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FINANCES OF THE PRIVATE CORPORATE SECTOR: 1955-56 to 1986-87

Uma Datta Roy Choudhury

The Reserve Bank of India undertakes sample studies of joint stock companies annually and publishes its results. As a special exercise, it prepared and published estimates for the aggregate private corporate sector based on the sample results covering the period 1950-51/1955-56 to 1962-63. No such attempts have been made thereafter. The primary objective of this study is to fill this gap and present a long period comparable series for a number of aggregates relevant for an analysis of the finances of non-financial non-government joint stock companies since 1955-56.

Scope and Coverage of Data

All economic enterprises can be classified to belong to either public or private corporate or household unorganised sectors. Public sector comprises government administrative departments and departmental and non-departmental enterprises (including public corporations which are wholly or mainly owned and/or controlled by the public authorities) while the private corporate sector comprises corporations, joint stock companies (public limited and private limited - distinguished by pattern of ownership and control), cooperatives, limited liability partnerships and other financial and non-financial enterprises which by virtue of legislation, are recognised as business entities independent of their owners. Enterprises which are not regulated by any legislation and do not necessarily maintain any annual accounts and balance sheets are classified as unincorporated; these, together with the household industries owned and operated by household members jointly or singly and not coming under any legislation, comprise the household sector. The private corporate sector enterprises are further classified first by the nature of the enterprises, i.e., public and private limited joint stock companies, cooperatives, limited liability partnership, etc., and then crossclassified by the nature of business, i.e., nonfinancial and financial with further subclassification by kinds of economic activities or industries.

The present study covers non-financial joint stock companies in the private corporate sector

for which basic data become available annually through the sample surveys undertaken by the Reserve Bank of India (RBI). As the basic data come from one single source, we expect that the results would be internally consistent.

Though a systematic analysis of balance sheets and profit and loss accounts of joint stock companies was initiated by the RBI as early as 1949 using the accounts of 2,500 non-financial companies which closed in 1947, it is only since 1954 that results of later and similar studies are brought out regularly in RBI Bulletins. On the basis of a careful examination of the methods of presentation of the accounts by the joint stock companies and varying concepts and definitions used by them, RBI has standardised the method of analysis of annual accounts and their consolidation to present annually an overall picture of the performance of the sample of joint stock companies. The first study covering 757 medium and large non-government non-financial public limited companies for the years 1950 and 1951 was published in August 1954. The second study covered 750 companies for the period 1950-51 to 1955-56; the third covered 1,001 companies for the period 1955-56 to 1960-61; and the fourth study covered 1,333 companies for the years 1960-61 to 1962-63; and so on. It will be noticed that every subsequent study includes the results of at least one year common to the previous study so that two successive series may be linked.

Because the distribution of public limited companies according to paid-up capital is highly skewed, a careful selection of a limited number of medium and large public limited companies

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The paper is based on her study, Capital Stock, Capital Formation and Depreciation Allowances of Non-Government Non-Financial Joint Stock Companies: Trends and Structure since 1955-56, prepared for and commissioned by the Industrial Development Bank of India (IDBI). The author is grateful to the IDBI for the opportunity given. The author is also grateful to the Reserve Bank of India for making available unpublished industry-wise data for medium

The author is also grateful to the Reserve Bank of India for making available unpublished industry-wise data for medium and large private limited companies for the period 1965-66 to 1980-81.

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ensures around 80 per cent coverage in terms of paid-up capital of this category of companies.

The data for medium and large non-financial public limited joint stock companies are published classified by industries as well. This becomes possible because while selecting the companies the main objective is to have maximum coverage, industry-wise, in terms of paid-up capital and to include as many representative units as possible from various industries within the limits of overall size.

Beginning with medium and large nongovernment non-financial public limited companies, the RBI gradually extended its coverage to small public limited companies, and medium, large, and small private limited companies. The sample data for medium and large public limited companies are published industry wise. This is not possible for medium and large private limited companies because of the large number of these companies with, in general, predominance of smaller size companies. Hence, the coverage of some of the industries is not adequate for separate presentation. Therefore, the RBI presents the results only for main industrial groups. For the present study, the RBI made available unpublished industry-wise data for medium and large private limited companies for the period 1965-66 to 1980-81.

In the case of small (less than Rs. 5 lakh paid-up capital) public and private limited companies which supplement the data for medium and large joint-stock companies, the problem of selection of minimum number of companies for analysis and their adequacy in terms of representation of the respective categories is even more acute. Hence, in this case, the RBI does not present industrywise results, even by main groups.

Until 1975-76, small public and private limited non-financial joint stock companies used to be separately studied and the results published separately. These had to be combined with results of the medium and large public and private limited non-financial joint stock companies in order to arrive at the aggregate results for small, medium, and large companies. From 1976-77 to 1981-82, the small public and private limited non-financial joint stock companies were not at all studied.

with paid-up capital of more than Rs 5 lakh each However, from 1982-83 onwards, the small companies were studied along with the medium and large companies in a single survey. Hence, for these more recent years, the study of public and private non-government non-financial joint stock companies has been somewhat simplified as the results of small, medium, and large companies are available in a single sample survey.

Appendix A.1.1.1 to A.1.3.5 give the up-to-date information on the coverage in terms of number of companies, etc., for non-government nonfinancial public and private limited joint stock companies on which the present study is based.

Main objectives of the study

Using the sample data on Finances of Joint Stock Companies for public limited companies from 1950-51 to 1986-87 and for private limited companies from 1955-56 to 1986-87, we shall first obtain the population (This is a statistical term meaning the totality out of which a sample is taken for study and does not necessarily relate to human population. To avoid possible confusion, we shall henceforward use the term aggregate instead of population) estimates of a number of financial measures obtained from the balance sheets and income and outlay accounts (e.g., net worth, capital employed, cash flow, total borrowings, gross/net fixed assets, value added and gross/net fixed capital formation), separately for public, private, and all non-government nonfinancial joint stock companies and then study trends and inter- relationship between them such as profitability ratio, (i.e. rate of return), return to capital, availability of domestic resources, dependency on borrowings, rate of saving, rate of fixed capital formation, level and rates of depreciation, etc. We shall also estimate the present value of capital as the sum of cash flow as expected over future years using the Discounted Cash Flow Method (DCFM). Finally, we shall compare our estimates of the several financial measures with those available from National Accounts Statistics (NAS) and thus determine the contribution of the private non-financial corporate sector to total gross/net domestic product. We shall extend the analysis to broad industry-groups within the corporate sector using the published VOL. 4 NO. 4

industry-wise data for public limited companies and unpublished RBI results for private limited companies. However, due to non-availability of detailed industry-wise data for the private limited companies, we shall limit the global estimates at the industry level to only four industry groups.

AGGREGATE ESTIMATES

Derivation of aggregate estimates

One problem in deriving aggregate estimates from the RBI sample surveys is that the number of companies selected under different categories each year has not been uniform. Thus, for example, while the coverage of medium and large non-financial public limited companies was kept around 80 per cent (in terms of paid-up capital) over the period 1950-51 to 1970-71, the coverage for all size groups together (i.e. medium, large, and small) was around 65 per cent in 1985-86 and 1986-87. In the case of medium and large private limited companies, the coverage (in terms of paid-up capital) is much smaller, only around 35 per cent in the two surveys -one for the quinquennium beginning 1955-56 and the other for the next survey covering the period 1960-61 to 1962-63 and came down to 28 per cent by 1965-66, in spite of a larger sample studied.

On the other hand, the RBI sample surveys have two strong points which enable the development of a continuous series over the years. First, as already mentioned, every two consecutive surveys cover at least one common year. Second, to the extent possible, a majority of the companies selected in any survey is continued in the next and the results for the overlap are published separately. Thus, for example, in the most recent survey, results for public and private limited companies, rates of growth for all important measures (e.g., sales, total income, profit, total borrowing, fixed assets, etc.) in the common year with reference to the previous sample study (1984-85) are given for the common set of companies, namely, 1,867 public limited and 1,053 private limited companies. Similarly, important ratios (e.g., gross fixed/total capital formation to total uses of funds, external sources of funds to

total sources of funds and increase in bank borrowings to external sources of funds) are presented for the common set of companies. This has certain obvious advantages but it does not permit treating the set of sample surveys as a comparable series without certain adjustments. This is what we propose to do.

Currently the procedure followed by the RBI to derive the aggregate estimates is to obtain them on an overall basis. Alternatively, the results of individual surveys only are studied. The overall method is to use the ratio of paid up capital of the sample companies to all companies in the first year of the respective survey as the 'blow-up' factor. Of course, the method does not take into account the changes in the aggregate paid-up capital because of new registrations and also new capital issues by existing companies during the period of the survey. Besides, this method requires that the population estimates for the common year in two consecutive samples have to be revised every time the new data (for the common year) become available. The difference between the two population estimates from two consecutive samples for the same year is often large enough to make one raise doubts about the reliability of the estimates and the soundness of the method of 'blowing up'. In spite of these limitations and in the absence of any alternative indicator, the 'blow-up' method is being generally used for obtaining aggregate estimates for selected measures for non-government non-financial joint stock companies (e.g. for estimating the savings and capital formation of non-financial joint stock companies). The RBI analysis accompanying the results of each Survey of non-government non-financial joint stock companies is limited to the study of rates of growth, etc., between the common companies of the current survey and the previous one considering only the first year of the period covered by the new survey and last year of the period covered by the previous survey.

Besides publishing the results of each sample survey in the RBI Bulletins, RBI had, in the past, brought out separate volumes containing consolidated data on *Financial Statistics of Joint Stock Companies in India* for the periods 1950-51 to 1962-63, 1960-61 to 1970-71 and 1970-71 to

1974-75 issued in 1967, 1975 and 1977, respectively. The main purpose of these volumes was to bring together in one place data available in the various annual studies and to present them on a comparable basis to the extent possible. In the first volume in the series containing the data for the period 1950-51 to 1962-63 an attempt was made to provide comparable figures in respect of all non-government non-financial companies - for public limited companies for the period 1950-51 to 1962-63 and for private limited companies for the period 1955-56 to 1962-63. These estimates were based on the sample results as they were. For the common year between successive surveys, the data relating to the survey with a larger sample was used. Using the information on paid-up capital and their limited details by industries, aggregate estimates were built up on the basis of the ratio of the paid-up capital of all companies to that of the sample companies (the 'blow-up' factor). In view of the inter-industry differences in the relationship between paid-up capital and other variables, industrywise estimates were first obtained and then combined to arrive at the overall estimates for all public limited companies for the period 1950-51 to 1962-63 for which industry-wise paid-up capital was available. For later periods, in the absence of similar industry-wise data, even for public limited companies, the RBI has not published any such aggregate estimates. For preparing estimates of aggregate savings or capital formation therefore the aggregates are estimated directly by using the 'blow-up' factor.

To get over these problems, we shall first adjust the sample results and then obtain the aggregate estimates. The adjustment for sample data is through a factor which measures the difference in the sample results for the common year in consecutive surveys. Since the sample size has been gradually increasing, if we start with the results for the most recent survey and trace backwards, the exercise involves a series of adjustments beginning with the most recent overlapping year. For every set of two consecutive surveys, the results for the common year are used to obtain the adjustment factor for each of the characteristics separately and the sample results for the other years are adjusted accordingly. The adjusted

results for the common year of the previous survey are then used to work out the subsequent adjustment factor. Thus, for example, for public limited joint stock companies (Appendix A.1.2.2), the common year for the most recent two consecutive surveys is 1985-86 and it is possible to work out the adjustment factor and apply it to 1983-84 and 1984-85. The process is then repeated with the common year (1984-85) between the previous two surveys. However, the consecutive surveys do not generally give parallel results for each of the years common to the two surveys, it gives such parallel results only for one year (last year of previous survey and first year of next survey). This is particularly so in such cases where a given survey covers a number of years and in the next survey only the last year of the previous survey is repeated. In such cases, the same adjustment factor is used for all the other years covered by the particular survey. If two consecutive surveys have more than one common year, we take into account only the last year of the previous survey. The results of these adjustments are given Table 1. It will be noticed that the adjustments improve very considerably the coverage of the sample.

The adjusted sample results thus obtained have the advantage of being comparable over time having adjusted for gradual increase in sample size and having made full use of data for common years. In future, when further sample results become available, the series can be extended without revising the past results.

To obtain the aggregate estimates, the adjusted sample results are 'blown up' by the same factor as used in the RBI studies. This is done for the public limited companies and for the period 1962-63 to 1983-84. For earlier period, 1950-51 to 1962-63, the aggregate estimates are available in 'Financial Statistics of Joint Stock Companies in India, 1950-51 to 1962-63 [RBI, 1966].

In the case of the private limited companies, we did not think it advisable to adjust similarly the sample results because, as earlier mentioned, the RBI sample of private limited companies is rather small in relation to the aggregate. Hence, the aggregate estimates are obtained from the sample results, without any adjustment, by using the same 'blow up' factor as used in the RBI studies, namely, the ratio of total paid up capital to paid-up capital of sampled companies in the first year of any given survey covering a number of years.

Having thus obtained the aggregate estimates for both public and private limited nongovernment non-financial joint stock companies for each of the several characteristics, the totals representing all non-government non-financial joint stock companies are derived as the sum of the estimated values for the two groups of limited companies.

No attempt is made to prepare aggregate estimates of inventories and derive changes in inventories to obtain estimates of total gross capital formation. This is because the sample results could not be adjusted in view of wide fluctuations in the figures over time. Gross fixed capital formation, i.e., annual addition to fixed assets gross of depreciation, is derived as annual change in gross fixed assets while net fixed capital formation is obtained by netting for depreciation provision from Income and Outlay Account. The total estimates separately for public and private limited companies and all companies are presented in Tables 3 to 7 at current prices. In Table 8, we give the estimates of additions to gross/net fixed assets and gross/net value added at constant prices of 1980-81. From National Accounts Statistics, price indices of machinery & equipment and cost of construction have been derived. These have then been combined (using proportion of investment in machinery & equipment and new construction in the base year as weights) to obtain capital cost index which is used to deflate the current price series of fixed capital formation. To obtain value added at constant prices, the same price deflator has been applied as used for gross/net value added in organised manufacturing sector (available from National Accounts Statistics) Because of the absence of necessary details, it has not been possible to undertake all the adjustments which are essential to derive savings or value added from Appropriation Account as published by the RBI survey results. The points of departure are detailed in Appendix A.

These overall estimates help in getting an idea of the size of the private corporate sector with reference to total National Domestic Product (Table 6, column 11). It will be seen that gross value added of private corporate sector (nonfinancial) which was around 9 per cent of the total in 1960-61 remained around that level till 1979-80 with a slight fall to 7 per cent over the period 1967-68 to 1970-71. The proportion has increased somewhat since then and forms as much as 11.4 per cent in 1986-87.

FINANCIAL PERFORMANCE, PROFITABILITY, AND RETURN TO CAPITAL

Having thus examined the overall performance of the public and private limited companies over the period of last three decades, we shall proceed to examine their financial performance by measures such as profitability ratio or return to capital. In this context, one could consider several alternative estimates of profit, e.g., profit gross of interest and tax, or profit before tax or profit after tax or retained profit. Retained profit (gross of non-operating surplus/deficit) plus changes in tax provision net of advances of income tax would measure the savings of the enterprise. We may note that we have made no adjustment for 'changes in tax provision, net of advances of income tax'. Similarly, profit before tax as opposed to profit gross of interest and tax would indicate the liability of the enterprise in terms of interest payment and hence borrowings.

A number of alternative measures can also be considered such as savings, gross and net of depreciation, or rates of savings using the estimates of value added determined independently. This can then be examined jointly with debt-equity ratio or profitability ratio or return to capital. Finally, the trend in share of labour in total value added offers supplementary information to judge the performance in terms of distribution of factor incomes between payment to labour and return to capital.

Table 9 presents data on rates of savings gross and net separately as ratios of gross and net value added respectively for public limited companies, private limited companies, and the two taken together. It will be seen that rates of net savings are very low for private limited companies (ranging between as low as 1.61 per cent in 1975-76 and the maximum of 8.28 per cent in 1980-81). Though there was some increase in the rate of net savings of public limited companies up to 1974-75 (17.98 per cent) and of private limited companies up to 1980-81 (8.28 per cent), the rates declined thereafter reaching low level in 1986-87, the latest year for which data are available, 2.76 per cent for public limited companies and 3.46 per cent for private limited companies and 2.96 per cent for all companies; for public limited companies and all companies, this was the lowest since 1960-61; private limited companies had reached the lowest of 1.61 per cent in 1975-76.

Looking at the problem somewhat differently. one could examine the extent to which gross capital formation was financed by gross savings i.e. by internal resources. We have not made any estimates of changes in inventories, and hence of gross capital formation, because of the wide fluctuations in the levels of inventories (available from RBI sample data) and also because of doubts about using paid-up capital as 'blowing up' factor for inventories. In view of this, we present only estimates of gross/net fixed capital formation. In Table 9, we give gross savings as percentage of gross fixed capital formation for the period 1955-56 to 1986-87 for public limited companies and for 1956-57 to 1986-87 for private limited and all companies. One should expect (unless changes in inventories are large and negative) that gross savings would be larger than gross fixed capital formation; that, they would fully finance gross fixed capital formation and would have some funds to finance inventory changes. However, the results in the Table make it clear that except for a few years, both in the late sixties and seventies, gross savings were not enough to finance even fixed capital formation. Moreover, the ratio of gross savings to gross fixed capital formation fluctuates widely over time, more so in the case of public limited companies, even within the limited period of only seven years in the eighties, ranging between 56.26 per cent in 1981-82 to 32.80 per cent in 1985-86. This is also brought out clearly by the values of standard deviation and coefficient of variation presented at the bottom of the Table. Consequently, use of external resources to finance investment has increased over the period from just about 2 per cent in 1959-60 to as much as 67 per cent in 1985-86 in the case of public limited companies and from about 14 per cent to 43 per cent for private limited companies.

From the seventies to the eighties, there has been a substantial increase in the absolute level of expenditure on new fixed capital (at constant prices) (see Table 8) even though the rates have been fluctuating. Over the complete period since the late fifties, the absolute level of fixed capital formation has increased more than fourfold. The marked increase during the eighties may perhaps be attributed partly to the support received from equity and debenture fluctuations by the companies in a relatively buoyant capital market [Sharma, 1987].

Gross savings can be thought of as the sum of annual depreciation provision and retained profit. Of the two components, while retained profit is more or less a residual item after deductions for dividends payments and tax, depreciation provision is an independent source of internal finance which increases with a higher rate of depreciation. The results in Table 9 show that depreciation provision during the year is a consistently higher proportion of gross fixed capital formation than retained profits, i.e., net savings of joint stock companies. In other words, internal finance in the form of retained profits is not generally adequate to meet expenditure on new capital. This is true for both public and private limited companies.

Thus, the rates of savings of corporate sector (non-financial) are substantially low though there have been periods/points of slightly higher rates with fluctuations thereafter. It is possible, as Chakravarty said, that 'some of the government decisions have in fact been responsible in making it more attractive for the private corporate sector to seek borrowed funds more than plan for increasing their own internal savings' [Chakravarty, 1980].

To examine the question further, we give in Table 3, alternative measures of debt-equityratio, that is, total borrowing as a proportion of net worth (own capital) or as a proportion of total capital employed (own capital plus borrowed funds). It will be noticed that, for the private corporate sector as a whole, the dependence on borrowings for financing investment was not only large in 1955-56 but has increased over the years and that the ratio has always been larger for private limited companies than for public limited companies. Moreover, borrowings have been in excess of net worth since 1965-66 for private limited companies and since 1967-68 for public limited companies.

Borrowing by public limited companies as a ratio of capital employed reached 50 per cent in 1966-67 and hovered around this level till about 1975-76 when it increased somewhat to reach the level of 56 per cent in 1986-87. In the case of private limited companies, the same was around 40 per cent in 1955-56, became more than 50 per cent within ten years, and increased further to 63.48 per cent in 1986-87. Thus, for private corporate sector as a whole, there has been a decline in the internal funds for financing asset formation. Or, in other words, government policies of tax concessions, depreciation rebate and the like had little effect on the level of savings generated; the dependence of the private corporate sector on external funds for investment has continued and increased.

Finally, we may examine the factor income distribution of joint stock companies, namely, the division of the value added between compensation of employees and operating surplus (sum of rent, interest and dividends paid netted in each case for receipts and retained profit excluding non-operating surplus/deficit). These ratios are presented in Table 6 along with standard deviation, coefficient of variation and the averages over the period 1960-61 to 1986-87. It will be seen that these are more or less constant over the period with the share of labour being higher in private limited companies than in public limited companies. For the private corporate sector as a whole, nearly 60 per cent of net value added is paid out to labour. The constancy of this proportion is interesting and is supported by the results presented by V.V. Divatia and Kripa Shanker [1977] for the period 1970-71 to 1973-74 and Kripa Shanker and T.G. Nayak [1983] for the period 1960-61 to 1977-78.

The near constancy of the proportion of return to labour in total value added suggests that the employees did not stand at a disadvantage due to inflation which has been considerable over the period of study. On the other hand, the steady ratio of operating surplus to value added needs further examination in terms of its different components. With the increase in debt-equity ratio (Table 3). the interest payment would increase and cut into profits. However, an examination of the series of dividend payments shows that these have also increased resulting in wide fluctuations in retained profits over the years 'in tune with variations in profits after tax from which both dividends and retained profits are derived' [Sharma, 1988]. This implies that 'The role of retained profits in the generation of internal resources of the companies was, therefore, relegated to the background and the only other internal source, viz., depreciation provision, became the sheet-anchor of the companies' [Sharma, 1988].

It might therefore be useful to examine the rate of depreciation i.e. depreciation provision during the year as percentage of gross/net fixed assets at the beginning of the year. While the Income and Outlay Account gives the annual depreciation allowed for income tax purposes, the Balance Sheet gives the cumulated total of depreciation provision (as in the case of fixed assets and annual additions to fixed assets). The two sets of figures (annual depreciation allowance from Income and Outlay Accounts and annual amounts of depreciation provision derived from cumulated totals in the Balance Sheet) are likely to differ because of the accounting principles followed (even if other factors are ignored) and Table 10 (cols 2 & 3) shows the extent of difference. Table 10 (cols 4,5,6 & 7) give the rates of depreciation using data in col (2) i.e. depreciation provision during the year. The rates do not show any increasing trend over the whole period except that the average rate did increase from 1960-61 onwards as compared to the rate over the earlier period. Leaving aside the more recent period, the rate has been generally lower for private limited companies than for public limited companies; in the fifties, it was the reverse. In the case of public limited companies, the average rate remained around 6.57 per cent over the period 1960-61 to 1969-70 and continued more or less at the same level till 1982-83, but increased since 1983-84 to an average of 7.02 per cent. For private limited companies, the rates show somewhat different trend being lower (average of 4.75 per cent) over the period 1964-65 to 1970-71 as compared to the earlier or the later periods. The rates do increase for all categories of companies for the more recent period. Perhaps this has been the result of relaxation in the admissibility of depreciation allowance on the installation of new plant and machinery from the accounting year 1980-81 to 1984-85 and in the overall rates of depreciation on all the capital assets from 1983-84 onwards. All this obviously implies availability of larger internal funds through depreciation provision.

The profitability ratio, i.e., return to capital employed, measures the overall efficiency of the private corporate sector in terms of the utilisation of the long-term funds supplied by owners and creditors taken together. For the purpose, capital employed is measured as net worth plus total borrowings while profit is taken gross of tax provision and interest but netted out for depreciation. The results are presented in Table 11 along with averages, standard deviation and coefficient of variation over selected periods. The ratio shows no trend till 1979-80 though in the years 1974-75 and 1979-80 it was higher than over the rest of the period. During the eighties, it declined to reach near lowest value in 1986-87 in spite of the fact that, during this period, there was every indication of an improvement in the availability of funds and their utilisation by the public and private limited companies.

VALUE OF CAPITAL STOCK AND DEPRECIATION ALLOWANCE

The figures of fixed assets (gross/net) presented earlier (Table 4) are taken from balance sheets which normally reflect the book value of assets, i.e., cumulated value at historical cost or at prices at which they were purchased in different years. In principle, capital stock should represent the potential to contribute to future production. For this purpose, capital stock has to be measured at replacement cost which is the same as valued at

present market cost. Replacement cost is estimated by the Perpetual Inventory Method (PIM) while market value of the present stock of capital is obtained directly through surveys.

PIM requires reliable historical data on annual fixed investment at current and base year constant prices. Such capital formation series should preferably extend as far back as the life of most of the assets in existence. Reliability of the estimates of capital stock using PIM depends on the accuracy of the basic investment data over a long period, assumptions about average life of existing assets, and associated patterns of retirement of different types of capital assets. In India, there exists a long period series on capital formation (since 1950-51) and substantial work has been done, both at research and official level, to determine the average life of various types of fixed assets in different industries. The series of capital formation converted to given year prices by the use of relevant price indices is also available though appropriateness of the price indices used needs closer scrutiny. Moreover, adequate consideration is not given to the pattern of retirement of different types of capital assets and the terminal value of the assets which are scrapped (if and when such values are not zero and could even be negative). Problems also arise when there occurs changes in physical quality of assets and technical improvements of existing assets due to day to day expenditure of capital nature which affect both the productivity of the assets and their assumed working life. Even with little technical change, good regular maintenance, repairs, and servicing do extend the life of assets. There also occur cases where assets which have completed their expected life continue to be used. In such cases, PIM with assumed life of assets (which is lower than length of actual use) would underestimate net capital stock because of allowing higher level of capital consumption than warranted in practice. For instance, residential/non-residential pucca buildings (assumed age of 80 years) or transport equipments (ships: 15 years, aeroplanes: 10 years, buses, trucks, etc., 10 years) are much lower than actual period of use. But, the adjustments required to rectify and obtain more accurate estimates would not be easy. The omission of recovery value of scraps would have the same effect unless these values are taken care of while estimating annual investment figures which are cumulated to obtain capital stock figures. Thus many conceptual and measurement problems remain in estimating capital stock using PIM and call for further research.

There are two alternatives to PIM: One is a comprehensive census of assets to determine the current market value. The other is the DCFM to determine the present value of the stock of capital. The census is both complex and expensive. Hence, we propose to use the discounted cash flow method to obtain present value of capital assets of the private corporate sector (non-financial). In DCF method, the value of an asset is the accumulated discounted value of its future annual services and therefore require data on cash flow, rate of discount, and expected life of assets. Generally the data on cash flow presented in Table 4 can be used for the purpose of estimating the present value of capital. For instance, estimation of value of capital stock in 1980-81, with given life span of assets, will require data on annual cash flows over the period of use of the assets. Since data are available upto 1986-87 only, it will be essential to project data and obtain estimates of future cash flow. For the purpose, linear and log linear trend lines were fitted on the given data on cash flow for the period 1955-56 to 1986-87 available in (Table 4). The results show that log linear gives a reasonably good fit with the values of coefficients significant and these results are used to obtain projected estimates of future cash flows (Appendix A.6.1.14) separately for public and private enterprises as well as for all non-financial joint stock companies.

The rate of discount (alternatively termed as rate of return or profitability ratio or cost of capital), is worked out for the complete period beginning 1950-51 and also averaged over given periods (Table 11). As noted earlier, the profitability ratio shows no trend and averages over periods are reasonably constant. Nevertheless, we shall also use two alternative rates of return of 15 percent and 10 percent.

The life span of assets also needs to be determined as an average over all assets. Since no

details of composition of assets of the private corporate sector are available, it is not possible to determine the life span as a weighted average. On the basis of work done by several research workers as well as at the official level, the expected average life of different types of assets are published in 'Estimates of Capital Stock of Indian Economy' [CSO, 1988]. Picking up types of assets which are likely to exist/be used in private corporate sector, the straight arithmetic average and the median of the age are determined. While the median works out to be 20 years, the average is 28 years. These refer to average life over which different assets are likely to be used and not their current average age. Since the current age structure would be directly related to the dates of establishment of the enterprises and the pattern of capital expenditure for renewals and replacements, it was decided to use alternative life spans, viz., 25, 20, 17, 16, 15, 10 years and, one single exercise with 35 years. Using these values of rate of discount, future cash flows, and average life of assets, we propose to determine the present value of capital (fixed assets) for the years 1950-51, 1955-56, 1960-61, 1970-71 and 1980-81 for the private corporate sector (nonfinancial). Alternative estimates, using different discount rates and different average life spans, are presented in Table 12.

Having obtained the present value of gross/net fixed assets for any given year, it is possible to use it as the base and obtain annual estimates for subsequent years by successively adding annual estimates of gross/net fixed capital formation over the years. Thus, using 1955-56, 1960-61 and 1970-71 as base years, we obtain estimates for 1960-61, 1970-71 and 1980-81, respectively, To elaborate, this implies for example, that by using 1960-61 present value of fixed assets (adjusted to 1970-71 prices) and adding to it the annual figures of gross fixed capital formation at 1970-71 prices for the period 1961-62 to 1970-71, current value of fixed assets in 1970-71 can be obtained and the exercise can be continued to obtain the estimate for 1980-81. This method is generally followed under PIM when the constant base year replacement value of capital stock is estimated in detail and the annual addition to capital for the subsequent periods (adjusted to constant base year prices) are added to obtain the corresponding estimates for the future periods. The present value of fixed assets (gross) obtained by the DCFM and presented in Tables 12 are at current prices.

To apply the above method therefore, the estimates of gross fixed capital formation for the relevant periods will have to be adjusted to the constant prices of 1960-61, 1970-71 and 1980-81 to obtain the alternative estimates of present value of fixed capital assets in the respective years. This is done by using the implicit cost of capital indices worked out from the series of gross fixed capital formation at current and 1980-81 prices available from NAS and the gross fixed capital formation series worked out for the current exercise (Tables 7 and 8). Because of the wide range of life span of different types of assets (from 80 years for residential/non residential buildings to 20 years for most of the machinery, to 10 or 15 years for most of the transport vehicles (other than railways) giving a median of 28 years), the present value of assets (gross) obtained by the DCFM using 25 years of potential capital service is used to compare the alternative estimates. The results are given in Table 13. It will be seen therefrom that for 1970-71 the two independent approaches give estimates which are reasonably close while for 1980-81 the PIM estimate is somewhat higher than the present value obtained by the DCFM and for 1960-61 lower. The overestimation is of the order of 14 per cent in 1980-81 against only 1 per cent (higher estimate) for 1970-71. For 1960-61 on the other hand, PIM gives lower estimate and the DCFM estimate of present value is nearly 9 per cent higher. For 1980-81 the results differ substantially presumably because of the high levels of investment during the seventies with no corresponding increase in output and rate of return. Actually, the rate of return during the eighties is somewhat lower than in seventies both for public and private limited companies (nonfinancial).

We should mention that the method used to derive the estimates presented in column (3) of Table 12 is not based on detailed data. Thus, the conversion of present value of capital stock in a given year to a different price base is done at the overall level only. It is therefore possible that the estimates so obtained are overestimates. It is also

possible that the age composition of capital assets in 1980-81 contain larger volume of new additions and replacements with higher potential capital service (as compared to 1955-56 or 1960-61) and that therefore, while applying the DCFM, a higher life span of assets should be assumed. For these several reasons, the results would be unsatisfactory. Nevertheless, they are presented to give an idea of the difference in the estimates obtained by quite independent approaches.

The estimates of present value of assets obtained here refer to gross fixed assets and would require to be adjusted for depreciation to obtain the corresponding net fixed assets figures. In Table 10 we compare the absolute levels of depreciation provision as obtained from Income and Outlay Account and Balance Sheet. The table also gives Rates of Depreciation using depreciation figures from Income and Outlay Account and gross and net fixed assets (book value) from Table 4. These rates are reasonably steady with small values of standard deviation and coefficient of variation. However, these rates are with reference to fixed assets at book value while our exercise requires netting of gross fixed assets at current market value. Assuming that the estimates of depreciation available from Balance Sheet are unlikely to be underestimates (see two sets of data in Table 10) the ratios of net to gross fixed assets (Table 4) have been used to obtain net fixed assets at current value (Table 14). Net present value of assets for 1980-81 are then taken forward by PIM using estimates of net fixed capital formation from Tables 7 and 8 to obtain net fixed assets for the subsequent period at current and 1980-81 prices (Table 14). The current price estimates are used to obtain the fixed capital-output ratios as well as the rates of depreciation. For fixed capital-output ratios the estimates of net value added from Table 6 are used. [Rates of depreciation are calculated taking the depreciation provision made during the year as percentage of gross/net fixed assets at the beginning of the year (assumed to be the same as at the end of the previous year) (Table 15)]. The fixed capitaloutput ratios (net) are presented in Table 14. The fixed capital-output ratio increases from 3.12 in 1960-61 to 4.39 in 1970-71 but comes down to

3.30 in 1980-81. The estimates appear reasonable. CSO's estimates presented in 'Estimates of Capital Stock of Indian Economy' [CSO, 1988, Statement 5] gives fixed capital-output ratio for 1981-82 as 3.4 for mining and quarrying, 3.1 for registered manufacturing, 2.7 for hotel and restaurants, and 3.5 for transport by other means. It may be noted, that these are the industry-groups which would be covered under non-financial joint stock companies and that the industry groups covered in the CSO classification includes both organised and unorganised enterprises within each sector except for manufacturing (registered). The organised parts of these industry groups included under private corporate sector are likely to be more capital intensive with even higher fixed capital-output ratios. The 'other industries' included under joint stock companies, on the other hand are primarily 'services', hotels and restaurants, etc., and less capital intensive. Thus, we may conclude that the estimates of present value of fixed assets derived through DCFM (Table 14) appear reasonable and may be used for further analytical studies.

Table 15 presents similar estimates for total capital stock (including inventories). The capital - output ratio works out at 5.54 in 1970-71, 4.29 in 1981-82 and 5.08 in 1985-86 at current prices. At 1980-81 prices the corresponding estimates are 4.51, 4.29 and 4.67, respectively.

COMPARISON BETWEEN ALTERNATIVE ESTIMATES

We now propose to compare, in greater detail, the several estimates derived by us using annual sample studies of RBI with those published in the NAS. The latter includes annual estimates of gross savings of non-financial joint stock companies within the private corporate sector, net savings and gross/net capital formation for the overall private corporate sector and net fixed capital stock for all joint stock companies (financial and non-financial) within the private corporate sector. Before comparing the two sets of estimates, the NAS series have been adjusted wherever necessary to obtain estimates for non-financial joint stock companies so that they become more directly comparable with those derived by us.

The data on gross savings separately for nonfinancial Joint Stock Companies for the period 1956-57 to 1969-70 are not available in NAS. Therefore, the series of gross savings of private corporate sector for the period 1956-57 to 1969-70 are adjusted to obtain the corresponding estimates for non-financial joint stock companies. This adjustment is by the use of the factor 0.8947 which is the average of the proportion of gross savings of non-financial joint stock companies to that of total private corporate sector for the period 1970-71 to 1987-88 [NAS 1990, 1989 - New series].

Similarly, the series of gross fixed capital formation for the period 1956-57 to 1986-87 is adjusted by using the factor 0.7329 which is the average of the proportion of joint stock companies to total corporate sector for the period 1970-71 to 1980-81 [NAS, 1979, 1985, 1987].

For the RBI sample surveys, the basic source of data is the Annual Accounts of the sampled non-financial joint stock companies, i.e., the annual Balance Sheets and Income and Outlay Accounts. The figures of depreciation provision are from Income and Outlay Accounts where the estimates are prepared by individual companies applying the standard methodology. In NAS (1990), depreciation provision (consumption of fixed capital) is independently estimated at replacement cost based on the economic life of individual assets and hence differs from those derived from books of accounts. The NAS (1990) has presented both the sets of figures to enable a direct comparison which we reproduce in Table 16 (cols 4 & 5; 8 & 9) along with the estimates derived by us (cols 2 & 3; 6 & 7). These are also based on the data from the books of accounts of the companies. The estimates in cols. (3) and (4)of Table 16 differ mainly because of different methods used in estimating the totals from the sample data. However, it may be noticed that, except for the first year, the estimates derived by us are higher than those from NAS. In Table 16, we compare our estimates of depreciation with those, for private corporate sector, obtained from National Account Statistics (NAS). It will be noticed that, for the first three years (beginning 1980-81), the NAS estimates are slightly higher than those derived by us and lower thereafter. In the NAS estimates, Fixed Assets are at replacement cost determined by PIM and consumption of fixed capital (depreciation) is estimated therefrom using straight line method. Also, the NAS estimates are for private corporate sector (non-financial and financial joint stock companies plus cooperative societies) while the estimates derived by us refer to non-financial joint stock companies only. It is difficult to argue in favour of any one particular set of estimates except to point out that PIM is expected to give better estimates of capital consumption based on the replacement value of the assets.

In view of the differences in the estimates of depreciation provisions in the NAS and ours, in the following, we shall compare only the estimates of gross fixed capital formation and gross savings (Table 17). It will be seen that our estimates are higher, in both the cases, compared to those from NAS and that the percentage difference in gross fixed capital formation is much larger than in gross savings. Such large differences, particularly in the estimates of gross fixed capital formation, can at best be only partly explained by the differences in methods used to derive total estimates from the same basic data. The differences are somewhat smaller for the estimates of gross savings though again our estimates are higher than the NAS estimates for all years except for a few years during 1956-57 to 1962-63.

The methods used to estimate net fixed assets are substantially different in the two cases. We use the DCFM while NAS uses PIM approach and the two appear to give substantially different results (Table 18). It will be seen that NAS gives much lower estimates of replacement value of fixed capital and hence a much lower fixed capital output ratio. This needs further consideration. It is somewhat surprising that NAS estimates for private corporate sector, which comprises organised enterprises with manufacturing predominating, should have overall fixed capital output ratio lower than the all-India average (1.93 for corporate sector joint stock companies against 2.5 for all -India covering both organised and unorganised enterprises.) Thus, it seems that NAS estimates of fixed capital formation, fixed capital stock, and savings of the private corporate sector

are somewhat underestimates. This is also true of total capital-output ratio as can be seen from the results in Table 18.

JOINT STOCK COMPANIES: BEHAVIOUR AT INDUSTRY GROUP LEVEL

Except in the RBI sample surveys, no industrywise analysis is available of joint stock companies and their behaviour over a sufficiently long period. The current practice of 'blowing up' the sample data by the paid-up capital ratio has often been questioned and its application to the data at the industry level has been very limited. This is because such estimates, for individual items at the industry level, would have a much larger margin of uncertainty than the global estimates for all joint stock companies. On the other hand, it can be argued that 'blowing-up' at the industry level would take into account the inter-industry variation in coverage and would therefore give better estimates. Hence, we propose to prepare estimates and analyse the data for four main industry groups out of the six for which RBI sample data are available, namely, Agriculture and Allied Activities, Mining and Quarrying, Processing and Manufacture - Foodstuffs, Textiles, Tobacco, Leather and Products thereof, and Processing and Manufacture - Metals, Chemicals and Products thereof. These account for about 75 to 80 per cent of value added by all nongovernment non-financial joint stock companies. As before, for public limited companies, we adjust the sample data before 'blowing up'. For the private limited companies, we 'blow-up' directly. The study is limited to the period of seventeen years (1970-71 to 1986-87) because of the absence of data on industry-group wise paid-up capital for the earlier period. The results are given in Tables 19 to 30.

It will be noticed that, irrespective of the measure used, industry-group 'Processing and Manufacture of Metals, Chemicals and Products thereof' is the largest in size and 'Mining and Quarrying' is the smallest. The performance of the latter industry group over the seventeen year period beginning 1970-71 is substantially at a lower level as compared to those of other industry groups. In terms of expansion and growth, Agriculture and Allied Activities covering Tea, Coffee and Rubber plantations appear to be ahead of others though annual growth rates (at constant prices) of both the groups of Processing and Manufacture are also substantial. What comes out clearly from Table 24 is the disparity in development pattern between industry groups. Thus, growth of paid up capital for Mining and Quarrying has been much lower than that of other industry groups. At constant prices, both fixed capital formation and value added show substantial growth in all industry-groups except Mining and Quarrying. For Mining & Quarrying, both net fixed capital formation and net value added do not show positive growth at constant prices over the period 1970-71 to 1986-87. It is also significant that, for all the four groups of industries, fixed capital formation shows a much faster growth than value added (output) thus suggesting that increase in output has not been commensurate with investment over the period. In other words, in all the four industry groups, there is an increase in incremental capital/output ratio (ICOR) over the period.

For most of the characteristics, patterns of growth are distinctly different over the seventies and the eighties. However, because of the erratic behaviour - particularly of gross/net fixed capital formation - the results are not always statistically significant. In summary, considering only gross/net value added and gross/net fixed capital formation at constant prices, the results clearly show that for Agriculture and Allied Activities and Processing and Manufacture: Metals, Chemicals and Products thereof, the eighties show substantially higher rate of increase. For the other two industry-groups, as well as for all industries, fixed capital formation has risen substantially in the eighties as compared to seventies but with no particular increase in the rate of growth of value added.

The pattern of growth between the Public and Private limited companies within each industry group is not always the same and is particularly different for private limited companies. For Agriculture and Allied Activities, growth rate in the eighties for private limited companies is much higher while, for Mining and Quarrying and Processing & Manufacture of Metals, Chemicals and Products thereof, the pattern is reversed with

the case of value added. Fixed capital formation, for all industry groups, shows higher growth in the eighties irrespective of being public or private limited. Summary results of rates of growth of value added and fixed capital formation for the four industry groups for the seventies and the eighties are given in Table 25 along with the growth rates for all industries.

The rates of savings (Table 26) are disappointing, besides being very erratic, except in the case of Processing & Manufacture of Metals, Chemicals and Products thereof. In this case, net saving is positive throughout the period, with the rate ranging between a little over 4.0 per cent and 12.69 per cent giving an average of 9.0 per cent over the period. The overall average rates of net savings for the two groups of industries viz., Mining, & Ouarrying and Processing & Manufacture of Foodstuffs, Textiles, Tobacco, Leather and products thereof, were low, 3.5 per cent and 2.66 per cent, respectively, with negative savings in several years. In Agriculture & Allied Activities, the rate of net saving averaged 11.6 per cent because of the reasonably high rate of savings during the seventies. Low savings imply small internal finances and large borrowing for capital formation. Because of the wide fluctuations in both gross saving and gross fixed capital formation, no pattern emerges from Table 27 presenting gross savings as a proportion of gross fixed capital formation and even the averages get distorted because of occasional high ratios (e.g., 1977-78 for Agriculture & Allied Activities or 1976-77 for Processing & Manufacture of Metals, Chemicals and Products thereof). Generally speaking, (except in most part of the seventies, in Agriculture & Allied Activities and Processing & Manufacture of Metals, Chemicals & Products thereof), gross saving have been lower than gross fixed capital formation giving overall low ratios. The other two industry groups have gross saving higher than gross fixed capital formation but only in a few years.

Between Public Limited and Private Limited companies, within each industry groups, there is no clear difference, gross saving being lower than gross fixed capital formation in most years. Comparing borrowing with net worth (Table 28). the growth rate being higher in the seventies in it is seen that the former is higher than the latter in all years, (except in Processing and Manufacture of Foodstuffs, textiles, etc., in 1974-75 when it was marginally lower), for all the three industry groups except Agriculture. In Agriculture and Allied Activities, borrowing was lower than net worth in all years except the three years 1980-81 to 1982-83. In general, for the four industry groups, annual fixed investment was not financed by internal resources and dependence on external resources in the form of borrowing has been quite substantial.

In Table 29, we show the shares of factor incomes in the total value added (net). It will be noticed that the share of labour is very different between the four industry-groups: around 55 per cent in Processing & Manufacture of Metals, Chemicals and Products thereof, around 66 percent in Processing & Manufacture of Foodstuffs, Textiles, etc., 72 per cent for Mining & Quarrying, and 70 per cent in Agriculture and Allied Activities. The comparatively smaller share of labour income in total value added in the case of Metal & Chemical industries goes with higher rate of savings and hence larger internal resources for capital formation.

Lastly, in Table 30, we show profitability ratios defined as Profit (gross of tax & interest but net of depreciation) as a percentage of capital employed. It will be seen that, in Agriculture and Allied Activities, the ratio varies from 12.35 per cent in 1972-73 to 47 per cent in 1977-78, and in Mining and Quarrying from 2.1 per cent in 1971-72 to 17.7 per cent in 1985-86. In the other two industry-groups, the range of variation is somewhat smaller - 9.5 per cent to 20.7 per cent in Processing and Manufacture of Foodstuffs. Textiles, etc., and from 12.3 per cent to 20.9 per cent in Processing and Manufacture of Metals. Chemicals, etc. In view of such fluctuations in the profitability ratio, we preferred not to use the Discount Cash Flow Method (using profitability ratio as the rate of discount) for measuring Present Value of Capital for individual industry groups. Besides, it is necessary to be more specific about the age of assets and the period over which potential capital services can be expected when the industry groups are so different in nature as Plantations on the one hand and Manufacture of Metals & Chemicals on the other.

Even these brief comments bring out the distinct character of different industry groups. Processing & Manufacture of Metals and Chemicals is the largest and shows generally a steady pattern of output and investment. Mining and quarrying on the other hand shows wide fluctuations and a decline in output/value added at constant prices over the period. There is also a difference between the seventies and the eighties, the performance of the industry-groups being distinctly better in the eighties than in the seventies. In Table 31, we give a summary of the principal results. It highlights the gradual increase in gross fixed investment over the period accompanied by a fall in savings.

CONCLUDING REMARKS

This has been a rather laborious and time consuming exercise. However, we hope that having a comparable long period series for the non-government non-financial joint stock companies has several advantages. Presently, the general practice is to revise the estimates of corporate sector savings and investment every time new sample results for a common year become available. This can be avoided if the suggested method of adjusted sample results is standardised and adopted. The method also has the advantage that it reduces the 'blowing up' factor and thus mitigates the general criticism against it.

Of course, the basic question of reliability of the results and validity of the conclusions drawn may be raised. The basic information used for the present study have gone through several stages of processing and adjustments and it is very difficult to assess their reliability. For this reason, we have included in the appendices, the results produced at different stages of processing along with the original data so that one may assess both the adjustment process and the results. In doing this, one should keep in mind the usual limitation of economic statistics and the fact that their validity is to be judged not so much in terms of sampling errors as in terms of the nature of the results and their empirical validity in the context of actual economic situation. We hope that our procedures and the results do stand this criterion.

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Year	Pa	id-up Capital (Rs	lakh)	Percentag	e Coverage
	Total	Sample	Adjusted Sample	Sample to Total	Adjusted Sample To Total
(1)	(2)	(3)	(4)	(5)	(6)
1962-63	117.060	81,637	128,235	69.74	109.55
1963-64	127.870	85,154	133,453	66.59	104.37
1964-65	135,300	87,225	136,769	64.47	101.09
1965-66	147.820	106,688	141,522	72.17	9 5 .73
1966-67	159.240	119,052	158,172	74.76	99.33
1967-68	168,430	126,135	167,583	74.89	99.50
1968-69	180.070	131,617	174,866	73.09	97.11
1969-70	182,750	138,578	184,198	75.83	100.79
1970-71	194,830	156,911	191,165	80.54	98.12
1971-72	203,590	161,588	196,863	7 9 .37	96.70
1972-73	217,560	166,774	203,247	76.66	93.42
1973-74	232,330	172,178	210,505	74.11	90.61
1974-75	248,440	182,261	223,507	73.36	89.96
1975-76	267,540	191,356	234,717	71.52	87.73
1976-77	280,800	202,973	248,967	72.28	88.66
1977-78	311,320	214,744	264,865	68.98	85.08
1978-79	324,020	224,351	279,855	69.24	86.37
1979-80	344,490	235,705	294,018	68.42	85.35
1980-81	359,030	270,918	309,876	75.46	86.31
1981-82	408,310	288,430	329,906	70.64	8 0 .80
1982-83	464,290	324,596	349,590	69.91	75.30
1983-84	511,440	358,700	373,475	70.14	73.02
1984-85	564,080	392,355	•	69.56	
1985-86	642,070	414,925		64.62	
1986-87	750,980	455,855		60.70	

TABLE 1. NON-GOVERNMENT NON-FINANCIAL PUBLIC LIMITED COMPANIES PAID-UP CAPITAL: SAMPLE DATA AND ADJUSTED SAMPLE DATA 1962-63 TO 1986-87

Note: The method of adjusted sample was not used for the last three years as no second sample results are available for more recent years.

 TABLE 2. NON-GOVERNMENT NON-FINANCIAL PUBLIC LIMITED COMPANIES: COMPARISON OF TOTAL

 ESTIMATES PREPARED BY TWO ALTERNATIVE METHODS FOR THE YEAR 1962-63.

