the symbol %, should be used in the text and the tables.

COMPUTER DISK

If the manuscript is on a computer, send a copy of it on a CD covering text, tables, graphs, etc., with details of the software used.