	Total (I	Rs lakh)	Di	fference
Item	As Estimated By RBI	As Presented In This Study	Actual (Rs lakh) [2-3]	Percent [(4)as % of (2)]
(1)	(2)	(3)	(4)	(5)
1. Net Worth	186,522	176.319	10.203	5.47
2. Borrowings	119,898	126,526	(-) 6.628	(-) 5.53
3. Capital employed	306,420	302,845	3.575	1.17
4. Gross Fixed Assets	292,101	262,498	29.603	10.13
5. Net Fixed Assets	171,364	180,007	(-) 8.643	(-) 5.04
6. Gross Profit	41,258	41.555	(-) 297	(-) 0.72
7. Interest	6,577	6.281	296	4.50
8. Depreciation Provision (I-O A/C)	14,887	16,323	(-) 1,436	(-) 9.65

	2	id Up Capita			Net Worth		~	arrowings		3	ital Employ.	g		H	orrowings a	is Percentag	e of	
Year						(Rs1	akh)						U	apital Emplo	pake		Net Wor	æ
6	Public (2)	Private (3)	Total (4)	Public (8)	Privete (6)	Total ()	Public (8)	Private (9)	Total (10)	Public (11)	Private (12)	Total (13)	Public (14)	Private (15)	Total (16)	Public (17)	Private (18)	Total (19)
1955-56				97,252	35,196	132,448	40,633	22,654	63,287	137,885	57,850	195,735	29.47	39.16	32.33	41.78	64.37	47.78
1956-57	69,570	30,930	100,500	102,814	37,211	140,025	51,953	25,141	100	154,767	62,352	217,119	33.57	40.32	35.51	50.53	64.56	55.06
85-7261	75,560	29,390	104,950	110,216	37,086	147,302	65,024	25,259	90,283	175,240	62,345	237,585	37.11	40.51	38.00	29.00	68.11	61.29
1958-59	78,220	30,450	108,670	114,321	38,560	152,881	68,476	23,341	91,837	182,817	61,901	244,718	34.19	37.71	37.53	59.92	60.53	60.07
1959-60	81,410	32,740	114,150	122,452	43,450	165,902	69,352	721,097	96,449	191,804	70,547	262,351	36.16	38.41	36.76	56.64	62.36	58.14
1960-61	025,19	35,630	127,150	152,462	38,581	191,043	88,437	33,776	122,213	240,899	72,357	313,256	36.71	46.68	39.01	58.01	87.55	63.97
1961-62	109,330	29,610	138,940	171,546	44,562	216,108	103,984	36,912	140,896	275,530	81,474	357,004	37.74	45.31	39.47	60.61	82.83	65.20
1962-63	117,060	070,02	147,030	186,522	48,769	235,291	119,898	41,930	161,828	306,420	669"06	397,119	39.13	46.23	40.75	64.28	85.98	68.78
1963-64	127,870	36,130	164,000	198,023	59,718	257,741	147,524	51,344	198,868	345,547	111,062	456,609	42.69	46.23	43.55	74.50	85.98	77.16
1964-65	135,300	37,490	172,790	217,037	65,344	282,381	171,739	58,930	230,669	388,775	124,274	513,049	44.17	47.24	44.96	79.13	90.18	81.69
1965-66	147,820	40,020	187,840	242,131	63,142	305,273	207,191	68,503	Z75,694	449,322	131,645	580,967	46.11	52.04	47.45	85.57	108.49	90.31
1966-67	159,240	41,740	200,980	249,081	62,723	311,804	244,753	610'69	313,772	493,834	131,742	625,576	49.56	52.39	50.15	98.26	110.04	100.63
1967-68	168,430	43,020	211,450	260,550	64,702	325,252	272,202	166'21	345,193	532,752	137,693	670,445	51.09	53.01	SI.49	104.47	112.81	106.13
1968-69	180,070	45,870	225,940	280,366	70,395	350,761	295,235	80,005	375,240	575,601	150,400	726,001	51.29	53.19	51.69	105.30	113.65	106.98
1969-70	182,750	47,240	229,990	289,008	75,395	364,403	209,594	85,138	384,732	588,602	160,533	749,135	50.90	53.03	51.36	103.66	112.92	105.58
1970-71	194,830	49,090	243,920	316,300	74,710	010'16E	326,856	102,220	429,076	643,156	176,930	820,086	50.82	57.77	52.32	103.34	136.82	109.74
1971-72	203,590	53,580	257,170	341,728	84,020	425,748	348,392	121,238	469,630	690,120	205,258	895,378	50.48	59.07	52.45	101.95	144.30	110.31
1972-73	217,560	57,450	275,010	377,167	97,564	474,731	366,520	133,524	500,044	743,687	231,088	914,715	49.28	57.70	51.30	97.18	136.86	105.33
1973-74	232,330	66,260	298,590	423,233	115,670	538,903	408,560	163,500	572,060	831,793	Z79,170	1,110,963	49.12	58.57	51.49	96.53	141.35	106.15
C1-4161	248,440	040,01	323,480	489,128	137,916	527,044	469,669	190,616	660,285 760,785	958,797	328,532	1,287,329	48.99	28.02	51.29	96.02	138.21	05.001
6/-C/61	040,040	00,1,20		538 609	160 061	197'CDD	676'T#C	0C0'017	101/701	1112176		1 511 246	81.1X	07 00 40	01.00	106.40	N/7CT	64-CTT
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1978-79	324,020	101,980	426,000	638,279	190.311	828,590	705.501	309.161	1.014.662	1.343.780	499.472	1.843.252	52.50	61.90	55.05	110.53	162.45	122.46
1979-80	344,490	109,140	453,630	718,493	219,761	938,254	813,348	350,015	1,163,363	1,531,841	569,776	2,101,617	53.10	61.43	55.36	113.20	12.921	123.99
1980-81	359,030	132,380	491,410	799,640	275,508	1,075,148	935,521	387,676	1,323,197	1,735,161	663,184	2,398,345	53.92	58.46	55.17	116.99	140.71	123.07
1981-82	408,310	154,310	562,620	971,488	327,736	1,299,224	1,228,566	509,817	1,738,383	2,200,054	837,553	3,037,607	55.74	60.87	57.23	126.46	155.56	133.80
1982-83	464,290	167,850	632,140	1,172,769	361,758	1,534,527	1,598,995	614,431	2,213,426	2,771,764	976,189	3,747,953	<i>51.6</i> 9	62.94	29:06	136.34	169.85	144.24
1983-84	511,440	187,540	698,980	1,382,918	423,194	1,806,112	1,890,718	716,457	2,607,175	3,273,636	1,139,651	4,413,287	<i>S1.76</i>	62.87	59.08	136.72	169.30	144.35
1984-85	564,080	199,860	763,940	1,722,845	486,305	2,209,150	2,259,603	820,714	3,080,317	3,982,448	1,307,019	5,289,467	S6.74	62.79	28.23	131.16	108.11	29.45
1985-86	642,070	217,570	859,640	2,410,280	590,684	3,000,964	2,866,995	984,419	3,851,414	5,277,275	1,575,103	6,852,378	5	62.50	56.21	118.95	166.66	128.33
1986-87	750,980	244,740	995,720	2,785,330	677,231	3,462,561	3,558,728	1,177,389	4,736,117	6,344,058	1,854,620	8,198,678	56.10	63.48	57.77	127.77	173.85	136.78
955-56 TO 1986	5																	
e													7.8104	8.2491	7.6915	26.4014	36.7101	28.255
2													16.4324	15.3520	15.6479	27.8540	782.62	28.001
ÐA													47.5306	53.7331	49.1534	94.7850	122.6587	100.901

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rision (19) (19) (19) (19) (19) (19) (19) (19)		iation Pro ing the year	Private (18)		1529	1757	2130	1865	2237	2119	2272	2855	3247	3554	4339	4370	4514	4740	540	7150	8309	10025	11470	14353	16283	22617	25250	28106	34122	41747	55765	71009	94916	99726	109454	
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Frond Amon Dynomial Antification	Fore Allow Depreciation Fore Part Allow Part Allow Depreciation Fore	Groe	Public (2)		119118	132437	154937	170891	183846	221465	261660	292101	304728	343608	115566	133254	471505	518270	535951	588344	1/0119	723202	813238	915369	1037601	1106417	1266088	1368837	1525985	1726327	2147421	1146727	167256	131738	6017965	
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Net Gross Depreciation Vorth Fixed Depreciation Asset (4) (4) (22) (3) (4) (53.79 53.79 58.12 (57.44 59.80 61.67 712.29 69.96 68.76 74.98 77.16 75.09 80.32 118.15 119.14 22.34 131.89 135.89 22.34 131.89 135.89 22.34 131.89 135.66 42.35 155.15 127.66 58.81 178.59 163.28 70.90 212.90 182.48 83.89 234.02 207.00 83.89 234.02 207.00 83.89 234.02 207.00 93.81 177.66 289.43 77.44 289.41 289.43 77.44 289.41 289.43 77.44 289.41 289.55 91.73 357.93 357.93	a Bomowinge				Private					Total		
(2) (3) (4) 63.79 53.79 58.12 65.74 59.86 61.67 72.29 69.96 68.76 72.29 69.96 68.76 73.29 69.96 68.76 73.29 69.96 68.76 73.29 69.96 68.76 73.29 118.15 119.14 112.52 118.15 119.14 112.52 118.15 119.14 12.53 135.15 127.66 63.37 195.63 163.28 70.90 212.90 182.48 71.95 155.15 127.66 63.37 195.63 163.28 70.90 212.90 182.48 77.60 272.05 287.19 77.60 367.21 289.93 77.60 367.21 289.93 77.60 367.21 289.93 77.60 68.04 740.63 77.60 68.04 740.63 </th <th>ant with the</th> <th>Capital Employed</th> <th>Net Worth</th> <th>Gross Fixed Asset</th> <th>Depreciation</th> <th>Borrowings</th> <th>Capital Employed</th> <th>Net Worth</th> <th>Gross Fíxed Asset</th> <th>Depreciation</th> <th>Borrowings</th> <th>Capital Employed</th>	ant with the	Capital Employed	Net Worth	Gross Fixed Asset	Depreciation	Borrowings	Capital Employed	Net Worth	Gross Fíxed Asset	Depreciation	Borrowings	Capital Employed
63.79 53.79 53.79 58.12 67.44 59.80 61.67 72.29 69.96 68.76 74.98 77.16 75.09 80.32 83.01 83.00 100.00 1100.00 100.00 112.52 118.15 119.14 112.52 118.15 119.14 112.52 118.15 119.14 112.52 118.15 119.14 122.34 131.89 135.89 122.34 131.89 135.46 122.34 131.89 135.46 135.81 178.59 163.28 170.90 212.90 182.48 163.37 195.63 157.46 183.89 234.02 227.09 183.89 234.02 235.19 207.40 182.48 335.55 207.41 289.47 289.93 207.44 289.47 289.93 207.48 713.26 252.55 207.41 289.47 289.93 207.44 289.47 289.93 207.48 779.56 335.19 207.48 779.56 335.19 207.48 779.56 289.93 <td< td=""><td>(2)</td><td>(9)</td><td>6</td><td>(8)</td><td>(6)</td><td>(10)</td><td>(11)</td><td>(12)</td><td>(13)</td><td>(14)</td><td>(15)</td><td>(16)</td></td<>	(2)	(9)	6	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
67,44 59,80 61,67 72.29 69,96 68.76 74,98 77.16 75.09 80,32 83.01 100.00 100,00 100,00 100.00 112,52 118.15 119.14 112,52 118.15 119.14 112,52 118.15 119.14 122,34 131.89 135.89 122,34 131.89 135.89 122,34 131.89 135.46 142,35 155.15 127.66 138.81 178.59 163.28 170,90 212.90 182.48 170,90 212.90 182.48 170,90 212.90 182.48 170,90 212.90 182.45 207.40 182.43 335.19 207.43 326.55 255.42 207.44 289.47 289.93 207.43 326.55 335.19 277.60 367.21 382.97 287.44 289.47 </td <td>45.95</td> <td><i>57.2</i>4</td> <td>91.23</td> <td>61.98</td> <td>68.41</td> <td>10.13</td> <td>79.95</td> <td>69.33</td> <td>54.97</td> <td>59.57</td> <td>51.78</td> <td>62.48</td>	45.95	<i>57.2</i> 4	91.23	61.98	68.41	10.13	79.95	69.33	54.97	59.57	51.78	62.48
72.29 69.96 68.76 74.98 77.16 75.09 80.32 83.01 83.00 100.00 100.00 100.00 112.52 118.15 119.14 112.52 118.15 119.14 112.52 118.15 119.14 112.52 118.15 119.14 112.52 118.15 119.14 112.52 155.15 157.66 188.18 178.59 135.64 163.37 195.63 157.46 163.37 195.63 157.46 170.90 212.90 182.48 183.89 234.02 252.75 207.46 182.48 157.66 183.89 234.02 252.47 277.60 367.21 382.97 277.60 367.21 382.97 277.60 365.55 335.19 277.60 367.21 382.97 277.60 367.21 382.97 277.60 365.65	58.75	64.25	96.45	71.78	80.36	74.43	86.17	73.30	61.53	64.29	63.08	69.31
74.98 77.16 75.09 80.32 83.01 83.00 100.00 100.00 119.14 112.52 118.15 119.14 112.53 135.15 119.14 112.53 135.16 100.00 122.34 135.15 127.66 142.35 155.15 127.66 142.35 178.59 150.40 163.37 195.63 163.28 170.90 212.90 182.48 170.90 212.90 182.48 170.90 212.90 182.48 170.90 212.90 182.48 170.90 212.90 182.48 207.46 183.46 285.42 207.46 289.47 289.93 207.46 285.65 252.42 207.48 282.65 252.43 207.48 283.64 283.65 207.44 289.47 289.93 207.46 284.62 282.65 207.48 282	73.53	72.74	96.13	81.34	91.98	74.78	86.16	77.10	71.61	72.02	73.87	75.84
80.32 83.01 83.00 100.00 100.00 100.00 112.52 1118.15 119.14 112.52 131.81 131.81 112.52 131.81 135.63 122.34 131.81 135.63 122.35 157.66 135.63 142.35 157.65 157.66 163.37 195.63 163.28 170.90 212.90 182.48 170.90 212.90 182.48 183.89 234.02 222.75 207.40 182.48 132.65 207.40 182.48 132.93 207.44 289.47 289.47 207.44 289.47 289.43 207.45 285.56 255.42 207.46 283.64 283.67 207.41 289.47 289.93 207.43 235.55 227.75 207.44 286.55 255.54 207.43 285.55 255.54 207.44 <td< td=""><td>77.43</td><td>75.89</td><td>99.95</td><td>88.91</td><td>101.78</td><td>69.11</td><td>85.54</td><td>80.02</td><td>78.86</td><td>78.83</td><td>75.15</td><td>78.12</td></td<>	77.43	75.89	99.95	88.91	101.78	69.11	85.54	80.02	78.86	78.83	75.15	78.12
100.00 100.00 100.00 100.00 112.52 118.15 119.14 122.34 131.89 135.85 132.35 157.60 109.90 142.35 157.66 109.90 142.35 157.66 127.66 158.81 178.59 150.40 163.37 195.63 163.28 170.90 212.90 182.48 183.89 234.02 227.75 207.40 182.48 153.28 170.90 212.90 182.48 189.56 242.00 227.75 207.44 289.47 289.42 207.46 289.47 289.43 207.46 282.55 335.19 277.60 367.21 382.97 287.48 732.85 335.19 277.60 367.21 382.97 287.48 749.50 529.59 395.71 498.52 485.25 397.73 571.69 608.55 <	78.42	79.62	112.62	105.51	122.22	80.23	97.55	86.84	86.26	88.50	78.92	83.75
112.52 118.15 119.14 122.34 131.89 135.15 119.14 122.38 131.89 135.89 135.89 142.35 155.15 127.66 180.90 163.37 195.63 157.46 157.66 163.37 195.65 157.46 163.28 170.90 212.90 182.48 163.28 183.89 234.02 222.75 227.65 207.46 289.47 289.47 289.53 207.46 285.56 225.542 227.75 207.41 289.47 289.47 289.93 207.43 285.56 287.39 335.19 277.60 365.21 382.97 382.97 377.60 367.21 382.97 382.97 377.60 367.21 382.97 382.97 377.60 367.21 382.97 382.97 377.60 367.21 382.97 382.97 377.60 367.21 382.97 382.97 <td>100.00</td>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
122.34 131.89 135.89 122.38 131.60 135.15 142.35 155.15 127.66 153.81 175.65 155.15 163.37 155.63 163.28 170.90 212.90 182.48 170.90 212.90 182.48 183.56 234.02 222.75 207.46 255.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.48 265.66 255.42 207.13 392.97 382.97 207.13 499.59 529.59 333.27 499.59 529.59 317.35 571.60 529.61 217.36 580.08 529.59 333.27 <	117.58	114.38	115.50	121.42	122.08	109.28	112.60	113.12	118.62	119.55	115.29	113.97
129.88 137.60 109.90 142.35 155.15 127.66 163.37 155.65 127.66 163.37 195.63 163.28 170.90 212.90 182.48 183.85 234.02 207.06 183.56 234.02 207.06 183.56 234.02 207.02 207.46 265.66 255.42 207.46 265.66 255.42 207.46 265.66 255.42 271.60 335.19 232.55 230.82 413.32 438.95 2314.14 289.47 289.93 277.60 367.21 382.97 230.82 413.32 458.55 335.27 498.52 335.19 335.24 579.56 529.59 391.73 571.66 662.18 574.48 779.50 815.71 574.48 779.50 815.71 574.48 779.50 815.71 574.50	135.57	127.20	126.40	140.38	143.43	124.14	125.35	123.16	133.12	136.95	132.41	126.77
142.35 155.15 127.66 163.37 195.63 150.40 163.37 195.63 163.28 170.90 212.90 182.48 183.89 234.02 207.00 183.86 232.02 207.00 183.86 232.02 207.00 207.46 289.47 289.43 207.46 265.66 255.42 207.46 265.65 255.42 277.60 367.21 382.97 247.38 326.55 335.19 230.82 413.32 428.45 333.27 499.59 529.59 391.73 571.66 662.18 477.26 689.04 740.63 574.86 7179.50 815.71 677.20 999.54 972.57 570.20 999.54 972.57 570.20 999.54 972.57 570.20 999.54 972.57 570.20 999.54 972.57 570.20	166.81	143.44	154.79	180.74	195.43	152.01	153.49	134.92	143.84	121.89	162.72	145.76
158.81 178.59 150.40 163.37 195.63 163.28 170.90 212.90 182.48 183.89 234.02 207.00 183.89 234.02 207.00 183.89 234.02 207.00 183.89 235.56 235.42 207.46 289.47 289.93 277.60 367.21 382.97 230.82 413.32 485.45 335.19 235.55 335.19 277.60 367.21 382.97 289.43 236.55 335.19 277.60 367.21 382.97 335.37 499.59 529.59 31.73 571.69 682.18 418.65 618.08 662.18 574.48 779.50 815.71 677.20 999.64 740.63 574.66 689.04 740.63 574.70 972.57 677.57 677.20 999.54 972.57 677.20 <t< td=""><td>194.19</td><td>161.39</td><td>169.37</td><td>205.53</td><td>229.68</td><td>174.47</td><td>171.75</td><td>147.81</td><td>162.44</td><td>141.96</td><td>188.74</td><td>163.78</td></t<>	194.19	161.39	169.37	205.53	229.68	174.47	171.75	147.81	162.44	141.96	188.74	163.78
163.37 195.63 163.28 170.90 212.90 182.48 183.89 234.02 207.00 183.80 234.02 207.00 183.80 234.02 207.00 207.46 285.66 222.75 207.41 289.47 299.93 277.60 367.21 382.97 230.82 413.32 485.45 344.48 468.55 335.19 230.82 413.32 485.45 344.48 468.52 485.45 335.27 499.59 529.59 317.35 571.66 660.18 418.65 618.08 662.18 477.26 689.04 740.63 524.48 779.50 815.71 637.20 990.54 972.57 637.20 990.54 972.57 637.20 972.57 669.04 637.20 972.57 670.56 637.20 91.57.01 972.57	234.28	186.52	163.66	236.46	252.28	202.82	181.94	159.79	186.96	164.67	225.58	185.46
170.90 212.90 182.48 183.89 224.02 227.75 207.46 289.47 289.47 224.14 289.47 289.43 247.38 326.55 62 225.75 277.60 367.21 382.97 320.82 413.32 428.25 334.48 468.52 485.45 334.48 468.52 485.45 337.27 495.59 502.18 418.65 618.08 662.18 417.26 689.04 740.65 524.48 779.50 815.71 637.20 969.64 972.57 769.22 12.40.25 1.174.67 769.22 12.40.25 1.174.67 769.26 12.40.25 1.174.67	276.75	205.00	162.57	238.25	261.80	204.34	182.07	163.21	201.80	177.09	256.74	199.70
183.89 234.02 207.00 189.56 242.00 222.75 207.46 265.66 2255.42 227.160 265.66 255.42 277.60 367.21 382.97 333.27 499.59 529.55 333.27 499.59 529.59 317.66 689.04 740.63 317.25 618.08 662.18 477.26 689.04 740.63 574.8 779.50 815.71 637.20 969.64 740.63 574.8 779.50 815.71 637.20 969.64 740.63 574.8 779.50 815.71 637.20 969.64 740.63 574.8 779.50 815.71 637.20 969.64 740.63 769.21 1240.25 1,174.67 769.22 1,540.25 1,570.57 769.24 660.64 740.63	307.79	221.15	167.70	252.06	285.23	216.10	190.30	170.25	218.57	196.88	282.45	214.02
189.56 242.00 222.75 207.46 265.66 255.42 207.41 289.47 289.93 277.60 325.55 335.19 277.60 355.72 335.19 277.60 43.32 438.27 320.82 413.32 428.25 347.48 468.52 455.45 353.77 499.59 529.59 353.71 499.59 529.59 353.71 499.59 529.59 353.71 499.59 529.59 353.71 499.59 529.59 391.73 571.69 608.55 418.65 618.08 662.18 573.48 779.20 815.71 574.48 779.20 815.71 574.48 779.25 1,174.67 769.22 1,240.25 1,174.67 700.22 1,240.25 1,174.67	333.84	238.94	182.46	282.43	327.69	236.87	207.86	183.60	241.02	223.91	307.04	231.76
207.46 265.66 255.42 224.14 289.47 289.93 277.60 367.21 289.93 320.82 413.32 428.25 344.48 468.52 485.45 333.27 499.59 529.59 391.73 571.69 608.55 417.26 689.04 740.63 524.48 779.50 815.71 677.20 989.64 972.57 677.20 989.64 972.57	338.77	244.34	195.42	301.32	357.40	252.06	221.86	190.74	250.58	241.62	314.80	239.14
224.14 289.47 289.93 247.38 326.55 335.19 277.60 367.21 382.97 330.82 413.32 428.25 344.48 46.8.52 485.45 353.27 499.59 529.59 31.73 571.69 668.55 417.26 689.04 740.65 524.48 779.50 815.71 677.20 989.64 972.57 769.22 1240.25 1,174.67	369.59	266.98	193.64	335.26	388.29	302.64	244.52	204.67	275.73	274.04	351.09	261.79
247.38 326.55 335.19 277.60 367.21 382.97 320.82 413.32 428.25 344.48 46.52 428.25 353.27 499.59 529.59 351.79 571.69 662.18 477.26 689.04 740.65 524.48 779.50 815.71 657.20 989.64 815.71 677.22 1240.25 1,174.67	393.94	286.48	217.78	396.00	464.30	358.95	283.67	222.85	304.88	314.37	384.27	285.83
277.60 367.21 382.97 320.82 413.32 428.25 344.48 468.52 428.25 353.27 499.59 529.59 391.73 571.69 608.55 418.65 618.08 662.18 477.26 689.04 740.63 524.48 779.50 815.71 637.20 969.64 972.57 637.20 969.64 972.57	414,44	308.71	252.88	467.18	554.74	395.32	319.37	248.49	346.90	365.96	409.16	311.18
320.82 413.32 428.25 344.8 468.52 485.45 353.27 499.59 529.59 391.73 571.69 608.55 418.65 618.08 662.18 477.26 689.04 740.65 524.48 779.50 815.71 637.20 969.64 747.57 637.20 969.64 740.65	461.98	345.29	299.81	560.32	670.51	484.07	385.82	282.08	395.15	423.27	460.08	354.65
344.48 468.52 485.45 353.27 499.59 529.59 391.73 571.69 668.55 418.65 618.08 662.18 477.26 689.04 740.65 574.48 779.50 815.71 554.48 779.50 815.71 667.20 969.64 972.57 769.22 1.240.25 1.174.67	531.08	398.01	357.47	675.43	823.11	564.35	4 5 4.04	328.22	451.24	483.58	540.27	410.95
353.27 499.59 529.59 391.73 571.69 608.55 418.65 618.08 662.18 477.26 689.04 740.63 524.48 779.50 815.71 637.20 969.64 972.57 769.22 1.240.25 1,174.67 769.22 1.240.25 1,174.67	612.79	442.98	357.90	767.27	950.00	624.28	482.25	347.19	511.74	550.55	615.96	452.05
391.73 571.69 608.55 418.65 618.08 662.18 477.26 689.04 740.63 524.48 779.50 815.71 657.20 969.64 972.57 769.22 12.40.25 1,174.67 769.22 12.40.25 1,174.67 769.22 12.40.25 1,240.25	648.56	461.68	420.00	918.64	1,185.80	701.77	551.53	366.75	560.22	621.55	663.27	482.43
418.65 618.08 662.18 477.26 689.04 740.63 524.48 779.50 815.71 637.20 969.64 972.57 769.22 12.40.25 1,174.67 769.22 12.40.25 1,174.67 769.26 1.60.7	733.56	517.26	457.50	1,038.87	1,374.84	777.65	606.99	405.03	639.28	715.94	745.82	537.98
477.26 689.04 740.63 524.48 779.50 815.71 637.20 969.64 972.57 769.22 12.40.25 1,174.67 2007 6 50.1	197.74	557.82	493.28	1,163.74	1,565.77	915.33	690.29	433.72	697.03	788.80	830.24	588.42
524.48 779.50 815.71 637.20 969.64 972.57 769.22 1.240.25 1.174.67 2007.05 1.601.73 1.200	919.69	635.89	569.61	1,325.81	1,796.60	1,036.28	787.45	491.12	781.17	888.61	951.91	670.89
637.20 969.64 972.57 769.22 1,240.25 1,174.67 6007.05 1,501.70 1,200.01	1,057.84	720.29	714.10	1,515.88	2,006.57	1,147.79	916.54	562.78	886.04	982.60	1,082.70	765.62
769.22 1,240.25 1,174.67	1,389.20	913.27	849.48	1,953.39	2,569.62	1,509.41	1,157.53	680.07	1,111.97	1,196.37	1,422.42	69'696
	1,808.06	,150.59	937.66	2,297.98	2,774.82	1,819.13	1,349.13	803.24	1,393.28	1,398.91	1,811.12	i,196.45
17.04C'1 7/.10C'1 00./04	2,137.93	,358.92 1	,096.90	2,883.70	3,534.03	2,121.20	1,575.04	945.40	1,701.66	1,697.52	2,133.30	1,408.84
1,130.02 1,865.64 1,728.48	2,555.04 1	,653.16 1	,260.48	3,186.71	3,942.15	2,429.87	1,806.35	1,156.36	2,056.77	2,038.70	2,520.45	1,688.54
1,580.91 2,437.27 2,218.15	3,241.85 2	0,190.66	531.02	3,743.94	4,754.73	2,914.55	2,176.85	1,570.83	2,626.32	2,573.62	3,151.39	2,187.47
1,826.90 2,925.14 2,692.88	4,024.03 2	633.49]	,755.35	4,433.78	5,692.15	3,485.87	2,563.15	1,812.45	3,143.40	3,113.19	3,875.29	2,617.25

TABLE 5. ESTIMATED TOTAL: NET WORTH, GROSS FIXED ASSET, DEPRECIATION, BORROWINGS AND CAPITAL EMPLOYED

VOL. 4 NO. 4

FINANCES OF THE PRIVATE CORPORATE SECTOR

Note: Depreciation refers to accumulated depreciation as recorded in Balance Sheet.

																		-	(Rs lakh)
Year	Remanera	ttion To Emp	loyees F	Profit Plus D	lepreciation	Provision		Gross Va	due Added		Nct	Value Adde	q	Compensa	tion of Em	ployees	å.	rating Surpl	3
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Total as p.c. of all- India	Public	Private	Total	Public	(percer Private	Total Total	et value au Public	lded) Private	Total
(1)	(2)	(6)	(4)	(2)	(9)	(L)	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
19-0961	55,629	16,531	72,160	45,117	13,705	58,822	100,746	30,236	130,982	8.59	89,215	28,117	117,332	62.35	58.79	61.50	37.65	41.21	38.50
1961-62	61,251	19,513	80,764	49,857	16,544	66,401	111,108	36,057	147,165	9.14	97,742	33,485	131,227	62.67	58.27	61.55	37.33	41.73	38.45
1962-63	67,315	22,018	89,333	56,145	18,875	75,020	123,460	40,893	164,353	9.55	108,573	38,038	146,611	62.00	57.88	60.93	38.00	42.12	70.95
1963-64	52,891	30,660	83,551	69,260	23,879	93,139	122,151	54,539	176,690	86.8	102,523	51,292	153,815	51.59	59.78	54.32	48.41	40.22	45.68
1964-65	61,959	35,741	97,700	77,645	26,204	103,849	139,604	61,880	201,549	8.77	116,505	58,326	174,831	53.18	61.28	55.88	46.82	38.72	44.12
1965-66	72,016	36,676	108,692	85,118	100'12	112,119	157,134	63,677	220,811	9.18	131,951	59,338	191,288	54.58	61.80	56.82	45.42	38.20	43.18
1966-67	74,774	36,902	111,676	90,043	25,414	115,457	164,817	62,316	227,133	8.29	138,228	57,946	196,174	54.09	63.68	56.93	45.91	36.32	43.07
1967-68	82,332	38,670	121,002	88,212	23,974	112,186	170,544	62,644	233,188	7.24	142,642	58,130	200,772	57.72	66.52	60.27	42.28	33.48	39.73
1968-69	90,572	42,914	133,486	94,878	25,316	120,194	185,450	68,230	253,680	T.4.T	154,597	63,490	218,087	58.59	61.59	61.21	41.41	32.41	38.79
1969-70	94,254	45,764	140,018	107,406	28,240	135,646	201,660	74,004	275,664	7.38	168,628	68,597	237,225	55.89	66.71	59.02	44.11	33.29	40.98
1970-71	107,716	42,530	150,246	126,928	30,000	156,928	234,644	72,530	307,174	7.74	196,956	65,380	262,336	54.69	65.05	57.27	45.31	34.95	42.73
1971-72	120,420	50,107	170,527	138,059	36,451	174,510	258,479	86,558	345,037	8.17	218,475	78,249	296,724	55.12	64.04	57.47	44.88	35.96	42.53
1972-73	141,027	57,801	198,828	151,660	42,443	194,103	292,687	100,244	392,931	8.46	247,863	90,219	338,082	56.90	64.07	58.81	43.10	35.93	41.19
1973-74	164,859	70,049	234,908	180,903	55,539	236,442	345,762	125,588	471,350	8.28	296,880	114,118	410,998	55.53	61.38	57.16	44.47	38.62	42.84
1974-75	203,922	88,523	292,445	234,561	71,145	305,706	438,483	159,668	598,151	8.92	383,667	145,315	528,982	53.15	60.92	55.28	46.85	39.08	44.72
1975-76	233,397	98,413	331,810	221,642	665'69	291,041	455,039	167,812	622,851	8.75	396,607	151,529	548,136	58.85	64.95	60.53	41.15	35.05	39.47
1976-77	241,366	114,231	355,597	237,644	91,592	329,236	479,010	205,823	684,833	8.95	418,157	183,206	601,363	57.75	62.35	59.13	42.25	59.TE	40.87
81-178	ZUZ'LIZ	142,304	419,576	269,784	98,015	367,799	\$47,056	240,319	787,375	10.6	478,407	215,069	693,476	57.96	66.17	60.50	42.04	33.83	39.50
1978-79	303,297	159,529	462,826	306,776	107,204	413,980	610,073	266,733	876,806	9.34	536,298	238,627	774,925	56.55	66.85	59.73	43.45	33.15	40.27
1979-80	344,595	186,355	530,950	374,050	139,309	513,359	718,645	325,664	1,044,309	10.19	633,796	291,542	925,338	54.37	63.92	57.38	45.63	36.08	42.62
1980-81	390,163	216,104	606,267	414,879	161,536	576,415	805,042	377,640	1,182,682	9.68	707,878	335,893	1,043,771	55.12	64.34	58.08	44.88	35.66	41.92
1981-82	482,171	282,158	764,329	496,997	192,210	102,689	979,168	474,368	1,453,536	10.17	863,141	418,603	1,281,744	55.86	67.40	59.63	44.14	32.60	40.37
1982-83	570,177	300,092	870,269	555,838	218,916	774,754	1,126,015	519,008	1,645,023	10.36	986,240	447,999	1,434,239	57.81	66.98	60.68	42.19	33.02	39.32
1983-84	651,023	327,547	978,570	604,459	249,583	854,042 1	1,255,483	577,130	1,832,612	9.35	1,059,817	482,214	1,542,031	61.43	67.93	63.46	38.57	32.07	36.54
1984-85	756,377	347,421 1	103,798	752,302	273,473 1	,025,775	1,508,679	620,894	2,129,573	10.24	1,266,211	521,168	1,787,379	59.74	66.66	61.76	40.26	33.34	38.24
1985-86	917,002	415,226 1	332,228	969,120	346,615 1	315,735	1,886,122	761,841	2,647,963	11.31	1,582,264	652,387	2,234,651	57.96	63.65	59.62	42.04	36.35	40.38
1986-87	1,061,235	473,316 1	,534,551 1	1,060,364	370,485 1	430,849	2,115,599	843,801	2,959,400	11.36	1,773,846	720,629	2,494,475	59.83	65.68	61.52	40.17	34.32	38.48
19 -09 1	186-87																		
es B													2.90	ZI 2.5	420 2	2101	2.9027	2.9420	2.2101
S													5.0	48 4.6	058 3	.7378	6.7636	8.1440	5.4072
AVG												1	51.0	344 63.	8756 59	1.1274 4	12.9156	36.1244	40.8726
Notese 1. Dat (ii) Private Li 2. Data from	n from 'Final mited Comp 1963-64 onv	ucial Statisté mice, Statem ards are as e	s of Joint S ent 9.3 and stimated.	tock Compa 9.4 for the J	nies in India arrod 1955-	r'(RBI, 196 56 to 1962-4	7) are: (i) Pi 63.	blic Limite	d Companies	s; Statement 9.1	and 9.2 for	the period 1	950-51 to 1!	62-63.					

TABLE 6, ESTIMATED TOTAL: REMUNERATION TO EMPLOYEES, PROFIT PLUS DEPRECIATION PROVISION, GROSSNET VALUE ADDED

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Year	Ret	tained Profit		G	ross Savings		Gross Fix	ed Capital F	ormation	Net Fixed	Capital Fo	rmation
(1)	Public (2)	Private (3)	Total (4)	Public (5)	Private (6)	Total (7)	Public (8)	Private (9)	Total (10)	Public (11)	Private (12)	Total (13)
1955-56	3,428	795	4,223	8.817	2.324	11.141	10 672			5 589		
1956-57	3,443	713	4,156	9,220	2.470	11.690	13,319	3.670	16.989	5 28 3		
1957-58	1,522	585	2,107	8.109	2.715	10.824	22,500	3 581	26 081	7 542	1.913	9.455
1958-59	2,164	572	2,736	9,179	2,437	11,616	15,954	2,836	18,790	15,913	1,451	17,364
1959-60	4,762	1,628	6,390	12,708	3,865	16,573	12,955	6,219	19.174	8,939	971	9,910
1960-61	6,400	1,176	7,576	17,931	3,295	21,226	37,619	-2.064	35,555	5,009	3.982	8,991
1961-62	5,807	1,810	7,617	19,173	4,382	23,555	40,195	8,023	48,218	26.088	-4,183	21,905
1962-63	5,848	1,416	7,264	20,735	4,271	25,006		-		26.829	5.451	32,280
1963-64	14,018	1,933	15,951	33,646	5,180	38,826	42,230	15,122	57.352	22.602	11.875	34,477
1964-65	15,029	2,966	17,995	38,128	6,520	44,648	38,880	9,286	48,166	15,781	5,732	21.513
1965-66	14,506	2,651	17,157	39,690	6,990	46,680	51,903	11.584	63,487	26,720	7.245	33,965
1966-67	16,390	2,127	18,517	42,979	6,497	49,476	37,743	670	38,413	11.154	-3,700	7,454
1967-68	9,735	1,409	11,144	37,367	5,923	43,290	38,251	5,174	43,425	10,349	660	11,009
1968-69	9,397	1,552	10,949	40,250	6,292	46,542	46,765	11,378	58,143	15,912	6.638	22,550
1969-70	21,067	2,279	23,346	54,099	7,686	61,785	17,681	7,076	24,757	15 351	1.669	-13,682
1970-71	24,788	1,831	26,619	62,476	8,981	71,457	52,393	12,714	65,107	14,705	5,564	20,269
1971-72	23,782	2,310	26,092	63,786	10,619	74,405	52,727	22,753	75,480	12,723	14,444	27,167
1972-73	25,060	3,651	28,711	69,884	13,676	83,560	82,131	26,665	108,796	37,307	16,640	53,947
1973-74	42,179	9,155	51,334	91,061	20,625	111,686	90,036	34,888	124 924	41154	23,418	64,572
1974-75	68,793	9,118	78,091	123,789	23,471	147,260	102,131	43,120	145,251	47,315	28,767	76,082
1975-76	26,862	2,433	29,295	85,294	18,716	104,010	122,232	34,405	156,637	63,800	18,122	81,922
1976-77	21,316	4,281	25,597	82,170	26,898	109,068	68,816	56,704	125,520	7,963	34,087	42,050
1977-78	30,480	6,562	37,042	99,130	31,812	130,942	159,671	45,038	204,709	91,022	19,788	110,810
1978-79	53,457	8,793	62,250	127,232	36,899	164,131	102,749	46 774	149,523	28,974	18,668	47,642
1979-80	91,504	21,745	113,249	176,353	55,867	232,220	157,148	60,711	217,859	72,299	26,589	98,888
1980-81	106,599	27,826	134,425	203,763	69,573	273,336	200 34 2	71 202	271,544	103,178	29,455	132,633
1981-82	1 20,901	15,366	136,267	236,928	71,131	308,059	421,094	163,892	584,986	305.067	108,127	413,194
1982-83	111,426	19,254	130,680	251,201	90,263	341,464	599,306	129,084	728,390	459,531	58,075	517,606
1983-84	47,182	17,583	64,765	242,847	112,499	355,346	579,064	219,410	798,474	383,398	124,494	507,892
1984-85	67,737	31,517	99,254	310,205	131,243	441,448	805,947	113,507	919,454	563,479	13,781	577,260
1985-86	111,351	45,195	15,646	415,208	154,649	569,857	1,265,971	208,739	1,474,710	962,113	99,285	1,061,398
1986-87	48,913	24,941	73,854	390,666	148,113	538,779	1,080,448	258,413	1,338,861	738,695	135,241	873,936

TABLE 7. ESTIMATED TOTALS RETAINED PROFIT, GROSS SAVINGS, GROSS/NET FIXED CAPITAL FORMATION	
(at current prices)	

(Rs lakh)

Notes: 1. Data from 'Financial Statistics of Joint Stock Companies in India' (RBI, 1967) are: (i) Public Limited Companies; Statement 9.1 and 9.2 for the period 1950-51 to 1962-63. (ii) Private Limited Companies; Statement 9.3 and 9.4 for the period 1955-56 to 1962-63. Data from 1963-64 onwards are as estimated.

TABLE & ESTIMATED TOTALS GROSS/NET FIXED CAPITAL FORMATION, GROSS/NET VALUE ADDED

(at 1980-81 j	prices)
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					(21	1980-81 pri	ces)					(Rs lakh)
Year	Gross Fix	ed Capital Fo	ormation	Net Fixed	d Capital Fo	rmation	Gro	ss Value Ad	ded	Ne	t Value Ade	ied
(1)	Public (2)	Private (3)	Total (4)	Public (5)	Private (6)	Total (7)	Public (8)	Private (9)	Total (10)	Public (11)	Private (12)	Total (13)
1951-52	55,253			26,969					·			
1952-53	58,747			31,569								
1953-54	24,337			-2,835								
1954-55	61,455			34,309								
1955-56	66,327			32.834								
1956-57	81,462	22,446	103,908	46,128	11,700	57.828						
1957-58	142,045	22,607	164.653	100,461	9,160	109.621						
1958-59	82,492	14.664	97,156	46,2.20	5.020	51.240						
1959-60	66,097	31,730	97.827	25,556	20,316	45.872						
1960-61	184,136	10,103	174,033	129.546	-21,446	108,100	389 733	116 967	506 700	335143	105 624	440 767
1961-62	186,953	37.316	224,270	127.671	24,720	152,391	427 010	138 574	565 584	367 728	125 978	493 706
1962-63	138,810	32,385	171,195	73,703	18,279	91,982	455,236	150,785	606 021	390.129	136,680	526 809
1963-64	180,009	64.4.59	244,467	104.642	49.864	154,506	429 504	191,769	621 273	354.138	177 174	531 312
1964-65	159,214	38.026	197,240	73.281	22,353	95.634	476 627	211 267	688 115	390 694	195 594	586 288
1965-66	199,550	44.537	244.087	109.360	26.623	135,983	509 348	206 408	715 757	419 158	188 494	607 652
1966-67	124,195	2,205	126,400	45,405	-10,806	34,599	486,904	184.095	670,999	408 113	171 084	579 197
1967-68	118,424	16.019	134,443	40.334	3.017	43.351	468 142	171 957	640 099	390 052	158 955	\$49.007
1968-69	139,889	34,035	173,925	53,906	20,216	74,122	502,575	184,905	687,480	416.591	171.086	587 677
1969-70	49,736	19,904	69,640	-39,202	4,785	-34,417	528,875	194.083	722,958	439.937	178 964	618 901
1970-71	138,533	33,617	172,150	43,330	15,416	58,746	586,610	181,325	767,935	491,407	163.124	654.531
1971-72	131,785	56,868	188,653	34,458	36,099	70,557	605,054	202.617	807,671	507.727	181.848	689 575
1972-73	188,115	61,074	249,189	87,376	38,132	125,508	638,636	218,730	857.366	537,897	195.788	733 685
1973-74	183,000	70,911	253,911	81,872	46,055	127,927	662,126	240,498	902.624	560.998	215.642	776.640
1974-75	165,851	70,023	235.874	75,567	45,381	120,948	653,672	238,026	891.698	563.388	213.385	776773
1975-76	179,674	50,573	230,247	97,472	27,872	125,344	655,581	241,769	897.351	573,380	219.068	792.448
1976-77	91,111	75,075	166,186	5,117	43,159	48,276	682,253	293,153	975,407	596 260	261.238	857.498
1977-78	224,194	63,238	287,432	126,564	27,041	153,655	754,872	331,612	1,086,484	657,243	295,465	952,708
1978-79	132,836	60,471	193,307	38,702	24,838	63,540	808,151	353,336	1,161,486	714,017	317,703	1.031.720
1979-80	174,745	67,509	242,254	82,285	30,524	112,809	812,028	367,982	1,180,010	719,569	330,997	1.050.566
1980-81	200,342	71,202	271,544	103,178	29,455	132,633	805,042	377,640	1.182.682	707.878	335.893	1.043771
1981-82	375,910	146,306	52.2,216	274,581	97,628	372,209	898,319	435,200	1,333,519	796,991	386.522	1.183.513
1982-83	490,832	105,720	596,552	378,837	48,264	427,101	986,089	454,513	1,440,602	874,094	397.057	1.271.151
1983-84	429,063	162,574	591,638	275,715	87,979	363,694	1,028,073	472,593	1,500,665	874,725	397,998	1,272,723
1984-85	544,301	76,658	620,959	364,843	2,850	367,693	1,164,913	479,418	1,644 331	985,455	405,610	1,391,065
1985-86	77 0,009	126,962	896,971	567,235	54,671	621,906	1,348,097	544,522	1,892,619	1,145,323	472,231	1,617,554
1986-87	605,734	144,875	750,609	391,826	68,795	460,620	1,461,251	582,816	2,044,067	1,247,343	506,736	1,754,079

Year	Rat	e of Gross Savi	s9 u	Ra	te of Net Savin		Gross Savin	igs as Per cent of Capital Formation	Gross Fixed	Net Savings Ci	as Per cent of G spital Formation	hoes Fixed	Depreciation Gross Fix	Provision as P ed Capital Forn	er cent of nation
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
Ξ	(2)	(3)	(4)	(2)	(9)	ŝ	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1955-56							82.62			32.12			S 0.50		
1956-57							69.22	67.30	68.81	25.85	19.4300	24.46	43.37	47.87	44.35
1957-58							36.04	75.82	41.50	6.76	16.3400	8.08	29.28	59.48	33.42
1958-59							57.53	85.93	61.82	13.57	20.1700	14.56	43.96	65.76	47.26
00-6661	00.21						60.96 1	61.20	86.43	50.75	200181002	15.55	P. 19	79.66	53.10
1900-01	17.26	1215	16.21	11.1	4.18	0.40 0.40	47.66	13 13	59.70	17.00	11 66M	21.31	30.65	20.05	38.39
1962-63	16.79	1044	10.01	t P n v	14.0	0.00	4/./4 68.33	10.40	46.83 66.61	14.44	0000011	08.01	07.55	001.26	20.65
1963-64	27.54	9.50	21.20	13.67	11.5	10.37	19.67	34.25	170	33.19	12.7800	1812	46.48	21 47	10 80
1964-65	27.31	10.54	22.15	12.90	5.09	10.29	98.07	70.21	92.70	38.65	31.9400	37.36	59.41	38.27	55.34
1965-66	25.26	10.98	21.14	10.99	4.47	8.97	76.47	60.34	73.53	20.95	22.8900	20.02	48.52	37.45	46.51
1966-67	26.08	10.43	21.78	11.86	3.67	9.44	113.87	969.70	128.80	43.42	317.4700	48.21	70.45	652.22	80.59
1967-68	22.07	9.46	18.68	6.82	2.42	5.55	98.39	114.47	100.31	25.45	27.2300	25.66	72.94	\$2.74	74.65
1968-69	21.70	9.22	18.35	6.08	244	5.02	86.07	55.30	80.05	20.10	13.6400	18.83	65.97	41.66	61.22
1969-70	26.83	10.39	22.41	12.49	3.32	9 .8	305.97	108.62	249.57	119.14	32.2100	94.31	186.83	76.41	155.26
1970-71	26.63	12.38	23.26	12.59	2.80	10.15	119.24	70.64	109.75	47.31	14.4700	40.88	71.93	56.17	68.87
21-172	24.68	12.27	21.56	10.89	295	8.79	120.97	46.67,	98.58	45.10	10.1500	34.57	75.87	36.52	64.01
1972-73	23.88	13.64	21.27	10.11	4.05	8.49	85.09	51.29	76.80	30.51	13.6900	26.39	54.58	37.60	50.41
1973-74	26.34	16.42	69 E	14.21	8.02	12.49	101.14	59.12	89.40	46.85	26.2400	41.09	\$4.29	32.88	48.31
C1-4/61	28.23	14.70	24.62	17.98	6.27	14.76	121.21	54.43	101.38	67.54	21.1500	53.76	53.67	33.28	47.62
1975-76	18.74	11.15	16.70	6.77	1.61	5.34	69.78	54.40	66.40	21.97	7.0700	18.70	47.81	47.33	47.70
11-0/61	CI./1	13.07	66.CI	01.0	4 .7	97.4	119.41	41.44	80.89	16.05	0066.1	65.0Z	25 .58	68.65	02.99
8/-//61	18.12	47.61	60.01 0.701	15.0	50 F	4, 5 5	97.0 <u>8</u>	/0.63	03.90	60.61	14.5/00	18.09	42.99	8.8	45.87
1979-80	20.00 24 54	12.65	18.12	19.9	2.08 7.45	8.05	123.83	V8.89	10.01	50.05	18.8000	40.14 90.12	11.80	60.08 50.08	51.98
1980-81	25.31	18.42	2112	15.06	8 28	12.88	12.101	12.79	100 66	53.21	30 0800	49.50	48 50	17°00	51.16
1981-82	24.20	14.99	21.19	14.01	3.67	10.63	56.26	43.40	52.66	28.71	9.3700	23.29	27.55	34.03	29.37
1982-83	22.31	17.39	20.76	11.30	4.30	9.11	41.92	66.69	46.88	18.60	14.9200	17.94	23.32	55.01	28.94
1983-84	19.34	19.49	19.39	4.45	3.65	4.20	41.94	51.27	44.50	8.15	8.0100	8.11	33.79	43.26	36.39
1984-85	20.56	21.14	20.73	5.35	6.05	5.55	38.49	115.63	48.01	8.41	Z7.7600	10.79	30.08	87.87	37.22
1985-86	22.01	20.30	21.52	7.04	6.93	7.01	32.80	74.09	38.64	8.80	21.6500	10.61	24.00	52.44	28.03
1986-87	18.47	17.55	18.21	2.76	3.46	2.96	36.16	57.32	40.24	4.53	9.6500	5.52	31.63	47.67	34.72
1960-61 to 198	6-87														
a i	3.0087	3.3043	2.0314	8/ 16.6	1.1338	1300.5	1710.75	6800.071	40.7/33	1764.67	2201.80	16,56,51	5620.16	11/ 4500	2004.42
NO.	4279.CI	1564.62	13.0922	40.4189	40.4506	1051.12	000100	71057/1	2106.84	2418.60	PC8C.061	0568.10	1556.00	1604.001	CE/8.C4
AVG 1956-57 TO 19	054C.22	604/.01	20.0989	NF 60'6	4.3300	C101.8	0071.20	1795-101	1667.60	HACO.CC	7084.05	0404.47	6904'00	7066-01	1445.60
SD SD							49.8511	163.2955	38.9931	22.7271	54.2116	17.9525	29.4723	109.5858	23.1658
S							57.9421	167.2111	48.2070	71.0588	185.9192	62.5789	54.5259	159.9808	44.3804
AVG							86.0361	97.6583	80.8868	31.9835	29.1587	28.6877	54.0519	68.4993	52.1984
Note: 1. Figure: 2. Ratios for pri	s for public lin vate companies	uted companies 1 for 1960-61 a	s only are pres re not presente	ented for 1955- d as gross fixed	-56 as data for p 1 capital format	rivate companion is negative	ies for this yea	u are not availabl	le and hence tot	d can not be d	enved.				

TABLE 9 ESTIMATED TOTALS. RATE OF GROSSNET SAVINGS, GROSSNET SAVINGS AS PERCENTAGE OF GROSS PAGED CAPITAL PORMATION, DEPRECIATION PROMISION AS PERCENT OF GROSS PERCENTING

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Year	Depreciati (Rs	on Provision crore)	Dep	oreciation as per ce (At Book	nt of Fixed Asse Value)	ts
	During the Year	Annual Change from Balance	G Public	ross Fixed Assets Private	Total	Net Fixed Assets Total
(1)	(2)	Sheet (3)	(4)	(5)	(6)	(7)
1956-57	75.34	48.84	4.85	6.59	5.29	9.33
1957-58	87.17	79.82	4.97	6.53	5.47	9.38
1958-59	88.80	70.37	4.53	6.99	4.79	8.00
1959-60	101.83	99. 91 ⁻	4.65	5.60	4.99	8.30
1960-61	136.50	118.86	6.27	5.66	6.11	10.34
1961-62	159.38	201.99	6.04	5.66	6.16	10.24
1962-63	177.42	179.78	5.69	5.65	5.78	9.66
1963-64	228.75	226.85	6.72	5.43	6.64	11.26
1964-65	266.53	207.38	7.58	4.80	7.16	10.81
1965-66	295.23	234.73	7.33	4.62	7.02	10.78
1966-67	309.59	128.28	6.72	4.90	6.40	9.86
1967-68	324.16	204.49	6.44	4.90	6.20	9.55
1968-69	355.93	279.29	6.54	4.78	6.29	9.82
1969-70	384.39	183.01	6.37	4.48	6.16	9.79
1970-71	448.38	334.95	7.03	4.79	6.91	11.23
1971-72	483.13	416.69	6.80	5.69	6.77	11.22
1972-73	548.49	533.10	6.99	5.60	6.95	11.81
1973-74	603.52	592.14	6.76	5.73	6.72	11.60
1974-75	691.69	623.21	6.74	5.46	6.76	11.81
1975-76	747.15	691.98	6.38	5.67	6.39	11.17
1976-77	834.71	733.58	5.86	5.67	6.30	11.04
1977-78	939.00	975.32	6.20	6.57	6.47	11.62
1978-79	1018.81	752.93	5.83	6.49	6.16	11.13
1979-80	1189.71	1031.25	6.20	6.45	6.59	12.02
1980-81	1389.11	971.16	6.37	6.87	6.87	12.58
1981-82	1717.92	2208.90	6.72	7.35	7.49	13.43
1982-83	2107.84	2092.74	6.51	7.62	7.32	12.83
1983-84	2905.81	3085.49	7.12	8.25	8.05	13.44
1984-85	3421.94	3525.37	7.29	9.23	7.77	12.90
1985-86	4133.11	5527.24	7.35	9.17	7.76	12.84
1986-87	4649.25	5575.22	6.33	8.78	6.84	11.23
1956-57 to 19	86-87	STD	0.7678	1.3002	0.7558	1.3786
		CV	12.0708	20.9945	11.5654	12.5324
		AVG	6.3606	6.1929	6.5348	11.0006

TABLE 10. RATE OF DEPRECIATION ON ASSETS, 1956-57 TO 1986-87

Year			Profitab	ility Ratio)											
		Public	Pr	vate	Tota	1	S	Averages elected P	over		Public	;	Private	Т	otal	
(1)		(2)	I	(3)	(4)			(5)			(6)		(7)	I	(8)	
1950-51	. 1	0.1182		,			Period	s beginni	ng 1950-3	51						
1951-52	!	0.1428														
1952-53)	0.1011					1950	-51 to 19	84-85(35))	0.139	1				
1953-54	ا ا	0.1107					1950	-51 to 19	74-75(25))	0.130	9				
1954-55	i 1	0.1220					1950	-51 to 19	69-70(20)	1	0.125	1				
1955-56	i '	0.1348	0.	1042	0.125	57	1950	-51 to 19	66-67(17))	0.126	6				
1956-57	,	0.1269	0.	1232	0.125	18	1950	-51 to 19	65-66(16)	1	0.126	5				
1957-58	3	0.1008	0.	1305	0.108	6	1950	-51 to 19	64-65(15)		0.1260	0				
1958-59	, ,	0.1087	0.	1 49 4	0.119	0	1950	-51 to 19	69-60(10))	0.1200	0				
1959-60) .	0.1335	0.	576	0.140	0										
1960-61		0.1394	0.	1601	0.144	2	Period	s beginni	ng 1955-5	56						
1961-62		0.1324	0.	1715	0.141	4		-	-							
1962-63	3	0.1346	0.	1766	0.144	2	1955	-56 to 19	79-80(25))	0.140	6	0.1546	0.	1437	
1963-64	L I	0.1436	0.	1858	0.153	19	1955	-56 to 19	74-75(20))	0.133	9	0.1515	0.	1379	
1964-65	5	0.1403	0.	1823	0.150	5	1955	-56 to 19	71-72(17))	0.128	7	0.1506	0.	1337	
1965-66	i	0.1334	0.	1721	0.142	2	1955	-56 to 19	70-71(16))	0.127	9	0.1514	0.	1333	
1966-67	,	0.1285	0.	1597	0.135	í1	1955	-56 to 19	69-70(15))	0.127	2	0.1529	0.	1331	
1967-68	3	0.1132	0.	1413	0.119	0	1955	-56 to 19	64-65(10))	0.129	5	0.1541	0.	1353	
1968-69)	0.1112	0.	1368	0.116	5										
1969-70)	0.1264	0.	1422	0.129	8	Period	s beginni	ng 1960-6	51						
1970-71	L	0.1388	0.	1291	0.136	57		Ŧ	÷							
1971-72	2	0.1421	0.	1371	0.140	19	1960	-61 to 19	84-85(25))	0.146	7	0.1585	0.	1494	
1972-73	3	0.1437	0.	1403	0.142	9	1960	-61 to 19	79-80(20)	0.145	5	0.1600	0.	1487	
1973-74	L .	0.1587	0.	1579	0.158	5	1960	-61 to 19	76-77(17	,)	0.140	3	0.1583	0.	1444	
1974-75	5	0.1875	0.	1729	0.183	7	1960	-61 to 19	75-76(16)	0.139	2	0.1574	0.	1433	
1975-76	5	0.1529	0.	1522	0.152	.8	1960	-61 to 19	74-75(15	,)	0.138	3	0.1577	0.	1426	
1 9 76- 7 7	1	0.1590	0.	1728	0.162	26	1960	-61 to 19	69-70(10)	,)	0.130	3	0.162.8	0.	1377	
1977-78	3	0.1614	0.	1 65 7	0.162	5				•		-				
1978-79)	0.1734	0.	1584	0.169	3	Period	ls beginni	ng 1970-1	71						
1979-80)	0.1888	0.	1846	0.187	7				-						
1980-81	L	0.1831	0.	.1840 0.1877		0.1877		-71 to 19	86-87(17	`	0.1532		0.1540 0.		1 533	
1981-82	2	0.1732	0.	1629	0.170)3	1970	-71 to 19	85-86(16)	7) 0.1532 6) 0.1557		2 7	0.1540		0.1533	
1982-83	3	0.1501	0.	1515	0.150)5	19/0-71 to 1985-8 1970-71 to 1984 9		1970-71 to 1983-86(16) 0.1557		, 7	0.1556	0.	1572		
1983-84	L	0.1249	0.	1357	0.127	7	1970	-71 to 19	79-80(10)	,	0.160	6	0.1571	0.	1 508	
1984-85	5	0.1280	0.	1329	0.129	n	1910	-11 00 12	17-00(10	,	0.100	v	0.1371	0.	1376	
1985-86	i	0.1261	0.	1506	0.131	7	Period	s heainni	ne 1980-1	21						
1986-87	,	0.1123	0.	333	0.117	10	1 01 100	is ingital	ing 1 900-0	31						
						•	1980	0-81 to 1	986-87(7)		0.142	5	0.1497	0.	1441	
	1955	-56 to 19	62-63	1960	-61 to 19	81-82	1960	-61 to 19	75-76	1963	-64 to 19	75-76	1982	-83 to 19	86-87	
0770																
SID	0.0130	0.0235	0.0124	0.0219	0.0168	0.0191	0.0173	0.0175	0.0153	0.019	0.0180	0.0169	0.0122	0.0084	0.0109	
AVG	10.3242 0.1264	16.0578 0.1466	9.4896 0.1311	14.72.53 0.1484	10.4558 0.1610	12.6045 0.1512	12.4322 0.1392	11.1320 0.1574	10.6597 0.1433	13.5986 0.1400	11.6725 0.1546	11.8176 0.1433	9.5330 0.1283	5.9862 0.1408	8.2827 0.1312	

TABLE 11. ESTIMATED TOTAL: PROFITABILITY RATIO (RATE OF RETURN) 1950-51 TO 1986-87

Note: 1. Profitability ratio or rate of return is defined as profits (net of depreciation but gross of interest) as proportion of capital employed (net worth plus borrowing). 2. Figures within brackets indicate the number of years which the averages cover.

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									C	onstant Ra	tes of Retu	m	
Desired Countral	[if- of	Pu	blic	Pr	ivate	Т	otal	Put	lic	Priv	vate	To	otal
Period Covered	Assets	Rate of Return	Amount (Rs lakh)	Rate of Return	Amount (Rs lakh)	Rate of Return	Amount (Rs lakh)	10 P.C.	15 P.C.	10 P.C.	15 P.C.	10 P.C.	15 P.C.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Present value of fixed as	iscus in 1950	0-51	-			-							
1950-51 to 1984-85	35	0.1391	263612					478178	228840				
1950-51 to 1974-75	25	0.1391	21 1993					533847	190927				
1950-51 to 1969-70	20	0.1251	204155					258643	164930				
1950-51 to 1966-67	17	0.1266	177811					221451	148944				
1950-51 to 1965-66	16	0.1265	168198					206833	142078				
1950-51 to 1964-65	15	0.1260	158064					191191	134397				
1950-51 to 1959-60	10	0.1200	105181					115584	92042				
Present value of fixed as	sets in 195:	5-56											
1955-56 to 1979-80	25	0.1406	349654	0.1546	93405	0.1437	442076	549673	318469	162981	97349	712654	415818
1955-56 to 1974-75	20	0.1339	318794	0.1515	84248	0.1379	401444	437151	278084	129022	85202	566173	363285
1955-56 to 1971-72	17	0.1287	289047	0.1506	76900	0.1337	364445	364047	246768	110340	77204	474387	323972
1955-56 to 1970-71	16	0.1279	276803	0.1514	74273	0.1333	349682	342574	236682	105506	74934	448079	311616
1955-56 to 1969-70	15	0.1272	263228	0.1529	71434	0.1331	333557	320402	22,5794	100968	72706	421370	298500
1955-56 to 1964-65	10	0.1295	181750	0.1541	55387	0.1353	237135	211769	164382	72362	56459	2841 31	220840
Present value of fixed as	sets in 1960	0-61				·							
1960-61 to 1984-85	25	0.1467	570934	0.1585	149275	0.1494	718995	940476	553421	277774	161527	1218249	71 49 48
1960-61 to 1979-80	20	0.1455	498581	0.1600	126699	0.1487	623975	740302	481272	208095	136443	948398	617716
1960-61 to 1976-77	17	0.1403	462776	0.1583	115199	0.1444	575686	627164	432759	173104	121447	8002.69	554206
1960-61 to 1975-76	16	0.1392	447930	0.1574	111161	0.1433	556924	593714	417048	161966	116215	755680	533263
1960-61 to 1974-75	15	0.1383	430629	0.1577	107185	0.1426	535970	559084	400043	153404	112011	712487	512054
1960-61 to 1969-70	10	0.1303	321843	0.1628	82432	0.1377	402795	371058	294871	108223	86877	479281	381748
Present value of fixed as	sets in 1970	0-71											
1970-71 to 1994-95	25	0.15325	1475958	0.15405	430571	0.1533\$	1908702	2652079	1522916	799399	448693	3452858	1972150
1970-71 to 1989-90	20	0.15325	1277426	0.1540\$	372456	0.1533\$	1651370	2064 524	1311323	624671	385763	2689794	1697344
1970-71 to 1986-87	17	0.15325	1139326	0.15405	331737	01533\$	1472061	1725886	1165746	523503	342270	2249389	1508016
1970-71 to 1985-86	16	0 1557	1069042	0 1553	311231	01556	1380305	1609 509	1111085	483052	323693	2093461	1434775
1970-71 to 1984-85	15	0 1577	006336	0.1556	200474	01572	1286747	1476922	1045070	439771	301908	1016603	1347977
1970-71 to 1979-80	10	0.1606	719245	0.1550	193782	0.1598	913094	957725	754096	259043	200523	1216768	954619
Present value of fixed as	sets in 1980	0-81											
1980-81 to 2004-05	25	0.1425*	4780619	0.1497*	1399432	0.1441*	6183287	7681 8 35	4437697	2370673	1395499	1057474	5836003
1980-81 to 1999-00	20		4075640		1219962		5299745	5997058	3830968	1875341	1217100	7877120	5050781
1980-81 to 1996-97	17		3603005		1096053		4703291	5026021	3413528	1588540	1093803	6618722	4509801
1980-81 to 1995-96	16		3436467		1051746		4492402	4708777	3264521	1494626	1049692	6207 320	4316569
1980-81 to 1994-95	15		3265231		1005848		4275151	4394718	3110305	1401544	1003985	5799844	4116481
1000 01 1000 10			0000000										

TABLE 12. PRESENT VALUE OF GROSS FIXED	ASSETS AT SELECTED POINTS OF TIME, AT	VARIABLE AND CONSTANT RATES OF RETURN
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\$ The average rate of return over 17 years (the period 1970-71 to 1986-87) has been used for 20 years and 25 years life of assets * The average rate of return has been taken to be the same as the average of 7 years (1980-81 to 1986-87) for different assumed life span of assets Note: 1. Alternative estimates of present value of assets for the each of the time points considered above have been estimated assuming different span of life of assets and corresponding rates of return. 2. For background material on each flow and rates of return see Appendix A.6.1.14.

		Present Value of Fixed Assets	: Gross	
Year	Discounted Cash Flow Method	Perpetual Inventory Method	Difference Between	Alternative Estimates
	(25 Years Asset Life) (Rs lakh)	(Rs lakh)	Actual (Rs lakh) Col(2-3)	Percentage Call × 10
(1)	(2)	(3)	(4)	(5)
1955-56 1960-61	442,076 718,995	656,138	62,857	- 8.74
1970-71 1980-81	1,908,702 6,183,287	1,930,545 7,093,681	-21,843 - 9 10,394	-1.14

TABLE 13. ALTERNATIVE ESTIMATES OF PRESENT VALUE FIXED ASSETS: GROSS

TABLE 14. PRESENT VALUE OF NET FIXED ASSETS AND FIXED CAPITAL-OUTPUT RATIOS, 1960-61 TO 1986-87 (AT CURRENT PRICES) (Rs lakh)

Year	Present Value of Fixed Assets:	Net Value Added	Fixed Capital Output Ratio
(1)	Net (2)	(3)	(4)
1960-61	, 366,328	117,332	3.1221
1970-7 1	1,151,710	262,336	4.3902
1980-81	3,446,564	1,043,771	3.3020
1981-82	3,978,277	1,281,744	3.1038
1982-83	4,752,011	1,434,239	3.31 33
1983-84	5 ,99 9,459	1,542,031	3.8906
1984-85	7,281,075	1,787,379	4.0736
1985-86	8,631,595	2,234,651	3.8626
1986-87	10,616,735	2,494,475	4.2561

TABLE 15. PRESENT VALUE OF NET TOTAL ASSETS AND CAPITAL-OUTPUT RATIOS 1970-71 TO 1985-86

(Rs lakh)

V			At Curre	nt Prices					At 1980-	81 Prices		
rear	Net Fixed	Inven-	Total	Net	Capital-O	utput Ratio	Net	Inven-	Total	Net	Capital-O	utput Ratio
	Assets	101163	Assets	Value Added	Fixed	Total	Assets	tories	Assets	Value Added	Fixed	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1970-71	1151710	302020	1453730	262336	4.390	5.541				1		
1980-81	3446564	1261745	4708309	1043771	3.302	4.511	3446564	1261745	4708309	1043771	3.302	4.511
1981-82	3978277	1521251	5499528	1281744	3.104	4.291	3579197	1499127	5078324	1183512	3.024	4.291
1982-83	4752011	1788409	6540420	1434239	3.313	4.560	3951406	1737236	5688642	1271150	3.108	4.475
1983-84	5999459	1928989	7928448	1542031	3.891	5.142	4378507	1851705	6230212	1272723	3.440	4.895
1984-85	7281075	2199552	9480627	1787379	4.074	5.304	4742201	2057441	6799642	1391065	3.409	4.888
1985-86	8631595	2727053	11358648	2234651	3.863	5.083	5109894	2436801	7546696	1617554	3.1.59	4.666

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Year		Depreciatio (Rs o	on Provision rore)			Rate of Dep (per cent of Net	preciation Fixed Assets)	
	As Es	timated	N A	\S	As Est	imated	N A	S
	Balance Sheet	I & O Account	I & O Account	PIM	Balance Sheet	I & O Account	I&O Account	PIM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1960-61	119	136	-	-	3.25	3.73	-	-
1970-71	335	448	-	•	2.91	3.89	-	-
1980-81	971	1,389	1,429	1,700	2.82	4.03	-	-
1981-82	2,209	1,718	1,704	2,001	6.41	4.98	8.45	9.93
1982-83	2,093	2,108	2,092	2,340	5.26	5.30	8.15	9.11
1983-84	3.085	2,906	2,830	2.782	6.49	6.11	8.78	8.63
1984-85	3.525	3,422	3,405	3.196	5.88	5.70	8.59	8.07
1985-86	5.527	4.133	4.057	3.948	7.59	5.68	8.62	8.39
1986-87	5,575	4,649	4,478	4,636	6.46	5.39	7.66	7.93

TABLE 16 DEPRECIATION PROVISION COMPARISON OF RATES	1960-61 TO 1986-87
THE TO BE RECEITION T ROTION COMMINED	1 1 1 0 0 0 1 0 1 1 0 0 0 0 1

Note: 1. Figures in col. (2) are derived as the difference between two consecutive points of time of total cumulative depreciation as available from Balance Sheets of Companies. 2. Cols. (3) and (4) use same basic source of information (viz., Income & Outlay Accounts of R. B.I. sample results) with different approaches to estimate the totals for the sector. 3. Figures in Col. (5) are estimated from the value of fixed capital stock and the expected age of various types of assets and differ from the provision of depreciation as per books of accounts. 4. Cols. (2) and (3) cover non-financial joint stock companies only while Cols (4) & (5) cover total private corporate sector. 5. An examination of levels in Cols.(3),(4) and (5) will make it obvious that the higher rates shown in Cols. (8) and (9) as compared to Col. (7) is due to higher levels of Fixed Assets estimated by Discounted Cash Flow Method and used as denominator for Col. (7). NAS gives a lower level of Net Fixed Assets obtained by application of PIM which is used as denominator to obtain the rates.

TABLE 17. COMPARISON OF SAVINGS AND GROSS FIXED CAPITAL FORMATION -ESTIMATES FROM DIFFERENT SOURCES 1956-57 TO 1986-87

Year	C	Gross Fixed Capital Fo	rmation		Gross Savings	
	NAS	As Estimated	Percentage	NAS	As Estimated	Percentage
	(R	s crore)	Difference		s crore)	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1956-57	134.85	169.89	25.98	135	116.90	-13.41
1957-58	213.27	260.81	22.29	105	108.24	3.09
1958-59	165.63	187.90	13.44	122	116.16	-4.79
1959-60	162.70	191.74	17.85	161	165.73	2.94
1960-61	238.93	355.55	48.81	247	212.26	-14.06
1961-62	370.84	482.18	30.02	282	235.55	-16.47
1962-63	293.89	375.43	27.75	302	250.06	-17.20
1963-64	474.92	573.52	20.76	346	388.26	12.21
1964-65	431.68	481.66	11.58	341	446.48	30.93
1965-66	291.69	634.87	117.65	354	466.80	31.86
1966-67	339.33	384.13	13.20	370	494.76	33.72
1967-68	394.30	434.25	10.13	357	435.60	22.02
1968-69	383.31	581.43	51.69	382	465.42	21.84
1969-70	334.20	247.57	-25.92	480	617.85	28.72
1970-71	454.40	651.07	43.28	589	714.57	21.32
1971-72	573.13	754.80	31.70	676	744.05	10.07
1972-73	603.91	1.087.96	80.15	715	835.60	16.87
1973-74	779.07	1.249.24	60.35	977	1.116.86	14.32
1974-75	849.43	1,452.51	71.00	1,324	1,472.60	11.22
1975-76	1,292.11	1,566.37	21.23	928	1,040.10	12.08
1976-77	815.72	1,255.20	53.88	985	1,090.68	10.73
1977-78	1,121.34	2,047.09	82.56	1,195	1,309.42	9.57
1978-79	834.77	1,495.23	79.12	1,377	1.641.31	19.19
1979-80	1,360.26	2,178.59	60.16	2,116	2,322.20	9.74
1980-81	2,595.20	2.715.44	4.63	2,063	2,733.36	32.49
1981-82	4,271.34	5,849.86	36.96	2,258	3,080.59	36.43
1982-83	5,419.06	7,283.90	34.41	2,605	3,414.64	31.08
1983-84	4,933.88	7,984.74	61.83	2,855	3,553.46	24.46
1984-85	6,003.18	9,194.54	53.16	3,847	4,414.48	14.75
1985-86	7,359.78	14,747.10	100.37	5,020	5,698.57	13.52
1986-87	8,936.98	13,388.61	49.81	4,628	5.387.79	16.42

Note: For the current exercise savings has been estimated as 'retained profit gross of non-operating surplus/deficit'. No adjustment has been made for 'changes in tax provision net of advances of income tax'

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Үеаг	Net Fixe	d Assets	Inven	tories	Total	Assets	Net Value	Total Capital-	Output Ratio	Fixed Capital-	Output Ratio
	As Estimated	NASI	As Estimated	NASI	As Estimated	NASI	Added As Estimated	As Estimated	NASI	As Estimated	NASI
(1)	(2)	(3)	(4)	(5)	(9)	ε	(8)	(6)	(10)	(11)	(12)
					At Curre	ent Prices					
1980-81	3446564	2014700	1261745	1186800	4708309	3242600	1043771	4.511	3.107	3.302	1.930
1981-82	3978277	2568300	1521251	1555000	5499528	4175700	1281744	4.291	3.258	3.104	2.003
1982-83	4752011	3224900	1788409	1789800	6540420	5080500	1434239	4.560	3.542	3.313	2.219
1983-84	5999459	3961900	1928989	1953600	7928448	5996400	1542031	5.142	3.889	3.891	2.569
1984-85	7281075	4707100	2199552	2223400	9480627	7026600	1787379	5.304	3.931	4.074	0.633
1985-86	8631595	5844100	2727053	2721500	11358648	8646900	2234651	5.083	3.869	3.863	2.615
					At 1980-	81 Prices					
1980-81	3446564	2014700	1261745	1186800	4708309	3242000	1043771	4.511	3.107	3.302	1.930
1981-82	3579197	2343900	1499127	1479000	5078324	3870700	1183512	4.291	3.270	3.024	1.980
1982-83	3951406	2774200	1737236	1692500	5688642	4523300	1271150	4.475	3.558	3.108	2.182
1983-84	4378507	3071000	1851705	1699600	6230212	4833300	1272723	4.895	3.798	3.440	2.413
1984-85	4742201	3428100	2057441	1791000	6799642	5289100	1391065	4.888	3.802	3.409	2.464
1985-86	5109894	3851300	2436801	2043900	7546696	5936700	1617554	4.666	3.670	3.159	2.381

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	ואניו	E 19. NON-GOVEKN	MENT NON-FILMIN	ED ASSETS (ESTIMA	COMPANIES: INUUS. ATED TOTALS AT CUF CULTURE AND ALLIE	IRY-UKOUPWISE FA RRENT PRICES), 1970- 2D ACTIVITIES	11 TO 1986-87	T WORTH, CAPITAL	, EMPLOYED,	(Rs lakh)
	Paid Up	Capital	Net 1	Worth	Capital I	Employed	Gross Fi	xed Assets	Net Fixe	d Assets
	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total
	(1)	(2)	(3)	(4)	5)	(9)	(L)	(8)	(6)	(10)
1670-71	4,567	5,897	7,564	10,510	9,928	14,339	9,203	13,548	6,352	9,344
1972-73	4,320	5,935	7.383	10.676	10,0/8	14.377	9,702	14,148	6,590 6,441	9,530
1973-74	5,245	6,112	9,058	12,358	12,750	17,819	11,946	17,425	7,933	11,401
1975-76	5,700 5,730	7,450	10,847	14,903 14,903	15,013	20,534 21,935	13,449 14,355	19,564 20,409	8,892 9,499	12,652 13,099
1976-77	5,730	7,490	12,652	16,305	17,951	24,125	15,912	22,636	10,882	14,831
1978-79	7,650	10,100	16,611	21,944	26,636	38,748	20,956	31.617	14.559	20.999
1979-80	8,530	11,030	18,352	23,457	29,421	42,674	24,154	35,416	16,574	23,326
1981-81	8,690 8,870	11.670	17,921	23,130 22,850	35,898 35,101	48,920 52.233	27,671 31,062	40,370	19,302	26,895 29,623
1982-83	13,170	16,940	31,167	36,475	55,660	161'12	51,532	70,375	35,250	47,204
1983-84	13,300	17,310	40,255	50,645	63,897	90,919	59,840 64 870	83,548	40,585	54,753
1985-86	15,860	20,470	67,733	85,886	100,735	154,168	85,361	126,337	58,840	85,007
19-0961	71,360	11,000	100'76	000'/11	135,502	212,993	11/9/9	1/9,182	81,480	120,156
					MINING AND QUAR	RYING				
Vaar	Paid Up	Capital	Net 1	Vorth	Capital E	Imployed	Gross Fi	ked Assets	Net Fixe	d Assets
3	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total
	(1)	(2)	(3)	(4)	5)	(9)	(L)	(8)	(6)	(10)
12-0261	3,674	5,247	2,647	5,443	6,124	11,274	6,109	12,235	3,507	6,760
1971-72	3,065	4,378	2,014	4,077	5,285 10 514	9,927	5,452 0 461	10,938	3,061	5,722
1973-74	5,443	1774	3,685	7,838	11,652	19,665	11,103	22,230	6,150	10,817
1974-75 1975-76	5,930 6,090	8,470 8,670	4,126 4 387	10,042	11,483 13 Q16	22,520	12,600	26,455	6,809 8,879	12,199
1976-77	6,520	9,120	5,142	12,025	18,592	31,640	22,677	40,603	15,079	21,443
1977-78	6,540 6,360	9,180 0.430	4,588	12,463	19,738 18,860	37,628 37,884	23,293	46,362 49 554	14,895	24,543
1979-80	6,390	6,500	5,571	11,973	20,632	39,483	24,795	51,241	14,258	25,078
1980-81 1981-27	6,340 6,320	9,670 0 860	6,606	12,860	23,484	43,551	25,642	55,664 71 601	14,330	25,713
1982-83	7,040	10,090	8,271	15,896	29,238	55,569	36,628	78,048	21,051	38,272
1984-85	7,120	10,460	10,307	21,339	38,280	71,621	53,672	112,127	31,813	37,081 48,797
1985-86 1986-87	1,470	10,990 14,620	12,671 16,599	Z1,643 36,989	38,744 55,935	75,973 107,712	53,788 75,456	119,754 166,488	31,645 43,365	48,797 67,706

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(Contd.)

					TABLE 19. (COA	(CTD.)				(Rs lakh)
			PROCESSING AND	MANUPACTURING: P	OODSTUPPS, TEXTLL	ES, TOBACCO, LEATH	ER AND PRODUCTS TI	HEREOP		
	Paid U	p Capital	Net	Worth	Capital E	mployed	Gross Fixe	ed Assets	Net Fixe	d Assets
I car	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total
	(1)	(2)	(£)	(4)	5)	(9)	6	(8)	(6)	(10)
1970-71 1971-72 1972-73	31,230 32,960 36,001	38,574 38,574 40,711 45,578	64,122 67,244 77 168	74,975 79,130 91,162	131,188 139,085 131,355	161,812 171,093 186 045	111,593 119,971 130,850	134,969 145,615 140,670	57,131 59,675 68,607	68,418 71,631 82,088
1074-75	42,089	51,986	98,462 116,448	115,834	189,425	233,247	169,775	204,830	83,351 89,351	98,726
1975-76	46,890	58,230	109,740	127,416	217,605	266,306	203,126	247,471	101,801	121,974
1977-778	49,770	61,990 68,030	104,453	121,542	239,311	291,122 344,444	229,833 263,040	281,928 324,792	113,313	135,378
1979-80	54,980	69,430	134,880	158,252	305,669	376,552	286,053	354,989	146,062	175,813
1981-82	60,200	11,120	157,859	187,779	383,525	480,032	374,330	469,084	207,121	255,212
1983-84	79,020	100,920	242,721	281,874	100,519	751,126	609,031 609,031	747,218	376,567	453,673
1985-86 1985-86	79,950	106,040 106,040	330,672	382,571 382,571 550 560	779,705	/80,303 954,242 1 408 929	000,09/ 816,764 1 232 063	61 / ,07 / 999,740 1 485 501	413,040 520,539 785,037	615,719 912,506
			PROCI	ESSING AND MANUFA	ICTURING: METALS,	CHEMICALS AND PR(DDUCTS THEREOF			(Rs lakh)
	Paid Up	Capital	Net /	Vorth	Capital E	mpioyed	Gross Fixe	i Assets	Net Fixe	d Assets
Year	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total
	E	3	(3)	(4)	6	(9)	(1)	(8)	(6)	(10)
1970-71	59,152	70,752	89,195 20,195	110,593	183,844	229,880	165,742	196,615	104,732	123,208
1972-73	02,430	83,600	116,060	144,240	229,427	293,022	217,966	260,365	129,217	153,529
1973-74 1974-75	85,460	102,220	158,241	00,001	302,737	385,212	282,369	338,846	159,343	191,039
1975-76 1976-77	87,690 86,370	105,580 105,510	161,558 157,375	198,274 196,952	320,797 309,716	408,046 405,604	301,675 296,818	367,032 368,874	168,589 162,564	200,508
1977-78	91,910	112,510	171,728	214,565 286,593	329,329 429.612	431,511 574,176	326,055 430.011	406,000 539,473	177,196 232,380	217,641 286.067
1979-80	119,380	147,810	241,736	306,751	474,204	630,979	456,672	576,009	245,945	304,445
1960-01	133,500	167,230	314,240	395,705	655,993	864,463	601,601	756,863	31,21	418,200
1982-83 1983-84	181,110	228,010	475,694	040710 608,706	1,061,138	1,380,427	1.021.373	1,292,078	606,341	753,473
1984-85 1985-86 1986-87	190,830 226,550 314,050	240,660 282,500 389,910	5/0,023 845,649 1,165,277	1,032,918 1,032,918 1,411,879	1,742,932 1,742,932 2,523,201	2,201,918 3,163,924	1,682,047 1,682,047 2,398,234	2,047,337	1,018,224	1,218,925
Note: Figures fo	or Private Ltd.	Companies may	be obtained as res	idual by subtracting	figures of Public L	td. Companies from	ı Total.			
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lakh)			(ces)	otal	10	5,698 7,344 1,170 1,170	3,310	2,057	9,628 489	733 0,788	9,231	I		(192)	ctal.	32)	4,874 4,874 0,142 3,515	5,779	586	2,448	2,439	1,931
(Rs		tion	matant Pri 10-81 base	Ĥ		100~		· • ~	~ ~	o.+. ⊷			ni	nstant Pri 0-81 base	F		6 D 0	44 19	ເປັ		121	215 2882
		tal Format	(At Co 198	Public	(15)	2,176 2,176 2,176	800 1-70 1-70	12.42	28	3 2 2	2,2	j	tal Format	(At Co 198	Public	(11)	38,27 92,33 54,04	61 8 7	102.86	26.97	101,121	70.87 223,36 319,21
		t Fixed Capit	Prices)	Total	(14)	-2,093 7,092 1,304 701 2,457	2,320	-1,851 180	10,701 588	1,004	35,448	T monte	t Fixed Capit	Prices)	Total	(30)	-12,660 42,883 28,014 8,094	20,608	101,938	32,448	279,554	106,119 422,658 704,014
	arrying	Ne	(At Current	Public	(13)	-959 3,497 1,011 130 130	90 90 90	121,1- 121,1-	5,272	-1,162 11,926	11,002		N	(At Current)	Public	(29)	-14,059 37,754 25,175 4,443	128	78,908 78,908	28.971	725,927 72,279	108,588 375,894 588,413
(18	fining and Qu		hices) se	Total	(12)	-3,242 19,384 5,750 6,861 6,965	12,459 8,086	4,423	14,227 5,280	6,972 16,661 4,630	26,201	Merels		rices) Se	Total	(28)	7058 139546 99028 48326	41432 2439	172557 172557	22727	285204	139601 333649 487128
0 NET) 5 OF 1980-1		mation	Constant F 1980-81 h	blic	1)	,642 1,182 1,337 1,431 1,195	55 55 55 55 55 55 55 55 55 55 55 55 55	42 72 8	,929 1,310	99.69.F	148	Meridian	ormation	Constant P 1980-81 b	olic	л С	672 672 008	(379	397	112	335	811 818
OSS ANT		Capital Fo	(At	P	1) L	40004	9	H	919		E		Capital Fo	¥,	Put	(3	21212	89.9	4 9 8 7 8 9	337	52 S	1884
TION (GR(CONSTANT		ross Fixed (at Prices)	Total	(10)	-1,297 8,463 8,425 4,738	5,759	1.681	15,937	24.610 24.610	46,734		ross Fixed (at Prices)	Total	(36)	2,824 60,926 48,722 28,729	28.180 19.28	01,100 133,473 24,534	27.27	348,254	206,707 548,552 868,890
'AL FORMA uent and c		5	(At Currer	Public	(6)	-657 4,009 1,497 2,854 2,854	1,223	1,550 847	3,281	2,105 14,939	21,668		ð	(At Currer	Public	(25)	-898 53,122 42,808 21,595	61 4 61 61 4 61	101,956 102,956 103,956	61,112 61,112	278,797	185,741 474,933 716,187
XED CAPIT SE AT CURI			t Prices) base	Total	(8)	204 -1,729 6,316 392	-1,196	3,297	2,106 19,164	6,035 5,826 17,678	23,683			t Prices) base	Total	(24)	6,357 34,994 50,238 50,238	-1,481	200,45 200,45	23,948 24,948	108,700	13,403 74,518 217,513
oupwise: Fi r-groupwi		I Formation	(At Constant 1980-81	Public	6	-1,108 4,184 419 540	-1,741	2262	1,817 15,187		14,290	The second	Formation	(At Constan 1980-81	Public	(23)	4,035 28,706 43,450 20,948	-3,463 9,866	25,961	17,338	97,502 42,185	11,031 67,656 189,844
USTRY-GRO 5: INDUSTR1		t Fixed Capita	Trices)	Total	(9)	707-707 2,942 235 77	-838 -838 -838	3,268	23,048	8,264 8,926 326	43,655	Particular and P	Fixed Capita	Prices)	Total	(22)	2,335 14,309 23,401 13,972	-988 9,128	-2,7/1 26,142	23,948	130,733	20,535 400,941
LBLE 20. IND TED TOTAL	ied Activities	Net	(At Current]	Public	(2)	148 1,949 251 251	888 1-1 220	50 50 50 50 50 50 50 50 50 50 50 50 50 5	2,020 18,266	5,262 1,011 5,552	26,340	re Takagan I	Net	(At Current]	Public	(21)	1,482 11,738 20,239 20,239	-2,310	-3,067 19,915	17,338	117,266	16,900 1113,858 349,940
TA (ESTIMA'	dture and All		Trices) Lee	Total	(4)	1,500 -612 7,203 3,474 1,242	250	4 5 5 7 5 7 5 7 5 7 5 7 7 7 7 7 7 7 7 7	3,736 21,147	9,761 9,808 17,107	29,627	Lande Taxel		Trices)	Total	(20)	26,608 55,096 71,463 49,794	17,607 30,400	55,416 55,416	47,391	134,585	47,193 111,090 272,333
	Agric	Formation	(At Constant] 1980-81 b	Public	(3)	1,247 -311 4,837 2,441 1 332	2061	3,556	3,027 16,765	6,156 3,369 17,488	18,287	international Boos	Formation	(At Constant 1980-81 b	Public	(19)	20,940 45,531 60,823 40,812	12,081	42,931	35,102	116,632	35,028 94,804 23,830
		Fixed Capital	ices)	Total	(2)	2,139 2,139	722 178	3,799	4,185 25,820	14,523	52,845		Fixed Capital	ices)	Total	(18)	10,646 24,055 35,160 30,663	11,978	11,496 42,864	47,391	64,328 13,806	69,879 82,643 85,761
		Gross	At Current Pr	ublic	(1)	499 136 1,503 1,503 1,503	-505- 506-	3,198	3,391	83.08 49.89 59.89	32,618		Grous	At Current P	ublic	(11) (11)	8,378 19,879 29,925 25,132	8,219 19,103	33,207	35,100	12,408	51,866 55,867 15,299 4
				- -		1971-72 1972-73 1973-74 1974-75 1974-75	1976-77 1977-78 1979-70	1979-80 1979-80	1981-82	1983-84 1984-85 1004 94	1986-87		Year				1971-72 1972-73 1973-74 1974-75	1975-76 1976-77	1978-79	1980-81	1982-83 1- 1982-83 1-	1984-85 1985-86 1986-87

42.864 42.931 55.416 19.915 25.142 22.961 34.079 47.391 35.102 47.391 17.338 2.105 11.010 9.007 12.235 47.391 35.102 47.391 17.338 23.948 17.338 23.948 166.328 116.632 117.266 130.733 77.562 108.700 113.866 68.385 84.335 97.764 65.707 42.185 48.706 113.866 68.385 84.335 97.764 65.707 42.185 48.706 113.867 68.385 84.335 97.764 65.707 42.185 48.706 182.643 94.800 113.3889 123.546 67.665 74.518 485.761 232.830 272.333 349.940 400.941 189.964 217.513 485.761 232.830 272.333 349.940 400.941 189.964 217.513 Note: Figure for Private Ltd.

$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Year			Agriculture and .	Allied Activities					Mining and	Quarrying			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		Å	ងពីទេ	Inte	rest	Ceath	Flow	F.	Viite	Inter	rest	Gash	Flow	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		Public	Total	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		(1)	(2)	(3)	(4)	3	(9)	е	(8)	(6)	(10)	(11)	(12)	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1970-71	1,831	2,215	223	351	1,956	2,363	834	1,284	437	165	761	1,592	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1971-72	1,740	2,090	280	424	1,811	2,191	R	308	4 04	575	-12	429	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1972-73	1,475	1,776	6 <i>L</i> Z	420	1,513	1,796	1,102	1,754	751	1,071	863	2,054	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1973-74	2122	2,528	392	571	2,161	2,557	720	1,775	879	1,189	472	2,111	
(5) (5) <td>27-5701</td> <td>4,886</td> <td>5,997</td> <td>524</td> <td>750</td> <td>4,858</td> <td>5,933</td> <td>826</td> <td>3,293</td> <td>830</td> <td>1,313</td> <td>116</td> <td>3,849</td>	27-5701	4,886	5,997	524	750	4,858	5,933	826	3,293	830	1,313	116	3,849	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	01-5161	001't	127.0	600	280	4 2 40,4 2 40,5	6/0'C	225 923	4 ,003	608 508	125,1	1937	4,703	
	1977-78	9.598	11 853		1 055	848	8,000 11 814	376	4040 640	1.437	2.501	1,030	4 578	
19949 7.56 9.12 1.51 2.66 3.14 5.03 1.93 2.96 2.96 2.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.14 5.06 3.06 <t< td=""><td>1978-79</td><td>6,961</td><td>8,038</td><td>1.003</td><td>167.1</td><td>6.961</td><td>7.708</td><td>840</td><td>1.994</td><td>1.346</td><td>2,730</td><td>1.052</td><td>2,661</td></t<>	1978-79	6,961	8,038	1.003	167.1	6.961	7.708	840	1.994	1.346	2,730	1.052	2,661	
19841 5,29 7,50 2,19 7,50 2,19 7,50 2,19 </td <td>1979-80</td> <td>7,596</td> <td>9,120</td> <td>1,541</td> <td>2,627</td> <td>7,143</td> <td>8,024</td> <td>1,791</td> <td>2,907</td> <td>1,329</td> <td>2,965</td> <td>2,036</td> <td>3,480</td>	1979-80	7,596	9,120	1,541	2,627	7,143	8,024	1,791	2,907	1,329	2,965	2,036	3,480	
1981-83 1,117 1,918 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,116 2,001 3,124 3,106 3,001 3,124 3,001 4,001 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 1,011 <	1980-81	6,259	1,507	2,157	3,539	5,323	5,625	1,633	3,561	1,751	3,757	1,850	4,047	
198.451 1,2/1 2,3/0 4,69 7,10 8,792 5,00 2,710 5,560 1,744 5,750 2,711 4,865 1,744 5,750 2,711 5,560 1,744 5,751 2,591 1,035 1986-457 35,137 45,07 3,611 35,107 45,637 1,144 7,591 1,035 1986-457 35,137 45,637 3,510 4,583 3,177 6,667 1,744 8,797 1986-457 35,134 2,867 1,248 3,597 1,603 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 1,646 <	1981-82	5,187	6,494	3,068	4,942	3,470	3,396	2,017	5.,068	2,145	5,186	2,067	5,118	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1982-83	11,237	13,330	4,649	7,151	8,792	8,951	1,286	2,726	2,571	4,863	1,148	3,722	
1964-55 33,147 45,21 3,60 9,311 4,379 10,56 3,571 1,349 3,177 6,001 3,591 10,56 1964-57 35,155 3,519 1,539 3,510 7,349 3,591 10,59 10,59 5,937 10,55 1964-57 35,155 3,506 5,607 12,349 3,661 3,591 10,55 Public Tool Interat Cath Pous Fortia Promating and Manufacturing Foodentify, Textules, Tobacco, Lanther and Poulace Thereof Processing and Manufacturing Manufacturing Foodentify, Textules, Tobacco, Lanther and Poulace Thereof Processing and Manufacturing Manufacturing Foodentify, Textules, Tobacco, Lanther and Poulace Thereof Processing and Manufacturing	1983-84	24,162	29,649	3,811	6,550	23,397	28,008	714	5,379	2,707	5,266	1,274	8,518	
1985-50 5,5,5 8,0,10 7,360 9,463 2,0,33 5,817 13,449 5,001 0,013 5,937 14,33 Yeu Polis Interst Cattley, Tokero, Larther and Produce Thereof Processing and Mmulticruring, Foodentfa, Toxulley, Tokero, Lanther 2,035 5,937 1,339 5,965 5,937 1,433 Yeu Polis Interst Cattley, Tokero, Lanther and Produce Thereof Processing and Mmulticruring, Foodentfa, Toxulley, Tokero, Lanther 7,03 5,937 1,433 Yeu Polis Towai Polis Polis Polis	C8-4961	110,85	48,527	3,865	8,311	35,190	45,813	3,761	8,288	3,177	6,067	3,597	10,362	
Model District <	09-0961		45,918	4,780	696'6	186,55	42,885	5,817	13,449	500.5	0,013	C(C,0	10,981	
Year Processing and Manufacturing: Metal, Chemical and Products Thereof Year Profix Fording and Manufacturing: Metal, Chemical and Products Thereof Year Poolic Total Products Thereof Profix Interest Cuah Plous (13) (14) (15) (13) Cuah Plous Cuah Plous Cuah Plous (13) (14) (15) (11) (14) Colspan="2">Cuah Plous Cuah Plous Colspa <th colsp<="" th=""><th>19-0861</th><th>CC1'97</th><th>016,86</th><th>RCC'I</th><th>14,038</th><th>c/n'cz</th><th>208,26</th><th>0,007</th><th>12,383</th><th>086,C</th><th>7,342</th><th>154,C</th><th>14,52/</th></th>	<th>19-0861</th> <th>CC1'97</th> <th>016,86</th> <th>RCC'I</th> <th>14,038</th> <th>c/n'cz</th> <th>208,26</th> <th>0,007</th> <th>12,383</th> <th>086,C</th> <th>7,342</th> <th>154,C</th> <th>14,52/</th>	19-0861	CC1'97	016,86	RCC'I	14,038	c/n'cz	208,26	0,007	12,383	086,C	7,342	154,C	14,52/
Processing and Manufacturing, Foodshrift, Textiles, Tobacco, Leather and Produce Thereof. Processing and Manufacturing Manufacturing, Topola (1) Constrained Produce Thereof. Mable Total Constrained Produce Thereof. Jobalic Total Produce Thereof. Jobalic Total Produce Thereof. Jobalic Total Produce Thereof. Jobalic Total Produce Thereof. Jobalic Total Produce Thereof. Jobalic Total Produce Thereof. Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic Jobalic <th colspa="</th"><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th>	<th></th>													
Pholic Total Interf Catal Flow Profit Total Interf Catal Flow Front Total Flow Front Total Flow Total Flow Total Flow Front Total Flow	;	Processi	ng and Manufacturi	ng: Foodstuffs, Te)	ttiles, Tobacco, Le	ather and Products	Thereof		Processing and M	fanufacturing: Meta	uls, Chemicals and	Products Thereof		
PublicTotal <th< th=""><th></th><th>Ъ</th><th>ai)(</th><th>[inter</th><th>rest</th><th>Centh</th><th>Flow</th><th>Æ</th><th>ofits</th><th>Inte</th><th>rest</th><th>Cash</th><th>Flow</th></th<>		Ъ	ai)([inter	rest	Centh	Flow	Æ	ofits	Inte	rest	Cash	Flow	
		Public	Total	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total	
1970-71 18.29 21,362 5,567 7,124 19,564 22,311 26,528 33,992 7,403 9,605 31,218 30,611 37,711 11,787 50,013 47,3 1973-773 10,378 23,356 6,554 8,705 11,021 24,552 33,992 7,403 9,605 31,218 34,3 1973-76 23,567 23,567 23,567 33,567 35,567 34,568 71,178 13,933 47, 1975-76 23,567 24,568 71,182 33,552 35,567 36,683 71,361 15,642 51,536 47,933 47, 1975-76 24,568 21,14 23,835 21,146 87,940 73,542 56,033 47, 1975-76 24,566 21,567 23,528 27,516 11,787 10,933 57,71 1977-78 24,566 21,567 23,566 11,616 73,366 21,5642 21,556 74,33 57,56 21,5642 51,566 51,56		(13)	(14)	(15)	(16)	(17)	(18)	(61)	(20)	(21)	(77)	(23)	(24)	
	1970-71	18 230	297.12	5.367	7.124	19.564	22.311	26.629	33.992	7.403	9.605	31.218	38.524	
1972.73 36,17 30,971 7,223 9,515 7,706 31,182 33,552 45,525 10,177 13,933 38,743 47,933 1975.74 39,811 7,000 13,182 31,522 45,525 10,177 13,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 38,743 47,933 37,946 60,356 74,44 56,038 71,341 12,543 47,933 37,346 56,038 67,536 12,343 47,341 56,038 67,346 46,038 74,44 56,038 71,341 12,343 12,343 12,343 12,343 12,341 103,338 13,341	1971-72	19,582	23,365	6,564	8,705	19,914	122,971	30,636	39,614	8,784	11,724	35,013	43,374	
1973-74 39,851 47,060 8,239 11,021 4,1268 47,828 42,067 53,386 11,767 16,034 47,933 58, 56,038 72,713 15,602 21,564 47,933 58, 56,038 72,713 15,602 21,564 47,933 58, 56,038 72,713 15,502 22,588 72,713 15,602 21,564 67,933 58, 56,53 72,713 15,602 21,564 77,933 58, 56,53 72,713 15,602 72,768 66,53 72,713 15,602 72,563 72,713 15,602 72,538 72,713 15,602 72,538 72,713 15,602 72,538 72,713 15,602 72,538 72,713 15,602 72,538 72,713 15,602 72,538 72,713 15,602 72,538 72,713 15,602 72,731 15,603 72,713 15,603 72,713 15,603 72,713 15,603 72,713 15,603 72,713 15,603 72,713 15,603 72,713 15,603 72,713 72,713	1972-73	26,178	30,971	7,223	9,535	21,096	31,182	33,552	43,525	10,177	13,933	38,743	47,635	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1973-74	39,851	47,090	8,239	11,021	41,298	47,828	42,087	53,386	11,787	16,034	47,933	800	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1974-75	13,246	49,205	11,30/	UZ 1'CI	42,808	4/,D11		CI / 7/	740'CI	00017	0CC 10	21.4	
1977.78 34,100 41,635 178.12 23,286 75,59 32,664 61,306 79,48 20,756 30,51 63,56 74, 1977.78 34,100 41,635 178.12 23,286 77,71 86,343 96,697 114,823 24,959 37,168 87,154 100, 1997.87 03,767 77,573 57,717 66,243 96,697 112,849 25,567 74, 1997.81 03,767 77,373 57,717 66,343 96,697 112,443 103,956 122,048 115,5 1981.82 03,761 73,326 57,717 66,343 96,697 113,493 123,493 122,048 125,493 122,048 125,413 122,443 122,714 104,995 155,415 47,424 53,536 122,048 155,415 177,414 156,316 127,618 115,5465 47,424 53,556 122,048 155,415 177,518 166,316 1157,516 155,415 177,518 156,316 127,548 47,4	01-0161	10,01	110,04	15 205	100'01	23 253	700' 71	2005	10C'1/	10,618	50 SC	50 I 55	77 633	
1978-79 51,131 60,807 20,162 26,033 44,261 51,446 87,065 114,823 24,959 77,168 87,154 109 1978-79 63,707 77,929 21,621 28,673 57,717 66,243 96,697 123,439 27,535 59,237 142,91 123,439 27,555 59,232 103,95 1980-81 63,767 77,371 66,141 110,445 113,439 77,545 47,241 56,439 123,135 1981-81 60,141 77,3919 41,038 40,641 48,977 133,449 107,424 42,241 56,556 133,916 135,465 47,424 68,556 133,916 135,465 47,424 68,556 122,048 133,916 175,465 47,424 68,556 122,048 133,916 176 1982-86 86,376 43,456 43,641 166,771 86,556 122,048 133,916 176 1982-86 86,376 44,954 187,517 26,569 123,916	81.1791	34,100	41.635	17.812	23,298	27,559	32,604	61,306	79,498	20,756	30,051	60,356	74,232	
1979-80 66.60 77.92 21.621 28.673 57.717 66.243 96.697 122,643 22.241 52.241 56.953 123 1980-81 63.767 77.594 24.762 21.856 56.765 68.181 110,415 143,965 77.355 53.925 104,995 133 1981-81 60.141 77.519 24.738 40.641 48.977 133.491 174,965 77.355 53.925 104,995 133 1981-81 60.141 77.519 41.039 40.641 48.977 133.491 174,965 77.355 53.925 104,995 133 16 77.35 106,318 133.916 178 1981-85 60.714 75.366 43.3395 52.448 16.0781 216,225 75.735 100,4955 133.916 178 1981-85 60.776 73.856 95.665 94.3566 181,454 22.049 85.566 122,779 166.777 161.866 211,71 167 133.916 178 <td>1978-79</td> <td>51,131</td> <td>60,807</td> <td>20,162</td> <td>26,083</td> <td>44,261</td> <td>51,446</td> <td>87,065</td> <td>114,823</td> <td>24,959</td> <td>37,168</td> <td>151,18</td> <td>109,190</td>	1978-79	51,131	60,807	20,162	26,083	44,261	51,446	87,065	114,823	24,959	37,168	151,18	109,190	
1980-81 63.76 7.754 24.766 5.765 66.18 110,415 114,360 77.555 75.55 75.56 75.755 75.755 75.755 75.755 75.755 75.756 75.756 75.755 75.755 75.755 75.755 75.755 75.755 75.755 75.755 75.755 75.755 75.755 75.756 77.208 77.351 163.356 77.351 163.356 77.351 163.351 75.775 105.318 173.316 77.71 105.715 105.715 105.715 105.715 105.715 105.716 177.71 105.715 105.716 177.71 105.715 105.715 105.715 105.715 105.716 177.71 105.715 105.715 105.716 177.71 105.715 105.716 177.71 105.715 105.716 107.771 105.715 105.716 107.771 105.716 107.771 105.717 105.717 105.717 105.717 105.717 105.717 105.717 107.771 105.777 20.751 105.711	1979-80	64,630	26.11	21,621	28,673	57,717	68,243	96,697	129,439	28,247	42,241	96,493	122,058	
1981-82 24,00 25,40 40,001 40,924 10,3,495 11,7,40 04,300 14,045 1982-85 61,714 75,919 41,804 55,076 43,399 52,438 160,781 215,795 166,318 133,916 173 1982-86 80,734 16,774 75,735 166,318 133,916 177,571 166 178 1984-85 80,734 103,779 54,309 62,548 144,954 187,517 87,079 106,343 177,571 166 1984-86 80,379 54,329 62,548 184,454 229,316 92,080 124,844 166,527 205 1984-86 80,379 54,329 63,056 184,454 229,316 92,080 124,844 166,527 205 1985-86 80,379 111,837 87,168 116,206 308,095 189,410 248,387 246,900 306,900 1986-87 11,080 143,527 87,166 116,206 308,095 314,341 120,877 166,527 203 1986-87 11,080 143,526 308,026 308,026 308,056 24,341 105,866 221,741 275 1986-87 11,080 116,526<	1980-81	63,767		24,766	32,856	56,765	68,181	110,415	148,980	37,555	52,928	104,995	135,329	
1983-54 61,71 76,439 47,844 60,990 48,399 62,548 144,954 187,517 82,079 110,843 177,571 162 1984.45 56,376 73,856 48,052 62,204 43,290 60,996 181,454 229,316 92,080 124,844 166,527 205 1984.45 10,3779 54,398 71,351 68,035 89,665 243,579 314,341 120,877 166,866 221,741 278 1986.47 11,080 143,578 87,166 116,266 308,055 314,341 120,877 166,866 221,741 278 1986.47 11,080 131,587 87,166 116,266 308,055 308,056 246,903 308,0593 189,110 248,387 246,900 306	1987.891	505'75 191 09	51612	41,890	55.076	43,393	52,438	160.781	216.295	75.735	106.318	133 916	178 657	
1984.85 56.376 73,856 48,052 62,204 43,290 60,996 181,454 229,316 92,080 124,844 166,527 203 1985-86 80,324 103,779 54,298 71,351 68,033 89,665 243,579 314,341 120,877 161,866 221,741 278 1986.87 11,080 143,283 88,997 111,837 87,168 116,206 308,026 389,693 189,110 248,287 246,690 306	1983-84	61.714	76.439	47,844	60.990	48.399	62,548	144,954	187,517	82.079	110.843	127.571	162,722	
1985-86 80.324 103,779 54.298 71,351 68,033 89,665 243,579 314,341 120,877 161,866 221,741 278 1986-87 11,080 143,283 88,997 111,837 87,168 116,266 308,026 389,693 189,110 248,287 246,690 206	1984-85	56,376	73,856	48,052	62,204	43,290	966'09	181,454	229,316	92,080	124,844	166,527	205,060	
1986-87 11.080 143,283 88.99/ 111,83/ 8/,108 110,000 308,000 187,109 240,200 308,000 309,000 300	1985-86	80,324	103,779	54,298	71,351	68,035	89,665	243,579	314,341	120,877	161,866	141,122	Z78,369	
	1986-87	11,080	143,283	88,991	111,85/	8/,108	110'700	070'905	5 KQ' KQC	011,481	197'947	240,090	797'006	

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(Rs lakh)		Saving	Total	(12)	944 554	1.934 1.934	3,444	4,086	3,592	100,9	9,840	13,909 12,729	eof	Saving	Total	(24)	22,409	24,174	31,447	34,543	36,488	55,588	78,181	900,021 20,003	143 685	188,503 204,626
		Gross	Public	(11)	411 173 570	269 769	121	1238	2,172	2,806	2,967	4,855 4,912	nd Products Then	Gross	Public	(23)	18,586	21,533	26,324	28,740	29,901	44,793	62,476	C16,8/ 92,765	82,968	147,807
INT PRICES)	l Quarrying	m Provision	Total	(10)	986 7962	1,525	2,518	3,439	3,538 4,243	5236	8,405	0,141 10,145 11,286	als, Chemicals ar	n Provision	Total	(22)	14,137	15,484	20,708	23,497	24,785	31,535	40,277	40,980 68,680	86,048	125,894
TOTALS AT CURR	Mining and	Depreciatio	Public	(6)	¥8:	631 710	914 1.163	6551	1.574	2,195	3.267	210,5 4,441 1,666	nufacturing: Met	Depreciatio	Public	(21)	11,992	13,161	17,633	19,178	19,806	25,048	32,135	48,870 48,870	66,696	99,039 127,774
. GELLWATED .		d Profits	Total	(8)	45 -242 54	409	1,163	254	4 2	297 2007-	1,435	3,764 1,443	ocessing and Mau	d Profits	Total	(20)	8,272	8,690 7.892	17 538	11,046	11,703	24,053	37,904	48,079 53,923	20,829	62,609 39,750
I AND GROSS SAV		Retaine	Public	Θ	47 -129 58	33¥	53	-282	298 669	119	9 <u>0</u>	414 246	Æ	Retaine	Public	(19)	6,594	6,165 6,165	8,691 14 007	9,562	10,095	19,745	30,341	42,996 43,895	18,272	48,768 35,021
ATION PROVISION		Saving	Total	(9)	1,443 1,030 668	1,836 5.107	3,918	10,988	6,218 1,576	892	12,615	19,958 19,958 15,083	ucts Thereof	Saving	Total	(18)	9,524	9,339 13.266	21,038	8,332	12,946	28,594	43,825	28,950	45,790 49 831	67,278 80,521
PROFIT, DEPRECI		Gross	Public	(2)	1,262 905 205	1,609	3,406 7,056	10,050 4,383	5,875 1.581	3,811	9,610	14,619 14,619 10,699	Leather and Prod	Gross	Public	(11)	8,273	8,018 10,899	17,222	1,104	10,245	24,655	35,124	26,935	31,633	48,568 57,887
WISE: RETAINED	Allied Activities	n Provision	Total	(4)	85 22 49	803	768 222	1,016	1.531	2,772	606 702 702	6,030 9,190	xtiles, Tobacco,	n Provision	Total	(16)	8,173	9,746	11,759	12,966	14,267	16,722	23,443	20,033 33,595	47,099 49 344	57,237 84,820
INDUSTRY-GROUT	Agriculture and	Depreciatio	Public	(3)	348 351 317	431 495 11	546 668	714	1,088	2,204	3,046	5,007 628	g: Foodstuffs, Te	Depreciatio	Public	(15)	6,692	0,090 8,141	9,686	10,529	11,271	13,292	17,764	25,142	34,529	42,009 65,359
TABLE 22.		i Profits	Total	(2)	45 SS 22	1,234	3,150 6,665	9,972 3,178	4,687 -81	-925 609	1,706	13,028 5,893	nd Manufacturin	l Profits	Total	(14)	1,351	3,520	9,279	4.634	-1,321	11,872	20,382	1,766	-1,309	10,041
		Retained	Public	(1)	914 554 283	1,178	2,860 6,388	9,336 3,380	4,787 360	49 1.601	6,564	9,612	Processing a	Retained	Public	(13)	1,581	2,758	7,536	-3,425	-1,026	11,363 20,806	17,360	1,793	-2,896 -2,938	6,559 -1,472
	Var	1			1970-71 1971-72 1972-73	1973-74 1974-75	1975-76	1978-78 1978-79	1979-80 1980-81	1981-82 1982-83	1983-84	1985-86			Year		1970-71	1972-73	1973-74 1974-75	1975-76	1977-78	1978-79 1979-80	1980-81	1982-83	1983-84 1984-85	1985-86 1986-87

Note: Figure for Private Ltd. Companies may be obtained as residual by subtracting figures of Public Ltd. Companies from Total.

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Luck Added Cross Value Added Net Value Added Net Value Added (1) <th>Agricult</th> <th>Agricult</th> <th>ricult</th> <th>ure and</th> <th>Allied Activit</th> <th>ics</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Mining and</th> <th>Quarrying</th> <th></th> <th></th> <th></th>	Agricult	Agricult	ricult	ure and	Allied Activit	ics						Mining and	Quarrying			
Art Constant Prices) Art Current Prices)	Gross Value Added Net	alue Added Net	Net	Net	Net	Va h	ie Added			Gross Valu	e Added			Net Value	Added	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	At Current Prices) (At Constant Prices) (At Current Prices)	(At Constant Prices) (At Current Prices)	ant Prices) (At Current Prices)	(At Current Prices)	at Prices)		(At Consta	unt Prices)	(At Currer	at Prices)	(At Consta	nt Prices)	(At Currer	It Prices)	(At Constau	nt Prices)
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	iblic Total Public Total Public Total	Public Total Public Total	Total Public Total	Public Total	Total		Public	Total	Public	Total	Public	Total	Public	Total	Public	Total
14.725 18.801 2.803 4.504 5.705 1.915 <	(1) (2) (3) (4) (5) (6)	(3) (4) (5) (6)	(4) (5) (6)	(5) (6)	(9)		6	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2014 8,802 15,502 19,735 6,566 8,303 201 9,116 15,506 19,630 6,850 8,591	15,502 19,735 6,866 8,303 15,506 19,630 6,850 8,591	19,735 6,566 8,303 19,630 6,850 8,591	6,850 8,303 6,850 8,591	8,303 8,591		14,725 14,757	18,621	2,833 1,779	3,204	8,776 5,399	14,387 9,724	2,469	3,745	7,975	7,671
27,078 38,230 5,238 13,550 10,781 23,254 5,714 11,219 9,724 20,11 27,1387 37,246 7,790 15,550 11,684 24,006 13,113 8,975 19,249 9,744 27,1387 35,718 9,714 16,211 10,785 7,909 8,409 13,113 8,975 14,469 8,449 9,444 24,755 32,1925 11,958 24,005 11,678 24,005 14,469 8,449 9,344 9,324 10,449 8,140 10,449 8,140 10,449 8,140 10,449 8,140 10,449 8,144 10,449 8,144 10,449 8,144 10,449 8,144 10,449 8,144 10,449	264 8,05 12,05 16,29 16,29 0,047 8,225 261 11,629 14,011 17,593 8,330 11,027 143 17,73 19,737 24,70 13,647 17,053	12,951 10,297 0,047 8,325 14,011 17,593 8,830 11,027 19,332 24,120 13,647 17,052	10,291 0,047 8,322 17,593 8,830 11,027 24,120 13,647 17,052	8,047 8,323 8,830 11,027 13,647 17,052	11,027		13,246	16,542	4,530 5,387	7,981	12,000	21,142 21,182	3,899	6,456 9,012	9,553	18,248
31,327 35,77 76/05 16,55 11,030 24,006 6,005 13,113 8,979 9,349 27,367 35,718 24,710 10,785 7,093 18,679 9,065 14,114 27,367 35,718 24,710 10,785 7,093 18,679 9,046 5,449 5,510 10,446 24,755 31,925 11,677 35,185 8,001 14,618 8,814 5,443 5,610 10,446 24,755 71,933 11,677 35,185 8,001 14,618 8,814 5,413 9,667 14,114 55,3965 71,933 11,955 24,037 7,418 13,055 11,305 24,038 14,617 55,2933 11,967 35,1172 11,305 22,4232 11,305 24,038 14,956 55,2943 76,046 71,644 76,056 14,566 77,948 56,10 12,956 50,294 76,046 71,646 71,646 71,646 71,648	753 18,934 22,852 29,328 14,207 18,166 979 27,018 31,399 38,597 21,261 26,046	22,852 29,328 14,207 18,166 31,399 38,597 21,261 26,046	29,328 14,207 18,166 38,597 21,261 26,046	14,207 18,166	18,166		22,078 30,403	28,230	6,288	13,550	10,791	23,254	5,374	11,269	9,624	20,181
24,136 $37,367$ 35718 9.714 $16,211$ $10,785$ $17,098$ $8,140$ $12,653$ $24,170$ $10,855$ $11,673$ $32,103$ $10,664$ $52,139$ $52,653$ $52,139$ <	496 30,088 31,191 39,942 22,782 29,072 (044 37,078 33,141 47,376 24,001 30,627	31,191 39,942 22,782 29,072 33,043 42,376 24,001 30,627	39,942 22,782 29,072 42,326 24,001 30,627	22,782 29,072	29,072		30,227	38,572 40,582	7,605	16,552	11,030	24,006	6,085 6,908	13,113	8,979 9,657	19,349
32,756 32,175 32,175 32,175 32,175 32,175 32,175 32,175 32,116 34,037 34,618 34,618 34,037 34,618 34,618 34,037 34,035 34,037 35,185 8,031 13,055 11,305 21,305 34,037 35,185 8,031 13,055 13,326 34,326 <td>650 33,588 28,579 37,424 24,562 32,057 356 33,588 28,579 37,424 24,562 32,057</td> <td>28,579 37,424 24,562 32,057 58,579 37,424 24,562 32,057</td> <td>37,424 24,562 32,057</td> <td>24,562 32,057</td> <td>32,057</td> <td></td> <td>27,367</td> <td>35,718</td> <td>9,714</td> <td>16,211</td> <td>10,785</td> <td>17,998</td> <td>8,140</td> <td>12,673</td> <td>9,066 8,429</td> <td>14,114</td>	650 33,588 28,579 37,424 24,562 32,057 356 33,588 28,579 37,424 24,562 32,057	28,579 37,424 24,562 32,057 58,579 37,424 24,562 32,057	37,424 24,562 32,057	24,562 32,057	32,057		27,367	35,718	9,714	16,211	10,785	17,998	8,140	12,673	9,066 8,429	14,114
77,895 $63,350$ $13,922$ $23,957$ $71,617$ $23,165$ $46,13$ $92,325$ $33,965$ $77,6075$ $27,305$ $77,6075$ $27,305$ $71,933$ $17,975$ $51,172$ $10,026$ $10,026$ $14,964$ $57,016$ $51,172$ $11,365$ $22,423$ $21,367$ $39,886$ $51,172$ $11,365$ $22,423$ $21,270$ $39,886$ $51,176$ $11,956$ $22,423$ $21,270$ $39,886$ $51,176$ $11,957$ model Added Accessing and Manufacuring: Metals, Chemicals and Products Thereof Act Constant Prices) (At Current Prices) (At Constant Price	692 35,999 25,985 33,780 26,321 34,155 1692 35,999 25,985 33,780 26,321 34,155 164 46 876 41 86 87	25,985 33,780 26,321 34,155 25,985 33,780 26,321 34,155 4,676 51 857 44,590 56,874	33,780 26,321 34,155 51 857 A4 890 56,874	26,321 34,155 44 580 56,874	34,155		24,756	32,125	11,678	24,170	7,063	14,618	9,483	18,934	52412	10,464
372.94 76,079 22.399 44,966 10,066 20,282 17,958 34,851 6,853 13,566 14,957 and Products Thereof Processing and Manufacturing: Metals, Chemicals and Products Thereof Net Value Added Net Value Added 14,957 Added Gross Value Added Att Constant Prices) (At Co	101 37,040 40,013 31,031 44,000 30,014 121 82,454 49,800 66,101 59,075 77,545 122 102 11 100 110 37,547	49,800 66,101 59,075 77,545 49,800 66,101 59,075 77,545	66,101 59,075 77,545	59,075 77,545	77,545		47,499	62,350	13,922	29,774	6,951	14,865	10,655	21,369	4,613	9,252
Ind Products Thereof Processing and Manufacturing: Metals, Chemicals and Products Thereof Ind Products Thereof Processing and Manufacturing: Metals, Chemicals and Products Thereof Le Added Gross Value Added Net Value Added Abblic Total Public Total Public Total Public Total Public	8410 106,851 26,732 81,818 11,929 107,429 898 114,429 55,394 80,341 73,891 110,454 245 128,544 54,510 83,173 77,967 119,354	55,394 80,341 73,891 107,499 55,394 80,341 73,891 107,499 54,510 83,173 77,967 119,354	80,341 73,891 107,499 83,173 77,967 119,354	77.967 119.354	119.354		50,849 50,849	76,079	22,399	51,172	10,096	20,282	21,270	34,851	6,833	13,261
Ue Added Gross Value Added Net Value Added (At Constant Prices) (At Consta	Processing and Manufacturing: Foodstuffs, Textiles, Tobacco, Leather	nufacturing: Foodstuffs, Textiles, Tobacco, Leather	oodstuffs, Textiles, Tobacco, Leather	xtiles, Tobacco, Leather	o, Leather		nd Products'	Thereof		Processing	and Manufa	sturing: Meta	uls, Chemical	s and Product	s Thereof	
(At Current Prices)	Gross Value Added Net Value	alue Added Net Value	Net Value	Net Value	Nct Value	12	Added			Gross Vali	ie Added			Nct Value	e Added	
Public Total Pu	t Current Prices) (At Constant Prices) (At Current Prices)	(At Constant Prices) (At Current Prices)	ant Prices) (At Current Prices)	(At Current Prices)	It Prices)	1	(At Constu	unt Prices)	(At Curre	nt Prices)	(At Consta	nt Prices)	(At Curre	nt Prices)	(At Consta	nt Prices)
(23) (24) (25) (26) (27) (28) (29) (30) (31) (32) 86,955 104,638 64,735 84,625 179,819 235,069 52,743 70,448 14,95 13,94 216,537 86,955 104,638 64,735 84,625 179,819 235,069 52,743 70,448 146,590 195,909 86,955 104,489 15,515 112,742 206,506 217,514 126,673 70,448 146,590 196,866 97,771 112,8605 113,742 176,546 216,673 70,448 216,531 234,025 216,673 96,787 113,167 135,566 216,673 266,773 118,671 166,256 171,809 226,603 97,177 112,675 177,719 145,517 116,256 171,809 226,533 96,487 266,773 186,766 118,664 166,757 188,865 200,037 95,127 116,128 177,710 145,556 <t< td=""><td>blic Total Public Total Public Total</td><td>Public Total Public Total</td><td>Total Public Total</td><td>Public Total</td><td>Total</td><td>1</td><td>Public</td><td>Total</td><td>Public</td><td>Total</td><td>Public</td><td>Total</td><td>Public</td><td>Total</td><td>Public</td><td>Total</td></t<>	blic Total Public Total Public Total	Public Total Public Total	Total Public Total	Public Total	Total	1	Public	Total	Public	Total	Public	Total	Public	Total	Public	Total
86,955 104,658 64,735 84,625 179,819 235,069 52,743 70,488 146,590 156,590 86,055 104,419 155,515 112,772 255,664 216,577 211,771 216,590 227,589 60,773 816,550 116,556 216,577 216,577 216,577 216,577 216,577 216,577 216,577 216,577 216,576 216,576 216,576 216,577 216,576 217,599 218,556 218,556 228,559 218,556 228,559 218,557 216,576 216,557 228,579 218,557 216,576 215,559 228,559 228,559 228,559 228,559 228,559 <td>(7) (18) (19) (20) (21) (22)</td> <td>(19) (20) (21) (22)</td> <td>(20) (21) (22)</td> <td>(21) (22)</td> <td>(22)</td> <td></td> <td>(23)</td> <td>(24)</td> <td>(25)</td> <td>(26)</td> <td>(12)</td> <td>(28)</td> <td>(29)</td> <td>(90)</td> <td>(31)</td> <td>(32)</td>	(7) (18) (19) (20) (21) (22)	(19) (20) (21) (22)	(20) (21) (22)	(21) (22)	(22)		(23)	(24)	(25)	(26)	(12)	(28)	(29)	(90)	(31)	(32)
86255 164 766 85515 161 75 94.669 168.866 2217 91.67 107,771 128,695 185.754 172.465 205.565 271.537 70.147 149.555 181.969 266.664 92,484 114.165 173.346 178.766 206.510 278.1456 181.107 149.555 171.366 226.560 97.682 127.514 118.164 157.566 177.369 226.560 275.566 177.366 226.560 275.566 177.369 226.560 275.566 177.369 226.560 275.566 276.566 177.366 226.566 276.	3,578 64,594 99,255 119,663 46,886 56,421	99,255 119,663 46,886 56,421	119,663 46,886 56,421	46,886 56,421 50,057 61,063	56,421 61 063		86,955	104,638	64,735	84,625	106,008	235,069	52,743 60,793	70,488	146,590	195,909 216,537
IOT,TII 125,05 133,367 172,366 212,613 275,149 114,107 149,565 181,366 236,369 238,369 236,300 238,369 238,369 238,369 238,369 236,300 238,369 238,369 236,300 236,300 236,300 236,300 236,300 236,300 236,300 236,300 236,300 236,300 236,300 <th< td=""><td>3,186 88,541 97,064 117,428 65,045 78,79</td><td>97,064 117,428 65,045 78,79</td><td>117,428 65,045 78,79</td><td>62,045 78,79</td><td>78,79</td><td></td><td>86255</td><td>104,489</td><td>85,515</td><td>112,742</td><td>205,961</td><td>271,537</td><td>70,147</td><td>94,699</td><td>121 200</td><td>227.971</td></th<>	3,186 88,541 97,064 117,428 65,045 78,79	97,064 117,428 65,045 78,79	117,428 65,045 78,79	62,045 78,79	78,79		86255	104,489	85,515	112,742	205,961	271,537	70,147	94,699	121 200	227.971
93,127 116,226 137,475 166,226 137,475 166,256 137,475 166,256 137,476 113,756 113,756 113,756 113,756 113,756 113,657 113,657 113,657 113,656 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 113,657 <th< td=""><td>5,340 139,103 118,872 142,130 105,411 125,87</td><td>118,872 142,130 105,411 125,87</td><td>142,130 105,411 125,87</td><td>105,411 125,87</td><td>125,87</td><td>0-0</td><td>101,771</td><td>128,695</td><td>133,367</td><td>172,546</td><td>212,673</td><td>275,149</td><td>114,107</td><td>149,595</td><td>181,989</td><td>238,589</td></th<>	5,340 139,103 118,872 142,130 105,411 125,87	118,872 142,130 105,411 125,87	142,130 105,411 125,87	105,411 125,87	125,87	0-0	101,771	128,695	133,367	172,546	212,673	275,149	114,107	149,595	181,989	238,589
145,515 167,333 202,149 276,932 260,556 559,554 177,101 247,397 228,754 519,552 114,551 187,533 202,149 276,119 295,506 1131,475 115,553 255,564 356,9997 238,238 351,882 119,552 119,552 119,552 119,552 119,552 119,552 119,552 119,552 119,552 119,552 119,552 116,582 115,553 255,591 359,621 257,393 216,583 116,582 235,595 115,583 235,596 235,556 114,556 115,553 255,591 359,621 257,393 225,593 116,582 235,592 115,562 255,291 359,621 257,444 378,775 222,523 231,552 115,562 235,592 115,562 235,592 115,562 235,592 115,562 235,592 115,562 235,592 115,562 235,592 115,562 256,291 359,621 257,933 216,582 115,562 245,193 256,291 359,621 257,933 215,692 233,293 115,562 235,592 115,562 236,187 277,93 27,596 116,552 256,291 359,671 237,393 24,257 256,287 237,390 271,562 256,197 236,392 256,291 359,671 237,391 232,562 112,562 256,197 236,392 255,291 359,671 237,391 232,562 112,562 256,197 237,391 232,562 115,562 256,197 236,392 256,291 359,671 237,391 232,562 112,562 256,197 236,392 256,391 236,562 113,562 256,197 236,392 256,391 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,392 256,397 236,397 236,397 236,397 236,392 256,397 236,397 236,392 256,397 236,397 236,397 236,392 256,397 236,397 236,392 256,397 236,392 256,397 236,392 256,397 236,397 236,397 236,392 256,397 236,397	1.329 1.35,036 103,923 1.29,543 97,113 1.21,20 1.329 1.35,036 103,923 1.29,543 97,113 1.21,20	103,02,121 107,024 90,033 101,120 102,1200,120,120 100,120 100,120 100,120 100,120 100,120 100,120 100	129,543 97,113 121,200	97,113 121,200	121,20	200	93,127	116,228	137,475	186,206	198,434	268,773	119,674	125,756	172,690	236,300
[66,678] 215,559 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 255,664 356,960 252,529 316,683 223,529 316,683 223,529 316,683 223,529 316,683 223,529 316,683 223,529 316,683 223,529 316,683 223,529 316,683 323,529 316,683 323,529 316,683 323,529 316,683 323,529 316,683 323,529 316,683 323,529 316,683 325,529 316,683 316,993 316,993 316,993 316,993 <	5274 186,633 159,817 205,317 131,982 169,911	10, 314 140, 323 103, 025 140, 911 103, 026 169, 911 103, 912 169, 911 103, 912 169, 911	205,317 131,982 169,911	131,982 169,911	16,91		145,515	187,333	202,149	278,932	260,636	359,634	101,110	247,397	228,754	319,552
212.912 264.281 396,767 567,175 296,427 423,739 347,897 458,495 263,080 376,962 165,96	1,442 238,996 182,442 238,996 164,678 215,555	182,442 238,996 164,678 215,553	238,996 164,678 215,553	164,678 215,553	215,55		164,678	215,553	255,664	356,960	255,664	356,960	223,529	316,683	223,529	316,683
166/358 2113/265 489/845 656/775 321/442 430/983 412/692 556/187 273/017 367/946 190/079 245/71 62/669 857/739 371/060 457/259 435/259 435/259 438/090 194/618 79/6018 847/810 11/25/709 487/106 647/816 719/806 960/833 421/699 562/812	4,030 2236,364 186,150 241,162 195,877 239,412 1019 273,007 231,152 291,718 192,877 239,412 105,552 254,552 256,718 255,555 255,555 255,555 255,555 255,555 255	237,152 241,182 162,860 211,731 237,752 259,718 199,877 239,412 237,500 258,000 205,012 257,500	291,718 192,877 239,412 291,718 192,877 239,412 266 mu 205,018 257 200	192,877 239,412	239,412		212,912	264,281	396,767	567,175 567,175	296,427	423,739	347,897	498,495	263,080	376,962
A THE TANK THE TANK TO THE TANK THE TAN	8.021 298,331 193,714 233,446 193,055 248,99 8.021 298,331 193,714 233,446 193,055 248,99 8.160 338,455 223,528 238,588 233,151 301,22	193,714 253,446 193,055 248,99 221,528 288,588 233,151 301,21	253,446 193,055 248,90 288,588 233,151 301,21	233,151 301,218,90	2680	52%	160,358	213,265	489,845 642,639 647,520	656,775 857,739	321,442	430,983 495,259 647 816	543,600 543,600	556,187 731,845 960,833	273,017 317,932 421,630	367,946 428,030 562,812

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Characterstics	Agricu	lture and Activities	Allied	Minir	ng and Qua	rrying	Processi turing F tiles, Tot Proc	ing and M Food Stuff acco, Les fucts The	anufac- is, Tex- uther and reof	Processi turing M cals and	ing and M letals and Products	lanufac- Cherni- Thereof
	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Constant Prices Gross fixed capital												
formation Net fixed capital	18.972	14.079	18. 64 7	1.3973	(-)9.8461	4.7324	9.9512	10.243	8.7777	19.221	11.864	10.713
formation	29.449	17.94	17.095	(-)1.3794	8.1811	6.0225	10.953	11.877	8.9413	16.248	23.439	14.786
Gross value added	10.521	9.5039	13.512	0.3147	(-)0.4130	1.2168	7.7061	7.143	10.001	5.2186	4.8823	6.2111
Net value added	10.508	9.4365	13.703	(-)1.7057	(-)2.5182	(-)0.4897	7.4022	6.9146	9.4248	5.4466	5.2243	6.061

TABLE 24. ALL INDUSTRIES AND INDUSTRY GROUP	WISE ANNUAL GROWTH RATES AT	CONSTANT (1980-81) PRICES

Note: (1) covers 1972-1987.

TABLE 25. ALL INDUSTRIES AND INDUSTRY-WISE ANNUAL GROWTH RATES FOR 1970-71 TO 1979-80 AND 1980-81 TO 1986-87 AT CONSTANT PRICES

Characteristics	Agricul Allied A	ture and Activities	Minir Quar	ng and Tying	Processing ufacturin stuffs, 7 Tobacco, 1 Products	and Man- g: Food- Textiles, Leather and Thereof	Processing ufacturing Chemic Products	g and Man- g: Metais, cals and ; Thereof	All Ind	lustries
	1970-80	1980-87	1970-80	1980-87	1970-80	1980-87	1970-80	1980-87	1970-80	1980-87
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		TOTAL	: PUBLIC	ANDPRIV	ATE LIMIT	ED COMP	ANIES			
At Constant Prices										
Gross Fixed Capital	3.6206	31.4190	-18.2550	16.3690	-4.1147	21.4660	5.7740	30.5840	0.8592*	5.4210
Formation										
Net FixedCapital Formation	36.1870	34.5750	-10.1880	83.7680	-0.0470	23.8010	-23.4650	39 .01 2 0	-0. 6 639*	6.2378
Gross Value Added	11.6430	19.1660	5.4001	5.1375	5.4954	3.9603	3.4881	9.1246	4.2877*	5.2209
Net Value Added	11.9210	18.9110	4.8412	2.6549	5.9538	4.7333	4.3091	8.4448	4.5893*	5.2832
			PUBL	IC LIMITE	D COMPA	NIES				
At Constant Prices										
Gross Fixed Capital Formation	13.1530	24.6770	-18.2030	-4.2181	-5.4028	23.2650	-7.5595	31.8900	-0.4435*	5.1580
Net Fixed Capital Formation	24.434 0	22.1320	0.5153	48.7170	0.2370	26.5270	-6.4087	40.3 90 0	4.0462*	6.1731
Gross Value Added	11.3840	13.9470	4.0554	3.8717	4.5543	5.9620	2.7310	10.3550	3.9804*	4.9226
Net Value Added	11.6050	15.6000	2.8711	1.4218	4.9834	4.7632	3.6817	9.7747	4.4976*	5.1524
			PRIVA	TELIMIT	ED COMP	ANIES				
At Constant Prices										
Gross Fixed Capital Formation	13.1200	44.8120	-25.8830	8.8369	0.4584	14.1750	4.0346	24.1240	5.9328*	6.7917
Net Fixed Capital Formation	-20.6790	53.1850	-2.3539	7.6926	-2.7665	12.1130	0.8840	43.0810	1.6154*	1.7162
Gross Value Added	12.5400	27.8490	6.9407	6.6385	9.4182	5.9987	5.7291	5.8490	5.0901*	5.9810
Net Value Added	13.0540	27.8340	7.4642	4.3396	9.9923	4.6943	6.0356	5.0058	4.8464*	5.6188

* For the period 1973-80.

					TABI	LE 26. INDUS	TRY-GROUF	WISE: RATE	OF SAVING	(GROSS AN	D NET)					(per cent)
Үсаг	Agr	iculture and	l Allied Act	ivitics		Mining an	d Quarrying	50	운 조 고	cessing and dstuffs, Te: ather and Pr	Manufactu ktiles, Toba oducts The	ring: cco, reof	Processi Chen	ng and Mar nicals and P	afacturing: roducts The	Metals, reof
		Rate o	f Saving			Rate o	f Saving			Rate of	[Saving			Rate of	Saving	
		Jross		Net	5	ross	~	रंत	5	SSO	2	a A	5	065	Ž	×
	Public	Total	Public	Total	Public	Total	Public	Total								
	Ξ	3	(3)	(4)	(2)	(9)	E	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1970-71	18.25	16.39	13.92	11.37	14.51	20.33	1.90	120	15.44	14.74	3.37	2.39	28.71	26.48	12.50	11.74
1971-72	12.57	11.30	8.09	5.88	9.72	17.29	-8.73	-10.05	13.86	13.29	2.20	1.66	26.85	24.90	11.01	10.65
1972-73	8.62	7.62	4.26	2.74	13.85	20.69	1.61	0.93	14.89	14.98	4.24	4.47	25.18	23.00	8.79	8.33
1973-74	17.37	15.79	13.34	11.19	15.34	24.23	1.64	634	17.37	17.53	8.43	8.57	24.89	22.96	9.86	9.24
1974-75	32.74	28.79	30.29	25.93	19.75	28.30	7.57	13.43	15.93	15.14	721	6.23	25.69	23.47	13.14	11.72
1975-76	23.09	20.69	20.13	17.34	19.42	25.42	5.71	10.32	7.06	6.71	-3.80	4.17	20.93	19.32	8.09	7.11
1976-77	32.10	28.08	30.05	25.59	19.32	23.58	4.26	925	6.06	5.73	4.79	-5.03	20.83	18.70	90.6	7.55
1977-78	42.77	36.52	40.98	34.30	16.28	24.69	4.63	4.93	8.81	8.55	-0.98	8.9 8	20.27	18.20	7.90	6.66
1978-79	17.53	14.30	14.08	10.38	18.23	19.66	-0.10	-3.59	16.97	15.32	8.61	6.99	22.16	19.93	11.15	9.72
1979-80	22.90	18.51	19.49	14.62	22.36	22.16	7.35	0.43	21.04	19.49	13.46	11.77	23.94	21.31	12.98	11.34
1980-81	6.24	4.69	1.49	-0.25	25.36	23.08	7.94	0.52	19.25	18.34	10.54	9.46	24.44	21.90	13.57	11.97
1981-82	4.72	2.48	-0.24	-2.79	24.03	24.83	6.44	4.04	11.99	12.14	1.76	1.09	26.03	22.33	16.08	12.69
1982-83	8.15	5.67	3.60	1.07	20.61	21.45	3.40	-3.86	12.35	12.95	0.93	0.74	23.38	21.62	12.62	10.82
1983-84	15.47	15.30	11.11	9.94	21.31	33.05	-2.82	6.72	13.21	15.04	-1.41	-0.51	20.03	18.95	523	4.36
1984-85	16.88	17.25	12.26	12.76	17.43	26.28	0.46	4.08	14.05	16.70	-1.52	0.20	23.16	21.88	8.79	7.75
1985-86	18.53	17.44	13.01	12.12	21.68	30.91	2.31	10.80	17.65	18.77	2.81	3.33	23.00	21.98	8.97	8.55
1986-87	12.70	11.73	5.67	4.94	18.94	24.87	1.16	3.62	14.40	15.58	-2.22	-1.00	19.21	18.18	4.87	4.14
1970-71 T	D 1986-87															
CLLS CLLS	9.8358	8.7248	10.8391	9.6359	3.8213	3.8809	4.3764	5.7943	3.9299	3.8753	5.1032	4.5693	2.5685	2.2929	2.9176	2.5187
CV AVG	53.8292 18.2721	54.4182 16.0329	76.2910 14.2075	83.1031 11.5952	20.4192 18.7141	16.0601 24.1650	209.8012 2.0860	166.6658 3.4766	27.7970 14.1380	27.3331 14.1779	177.6350 2.8729	241.8074 2.6606	10.9522 23.4522	10.6762 21.4764	28.4055 10.2714	27.7414 9.0792
Note: Rate	of saving	is defined a	is gross/net	saving as p	ercentage o	f gross/net	value addec	-								

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Public Public Total Total Year Gross Saving Depreciation Net Saving Gross Saving Depreciation Net Saving Depreciation Saving				Agriculture and	Allied Activities					Mining an	ed Quarrying		,
Year Groad Saving Depreciation Net Groad Saving Depreciation Net Groad Saving Depreciation Net Depreciation Net Saving Depreciation Net Saving Depreciation Net Saving Depreciation Saving Depreciation Saving Depreciation Saving Depreciation Saving Depreciation Saving			Public			Total			Public			Total	
1 2 3 4 5 177.72 181.36 70.34 111.02 171.67 87.50 177.72 181.36 70.34 111.02 171.67 87.50 177.77 181.36 70.34 111.02 171.67 87.50 177.77 956.67 13.10 23.50 23.87.6 23.00 177.77 956.67 13.00 13.56 13.93 37.00 177.77 958.81 13.50 13.56 13.33 13.93 177.77 956.67 13.56 13.56 13.34 177.77 13.66 13.56 13.35 13.34 177.77 13.66 13.56 13.56 13.34 199.86 13.56 13.56 13.34 13.34 199.86 13.56 13.56 13.34 13.34 199.86 13.56 13.56 13.34 13.34 199.86 13.56 13.56 13.34 13.34 <	Year	Gross Saving	Depreciation Provision	Net Saving	Gross Saving	Depreciation Provision	Net Saving	Gross Saving	Depreciation	Net Saving	Gross Saving	Depreciation Provision	Net Saving
		1	2	3	4	s	6	7	80	6	10	11	12
1971-71 1972-71 67 61 1972-71 18.11 53.00 49.50 13.500 51.81 53.00 16.99 53.500 1976-77 53.31 6.35.00 31.50 31.50 32.00 1976-77 53.31 6.35.00 31.50 32.00 32.00 1976-77 53.31 4.290 81.81 4.290 31.50 32.07 1976-77 53.31 4.35 34.02 10.24 31.30 57.07 1980-81 38.54 10.74 1.1.80 31.30 37.33 1980-87 31.56 34.61 15.31.60 13.2.9 37.33 1980-87 31.56 31.56 31.3.30 13.4.8 1980-87 31.50 13.2.9 13.4.8 34.5.1 1980-87 31.56 13.2.9 13.4.8 34.5.1 1980-87 31.56 13.2.9 13.4.8 34.5.1 1980-87 31.56 13.4.6 13.4.8 34.5.1 1990-87 13.4.6 12.4.8 13.4.8 34.5.1	1971-72	181.36	70.34	111.02	171.67	87.50	84.17						
1974-75 396.05 33.00 275.05 238.76 32.07 1975-77 353.18 42.30 410.26 340.80 51.36 52.07 1975-77 353.18 42.30 315.67 33.16 32.07 51.36 52.07 1976-77 453.18 42.30 18.07 54.66 71.20 57.07 51.31 40.30 1976-77 35.54 30.76 37.57 10.24 31.56 50.79 1996-87 18.67 70.51 13.56 70.51 15.37 34.55 1995-86 71.20 32.56 71.30 137.57 13.27 13.27 1995-86 71.20 12.46 15.56 34.56 71.31 1995-87 71.20 12.48 15.56 34.56 71.32 1995-87 71.20 12.48 15.56 34.56 71.33 1995-96 13.46 13.56 13.48 71.48 1995-97 13.46 13.56 13.48 <td>1973-74</td> <td>67.61</td> <td>18.11</td> <td>49.50</td> <td>51.81</td> <td>16.99</td> <td>34.82</td> <td>42.33</td> <td>38.43</td> <td>3.90</td> <td>16.80 68.36</td> <td>53.91</td> <td>0.60 14,46</td>	1973-74	67.61	18.11	49.50	51.81	16.99	34.82	42.33	38.43	3.90	16.80 68.36	53.91	0.60 14,46
1976-77 53.18 72.90 51.06 54.06 51.36 50.06 1976-77 85.95 34.02 10.26 34.03 34.03 1976-77 85.95 10.37 14.96 11.31 34.03 1976-77 85.95 10.37 14.96 11.31 34.03 1976-77 85.45 10.37 19.36 14.03 34.03 1976-77 13.56 34.05 15.95 15.32 15.33 1976-77 13.56 35.36 13.31 34.35 15.33 1985-87 11.56 13.48 13.36 13.48 14.40 1985-87 11.36 13.45 34.35 13.35 34.35 1985-87 11.36 13.48 13.34 13.34 13.34 1985-87 13.36 13.48 13.48 13.48 13.48 1985-87 13.96 13.48 13.48 13.48 13.48 1985-87 13.96 13.48 13.48 <t< td=""><td>1974-75</td><td>308.05</td><td>33.00</td><td>215.05</td><td>238.76</td><td>32.07</td><td>206.69</td><td>80.17</td><td>47.43</td><td>23.65</td><td>72.88</td><td>44.24</td><td>3.5</td></t<>	1974-75	308.05	33.00	215.05	238.76	32.07	206.69	80.17	47.43	23.65	72.88	44.24	3.5
1978-79 78.97 18.07 60.90 1.2.02 1.9.03 1978-79 78.97 18.07 74.02 100.49 11.81 34.02 100.49 11.81 34.03 100.49 11.81 34.03 100.43 11.91 34.03 100.43 11.91 34.03 100.43 11.91 34.03 100.43 11.91 34.03 100.43 11.91 34.03 100.43 11.91 34.04 100.43 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 11.91 34.05 34.05 11.91 34.05 34.05 11.91 34.05 34.05 11.91 34.05 34.05 11.91 11.91 11.91 11.91 11.91 11.91 11.91 11.91 11.91 11.91 11.91 11.91 11.91	11-9161	453.18	42.90	410.28	340.68	41.40	82.66Z	19.77	16.10	3.67	39.97 70.05	26.76 19.76	1321
1979-80 183.71 34.02 199.69 163.67 40.30 1981-87 35.540 73.73 190.69 153.67 40.30 1982-87 115.67 40.43 1.8.67 77.35 13.56 77.37 1982-86 71.30 23.540 75.74 73.01 95.76 77.39 1982-86 71.30 23.56 10.575 35.54 77.35 13.45 1982-86 71.30 23.55 10.73 45.81 77.35 13.45 1982-86 71.30 23.55 10.73 45.81 77.35 34.53 1991-72 194.67 57.35 17.35 13.45 34.55 77.45 1992-70 199.00 124.67 10.01.31 13.45 77.45 1992-71 199.00 122.167 35.638 77.45 1992-71 199.00 122.167 159.568 10.64 17.45 1011 1015 1015 1012.31 157.45 10.45 <td>1978-79</td> <td>78.97</td> <td>18.07</td> <td>60.90</td> <td>52.02</td> <td>15.92</td> <td>36.10</td> <td>16.007</td> <td>-3227.08</td> <td></td> <td>52.52</td> <td>106.42</td> <td>-13.19</td>	1978-79	78.97	18.07	60.90	52.02	15.92	36.10	16.007	-3227.08		52.52	106.42	-13.19
1990-81 94.95 94.12 10.46 12.31 43.65 1992-87 115.67 73.27 10.77 73.85 10.73 11.31 10.74 1992-87 115.67 73.27 10.77 73.85 11.53 11.32 33.54 1995-87 115.67 11.51 15.56 73.01 95.56 73.27 1995-87 11.51 36.58 10.74 17.31 34.58 1995-87 11.51 36.58 17.37 34.58 73.45 1995-87 11.50 11.51.67 11.34.82 73.45 11.34.82 1995-71 11.40 11.21.67 123.167 134.48 134.48 CV 113.06 123.16 124.48 134.48 AVG 51.36 132.16 124.48 14.48 Promentin Promentin 102.11 121.67 124.48 AVG 113.66 123.48 124.67 124.48 Premotin Promentineruning: Foodenulfs, Fondenulfs,	1979-80	183.71	29.52	149.69	163.67	40.30	123.37	140.13	101.55	38.58	212.92	209.72	3.20
1982-81 115.02 10.77 77.85 73.06 71.07 1982-87 115.02 73.76 73.06 71.27 1986-87 71.20 19.45 75.54 79.01 53.54 1986-87 71.20 19.45 15.56 77.27 38.54 1986-87 71.20 19.45 15.16 13.48 33.43 1971-72 TO 1986-87 51.30 13.51 36.38 73.45 SVU 199.00 17.4 15.16 134.82 AVG 57.35 121.67 36.53 73.45 Vol 199.00 17.4 1.511.60 134.82 AVG 57.35 122.167 36.53 73.45 AVG 199.00 102.31 134.87 73.45 AVG 199.00 102.31 132.167 36.53 73.45 AVG 199.00 102.31 121.67 121.46 133.46 AVG 10.31 10.16 (17) 10.48	1981-82	5.3, \$ 8,	40.43	-1.89	21.31	6.5 4 9. 4	-22.75	85.52	06.90	18.62	37.65	32.85	2.14
1971-72 TO 196687 235.00 79.74 175.61 125.10 73.44 1971-72 TO 196687 71.20 124.35 125.61 123.48 134.82 1971-72 TO 196687 134.62 127.0 124.48 155.61 134.82 1971-72 TO 196687 134.62 127.60 124.48 131.60 134.82 1971-72 TO 196687 134.62 127.60 102.31 135.81 134.82 270 157.61 121.67 36.58 73.45 134.82 Photo 173.0 173.95 132.67 38.58 73.45 1971-72 199.00 104.01 (19) (17) 104 1972-73 55.70 82.31 133.77 66.71 29.40 1972-74 73.53 93.72 73.46 93.44 93.44 1972-74 73.53 93.23 53.18 67.71 70.40 101 1972-74 73.45 93.31 73.45 67.71 70.40 101 1977	1982-83	18.62	10.77	7.85	13.09	10.74	2.36	36.53	31.58	8 ^{.4}	79.99	90.88 85.09	-10.89
1986-86 71.20 24.39 46.81 70.61 4.32 1971-72 TO 1986-87 21.30 19.35 19.35 23.43 17.39 1971-72 TO 1986-87 13.46 19.27 19.48 1.511.60 134.48 1971-72 TO 1986-87 13.46 19.27 121.67 133.48 73.45 270 13.46 19.21.67 123.48 1.511.66 134.48 29.00 37.33 121.67 35.43 73.45 Photosica 50.0 37.35 121.67 134.83 Processing and Mmultacturing Foodstuffs, Taxtiles, Tolacco, Lamber and Provision Poul Tolal Year Gross Saving Depreciation Net Saving Depreciation Yit (14) (15) (10) (17) 1971-73 55.70 82.31 33.44 53.34 1971-74 73.71 43.07 63.71 63.71 1971-73 55.71 63.71 63.71 63.71 1977-73 55.71 53.45 </td <td>1984-85</td> <td>255.40</td> <td>79.74</td> <td>175.67</td> <td>129.20</td> <td>38.54</td> <td>90.73</td> <td>20.62</td> <td>20.17</td> <td>0.45</td> <td>37.47</td> <td>33.00 10</td> <td>27.57 84.4</td>	1984-85	255.40	79.74	175.67	129.20	38.54	90.73	20.62	20.17	0.45	37.47	33.00 10	27.57 8 4 .4
1971-72 TO 1966.87 1971-72 TO 1966.87 134.46 134.48 134.49 134.40 134.40 134.40<	1985-86 1986-87	71.20 32.80	24.39 19.25	46.81 13.55	70.61 28.54	24.52	46.09 11.15	4,185.34 22.67	3,828.45 21.53	356.90 1.14	182.37 27.24	133.01 24.15	49.35 3.09
CV 94.67 52.76 102.31 28.181 133.54 Processing and Manufacturing, Foodstuffs, Taxtiles, Tobacco, Leather and Provision Pholic 73.43 73.45 Year Gross Saving Depreciation Net Saving Depreciation Net Saving Demeciation Year Gross Saving Depreciation Net Saving Depreciation Net Saving Demeciation 1971-72 95.70 81.31 (1.5) (1.6) (1.7) 1971-72 95.70 80.31 13.34 97.43 93.14 1971-72 95.71 94.34 90.36 13.14 93.24 93.44 1971-72 94.91 13.44 90.36 14.16 69.56 93.41 1971-72 94.91 13.46 94.46 94.41 94.41 94.41 1971-72 10.00.05 54.66 13.41 94.41 94.41 94.41 94.41 1972-75 84.93 14.822 -1.34 94.44 94.41 94.41 94.41 <td>1971-72 TO STD</td> <td>1986-87 134.62</td> <td>02.61</td> <td>124.48</td> <td>1,511.60</td> <td>134.82</td> <td>1,377.95</td> <td>1,058.31</td> <td>1,292.44</td> <td>93.28</td> <td>52.62</td> <td>49.94</td> <td>15.17</td>	1971-72 TO STD	1986-87 134.62	02.61	124.48	1,511.60	134.82	1,377.95	1,058.31	1,292.44	93.28	52.62	49.94	15.17
Processing and Manufacturing: Foodstruffs, Textiler, Tobacco, Leather and Provision Public Public Total Public Circus Saving Depreciation Net Saving Depreciation Year Gross Saving Depreciation Net Saving Depreciation Net Saving Depreciation 1971-72 957.70 82.31 13.87 55.15 76.00 1971-73 95.70 82.31 13.37 55.15 76.01 1971-74 71.35 34.49 30.36 60.35 40.35 1977-78 154.73 13.87 55.15 76.01 13.10 1977-78 154.73 13.87 55.15 76.01 13.10 1977-78 154.73 13.87 55.15 76.01 13.10 1976-77 95.34 90.36 13.47 13.49 13.10 13.10 1976-77 95.34 93.23 55.18 90.36 13.44 93.44 1976-77 95.95 54.66 74.35 54.64<	AVG	84.67 159.00	52.76 37.33	102.31	281.81 536.38	183.54 73.45	297.66 462.93	381.02	1,193.64	Z70.36 34.50	64.97 80.98	70.95 20.95	151.17 10.03
Processing and Manufacturing: Foodshuffs, Textiles, Tokecoo, Leather and Pro- Public Total Year Gross Saving Depreciation Provision Not Saving Depreciation Provision Total Year Gross Saving Depreciation Provision Not Saving Gross Saving Depreciation Provision Total (13) (14) (15) (16) (17) (17) (17)-72 9570 8231 13379 58772 Provision (13) (14) (15) (16) (17) (17) (17)-72 9570 8231 13379 58772 493.03 (17)-72 97778 82.13 133.71 40.25 133.49 90.01 (17)-72 1975-76 66.71 93.46 93.46 93.46 93.46 93.46 (1975-77 84.12 65.71 93.46 93.46 93.46 93.46 (1975-78 64.12 93.46 93.46 93.46 93.46 93.46 (1976-87 13.46													
Year Public Total Year Gross Saving Depreciation Net Saving Depreciation (13) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (13) (16) (17) (17) (14) (13) (17) (10) (17) (17) (14) (13) (17) (17) (17) (17) (14) (13) (17) (17) (17) (17) (14) (13) (17) (17) (17) (17) (14) (13) (17) (17) (17) (17) (14) (15) (17) (17) (17) (17) (18) (17) (18) (17) (17) (17) (18) (18) (18) <th></th> <th>Processi</th> <th>ng and Manufacturi</th> <th>ng: Foodstuffs, Te</th> <th>sxtiles, Tobacco, Le</th> <th>ather and Products</th> <th>i Thereof</th> <th></th> <th>Processing and M</th> <th>fanufacturing: Mol</th> <th>stals, Chemicals and</th> <th>i Products Thereof</th> <th></th>		Processi	ng and Manufacturi	ng: Foodstuffs, Te	sxtiles, Tobacco, Le	ather and Products	i Thereof		Processing and M	fanufacturing: Mol	stals, Chemicals and	i Products Thereof	
Year Gross Saving Deprectation Net Saving Deprectation (13) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (16) (17) (17) (14) (15) (17) (17) (17) (14) (15) (17) (17) (17) (14) (15) (17) (17) (17) (14) (15) (17) (17) (17) (14) (15) (17) (17) (17) (18) (13) (17) (17) (17) (18) (13) (16) (17) (17) (18) (13) (16) (17) (17) (18) (18)			Public			Total			Public			Total	
(13) (14) (15) (16) (17) 1971-72 55.70 82.31 13.87 55.15 78.07 1971-72 55.70 82.31 13.87 55.15 78.07 1971-72 55.70 82.31 13.87 55.15 78.07 1974-73 55.53 32.37 55.15 55.15 78.07 1974-74 75.55 32.17 55.15 55.15 78.07 1976-77 84.43 13.49 10.86.25 33.44 33.45 1976-77 145.73 128.11 41.67 66.25 33.44 1976-77 145.73 128.11 41.67 66.25 33.44 1976-77 145.23 54.65 74.45 66.71 39.01 1976-87 145.23 54.65 74.4 43.40 55.54 1996-87 13.46 17.36 13.56 54.65 74.4 43.40 1996-87 13.46 17.36 13.56 54.65 <t< th=""><th>Year</th><th>Gross Saving</th><th>Depreciation Provision</th><th>Net Saving</th><th>Gross Saving</th><th>Depreciation Provision</th><th>Net Saving</th><th>Gross Saving</th><th>Depreciation Provision</th><th>Net Saving</th><th>Gross Saving</th><th>Depreciation</th><th>Net Saving</th></t<>	Year	Gross Saving	Depreciation Provision	Net Saving	Gross Saving	Depreciation Provision	Net Saving	Gross Saving	Depreciation Provision	Net Saving	Gross Saving	Depreciation	Net Saving
1971-72 95.70 82.31 13.39 87.72 78.07 1973-73 95.80 82.31 13.39 87.72 78.07 1973-74 97.57 85.48 32.37 25.18 95.14 40.52 1973-75 86.43 32.37 25.18 95.15 40.52 1974-75 86.43 32.37 25.18 95.16 90.52 1975-76 86.43 32.37 25.18 95.80 108.25 1976-77 13.47 40.23 33.43 33.44 33.44 1976-77 13.47 40.23 34.45 90.25 90.25 1976-77 13.47 40.23 34.45 90.25 90.25 90.25 1979-80 155.58 66.17 34.05 34.40 39.01 39.01 1979-81 18.91 176.65 13.40 49.46 74.40 99.47 1981-82 11.16 55.66 71.31 39.01 39.01 39.04 <		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
INT-7:1 INT-7:2 INT-7:2 <t< td=""><td>1971-72</td><td>95.70</td><td>\$2.31</td><td>13.39</td><td>21:13</td><td>78.07</td><td>99.6 99.6</td><td>-2,211.02</td><td>-1,465.59</td><td>:</td><td>856.02</td><td>548.30</td><td>307.72</td></t<>	1971-72	95.70	\$2.31	13.39	21:13	78.07	99.6 99.6	-2,211.02	-1,465.59	:	856.02	548.30	307.72
1974-75 8.54 9.3.56 6.56 4.3.13 1975-76 8.43 13.14 41.07 6.57 3.3.35 108.25 1975-76 8.43 13.14 41.07 6.57 3.3.35 108.25 1975-76 8.43 13.14 41.07 6.57 3.3.35 6.025 1976-77 14.47 4.63 3.87 -3.435 33.76 60.25 1976-78 14.47 4.03 3.43 13.49 112.61 13.410 1976-89 155.58 5.43 3.87 6.57 39.93 1981-87 14.51 4.03 9.24 9.24 9.94 1980-88 14.51 7.43 3.44 9.93 19.34 1981-88 14.51 7.43 3.46 9.44 9.44 9.94 1980-87 14.51 7.43 3.14 40.24 10.44 10.4 1980-86 11.16 15.74 -1.18 11.34 11.34 11.34	1973-74	51.55	32.37	25.18	59.84	33.44	86.93 56.33	61.49	41.19	20.30	22	42.50	222
IP76-77 34.36 38.77	1974-75 1975-76	73.75 86.43	43.49	30.26	99.99 99.99	43.13	25.56 38.69	158.63	89.19 91.88	69.45 49.53	136.06	77.12	39.19 39.19
Igram Igram <th< td=""><td>1976-77</td><td>34.36</td><td>58.71</td><td>24.35</td><td>33.70</td><td>60.25</td><td>-26.55</td><td>589.66</td><td>-366.50</td><td></td><td>1,890.23</td><td>1,218.78</td><td>671.44</td></th<>	1976-77	34.36	58.71	24.35	33.70	60.25	-26.55	589.66	-366.50		1,890.23	1,218.78	671.44
1979-80 155.58 64.78 90.80 141.56 65.54 1990-81 155.58 64.78 90.80 141.56 65.54 1991-87 145.1 55.15 55.15 55.15 55.15 55.15 1991-87 14.51 15.55 54.6 73.40 3933 1991-87 14.91 17.65 1.56 73.41 3934 1992-88 11.16 55.65 71.31 70.61 1996-87 13.16 15.74 -1.80 70.34 1996-87 13.16 15.74 -1.80 70.31 1996-87 13.16 15.74 -1.80 70.31 1996-87 13.94 15.74 -1.80 70.35 1996-87 13.94 15.74 -1.80 70.35 1996-87 13.94 15.74 -1.80 70.35 1996-87 13.94 15.74 -1.80 70.35 1996-87 13.94 15.74 -1.80 70.35	1978-79	74.25	46.03	-13.49	10711	10.921	21.10	43.09	24.09	6681	41.65	29.62 29.63	18.02
1981-82 41.51 36.05 5.46 41.40 3933 1982-83 18.91 77.65 1.126 21.52 20.44 1982-84 34.71 37.41 -31.44 40.24 3033 1982-86 11.16 57.42 -5.66 71.31 70.61 1982-86 11.16 57.42 -5.66 71.31 70.61 1986-87 13.16 15.74 -1.80 16.36 71.34 1966-87 13.16 15.74 -1.80 16.36 71.46 1966-87 13.94 15.74 -1.80 16.36 71.46 1966-87 13.96 15.74 -1.80 16.36 71.46 1966-87 13.96 35.81 30.01 32.27 35.66 1971-72 TO 1986-87 83.96 55.81 30.01 32.27 35.66 277 83.96 55.81 11.1.12 63.62 53.28 270 65.66 55.68 11.1.12 63.62	1979-80 1980-81	155.58	64.78 50.51	90.80 40 46	141.58	63.54 42.69	78.04	199.88 107 73	105.18	94.70 40.65	107.50	95.41 55 38	85.38 57.12
1983-89 34.30 17.05 17.26 27.32 20.34 1984-85 34.77 37.41 -31.4 40.34 41.34 1984-85 61.75 67.42 -5.66 71.31 70.61 1984-85 61.75 67.42 -5.66 71.31 70.61 1986-87 13.16 15.74 -1.80 15.34 13.46 1986-87 13.96 15.74 -1.80 13.43 70.61 1996-87 13.96 15.74 -1.80 15.34 17.45 1996-87 13.96 35.81 30.01 32.27 35.66 1971-72 TO 1986-87 83.96 55.88 50.01 32.27 35.66 277 83.96 55.68 11.1.12 63.62 53.38 53.26 AVG 66.80 55.68 11.1.12 63.62 53.38 53.26	1981-82	41.51	36.05	5.46	43.40	66.66	3.47	2	42.93	20015	16.73	43.45	14.1
1984-85 61.75 67.42 -5.66 71.31 70.61 1986-87 13.16 35.95 -1.80 16.38 13.34 1986-87 13.94 15.74 -1.80 16.58 17.34 1996-87 13.94 15.74 -1.80 16.58 17.45 1971-72 TO 1986-87 35.81 30.01 32.27 35.65 270 38.96 35.81 30.01 32.27 35.65 270 38.39 64.31 266.76 50.72 33.56 AVG 66.80 55.68 11.1.12 63.62 53.31	1982-83 1983-84	34.27	37.41	-3.14	40.24 24	20.44 40.14	-1.15	58.85 58.85	17.23 45.89	12.96	57.16	46.02	11.14 11.14
1986-87 13.94 15.74 -1.80 16.58 17.46 1971-72 TO 1986-87 35.81 30.01 32.27 28.66 CP 83.96 35.81 30.01 32.27 28.66 AVG 66.80 55.68 11.12 63.62 53.81	1984-85 1985-86	61.75 31.16	61.42 26.95	-5.66 4.21	71.31 36.84	70.61 31.34	5.9 5.50	61.07 31.12	41.54 20.85	19.53 10.27	1997 1997 1997	28.58 29.29 29.29	20.85
1971-72 TO 1986-87 35.81 30.01 32.27 28.66 STD 38.96 35.81 30.01 32.27 28.66 CV 88.9 55.68 11.12 03.62 33.36 AVG 66.80 55.68 11.12 03.62 33.81	1986-87	13.94	15.74	-1.80	16.58	17.46	-0.89	22.73	17.84	4.89	23.55	18.98	4.51
	1971-72 TO STD CV AVG	1986-87 38.96 58.33 66.80	35.81 64.31 55.68	30.01 269.76 11.12	32.27 20.72 63.62	28.66 53.26 53.81	26.46 269.74 9.81	570.19 -555.47 -102.65	374.79 -527.29 -71.08	25.39 76.70 33.10	467.33 194.32 240.49	301.47 197.64 152.54	166.15 188.90 87.95
Note: No percentage are shown when gross fixed capital formation is negative.	Note: No perce	intage are shown wi	hen gross fixed cap	ital formation is n	egative.								

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rg: Metals Thereof	[] otal	Net Worth	(16)	107.86	106.06	103.15	102.21	104.13	105.80	105.94	101.11	100.35	105.70	108.61	118.46	128.19	126.78	122.33	113.17	124.09		01 9.1466	12 8.2536	94 110.8197
nufacturi Products "	-	Capital Employe	(15)	51.89	51.47	50.78	50.55	51.01	51.41	51.44	50.28	50.09	51.38	52.06	54.23	56.18	55.90	55.02	53.09	55.38		2.00	3.81	52.47
ig and Mau icals and F	lic	Net Worth	(14)	106.11	101.89	97.68	95.01	96.30	98.56	96.80	91.77	88.90	96.17	100.14	108.76	120.45	123.07	115.42	106.11	116.53		9.9082	9.5722	103.5098
Processir Chem	Pub	Capital Employed	(13)	51.48	50.47	49.41	48.72	49.06	49.64	49.19	47.86	47.06	49.02	50.03	52.10	54.64	55.17	53.58	51.48	53.82		2.3386	4.6082	50.7486
odstuffs, of	 	Net Worth	(12)	115.82	116.22	105.07	101.36	98.01	109.01	121.66	139.52	148.77	137.94	130.72	155.64	176.00	166.48	158.73	149.43	155.91		23.6499	17.5852	134.4873
acturing: Fo obacco, ducts There	Tot	Capital Employed	(11)	53.67	53.75	51.24	50.34	49.50	52.15	54.89	58.25	59.80	57.97	56.66	60.88	63.77	62.47	61.35	59.91	60.92	- 	4.3890	7.7118	56.9127
and Manufa Textiles, T her and Pro	ic	Net Worth	(10)	104.59	106.84	96.14	92.38	88.20	98.29	109.87	129.11	136.32	126.62	120.65	142.95	161.57	153.38	144.59	135.79	144.69		22.2231	18.0591	123.0582
Processing Leat	Publ	Capital Employed	(6)	51.12	51.65	49.01	48.02	46.86	49.57	52.35	56.35	57.68	55.87	54.68	58.84	61.77	60.53	59.12	57.59	59.13		4.5627	8.3389	54.7157
	la	Net Worth	. (8)	107.13	143.49	161.86	150.89	124.26	146.72	163.12	201.92	217.45	229.77	238.65	222.98	249.58	248.08	235.63	174.84	191.20		44.3308	23.4952	188.6801
Quarrying	Tot	Capital Employed	θ	51.72	58.93	61.81	60.14	55.41	59.47	61.99	66.88	68.50	69.68	70.47	69.05	71.39	71.27	70.21	63.61	65.66		5.7786	8.9615	64.4822
Mining and	lic	Net Worth	(9)	131.36	177.31	213.94	216.20	178.31	217.21	261.57	330.21	323.34	270.35	255.50	257.07	253.50	280.25	271.40	205.77	236.98		49.8674	20.7768	240.0153
	Pub	Capital Employed	(2)	56.78	63.94	68.15	68.37	64.07	68.48	72.34	76.76	76.38	73.00	71.87	72.02	71.71	73.70	73.07	67.30	70.32		4.8318	6.9127	69.8975
vities	al	Net Worth	(4)	36.43	40.92	43.10	44.19	39.35	47.19	47.96	45.61	76.58	81.92	111.45	128.59	111.63	79.52	80.44	79.50	80.76		28.0381	40.5610	69.1258
Allied Acti	To	Capital Employed	(3)	26.70	29.04	30.12	30.65	28.24	32.06	32.41	31.33	43.37	45.03	52.71	56.25	52.75	44.30	44.58	44.29	44.68		9.4341	23.9912	39.3232
ulture And	lic	Net Worth	(2)	31.25	37.39	39.52	40.76	38.41	39.10	41.88	37.39	60.35	60.31	89.15	93.58	78.59	58.73	46.91	48.72	46.65		18.2410	34.8930	52.2771
Agric	Pub	Capital Employed	(I)	23.81	27.21	28.33	28.96	27.75	28.11	29.52	27.22	37.64	37.62	47.13	48.34	44.00	37.00	31.93	32.76	31.81	1986-87	7.1409	21.3293	33.4793
Үсыг		·		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	8 <i>L-1</i> 78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	01 170-71 to	STD	C C	AVG

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TABLE 28: INDUSTRY-GROUPWISE BORROWING AS PERCENTAGE OF CAPITAL EMPLOYED AND NET WORTH

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TABLE 29. INDUSTRY GROUPWISE: FACTOR INCOMES AS PROPORTION OF NET VALUE ADDED

FINANCES OF THE PRIVATE CORPORATE SECTOR

									Processing	, and Manuf Textiles, 1	acturing: Fo l'obacco,	odstuffs,	Processi	ing and Man	ufacturing:	Metals,
	Agn	culture and a	Allied Activi	itics		Mining and	Quarrying		Lea	ther and Prc	oducts There	of	0 B	nicals and P	roducts The	reof
	Pub	lic	Tot	la	Publ	ic	Tot	a	Publ	ic	Tot	al	Pub	lic	To	al
la la	Compen- sation to Employees	Operating Surplus	Compen- sation to Employees	Operating Surplus	Compen- sation to Employees	Operating Surplus	Compen- sation to Employees	Operating Surplus								
	(1)	3	(3)	(4)	(2)	(9)	ε	(8)	(6)	(01)	(11)	(12)	(13)	(14)	(15)	(16)
10-71	72.11	27.89	73.32	26.68	66.22	33.78	65.71	34.29	61.10	38.90	62.32	37.68	49.51	50.49	51.78	48.22
11-72	74.60	25.40	75.67	24.33	16.79	2.03	91.36	8.64	61.57	38.43	62.29	37.71	49.61	50.39	51.45	48.55
72-73	17.81	22.19	78.66	21.34	69.43	30.57	68.12	31.88	59.75	40.25	69.69	39.31	52.17	47.83	54.04	45.96
73-74	75.97	24.03	T0.TT	22.93	81.53	18.47	72.51	27.49	55.44	44.56	56.49	43.51	52.24	47.76	54.08	45.92
74-75	64.20	35.80	64.83	35.17	81.70	18.30	63.46	36.54	58.97	41.03	60.67	39.33	49.22	50.78	51.39	48.61
175-76	70.68	29.32	70.84	29.16	84.52	15.48	64.48	35.52	73.70	26.30	74.34	25.66	52.03	47.97	54.03	45.97
11-31	63.85	36.15	64.77	35.23	84.28	15.72	63.27	36.73	70.62	29.38	71.60	28.40	49.85	50.15	52.13	47.87
8L-LL	57.87	42.13	59.23	40.77	93.82	6.18	72.24	27.76	67.53	32.47	69.63	30.37	52.00	48.00	54.74	45.26
61-81	71.00	29.00	73.76	26.24	87.71	12.29	83.02	16.98	61.26	38.74	64.21	35.79	50.84	49.16	53.59	46.41
79-80	69.07	30.93	71.55	28.45	78.00	22.00	77.06	22.94	58.38	41.62	61.07	38.93	50.29	49.71	52.95	47.05
80-81	74.07	25.93	76.49	23.51	80.63	19.37	75.39	24.61	61.28	38.72	64.00	36.00	50.60	49.40	52.96	47.04
81-82	80.29	19.71	80.99	19.01	78.73	21.27	73.23	26.77	68.27	31.73	70.09	29.91	50.09	49.91	53.68	46.32
82-83	74.79	25.21	76.56	23.44	88.54	11.46	85.00	15.00	68.82	31.18	69.12	30.88	53.78	46.22	56.61	43.39
83-84	59.10	40.90	61.77	38.23	93.30	6.70	74.83	25.17	69.90	30.10	70.29	29.71	58.52	41.48	60.78	39.22
84-85	50.94	49.06	53.00	47.00	74.35	25.65	69.35	30.65	70.80	29.20	70.34	29.66	177.19	-77.19	58.77	41.23
982-86	54.86	45.14	57.29	42.71	67.61	32.39	61.41	38.59	65.55	34.45	65.55	34.45	55.19	44.81	57.05	42.95
986-87	66.45	33.55	67.90	32.10	68.70	31.30	68.95	31.05	67.07	32.93	66.84	33.16	57.21	42.79	59.44	40.56
117-079	L8-9861 O.															
Ð	8.2282	8.2282	7.9775	7.9775	9.3013	9.3013	8.0419	8.0419	5.1653	5.1653	4.7535	4.7535	29.5557	29.5557	2.7807	2.7807
>	12.0829	25.7921	11.4571	26.2670	11.4827	48.9599	11.1202	29.0507	7.9826	14.6355	7.2180	13.9221	49.7303	72.8547	5.0860	6.1349
Ŋ	68.0980	31.9020	69.6293	30.3707	81.0023	18.9977	72.3178	27.6822	64.7071	35.2929	65.8563	34.1437	59.4320	40.5680	54.6738	45.3262

;							Process Foodstu	ing and Manufac iffs, Textiles, To	turing: bacco,	Processing a	nd Manufacturi	ng: Metals
Year	Agncult	ure and Allied A	Activities	Mir	ning and Quarryi	gu	Leather	r and Products T	hereof	Chemica	ls and Products	Ihereof
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
	(1)	(2)	(3)	(4)	(2)	(9)	ß	(8)	(6)	(10)	(11)	(12)
17-0791	18.44	8.71	15.45	13.62	8.74	11.39	13.90	9.87	13.14	14.48	15.99	14.79
1971-72	16.30	8.01	13.89	0.54	4.10	2.10	14.08	11.82	13.66	15.28	16.71	15.58
1972-73	14.32	7.38	12.35	10.48	8.80	67.6	17.30	13.47	16.57	14.62	15.68	14.85
1973-74	16.64	8.01	14.19	6.18	13.17	9.03	21.04	16.52	20.19	15.61	15.64	15.62
1974-75	32.55	20.12	29.21	7.45	22.08	14.62	19.73	12.95	18.51	19.14	17.91	18.88
1975-76	25.82	19.51	24.15	5.98	27.52	15.74	10.88	9.94	10.71	17.67	16.85	17.49
1976-77	42.81	24.15	38.04	5.27	30.31	15.59	12.43	11.77	12.31	19.38	19.16	19.33
1977-78	53.72	30.74	47.03	1.90	18.24	6.67	14.25	14.54	14.30	18.62	17.80	18.42
1978-79	26.13	8.89	20.74	4.50	6.02	5.26	18.13	15.49	17.65	20.27	19.20	20.00
1979-80	25.82	11.50	21.37	8.68	5.92	7.36	21.14	18.76	20.70	20.39	20.88	20.51
1980-81	18.46	8.31	15.35	6.95	9.61	8.18	19.22	17.58	18.91	20.47	22.20	20.90
1981-82	14.78	7.63	12.43	7.48	10.38	8.99	13.64	11.43	13.19	20.35	20.13	20.30
1982-83	20.19	9.72	17.27	4.40	5.47	4.91	11.67	11.54	11.65	16.79	19.21	17.35
1983-84	37.81	20.31	32.61	2.50	16.27	9.41	10.03	10.82	10.18	13.66	13.33	13.58
1984-85	48.39	33.01	42.86	9.82	13.58	11.57	8.94	11.65	9.46	14.78	13.32	14.45
1985-86	33.11	23.51	29.78	15.01	20.50	17.70	10.30	13.44	10.88	13.98	15.42	14.28
1986-87	19.32	15.66	17.99	11.90	11.06	11.50	9.50	13.42	10.17	12.21	1275	12.32
1970-71 TO 19	86-87											
STD	11.8610	8.2931	10.6604	3.9130	7.5684	4.0198	4.0421	2.5214	3.6531	2.6981	2.6526	2.6532
ა კ	43.3990	53.1667	44.7806	54.2222	55.5133	39.5451	27.9115	19.0496	25.6455	15.9433	15.4331	15.6266
AVG	27.3300	15.5982	23.8058	7.2166	13.6335	10.1650	14.4817	13.2358	14.2448	16.9232	17.1878	16.9788
Note: Profitabilit	y Ratio is defir	ied as Profit (pri	ofits before tax a	ind interest but	excluding depre	ciation provisio	n).					

TABLE 30. INDUSTRY-GROUPWISE: PROFITABLITY RATIO

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				Public					Private					Total		1
Rates and Ratios	Year	VII		Industr	ry Groups		All		Industr	y Groups		All		Industr	y Groups	
		Industries	Agriculture and Allied Activities	Mining and Quarrying	Food Stuffs, Textiles, Tobacco, Leather and Products Thereof	Metals, Chemicals and Products Thereof	Industries	Agriculture and Allied Activities	Mining and Quarrying	Food Stuffs, Textiles, Tobacco, Leather and Products Thereof	Metals, Chemicals and Products Thereof		Agriculture and Allied Activities	Mining and Quarrying	Food Stuffs, Textiles, Tobacco, Leather and Products Thereof	Metals, Chemicals and Products Thereof
1	6	٩	4	۶	9	-	∞	6	2	Ħ	12	£	14	S	16	17
Labour Income to	0261	55,65	72.11	66.22	61.10	49.51	65.05	68.17	64.73	68.30	58.51	57.27	73.32	65.71	62.32	51.78
Net Value Added	1980	55.12	74.07	80.63	61.28	50.60	64.34	83.98	68.08	72.82	58.60	58.08	76.49	75.39	64.00	52.96
	1987	59.83	66.45	68.70	67.07	57.21	65.68	70.63	69.24	66.00	66.12	61.52	67.90	68.95	66.84	59.44
Gross Fixed Capital	0/61	22.33	7.22		15.64		17.53	5.35		20.59	18.71	21.19	6.82	•	16.48	3.34
Formation to Gross	1980	24.89	13.87	8.15	19.24	23.90	18.85	17.47	43.01	21.73	11.46	22.96	14.75	23.64	19.83	20.37
Value Added	1987	51.07	38.72	83,54	•	84.54	30.62	45.60	66.69	61.26	54.90	45.24	41.11	91.33	93,98	61.17
Net Fixed Capital	1970	7.47	2.25	•	3.16	*	8.51	٠	*	08.95	07.88	7.73	06:00	*	04.14	*
Formation to Net	1980	14.58	9.51	*	10.59	12.96	08.77	12.85	21.40	12.99	03.73	12.71	10.33	01.24	11.11	10.25
Value Added	1987	41.64	33.78	79.93	•	81.75	18.77	41.84	99.05	53.39	47.96	35.03	36.58	88.87	92.80	73.27
Gross Saving to	1970	26.63	18.25	14.51	15.44	28.71	12.38	65.60	29.43	10.36	19.22	23.26	16.39	20.33	14,74	26.48
Gross Value Added	1980	25.31	6.24	25.36	19.25	24.44	18.42	•	20.22	15.39	15.50	23.11	04.69	23.08	18.34	21.90
	1987	18.47	12.70	18.94	14.40	15.04	17.55	06:60	30.98	19.68	15.04	18.21	11.73	24.87	15,58	18.18
Net Saving to Net	1970	12.59	13.92	1.90	3.37	12.50	02.80	01.73	•	•	09.46	10.15	11.37	1.20	2.39	11.74
Value Added	1980	15.06	1.49	7.94	10.54	13.57	08.28	*	•	05.94	08.12	12.88	•	0.52	9.46	11.97
	1987	2.76	5.67	1.16	•	4.87	03.46	03.56	06.43	03.32	96.10	2.96	4.94	3.62	÷	4.14
Gross Saving to	1970	119.24	181.36	*	95.70	*	70.64	123.76	19.13	58.25	116.04	109.75	171.67	*	87.72	856.02
Gross Fixed Capital	1980	101.71	44.95	311.33	100.06	102.23	11.16	•	1036.50	70.80	135.24	100.66	31.81	97.63	92.48	107.50
Formation	1987	36.16	32.80	22.67	13.94	22.73	57.32	21.67	31.19	32.12	27.39	40.24	28.54	27.24	16.58	23.55
Borrowing to Net	0261	103.34	31.25	131.36	104.59	106.11	136.82	49.73	84.19	182.17	115.14	109.75	36.43	107.13	115.82	107.86
Worth	1980	116.99	89.15	255.50	120.65	100.14	159.27	188.05	220.87	185.76	140.19	123.07	111.44	238.65	130.72	108.61
	1987	<i>TT.T</i> 21	46.65	236.98	144.69	116.53	173.85	204.09	153.93	228.56	159.82	136.78	80.76	07.161	155.91	124.09
Profit to Capital	1970	13.88	18.44	13.67	13.90	14.48	12.91	08.71	08.74	68.60	15,99	13.67	15.45	11.39	13.14	14.79
Employed	1980	18.31	18.46	6.95	19.22	20.47	18.07	08.31	19:60	17.58	22.20	18.24	15.35	8.18	18.91	20.90
	1987	11.23	19.32	11.90	9.50	12.21	13.33	15.66	11.06	13.42	12.75	11.70	17.99	11.50	10.17	12.32

Note:* Numerator negative.

Year		Publi (Sma	c Limited Com II, Medium & I	panies .arge)			Privat (Sma	te Limited Com 11, Medium & I	ipanics .arge)		(Public & P	Total rivate Limited	Companies)
	No. of Cc	mpanics		Paid up Capita	1	No. of Co	mpanies		Paid up Capita			Paid up Capita	T
	Sample	Total	Sample (Rs lakh)	Total (Rs lakh)	Sample as P.C. of Total	Sample	Total	Sample (Rs lakh)	Total (Rs lakh)	Sample as P.C. of Total	Sample (Rs lakh)	Total (Rs lakh)	Sample as P.C. of Total
(1)	(2)	(3)	(4)	(5)	(9)	e	(8)	(6)	(10)	(11)	(12)	(13)	(14)
1956-57	1.664	8.771	55.055	69.570	79.14	333	20.512	7.118	30.930	23.01	62 173	100.500	61.8K
1957-58	1,669	8,255	58.080	75,560	76.87	333	19.934	7,404	29,390	25.19	65,484	104.950	61.40
1958-59	1,669	7,608	60,877	78,220	77.82	333	19,691	7,383	30,450	24.25	68,260	108,670	62.81
1959-60	2,019	7,151	63,855	81,410	78.44	501	19,621	8,515	32,740	26.01	72,370	114,150	63.40
1960-61	2,351	6,663	74,017	91,520	80.88	501	19,344	8,446	35,630	23.70	82,463	127,150	64.85
1040 63	2,240	666.0	C96,11	055,601	16.17	105	18,422	8,868	29,610	26.6Z	86,833 00.201	138,940	62.50
1963-64	2,240	6,404 6,474	150,158	127,820	66.50		10,287	9,144 11 551	36130	10.05	18//06	164,030	58 97
1964-65	2.186	6.450	87.225	135.300	64.46	1.552	19.588	11.982	37.490	31.96	99.207	172.790	57.41
1965-66	2,246	6,461	106,688	147,820	72.17	1,776	20,090	12,109	40,020	30.26	118,797	187,840	63.24
1966-67	2,251	6,478	119,052	159,240	74.76	1,786	20,317	13,658	41,740	32.72	132,710	200,980	66.03
1967-68	2,251	6,497	126,135	168,430	74.89	1,802	20,606	14,564	43,020	33.85	140,699	211,450	66.54
1968-69	2,251	6,613	131,617	180,070	73.09	1,812	21,152	15,251	45,870	33.25	146,868	225,940	65.00
1969-70	2,251	6,593	138,578	182,750	75.83	1,822	22,134	15,587	47,240	33.00	154,165	229,990	67.03
1970-71	2,400	6,599	156,911	194,830	80.54	2,126	23,407	19,761	49,090	40.25	176,672	243,920	72.43
19/1-72	2,400	6,703	161,588	203,590	76.67	2,126	22,212	19,603	53,580	36.59	181,191	0/1//22	70.45
C1-7161	29 1 ,2	0,019	100,//4	000,114	/0.00	071'7	141,141	100'07	004'10	10.45	C/ /'001	010,612	76.10
1074 75	2,400	110,1	107 001	00000000	73.36	27172	29,904	10.768	007'00	11.67	191,46/	295,590	04.12 57.65
1975-76	308 C	203 6	107'701	240,440	11.57	21170	35162	18,108	82,180	20.22	200 464	062.955	59 80
1976-77	1,720	7.794	202.973	280.800	72.28	1.011	37.371	16.054	89.720	17.89	219.027	370.520	59.11
1977-78	1,720	8.028	214,744	311,320	68.98	1,011	39,521	16,555	95,720	17.30	231,299	407,040	56.82
1978-79	1,720	8,309	224,351	324,020	69.24	1,011	42,427	17,373	101,980	17.04	241,724	426,000	56.74
1979-80	1,720	8,864	235,705	344,490	68.42	1,011	46,804	18,139	109,140	16.62	253,844	453,630	55.96
1980-81	1,651	9,388	270,918	359,030	75.45	1,004	52,475	17,821	132,380	13.46	288,739	491,410	58.76
1981-82	1,651	10,169	288,430	408,310	70.64	1,004	61,339	18,648	154,310	12.08	307,078	562,620	54.78
1982-83	1,838	11,371	324,596	464,290	16.69	1,027	70,589	19,780	167,850	11.78	344,376	632,140	54.48
1983-84	1,867	12,523	358,700	511,440	70.14	1,053	80,768	22,335	187,540	11.91	381,035	698,980	54.51
1904-03		14,149	CCC,27C		95.40	040,1	72,240	24,4,478	002'661	C771	410,833	046,601	00.40
1985-86	1,942	15,682	414,925	642,070	04.62 20.70	1,096	105,001	955,62	2172/0	11.74	440,464	049,668	21.24
1980-8/	75,1	1/,101	ددة,دد4	N84'NC/	00.70	1,090	750,021	21,284	744, 140	C1.11	461,684	101,044	46.32
Note: 1 Public	: Limited: for th	ie period 1976	-77 to 1981-82	, figures refer	to medium and I	arge companie	s only and fo	r the rest of the	period figure	s include small c	companies also	e,	
Z. Public Lum	Led : for the per	1 00-1903-04 K	bur 9/-C/61 o	1962-83 to 19	52-86 figures ref	er to large, me	dum and sma	all compani cs a	nd for the rest	of the penod it	covers large a	nd medium co	mpanues only.
Source: 1. Col	umn 2,4,7 & 9	RBI Bullein	S.		anti Ardinog n								
2. Column 3,5	8 & 10 -												
a) Ministry of	Industry, Depar	tment of Com	pany Affairs, 3	2nd Annual R	eport on the Wor	king and Adm	unistration of	Companies Ac	t, 1956 year ei	nded 31st March	4, 1988.		

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b) Ministry of Industry, Department of Company Affairs, Directory of Joint Stock Companies in India, Vol.1 (1985).

Sam-	Mediu	im and Larg	e (paid-up o	apital more t	han Rs 5 lakh each)		Small (Pa	id-up Capita	l of Rs 5 lakh	a or Less)
pie Num-	Period	Covered	Size of	Coverage	Date of	Period	Covered	Size of	Coverage	Date of
(1)	From (2)	To (3)	(No. of Compa- nies) (4)	Paid-up Capital (per cent) (5)	of Results in R.B.I (6)	From (7)	To (8)	Sample (No. of Compa- nics) (9)	of lotal Paid-up Capital (per cent) (10)	of Results in R.B.I (11)
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 4. 15. 16. 7. 8. 9. 10. 11. 12. 3. 4. 13. 4. 13. 4. 13. 14. 15. 14. 13. 14. 13. 14. 13. 14. 13. 14. 15. 16. 17. 18. 19. 19. 19. 19. 19. 19. 19. 19. 19. 19	1950-51 1955-56 1960-61 1965-66 1965-66 1965-66 1965-66 1970-71 1977-71 1977-71 1977-71 1977-75 1975-76 1977-78 1977-78 1978-79 1980-81 1982-83 1983-84 1984-85	1955-56 1960-61 1965-66 1966-67 1967-68 1968-69 1969-70 1971-72 1973-74 1974-75 1975-76 1975-76 1975-78 1978-79 1980-81 1982-83 1984-85 1985-86	750 1,001 1,333 1,501 1,501 1,501 1,501 1,501 1,501 1,650 1,650 1,650 1,720 1,720 1,720 1,720 1,720 1,720 1,720 1,720 1,720	75.0* 78.0* 69.0* 81.0* 81.0* 81.0* 81.0* 81.0* - - - - - - - - - - - - - - - - - - -	September, 1957 June, 1962 December, 1967 August, 1969 October, 1970 October, 1971 April, 1972 September, 1972 September, 1974 September, 1975 July, 1976 September, 1977 May, 1980 Rebuary, 1981 July, 1983 February, 1985 May, 1987 July, 1988 September, 1989	1956-57 1957-58 1958-59 1960-61 1961-62 1962-63 1963-64 1965-66 1965-66 1966-67 1968-70 1968-70 1971-72 1972-73 1974-75	1957-58 1958-59 1959-60 1961-62 1962-63 1963-64 1965-66 1965-66 1965-66 1966-67 1967-68 1969-70 1970-71 1972-73 1973-74	501 663 1,018 1,015 1,015 951 745 750 750 750 750 678	10.0 13.8 26.0 28.0 24.0 26.0 25.0 30.0 27.0 24.0 23.0 -	March, 1960 December, 1960 February, 1962 September, 1963 October, 1964 April, 1966 February, 1967 March, 1968 December, 1969 January, 1971 August, 1972 May, 1973 June, 1975 April, 1976 September, 1978

APPENDIX A.1.2.2. PROPORTION OF PAID UP CAPITAL COVERAGE FOR MEDIUM & LARGE
AND SMALL PUBLIC LIMITED COMPANIES, 1950-51 TO 1986-87 AND 1956-57 TO 1975-76

Note: 1. Small Companies are included under medium and large companies from 1982-83 onwards. 2. No separate data on small companies are available after 1975-76. * Represents the per cent of the paid-up capital of all non-government non-financial public limited companies. According to RBI, the percentage coverage had remained more or less the same till 1980-81.

APPENDIX A.1.2.3. SIZE OF SAMPLE COVERAGE EACH YEAR FOR PUBLIC LIMITED COMPANIES (USING LAST SAMPLE WHERE VER RELEVANT SEPARATELY FOR MEDIUM & LARGE AND SMALL) 1950.51 TO 1946-87

V		Medium a	nd Large		Sma	11	Comb	ined: Medium	& Large & Small
1 car (1)	No. of Com- panies (2)	Paid-up Capital (Rs lakh) (3)	Date of Publication	No. of Com- panies (5)	Paid-up Capital (Rs lakh) (6)	Date of Publication	No. of Com- panics (8)	Paid-up Capital (Rs lakh) (9)	Date of Publication (10)
1950-51 1951-52 1952-53 1953-54 1955-56 1955-56 1955-57 1955-56 1956-57 1957-58 1956-57 1957-58 1956-57 1957-58 1956-57 1957-58 1956-67 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-63 1962-76 1970-71 1977-78 1970-77 1977-78 1976-77 1977-78 1976-77 1977-78 1976-77 1977-78 1976-77 1977-78 1978-79 1979-80 1980-81 1982-83 1982-83 1982-83 1982-83 1982-83	$\begin{array}{c} 750\\ 750\\ 750\\ 750\\ 750\\ 1,001\\ 1,001\\ 1,001\\ 1,001\\ 1,033\\ 1,333\\ 1,333\\ 1,333\\ 1,333\\ 1,333\\ 1,333\\ 1,501$	34,036 35,069 35,445 37,590 38,444 47,405 50,351 53,779 56,703 59,492 71,636 75,745 79,619 82,893 84,976 104,967 117,334 124,294 136,907 155,188 159,988 165,194 170,573 180,820 189,896 202,973 214,744 224,351 235,705 270,918 288,430	September, 1957 September, 1957 September, 1957 September, 1957 September, 1957 September, 1957 June, 1962 June, 1962 June, 1962 June, 1962 December, 1967 December, 1967 December, 1967 December, 1972 September, 1972 September, 1972 September, 1975 September, 1975 September, 1975 September, 1975 September, 1975 September, 1975 September, 1975 September, 1975 September, 1977 May, 1980 November, 1983 July, 1983 February, 1985 February, 1985	501 663 668 1,015 1,015 1,015 750 750 750 750 750 750 750 750 750 75	851 1,276 1,377 1,385 2,381 2,249 1,721 1,718 1,683 1,671 1,723 1,600 1,580 1,605 1,441 1,460	March, 1960 December, 1960 February, 1962 September, 1963 October, 1964 April, 1966 February, 1977 March, 1968 December, 1969 January, 1971 January, 1971 May, 1973 May, 1973 June, 1975 April, 1976 April, 1976 September, 1978 September, 1978	1,838 1,867 1,942 1,942	324,596 358,700 392,355 414,925 455,855	May, 1987 July, 1988 September, 1989 September, 1989 September, 1989

Note: Cols 4,7 and 10 refers to R.B.I. Bulletins.

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Medium and	Large (Paid-	p Capital n	nore than Rs	5 lakh cach)		Small (Pa	id-up Capit	al Rs 5 lakh	or less)
Period Cove	red	Size of	Coverage	Date of	Period (Covered	Size of	Coverage of Total	Date of Publication
From	То	(No. of Compa- nies)	Paid-up Capital (Per Cent)	of Results in R.B.I Bulletin	From	To	(No. of Compa- nies)	Paid-up Capital (Per Cent)	of Result in R.B.I Bulletin (10)
(1)	(2)	(3)	(4)	(5)	(6)	()	(0)	(9)	(10)
1955-56 1955-56 1955-56 1955-56 1955-56 1955-56 1950-61 1960-61 1960-61 1960-61 1965-66 1965-66 1965-66 1965-66 1965-66 1970-71 1970-71 1970-71 1970-71 1973-74 1974-75 1977-78 1975-76 1977-78 1975-76 1977-78 1972-83 1980-81 1982-83	1956-57 1957-58 1959-60 1960-61 1960-61 1962-63 1963-64 1965-66 1965-66 1965-66 1965-66 1965-66 1965-68 1968-69 1969-70 1971-72 1971-72 1971-73 1971-74 1971-75 1975-76 1977-78 1978-79 1980-81 1982-83 1984-85	333 333 333 333 333 333 501 501 501 501 701 701 701 701 701 701 701 1,001 1,001 1,001 1,011 1,011 1,011 1,014 1,027	35* 35* 35* 35* 35* 35* 35* 35* 35* 35*	December, 1958 November, 1959 November, 1960 November, 1961 December, 1965 December, 1965 December, 1965 December, 1965 January, 1968 November, 1970 November, 1970 December, 1971 July, 1972 December, 1977 December, 1977 December, 1975 December, 1975 December, 1975 December, 1975 December, 1975 December, 1975 December, 1978 May, 1981 May, 1981 May, 1985 June, 1987	1963-64 1964-65 1965-66 1966-67 1967-68 1968-69 1969-70 1970-71 1971-72 1972-73 1973-74 1974-75	1964-65 1965-66 1966-67 1967-68 1968-69 1969-70 1970-71 1971-72 1972-73 1973-74 1974-75 1975-76	999 1,051 1,075 1,085 1,101 1,111 1,121 1,125 1,125 1,125 1,125 1,125	14 17 14,5 15 16 - - - -	April, 1967 March, 1968 December, 1969 February, 1971 January, 1972 April, 1973 February, 1974 January, 1975 January, 1976 October, 1976 November, 1977 November, 1978
1982-83 1983-84 1984-85	1984-85 1985-86 1986-87	1,027 1,053 1,096	13.2 12.6	June, 1987 September, 1988 March, 1990					

APPENDIX A.1.3.4. PROPORTION OF PAID-UP CAPITAL COVERAGE FOR MEDIUM & LARGE AND SMALL PRIVATE LIMITED COMPANIES, 1955-56 TO 1984-85

Note: 1. Small companies are included under medium and large companies from 1982-83 onwards. * Represents the per cent of the paid-up capital of all non-government non-financial private limited companies.

APPENDIX A. 1.3.5. SIZE OF SAMPLE COVERAGE EACH YEAR (USING LAST SAMPLE WHEREVER RELEVANT SEPARATELY FOR MEDIUM & LARGE AND SMALL) PRIVATE LIMITED COMPANIES, 1955-56 TO 1986-87

Vere		Medium a	nd Large		Sma	11	Combi	ined: Medium	& Large & Small
(1)	No. of Com- panies	Paid-up Capital (Rs lakh)	Date of Publication (in R.B.I. Bulletin)	No. of Com- panies	Paid-up Capital (Rs lakh)	Date of Publication (in R.B.I. Bulletin)	No. of Com- panies	Paid-up Capital (Rs lakh)	Date of Publication (in R.B.I. Bulletin)
1055.56	(2)	(3)	(4)	(3)	(0)		(8)	(9)	(10)
1056.57	333	6 03/	December, 1962						
1957.58	333	7118	December 1962						
1958-59	333	7404	December 1962						
1959-60	333	7.383	December, 1962						
1960-61	501	8,446	January, 1968						
1961-62	501	8,868	January, 1968						
1962-63	501	9,144	January, 1968						
1963-64	501	9,306	January, 1968	999	2,245	April, 1967			
1964-65	501	9,439	January, 1968	1,051	2,543	March, 1968			
1965-66	701	9,839	December, 1972	1,075	2,270	December, 1969			
1966-67	701	11,323	December, 1972	1,085	2,335	February, 1971			
1967-68	701	12,109	December, 1972	1,101	2,455	January, 1972			
1908-09	701	12,423	December, 1972	1,111	2,828	April, 1973			
1909-70	1 001	12,920	December, 1972	1,121	2,667	Feburary, 1974			
1971.72	1,001	17101	December 1975	1,125	3,139	January, 1975			
1972.73	1001	17/71	December 1975	1,125	2,302	Datuary, 1970			
1973-74	1001	16701	October 1976	1,125	2,550	November 1077		-	
1974-75	1.001	17.241	May 1978	1 125	2,300	November 1978			
1975-76	1.011	15.573	October, 1984	1 125	2 535	November 1978			•
1976-77	1.011	16.054	October, 1984	-,	2,000	1000011000, 1970			
1977-78	1,011	16,555	October, 1984						
1978-79	1,011	17,373	October, 1984						
1979-80	1,011	18,139	October, 1984						
1980-81	1,004	17,821	July, 1985						
1981-82	1,004	18,648	July, 1985						
1982-83							1,027	19,780	June, 1987
1983-84							1,053	22,335	September, 1988
1984-83							1,096	24,478	March, 1990
1762-80							1,096	25,539	March, 1990
1700-0/							1,096	27,2.84	March, 1990

																		(Rs lakh)
Year	Gross	Fixed As	sets	Cumulai (from I	ted Depred Balance St	ciation leet)	Net	Fixed Ass	set	Ż	etworth (1	<u> </u>	B	orrowings		Capit	al Employ	ed
E	Medium & Large (2)	Small (3)	Total (4)	Medium & Large (5)	Small (6)	Total (7)	Medium & Large (8)	Small (9)	Total (10)	Medium & Large (11)	Small (12)	Total (13)	Medium & Large (14)	Small (15)	Total (16)	Medium & Large (17)	Small (18)	Total (19)
1050	26 646			75 185			30161			50.621			51 973			72 504		
1951	58,903	, ,		27,981			30,922			54,060			25,517			112,91	1 . I	
1952	63,484	•		30,401	•	,	33,083	•	,	55,232	٠	•	24,538	•	•	19,770	•	,
1953	68,329			32,847			35,482			57,380		• •	24,590		• •	81,970 86,856	• •	
1955	95,095	F 1		40,992			54,103		,	75,395		•	32,211	۰		107,606		
1956	108,969	1,336	110,305	44,696	461	45,157	64,273	875	65,148	82,562	1,041	83,603	42,153	629	42,812	124,715	1,700	126,415
1957	126,840	2,209	129,049	49,366	802	50,168	77,474	1,407	78,881	87,640	202	89,204	52,518	1,178	53,696	140,158	2,742	142,900
1959	141,/41	200	14,01	50,232	C18 688	646,000	92,100	1,243	93,712	98,610	1,/43	100.420	57,423	1,001	58,861	156.033	3,248	126,281
996	164,592	4,655	169,247	68,125	1,677	69,802	96,467	2,978	99,445	106,532	3,172	109,704	64,258	2,747	67,005	170,790	5,919	176,709
19-0961	181,271	5,095	186,366	72,477	1,895	74,372	108,794	3,200	111,994	121,377	3,296	124,673	72,769	2,925	75,694	194,146	6,221	200,367
1961-62	200,011	4,424	204,435	81,974	1,678	83,652	118,037	2,746	120,783	131,154	3,086	134,240	79,547	2,486	82,033	210,701	5,572	216,273
1962-63	219,148	4444 164	49,517	1/9/1	1,688	93,659	111,121	2,811	141 866	140,724	2,891	152 014	88,003	7,082	C47, 14	080,872	200.4	4C1,4C2
1964-65	264.767	5.77.5	270.544	116.716	2.267	118.983	148.051	3.510	151.561	159.058	3,485	162.543	111.314	3.407	114.721	270.372	6.892	277.264
1965-66	314,310	4,589	318,899	130,685	1,832	132,517	183,625	2,757	186,382	187,022	2,710	189,732	145,908	2,646	148,554	332,930	5,356	338,286
1966-67	357,428	4,283	361,711	147,276	1,783	149,059	210,152	2,500	212,652	199,577	2,414	201,991	179,252	2,532	181,784	378,829	4,946 2,75	383,775
1968-69	418,997	4,027	423,024	183.079	1.00	184,742	235,918	2,364	238,282	220,049	2,235	222,284	211,698	2,683	214,381	431,747	4,918	436,665
1969-70	449,755	4,134	453,889	204,537	1,778	206,315	245,218	2,356	247,574	235,553	2,153	237,706	222,913	2,782	225,695	458,466	4,935	463,401
1970-71	552 453	4,417	556,587	080 677		251,529	205 281	2,414	280,198	200,471	2677	208,/03	100,802	2,860	285 097	770,000	201,0	521 255
1972-73	602,326	4,279	606,605	287,318	1,928	289,246	315,008	2,351	317,359	303,138	1,963	305,101	287,093	2,622	289,715	590,231	4,585	594,816
1973-74	652,495	4,625	657,120	316,125	2,098	318,223	336,370	2,527	338,897	332,094	2,053	334,147	302,222	2,975	305,197	634,316	5,028	639,344
1075-76	784.180	4 505	788.784	365,885	2.040	367.925	418.304	2.555	420.859	391,685	2.247	393.932	394,504	2.639	397,143	786.189	4,9/9	791.075
1976-77	849,972			405,611	! •		444,361		-	408,252			424,764			833,016		
1070 70	930,427	•	,	445,178	•		485,249		, ,	438,074		• •	457,637			895,711 967,440		
1979-80	1113.706	r 1		538,040			575,666			522,500	,	1	566,986	1	. ,	1089,486		
1980-81	1365,855		•	610,756	,		755,099	ı	,	621,502	ı	•	722,041	•	•	1343,543		
1981-82	1590,458	•	. 02 0201	600,180	•	200 r.L.L	9/1/30/6	•	- 104 210	118'90/	•	C34 200	210,188	•	1146 621	1294,426	,	100 001
1087-83			7387.575			897.783			1484,792			990,423		••	1362,767			2353,190
1984-85		ı	2873,853	•		1068,181		,	1805,672	,		1198,334	•		1571,679	,	ı	277,013
1985-86	,	1	3488,244	•	,	1273,611	•	•	2214,633	•	•	1557,632	•	•	1852,782	•		3410,414
1986-87	•	•	3932,352	•		1452,331	•		2480,021		•	1690,743		•	2160,209		•	3850,952
Note: 1 Fo 2. Gross Fi 3. Net Wor	r the period ixed Assets th plus Bor	1950-51 minus Cu rowings =	to 1962-63, mulated De capital En	, paid-up ca	pital is tak = Net Fixe	en in the al d Assets.	bsence of d	ata on shai	re capital.				·					

VOL.4 NO.4

FINANCES OF THE PRIVATE CORPORATE SECTOR

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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Valuation	tion to E	nployees	(Gross o	of Interest	t & Tax)	Z Z	Value Ac	ided	Ret	ained Pro	Ę	(Dur	ing the Y	car)	5	TOSS SAV	'ng
	Ξ	Medium & Large (2)	Small (3)	Total (4)	Medium & Large (5)	Small (6)	Total	Medium & Large (8)	Small (9)	Total	Medium & Large (11)	Small (12)	Total (13)	Medium & Large (14)	Small (15)	Total (16)	Medium & Large (17)	Small (18)	Total (19)
		1-1-1	Ξ	Ē	Ð	5	3	(o)	E	(11)	(11)	(71)	(c1)	(1.1)	(21)	(01)		(o1)	(21)
1951 2465 2755 2757 2756 2757 2756 2757 2756 2757 2756 2757 2756 2757 2756 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 2757 2567 <th< td=""><td>1950</td><td>•</td><td>•</td><td>,</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>1.480</td><td>•</td><td>•</td><td>2.394</td><td>•</td><td>•</td><td>3,874</td><td>•</td><td>•</td></th<>	1950	•	•	,	•	•	•	•	•	•	1.480	•	•	2.394	•	•	3,874	•	•
1993 260 -3.37 1993 2691 -2.60 -3.37 1993 2.917 73 2.911 -2.60 -3.37 1993 2.917 73 2.911 2.96 -4.115 1993 2.917 73 2.911 2.96 -4.115 1993 2.917 73 2.911 2.96 -4.115 1993 2.917 73 2.911 2.96 -4.115 1993 2.917 73 2.911 9.914 4.113 7.221 1994 2.917 7.914 2.912 9.914 7.714 9.914 7.721 1994 1.700 4.9197 7.700 5.444 2.723 4.445 2.723 4.445 2.724 7.721 4.446 7.721 4.466 7.721	1951	ı		I	•	•	ł	•	،	•	2,456	•	•	2,771	•	,	5,227		•
1933 2931 1123 2467 123 4113 1955 2931 1531 1531 1531 1531 1531 1531 1955 2391 7153 6671 1492 6534 1531 <t< td=""><td>1952</td><td>•</td><td>•</td><td>•</td><td>,</td><td>•</td><td>,</td><td>•</td><td>•</td><td>•</td><td>657</td><td>•</td><td>,</td><td>2,680</td><td>•</td><td>•</td><td>3,337</td><td></td><td>•</td></t<>	1952	•	•	•	,	•	,	•	•	•	657	•	,	2,680	•	•	3,337		•
	5661	•	•	•	•	•	•	•	•	•	1,253	•	•	2,862	•	•	4,115	,	·
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1056		,	•	•	J	,		•	ı	1,658	•	,	3,020	•	•	4,678	•	•
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1956	01202	- 261	30.073	. 15 01 2	. 9		10.05			7 080	, ^c		477.4	. 3	-		. 3	1 204
1938 32.977 773 33.770 153.87 26.84 27.342 56.957 77.35 77.34 77.34 77.34 77.34 77.34 77.34 77.34 77.35 77.35 77.35 77.35 77.35 77.35 77.36 77.35 77.36 77.37 77.36 77.36 77.36 77.37 77.36 77.37 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 77.36 <	1957	31 405	N/Y	10,02	C14'C1	6	10,012	45,507		40,140	1 400	<u>ک</u>	1 270	4,730	35	5 443	222.9	52	6822
	1958	32,937	ELL ELL	33.710	15,892	269	16.161	48.829	1.042	49.871	1.884	35	1.896	5,749	8	5.839	7.633	58	7,735
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1959	35,871	818	36,689	20,469	321	20,790	56.340	1.139	57.479	3.915	24	3.939	6,644	3	6.736	10.559	116	10.675
	1960	39,157	1,550	40,707	23,187	38	23,852	62,344	2,215	64,559	4,47	E	4,524	8,500	200	8,700	12,947	112	13,224
1961-62 45(40) 1672 48(05 78,516 2,758 4,779 50 4,778 51 2,566 7,182 11,290 157 14,990 15,178 234 1962-65 55,108 2,708 17,301 2,320 2313 24,409 231 11,490 13,419 231 13,409 231 11,490 134,413 231 14,490 231 14,490 231 13,409 231 231 131,409 <td>19-0961</td> <td>43,190</td> <td>1,700</td> <td>44,890</td> <td>26,761</td> <td>691</td> <td>27,452</td> <td>69,951</td> <td>2,391</td> <td>72,342</td> <td>5,336</td> <td>62</td> <td>5,398</td> <td>9,629</td> <td>22J</td> <td>9,856</td> <td>14,965</td> <td>289</td> <td>15,254</td>	19-0961	43,190	1,700	44,890	26,761	691	27,452	69,951	2,391	72,342	5,336	62	5,398	9,629	22J	9,856	14,965	289	15,254
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1961-62	46,404	1,672	48,076	28,912	593	29,505	75,316	2,265	77,581	4,779	ŝ	4,829	10,399	193	10,592	15,178	243	15,421
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1962-63	50,523	1,702	52,225	31,827	613	32,440	82,350	2,315	84,665	4,119	ຊ:	4,148	11,293	191	11,490	15,412	558	15,638
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1963-64	55,160	2086	57,206	36,301	782	37,088	91,461	2,833	94,294	5502	5	5,561	12,967		13,201	18,469	262	18,762
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$		20070	66717	10,40	20,010	ŝś	17065	477 INI		104,428	50/'C	20	06/10	14,/81	222	000,01	20,484		002°07
	1966-67	75 944		17 540		140	48, 384	122.21	2.716 2.716	175 033	1200	82	7316	18,715	18	100,11	210.92	511	26,223
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1967-68	83.810	1.722	85.532	45.419	3	46.065	129.229	2.368	131.597	4336	12	4.353	19.672	22	19.874	24.008	219	24.227
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1968-69	90,292	1,544	91,836	47,289	440	47,729	137,581	1,984	139,565	4,175	-74	4,101	21,279	174	21,453	25,454	8	25,554
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1969-70	97,556	1,635	161,66	57,074	83	57,494	154,630	2,055	156,685	9,614	ŝ	9,532	23,633	23	23,825	33,247	011	33,357
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	12-0/61	172,801	co/.1	110,286	12,406	ŝ	1167/	180,9Z/	0/2/2	183,197	6/Z CI	នុខ	11,256	29,081		267,62	002,44	89	84C,44
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1077.73	135 544	2 2 3 3 3	137 485	82,707	426 426	104.07	218.251	2367	220,430	14,440	ផុតុ	14,42	32,972	<u>s</u> ē	33 169	47.727	5	47,885
	973-74	149,657	2,094	151.751	99,740	492	100,232	249.397	2.586	251.983	22,852	7	22,851	34,943	207	35,150	57,795	206	58,001
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1974-75	183,722	2,219	185,941	135,059	868	135,927	318,781	3,087	321,868	36,729	253	36,982	38,929	81	39,125	75,658	4	76,107
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	(975-76	196,541	2,419	198,960	119,250	868	120,148	315,791	3,317	319,108	13,889	85	13,974	40,872	209	41,081	54,761	294	ככט,ככ
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	11-011	201.922	•		810,161	•	•	559,445 275,445	•	•	00711	•	•	40°77			14.0	•	, ,
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	978-79	249.724			167.189			416.913	,	1	27,925	•	,	51,029	,	,	78.954		,
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	979-80	280,360	•	,	205,053	1		485,413	•	•	47,233	•	•	57,992	•	•	105,225	•	,
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	980-81	327,550		•	241,542	•	•	569,092			54,724	,	•	73,217		·	127,941	•	,
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	981-82	378,922	•		271,122	,		650,044	•	-	660,8 0	•		81,844	,		139,943	,	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	587-83	•	•	429,019	•	•	161,042	•	•	001,021	,	•	17970	,	,	99,824	,	•	100,201
1985-86 - 2021/02 - 2329/2010 - 2329/2010 - 200/2021 - 211/2020 - 200/2020 - 211/2020	983-84	,	•	4/3,243	•		254 619	•	•	100,120	•		21.515	• •		168,403		•	215 765
	085-86	• •		201,02		• •	429 973			1072 531		, ,	71 960		, ,	106,366	•		268 326
1086.87 . 644.188 . 433.567 . 1076.755 . 29.691 . 207.450 .	986-87			644.188	,	,	432.567			1076,755	•	,	29,691	•		207,450	•	•	2371,741

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Appendix a.2.2.8. Profit and Cash Flow (sample results: medium & large, small and total Public Limited Companies), 1950 to 1986-87

(Rs lakh)

$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Total (16) - - - 20,877 19,834 22,000 27,526
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20,877 19,834 22,000 27,526
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	- 20,877 19,834 22,000 27,526
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	- 20,877 19,834 22,000 27,526
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20,877 19,834 22,000 27,526
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	- 20,877 19,834 22,000 27,526
1954 895	20,877 19,834 22,000 27,526
	20,877 19,834 22,000 27,526
	20,877 19,834 22,000 27,526
1957 14,102 100 14,201 2,402 63 2,466 5,246 07 5,442 17,125 222 17,268 10,528 20,663 214	19,834 22,000 27,526
1937 14,192 177 14,971 2,403 05 2,400 5,340 97 5,445 17,155 255 17,568 19,538 290	27,526
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	21,020
1539 20,409 321 20,790 3,037 79 3,118 0,044 92 0,730 24,074 334 24,408 27,113 413 10(0 23.197 6(5 23.952 3.292 161 3.442 9.500 200 9.700 29.405 704 20.100 21.697 945	27 557
1500 $25,167$ 005 $25,052$ $3,252$ 101 $3,445$ $6,500$ 200 $6,700$ $26,405$ 704 $25,107$ $51,067$ 8051660.61 26.761 601 $27,452$ 3.711 180 3.901 0.620 207 0.955 22.670 738 22.417 36.200 0.19	27 209
190001 20,01 091 21,92 3,711 100 3,091 9,029 221 9,030 32,079 738 33,417 30,390 916 1061.62 28,012 503 20,505 4,366 148 4,514 10,200 102 10,502 34,045 638 35,593 30,311 786	A0 007
1962-63 31 827 613 32 440 4 943 154 5 007 11 203 107 11 400 38 177 656 38 833 43 120 810	43 030
1963.64 36 301 787 37 088 5000 186 6 005 12 067 234 13 201 43 250 835 44 104 40 268 1 021	50.280
1964_65 38.616 905 30.521 7.307 235 7.542 14.781 285 15.066 46.000 055 47.045 53.307 1.100	54 587
1965-66 43 507 607 44 204 10172 203 10 375 17 070 231 17 301 50 405 725 51 130 60 577 928	61 505
1966.67 47.773 611 48.384 12.885 204 13.080 18.715 1.02 18.007 53.603 509 54.202 66.488 803	67 201
1967-68 45 419 645 46 065 15 411 235 15 646 19 672 207 19 874 49 680 613 50 293 65 091 848	65 939
1968-69 47.289 440 47.729 16.780 218 16.008 21.270 174 21.453 51.788 396 52.184 68.568 614	69 182
1960-70 57 074 420 57 404 17 331 224 17 555 23 633 102 23 825 63 376 388 63 764 80 707 612	81 310
100-10 51,014 420 51,351 224 11,351 225,035 132 23,055 132 23,055 05,70 300 03,70 00,70 012	102 203
1971-72 78 501 450 78 051 25 783 242 25 025 30 451 190 30 641 83 169 308 83 567 108 952 640	109 592
1972-73 82 707 426 83 133 27 211 251 27 462 32 972 197 33 169 88 468 372 88 840 115 679 623	116.302
1973-74 99.740 492 100.232 27.927 268 28.195 34.943 207 35.150 106.756 431 107.187 134.683 699	135,382
1974-75 135 059 868 135 927 37 473 345 37 818 38 929 196 39 125 136 515 719 137 234 173 988 1 064	175.052
1975-76 119 250 898 120 148 48 281 391 48 672 40 872 209 41 081 111 841 716 112 557 160 122 1 107	161.229
1976-77 131 518	-
1977-78 144 320 - 58 918 - 47 003 - 132 405 - 191.323 -	_
1978-79 167 189 - 60.870 - 51.029 - 157.348 - 218.218 -	-
1979-80 205 053	-
1980-81 241 542 - 94 329 - 73 217 - 220 430 - 314.759 -	-
1981-82 271 122 - 119 545 - 81 844 - 233 421 - 352.966 -	-
1982-83	395.955
1983-84 - 291.886 - 174.381 - 139.463 - 256.968	431.349
1984-85 - 354.618 - 201 378 - 168.650 - 321.890	523.268
1985-86 - 429.923 - 232.576 - 196.366 - 393.713	626.289
1986-87 - 432.567 - 282.954 - 207.450 - 357.063	640.017

Note: 1. Data on percentage of gross profits to Sales (Source: RBI Bulletin, June 1962) along with series of Sales used to derive the figure of Profit in 1956-60.

Year		Net Worth		щ	lorrowings	24	Cap	ital Emplo	yed	Groe	s Fixed As	sets	Cumuls from	ated Depre Balance S	sciation	Net	Fixed As	sets
	Medium & Larve	Small	Total	Medium	Small	Total	Medium & I ame	Small	Total	Medium & Large	Small	Total	Medium	Small	Total	Medium	Small	Total
(1)	(2)	(2)	(4)	(2)	(9)	E	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(12)	(16)	(17)	(18)	(19)
1954-55	9,223	,		6,036	.	.	15,259		.	6,929	,		3,046		-	3,883	•	
1955-56	9,406	,	•	6,541	•	•	15,947	•	•	7,721	•	,	3,460	,	•	4,261	•	•
1956-57	9,690	•	,	6,833		•	16,523	•		8,671		•	3,907	•	•	4,764	•	ı
1957-58	10,256	,	•	6,572		•	16,828	,	•	9,567	•	•	4,320		•	5,247	ı	,
1958-59	10,765	•	•	7,261	•	•	18,026	•	•	10,483	,	ı	4,823	,	,	5,660	,	•
1959-60	13,092	•	,	11,433	•		24,525	•	•	13,246	,	,	5,222		•	8,024	•	1
19-0961	13,163	,	•	11,516	•	•	24,679	•	•	13,438	•		5,306	•	•	8,132	•	•
1961-62	14,645	•	•	12,125	•	•	26,770	•	•	15,201	•		6,062	•	•	9,139		•
962-63	15,553	•	•	13,374	•	•	28,927	•	•	16,973	•	ı	6,873	•	•	10,100	•	•
1963-64	16,661	2,431	19,092	13,261	3,154	16,415	29,922	5,585	35,507	18,339	3,307	21,646	7,783	1,264	9,047	10,556	2,043	12,599
1964-65	17,896	2,988	20,884	14,813	4,021	18,834	32,709	7,009	39,718	20,060	4,547	24,607	8,797	1,832	10,629	11,263	2,715	13,978
965-66	16,674	2,431	19,105	17,021	3,706	20,727	33,695	6,137	39,832	22,634	4,167	26,801	9,463	1,590	11,053	13,171	2,577	15,748
966-67	18,055	2,469	20,524	18,762	3,822	22,584	36,817	6,291	43,108	24,936	4,267	29,203	10,711	1,693	12,404	14,225	2,574	16,799
967-68	19,240	2,664	21,904	20,524	4,186	24,710	39,764	6,850	46,614	27,154	4,811	31,965	12,080	1,902	13,982	15,074	2,909	17,983
968-69	20,376	3,029	23,405	21,582	5,018	26,600	41,958	8,047	50,005	29,179	5,997	35,176	13,406	2,370	15,776	15,773	3,627	19,400
969-70	22,174	2,703	24,877	23,048	5,044	28,092	45,222	7,747	52,969	31,857	5,387	37,244	14,942	2,134	17,076	16,915	3,253	20,168
970-71	26,693	3,381	30,074	34,943	6,205	41,148	61,636	9,586	71,222	43,726	6,829	50,555	19,765	2,868	22,633	23,961	3,961	27,922
971-72	28,181	2,558	30,739	38,444	5,912	44,356	66,625	8,470	75,095	48,587	5,685	54,272	22,173	2,424	24,597	26,414	3,261	29,675
972-73	31,318	2,648	33,966	40,349	6,136	46,485	71,667	8,784	80,451	54,987	5,940	60,927	25,341	2,624	27,965	29,646	3,316	32,962
973-74	31,173	2,500	33,673	41,081	6,516	47,597	72,254	9,016	81,270	54,810	6,293	61,103	25,434	2,830	28,264	29,376	3,463	32,839
974-75	33,883	2,449	36,332	43,667	6,548	50,215	77,550	8,997	86,547	60,382	6,271	66,653	28,800	2,598	31,398	31,582	3,673	35,255
975-76	27,925	2,501	30,426	39,714	6,748	46,462	67,635	9,249	76,884	56,480	6,852	63,332	27,363	2,948	30,311	29,117	3,904	33,021
976-77	28,995		•	42,413	•	•	71,408	•		61,576	,	,	30,724	•	,	30,852	•	•
977-78	30,533	,		45,428		•	75,961		•	67,307	•	ı	34,431		•	32,876	•	•
978-79	32,421	,		52,668			85,089	,		74,265		•	38,624	•		35,641	•	,
979-80	36,524	,	•	58,172	•	•	94,696	•		82,542	•	•	43,236	•		39,306	•	•
980-81	37,089	,	•	52,189	•	•	89,278	•	•	76,444	ı	•	39,114	•	,	37,330	,	،
981-82	39,606	,	,	61,610	ı	,	101,216	•	•	88,429	,	ı	44,965	•		43,464	•	•
982-83	•	,	42,631	•		72,407	•	•	115,038	•	•	101,443	•	•	47,349	•	'	54,094
983-84	•	,	50,400	•	•	85,326	•	•	135,726	•	,	128,650	•	•	60,944	,	r	67,70
984-85	•		59,575	•		100,542	•	•	160,117	,	,	146,240	,		69,929	•	•	76,311
985-86		,	69,347	•	,	115,572	•	•	184,919	,	•	164,653	•	•	80,829	•	•	83,82
797.97			1.1															

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See Notes in A.2.2.6.

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049	

																		(Ks lakh)
Year	Remuner	ation to Er	nploy ccs	(Gross o	Profit f Interest	& Taz)	Net	Value Add	eq	Ret	tined Profi	4	Deprecia (Durir	tion Prov	ision ur)	5	oss Saving	
	Medium & Larve	Small	Total	Medium & Large	Small	Total	Medium & Larve	Small	Total	Medium & Large	Small	Total	Medium & Large	Small	Total	Medium & Larre	Small	Total
(1)	(2)	(2)	(4)	(2)	9	ε	(8)	(6)	(01)	(11)	(12)	(13)	(14)	(15)	(16)	(11)	(18)	(19)
1954-55	3,199		•		•	•				200			437	•		637		
1955-56	3,652			1,964	•	,	5,616	1	1	216	·	ı	490	•	•	706	•	
1956-57	3,942	,	•	2,126	•	•	6,068	•	ı	169		•	584	,	•	753	•	•
1957-58	4,304	•	•	2,473		•	6,777	•	•	161	•	•	524	•	•	685	•	
1958-59	4,680	•	•	2,882		•	7,562	•	•	417	•	•	575	•	•	992		•
1959-60	5,614	•	•	3,760	,	1	9,374	•	,	571	,		750	•	•	1,321	•	•
1960-61	6,070	•	•	4,034			10,104		•	551	•	•	760	•	•	1,311	•	•
1961-62	6,716	•		4,605	,	•	11,321	•	•	651		•	856	•	,	1,507	,	
1962-63	7,255		•	5,155	•	•	12,410	,	•	448	•	,	915	,	1	1,363	•	•
1963-64	8,150	1,652	9,802	5,892	202	6,596	14,042	2,356	16,398	626	8 (-)	618	1,038	206	1,244	1,664	198	1,862
1964-65	9,160	2,263	11,423	6,235	1,004	7,239	15,395	3,267	18,662	896	52	948	1,136	288	1,424	2,032	£	2,372
1965-66	9,206	1,891	11,097	5,844	1,013	6,857	15,050	2,904	17,954	804	(-) 2	802	1,313	258	1,571	2,117	256	2,373
1966-67	606'6	2,166	12,075	6,095	161	6,886	16,004	2,957	18,961	20 <u>4</u>	°.	<u></u>	1,430	266	1,696	2,134	258	2,392
1967-68	10,832	2,259	13,091	5,864	724	6,588	16,696	2,983	19,679	571	(-) 94	477	1,528	286	1,814	2,099	192	2,291
1968-69	11,760	2,508	14,268	5,939	902 202	6,841	17,699	3,410	21,109	565	(-) 49	516	1,576	335	1,911	2,141	286	2,427
1969-70	12,774	2,326	15,100	6,702	832	7,534	19,476	3,158	22,634	795	(-) 43	752	1,784	348	2,132	2,579	303	2,884
1970-71	13,976	3,144	17,120	8,054	1,144	9,198	22,030	4,288	26,318	3	13	137	2,878	452	3,330	3,542	22	4,067
1971-72	15,406	2,926	18,332	9,406	8 <u>9</u> 0	10,296	24,812	3,816	28,628	880	(-) 35	845	3,040	398	3,438	3,920	363	4,283
1972-73	17,176	2,947	20,123	10,395	168	11,286	27,571	3,838	31,409	1,377	(-)108	1/2/1	3,490	412	3,902	4,867	308	5,173
1973-74	17,498	2,894	20,392	11,700	1,129	12,829	29,198	4,023	33,221	2,538	121	2,665	3,339	418	3,757	5,877	£ {	6,422
1974-75	20,292	3,028	23,320	13,594	1,367	14,961	33,886	4,395	38,281	2,241	161	2,402	3,781	424	4,205	6,022	282	6,607
1976-77	20440	,		CAF C1	, rvc	5,'11	20,022	t , ', t	700,00	2, 2, 2,	ŧ. []	8 7	000°C	ç,	ocn'+	4,1/0	Ŗ,	t n f
1977-78	24.612	,	•	12.585	•	•	37.197	•		1.135			4.367	•	•	5.502	,	•
1978-79	27,177	•		13,475	•	•	40,652	•	•	1,498	•	•	4,788	•		6,256		
1979-80	30,972	•	•	17,482	•	•	48,454	•		3,614			5,671	•		9,285		•
1980-81	29,092	•	•	16,126	•	,	45,218	'		3,746	•	•	5,620			9,366		•
1981-82	34,098	,	,	16,489	•	,	50,587	•	,	1,857	ı	•	6,739	•	•	8,596		•
1982-83	•	•	35,364	•	•	17,430	•	•	52,794	•		2,269		•	8,368	•	1	10,637
1983-84	•	•	39,009		•	18,420	,	•	57,429	,		2,094	,	ı	11,304	•	•	13,398
1984-85	•		42,561	•	•	21,285		•	63,846	•	•	3,861	,	۰	12,217	•		16,078
1985-86	•	•	48,748	,		27,843	,	•	76,591		•	5,306		•	12,850			18,156
1986-87	•	•	52,776	•	•	27,576	•	•	80,352	•	,	2,781	,	•	13,734	•	•	16,515
See Notes	in A.2.2.7.																	

Year	а, г	rofit (Gross e iterest & Tai	c) e		Interest		Depr	cciation Prov uring the Ye	ision ar)		Cash Flow		Profit	Plus Deprec	iation
	Medium & Large	Small	Total	Medium & Large	Small	Total	Medium & Large	Small	Total	Medium & Large	Small	Total	Medium & Large	Small	Total
(1	(2)	(£)	(4)	(5)	(9)	Э	(8)	(6)	(01)	(11)	(12)	(13)	(14)	(15)	(16)
955			•	236	•		437							•	•
956	1,964		•	292		·	490	•	·	2,162	,	,	2,454	,	,
957	2,126	,	•	349	,	•	584		•	2,361	,		2,710	•	
958	2,473		•	367		•	524		,	2,630	•	•	2,997	•	ı
959	2,882	,	,	377	•	•	575	•	•	3,080	•	•	3,457	•	•
960	3,760			634	,	,	750.	•	ı	3,876	ı		4,510		•
960-61	4,034	•	•	641	•	,	760	•	·	4,153	ı	ı	4,794	•	•
961-62	4,605	,	•	750	,	,	856	•		4,711	•	•	5,461	•	•
962-63	5,155	ı	,	836	,	•	915	ı	ı	5,234	ı	,	6,070		
963-64	5,892	705	6,596	949	221	1,170	1,038	206	1,244	5,981	689	6,670	6,930	910	7,840
964-65	6,235	1,004	7,239	1,053	325	1,378	1,136	288	1,424	6,318	967	7,285	7,371	1,292	8,663
965-66	5,844	1,013	6,857	1,365	302	1,667	1,313	258	1,571	5,792	969	6,761	7,157	1,271	8,428
966-67	6,095	161	6,886	1,584	332	1,916	1,430	266	1,696	5,941	725	6,666	7,525	1,057	8,582
967-68	5,864	724	6,588	1,809	389	2,198	1,528	286	1,814	5,583	621	6,204	7,392	1,010	8,402
968-69	5,939	902	6,841	1,926	454	2,380	1,576	335	1,911	5,589	783	6,372	7,515	1,237	8,752
969-70	6,702	832	7,534	2,016	416	2,432	1,784	348	2,132	6,470	764	7,234	8,486	1,180	9,666
970-71	8,054	1,144	9,198	3,140	5 4 4	3,684	2,878	452	3,330	7,792	1,052	8,844	10,932	1,596	12,528
971-72	9,406	890	10,296	3,829	567	4,396	3,040	398	3,438	8,617	121	9,338	12,446	1,288	13,734
972-73	10,395	891	11,286	4,103	604	4,707	3,490	412	3,902	9,782	669	10,481	13,885	1,303	15,188
973-74	11,700	1,129	12,829	4,158	4 9	4,802	3,339	418	3,757	10,881	903	11,784	15,039	1,547	16,586
974-75	13,594	1,367	14,961	5,440	726	6,166	3,781	424	4,205	11,935	1,065	13,000	17,375	1,791	19,166
975-76	10,305	1,399	11,704	5,738	885	6,623	3,588	450	4,038	8,155	964 196	9,119	13,893	1,849	15,742
976-77	12,342	,	•	6,315	•	·	4,047			10,074			16,389	ł	•
977-78	12,585	٠	•	6,599	•	•	4,367	ı	·	10,353	•	•	16,952	•	•
61-814	13,475	•	۱	7,017	,		4,788	·		11,246		,	18,263	,	•
08-6/4	17,482	•	,	8,136		•	5,671	·		15,017	•	•	23,153	,	,
18-080	16,126	,	,	8,005		•	5,620	Î	ı	13,741	•	•	21,746	•	•
381-82	16,489	•	•	9,892	,	•	6,739	•		13,336		•	23,228	,	•
982-83		•	17,430	•	•	11,578	•	•	8,368	•	•	14,220		•	25798
783-84	,	•	18,420	ı	•	12,677	,	•	11,304	•	•	17,047	,	•	29724
984-85	,		21,285	,		14,494	•	,	12,217	•	•	19,008	•	•	33502
985-86	•	•	27,843	•	•	16,859	•	•	12,850	•	•	23,834	١	•	40693
10.07															

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Rs lakh)		Cash Flow		(17)	56,520	64,097	68,381	68,812	73,388	68,584	71,294	86,725	99,962	104,946	111,548	132,161	168,115	139,609	149,900	162,943	195,293	239,544	256,880	273,289	261,336	266,259	321,890	393,713	357,063
		Interest		(16)	6,880	8,184	10,104	12,680	16,046	19,180	20,838	21,536	24,575	28,547	30,137	31,745	42,897	54,848	60,796	66,583	69,672	79,693	101,206	128,260	157,185	176,212	201,378	232,576	282,954
		Gross Savines	(13)+(14)	(15)	28,851	35,113	38,541	37,999	42,688	37,446	39,085	54,530	61,299	61,677	65,288	82,505	111,361	74,832	72,852	84,338	109,891	150,510	175,870	191,426	189,143	177,767	215,765	268,326	237,141
		Depre- ciation	Provision (During the Ycar)	(14)	17,880	20,484	23,349	24,111	26,409	27,760	29,960	33,295	36,978	38,681	41,876	44,289	49,313	51,265	53,953	58,406	63,720	72,415	83,863	93,744	105,244	143,229	168,650	196,366	207,450
'S'		Retained		(13)	10,971	14,629	15,192	13,888	16,279	9,686	9,125	21,235	24,321	22,996	23,412	38,216	62,048	23,567	18,899	25,932	46,171	78,095	92,007	97,682	83,899	34,538	47,115	71,960	29,691
IXED ASSE E results)	alts	Ndded	Gross (8)+(10)	(12)	114,095	127,479	141,114	150,440	163,703	169,678	180,083	203,266	230,224	249,931	273,437	313,275	394,461	399,227	424,692	465,422	526,925	613,335	694,840	791,119	847,839	919,027	1,049,370	1,218,897	1,284,205
MPLOYED, F Sted sampi	ample Res	Value /	Net (8)+(9)	(11)	96,215	106,995	117,765	126,329	137,294	141,918	150,123	169,971	193,246	211,250	231,561	268,986	345,148	347,962	370,739	407,016	463,205	540,920	610,977	697,375	742,595	775,798	880,720	1,022,531	1,076,755
CAPITAL E) Low (adjug	Adjusted S	Profit Plus	Depre- ciation (9)+(14)	(10)	63,400	72,281	78,485	81,492	89,434	87,764	92,132	108,261	124,537	133,493	141,685	163,906	211,012	194,457	210,696	229,526	264,965	319,237	358,086	401,549	418,521	442,471	523,268	626,289	640,017
RROWINGS, ND CASH F	Companies:	Profit		(6)	45,520	51,797	55,136	57,381	63,025	60,004	62,172	74,966	87,559	94,812	608'66	119,617	161,699	143,192	156,743	171,120	201,245	246,822	274,223	307,805	313,277	299,242	354,618	429,923	432,567
/orth, Bor 35, Profit /	ic Limited (Remune-	to Emplo- yees	(8)	50,695	55,198	62,629	68,948	74,269	81,914	87,951	95,005	105,687	116,438	131,752	149,369	183,449	204,770	213,996	235,896	261,960	294,098	336,754	389,570	429,318	476,556	526,102	592,608	644,188
2.12 NET W BED, SAVING	Iduq	Net Fixed	Assets (5)-(6)	(1)	197,181	216,115	232,672	250,729	286,233	307,805	324,682	340,733	354,600	370,791	397,411	428,535	481,181	531,925	563,782	617,153	674,127	740,762	864,475	1,036,854	1,282,328	1,525,151	1,805,672	2,214,633	2,480,021
PENDIX A.4 VALUE ADE		Depre- ciation	from Balance-	(9)	90,362	101,906	114,652	127,932	144,095	161,308	178,590	199,486	222,661	249,080	278,226	308,294	342,289	378,411	417,171	460,002	508,147	561,606	625,536	698,155	785,835	909,364	1,068,181	1,273,611	1,452,331
Ă		Gross Fixed	Assets	(5)	287,543	318,021	347,324	378,661	430,328	469,113	503,272	540,219	577,261	619,871	675,637	736,829	823,470	910,336	980,953	1,077,155	1,182,274	1,302,368	1,490,011	1,735,009	2,068,163	2,434,515	2,873,853	3,488,244	3,932,352
		Capital Employed	(2)+(3)	(4)	331,740	360,621	392,980	430,179	490,499	530,049	558,945	593,289	631,040	667,298	694,775	753,640	862,538	936,242	986,059	1,060,124	1,160,632	1,307,367	1,497,636	1,777,534	2,087,015	2,396,337	2,770,013	3,410,414	3,850,952
		Borrow- ines	þ	(3)	138,598	153,960	173,596	198,364	243,100	270,821	286,692	301,980	320,699	336,871	342,414	370,173	422,516	475,460	508,527	552,002	609,346	694,161	807,458	992,620	1,203,972	1,384,026	1,571,679	1,852,782	2,160,209
		North Worth		(2)	193,142	206,661	219,384	231,815	247,399	259,228	272,253	291,309	310,341	330,427	352,361	383,467	440,022	460,782	477,532	508,122	551,286	613,206	690,178	784,914	883,043	1,012,311	1,198,334	1,557,632	1,690,743
	Ycar			(1)	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87

Note: Cols. (2) to (7) are stock figures while the rest are flow data.

FINANCES OF THE PRIVATE CORPORATE SECTOR

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			APPEN	DIX A.5.3.	13. COMP.	ARISON F R.B.I.	RESULTS	FIRST AN	D LAST S A MEDIUN	AMPLE V.	ALUES PO	R SELECT VTE LIMIT	ED CHAR	ACTERIST ANIES)	ICS AS AV	ALABLEF	ROM			e	ls lakh)
	1963	-64	1964	55	1965	\$	8	-67	1967.	68 68	1968-	69	1969-	2	1970-71		1971-72	19	72-73	1973	74
	First Sample	Last Sample	First	Last Sample	First	Last	First	Sample	First	Sample S	First Ample S	Last ample S	First supple S	Last Inple	First I imple Sau	ast Fi nple San	rst Las tpic Samp	t First le Sample	Last Sample	First Sample	Last Sample
(1)	(2)	3)	(4)	છ	۹	ε	⊛	6	<u>(</u>	E	(2]	(EI)	(14)	(3)	(16)	17) (1	8) (19,	(02) 0	(12)	£	(23)
Paid-up Capital	11,802	11,551	11,694	11,982	12,566	12,109	14,882	13,658	15,670	14,564	15,462	15,251	116,51	5,587 1	6,139 15	761 21,	395 19,6	03 20,94	3 20,001	21,117	19,289
Net Worth Borrowing	19,468	19,092	20,501	20,884	22,170	19,105	23,364	20,524	24,607	21,904	24,386	23,405	25,431	24,877 2	6,052 30	0,074 34	847 30,7	39 36,75	2 33,966	37,382	33,673 17 607
Gross Fixed Asset	21,774	21.646	18,724 23.739	18,634	12072	26,801	32,428	29,203	34.467	31.965	35.374	20,000 2 35,176 3	29,020 -	2,092 3	0.084 50	1,148 40 1555 57	625 542	20 4/,0/ 72 63 18	5 40,485 7 60,927	770775	192,14 61.103
Depreciation	9,073	9,047	10,199	10,629	12,011	11,053	13,980	12,404	15,352	13,982	15,945	15.776	7,601 1	7.076	9,018 22	1,633 26.	335 24.5	97 29,04	9 27,965	31,550	28,264
Total Remuneration	9,743	9,802	10,879	11,423	12,458	11,097	13,455	12,075	14,956	13,091	14,743	14,268	15,417	5,100 1	6,230 1	1,120 21,	080 18,3	32 22,66	8 20,123	22,892	20,392
PTODI Interest	0,000	0/111	1,342	9571 1.378	186'1	6,857 1.667	8,592 2.136	6,886 1.916	7,872	6,588 2.198	2.402	6,841 2.380	7,647	7,534	7,848 2.785	9,198 11 1,684 4	285 102 567 43	96 12,03 96 4 81	9 11,286 9 4,707	5,100	4.802
No. of Companies Sampled	1,500	1,500	1,500	1,552	1,552	1,776	1.776	1,786	1,786	1,802	1,802	1,822	1,812	1,822	1,822	2,126 2	,126 2,1	26 2,12	6 2,126	2,126	2,126
									APPEND	ELE 2 A XI	CONTD.										
	19.	74-75		975-76		11-916		3 <i>1-11</i> 61		1978-7	•6	1980-	*18	198	2-83	198:	3-84	1984-	85	1985-	86
	First	Last	First	24 J	L Fir	ير لا	ust F	irst	ast	First	Last	First	Last	First	Last	First	Last	First	Last	First	Last
	Sample	Sampl	e Samp	le Samp	le Sam	ple Sar	nple Sa	mple St	unple S	ample S	ample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample S	ample	Sample
	(24)	(25)	(26)	(27,	(21	2 ()) (6	30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)
Paid-up Capital	19,93	5 19,76	8 20,4;	28 18,1	08 16;	255 16	054 1	6,681 1	6,555	17,835	17,373	19,095	17,821	19,108	19,780	20,552	22,335	20,962	24,478	24,367	25,539
Net Worth	37,01	3 36,33	2 36,7	41 30,4 M 46.4	26 30,	891 28	1,995 3	2,257 3	0,533	34,359 54 354	32,421	41,471	37,089	44,878	42,631	45,357	50,400 e5 275	51,779	59,569	61,267	69,343 115 STT
Gross Fixed Asset	68,325	5 56,65	1.90 11.90	91 63,3	3 6 7 5	74 82.6	576 4	. 0,411 6	1,307	78,290	74,265	93,121	76,444	106058	101443	117490	128650	133457	146240	164949	164,653
Depreciation Total Remonention	32,016	6 31,39	8 34,7	17 30,3 K 21,6	11 32, 85 21	143 30	,724 3 440 2,	5,787 3	4617	40,413	38,624 27 177	48,812 35.088	39,114 29,002	52,459 38.406	47,349 35 364	56,324 30.754	60,944 30,000	64,900 43 776	69,929 47 561	80,762 40 847	80,829 47.460
Profit	15,440	14,96	1 13,69	8 11,7	0 7 7	182 12	342	2,677 1	2,585	13,607	13,475	19,255	16,126	17,851	17,430	18,218	18,420	20,522	21,285	26,942	27,843
Interest	6,427	7 6,16	6 7,4(9 6,6	23 6,	435 6	,315	6,685	6,599	7,238	7,017	9,583	8,005	11,536	11,578	12,292	12,677	13,271	14,494	16,172	16,859
No. of Companies Sampled	2,126	5 2,12	6 2,Ľ	26 2,1	36	1 110	,011	110,1	1,011	110,1	110,1	1,011	1,004	1,004	1,027	1,027	1,053	1,027	1,096	1,053	1,096
Note: Two Sets of Sam * Refers to medium &	ple results	t are not a	ivailable d compar	for the y- tics only.	tars 1975	-80, 196	11-82, an	d 1986-8	7 and her	ice data f	or these 1	oints of 1	time are 1	lot preser	ited.						

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	Pub	lic Limited	Priva	ate Limited	Total	Companies
rear	Cash flow (Rs.lakh)	Profitability Ratio	Cash flow (Rs lakh)	Profitability Ratio	Cash flow (Rs lakh)	Profitability Ratio
1	2	3	4	5	6	7
1951	13,828	0.1182				
1952	18,512	0.1428				
1953	14,017	0.1011				
1954	, 15,216	0.1107				
1955	17,563	0.1220				
1956	22,251	0.1348	6,659	0.1042	28,910	0.1257
1957	23,344	0.1269	8,298	0.1232	31,642	0.1258
1958	21,213	0.1008	8,978	0.1305	30,191	0.1086
1959	23,444	0.1087	9,793	0.1494	33,237	0.1190
1960	29,847	0.1335	11,958	0.1576	41,805	0.1400
1961	40,498	0.1394	11,805	0.1601	52,303	0.1442
1962	44,247	0.1324	14,267	0.1715	58,514	0.1414
1903	51,397	0.1346	16,2/4	0.1766	67,871	0.1442
1904	01,418	0.1430	20,219	0.1858	81,637	0.1539
1903	07,049	0.1405	21,892	0.1823	89,541	0.1505
1900	/1,0/4	0.1334	21,492	0.1/21	93,300	0.1422
1907	69.024	0.1285	19,009	0.1597	93,447	0.1351
1900	73 110	0.1152	17,401	0.1415	80,413 01 577	0.1190
1909	86040	0.1112	10,150	0.1508	106.000	0.1105
1970	101 881	0.1204	20,009	0.1422	100,909	0.1290
1972	108,536	0.1300	20,040	0.1271	132 071	0.1307
1973	119 401	0 1437	28 923	0 1403	148 324	0 1429
1974	145.866	0.1587	39 044	0.1579	184,910	0.1585
1975	186.877	0.1875	47,739	0.1729	234,616	0.1837
1976	159.126	0.1529	39,342	0.1522	198.468	0.1528
1977	169.072	0.1590	56,300	0.1728	225,372	0.1626
1978	191.522	0.1614	59.860	0.1657	251,382	0.1625
1979	226,110	0.1734	66,014	0.1584	292,124	0.1693
1980	280,674	0.1888	90,356	0.1846	371,030	0.1877
1981	297,622	0.1831	102,072	0.1807	399,694	0.1824
1982	338,250	0.1732	110,355	0.1629	448,605	0.1703
1983	347,081	0.1501	120,667	0.1515	467,748	0.1505
1984	363,736	0.1249	143,138	0.1357	506,874	0.1277
1985	462,781	0.1280	155,160	0.1329	617,941	0.1292
1986	609,232	0.1261	203,013	0.1506	812,245	0.1317
1987	588,226	0.1123	199,906	0.1333	788,132	0.1170
1988	621,319		185,832		808,309	
1989	690,313		206,241		897,798	
1990	767,044		228,891		1 107 502	
1991	852,220		254,028		1,107,575	
1992	940,949		201,920		1 366 414	
1993	1,052,101		247 250		1,500,414	
1 005	1,109,040		285 386		1,517,000	
1006	1,290,003		A27 710		1 872 341	
1997	1603 501		474 682		2.079.421	
1998	1781 560		526 813		2,309,635	
1999	1070 580		584,668		2,565,336	
2000	2199 411		648,878		2,849,346	
2001	2.443.886		720,139		3,164,799	
2002	2,715,265		799.227		3,515,175	
2003	3,016,778		887,000		3,904,343	
2004	3.352.108		984,412		4,336,595	
2005	3,724,339		1,092,523		4,816,702	

APPENDIX A.6.1.14. CASH FLOW AND PROFITABILITY RATIO

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DEVELOPMENT OF PUBLIC SECTOR POLICY IN INDIA

P.S. Palande

This study reviews the development of policy pertaining to public sector enterprises. Commencing with a policy of free enterprise, until the first World War, some regulatory measures were enforced thereafter. Following Independence and the Planning era, stress was laid on the responsibility of the statefor the development of key basic industries like iron and steel, heavy chemicals, manufacture of electrical equipment, etc. By 1956, the public sector undertakings expanded to include atomic energy, air lines, ship building, railways, telecommunication, etc. In the seventies, banks were nationalised, the coal industry was taken over, and the public sector occupied a pivotal role in economic development. Various sick units in the textile and engineering industries were also nationalised between 1971 and 1980. However, by the eighties, doubts began to be felt whether the investments in the public sector were yielding adequate returns and the performance of the public sector undertakings came under greater scrutiny.

Perhaps the first explicit articulation of the concept of state ownership of the means of production, was made in the Karachi session of the Indian National Congress in 1931. The Fundamental Rights Resolution passed in that session emphasised the need for the State to own or control the key industries and services, mineral resources, railways, waterways, shipping and other means of public transport. Somewhat surprisingly, the Bombay Plan (1944) prepared by industrialists like Tata, Birla and Sri Ram among others, also emphasised the need for State control over economic development: 'We have indicated that no economic development of the kind proposed by us would be possible except on the basis of a central directing authority, and further measures of State control would be required to prevent an inequitable distribution of the financial burdens involved in it. An enlargement of the positive as well as preventive functions of the State is essential to any large-scale economic planning. This is inherent in the idea of planning and its implications must be fully admitted' [Marathe, 1986, p. 28].

Similarly, the Industrial Policy Statement of 1945 of the Government of India attached great importance to the development of basic industries like iron and steel, heavy engineering, machine tools, heavy chemicals, etc. It is worth quoting it at some length (paragraph numbers are from the original):

2. Under the Government of India Act, 1935, the development of industries is a provincial subject, but it is open to the Centre to declare by law that the development of certain industries under Central control is expedient in the public

interest and therepon, the development of such industries becomes a Central subject. ... some explanation is necessary as to why the Government of India feel themselves called upon to issue a statement of their industrial policy. The reasons are two-fold.... In the second place, the progress of planning has made it abundantly clear that certain industries must be taken over under Central control in the interests of co-ordinated development. It was indeed contemplated by Parliament, when the Government of India Act was passed, that industries in which a common policy was desirable would be brought under Central control. Government consider that for achieving the foregoing object the following industries should be centralised: (1) Iron and steel. (2) Manufacture of prime movers. (3) Automobiles and tractors and transport vehicles. (4) Aircraft. Ship-building (5) and marine engineering. (6) Electrical machinery. (7) Heavy machinery, such as textiles, sugar, paper, mining, cement and chemicals. (8) Machine tools. (9) Heavy chemicals and fine chemicals, chemical dyes, fertilisers and pharmaceutical drugs. (10) Electro-chemical industry. (11) Cotton and woollen textiles. (12) Cement. (13) Power alcohol. (14) Sugar. (15) Motor and aviation fuel. (16) Rubber manufacture. (17) Non-ferrous metals industry. (18) Electric power. (19) Coal. (20) Radio engineering.

4. The attitude of Government towards industry in the past was, for many years, one of *laissez faire*. Till the war of 1914-18 this policy was maintained in the belief, which was in accordance with the current economic doctrine, that industrial

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progress was best achieved by unregulated private enterprise. This attitude underwent some modification after the last war through the adoption of the policy of discriminating protection. ... If India is to make rapid headway and if the standard of living of the masses is to be effectively raised, a vigorous and sustained effort is necessary in which the State no less than private industry must take a part.

7(i). A primary point in industrial policy is the extent to which the State will take part in industrial enterprise. In India, ordnance factories, public utilities and railways together forming a considerable proportion of the total industrial enterprise are already very largely State owned and State operated. This arrangement will naturally continue. Further, Government have recently decided that the bulk generation of electric power should, as far as possible, be a State concern.... Apart from ordnance factories, public utilities and railways, basic industries of national importance may be nationalised provided adequate private capital is not forthcoming and it is regarded as essential, in the national interests, to promote such industries.

7(ii). Certain industries of national importance such as ship-building and the manufacture of locomotives and boilers will be run by the State as well as by private capitalists....

The Statement also refers to the need for the Government to have power to license industrial undertakings and other powers of control.

Nevertheless, prior to Independence, activity in the public sector was confined to sectors like railways, ports, communications, broadcasting, irrigation and power and a few departmental undertakings such as the ordnance factories, railway workshops and Post & Telegraph (P&T) workshops. After Independence, public sector was conceived in a much broader manner and was given a central role in the industrial development of the country.

INDUSTRIAL POLICY RESOLUTION, 1948

The Industrial Policy Resolution of 1948, released on April 6, 1948, constitutes the first statement of industrial policy of the Government of India after Independence. Among other things, it argues the case for State participation in

industry and lays down certain guidelines in that context. As such, it is worth quoting it at some length. The paragraph numbers are those in the Resolution.

2. Any improvement in the economic conditions of the country postulates an increase in national wealth: a mere redistribution of existing wealth would make no essential difference to the people and would merely mean the distribution of poverty. A dynamic national policy must, therefore, be directed to a continuous increase in production by all possible means, side by side with measures to secure its equitable distribution. In the present state of the nation's economy, when the mass of the people are below the subsistence level, the emphasis should be on the expansion of production, both agricultural and industrial; and in particular on the production of capital equipment of goods satisfying the basic needs of the people and of commodities the export of which will increase earnings of foreign exchange.

3. The problem of State participation in industry and the conditions in which private enterprise should be allowed to operate must be judged in this context. There can be no doubt that the State must play a progressively active role in the development of industries, but ability to achieve the main objectives should determine the immediate extent of State responsibility and the limits to private enterprise. Under the present conditions, the mechanism and the resources of the State may not permit it to function forthwith in Industry as widely as may be desirable. The Government of India are taking steps to remedy the situation; in particular, they are considering steps to create a body of men trained in business methods and management. They feel, however, that for some time to come, the State could contribute more quickly to the increase of national wealth by its present activities wherever it is already operating and by concentrating on new units of production in other fields, rather than on acquiring and running existing units. Meanwhile, private enterprise, properly directed and regulated, has a valuable role to play.

4. On these considerations the Government have decided that the manufacture of arms and ammunition, the production and control of atomic

energy, and ownership and management of railway transport should be the exclusive monopoly of the Central Government. Further, in any emergency, the Government would always have the power to take over any industry vital for national defence. In the case of the following industries, the State - which in this context, includes Central. Provincial and State Governments and other Public Authorities like Municipal Corporations - will be exclusively responsible for the establishment of new undertakings, except where, in the national interest, the State itself finds it necessary to secure the co-operation of private enterprise subject to such control and regulation as the Central Government may prescribe: (1) Coal, (2) Iron and Steel, (3) Aircraft manufacture, (4) Shipbuilding, (5) Manufacture of telephone, telegraph and wireless apparatus excluding radio receiving sets, (6) Mineral Oils.

While the inherent right of the State to acquire any existing industrial undertaking will always remain, and will be exercised whenever the public interest requires it, Government have decided to let the existing undertakings in these fields develop for a period of ten years, during which they will be allowed all facilities for efficient working and reasonable expansion. At the end of this period, the whole matter will be reviewed and a decision taken in the light of circumstances obtaining at the time. If it is decided that the State should acquire any unit, the fundamental rights guaranteed by the Constitution will be observed and compensation will be awarded on a fair and equitable basis.

Management of State enterprises will, as a rule, be through the medium of public corporations under the statutory control of the Central Government, who will assume such powers as may be necessary to ensure this.

5. The Government of India have recently promulgated a measure for the control by the State of the generation and distribution of electric power. This industry will continue to be regulated in terms of this measure.

6. The rest of the industrial field will normally be open to private enterprise, individual as well as co-operative. The State will also progressively participate in this field; nor will it hesitate to intervene whenever progress of an industry under private enterprise is unsatisfactory

As a statement of policy, the Resolution is clear and does not require any comment. Nevertheless, we may note that there was a recognition that 'the mechanism and the resources of the State may not permit it to function forthwith in Industry as widely as may be desirable' and that, even at that early stage, there was a realization that the limitations of resources were largely in manpower trained in business methods and management.

Indian Telephone Industries Ltd. (1948), and Indian Rare Earths Ltd. (1950) are some of the first public sector enterprises set up.

The Industries Development and Regulation Act, 1951 and the Registration and Licensing of Industrial Undertakings Rules, 1952 made thereunder are mainly concerned with the licensing and regulation of industry in the private sector. But, in Clause 2, the Act declares that 'it is expedient in the public interest that the Union should take under its control the Industries specified in the First Schedule'. This Schedule has 38 entries, the major ones of which are: (1) Metallurgical industries (Ferrous and non-Ferrous), (2) Fuels like coal, lignite, mineral oil, motor and aviation fuel, etc., (3) Boilers and Steam generating plants, (4) Prime movers. (5) Electrical equipment, (6) Telecommunications, (7) Transportation, (8) Industrial machinery, (9) Machine tools, (10) Agricultural machinery, (11) Earth-moving machinery, (12) Miscellaneous mechanical and engineering industries, (13) Commercial, office and household equipment, (14) Medical and surgical appliances, (15) Industrial instruments, (16) Scientific instruments, (17) Fertilisers, (18) Chemicals, (19) Dye-stuffs, (20) Drugs and pharmaceuticals, (21) Textile, (22) Paper and pulp, (23) Sugar, (24) Food processing, (25) Leather and leather goods, (26) Cement and gypsum products, (27) Defence industries.

FIRST FIVE YEAR PLAN, 1951-56

In its chapter on 'Objectives, Techniques, and Priorities in Planning' (Chapter II), the First Five Year Plan noted as follows:

'It is clear that in the transformation of the economy that is called, the State will have to play a crucial role. Whether one thinks of the problem of capital formation or of the introduction of new techniques or of the extension of social services or of the overall re-alignment of the productive forces and class relationships within society, one comes inevitably to the conclusion that a rapid expansion of economic and social responsibilities of the State will alone be capable of satisfying the legitimate expectations of the people. This need not involve complete nationalisation of the means of production or elimination of private agencies in agriculture or business and industry. It does mean, however, a progressive widening of the public sector and a re-orientation of the private sector to the needs of a planned economy' [Planning Commission, 1953, Ch II, para 11].

'We should like to emphasise here that, as far as ownership of productive capital assets (other than in agriculture, small-scale industry and transport, and in residential housing) is concerned, the share of the public sector is already large. The book value of gross fixed assets owned by the Central and State Governments, together with the working capital in the enterprises concerned, amounted to over Rs 1,200 crore at the end of 1950-51.... The value of productive capital assets in the private sector (again excluding agriculture, small-scale industry and transport, and in residential housing) in 1950 was not perhaps more than about Rs 1,500 crore... These estimates are necessarily rough ... but they show that in the building and maintenance of basic services essential for organised industry, and to some extent in industrial development itself, the State has already been playing a not insignificant part. It suggests that the productive capital in industry and in services essential to it is so small compared to the needs of the country that, in the further accumulation of it, the two can well supplement each other and need not necessarily expand at the expense of the other' [Planning Commission, 1953, Ch II, paras 12-14].

'The distinction between the public and the private sector is, it will be observed, one of relative emphasis; private enterprise should have a public purpose and there is no such thing under present conditions as completely unregulated and free private enterprise. Private enterprise functions within the conditions created largely by the State. ... The points of interaction between private and public enterprise are multiplying rapidly. ... All these are indications that the private and the public sectors cannot be looked upon as anything like two separate entities; they are and must function as parts of a single organism' [Planning Commission, 1953, Ch II, para 16].

'The high priority given in the investment programme of the public sector to the improvement of agriculture limits inevitably the investment which the State can itself undertake in industries, especially large scale industries. Progress in this field would, therefore, at this stage depend to a great extent on effort in the private sector. The State in this initial period has to concentrate on the provision of basic services like power and transportation. The State also has special responsibility for developing key industries like iron and steel, heavy chemicals, manufacture of electrical equipment and the like, without which in the modern world continued development is impossible' [Planning Commission, 1953, Ch II, para 47].

INDUSTRIAL POLICY RESOLUTION, 1956

In the course of the discussion on the 'Economic Situation in India' on December 20 and 21, 1954, in the Lok Sabha, the Prime Minister Pandit Jawaharlal Nehru, in a fairly long speech, made certain points about the role of the public sector: 'I now come to the public sector. From this larger point of view, it is obvious, in a country as undeveloped as we are, quite apart from the objectives, we cannot progress except by State initiative, except by enlarging the public sector, and except also by controlling the private sector in a measure, i.e. the important points of the private sector. I cannot obviously go into the question where the line should be drawn. But the line will ever be a changing one because the public sector will be a growing one, and the point is that the strategic points must be controlled by the State. The strategic industries, and the strategic points in the private sector must be controlled by the State' [Lok Sabha, 1954, Vol. IX, p. 3,607]. At the end, the Lok Sabha passed the following Resolution: 'This House having considered the economic situation in India, and the policy of the Government in relation thereto, is of the opinion that - (i) the policy of Government is in harmony with the policy statement of the 6th April, 1948; (ii) the objective of our economic policy should be a socialistic pattern of society; and (iii) towards this end the tempo of economic activity in general and industrial development in particular should be stepped up to the maximum possible extent' [Lok Sabha, 1954, Vol. IX, p. 3,692].

As a sequel, Government reformulated its industrial policy and the second Industrial Policy Resolution was released on October 30, 1956. It states (paragraph numbers are those in the Resolution):

1-2. The Government of India set out in their Resolution dated 6 April 1948, the policy which they proposed to pursue in the industrial field. ... These eight years have witnessed many important changes and developments in India. ... Planning has proceeded on an organized basis, and the First Five Year Plan has recently been completed. Parliament has accepted (December 1954) the socialist pattern of society as the objective of social and economic policy.

6. The adoption of the socialist pattern of society as the national objective, as well as the need for planned and rapid development, require that all industries of basic and strategic importance, or in the nature of public utility services, should be in the public sector. Other industries which are essential and require investment on a scale which only the State, in present circumstances, could provide, have also to be in the public sector. ... Nevertheless, there are limiting factors which make it necessary at this stage for the State to define the field in which it will undertake sole responsibility for further development, and to make a selection of industries in the development of which it will play a dominant role. ... After considering all aspects of the problem ..., the Government of India have decided to classify industries into three categories, having regard to the part which the State would play in each of them. These categories will inevitably overlap to some extent and too great a rigidity might defeat the purpose in view. But the basic principles and objectives have always to be kept in view and the general directions hereafter referred to, be followed. It should also be remembered that it is always open to the State to undertake any type of industrial production.

7. In the first category will be industries, the future development of which will be the exclusive responsibility of the State. The second category will consist of industries, which will be progressively State-owned and in which the State will, therefore, generally take the initiative in establishing new undertakings, but in which private enterprise will also be expected to supplement the effort of the State. The third category will include all the remaining industries, and their further development will in general, be left to the initiative and enterprise of the private sector.

8. Industries in the first category have been listed in Schedule A of this Resolution. All new units in these industries, save where their establishment in the private sector has already been approved, will be set up only by the State. This does not preclude the expansion of the existing privately owned units, or the possibility of the State securing the co-operation of private enterprise in the establishment of new units when the national interests so require. Railways and air transport, arms and ammunition and atomic energy will, however, be developed as Central Government monopolies. Whenever co-operation with private enterprise is necessary, the State will ensure, either through majority participation in the capital or otherwise, that it has the requisite powers to guide the policy and control the operations of the undertaking.

9. Industries in the second category will be those listed in Schedule B. With a view to accelerating their future development, the State will increasingly establish new undertakings in these industries. At the same time, private enterprise will also have the opportunity to develop in this field, either on its own or with State participation.

10. All the remaining industries will fall in the third category, and it is expected that their development will be undertaken ordinarily through the initiative and enterprise of the private sector, though it will be open to the State to start any industry even in this category. ...

The two Schedules mentioned above are as follows: SCHEDULE A: (1) Arms and ammunition and allied items of defence equipment, (2) Atomic energy, (3) Iron & Steel, (4) Heavy castings and forgings of iron and steel, (5) Heavy plant and machinery required for iron and steel

production, for mining, for machine tool manufacture and for such other basic industries as may be specified by the Central Government, (6) Heavy electrical plant including large hydraulic and steam turbines, (7) Coal and lignite, (8) Mineral oils, (9) Mining of iron ore, manganese ore, chrome-ore, gypsum, sulphur, gold and diamond, (10) Mining and processing of copper, lead, zinc, tin, molybdenum and wolfram, (11) Minerals specified in the schedule to the Atomic Energy (Control of Production and Use) Order. 1953, (12) Aircraft, (13) Air transport, (14) Railway transport, (15) Shipbuilding, (16) Telephones and telephone cables, telegraph and wireless apparatus (excluding radio receiving sets), (17) Generation and distribution of electricity. SCHEDULE B: (1) All other minerals except 'minor minerals' as defined in Section 3 of the Minerals Concession Rules 1949, (2) Aluminium and other non-ferrous metals not included in Schedule A, (3) Machine tools, (4) Ferro-alloys and tool steels, (5) Basic and intermediate products required by chemical industries such as the manufacture of drugs, dye-stuffs and plastics, (6) Antibiotics and other essential drugs, (7) Fertilizers, (8) Synthetic rubber, (9) Carbonisation of coal, (10) Chemical pulp, (11) Road transport, (12) Sea transport.

SECOND, 1956-61 AND THIRD, 1961-66, PLANS

Industrial Policy Resolution, 1956, was a prelude to the Second Five Year Plan which visualised a more active role for the public sector and provided a detailed justification for the same: 'The use of modern technology requires large scale production and a unified control and allocation of resources in certain major lines of activity. These include exploitation of minerals, and basic and capital goods industries which are major determinants of the rate of growth of economy. The responsibility for new developments in these fields must be undertaken in the main by the State, and the existing units have also to fall in line with the emerging pattern. Public ownership, partial or complete, and public control or participation in management are specially required for those fields in which technological considerations tend towards a concentration of economic power and of wealth. In certain fields,

private enterprise can, under present day conditions, make little headway without assistance and support from Government, and in these cases the public or semi-public character of the resources drawn upon has to be recognised. In the rest of the economy, conditions have to be created in which there is full scope for private initiative and enterprise either on an individual or on a cooperative basis. In a growing economy which gets increasingly diversified there is scope for both the public and the private sectors to expand simultaneously; but it is inevitable, if development is to proceed at the pace envisaged and to contribute effectively to the attainment of the large social ends in view, that the public sector must grow not only absolutely but also relatively to the private sector' [Planning Commission, 1956, p. 23].

In 1966, the Prime Minister had summed up very succinctly the role of the public sector in promoting economic development: 'We advocate a public sector for three reasons: to gain control of the commanding heights of the economy; to promote critical development in terms of social gain or strategic value rather than primarily on considerations of profit; and to provide commercial surpluses with which to finance further economic development' and, again in 1969, 'The public sector occupies a pivotal role in our economic strategy. From the beginning, it has been recognised that the public sector would necessarily have to venture into the difficult and intensive fields of basic industry which the private sector had shunned for long' [UNESCO, (E/5985), p. 6].

Nevertheless, in comparison with the Second Plan, in the Third Plan (1961-66), the emphasis on public sector appears to have been somewhat toned down: 'As in the Second Plan the roles of the public and private sectors are conceived of as supplementary and complementary to one another' [Planning Commission, 1962, p. 458].

ADMINISTRATIVE REFORMS COMMISSION: REPORT ON PUBLIC SECTOR UNDERTAKINGS, 1967

The Administrative Reforms Commission (ARC) appointed, in 1967, a Study Team On Public Sector Undertakings and after due deliberation incorporated its findings in its own Report on Public Sector Undertakings, in October 1967. We shall in due course come back to its many findings and recommendations. Here, we shall confine ourselves to its discussion and recommendations regarding the forms of organization of public sector undertakings (Chapters II and III).

The Industrial Policy Resolution of 1948 had said that the 'management of State enterprises will, as a rule, be through the medium of public corporations under the statutory control of the Central Government'. As mentioned earlier, there were also undertakings run directly by the departments or executive agencies of the Government. Later, in accordance with the provisions of the Companies Act, 1956, it also became possible to register public sector undertakings as Government companies provided Government's participation was not less than 51 per cent. Thus, if we leave out the departmental undertakings, there are two forms of public sector undertakings: First, run by Government as statutory corporations, and second, undertakings run by Government companies registered in accordance with the provisions of the Companies Act, 1956. There has been much discussion and debate as to which form is the more suitable.

At the end of 1966-67, there were 76 industrial and commercial undertakings in the Central sector of which 70 were Government companies. The remaining six were set up as statutory corporations. They are: Life Insurance Corporation, Central Warehousing Corporation, Air India, Indian Airlines Corporation, Oil and Natural Gas Commission, and Food Corporation of India. It should be noted that there are many undertakings styled as 'corporations' though in fact they are Government Companies registered under the Companies Act. Thus, the Fertilizer Corporation of India, the Indian Oil Corporation, the State Trading Corporation, etc., are actually companies and not statutory corporations [ARC, Ch. II, para 8].

'A noticeable feature of our public sector is the existence of more than one undertaking with an independent legal status functioning in the same field of industry, e.g., oil refineries and pharmaceuticals. On the other hand, certain big enterprises include more than one operating unit. Thus, the Hindustan Steel Ltd. administers five projects - the three steel plants located at Bhilai, Rourkela, and Durgapur, the Alloy Steels Plant at Durgapur, and the coal washeries at Durgapur and elsewhere. The Bokaro Steel Ltd., however, stands outside this big enterprise. Similarly, the Bharat Heavy Electricals Ltd. has five operating units the High Pressure Boiler Plant at Tiruchirapalli, the Heavy Electricals Equipment Plant and Central Foundry Forge Plant at Hardwar, the Heavy Power Equipment Plant and Switchgear Unit at Hyderabad. This multi-unit enterprise in the electricals sector used to be part of an even bigger enterprise from which it was separated. The residuary unit remaining after separation was the Heavy Electricals Ltd., Bhopal' (Ch. II, para 9).

'The present organization of public undertakings reflects a marked preference for the Government company form.... The original intention was to set up public undertakings in the form of statutory corporations. The Government company form was introduced subsequently some years after the first Industrial Policy Resolution. The principal merit of the company form that appears to have appealed to the Government is the flexibility that it provides for subsequent reorganization. In the case of statutory corporations. Government have to seek approval of Parliament every time they introduce a change in the organisational structure or bring into existence a new undertaking. As Parliament cannot directly manage the undertakings, it is inescapable that it should repose trust in their boards of management. This could be better secured if Parliament were to approve, after discussion, the setting up of the undertakings through legislation or a resolution. Such a procedure would also facilitate investing them with the requisite measure of autonomy' [ARC, Ch. III, para 2].

'In the beginning, the policy of setting up public undertakings as companies had come in for much criticism, the main points of the criticism being: (i) the undertaking set up as a Government company evades the constitutional responsibilities which a State-owned enterprise owes to Parliament; (ii) the law regulating limited companies becomes a mere fiction as all or most of the functions normally vested in the shareholders and management are with the Government; (iii) a meeting of shareholders in the case of a Government company is meaningless as declaration of profits and appointments to the Board rested with the Government; and (iv) the extent of autonomy provided could be reduced by the executive agencies of the Government' [ARC, Ch. III, para 3].

'The Estimates Committee in their 80th Report (April 1960) took note of this criticism and recommended that all wholly State-owned public undertakings should generally be in the form of statutory corporations. The company form should be an exception to be resorted to only when Government have an emergency to take over an existing enterprise or have decided to launch an enterprise either in association with private capital or with a view eventually to transferring it to private management. In their reply to this recommendation given in September, 1962, Government contended that the 'Company form was advantageous in that it allowed the flexibility and autonomy for the successful operation of commercial enterprises and also provided for Parliamentary control over the companies under the special provisions of the Companies Act' [ARC, Ch. III, para 4]. (See Annexure I)

'We have carefully considered all the aspects of the question whether a statutory corporation or a Government company is the more suitable form. We believe that there is an important advantage in adopting the form of a statutory corporation as compared to company form. Statutory corporations are set up after a full public debate and with the approval and sanction of Parliament. This leads to a clear and precise definition of their objectives and obligations. It also results in a clear demarcation of powers between the Government and the public undertaking. Further, Parliament, having vested autonomy in the undertaking through an enactment, will itself take care to ensure that such autonomy is fully recognised by the executive agencies of the Government' [ARC, Ch. III, para 5].

'In certain cases, however, the company form is preferable. For instance, the company form is more appropriate for undertakings which have an element of private participation. It is also desirable for those undertakings which are predominantly trading concerns or which have been set up to improve or stabilise a particular area of

business, as in the case of the construction undertakings, the traditional corporations and hotels. Further, when it is necessary to set up an undertaking which is comparatively small in size and it is to be given an independent legal status, a company may be floated for the purpose. This will obviate the need for the elaborate procedure required for setting up a statutory corporation' [ARC, Ch. III, para 6].

FOURTH, 1969-74 AND THE FIFTH, 1974-79 PLANS

Like between the Second and the Third plans, the emphasis on public sector varied between the Fourth and the Fifth plans. In the Fourth Plan (1969-74), the public sector was expected 'to take charge more and more of the commanding heights in the production and distribution of basic and consumer goods' [Planning Commission, 1969, p. 28.]. It was envisaged that 'both in terms of the proportionate magnitude of investments and the nature of the investments, the public sector will occupy a pre-eminent position in the industrial field by the end of the Fourth Plan' [Planning Commission, 1969, p. 316].

The Draft Fifth Plan (1974-79) was formulated in terms of 1972-73 prices and in the context of the economic situation obtaining in the first half of the fiscal year 1973-74. Thereafter, two major developments took place. The inflationary pressures gathered momentum till September 1974; and the balance of payment position worsened due to the steep rise in the prices of imported oil and other materials [Planning Commission, 1974, p. 1]. These kept the industrial growth low: 2.5 per cent during 1974-75 and 5.7 per cent during 1975-76. To compensate for the low rate of growth in the first two years, the objective now was to achieve 9 to 10 per cent annual rate of growth in the remaining three years of the Plan period. Evidently, it was believed that to achieve a higher rate of industrial growth, some relaxation in industrial regulation was necessary. Hence: '21 industries including cotton spinning, basic drugs, and industrial machinery have been delicensed. In respect of 29 selected industries, including foreign and MRTP companies, have been permitted to utilise their installed capacity without limit. In order to promote exports of engineering

goods, 15 engineering industries have been allowed the facility of automatic growth of capacity at 5 per cent per annum or up to a ceiling of 25 per cent in a Plan period in physical terms. Various facilities have been extended to nonresident Indians for the establishment of industrial undertakings for investing their earnings in selected industries. The resources of IDBI and other term lending institutions are also proposed to be augmented. Conditions are now favourable for maintaining the tempo of growth in industrial production and investment achieved during the last guarter of 1975-76'. Out of the proposed Plan outlay of Rs. 16,660 crore for industrial development, Rs. 9,660 crore were allocated to Central and State Public Sectors [Planning Commission, 1974, Pp. 60-62].

In the elections in 1977, the Congress lost and there was a brief rule of the Janata Government during 1977-80. On December 23, 1977, the Janata government issued a statement on Industrial Policy. It had greater emphasis than before on small scale industry, tiny sector, cottage industries, etc., and it professed to reorient the Public Sector accordingly: 'The public sector in India has today come of age. Apart from socialising the means of production in strategic areas, public sector provides a countervailing power to the growth of large houses and large enterprises in the private sector. There will be an expanding role for the public sector in several fields. Not only will it be the producer of important and strategic goods of basic nature, but it will also be used effectively as a stabilising force for maintaining essential supplies for the consumer. The public sector will be charged with the responsibility of encouraging a wide range of ancillary industries, and contribute to the growth of decentralised production by making available its expertise in technology and management to small scale and cottage industry sectors. It will be the endeavour of Government to operate public sector enterprises on profitable and efficient lines in order to ensure that investment in these industries pays an adequate return to society. The Government attaches high priority in the building up of a professional cadre of managers in the public sector, who would be given the necessary autonomy and entrusted with the task of providing dynamic and efficient management to such enterprises' (para 21).

INDUSTRIAL POLICY, 1980

Evidently, doubts had begun to be felt regarding the feasibility of ensuring that investments in public sector 'were not only fruitful but would yield adequate return'. Reaffirmation of faith and blaming the failure on somebody became necessary. Hence, a fresh statement of Industrial Policy (1980) was issued on July 23, 1980. On public sector, it had the following to say:

'The Industrial Policy Resolution 1956 has served as the cornerstone of the Congress Government Policy-frame for the past quarter of a century..... In terms of this Resolution the task of raising pillars of economic infrastructure in the country was entrusted to the public sector (para 1). An unfortunate development during the recent political vacuum (electoral defeat of the Congress in 1977 and the brief rule of the Janata Government during 1977-80) has been an erosion of faith in the public sector which has been reflected in its rather poor performance in recent years. Public sector, which was conceived to provide the pillars of the Country's economic infrastructure, was rendered hollow. The gigantic task before us, therefore, is to rehabilitate faith in the public sector. We have not only to restore people's faith in the public sector but also evolve effective operational systems of management in the public sector undertakings. The public sector has to be identified as people's sector and not as 'Nobody's sector' as was rendered by the last Government. Public sector constitutes a substantial segment of industrial activity in the country and its contribution in terms of generating surpluses and employment for further growth of the economy needs to be improved' (para 6).

More positively, the following specific steps were suggested: 'Government have decided to launch a drive to revive the efficiency of the public sector undertakings. Industrial undertakings in this sector will be closely examined on a unitby-unit basis and corrective action taken in terms of a time-bound programme wherever necessary. Some of the units were allowed to get into chronic problems and instead of contributing surpluses, tended to put a drain on the public exchequer. Priority will be accorded to convert losing concerns into viable ones through broad restructuring of the system and by providing dynamic and competent management (para 7). ... Part of the reason for unsatisfactory performance of some of the units in the public sector has been the absence of proper management cadre. ... emphasis will be placed on developing management cadres in functional fields such as operations, finance, marketing, and information system' (para 8).

SIXTH FIVE YEAR PLAN (1980-85)

In its Review of Industry and Minerals (Chapter 16), the Sixth Five Year Plan (1980-85) had the following to say: 'The progress of industrialisation over the last thirty years has been a striking feature of Indian economic development ... A significant aspect of industrial development during this period has been the predominant role assigned to the public sector in the establishment of basic industries. The public sector has taken the initiative for the development of such industries as steel, non-ferrous metals, petroleum, coal, fertilisers, and heavy engineering. It has also made investments in consumer industries like textiles, drugs and pharmaceuticals, cement and sugar, partly as a result of the need for it to assume the responsibility for nursing back sick units which were taken over by Government. ... The total investment, as on March 1979, amounted to Rs. 15,600 croreArising from these large investments in the public sector, the share of the public sector in the net domestic product in organised industry and mining has also moved up from 8 per cent in 1960-61 to 28.9 per cent in 1977-78.

'The performance of the public sector cannot be judged on the basis of the yard-stick normally applied to the private sector. The justification of the public sector lies in its contribution to fulfilling certain broader socio-economic objectives. Viewed in this light, the public sector as a whole has acquitted itself reasonably well. But for the entry of the public sector in a major way in the development of these basic industries, the structural changes witnessed in the Indian economy could not have been achieved. It has also provided the necessary counter-poise to the private sector for supply management as needed from time to time in periods of crisis in vital sectors of the economy. The public sector has also devoted comparatively greater attention to research and development, so essential for achieving the goals of technological self-reliance'.

'In aggregate financial terms the internal resources generated by the public sector undertakings for financing the Plan have been comparatively meagre. The major factors responsible for these are: (a) low return on investment on account of price constraints imposed on some public sector undertakings; (b) considerable number of private sector sick units (particularly in the textile and engineering industries) which the Central Government had to take over in the interest of maintaining employment and production; and (c) the technological complexity of the industries which had to be promoted in the public sector where a larger gestation period and slower learning curve are inevitable'.

'Notwithstanding these considerations, there is need for substantial improvement in the working of the public sector undertakings. The continued growth prospects of the public sector, and indeed of the economy, are critically dependent on its ability to generate resources for its future growth. A substantial improvement in the efficiency of these undertakings, so as to provide a reasonable rate of return on large investments made on them is, therefore, of crucial importance. To the extent pricing policy has inhibited the resource raising capacity of certain undertakings, it would be necessary to review it to bring it in line with prudent commercial norms. There is also the need to improve management practices within the undertakings so as to impart a greater concern for optimal utilisation of capacity and higher levels of technical efficiency. Inordinate delays have been a common feature in the implementation of public sector undertakings: these not only lead to loss of production but also significantly contribute to higher investment costs. Modern techniques of project monitoring and construction management will need to be introduced to avoid the excessive costs inherent in the serious slippages in the construction projects. At the same time it is necessary that there should be adequate delegation of authority to the public sector undertakings and also within the public sector undertakings at various levels. As far as possible, the authority and discretion of the public sector management, within the delegated functions, should not be brought into question; the performance of the management should be judged on the basis of overall results achieved as distinct from the soundness of individual decisions taken by it. The induction of professional management and industrial culture in the public sector enterprises should be steadily promoted. An intensive institutionalised programme of induction and short term training for senior public sector managers should be introduced to ensure continuous availability of a body of properly trained and motivated personnel for top level positions in the public sector' [Planning Commission, 1981, Ch. 16, paras 16.2-16.7].

We do not know what concrete steps were taken along the lines suggested above.

COMMITTEE TO REVIEW POLICY FOR PUBLIC ENTERPRISES, 1984

In September 1984, the Government of India appointed a committee to analyse the performance of public sector enterprises, to identify the constraints and suggest measures to improve their functioning. The Committee submitted its report on December 31, 1984. In its introductory chapter, the Committee noted as follows:

'The expectation that public enterprises as commercial ventures should 'augment the revenues of the State' and provide a return which can be used for further investment and growth has not been fulfilled. Even for units which were making losses because of the nature of the product or because of their serving some specified social objectives, the efficiency of operation has often deteriorated. In actual practice, the freedom of operation has been often curtailed or interfered with by formal or informal Governmental intervention. While the public enterprises were to be judged by their 'total results' the monitoring and evaluation system of the Government has not been adequate to the task. The strict enforcement of standards on public enterprises would entail having a closer look at the constraints of the operation. While some of these arise from the general nature of our economic structure and some from incorrect investment decisions of the past, others stem from poor managerial practices within the enterprises and formal and informal interference by Government. The primary objective of this Report is to consider these constraints and to suggest measures to change the whole environment of operation of public enterprises so that their performance can effectively improve' [Sen Gupta, 1984, paras 1.5-1.6]

SEVENTH FIVE YEAR PLAN, 1985-90

The Seventh Five Plan (1985-90), in its chapter on Industry and Minerals, has only a few and scattered observations on Public Sector. In the following, we extract them to present a connected account as much as possible:

'It is almost three decades since the Industrial Policy Resolution of 1956 conceptualised and articulated the basic framework underlying our industrial policies.... The public sector was to provide a leading role, partly as a catalyst, in moulding and accelerating the process of industrialisation within the framework of a 'mixed economy'... The major thrust for the development of heavy industries has been provided by the public sector. In critical areas such as power, railways, coal, petroleum, steel, and fertilisers, the public sector has been intensively involved in setting the pace of development ... The task of achieving the multiple objectives of industrial planning, however, has not been without frustration. The principal failures of planning relate to the inability to utilise the growing potential of the industrial sector and inadequate attention paid to reducing costs and improving quality [Planning Commission, 1985, Ch. 7, paras 7.1-7.5].

'In the public sector, problems began with cost and overruns in a large number of projects. After commissioning, inefficiency tended to persist at the operational stages of the projects. ... It may be added that, in the first phase of industrialisation, emphasis was based on steel based industries. The high cost of steel in later years affected competitiveness of such industries. In the next phase of industrialisation, we will be depending on other basic materials such as petro-chemicals, intermediates, electronic components and materials. It must be ensured that these will be available at competitive prices [Planning Commission, 1985, Ch. 7, para 7.11].

'The industrial economy visualised in the Industrial Policy Resolution of 1956 is characterised by a symbiotic and complementary relationship between public and private sectors. Public sector investments in infrastructure and basic industries provide productive inputs and facilities as well as market for private manufacturing. The industrial base in the economy has considerably widened as a result. The performance of the public sector should become more dynamic. Perhaps, the time has come to inject an element of competition within the public sector and in certain cases with the private sector. Over the years, considerable expertise has been built up in the public sector to design, engineer, erect, commission, and operate large enterprises. Industrial Policy should ensure the utilisation of this expertise in the public sector and also encourage involvement of the private sector for the development of 'sunrise' industries such as microtelecommunications, computers, electronics, ceramic composites and biotechnology. As a matter of policy, the public sector will have to assume an increasingly leading role in technological modernisation of manufacturing. This selective approach will need to be supplemented, however, with steps to consolidate and improve the functioning of existing enterprises. Such an initiative has a number of policy implications: endowing management with autonomy consistent with their accountability; weeding out such industrial units as cannot become viable through modernisation, amalgamation and restructuring, improving and tightening public sector project selection procedures; and not treating the public sector as the repository of sick and unviable private industrial units' [Planning Commission, 1985, Ch. 7, para 7.33-7.35].

WHITE PAPER ON PUBLIC SECTOR, 1988

It is only in recent years that there has been a recognition that a serious review of the place of the public sector is essential. In fact, there has been a demand for a clear statement of policy from the Government on this important issue. This persuaded the Government in 1988 to come out with a White Paper which remained in the Draft stage.

Reiterating the Government's commitment to the public sector, 'which shall continue to occupy commanding heights' the paper suggested that the use of public enterprises to further the goals and objectives of planning has to be selective so that it becomes more purposive and meaningful. Public enterprises should vacate low technology, small scale and non-strategic areas and concentrate on high priority and high technologically demanding areas. This requires a thorough review of the existing portfolio of public investments.

The priority areas proposed for the growth of public enterprises were: Major investments in technology acquisition and development, and capability building in critical sectors which influence the prospects for development in the economy such as electronics, information technologies and bio-technology; investments in infrastructural services, particularly when they are a part of an integrated net-work; investments in mega projects involving the discovery and exploitation of mineral resources; investments in the manufacture of products where strategic considerations preclude dependence on private sources. The paper also identified selective investments in areas largely in the private sector, where a countervailing power to monopolistic or oligopolistic practices is felt necessary and where other methods of regulating these practices are ineffective.

The paper points out that while the public enterprises have many impressive achievements which include providing a spring-board for the economy to achieve a significant degree of selfsufficiency in the energy sector and substantial increases in production in key infrastructure sectors of the economy, these are also areas of serious concern. Most important of these lie in the area of resource generation. The most significant failure of the public enterprises is that they have not generated adequate surplus for sustained public investment.

An issue needing urgent attention is the nature of government - public sector interface as it has evolved over the years. Public enterprises are not always able to respond quickly and effectively to changing technological and market imperatives. One of the reasons is excessive bureaucratic control.

Another problem which has affected the performance of the public sector is that over the years it has come to be regarded as a provider and protector of employment. This has led to excessive over-manning in many enterprises. Employment in chronic loss making enterprises is close to 0.8 million. Excessive over-manning has had an impact on the profitability of the undertakings. This issue will have to be confronted and a consensus reached at, on measures needed to resolve it. The logic of having a completely uniform wage structure in the public sector needs to be examined. Further, guidelines of wage negotiations in the public enterprises would provide for the establishment of a link between wage increases and productivity. The management of public enterprises would have greater freedom in wage negotiations.

The public sector will have to be developed as an efficient and a profitable instrument for which it came into being, including sustained employment generation. The economy cannot sustain continuing losses on a large scale as they impose a severe burden on the budget. The government feels that financial profitability is both relevant and important and ought to be one of the key yardsticks of public sector performance evaluation. Major technological and financial restructuring is needed to make some of the perennially loss-making enterprises viable. Quite a few of the chronic loss-makers can be revived by the induction of new technology and changes in product-mix. This, the government will initiate speedily. In future, any deviations from commercial considerations in investment decisions have to be made as transparent as possible, whenever the source of these deviations is outside the domain of the enterprise managers. The government would restructure the capital base of such public enterprises that continue to make losses on a case-by-case basis. To give sharper focus to the concept of autonomy and accountability in the public sector, the government intends to work out for each public enterprise a corporate statement of goals and enumeration. The government is determined that public enterprises should improve their productivity and achieve excellence and contribute more substantially to the growth process (*Economic Times*, Nov. 28, 1988).

STATEMENT OF INDUSTRIAL POLICY, 1991

On July 24, 1991, the government issued a Statement of Industrial Policy. It has the following to say on Public Sector (paragraph numbers are the same as appearing in the Statement): 29. The public sector has been central to our philosophy of development. In the pursuit of our development objectives, public ownership and control in critical sectors of the economy has played an important role in preventing the concentration of economic power, reducing regional and ensuring that planned disparities development serves the common good. 30. The Industrial Policy Resolution of 1956 gave

the public sector a strategic role in the economy. Massive investments have been made over the past four decades to build a public sector which has a commanding role in the economy. Today key sectors of the economy are dominated by mature public enterprises that have successfully expanded production, opened up new areas of technology and built up a reserve of technical competence in a number of areas.

31. After the initial exuberance of the public sector entering new areas of industrial and technical competence, a number of problems have begun to manifest themselves in many of the public enterprises. Serious problems are observed in the insufficient growth in productivity, poor project management, over-manning, lack of continuous technological upgradation, and inadequate attention to R & D and human resource development. In addition, public enterprises have shown a very low rate of return on the capital invested. This has inhibited their ability to regenerate themselves in terms of new investments as well as in technology development. The result is that many of the public enterprises have become a burden rather than being an asset to the Government. The original concept of the public sector has also undergone considerable dilution. The most striking example is the take over of sick units from the private sector. This category of public sector units accounts for almost one third of the total losses of central public enterprises.
Another category of public enterprises, which does not fit into the original idea of the public sector being at the commanding heights of the economy, is the plethora of public enterprises which are in the consumer goods and services sectors.

32. It is time therefore that the Government adopt a new approach to public enterprises. There must be greater commitment to the support of public enterprises which are essential for the operation of the industrial economy. Measures must be taken to make these enterprises more growth oriented and technically dynamic. Units which may be faltering at present but are potentially viable must be restructured and given a new lease of life. The priority areas for growth of public enterprises in the future will be the following: Essential infrastructure goods and services; Exploration and exploitation of oil and mineral resources; Technology development and building of manufacturing capabilities in areas which are crucial in the long term development of the economy and where private sector investment is inadequate; Manufacture of products where strategic considerations predominate such as defence equipment. At the same time the public sector will not be barred from entering areas not specifically reserved for it.

33. In view of these considerations, Government will review the existing portfolio of public investments with greater realism. This review will be in respect of industries based on low technology, small scale and non-strategic areas, inefficient and unproductive areas, areas with low or nil social considerations or public purpose, and areas where the private sector has developed sufficient expertise and resources.

34. Government will strengthen those public enterprises which fall in the reserved areas of operation or are in high priority areas or are generating good or reasonable profits. Such enterprises will be provided a much greater degree of management autonomy through the system of memoranda of understanding. Competition will also be induced in these areas by inviting private sector participation. In the case of selected enterprises part of Government holdings in the equity share capital of these enterprises will be disinvested in order to provide

further market discipline to the performance of public enterprises. There are larger number of chronically sick public enterprises incurring heavy losses, operating in a competitive market and serve little or no public purpose. These need to be attended to. The country must be proud of the public sector that it owns and it must operate in the public interest.

TYPES OF PUBLIC SECTOR UNDER TAKINGS

The forms of organisation of public enterprises adopted have undergone a change over time. In the early period, they were run directly like Government Departments, but with the larger entry of the State into industrial and commercial activities, new forms of management became necessary to suit particular activities undertaken. Initially, statutory corporations and statutory boards were set up which subsequently gave way to the company form which has now become the most common mode. Broadly, the public undertakings may be divided in the following: (i) Departmental undertakings, (ii) Statutory boards, (iii) Statutory corporations, and (iv) Companies registered under the Companies Act, 1956.

(i) Departmental undertakings are directly subordinate to the respective ministries, and are financed by annual appropriations from the treasury and their revenues are paid into the treasury. They are subject to the budget, accounting and audit controls applicable to government and their permanent staff consists of civil servants with the same conditions of recruitment and service as for other civil servants. The examples of this type of undertakings are : Railways; Posts and Telegraph; Ordnance factories; Army Clothing Factory; Gun Carriage Factory at Jabalpur; Chittaranjan Locomotive Works; and the Integral Coach Factory at Perambur. In short. they are like government departments and, therefore face certain problems in their day-today working arising from excessive financial control by government, absence of autonomy, interference from bureaucracy, non-availability of suitable personnel on the one hand, and overstaffing on the other, etc. Also, since they are financed exclusively from the treasury, and are not permitted to use their revenues themselves, there is little incentive for them to generate any surpluses. Railways is an exception. Acworth Committee (1921) suggested that the Railways should have a separate budget of its own and, accordingly, it has been submitting its own budget since 1924-25. Nevertheless, in general, Departmental undertakings as an organisational form of public enterprise was not considered suitable and government looked for alternatives such as the following.

(ii) Statutory Boards were set up mainly for executing large river projects such as Bhakra Nangal, Hirakud, Nagarjunsagar, etc. Such boards are not suitable for commercial activities because they are controlled quite rigidly by the government and function almost like Government departments.

(iii) Statutory corporations are owned by the State and are created by specific enactments defining their objects, powers, privileges, form of management and relationship with government departments. Except for appropriations to provide capital or to cover losses, they are usually financed through funds borrowed from the govemment and public financial institutions or, in some cases, directly from the public and through revenues derived from the sale of goods and services, and have the authority to use and re-use their revenues. All appointments to top positions are made by the government but, barring the officers taken on deputation, their employees are not civil servants. Examples of this form include the following: Damodar Valley Corporation; Oil and Natural Gas Commission (set up in 1956 by a simple Resolution of the Government as a subordinate office of the Ministry and later converted into a Statutory Corporation by an Act of Parliament in 1959); Life Insurance Corporation; Air India International; Industrial Finance Corporation of India; Employees' State Insurance Corporation; State Bank of India, etc. The advantage of this form is that each corporation can have special features built into it to meet its requirements. The drawback is that any change in its structure requires an amendment to the statute by which it was established. Moreover, the stranglehold of the government is still strong and takes away much of its autonomy.

(iv) Public Limited Companies are created under a general law, viz. the Companies Act, 1956, and have all the features of a public limited company. The whole of the capital stock is owned by the government. They have greater independence though their Directors are appointed by the government and work as per guidelines prescribed by the Government.

Choice of Form

The nature of activities in the initial years permitted the use of the Departmental Undertakings as a form and so that was the form adopted. The Industrial Policy Resolution (IPR), 1948 preferred statutory corporations and declared that 'Management of State enterprise will, as a rule, be through the medium of public corporations under the statutory control of the Central Government, who will assume such powers as may be necessary to ensure this'. Accordingly, in the years following, public enterprises were organised as statutory corporations. But soon a realisation that they required greater flexibility and freedom if they were to be successful, led to a search for suitable alternatives. The First Plan recognised such a need in view of the changed circumstances and observed: 'The drawbacks of departmental management of public enterprises are well-known. Successful conduct of such enterprises requires a great deal of initiative and the power to take quick decisions on the part of the executives in charge, and these can hardly be secured if enterprises are directly under a government department. On the other hand, the extent of autonomy which can be insisted on for such enterprises at the present stage is a matter on which a definite judgement cannot be hazarded except in the light of further experience. Several of the industrial undertakings directly under the Central Government have already been organised as joint stock companies with boards of directors vested with powers of management in the same manner as in any undertaking in the private sector' [Ministry of Information and Broadcasting, 1953, p. 183]. On the whole, the joint stock form was considered suitable as it would make it possible

to operate the public sector undertakings on business lines with internal management entirely under the control of the board of directors.

The Second Plan was non-committal, but the issue was re-opened when the Estimates Committee, in its 80th Report (April, 1960) taking into account the recommendations of a UN seminar held at Rangoon in 1954, later endorsed by another Seminar at New Delhi in 1959, recommended that all wholly State- owned public undertakings should generally be in the form of statutory corporations. It also recommended that the company form should be an exception to be resorted to only when Government have in an emergency to take over an existing enterprise or have decided to launch an enterprise either in association with private capital or with a view eventually to transferring it to private management. But in their reply (September, 1962), the Government contended that 'the company form was advantageous in that it allowed the flexibility and autonomy for the successful operation of commercial enterprises and also provided for Parliamentary control over the companies under the special provisions of the Companies Act' [Varma, 1967, p. 14].

The question was also considered in some detail by the Krishna Menon Committee and the decision taken by the Government in 1961 on its recommendations was as follows: 'Government consider that the form of management of the undertakings should be determined by the requirements of each case. Accordingly, from the point of view of flexibility of operations, the company form of management would be preferable. In some instances, it would be necessary to form statutory corporations while in a few others, for various reasons, it would be desirable to run the undertakings as departmental organizations' [Varma, 1967, p. 14]. Thus, the government did not agree to be committed to any specific form and kept its options open.

But the ARC was of the opinion that statutory corporations were best suited to our conditions and observed: 'We have carefully considered all the aspects of the question of whether a statutory corporation or a Government company is the more suitable form. We believe that there is an important advantage in adopting the form of a statutory corporation as compared to company form. Statutory corporations are set up after full public debate and with the approval and sanction of Parliament. This leads to a clear and precise definition of their objectives and obligations. It also results in a clear demarcation of powers between the Government and the public undertaking. Further, Parliament, having vested autonomy in the undertaking through an enactment, will itself take care to ensure that such autonomy is fully recognised by the executive agencies of the Government' [ARC, 1967, p. 13].

The ARC did not favour the company form on the following grounds: (i) the undertaking set up as a government company evades the constitutional responsibilities which a state-owned enterprise owes to Parliament; (ii) the law regulating limited companies becomes a mere fiction as all or most of the functions normally vested in the shareholders and management are with the Government; (iii) a meeting of shareholders in the case of a government company is meaningless as declaration of profits and appointments to the Board rested with the Government; and (iv) the extent of autonomy provided could be reduced by the executive agencies of the Government [ARC, 1967, p. 13].

Nevertheless, the government has generally favoured the company form because it provides operational flexibility, e.g., in (a) recruitment; it is free to adopt its own procedure and does not have to go through the Public Service Commission; (b) It can make independent and quick purchases without going through the time consuming and perhaps costlier procedures of the Directorate General of Supply and Disposals; (c) It can entrust construction works to construction companies even in the private sector and not necessarily to the Central Public Works Department; (d) It provides freer access to outside expertise without constraints in the matter of obtaining consultation and advice from nongovernmental sources; (e) It makes it easier to delegate authority and responsibility on a larger scale. Certain responsibilities attach to the directors who, therefore, are expected to exercise greater care and take keener interest in the affairs of the company. The company form can thus provide an incentive for efficiency in that a

comparison with private enterprises should force the management to adopt more businesslike managerial practices. As already mentioned, any important changes in an individual company's structure, including changes in the Articles of Association, can be made at government's level without concurrence of any other authority like Parliament because the individual companies are set up by a simple government order. Of course, such flexibility gives freedom from procedures but not from several provisions of the Company Law which are equally applicable to the government companies.

Holding Company

A recent development is the concept of a holding company. Under this form, government's interface with the undertakings works through the holding company which is responsible for day to day operations of and co-ordination among a number of subsidiary companies. Government has no direct, day to day contact with the individual constituent companies, thus ensuring greater decentralization of operation. It sets the target for the holding company as a whole and receives through it, periodical performance reports of the subsidiaries, thereby facilitating an objective evaluation and monitoring.

The origin of this idea can be traced to the recommendation of the ARC (1967) suggesting that the industrial and manufacturing concerns should be grouped into 12 sectoral corporations. This was not quite accepted but, in April 1968, National Textile Corporation (NTC), was formed as a holding company for all nationalised sick textile mills. In 1971 when all the public sector steel plants, as also other related public enterprises concerned with mining of iron ore and manganese ore, the manufacture of refractories, the construction of projects, etc., were brought as subsidiary companies under the umbrella of one holding company, viz. the Steel Authority of India Ltd. SAIL, (actually incorporated in 1973). There was rethinking in 1977 and the idea of a holding company was abandoned, with the result that in 1977-78, SAIL was restructured into an integrated company with all the public sector steel plants under it. Other related activities were kept

out of its domain. This was the same pattern as that of BHEL and HMT which were multi-unit integral complexes, but not holding companies.

In the coal sector, somewhat different arrangements were evolved. In late 1975, Coal India Ltd. (CIL) was set up as a holding company, with all the public sector coal units under its control as its subsidiaries, but with sufficient freedom.

On the contrary, fertilisers was one area where holding company concept was not accepted. Initially, there was a large Fertiliser Corporation of India (FCI) with a number of plants under it. Instead of setting up a holding company, the two units, viz., National Fertiliser Ltd. (NFL) and FCI were broken up in five separate companies. Based on their experience, there is now talk of reorganisation, possibly in further smaller units.

The idea of the holding company was revived by the Committee to Review Policy for Public Enterprises (1984). The Committee noted: 'The logic of 'Holding Company' structure is to introduce an intermediate level of management, i.e., the Board of the Holding Company, between the Ministry and the Companies, reconstituted as subsidiary companies. The Board of the Holding Company also takes up the job of coordination between the subsidiary companies. As a result, the interface between the Government and the subsidiary Companies is minimised without sacrificing the essential need for coordination of the operation of the companies' (para 3.13).

Two new holding companies, viz., the Bharat Yantra Nigam Ltd. was set up in July 1986 as a holding company for the following subsidiaries: (i) Bharat Heavy Plate and Vessels Ltd.; (ii) Bharat Pumps and Compressors Ltd.; (iii) Bridge and Roof Co. (India) Ltd.; (iv) Richardson & Cruddas Ltd.; (v) Triveni Structurals Ltd.; and (vi) Tungabhadra Steel Products Ltd.; and Bharat Bhari Udyog Nigam Ltd. was set up in September 1986, as a holding company for the following subsidiaries: (i) Burn Standard Co. Ltd.; (ii) Jessop & Co. Ltd.; (iii) Braithwaite & Co. Ltd.; (iv) Bharat Wagon & Engineering Co. Ltd.; (v) Bharat Process and Mechanical Engineering Ltd.; (vi) Lagan Jute Machinery Ltd.; and (vii) Braithwaite, Burns & Jessop Construction Co.

Ltd. With the formation of the Bharat Business International Ltd., the idea was extended to the trading sector.

GROWTH OF ENTERPRISES

Because of policy emphasis on the public sector. the number of public sector enterprises and investment in them grew rapidly from just 5 enterprises with an investment of Rs 29 crore in 1951, to 244 enterprises with an investment of Rs 99,315 crore in 1989-90. Over the years, the scope of the public sector has changed from that of a mere provider mainly of infrastructural facilities or at best a catalyst to that of an active participant in the process of industrialisation. Initially, its activities were intended to be restricted to the core and strategic industries such as steel, metals, coal, power, and petroleum. Over the years, public enterprises have extended into several other fields such as trading and marketing, contracts and consultancy, construction and transport equipment, and also consumer goods such as bread, beverages, cloth, and tourism. Of late, Government has also been looking after a large number of sick units taken over from the private sector.

In the First Plan (1951-56), while fixing priorities for the public sector, it was pointed out that then major emphasis in industrial till development had been on consumer goods industries, while basic capital goods and producer goods industries had lagged behind. The output of consumer goods industries, such as cotton textiles, sugar, soap, matches, and salt was, on the whole, sufficient to meet the existing low level of demand in the country. On the other hand, the existing capacity for the production of capital and producer goods, in most cases, was quite inadequate even for present requirements. Only a small beginning had been made with textile machinery and the power sector depended entirely on imported generating equipment. The output of iron and steel was also barely sufficient to meet 50 per cent of the demand and that of heavy chemicals was considered no less inadequate. The Plan intended to make good these deficiencies. [Ministry of Information and Broadcasting, 1953, Pp. 177-178).

Accordingly, the following approach was

adopted : (i) fuller utilisation of existing capacity in producer goods industries like jute and plywood and consumer goods industries like cotton textiles, sugar, soap, vanaspati, paints and varnishes; (ii) expansion of capacity in producer and capital goods industries like iron and steel. aluminium, cement, fertilisers, heavy chemicals, machine tools, etc.; (iii) completion of industrial units on which a part of the capital expenditure had already been incurred; (iv) establishment of new plants to rectify, as far as resources permitted, the existing lacunae and drawbacks, e.g., manufacture of sulphur from gypsum, chemical pulp for rayon, etc. [Ministry of Information and Broadcasting, 1953, Pp. 180-181). Hence, in the total provision of Rs. 83 crore (subsequently revised to Rs 101 crore) on Central industrial projects, major items were: Iron and Steel (Rs. 30.00 crore), Ship-building (Rs 14.08 crore), Machine tools (Rs 9.63 crore), Sindri Fertiliser factory (Rs 9.03 crore), Chittaranjan locomotive factory (Rs 4.73 crore), Railway coach factory (Rs4.00 crore), Penicillin factory (Rs 2.06 crore), National Instruments factory (Rs 1.82 crore), Indian Telephone Industries (Rs 1.30 crore), Hindustan Cables Ltd. (Rs 1.30 crore), Mandi Salt works, Rare Earth factory, D.D.T. factory, Housing factory, etc. In fact, during the plan period (1951-56), the actual investment turned out to be only Rs 52 crore in 22 new units, some of the more important being: Hindustan Cables Ltd., Hindustan Machine Tools Ltd., Indian Airlines Corporation., Hindustan Steel Ltd., Hindustan Antibiotics Ltd., Bharat Electronics Ltd., Hindustan Insecticides Ltd., and the National Industries Development Corporation Ltd.

The progress was reviewed in the Second Plan which noted: 'The progress of production and expansion of capacity can be considered to have been satisfactory in the case of Sindri Fertiliser Factory, Chittaranjan Locomotive Factory, Indian Telephone Industries, the Integral Coach Factory, the Cable Factory, and the Penicillin Factory. On the other hand, progress has been somewhat behind schedule in the case of some Central and State Projects which have taken longer to complete and to begin production than had been anticipated. This is true, for instance, of

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the Machine Tool Factory, U.P. Cement Factory, Nepa (Paper) Factory, and the Bihar Superphosphate Factory' [Planning Commission, 1956, p. 387]. The most important single weakness was seen to be in the low level of steel production which the Second Plan decided to make good through the establishment of three new plants and the expansion of production capacity in the existing units. It also planned for expansion of machine-building, heavy engineering, and heavy chemicals along with expansion of capacity for some consumer goods [Planning Commission, 1956, Pp. 387-389]. More generally, the Second Plan (1956-61) accorded high priority to industrialisation, and especially to the development of basic and heavy industries, oil exploration and coal and to make a beginning with the development of atomic energy. A large expansion of public enterprise in this sphere was envisaged. [Planning Commission, 1956, p. 28]. 'Practically the whole of the proposed outlay of Rs. 690 crore for large-scale industry and mining is for development of basic industries such as iron and steel, coal, fertilisers, heavy engineering and heavy electrical equipment' [Planning Commission, 1956, p. 67]. The major new investments proposed were : Iron and steel (Rs. 350 cr.), Heavy machinery (Rs 20 cr.), Lignite (Rs 52 cr.), Fertilisers (Rs 37 cr.), Heavy engineering (Rs 17.75 cr.). During the plan period (1956-61) an investment amounting to Rs 875 crore was undertaken. The number of new public enterprises was only 15 but they were mostly capital intensive, some of the important being: Heavy Electricals (India) (later, in 1964, incorporated as Bharat Heavy Electricals, Ltd.), National Coal Development Corporation, Bhilai, Durgapur, and Rourkela Steel plants, Heavy Engineering Corporation Ltd., and the Fertiliser Corporation of India.

Major industrial projects in the public sector included in the Third Plan (1961-66) were in the field of iron and steel, industrial machinery, heavy electrical equipment, machine tools, fertilisers, basic chemicals and intermediaries, essential drugs and petroleum refining. These were grouped into three categories, viz., (1) projects under execution and carried over from the Second Plan; (2) new projects for which external credits

were already assured wholly or partly; and (3) new projects for which external credits had yet to be arranged. In respect of these categories, it was said: 'It may reasonably be assumed that all the projects falling in category (1) will be completed during the Third Plan. This should also apply to most of those in category (2); at any rate, considerable progress should be made with all these projects. But, some of them, e.g., the precision instruments project and the two heavy electrical projects are still only at the preliminary stage of formulation and their scope and content are yet to be defined. It is possible, therefore, that some of these projects may spill over to some extent into the Fourth Plan. Obviously, the largest element of uncertainty attaches at present to those projects falling in category (3). Some of these, however, e.g., the alloy steel plant, are of very high priority and everything possible will have to be done to expedite them [Planning Commission, 1961, Pp. 461-462].

In the last three years of the Plan (1963-66), out of a total industrial investment of Rs 945 crore, major items were: Steel (Rs 256.9); Engineering (Rs 292.9); Petroleum (Rs 185.1); Chemicals (Rs 85.2); and Mining and minerals (Rs 75.2). This information is not separately available for the first two years of the Plan. However, taking the whole plan period (1961-66), new investment worth Rs 1,464 crore was undertaken including that on 32 new enterprises, some of the important among them being National Seeds Corporation. Ltd., Ashoka Hotels Ltd., Bokaro Steel Ltd., Indian Oil Corporation. Ltd., Bharat Heavy Electricals Ltd., earlier called Heavy Electricals (India), and the Food Corporation of India Ltd. At the end of the plan period, there were 74 undertakings with a total capital investment amounting to Rs 2,417 crore.

In the Fourth Plan (1969-74), 'The major proportion of the outlay in the public sector is intended for the completion of projects already under implementation and projects on which investment decisions have been taken. New projects were envisaged in high priority fields like fertilizers, pesticides, petro-chemicals, nonferrous metals, and development of iron ore, pyrites and rock-phosphate resources. New investment in the engineering industries is limited

to a few comparatively small projects for filling critical gaps' [Planning Commission, 1969, p. 314]. Therefore, 'Taken as a whole, the public sector investments would strengthen the control of Government over the commanding heights of the economy. Thus, the public sector will account for a little over three-fourths of the investments envisaged in the 'core' sector during the Fourth Plan period, the balance being the share of the private sector. Looked at from another angle, 'core' industries would represent approximately 80 per cent of the total investment of around Rs. 3,000 crore in large industries and minerals in the public sector. Thus, both in terms of the proportionate magnitude of investments and the nature of the investments, the public sector will occupy a pre-eminent position in the industrial field by the end of the Fourth Plan. At the same time, the public sector will enter the field of consumer goods industries, particularly in fields in which adequate investment is not forthcoming' [Planning Commission, 1969, Pp. 315-316]. During the plan period, 37 new units were set up and 952 industrial undertakings (mostly coal mines) were nationalised; total investment amounted to Rs. 2,335 crore. Major items of investment were as follows: Steel (720.2); mining and minerals (Rs 572.17); chemicals and fertilisers (Rs 397.11).

During the Fifth Plan (1974-79), 54 new units with an investment of Rs. 9,365 crore were set up. Major items were: Steel (Rs 1,077.09); minerals and metals (Rs 286.95); petroleum (Rs 533.19); chemicals and fertilisers (Rs 1919.4); heavy engineering (Rs 252.52); and medium and light engineering (Rs 115.93). Parliamentary Committee on Public Undertakings (1972-73) recommended that the public sector should enter consumer goods as well; however, the investment amounted to only Rs 46.01 crore.

In the Sixth Plan (1980-85), a considerable part of the investment amounting to Rs. 27,209 crore was for completion of on-going projects [Planning Commission, 1981, p. 55]. Nevertheless, 35 new projects were set up. Major investments were: Steel (Rs. 2,196.85); minerals and metals (Rs. 1,914.99); coal (Rs 2,522.65); petroleum (Rs 2,800.19); chemicals and fertilisers, etc., (Rs 1,063.93); heavy engineering (Rs 597.53); medium and light engineering (Rs 390.16); and consumer goods industries (Rs 228.17).

The Seventh Plan (1985-90) also emphasised consolidation, improvement, and modernization rather than large expansion of capacity except where it was imperative [Planning Commission, 1985, Vol. II, p. 419]. The investment during the plan period amounted to Rs. 56,504 crore and included 23 new units.

As a result of this sustained emphasis on public sector over a period of four decades, total investment in the non-departmental non-financial enterprises of the central government, as on March 31, 1990, amounted to Rs. 99,315 crore. Of this, Rs 93,091 crore was invested on projects which were already completed. As was intended, a large part of this, in fact as much as Rs. 72,059 crore (77.4 per cent), was on basic and heavy industry such as steel, coal, petroleum, heavy engineering, etc., and Rs. 21,032 crore (21.2 per cent) on consumer goods and service enterprises.

Nationalisation of existing units / taking over of sick units

Apart from setting up new units, the public sector was also expanded by nationalisation of some existing private sector undertakings in order to secure a larger share in some key sectors and by taking over the management of certain sick units in order to protect the employment therein. The first non-financial unit to be so taken over was Vizag Shipyard in 1952 followed by 9 aviation companies in 1953. Up to 1990, a total of 1,111 non-financial undertakings in the private sector were taken over, of which 937 were coal mines. Among other important non-financial undertakings nationalised were the following:

1955 - Hindustan Housing Factory Ltd.; 1960 -Mazgaon Dock Ltd., Mughal Line Ltd., Garden Reach Workshop; 1969 - Cooper Allen and North West Tannery; 1971 - Jayanti Shipping Co. Ltd., Asian Refractories Ltd.; 1972 - Richardson and Cruddas Ltd., Indian Copper Corporation. Ltd., Balmer Lawrie Ltd., Coking Coal Mines; 1973 -Alcock Ashdown and Co. Ltd., Jessop and Co. Ltd., Metal Scrap Trading Corporation. Ltd., Coal Mines; 1974 - 4 Oil Companies, Andrew Yule and Co., Sick Textile Mills; 1976 - Burmah Shell Co. Ltd., Braithwaite and Co. Ltd., Burn and Co. Ltd., Indian Standard Wagon Co. Ltd., IISCO, Metal Corporation of India Ltd.; 1977 - Caltex Oil Refining Ltd.; 1978 - Hindustan Tractors Ltd., IISCO Stanton Pipe and Foundry Co. Ltd.; 1980 - Maruti Ltd., Hind Cycle Ltd., Bird and Co. Ltd., Bengal Chemicals and Pharmaceuticals Ltd., four Jute Mills, etc. Thus, the tempo of nationalisation was considerable between 1971 and 1980.

Ason March 31, 1990, the investment in private sector undertakings taken over by the Central Government amounted to Rs. 4,592.52 crore (Total investment in enterprises of the central government, as on March 31, 1990, amounting to Rs. 99,315 crore, mentioned above includes this). The entire civil aviation and a good part of ship-building and ship-repairing is now in the public sector. It also has almost total control over coal mining and production/ refining and distribution of petroleum products. Similarly, a considerable part of the textile industry has now come into the public sector. The exact figures of assets of the nationalised units are not available. However, on the basis of information partly available in the Annual Surveys of Public Enterprises by the Bureau of Public Enterprises, it seems that the total assets of these units when they were nationalised, amounted to about Rs. 306 crore. This does not include the assets of the 103 textile mills, 226 coking coal mines, and 711 coal mines.

ANNEXURE I

APPLICATION OF THE COMPANIES ACT, 1956, TO GOVERNMENT COMPANIES

Sec. 617. Definition of "Government Company".- For the purposes of [this Act] Government company means any company in which not less than fifty-one per cent of the [paid-up share capital] is held by the Central Government, or by any State Government or Governments, or partly by the Central Government and partly by one or more State Governments, [and includes a company which is a subsidiary of a Government Company as thus defined]. Sec. 618. Omitted. (It pertained to Managing Agency system).

619. Application of sections 224 to 233 to Government companies.- (1) In the case of a Government Company, the following provisions shall apply, notwithstanding anything contained in sections 224 to 233. (2) The auditor of a Government company shall be appointed or reappointed by the Central Government on the advice of the Comptroller and Auditor-General of India: [provided that the limits specified in sub-sections (1-B) and (1-C) of section 224 shall apply in relation to the appointment or reappointment of an auditor under this sub-section]. (3) "The Comptroller and Auditor-General of India shall have power - (a) to direct the manner in which the company's accounts shall be audited by the auditor appointed in pursuance of subsection (2) and to give such auditor instructions in regard to any matter relating to the performance of his functions as such; (b) to conduct a supplementary or test audit of the company's accounts by such person or persons as he may authorise in this behalf; and for the purposes of such audit, to require information or additional information to be furnished to any person or persons, so authorise, on such matters, by such person or persons, and in such form, as the Comptroller and Auditor-General may, by general or special order, direct. (4) The auditor aforesaid shall submit a copy of his audit report to the Comptroller and Auditor-General of India who shall have the right to comment upon, or supplement, the audit report in such manner as he may think fit. (5) Any such comments upon, or supplement to, the audit report shall be placed before the annual general meeting of the company. at the same time and in the same manner as the audit report.

Sec. 619-A. Annual Reports on Government companies.-(1) where the Central Government is a member of a Government company, the Central Government shall cause an annual report on the working and affairs of that company to be - (a) prepared within three months of its annual general meeting before which the audit report is placed under sub-section (5) of section 619; and (b) as soon as may be after such preparation, laid before both Houses of Parliament together with a copy

of the audit report and any comments upon, or supplement to, the audit report, made by the Comptroller and Auditor-General of India. (2) Where in addition to the Central Government, any State Government is also member of a Government company, that State Government shall cause a copy of the annual report prepared under sub-section (1) to be laid before the House or both Houses of the State Legislatures together with a copy of the audit report and the comments or supplement referred to in sub-section (1). (3)Where the Central Government is not a member of a Government company, every State Government which is a member of that company, or where only one State Government is a member of the company, that State Government will cause an annual report on the working and affairs of the company to be- (a) prepared within the time specified in sub-section (1); and (b) as soon as may be after such preparation, laid before the House or both Houses of the State Legislature with a copy of the audit report and comments or supplement referred to in sub-section (1).] (4) The provisions of this section shall, so far as may be, apply to a Government company in liquidation as they apply to any other Government company.]

Sec. 619-B. Provisions of section 619 to apply to certain companies.- The provisions of section 619 shall apply to a company in which not less than fifty-one percent of the paid-up share capital is held by one or more of the following or any combination thereof, as if it were a Government company, namely:- (a) the Central Government and one or more Government companies; (b) any State Government or Governments and one or more Government companies; (c) The Central Government, one or more State Governments and one or more Government companies; (d) the Central Government and one or more corporations owned or controlled by the Central Government; (e) the Central Government, one or more State Governments and one or more State Governments and one or more corporations owned or controlled by the Central Government; (f) one or more corporations owned or controlled by the Central Government or the State Government; (g) more than one Government company.]

Sec. 620. Power to modify Act in relation to Government companies. (1) The Central Government may, by notification in the Official Gazette, direct that any of the provisions of the Act (other than sections 618, 619 and [619-A]) specified in the notification: - (a) shall not apply to any Government company; or (b) shall apply to any Government company, only with such exceptions, modifications and adaptations, as may be specified in the notification. (2) A copy of every notification proposed to be issued under sub-section (1), shall be laid in draft before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive editions aforesaid, both Houses agree in disapproving the issue of the notification or both Houses agree in making any modification in the notification, the notification shall not be issued or, as the case may be, shall be issued only in such modified form as may be agreed upon by both the Houses.]

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DEVELOPMENT OF IRRIGATION AND ITS IMPACT ON PATTERN OF LAND USE, OUTPUT GROWTH AND EMPLOYMENT GENERATION

S.K. Ray

The purpose of this study is to analyse the consequences of the changes in the pattern of development and use of irrigation that have occurred in India due to widespread adoption of yield increasing seed-fertilizer technology in the post-1971 period. For comparative analyses, the study is divided into two periods: 1951 to 1965 and 1971 to 1985.

Significant changes in the pattern of development of irrigation occurred in the post-1971 period. Growth rate in irrigated area increased considerably during the period largely due to increasing exploitation of available ground water resources. Expansion from surface water sources of irrigation slowed down, and was achieved mostly by stretching the system to less dependable sources. Regional disparities in irrigation got further accentuated. While the area expansion effect of irrigation declined significantly in the post-1971 period, the impact of irrigation on cropping pattern and on overall yield did not record any significant improvement.

In the post-1971 period, gross sown area could have expanded at a faster rate and the rising trend in fallowing could have been arrested, had the irrigation been used as extensively as it was in the pre-1965 period. For yield as well as for cropping pattern index, the elasticity coefficients with respect to net sown area irrigated declined in the post-1971 period because extension of irrigation to new areas during this period was primarily for providing irrigation coverage to relatively low yielding and low value crops grown in the kharif season. However, the elasticity coefficients for both the components with respect to intensity of irrigation increased in the post-1971 period because energization of assured irrigation sources improved the scope for year round irrigation and led to increased cultivation of relatively high yielding and high value crops in the rabi season. Even with new technology and high rate of expansion in irrigation, growth rate of output in the post-1971 period declined due to a sharp fall in the growth rate of area under all crops. Growth rates both of yield and index of cropping pattern improved but not enough to compensate the decline in the growth rate of area under all crops from 1.34 per cent in 1951-65 to 0.39 per cent in 1971-85.

In the pre-1965 period, all crops production index recorded a growth rate of 3.00 per cent of which 49 per cent was due to expansion in cropped area, 45 per cent to improvement in yields, and 6 per cent due to changes in cropping pattern. The relative contributions from the sources of growth of output altered in the post-1971 period. Production recorded a growth rate of 2.73 per cent, nearly 70 per cent of which was due to improvement in yields, 16 per cent to changes in cropping pattern, and only around 14 per cent due to expansion in cropped area. This affected adversely employment incrop production. On-farm employment in the post-1971 period was also adversely affected because of decline in the employment elasticity with respect to yield.

Several suggestions are made to address the problems arising from intensive use of irrigation. Further, for improving the efficiency of modern inputs including irrigation, it is argued that a better strategy for increasing agricultural production would be to use these costly inputs in the dry rabi and summer seasons than in the rainy kharif season.

INTRODUCTION

Two distinct phases in the pattern of development and use of irrigation are discernable in the post- Independence period. In the pre-1965 period, when crop production was practiced mostly under rainfed conditions with more or less a static technology, development of irrigation was primarily done by Government mainly through exploitation of surface water and irrigation was primarily protective and extensive. It not only opened up new areas for crop production, but also made it possible to grow crops during the dry rabi and summer seasons. The sudden introduction of the new seed-fertiliser technology in the mid-

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1960s changed completely this role of irrigation. The new technology, which provided scope for significant productivity gains only if modem inputs were used along with assured and controlled supply of water, made intensive use of irrigation more profitable than its extensive use. Since assured and controlled supply of water was a necessary pre-condition for the adoption of new technology, development of irrigation from mid-1960s progressed more through exploitation of ground water resources, and that too largely through private initiatives with encouragement and support from Government. Between 1951 and 1965, when the crop technology had remained mostly static, gross irrigated area had increased by a little over 8 million hectares. In contrast, between 1971 and 1985, when the adoption of new technology progressed rapidly, gross irrigated area increased by nearly 16 million hectares. This large step up in the exploitation of the country's limited water resources, and that too for intensive irrigation practices, are expected to bring changes at the All-India level in the pattern of land use, sources of output growth, and employment in crop production. In this study, an attempt is made to probe and analyse some aspects of these changes. The study is based on time series analyses of available data at the all-India level. Time series or cross-sectional analyses at the state or regional levels are deliberately avoided as the inferences drawn at the national level from those analyses will be poor and inadequate for two reasons: (i) data base for some states, particularly those in the eastern region, are not reliable; and, (ii) pattern of development and use of irrigation, and other conditioning factors differ significantly among the states.¹ However, in order to examine the broad contours of change at the state and regional levels, several relevant indicators are computed and the changes in them over some selected reference years are analysed. The focus of the study is to investigate the changes that might have occurred due to technology induced development of irrigation in the post-1971 period. For providing a comparative picture of the changes in the magnitudes of relevant parameters and indicators, two separate time periods are used, each of 15 years: 1951 to 1965, when the crop technology had remained more or less static; and

1971 to 1985, when the adoption of new technology was actively promoted. The intervening years between the two periods are deliberately excluded from the analyses; those were the initial years of experimentation when the new technology was introduced selectively in carefully chosen areas.²

Elementary statistical tools and techniques are used in the analyses. Regression equations presented in this study are all estimated with log-linear specification. The justification for using log-linear specification is not dictated by mere statistical considerations; the logic for its use is based on a set of assumptions and theory, the details of which have been reported in an earlier publication [Ray, 1983]. Further, the regression equations are estimated only for analysing the past performance and not to make predictions for the future.

Parameters estimated in this study for measuring the impact of irrigation have wider connotation. Since irrigation is treated as the leading input in facilitating the introduction of yield increasing inputs and technology, the estimated parameters, in essence, reflect the impact of a package of complementary inputs including irrigation. Measuring pure effect of irrigation is practically impossible.

DEVELOPMENT OF IRRIGATION

The ultimate irrigation potential of India is currently estimated at 113.50 million ha, 73.50 million ha from surface irrigation sources and 40.00 million ha from ground water sources (Table 1). Nearly 34 per cent of this total potential is estimated to be in the north, around 24 per cent each in the east and the west, and the balance of about 18 per cent is in the south. North has rich ground water reserve. Over 43 per cent of the country's currently estimated ground water reserve is in the north, roughly 22 per cent each in the east and the west, and a little over 13 per cent only in the south. North is also better endowed with relatively dependable major and medium surface irrigation potential. Considerable potential for minor surface irrigation exists in the south and in the east.

Region	Major & Medium Sur- face Irrigation Sources	Minor Surface Irrigation Sources	Total Surface Irrigation Sources	Ground Water Sources	Minor Irriga- tion Sources (3)+(5)	Total from all Sources (4)+(5)	Gross Sown Area, 1985
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
East	13,735	5,420 (36,13)	19,155	8,840 (22,10)	14,260	27,995 (24,67)	31,751
North	18,855 (32.23)	1,935 (12.90)	20,790 (28.29)	17,330 (43.32)	19,265	38,120 (33.68)	39,755 (22.59)
South	ì0,04Ó (17.16)	4,600 (30.67)	14,640 (19.92)	5,275 (13.19)	9,875 (17.95)	19,915 (17.55)	33,881 (19.26)
West	15,87Ó (27.13)	`3,045´ (20.30)	18,915 (25.73)	8,555 (21.39)	11,600 (21.09)	27,47Ó (24.20)	70,568 (40.11)
All-India	58,50Ó (100.00)	15,000 (100.00)	73,500 (100.00)	40,000 (100.00)	55,000 (100.00)	113,500 (100.00)	175,955 (100.00)

TABLE 1. REGIONAL DISTRIBUTION OF ULTIMATE IRRIGATION POTENTIAL

Notes: Number in parentheses denotes percentage to all-India estimate. States and Union Territories are grouped into the following four regions:

East: Assam, Bihar, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tripura, West Bengal, Andaman and Nicobar Islands, Arunachal Pradesh, Mizoram;

North: Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Uttar Pradesh, Delhi; South: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Pondicherry;

West: Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Goa, Daman and Diu, Dadra and Nagar Haveli, Lakshadweep.

Sources: Compiled and computed from Seventh Five Year Plan, Vol. II and Dhawan (1990).

Exploitation of the irrigation potential has progressed unevenly, both over space and time. According to the land utilization statistics published by the Ministry of Agriculture, utilization of the potential increased from about 20 per cent in 1951 to only around 27 per cent in 1965 (Table 2). However, with the introduction of New Strategy for Agricultural Development in 1965, exploitation of the potential has progressed rapidly, and by 1985 about half of the country's irrigation potential was tapped. Tapping of the potential has progressed at a faster pace in the north and the south, and by 1985 both the regions have exploited over 55 per cent of their respective irrigation potential. In the west, exploitation of the potential gathered momentum after 1971, and by 1985 the region was able to tap over 44 per cent of its potential. Tapping of the potential has been slow in the east, from about 18 per cent in 1951 to 20 per cent in 1965, and then to around 30 per cent in 1985. On the whole, the intensive production strategy pursued since the mid-1960s has considerably accelerated exploitation of the country's untapped irrigation potential. During the first fifteen years of planning, gross area irrigated from all sources increased from 22.56 to 30.70 million ha, and over the next twenty years it rose sharply to 54.06 million ha.

However, the acceleration in the overall exploitation of irrigation potential has further accentuated the unevenness in the distribution of gross irrigated area over the regions. Between 1951 and 1965, the country's gross irrigated area increased by 8.14 million ha, around 38 per cent of which was in the south, about 30 per cent in the north, roughly 25 per cent in the west, and 7 per cent in the east. In the next six years, i.e., from 1965 to 1971, another 7.49 million ha were added to the country's gross irrigated area, nearly 60 per cent of which was due to the rapid expansion in the north. West made a modest contribution of around 20 per cent to the total increment, but contribution from the south dropped drastically to 12 per cent, and from the east, it improved marginally to 8 per cent. During the next fifteen years ending in 1985, an impressive addition of 15.87 million ha was made, but the bulk (44 per cent) of this was again due to the rapid expansion in the north and to a considerable extent (32 per cent) in the west; 15 per cent came from the east, and the remaining only 9 per cent from the south. As a result, north now accounts for over 40 per cent of the country's gross irrigated area, the west above 22 per cent, while the south and the east below 21 and 16 per cent, respectively.

(000 ha)

Year	Region	Per cent of	Per cent	Per ce	Per cent Distribution of Net Irrigated Area					
		Ultimate Irrigation Potential Utilised	Distribution of Gross Irrigated Area	Canals	All Surface Irrigation Sources	Ground Water Sources	All Sources			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			
1951	East	17.76	22.03	17.13	30.16	5.39	23.09			
	North	22.36	37.78	44.80	31.11	52.50	37.22			
	South	28.17	24.87	27.11	27.85	14.91	24.16			
	West	12.58	15.32	10.96	10.88	27.20	15.53			
	All-India	19.88	100.00	100.00	100.00	100.00	100.00			
			(22,563)	(8,295)	(14,875)	(5,978)	(20,853)			
1965	East	19.85	18.10	19.54	25.78	4.55	19.34			
	North	28.74	35.68	42.76	30.13	45.13	34.68			
	South	43.83	28.43	24.08	31.32	14.73	26.28			
	West	19.88	17.79	13.62	12.77	35.59	19.70			
	All-India	27.05	100.00	100.00	100.00	100.00	100.00			
			(30,705)	(11,223)	(18,525)	(8,075)	(26,600)			
1971	East	21.95	16.09	21.20	24.07	4.99	16.76			
	North	40.32	40.24	39.11	30.25	52.57	38.80			
	South	48.36	25.22	24.19	30.93	13.07	24.09			
	West	25.65	18.45	15.50	14.75	29.37	20.35			
	All-India	33.65	100.00	100.00	100.00	100.00	100.00			
			(38,195)	(12,838)	(19,216)	(11,887)	(31,103)			
1985	East	30.49	15.79	18.64	22.59	10.66	16.88			
	Nonh	58.76	41.43	39.29	31.28	46.55	38.64			
	South	55.30	20.37	22.09	26.60	11.79	19.51			
	West	44.11	22.41	19.98	19.53	30.90	24.97			
	All-India	47.63	100.00	100.00	100.00	100.00	100.00			
			(54,064)	(15,861)	(21,791)	(19,988)	(41,779)			

TABLE 2. UTILIZATION AND DISTRIBUTION OF IRRIGATED AREA

Notes: Number in parentheses denotes area in thousand hectares; see notes to Table 1 for regions. Source: Compiled and computed from various issues of *Indian Agricultural Statistics, Vol. I.*

A major part of expansion in irrigation since mid-1960s was through increased exploitation of the ground water. Of the 15.18 million ha added to the net irrigated area during 1965-85, nearly 80 per cent came from exploitation of ground water. As a result, the share of surface irrigation in net irrigated area declined sharply from around 71 per cent in 1951 to 52 per cent in 1985 (Table 3). In fact, there was an absolute decline in surface irrigated area from sources other than the canals. Between 1965 and 1985, while the net area irrigated by canals increased from 11.22 to 15.86 million ha, that from other sources of surface irrigation declined from 7.30 to 5.93 million ha.

Clearly, canals and ground water have received more attention in the development of irrigation in India. Moreover, relatively larger potentials of the north from these two sources have helped to place it at a considerable advantage over the other

regions. North has now roughly 40 per cent of the country's canal irrigated areas; for other regions, it is around 20 per cent (Table 2). Similarly, almost 50 per cent of the country's currently ground water irrigated areas is in the north and 30 per cent in the west; the south and the east have only around 10 per cent each. All these have contributed to help develop a more dependable and controllable irrigation system in the north and to some extent in the west. Ground water now provides irrigation to over 55 per cent of the net irrigated area in the north and the west; it is roughly 30 per cent each in the south and the east (Table 3). Similarly, while canals provide the main source for surface irrigation in the north and the west, the south and the east continue to depend significantly on minor surface irrigation, like tanks, ponds, etc.

		Net Area Irrigated by Surface Water					Net Area Irrigated by Ground Wate				
			Canals			Other		Tube-			Total Net Irrigated
Region	Year	Govt.	Private	Total	Tanks	Sources	Total	wells	Wells	Total	Area
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
East	1951 1965	14.83 27.17	14.99 15.47	29.82 42.64	29.90 20.03	33.61 30.19	93.33 92.86	1.88	5.26	6.67 7.14	100 100
	1971 1985	40.19 37.80	11.98 4.12	52.17 41.92	12.31 9.44	24.12 18.41	88.60 69.77	7.26 23.92	4.14 6.31	11.40 30.23	100 100
North	1951 1965	44.13 49.08	4.25 2.94	48.38 52.02	0.18 4.51	11.16	59.72 60.49	10.22	29.29	40.28 39.51	100 100
	1971 1985	39.91 37.54	1.67 1.06	41.58 38.60	3.09 0.98	3.45 2.65	48.12 42.23	32.09 53.61	19.79 4.16	51.88 57.77	100 100
South	1951 1965	44.04 38.07	1.11 0.58	45.11 38.65	31.42 38.13	5.85 6.20	82.38 82.98	0.58	16.44	17.62 17.02	100 100
	1971 1985	41.23 42.92	0.17 0.06	41.40 42.98	32.72 22.74	5.10 5.38	79.22 71.10	1.28 4.39	19.50 24.51	20.78 28.90	100 100
West	1951 1965	27.40 28.50	0.95 0.67	28.35 29.17	15.92 12.74	5.75 3.24	50.02 45.15	0.13	54.72	49.88 54.85	100 100
	1971 1985	31.02 30.11	0.40 0.26	31.42 30.37	10.15	3.17 4.17	44.74 40.80	1.76 5.44	53.50 53.76	55.26 59.20	100 100
All-India	1951 1965	34.73 37.89	5.46 4.30	40.19 42.19	17.03 17.97	14.22 9.48	71.44 69.64	4.09	26.27	28.56 30.36	100 100
	1971 1985	38.46 36.78	2.78 1.18	41.24 37.96	13.21 7.97	7.26 6.22	61.71 52.15	14.33 26.97	23.96 20.88	38.29 47.85	100 100

TABLE 3. SOURCE-WISE DISTRIBUTION OF NET IRRIGATED AREA AT REGIONAL LEVELS

Note: See notes to Table 1 for regions. Source: Compiled and computed from various issues of Indian Agriculture Statistics, Vol. I.

irrigated area from different sources and their sensitivities to variations in rainfall from the normal level during the two periods, 1951-65 and 1971-85 (for full annual data, see Annexure). It will be noticed that net area irrigated by government canals increased at an annual rate of 2.52 per cent during 1951-65 and at a somewhat lower rate (2.03 per cent) during 1971-85. Moreover during the period 1971-85, expansion of area under canal irrigation appeared to have been achieved by tapping sources which were more dependent on rainfall. During the second period, the magnitude of the elasticity coefficient with respect to rainfall not only increased significantly but also changed sign and became positive. Thus, during the second period, government canals augmented the coverage of area with irrigation in years of good rainfall but did not provide enough protection in years of below normal rainfall. Published data on area irrigated by private canals appear to be unreliable. Even then it would be safe to conclude that area irrigated by these canals, which were generally from rain-fed sources, declined sharply over the entire period, particularly so during 1971-85. As a result, growth rate

In Table 4, we give the rates of growth in net in the total net area irrigated by canals dropped from 2.11 per cent in 1951-65 to 1.76 per cent in 1971-85. Also, the magnitude of its elasticity coefficient with respect to rainfall increased significantly and became positive. Of the remaining two surface irrigation sources, namely, tanks and the category labelled as 'other sources', net area irrigated by tanks increased at an annual rate of 2.03 per cent during 1951-65 but declined at 1.07 per cent during 1971-85. Net area irrigated from this source too became more sensitive to rainfall during 1971-85. Regarding net area irrigated from 'other sources', published data again appear to be unreliable; it shows an increase in the rate of growth, from 0.13 per cent during 1951-65 to 0.72 per cent during 1971-85. Growth rate of net area irrigated from all sources of surface water irrigation declined from 1.77 per cent in 1951-65 to 1.13 per cent in 1971-85. Further, net area irrigated by surface water became very sensitive to rainfall in the second period; the magnitude of its elasticity coefficient with respect to rainfall increased from an insignificant level of 0.0151 in 1951-65 to a highly significant level of 0.1465 in 1971-85.

(per cent)

Source of Irrigation	Growth F	late	Elasticity with resp	R ²		
	1951-65	1971-85	1951-65	1971-85	1951-65	1971-85
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Government Canals	2.52*	2.03*	-0.0581*	0.1054*	0.98	0.98
2. Private Canals	-0.74	-3.66*	0.1469	0.1261	0.15	0.45
3. All Canals (1+2)	2.11*	1.76*	-0.0332*	0.1054*	0.99	0.97
4. Tanks	2.03*	-1.07*	0.2347*	0.3806*	0.78	0.56
5. Other Sources	0.13	0.72*	-0.1607	0.0414	-0.04	0.36
6. Surface Water from All Sources	1.77*	1.13*	0.0151	0.1465*	0.97	0.92
(3+4+5)						
7. Wells	0.69*	1.16*	0.0304	-0.0276	0.47	0.87
8. Tubewells	-	6.77*	-	-0.1220	-	0.98
9. Ground Water from All Sources	1.76*	3.84*	-0.0744	-0.0700	0.89	0.99
10. Net Area Irrigated from All Sources (6+9)	1.77*	2.30*	-0.0117	0.0502	0.98	0.99
11. Area Irrigated more than once	5.08*	4.66*	0.1810	0.0893	0.86	0.96
12. Gross Area Irrigated from All Sources (10+11)	2.12*	2.79*	0.0060	0.0568	0.99	0.98
13. Intensity of Irrigation	0.35*	0.49*	0.0178	0.0066	0.74	0.90

TABLE 4. RATES OF GROWTH IN NET AREA IRRIGATED FROM DIFFERENT SOURCES

Notes: Growth rates estimated by fitting equations of the form $\log Y = a + bT + clogR$. Intensity of irrigation is the ratio of gross to net area irrigated multiplied by 100. Significance at 5 per cent or lower levels is denoted by "*

surface water irrigation in the latter period was more than compensated by a significant growth in ground water irrigation. During 1951-65, net area irrigated by surface water and ground water grew at almost the same rate. During 1971-85, ground water irrigation grew at a higher rate of 3.84 per cent primarily due to a spectacular growth of 6.77 per cent per annum in tubewell irrigation. Moreover, for both the periods, ground water irrigation turned out insensitive to rainfall, suggesting that irrigation from this source was more controllable and dependable to meet the uncertainties of rainfall. The combined effect of the changes in the development of irrigation from the two principal sources was to push up the growth rate in net irrigated area from 1.77 per cent in 1951-65 to 2.30 per cent in 1971-85. Also, as the responses of the two sources to variations in rainfall were in the opposite directions, net area irrigated from all sources remained insensitive to rainfall.

With irrigation, two or more crops are often taken on the same land in a given year. It will be noticed that area with more than one irrigated

However, the decline in the growth rate of crop in a year grew at a high rate of 5.08 per cent during 1951-65 but at a somewhat lower rate (4.66 per cent) during 1971-85. Neverthless, because of the higher rate at which net irrigated area had grown during the latter period, rate of growth of gross irrigated area (which is a total of net irrigated area and area with more than one irrigated crop in a year) increased from 2.12 per cent in 1951-65 to 2.79 per cent in 1971-85. Intensity of irrigation, defined as the ratio of gross to net area irrigated, grew at a slightly higher rate during the second period; 0.49 per cent during 1971-85 compared to 0.35 per cent during 1951-65. Since the growth rate in gross area irrigated is the total of the growth rates in net area irrigated and intensity of irrigation, evidently in both the periods, around 83 per cent of the growth in gross irrigated area was accounted for by the growth in net irrigated area. Further, in both the periods, area irrigated more than once, gross area irrigated, and the intensity of irrigation remained insensitive to rainfall.

> To estimate the contributions of surface water and ground water to the growth of gross irrigated area, regression equations in double logarithmic

form were estimated for the gross area irrigated separately for the two periods 1951-65 and 1971-85, using net area irrigated by surface water and ground water as the explanatory variables. For both the periods, the estimated equations explained over 98 per cent of the variations and provided highly significant estimates of the elasticity coefficients. For the period 1951-65, the estimated elasticity coefficients for surface and ground water are 0.9117 and 0.2862, respectively; the corresponding estimates for the period 1971-85 are 0.5857 and 0.5523, respectively.

Since logarithmic specification is used for estimating the elasticity coefficients, growth rate of gross irrigated area is sum of the products of the growth rates of net surface water and ground water irrigated areas by their respective elasticity coefficients. Using the growth rates in net area irrigated by surface irrigation and ground water (Table 4), and the elasticity coefficients presented above, it was found that of the 2.12 per cent rate of growth of gross irrigated area during 1951-65, 1.62 per cent was due to surface irrigation and the remainder 0.50 per cent to ground water. The relative contributions of the two sources were completely reversed in the second period. Of the 2.79 per cent rate of growth in gross irrigated area during 1971-85, 2.12 per cent was due to ground water and the remainder 0.67 per cent to surface irrigation. That, in both the periods, the contributions from the two sources add up exactly to the respective estimated growth rate in gross inigated area is due to the procedure followed in irrigation statistics which completely ignores conjunctive use of different sources of irrigation; to avoid double counting, where an area is irrigated by more than one source, the source providing major irrigation is normally taken as the source of irrigation.

Clearly, the pattern of development of irrigation during 1971-85 was very different from the same during 1951-65. To what extent and in what manner this affected the pattern of land use, output growth, and employment in agriculture are the questions we now turn to. IMPACT OF IRRIGATION ON THE PATTERN OF LAND USE

In Table 5, we give rates of growth of area under different land uses during the two periods 1951-65 and 1971-85 (For full annual data, see Annexure). It will be noticed that, during 1951-65, area under fallow including current fallow declined at an annual rate of 2.06 per cent but, during 1971-85, it increased at an annual rate of 0.94 per cent primarily because of an increase in current fallow. The magnitude of the elasticity coefficient with respect to rainfall also increased during 1971-85. The decline in fallow during 1951-65 meant an expansion of net sown area; it increased at an annual rate of 0.95 per cent, from 119 million ha in 1951 to 138 million ha in 1965. It increased further to 140 million ha in 1971, but thereafter increased at a very low annual rate of 0.12 per cent over the period 1971-85 and remained more or less around 141 million ha in 1985. Its elasticity coefficient with respect to rainfall also increased from 0.0509 in 1951-65 to 0.0853 in 1971-85. The increased sensitivity of net sown area to rainfall during the second period could be due to marginal lands brought under cultivation for offsetting the adverse effect of increase in area under fallow on net sown area.

However, the rate of growth in cultivable area (which is the net area sown plus area under fallow including current fallow) declined from 0.48 per cent in 1951-65 to 0.23 per cent in 1971-85 and the rate of growth of the proportion of cultivable area sown (obtained by subtracting the rate of growth in cultivable area from the rate of growth in net area sown) dropped from 0.47 per cent in 1951-65 to -0.11 per cent in 1971-85. Evidently, net sown area was used more intensively for raising two or more crops during a crop year. Though the area cropped more than once grew at a slightly lower rate in the second period (2.80 per cent compared to 3.06 per cent in the first period), growth rate in the per cent of net sown area cropped more than once (obtained by subtracting the rate of growth in net area sown from the rate of growth in area cropped more than once) increased from 2.11 per cent in 1951-65 to 2.68 per cent in 1971-85. Also, elasticity of area cropped more than once with respect to rainfall turned out to be fairly stable over the two periods.

	Growth Rate		Elasticity with re	espect to Rainfall	\overline{R}^2		
	1951-65	1971-85	1951-65	1971-85	1951-65	1971-85	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1. Current Fallows	-	1.09*	-	-0.7374*		0.64	
2. Fallow Lands including Current Fallows	-2.06*	0.94*	-0.1229*	-0.4720*	0.93	0.65	
3. Net A rea Sown	0.95*	0.12*	0.0509*	0.0853*	0.96	0.69	
4. Cultivable Area	0.48*	0.23*	0.0190*	0.0057	0.95	0.89	
5. Proportion of Cultivable Area Sown	0.47	-0.11	-	-	-	•	
6. Area Cropped More than Once	3.06*	2.80*	0.2990*	0.2926*	0. 9 7	0.97	
7. Proportion of Net Sown Area Cropped More than Once	2.11	2.68	, •	-	-	•	
8. Gross Area Sown	1.20*	0.59*	0.0789*	0.1228*	0. 9 7	0.93	
9. Cropping Intensity	0.25*	0.47*	0.0280*	0.0375*	0.96	0.96	
10. Percentage of Net Sown Area Irrigated	0.81*	2.18*	-0.0626*	-0.0351	0.84	0.98	
11. Percentage of Gross Sown Area Irrigated	0.92*	2.19*	-0.0729*	-0.0660	0.93	0.97	

TABLE 5. RATES OF GROWTH OF AREA UNDER DIFFERENT LAND USE

Notes: Growth rates estimated by fitting equations of the form $\log Y = a + bT + clogR$. Significance at 5 percent or lower levels is denoted by '*' Cultivable area is the total of net area sown and the area under fallows including current fallows.

During 1951-65, gross sown area increased at an annual rate of 1.20 per cent, over 80 per cent of which came from expansion in net sown area and the balance through multiple cropping. The position reversed completely in the second period when gross sown area increased at an annual rate of 0.59 per cent and only about 20 per cent of it came from expansion in net sown area and the balance through multiple cropping. Gross sown area in the second period became more sensitive to rainfall primarily due to increased sensitivity of the net sown area to the latter; its estimated elasticity with respect to rainfall increased from 0.0789 in 1951-65 to 0.1228 in 1971-85.

During the second period, the slow rate of expansion in net and gross sown area relative to a high rate of expansion in irrigation meant a high growth rate in the per cent of net sown area irrigated; it increased from 0.81 per cent in 1951-65 to 2.18 per cent in 1971-85. The corresponding rates for the gross sown area were 0.92 and 2.19 per cent, respectively. Clearly, during this period, the decline in the growth rate of net sown area was not sufficiently compensated by an improvement in the level of cropping intensity. Thus, the expansion of irrigation in the second

During 1951-65, gross sown area increased at period did not induce marked improvement in n annual rate of 1.20 per cent, over 80 per cent cropped area.

Land utilization data at regional level show similar changes in the pattern of land use (Table 6). In the north, per cent of cultivable area under current fallows was very low in 1951; except for a minor dip during 1965-71, it increased steadily over the entire period 1951-85. During the same period, the ratio also increased in the south and reached a very high level in 1985. In the east and the west, the ratio declined during 1951-65 but increased subsequently and, by 1985, reached its original level in 1951 in both the regions. Per cent of cultivable area under total fallows including current fallows recorded similar changes in all the regions; the ratio declined in the first period and increased over the second period. In 1985, the proportion of cultivable area cultivated was below their respective 1971 levels in all the regions. In the east, the ratio dropped even below its 1951 level. In the north, the ratio improved steadily up to 1971 and then declined in 1985 to its 1951 level. In the other two regions, the ratio declined during 1971-85 but still remained well above their respective 1951 levels.

	Year	Percent	age of Cultivable	Area under		_		
Region		Current Fallows	Total Fallows Including Cur- rent Fallows	Net Sown Area	Per cent of Net Sown Area Irrigated	Per cent of Gross Sown Area Irrigated	Intensity of Irriga- tion	Cropping Intensity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
East	1951	11.38	16.85	83.15	22.06	19.94	103.98	1 15.03
	1965	8.09	13.34	86.66	22.47	19.66	108.02	123.47
	1971	8.74	14.59	85.41	22.49	21.36	117.80	124.03
North	1985	11.17	19.06	80.94	30.63	27.19	122.37	137.89
	1951	3.91	8.17	91.83	32.33	29.42	110.63	121.56
	1965	4.86	7.25	92.75	35.47	32.47	118.76	129.75
	1971	4.70	6.76	93.25	46.02	43.01	127.28	136.20
South	1985	5.21	8.16	91.84	61.08	56.95	140.26	1 50.43
	1951	8.16	27.85	72.15	18.97	19.76	112.18	1 09.70
	1965	10.91	16.57	83.43	23.31	26.24	124.84	1 10.93
	1971	9.90	15.86	84.14	24.70	27.83	128.40	1 14.00
West	1985 1951 1965 1971 1985	6.36 5.49 4.84 6.87	19.62 12.95 11.24 12.48	80.38 87.05 88.76 87.52	28.08 6.98 8.84 10.37 16.76	52.85 7.11 8.54 10.26 17.36	136.51 107.48 104.28 111.30 117.42	105.70 107.97 112.47 113.41
All-India	1951	7.27	19.15	80.85	17.56	17.11	108.20	111.07
	1965	7.04	12.83	87.17	19.26	19.28	115.43	115.28
	1971	6.94	12.41	87.59	22.17	23.04	122.80	118.20
	1985	9.27	15.04	84.96	29.69	30.73	129.40	125.04

TABLE 6. CHANGES IN THE PATTERN	OF LAND USE AT REGIONAL LEVEL
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Notes: See Notes to Table 1 for regions. Cultivable area is the total of net area sown and fallow lands including current fallows. Source: Compiled and computed from various issues of *Indian Agricultural Statistics, Vol. 1*.

In the north and the east, cropping intensity improved particularly during 1971-85 when the proportion of cultivable area sown declined. During this period, proportion of net sown area irrigated in both the regions was higher than the proportion of gross sown area irrigated, and accordingly, intensity of irrigation was at a lower level than cropping intensity. In the other two regions, cropping intensity improved marginally and irrigation ratios also did not improve appreciably.

Changes in the pattern of land use as seen from regional and all-India aggregative data thus appear to be fairly similar. However, at the state level, there appear some differences (Table 7). For example, during 1971-81, fallows declined considerably in Punjab, Harvana, and West Bengal while irrigation ratios improved. In Orissa, there was hardly any improvement in irrigation ratios and yet fallows declined considerably. In the remaining states, area under fallows either increased or changed marginally. Proportion of cultivable area cultivated declined in eight states and remained almost unchanged in another four states. Only in five states, the proportion in 1981 was a little higher than in 1971. In general, changes in cropping intensity appeared to be positively associated with changes in irrigation ratios; improvement in the former occurred in those states where the intensity of irrigation and proportion of net sown area irrigated improved considerably.

	P	Per cent of Cultivable Area under					D		Der	t of				
	Curren	nt Fal- ws	Total F inclu Curren	^r allows ding nt Fal-	Net So	Arca	Net S An Irrig	Sown rea jated	Gross Area ga	Sown Irri- ted	Inte of Irr	ensity igation	Cro Inte	pping nsity
	1971	19 8 1	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	19 81
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Andhra Pradesh	12.2	19.0	13.7	20.9	86.3	79.1	27.9	31.9	30.2	35.0	119.4	124.3	110.1	113.5
Assam	1.5	1.4	2.6	2.6	97.4	97.4	7.9	6.5	8.4	6.5	122.3	123.7	115.5	123.7
Bihar	12.8	13.5	16.5	19.3	83.5	80.7	25.7	35.7	23.7	32.3	119.5	131.3	129.6	145.3
Gujarat	2.0	3.4	2.3	3.6	97.7	96.4	10.9	14.9	10.8	14.7	105.0	103.9	106.0	105.8
Haryana	3.4	1.2	3.8	1.3	96.2	98.7	48.3	60.7	45.7	61.0	133.9	154.9	141.5	154.0
Himachal Pradesh	5.4	5.8	6.9	6.3	93.1	93.7	15.5	16.2	15.8	16.5	175.7	167.0	172.3	164.2
Jammu & Kashmir	12.6	10.6	13.0	11.4	87.0	88.6	39.8	42.8	37.3	39.7	118.1	129.4	125.9	139.4
Karnataka	5.6	8.0	5.6	8.8	94.4	91.2	10.7	11.8	12.9	13.3	124.4	120.4	103.2	106.8
Kerala	1.6	1.8	2.5	2.4	97.5	97.6	13.3	17.4	16.5	19.2	141.8	141.2	114.3	128.2
Madhya Pradesh	3.6	4.5	7.9	9.3	92.1	90.7	8.2	12.5	7.5	11.4	102.7	105.1	112.3	114.5
Maharashtra	4.1	4.1	7.0	6.8	93.0	93.2	7.1	8.1	6.9	10.6	110.0	142.6	113.2	109.6
Orissa	1.4	0.1	4.0	0.2	96.0	99.8	12.9	15.3	18.5	19.5	175.4	145.3	122.3	114.4
Punjab	4.8	1.4	5.1	1.6	94.9	98.4	78.2	89.0	78.4	91.0	150.5	174.6	150.1	170.6
Rajasthan	8.5	10.7	16.4	19.8	83.6	80.2	15.3	18.6	15.3	19.9	110.1	122.2	110.1	113.9
Tamil Nadu	15.0	18.1	18.1	19.1	81.9	80.9	41.3	48.9	47.1	52.0	134.8	133.4	118.2	125.4
Uttar Pradesh	3.6	4.6	5.0	5.9	95.0	94.1	43.1	58.5	37.1	46.3	114.6	112.8	133.1	142.6
West Bengal	1.3	0.8	2.3	1.4	97.7	98.6	18. 8	26.6	18.8	27.8	125.3	142.4	125.3	136,4

TABLE 7. CHANGES IN THE PATTERN OF LAND USE AT STATE LEVEL

Note: Cultivable area is the total of net area sown and fallow lands including current fallows.

Sources: Compiled and computed from All India Report on Agricultural Census, 1970-71 and 1980-81.

The similarity in the pattern of change in land use observed even at the disaggregated level needs further examination. In particular, it is noteworthy that, inspite of land reforms and growing pressure of population on land, fallow has increased and gross sown area has expanded at a slower rate. It seems possible that the higher rate of expansion in irrigation during the second period due to yield increasing technology induced a switch from extensive to intensive cultivation practices. In the following, we shall examine this possibility.

As already mentioned, pre-1965 agricultural technology in India was essentially static and irrigation was used primarily for providing protection to crops against uncertain rainfall. Less than 35 per cent of the gross irrigated area was used for the production of rabi cereals and nonfood crops (Table 8). Efforts to raise food production necessitated extension of cultivation to hitherto uncultivated lands and also to rabi season. Expansion of irrigation not only opened up new areas for crop cultivation, but also provided an opportunity to grow crops during the rabi and summer seasons. Seasonal orientation of irrigation was adjusted to meet the requirements for rabi and summer cultivation. The intensity of irrigation increased from a low of around 108 in 1951 to over 115 in 1965. As a result, coverage of net and gross sown area with irrigation remained almost unchanged (Annexure). Area under cereals increased, particularly during the rabi season (Table 8). Total area under cereals increased from 80.64 million ha in 1951 to 94.26 million ha in 1965; but, while the area under kharif cereals moved up from 67.38 to 70.67 million ha, that under rabi cereals shot up from 13.26 million hain 1951 to 23.58 million hain 1965. Allocation of irrigation for rabi cultivation increased, but due to faster expansion in rabi cropped area, proportion of rabicereals with irrigation declined while that of kharif cereals increased.

						Growth Rates	
	1951	1965	1971	1985	1951-65	1965-71	1971-85
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Croppe	d Area (000 h	a.)			
When if Comple	(7.004	70 (72	70 807		0.24	0.50	0.00
Kharii Cereais	67,384	/0,6/3	12,891	70,034	0.34	0.52	-0.28
Pahi Careals	12 258	(44.30)	(43.97)	(39,70)	4 20	3 44	119
Kabi Cercais	(10.05)	(14 81)	(17 12)	(10.20)	4.20	3.44	1.10
Total Cereals	80 642	94 256	101 784	104.060	112	1 20	016
Total Celears	(61 14)	(50 10)	(61 39)	(58.90)	1.12	1.27	0.10
Total Pulses	20 554	24 165	23 126	22.906	116	.0.73	-0.07
	(15.58)	(15,18)	(13.95)	(12,98)	1.10	0.15	-0.07
Total Foodgrains	101.196	118 419	124,910	126.966	1.13	0.89	0.12
10 mil 1 00 mg. anno	(76.72)	(74.37)	(75.34)	(71.97)		0.07	
Total Food Crops	107.096	127.001	133.171	138.042	1.22	0.79	0.25
	(81.20)	(79.76)	(80.32)	(78.25)			
Total Non-Food Crops	24,797	32.228	32,620	38,370	1.89	0.16	1.18
•	(18.80)	(20.24)	(19.68)	(21.75)			
All Crops	131,893	159,229	165,791	176,414	1.35	0.68	0.44
•	(100.00)	(100.00)	(100.00)	(100.00)			
		Irrigate	d Area (000 h	a.)			
Kharif Canala	11 502	14 (50	15 005	17 750	1 69	0.60	1 16
Khani Cereais	11,393	14,030	13,093	(22, 47)	1.08	0.50	1.10
Pahi Carasla	(51.50)	(47.71)	(39.32)	(32.47)	2.84	1065	2 52
Kaul Celeals	4,705	(22.06)	(24 (2))	(28 50)	2.04	10.05	3.22
Total Carnala	(21.21)	(23.00)	28,002	28 849	2.04	427	2.24
Total Celears	(72 50)	21,731	(73 55)	20,040 (71.04)	2.04	4.57	2.34
Total Dalsas	1 030	(70.76)	2 024	(71.00)	0.04	1 47	0.88
I GAL LUISES	(8 50)	(7.20)	(5 30)	(2.07)	0.94	-1.47	-0.00
Total Foodgrains	18317	23 043	30 117	40.636	1 03	300	2 16
Total Poolgianis	(8118)	23,743 (77 08)	(78.85)	(74 32)	1.95	5.90	2.10
Total Food Cross	20 380	(11.90)	33.880	(14.33)	2 12	3.62	2 20
Total Tool Clops	(00.36)	(80.14)	(88 70)	(85.00)	2.14	5.02	2.27
Total Non-Food Crone	2 174	3 334	4 315	8 148	3 10	4 30	4 75
Total Real-Tool Crops	(9.64)	(10.86)	(1130)	(1401)	5.10	7.57	4.75
All Crops	22 563	30.705	38 105	54 666	2 22	370	2 50
Ал Сюра	(100.00)	(100.00)	(100.00)	(100.00)	<i>L.LL</i>	5.70	4 0, 1 7
		Percentage of	Cropped Area	Irrigated			
		B- 04					
Kharif Cereals	17.20	20.73	20.71	25.34	1.34	-0.02	1.45
Rabi Cereals	36.09	30.02	45.00	62.00	-1.31	6.98	2.32
Total Cereals	20.31	23.06	27.60	37.33	0.91	3.04	2.19
Total Pulses	9.43	9.15	8.75	7.80	-0.22	-0.74	-0.82
Total Foodgrains	18.10	20.22	24.11	32.00	0.79	2.98	2.04
Total Food Crops	19.03	21.55	25.44	33.70	0.89	2.80	2.03
Total Non-Food Crops	8.77	10.34	13.23	21.24	1.18	4.19	3.44
All Crops	17.11	19.28	23.04	30.99	0.86	3.01	2.14

TABLE 8. UTILIZATION OF CROPPED AREA AND IRRIGATED AREA

Notes: Number in parentheses denotes per cent to total area under all crops. Computed growth rates are between the terminal years of each period. Sources: Computed and estimated from data published in Area and Production of Principal Crops in India and Indian Agricultural Statistics: 1981-82 to 1985-86. Vol. 1.

The shift from extensive to intensive production, made first through the selective IADP and IAA programmes in the early 1960s and then through the New Strategy for Agricultural Development in 1965, changed the role of irrigation. Because the new technology could increase productivity only if modern inputs were used along with assured and controlled supply of water, intensive use of irrigation became more profitable than its extensive use. Demand for irrigation increased manifold especially for rabi cultivation, since in the initial years of experimentation with new technology, wheat and summer rice both grown in the rabi season, gave most promising results. Private investment in tube well irrigation increased tremendously as the returns were attractive. Inter-season allocation of irrigation was suitably adjusted in order to provide more irrigation facilities for rabi cultivation. Relative allocation of irrigation for kharif cereals declined substantially while that for rabi cereals increased dramatically. Simultaneously, expansion of area under rabi cereals slowed down in order to provide more irrigation to rabi crops. As a result of these changes, proportion of irrigated area under kharif cereals in 1971 remained at its 1965 level and that under rabi cereals increased from 32.02 per cent in 1965 to 45.00 per cent in 1971.

By 1971, the superiority of high-yielding varieties, when used along with irrigation and other recommended practices, was convincingly established and the new technology was increasingly adopted for cereal crops in kharif season. It received an added momentum from mid-1970s when special efforts were made to boost up rice production. In the process, demand for irrigation intensified further and irrigation became a limiting factor for further adoption of new technology. The rapid spread of new technology which occurred in the post-1971 period was made possible only by lowering the rate of expansion of cropped area.

During 1971-85, the annual rate of growth of cropped area under cereals declined from 1.29 per cent in 1965-71 to 0.16 per cent in 1971-85. For kharif cereals it actually turned negative; from 0.52 per cent in 1965-71 to -0.28 per cent in 1971-85 so that area under kharif cereals in 1985

was in fact a little below what it was in 1965. Area under rabi cereals increased but at a much lower annual rate; 3.44 per cent in 1965-71 while only 1.18 per cent in 1971-85. In order to provide greater irrigation to the cropped area, cropping intensity was kept at a lower level than the intensity of irrigation. The annual rate of growth in irrigated area under kharif cereals increased from 0.50 per cent in 1965-71 to 1.16 per cent in 1971-85 while that under rabi cereals declined from 10.65 per cent in 1965-71 to 3.52 per cent in 1971-85. Consequently, proportion of irrigated area under kharif cereals increased from 20.71 per cent in 1971 to 25.34 per cent in 1985 and that under rabi cereals from 45.00 per cent in 1971 to 62.00 per cent in 1985.

Evidently then, the area expansion effect of irrigation is expected to decline in the post-1971 period when new technology was increasingly adopted in rabi as well as kharif season. To verify this expectation, we have estimated the elasticities for the main land use variables³ with respect to two irrigation variables: net irrigated area, reflecting extension of irrigation to erstwhile unirrigated areas; and intensity of irrigation, reflecting frequency of land use with irrigation for raising crops during a year⁴ (For analysing the changes in the area under fallows, intensity of irrigation as a variable was omitted.) Besides, rainfall as an independent variable is included in all the equations. The elasticities are estimated separately for 1951-61 and 1971-85, except for current fallows where due to data limitations they are estimated for the latter period only (Table 9). It will be noticed that while the estimated elasticity of fallow lands with respect to irrigation was negative (-1.1568) in the first period, it became positive (0.4124) in the second period. The positive elasticities of net sown area with respect to net irrigated area and intensity of irrigation also declined in the second period (from 0.3802 to 0.0005 and from 0.7747 to 0.2474 respectively). The same is true for both area cropped more than once and gross area sown. Further, during 1971-85, irrigation and rainfall alone did not appear to be the sole factors responsible for variations in the net area sown and in fallow lands; other factors seemed to have influenced changes

in them. It may be noted that the tests for significance of the estimated elasticity coefficients in the second period, and the differences in their respective magnitudes between the two periods are affected by multicollinearity because of high correlation between net area irrigated and intensity of irrigation in the second period. However, even when the equations are estimated by including only one of the two variables at a time, the corresponding elasticities turn out to be significantly lower in the second period than in the first.

		Elas	sticity with respo	ect to	
	Period	Net Area Irrigated	Intensity of Irrigation	Rainfall	\overline{R}^2
(1)	(2)	(3)	(4)	(5)	(6)
1. Current Fallows in ha.	1971-85	0.4744*	-	-0.7611*	0.65
2. Total Fallows in ha	1951-65	-1.1568*	-	-0.1372*	0.93
	1971-85	0.4124*	-	-0.4924*	0.66
3. Net Area Sown in ha.	1951-65	0.3802*	0.7747*	0.0418*	0.96
	1971-85	0.0005	0.2474	0.0836*	0.68
	1951-65	0.5289*	-	0.0582*	0.93
	1971-85	0.0521*	-	0.0826*	0.69
	1951-65	-	2.1026*	0.0264	0.82
	1971-85	~	0.2496*	0.0836*	0.71
4. Area Cropped More than Once in ha.	1951-65	1.2080*	2.5603*	0.2656*	0.98
	1971-85	0.9773*	1.0890	0.2359*	0.97
	1951-65	1.6995*	-	0.3199*	0.95
	1971-85	1.2044*	-	0.2317*	0.97
	1951-65	-	6.7801*	0.2168*	0.85
	1971-85	-	5.3808*	0.2528*	0.91
5. Gross Area Sown in ha.	1951-65	0.4832*	0.9563*	0.0679*	0.98
	1971-85	0.1803*	0.3608	0.1112*	0.92
	1951-65	0.6668*	-	0.0882*	0.95
	1971-85	0.2555*	-	0.1098*	0.92
	1951-65	-	2.6441*	0.0484	0.83
	1971-85	-	1.1525*	0.1143*	0.89

TABLE 9. CHANGES IN THE IMPACT OF IRRIGATION ON PATTERN OF LAND USE (Based on all India time series data on land utilization)

Notes: Estimated by fitting equation of the form $\log Y = a + b \log X + ...$ Significance at 5 per cent or lower levels is denoted by '*'

Thus, it seems that the new technology reduced area, production, and yield index series for a large the area expansion effect of irrigation. Gross sown area in the post-1971 period might have expanded at a much faster rate had the irrigation been used as extensively as it was practiced in the pre-1965 period. It did not because new technology encouraged intensive irrigation for improving productivity. We shall now turn to examine as to what extent the gain in productivity was actually realized through irrigation.

EFFECT OF IRRIGATION ON GROWTH OF CROP OUTPUT

The Directorate of Economics and Statistics of the Ministry of Agriculture, besides publishing number of crops and crop aggregates, also computes and publishes four index series primarily related to land use, viz., net area sown, cropping intensity, cropping pattern, and productivity per ha of net area sown. The base for this series is the triennium ending 1969-70 (Table 10). Recently, the Directorate has published a new series with triennium ending 1981-82 as base for various crops and crop aggregates, but not including those related to land use mentioned above. Hence, we shall use the old series with triennium ending 1969-70 as the base.

					(IIIcilliu	ii average ent	mig m 1970 = 100)
Year	Production	Yield	Area	Net Area Sown	Cropping Intensity	Cropping Pattern	Productivity per hect. of Net Area Sown
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1951	58.5	77.1	78.2	86.8	93.7	98.4	70.1
1952	59.4	76.4	79.7	87.3	94.7	97.3	70.6
1953	62.9	80.1	82.5	88.9	94.3	95.1	71.9
1954	71.0	88.5	87.8	91.3	95.9	92.8	78.8
1955	72.2	87.2	87.9	92.1	96.1	94.1	78.9
1956	71.9	83.7	90.0	93.1	96.7	95.2	77.2
1957	76.2	86.4	90.8	94.2	97.2	97.0	81.6
1958	70.8	81.6	89.9	93.2	95.7	96.4	75.4
1959	82.2	91.5	93.5	95.1	97.6	96.0	85.8
1960	80.1	87.2	94.8	95.9	98.9	96.7	83.6
1961	86.7	94.2	94.5	96.1	98.3	97.2	90.2
1962	86.8	92.0	96.6	97.7	98.9	97.5	88.9
1963	85.3	89.6	97.4	98.3	99.1	97.5	86.8
1964	87.2	91.6	97.2	98.4	98.8	97.9	88.6
1965	96.9	99.7	98.4	99.5	98.0	98.7	97.4
1966	80.8	84.2	96.1	98.2	97.9	99.7	82.3
1967	80.7	85.3	96.0	99.0	97.0	98.5	81.5
1968	98.9	100.4	100.1	100.8	99.3	98.5	98.1
1969	97.3	98.2	98.5	99.2	99.3	100.6	98.1
1970	103.8	101.4	101.4	100.0	101.4	100.9	103.8
1971	111.5	107.9	102.5	101.1	101.4	100.8	110.3
1972	111.2	107.5	101.9	100.7	101.2	101.5	110.4
1973	102.2	100.9	98.7	98.8	99.9	102.6	103.4
1974	112.4	106.3	104.5	102.6	101.9	101.2	109.6
1975	108.6	104.4	100.5	99.3	101.2	103.5	109.4
1976	125.1	115.6	105.9	102.1	103.7	102.2	122.5
1977	116.3	109.0	103.2	100.5	102.9	103.4	115.7
1978	132.9	119.5	106.6	102.3	104.0	104.3	129.9
1979	138.0	122.2	108.2	103.1	104.8	104.4	133.9
1980	117.0	107.6	104.3	100.1	104.7	104.3	116.9
1981	135.3	122.7	105.9	100.9	105 7	104.1	1341
1982	142.9	125.6	108.1	102.4	106.9	105.2	139.5
1983	137.5	123.3	101.7	101.5	105.8	109.7	1355
1984	156.4	135.6	108.7	103.2	108.2	106.1	151.5
1985	154.6	136.8	105.2	101.6	107.4	107 4	157.2

TABLE 10. TRENDS IN THE COMPONENTS OF ALL CROPS PRODUCTION INDEX (Triennium average ending in 1970 = 100)

Source: Compiled from Area and Production of Principal Crops in India, 1988-1989.

As can be verified from the formulae used in the construction of index numbers, the all crops x (100)-1production index should satisfy the following:

(1) Index for all crops production

= Index of (net area sown x cropping intensity x cropping pattern x yield) x $(100)^{3}$

= Index of (area x cropping pattern x yield) x $(100)^{-2}$

(2) Index of productivity per hectare of net area sown

= Index of (cropping intensity x cropping pattern x yield) x (100)-2

(3)Index of area

= Index of (net area sown x cropping intensity) x (100)-1

However, the published index numbers do not satisfy the above identities for all the years. Hence, the additive relations for growth rates which follow from the above identities are not met by the independent estimates of growth rates derived from the index numbers (Table 11). For example, annual growth rates for area under all crops for 1951-65 and 1971-85 are 1.47 and 0.39 per cent respectively; but, the totals of the growth rates for net area sown and cropping intensity are 1.24 and 0.65 per cent respectively.

	Growt	h Rates	Elasticity with	\overline{R}^2		
(1)	1951-65 (2)	1971-85 (3)	1951-65 (4)	1971-85 (5)	1951-65 (6)	1971-85 (7)
1. Net Area Sown	0.90*	0.13*	0.0422*	0.0873*	0.98	0.69
2. Cropping Intensity	0.34*	0.52*	0.0326*	0.0498*	0.90	0.95
3. Area under All Crops	1.47*	0.39*	0.0879*	0.1657*	0.94	0.72
4. Cropping Pattern	0.19*	0.45*	-0.0156	-0.0378	0.12	0.79
5. All Crops Yield	1.34*	1.89*	0.0838	0.2981*	0.72	0.86
6. Productivity per hectare of Net Area Sown	1.93*	2.59*	0.1013*	0.3385*	0.88	0.92
7. Production of All Crops	3.06*	2.73*	0.1579*	0.4265*	0.94	0.92

TABLE 11. CHANGES IN THE COMPONENTS OF OUTPUT GROWTH (BASED ON INDEX NUMBERS, TRIENNIUM ENDING 1969-70 = 100)

Notes: Estimated by fitting equation of the form $\log Y = a + bT + \log R$. Significance at 5 percent or lower levels is denoted by '*'

Because of these arithmetical discrepancies in the published index numbers, land related index series also give estimated elasticities with respect to rainfall different from those presented earlier. Therefore, to avoid the anomalies, we will use for output analysis only the all crops index series for production and area, cropping pattern and yield. For the period 1951-65, total of the estimated growth rates for area, cropping pattern and yield turned out as 3.00 per cent; this is very close to the estimate of 3.06 per cent obtained independently from all crops production index. For the period 1971-85, there was no discrepancy; the total of the estimated growth rates of the three components was exactly equal to the growth rate estimated from all crops production index.

Thus, even with new technology and high rate of growth of irrigation, growth rate of crop output in the second period declined due to a sharp fall in the growth rate of area under all crops from 1.47 per cent in 1951-65 to 0.39 per cent in 1971-85. Both yield and cropping pattern growth rates improved but not sufficient to compensate the decline in the growth rate of area under all crops. Also, cropped area became more sensitive to rainfall during 1971-85. In fact, during this period, increased sensitivity to rainfall was found in all the components of all crops production index except in cropping pattern index which remained insensitive to rainfall. During the first period, growth rates of the components of all crops production index added up to 3.00 per cent; of this, 49 per cent was due to expansion in cropped area, 45 per cent to improvement in the yield level, and 6 per cent due to changes in cropping pattern. The sources of growth in crop production were different in the second period; growth rate of production was 2.73 per cent, nearly 70 per cent of which was due to improvement in yield, 16 per cent to changes in cropping pattern, and only about 14 per cent due to expansion in cropped area.

The decline in the area expansion effect of irrigation during the second period was also evident in the elasticity estimates obtained from the index of area under all crops (Table 12). As mentioned earlier, tests of significance of the elasticity coefficients for the second period are affected by multicollinearity because of high correlation between net irrigated area and intensity of irrigation but that, even when the equations are estimated by including only one of the two irrigation variables at a time, the corresponding elasticities turn out significantly lower in the second period than in the first. Thus, both expansion of net irrigated area and increased intensity of irrigation during the second period had lowered the effect of irrigation in expanding the area under all crops.

Year	Period	Net Area Irrigated	Percent of Net Sown Area Irrigated	Intensity of Irrigation	Rainfall	₹ 2
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Area Under All Crops	1951-65	0.5508*	-	1.3874*	0.0697*	0.96
	1971-03	0.2000	-	-0.1027	0.0992	0.92
	1071-85	0.01748*	_	-	0.1.572*	0.75
	1951-65	-	-	3.3112*	0.0473	0.84
	1971-85	-	-	0.7540*	0.1602*	0.70
2. Crooping Pattern	1951-65	-	0.4241*	-0.3873	0.0170	0.43
	1971-85	-	0.1066	0.4237*	-0.0371	0.75
	1951-65	-	0.3022*	-	-0.0001	0.36
	1971-85	-	0.1989*	-	-0.0311	0.75
	1951-65	-	-	0.2022	-0.0114	-0.11
	1971-85	-	-	0.8654*	-0.0442	0.75
3. All Crops Yield	1951-65	-	0.8691*	1.5106	0.1171	0.62
•	1971-85	-	0.6873*	0.6816	0.3164*	0.80
	1951-65		1.3447*	-	0.1837*	0.56
	1971-85		0.8358*		0.3261*	0.81
	1951-65	-	-	2.7187*	0.0588	0.52
	1971-85	-	-	3.5297*	0.2707*	0.76

TABLE 12. CHANGES IN THE IMPACT OF IRRIGATION ON THE COMPONENTS OF CROP OUTPUT (Based on Index Numbers, Triennium ending 1969-70 =100)

Notes: Estimated by fitting equation of the form $\log Y = a + b \log X + c \log Z + d \log R$. Significance at 5 percent or lower levels is denoted by '*'.

The effect of irrigation on cropping pattern and all crops yield are somewhat different. In both cases, elasticities in respect of per cent of net sown area irrigated are lower in the second period than the first; however, the corresponding elasticities in respect of intensity of irrigation is higher in the second period than in the first. These results are rather surprising and deserve further examination. In particular, it needs to be answered as to why intensive irrigation was practiced in the post new technology period if it did not improve the impact of irrigation on cropping pattern and overall yield. In the following, we offer some possible explanations.

The rapid spread of new technology in the post-1971 period was to a large extent prompted and promoted by the two major concerns of government (i) to accelerate the rate of growth in foodgrains production, and (ii) to reduce the growing inter-personal and inter-regional disparities which surfaced due to the selective approach initially followed in the introduction of new technology. Special efforts were made to address both the issues. A series of programmes were launched to encourage adoption of new technology in small farmers' dominated rice growing and other relatively backward areas where the existing irrigation facilities around that time were not adequate.

Efforts were made to speed up exploitation of the minor irrigation potentials in these areas from all available sources including those which could be utilized only during the kharif season. Targets were set for increasing coverage of kharif cereals area with irrigation and high yielding varieties of seeds. Credit support was extended for purchase of modern inputs and for investment in minor irrigation works like wells and tubewells, tanks, etc. To encourage adoption of new technology among small farmers, a subsidised mini-kit distribution scheme was introduced. A special rice production programme was launched for rabirice cultivation in the traditionally rice growing regions; the programme was subsequently shifted to the kharif season as the newly developed minor irrigation facilities in these regions turned out to be inadequate to provide irrigation to rabi rice. Wherever assured round the year irrigation possibilities developed through energization of wells, tubewells, and other sources of irrigation, efforts were made to extend cultivation to rabi season mostly for production of rice, wheat and some high-value non-food crops. Simultaneously, the parity between the kharif and rabi cereals prices which got distorted immediately after the introduction of new technology was restored. Prices of kharif cereals were raised in order to provide attractive returns for growing high yielding varieties in the kharif season. As mentioned earlier, due to these efforts not only irrigation of rabi cereals but also of kharif cereals and non-food crops increased.

However, yields of kharif cereals are lower than those of rabi cereals (Table 13). For example, yield of rabi rice is nearly double that of kharif rice. At the all-India level, beginning from 1966, rabi cereals have consistently higher yields than kharif cereals and the difference is widening. Rao, *et. al.*, estimated from time series data that, during 1968-85, yield of kharif foodgrains grew at the annual rate of 1.90 per cent while that of rabi foodgrains at 2.96 per cent [Rao, *et. al.*, 1988, p. 37]. Further, unlike those of wheat and to some extent rice, the yields of non-food kharif crops

did not improve much in the post-1971 period. Viewed against these facts, changes in the elasticity coefficients between 1951-65 and 1971-85 appear to be consistent. The elasticity with respect to per cent of net sown area irrigated for overall yield as well as for cropping pattern index was lower in the second period than in the first because the extension of irrigation to new areas during this period was primarily for providing irrigation to relatively low yielding and low value kharif crops. Similarly, the elasticity for both the components with respect to intensity of irrigation was high in the second period because energization of assured irrigation sources improved the scope for year round irrigation and led to increasing cultivation of relatively high yielding and high value rabi crops. Available information thus supports the statistical finding that while the area expansion effect of irrigation declined in the post-new technology period, its effect on overall yield and cropping pattern did not improve very much.5

	Ri	ce					
Year	Kharif (Autumn &	Rabi	Coarse	Cercals	Wheat	All C	arcals
1 cau	Winter)	(Summer)	Kharif	Rabi	Rabi	Kharif	Rabi
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1965	1,207	1,374	488	626	913	818	81
1966	845	1,801	473	521	827	658	728
1967	843	1,378	484	651	887	669	819
1968	1,011	1,508	590	674	1,103	7 9 4	963
1969	1,052	1,586	530	595	1,169	788	985
1970	1.049	1.533	569	609	1,209	804	1,021
1971	1,100	1,625	690	563	1,307	892	1,093
1972	1.108	1,841	575	528	1,380	848	1,141
1973	1.036	1.811	556	516	1,271	798	1,098
1974	1.121	1.750	621	634	1,172	867	1,047
1975	999	1,892	577	710	1,338	794	1,177
1976	1,195	1.964	704	657	1,410	957	1,236
1977	1.058	1.888	684	695	1,387	881	1,229
1978	1.274	1.995	714	692	1,480	1,010	1,311
1979	1 284	2,151	723	710	1,568	1,020	1,396
1980	1.024	2.116	648	666	1,436	848	1,276
1981	1 303	2.071	693	702	1,630	1,015	1,434
1982	1.266	2.204	746	673	1,691	1,021	1,469
1983	1 185	2.135	698	641	1,816	956	1,552
1984	1 413	2,203	846	667	1,843	1,149	1,607
1985	1 374	2 289	825	673	1,870	1,129	1,617
G.R.	159	2.37	2.10	0.95	2.89	1.95	3.07
101	059	0.07	070	0.27	0.89	0.71	0.95

TABLE 13. YIELDS OF KHARIF AND RABI CEREALS

Source: Compiled from Area and Production of Principal Crops in India, 1988-1989.

(kgs/ha)

(kgs/ha)

To a large extent, the seemingly surprising conclusion is a consequence of the development policies pursued in the post-1971 period. A major part of the expansion in irrigation during this period was realized through development and energization of ground water and that too mostly through private investment. However, unlike surface irrigation, ground water can provide irrigation to a limited area unless there is developed a battery of tubewells energized with large pumpsets which is beyond the limits of private initiative. A number of factors make intensive irrigation more rewarding than extensive irrigation. Given the capital-intensive nature of new technology, extension of irrigation to less fertile land generally result in high capital-output ratios. Availability of moisture and irrigation thus encourages the farmers to concentrate their efforts on 'irrigated and more fertile lands to the neglect of other less fertile lands. Small farmers, due to their limited resources, may concentrate on their irrigated portions while big farmers also may concentrate more on irrigated lands due to their profit motiveness' [Reddy, 1991, p. 559; see also Nadkarni and Deshpande, 1979, p. 7].

Rao, et al, have listed two other factors motivating farmers to heavy use of water: 'Apart from the faulty delivery systems for water, two factors mainly accounted for this development. The rising pressures from farmers for water-intensive crops particularly at the head reaches and the pricing for water which is not based on the volume or quantity of water used but according to the surface area served by irrigation (emphasis added). As a result, even in Western Region, where water is extremely scarce, the farmers are motivated to maximize output per unit of land by applying water intensively per acre rather than maximizing output per unit of water by spreading it out thinly over relatively larger areas or by growing crops which are not highly water intensive. The position is made worse by the flat rate charged for power with reference to horsepower of the engine rather than in relation to the amount of power used for pumping water. Under such a system the marginal cost of pumping water for an individual becomes virtually zero which has encouraged water-intensive crops and overdraw of ground water even in areas of low rainfall where rate of recharge is low' [Rao, et. al., 1988, p. 76].

					, 0
		Trien	inium average er	iding in	
	1965	1971	1975	1981	1985
Andhra Pradesh	760.3	777.2	882.5	1,108.9	1,251.8
Assam	922.4	950.5	985.3	960.2	1,048.9
Bihar	764.2	819.9	859.7	909.6	1,014.0
Gujarat	560.6	666.4	626.3	964.0	1,066.4
Haryana	770.3	1,109.3	973.1	1,452.7	1,708.8
Himachal Pradesh	938.8	1.183.0	1.196.6	1.205.7	1,171.5
Jammu & Kashmir	807.5	1,342.3	1,244.7	1.446.4	1,399.1
Karnataka	599.1	753.6	868.2	957.0	897.0
Kerala	1,295.3	1.422.7	1.468.1	1.557.2	1.637.8
Madhya Pradesh	601.4	599.4	615.1	595.5	763.2
Maharashtra	519.2	493.8	462.3	714.0	706.1
Órissa	869.4	916.5	778.2	777.0	863.5
Punjab	1,238.4	1.781.7	1.936.7	2.425.0	2.891.7
Rajasthan	422.2	488.2	445.9	533.9	697.2
Tamil Nadu	1.108.7	1.226.1	1.302.2	1.424.7	1.344.6
Uttar Pradesh	739.5	913.7	874.6	1 072.4	1 400.4
West Bengal	1.030.9	1.215.0	1.125.9	1 2 90 3	1 353.0
All India	708.0	819.3	8213	073 7	1 1150
Coeff. of Var. around All India yield level (%)	37.5	46.2	48.7	48.1	47.0

TABLE 14. CHANGES IN FOODGRAINS YIELD IN MAJOR STA	TES
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Note: For Punjab and Haryana, data for triennium ending 1965 refer to 1965 only.

Source: Computed from data compiled and published in Agricultural Production in Major States : 1949-50 to 1987-88, Crop -wise Data, published by Centre for Monitoring Indian Economy, April 1989. Many other factors might have also encouraged intensive use of water during the post-1971 period. The outcome is rather disturbing. The intensive use of water has resulted in less efficient use of a scarce resource of the country. Moreover, regional disparity has not declined. A higher rate of expansion in irrigation during the post-1971 period has not been able to bring down the disparity in state-wise foodgrains yield levels even to the position obtained in 1971 (Table 14).

IMPACT ON EMPLOYMENT GENERATION

From the standpoint of generation of employment, the main finding is that while the pre-1965 output growth was largely due to expansion in cropped area, the post-1971 output growth was mainly through improvement in productivity. Available studies indicate that on-farm employment increases if the output growth is obtained more through expansion of area than through gains in productivity. Analysing the available data from the 1950s to 1970s, Tyagi observed: 'Between the two periods, the total labour absorption may undergo a change on account of: (a) a change in the total area under all crops; (b) a change in the regional distribution of the area of a crop/crops; (c) a change in the distribution of the total area among different crops; (d) a change in the yield level/levels; (e) interaction of the above changes. The change in the total labour employed on account of (a) could be termed the area effect, and those on account of (b), (c), and (d), the locational, crop pattern, and productivity effects' [Tyagi, 1981, p. 109]. Using the labour input data from the Comprehensive Scheme for Studying the Cost of Cultivation/Production of Crops in important states for the period 1970-71 to 1978-79, and an aggregate of eight major crops (paddy, wheat, jowar, bajra, groundnut, cotton, sugarcane, and jute) which together have a weightage of 70.79 out of 100 in the all India agricultural production index, Tyagi estimated that while the employment elasticity with respect to expansion and locational shifts in area was of the order of 1.048, the same with respect to cropping pattern and yield were 0.4714 and 0.6624, respectively [Tyagi, 1981]. On this basis, the changes that occurred in the sources of growth

would have alone reduced the employment elasticity with respect to output from around 0.85 in the pre-1965 period to less than 0.70 in the post-1971 period. Actual situation appears to be much worse. Estimate of pre-1965 employment elasticity with respect to output was generally found to be around 1.00 [Rao, 1971; 1975; 1977], while for post-1971 period, it varied from 0.75 to as low as 0.20 Using data for the period 1972 to 1984, Bhalla found that 'the average elasticity of employment with respect to production of 'all crops' for the period 1971-72 to 1983-84 is considerably below the corresponding figure estimated by Tyagi [1981] for the ten-year period ended 1978-79: an employment elasticity of 0.5945 for the latter period compared to 0.769 for the earlier one' [Bhalla, 1987. Pp. 537-38]. In a more recent study prepared for the National Commission on Rural Labour, Bhalla, et al have provided a grim picture of on-farm employment during the post-1971 period. For the same time period 1971-72 to 1983-84, it has revised downward Bhalla's earlier estimate of employment elasticity with respect to output to 0.2. Increase in on-farm employment between the triennium ending in 1974 and 1984 was found to be only 5.97 per cent. Of this, nearly 98 per cent was accounted for expansion in gross cropped area and only about 2.5 per cent for shifts in cropping pattern. Changes in labour intensity (mandays per hectare) was estimated to make a negative contribution of -0.41 per cent, suggesting that improvement in yield had no or negative effect on employment. Identifying the factors responsible for low on-farm labour employment in post-1971 period, Bhalla, et al, observed that 'cropping pattern shifts have led to a negligible improvement in labour absorption at the all India level because, while in some regions, cropping pattern changes have improved matters, in others they have made the employment situation worse' [Bhalla, et. al. 1991, p. P-22]. Regarding the decline in labour intensity, Bhalla, et al. reported the following: 'The rise in real wages turned out to be the single most important. cause of falling employment per hectare. A rise in the product wage, by itself, induced a fall in

employment in more than 90 per cent of the cases studied. Increases in the use of machinery, equipment and modern inputs like fertilisers and pesticides tend to improve the employment situation. In many such cases however, the negative real wage effect swamps the positive capital effect, with the result that labour absorption goes down. A rise in NVA (net value added) by itself tends to favour greater labour absorption, but it has of course, not taken place in isolation' [Bhalla, et. al. 1991, p. P-32].

The study by Bhalla, et al., provides in fairly exhaustive details estimates of various parameters relevant for analysing state-wise and cropwise on-farm employment during the period 1972 to 1984. It raises a number of questions and its following conclusions deserve careful consideration: '..... a two pronged employment policy is needed to sustain even existing levels of employment, one set of instruments focussed on agriculture and another on non-agriculture. But in some states even this will not prevent employment per capita in agriculture from falling. Second: the agricultural policy interventions themselves have to become more sophisticated. Simply accelerating farm output growth rates may worsen the on-farm employment situation unless deliberate steps are taken to avoid this result.....' [p. P-22]. Bhalla, et. al. point out that a 'policy focussed on yield improvement alone has a weak and uncertain pay off in terms of employment generation, while one focussed more widely on the expansion of production is likely to produce clear employment gains' [p. P-25]. Accordingly, they emphasise the need for giving more attention to the expansion of gross cropped area (GCA) and suggest that 'increases in GCA can be sustained only by accelerated investment in irrigation in particular, but perhaps also in flood control and drainage in parts of Bihar and specified areas of other states' [p. P-25].

But, can an accelerated investment in irrigation and drainage alone help to improve the rate of expansion in gross cropped area? The evidence presented so far suggests that it may not, unless steps are taken to reverse the present trends in the utilisation of irrigation water. For instance, rising trend in fallowing due to increasing use of irrigation for intensive cultivation might as well reduce the net land base for crop cultivation in the coming years.

CONCLUSIONS AND POLICY IMPLICATIONS

India needs more food, and the adoption of new technology has undoubtedly helped her to ease considerably the overall situation on the food front. However, the rapid spread of new technology, initially for cultivation in the rabi season and subsequently also in the kharif season, has brought in its fold new set of problems which have far reaching implications on the country's rural economy. The new technology has encouraged more intensive use of the limited water resources on areas which have been already cropped, and has thus reduced the scope for further expansion in gross cropped area. As a result, on-farm employment has slowed down, and with sluggish growth of employment in the non-farm sector, unemployment problem in rural India has become more severe. As a consequence, the overall cost of producing food through high yielding varieties requiring intensive irrigation and application of chemical fertilisers and pesticides has priced food out of reach of those hungering for it.

The extent of fallowing shows an increase since the introduction of new technology. To some extent, this might be good for Indian agriculture. Before the introduction of new technology, cultivable land was over-extended by pressing into cultivation poor quality lands. The new technology has made it possible to shed off these lands which earlier should not have been brought under the plough. Net sown area in recent years has averaged at around 140 million hectares and has become more sensitive to variations in rainfall. More areas are thus likely to go out of cultivation in the coming years. In 1988, more than 29.5 million hectares of land went out of cultivation due to fallowing, the highest since 1951. However, the rising trend in fallowing has not yet caused any concern. It has not led to a significant step up in the rate of expansion in gross cropped area through multiple cropping. Programmes and policies have remained primarily concerned with realizing higher yields per unit of cropped area.

Not enough attention is given to how to maximise production per unit of water through more efficient techniques of irrigation. The irrigation facilities that have been developed so far can irrigate many more thousand hectares of land if the modern techniques of irrigation are used. Transportation of water by canals and field channels which causes the maximum loss of water through percolation and evaporation can be minimised by laying pipes below the surface; it can also help to save farm land. The use of continuous plastic pipes and plastic protectors can considerably help to minimise water loss in many arid areas of the country, where farmers struggle with less than 750 mm of rainfall to grow food for subsistence. The ideal purpose of irrigation should be to supply water to the root zone at the same rate that it is being used up, that is, to maintain a low soil moisture tension. Sprinkler system of application of irrigation water can maintain a low soil moisture tension by frequently supplying small amount of water. Drip or trickle systems of irrigation, suitable for irrigating most crops except the closely planted crops like foodgrains, can cut down significantly loss of water through percolation and evaporation; it can also be used to feed soluble nutrients. Among the advantages of drip irrigation is its precision: the amount of water reaching the crop is regulated and supplied slowly and constantly, offering ideal conditions for even growth and early maturity. The spaces between rows remain dry. Only the soil around the plant roots are moist, so evaporation and seepage losses are minimised. It is true that some of the modern techniques of irrigation that are used in the developed countries are too expensive and may not be suitable for India. But, if sufficient attention is directed towards the problem of water management, it should be possible to draw lessons from the basic principles used in these techniques, and design innovative schemes that are economical and better suited for the country.

Several aspects must be recognised and be given due consideration for efficient management of the country's vital water resources. Firstly, in India, unlike the countries in the temperate zone, rainfall, which is the ultimate source of all irrigation, is concentrated during a short period of three months. Its distribution is erratic and uneven and it often comes as a deluge causing serious soil erosion and water-logging problems in many parts of the country. Hence, round the year cultivation is possible only through land and water management schemes that are designed to conserve and utilize efficiently every drop of water falling on the soil surface. Better techniques to harvest rain water, therefore, deserve more serious attention. The soil surface should be treated in such a way that rain falling on areas outside the root zone is channelled to the area of plant growth. Traditional way of doing this by compacting and levelling the surface is not efficient, as significant amount of water loss occurs through percolation and evaporation. The use of plastics to cover the soil, construction of water traps and dams, collection conduits and under ground water reservoirs are some of the techniques by which rain water can be better utilized for crop production.

Secondly, as reported elsewhere, drainage which is as important to irrigated farming as water application, has not received due attention in the designing of irrigation schemes [Ray, 1990]. A conventional drainage scheme takes away considerable farm lands from the present small holdings of the farmers. Innovative schemes that can help to drain the fields, and at the same time do not make demand on farm lands, are likely to receive ready acceptance from the farmers. Underground drainage system built with plastic pipes, and vertical drainage method are some of the possibilities that deserve consideration.

The assured high rainfall region of eastern India is rich in ground water reserve and is also frequently visited by floods. Drainage during the rainy season is especially important in this paddy growing region. If the paddy fields could be dried out as the rice crop reached maturity, yields are increased and it is then possible to grow some other crop following rice. It may be possible to reduce considerably the drainage problems of this region if its rich ground water reserve is utilized to raise crops in the dry months; the resulting vacuum may help to speed up recharge of the under ground aquifers and lessen the drainage problems during the rainy months.

Thirdly, urgent steps must be taken to stop

over-exploitation of ground water resources. Falling water tables have become a serious problem in many areas, and have considerably increased the demand for pumping energy for obtaining the same irrigation service. In many coastal regions, over-exploitation of ground water reserve has caused saline intrusion. To a considerable extent, over-utilization of ground water resources is a consequence of the policies pursued by the government. Construction of wells and installation of pumpsets by individual farmers are encouraged and supported by the government with subsidies. Moreover, electricity for pumping ground water is provided at a flat annual rate based on pump horsepower. In some areas, it is even provided at free of charge. As a result, after construction and energisation of wells with subsidies provided by the government, farmers enjoy open access to extract as much water as they desire. For, there is neither any penalty for over-extraction nor any reward for conservation through investment in energy-efficient irrigation technologies. Ground water must be utilized efficiently. Its annual extraction must not exceed annual recharge in any area. And, to help expansion in gross cropped area, its use should be minimal during the rainy season.

Lastly, although cultivation during the kharif season is carried out under rainfed conditions, the adoption of new technology for kharif cereals production, especially for rice, has considerably increased the demand for irrigation water. Requirement for supplemental irrigation in the kharif season has become essential for protecting the sensitive high yielding varieties from water stress conditions, which invariably develop during the growing periods due to uncertain and uneven distribution of rainfall. Intensive use of irrigation and increasing application of costly modern inputs like fertilisers and pesticides have helped to improve kharif yields, but due to complementarity of rainfall with modern inputs. even with irrigation, production in the kharif season has remained more unstable than in the rabi season [Rao et al, 1988]

Basic limitations need to be recognised. Cultivation of high yielding varieties of seeds with irrigation and modern inputs can provide better results only if the production environment is better controlled. This is difficult to obtain during the kharif season. As reported elsewhere, the rainy season, when cloud-cover reduces the intensity of direct sunlight, high humidity increases the threat of disease and pests, floods make water control difficult, and fertiliser response is low, poses tough production problems [Ray et al, 1978]. The new short varieties require more careful management attention than do the older varieties, particularly with regard to water depth. They attract pests due to the lush growth and thick stands obtained at high rates of fertilisation. The new varieties lack seed dormancy, hence the grain sprouts and gets spoilt if it is not dried immediately after the harvest.

These limitations underline the need for caution against widespread adoption of new technology for kharif cultivation. The erratic and heavy rainfall from south-west monsoon increases the risks for crop failures and contamination of waterways by the same fertilisers and pesticides used for raising crop yields. Moreover, it should be borne in mind that, unlike the favourable price structure which prevailed when the new technology was introduced in the mid-1960s, modern inputs like fertilisers and pesticides have now become immensely costly. Since the responses to these inputs are generally low in the kharif season, increased production from their applications can be obtained only at higher costs.

Perhaps a better strategy would be to grow improved local varieties with indigenous inputs during the kharif season and, conserve as much water as possible to permit more area for cultivation in the rabi season, when greater intensity of sunlight and lower humidity raise fertiliser response, and create less favourable conditions for the spread of disease and insects. It is feasible to raise overall production at a relatively lower cost and provide food to the poor at a reasonable price, if the costly modern inputs are used more in the rabi season than in the kharif season. It may also provide some relief to the acute problem of rural unemployment

NOTES

1. Analyses based on all-India aggregated data reported in this paper are essentially an exploratory attempt to probe some issues related to intensification and disintensification of agriculture. The logical next step in this investigation, presently in progress, extends the analyses to holding size classwise agricultural censuses data for some selected states of India where the data base are fairly reliable. These will be reported in another article in this journal next year.

2. Some of the variables under investigation increased steeply from very low levels during the sub-period 1966 to 1970. Estimates of growth rates and elasticity coefficients would thus be biased if the excluded years were also included in the analyses.

3. The area expansion effect of irrigation is usually estimated by analysing the conventional measure of cropping intensity, i.e., the ratio of gross sown area (GSA) to net sown area (NSA), with one or a combination of the following irrigation ratios: (i) intensity of irrigation, i.e. the ratio of gross irrigated area (GIA) to net irrigated area (NIA), (ii) (NIA/NSA), (iii) (GIA/NSA) and (iv) (GIA/GSA). This procedure is crude and may provide misleading conclusions unless the main land use variables are also analysed separately. Further, it may be noted that

(GSA/NSA) = (GIA/NSA) + (GIA/GSA)and $(GIA/NSA) = (GIA/NIA) \times (NIA/NSA)$

4. The term intensity of irrigation, commonly used by the economists, is different from the term 'irrigation intensity' used in agronomic experiments. The latter implies number of irrigations (each of same quantity of water) applied in raising a particular crop from a given area, while the former simply indicates the number of irrigated crops grown in an area during a year. Thus, if a famer in his 1 ha land grows a crop without irrigation during the kharif season, and another crop with irrigation during the rabi season, the intensity of irrigation will be 1.00; if he grows both the crops with irrigation, the intensity of irrigation will be 2.00.

3. Basic limitation of the present as well as all other available studies measuring the effect of irrigation on productivity should be noted: the irrigation variables commonly used in the analyses are all based on surface area served by irrigation, and not according to the volume or quantity of water used. The volume or quantity of water used in crop production differs significantly from crop to crop and from season to season.

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																			(Arca in	000° ha)
	Current Fallows	Total Fallows	Arca	Arca		Net Area	i Irrigated	by Surfac	ce Water		Net Ar Gro	ca Irrigat Jund Wat	ed by	Net Area Irrigated	Gross	Per cent of Net	Per cent of Gross	Intensity of Ini-	Cropping Intensity	Rainfall
		Current	limoc	limoo		Canals		Tanks	Other	Total	Wells	Tube	Total	(11+14)	ungated	Area	Area	gamon (a)	6	(00) =
Year		SWOTIB			Govt.	Private	Total (6+7)		Sources	(01+6+8)	I	weits	(61+21)			mgated	Imgated			(C
Ξ	(2)	(3)	(4)	(2)	(9)	6	(8)	(6)	(10)	(11)	(12)	(13)	(14)	(15)	(91)	(11)	(18)	(61)	(20)	(12)
1951		28,124	118,746	131,893	7,158	1,137	8,295	3,613	2,967	14,875	5,978		5,978	20,853	22,563	17.56	17.11	108.20	111.07	88.6
1953		28,962 26,379	119,400	133,234	7,490	1,193	8,683 8,683	3,489	2,360	14,532 14 601	6,517 6,521		6,517 6,501	21,049	23,180	17.11	17.40	110.12	111.59	81.7 80 1
1954		24,775	126,806	142,480	2,545	1,314	8,859	128	2,097	15,184	6,685		6,685	21,869	24,363	17.25	17.10	9	112.36	100.8
1956		24,127	12/,843	144,087	1,832 8,025	1,360	9,067	4,025 4,423	2210	15,362	6,726 6,739		6,726 6.739	22,088 22,758	24,948 25,642	17.28 17.62	17.31	112.95	112.70	97.3 126.8
1957		23,326	130,848	149,492	7,916	1,357	9,273	4,492	2,202	15,967	6,566		6,566	22,533	25,707	17.22	17.20	114.09	114.25	148.6
1950		025.62	129,080	151 679	8,303 101 8	1 220	200'6	4,330	2,130	16,238	0,618 6,686		0,818 6,686	001,62	20,628 26,048	X	18.20	114.99	112.98	10.4
98		23,001	132,939	152,824	8,809	1,305	10,114	4,631	5,209	16,954	7,083		7,083	24,037	27,454	18.08	17.96	114.22	114.96	112.3
1 <u>8</u> 1	11,639	22,819	133,199	152,772	9,170	1,200	10,370	4,561	2,440	17,371	7,155	135	7,290	24,661	27,980	18.51	18.31	113.46	114.69	108.0
263	11.058	21,033	136,341	1562.00	9,539	1,103	10,832	4,012	2,403	18,016	6,148	8 8 8	1000 L	25,665	28,460	18.38	18.22	114.37	115.37	96.8
28	11,229	21,288	136,488	156,963	9,862	1,160	11,022	4,599	2,483	18,104	6,756	1,028	7,784	25,888	29,707	18.97	18.93	114.75	115.00	5
1965	11,156	20,322	138,120	159,229	10,080	1,143	11,223	4,780	2,522	18,525	6,988 7.260	1,087	8,075	26,600	30,705	19.26	19.28	115.43	115.28	27.2 8
1961	13,529	22,575	137,232	157,355	10,221	1,026	11,247	4,424	2,041	17,712	7,489	1,706	9,195	26,907	32,683	19.61	20.77	121.47	114.66	82.8
1968	11,924	20,724	139,876	163,736	10,295	32	11,243	4,493 3,076	2,346	18,082 18,708	6,000	2,112	9,111	27,193	33,207	19.44	20.28	122.12	117.06	104.7
1970	12,156	21,639	138,772	162,265	11,724	88	12,605	4,059	2,356	19,020	7,438	3,739	11,177	30,197	36,974	21.76	22.79	122.44	116.93	104.7
1701	11,116	19,875	140,267	162,791	11,972	998	12,838	4,112	2,266	19,216	7,426	4,461	11,887	31,103	38,195	1122	23.04	122.80	118.20	102.7
1973	15.176	24.369	137,144	167,150	12,134	60 98	12,996	3,619	2.255	18,870	151	5.393	12,964	31,834	39.055	23.21	57 00 54 00	121.68	118.23	221
4161	11,292	19,947	142,416	169,872	12,196	\$ <u>6</u>	13,065	3,900	2,298	19,263	2,679	5,604	13,283	32,546	40,238	22.85	23.69	123.63	119.28	103.3
1976	10.30/	017.67	19/./91	121,296	12,031	/58	13,701		2,422	19,480 20 149	98,/ 199,/	6,283 6,843	14 444	20, cc	41,/41	74.40	24.02	175 25	120.02	108.0
1977	14,570	23,955	139,476	167,334	13,016	5 5	13,861	3,901	2,300	20,062	7,655	7,432	15,087	35,149	43,552	25.20	26.03	123.91	119.97	328
1978	13,028	22,595	141,950	172,232	13,734	842	14,576	3,904	2,482	20,962	7.943	7,641	15,584	36,546	46,080	25.75	26.75	126.09	121.33	111.8
1980	15.662	25,688	138.932	69.584	13.908	3	14.750	3.479	2,430	20.659	8.557	6.00	17.860	38,519	49.209	27.73	29.02	127.75	12.06	84.0
1981	14,815	24,611	140,298	173,099	14,445	843	15,288	3,196	2,582	21,066	8,249	9,526	217,715	38,841	49,876	27.68	28.81	128.41	123.38	102.5
1982	13,487	23,050	142,001	17,054	14,681 14 876	퓙뒿	15,525	3,506	2.566	21,597	8,267 8,478 1	0,000	18,167	39,764 30 060	51,606 57,070	28.00 28.30	29.15	129.78	124.69	101.5
1981	13,695	22,876	142,746	80,165	15,745	¢ 8	16,240	3,783	2,411	22,434	8,548	0,973	19,521	41,955	53,937	29.39	29.95	128.56	126.21	116.1
1985	15,363	24,915	140,715	(75,955	15,366	4 <u>95</u>	15,861	3,330	2,600	21,791	8,723	1,265	19,988	41,779	54,064	29.69	30.73	129.40	125.04	85.0
Notes:	(a) Compute	od as the rati	io of gross	to net irr	igated are	a multipli	ed by 100													
	(c) Deinfall	co as une rat indee for se	uo or gros ich ver ie	s to net su	d hy meas	numpured	uy Luu. melatiwa di	enertitre c	of weights	er lettre be	infall duri	ine the hi	olosical o	rowth nerio	d of each c	nn in the di	fferent state	es of India f	nom its corr	econdino
weighter	1 historic no	rmal levels.		and mon		20 Sum						-								0

ANNEXURE: TREND IN THE PATTERN OF LAND USE AND SOURCE WISE AREA IRRIGATED

JOURNAL OF INDIAN SCHOOL OF POLITICAL ECONOMY

Sources: Compiled from various issues of Indian Agricultural Statistics. Vol. 1; rainfall data from Reports issued by the Director General of Observatorics, Poona.

INSTITUTIONAL CREDIT TO AGRICULTURE: ISSUES RELATED TO INTEREST AND DEFAULT SUBSIDY

Rajni Katula and Ashok Gulati

Subsidized credit to agriculture through concessional interest rates and high defaults, culminating into loan waivers, is posing a threat to the financial viability of credit institutions. This paper is an attempt to gauge the magnitude of the problem through alternative estimates of credit subsidy under different assumptions. Credit subsidy at all India level ranges from Rs 1,870 crore to Rs 1,041 crore for the year 1988-89 under different hypotheses. If perceived as a combination of interest and default subsidy, it forms 7.36 per cent of direct loans outstanding to agriculture. Of this, 4.5 per cent is on account of giving loans to agriculture at concessional rates of interest and 2.86 per cent on account of loans which are never likely to be repaid. The results of 1980s indicate that the amount of loans that are never likely to be recovered have multiplied by over four times, i.e., from Rs 1,724 crore in 1979-80 to Rs 7,261 crore in 1988-89, adversely affecting the recycling process of rural finance. Unless this regressive process is arrested, the system cannot sustain for long.

THE PROBLEM

In 1951, 80.2 per cent of all rural debt was proportion owed to inst owed to the money-lender in his various guises banks, and government of professional lender, farmer, trader, and cent to 61.2 per cent, th landlord. In 1981, this was reduced to a mere to friends and relatives.

24.3 per cent (Table 1). During this period, the proportion owed to institutions - cooperatives, banks, and government - rose from 7.2 per cent to 61.2 per cent, the residual being owed to friends and relatives,

TABLE 1. THE SHARE OF DEBT OF RURAL HOUSEHOLDS HELD BY DIFFERENT CREDITORS: THE OFFICIAL EVIDENCE

				(per cent)
Creditor	1951	1961	1971	1981
Total debt (Rs Crore at 1971-72 prices) Government cooperatives and banks Relatives & friends Money Lender Others	N.A. 7.2 11.5 80.2 1.1	36,100 17.3 5.8 69.4 7.5	37,541 29.2 13.8 54.2 2.8	23,361 61.2 9.0 24.3 5.5

Notes: N.A.: Not available.

Sources: 1. Bell (1990). 2. Based on RBI (1954, vol. 1, part 2, p. 3; 1977, p. 40; 1988, p. 38).

But, the sudden expansion of institutional agencies has given rise to a number of problems like uncoordinated credit disbursal, overlapping and duplication of banking facilities, governmental intervention not allowing bankers to choose the borrowers and consequent lagging recovery, and several problems arising out of different systems, security norms, service charges, interest rate, etc., followed by different agencies. The most serious amongst these is the problem of increasing overdues and default. Irrespective of the type of institution, overdues are considered a hardened constant, eroding the financial viability of these institutions. In this paper, we propose to trace the evolution of rural credit, its organisational set up, and major

problems faced by financial institutions (such as that of overdues and defaults) in extending credit to the agricultural sector. We also attempt an estimate of credit subsidy to agriculture under alternative hypotheses and finally offer some concluding remarks.

INSTITUTIONAL RURAL CREDIT: AN OVER VIEW

Evolution And Changes

The Report of the Rural Credit Survey Committee (1951-54) of the Reserve Bank of India (RBI) strongly recommended new initiatives and financial support for the cooperatives from gov-

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The views set forth in this paper are those of the authors and not of the institutions they represent.

ernment and RBI [RBI, 1954]. This marked the beginning of a new phase in agricultural credit and the share of cooperatives in rural credit increased from 3 per cent in 1951 to 11 per cent in 1969 [Gadgil, 1986]. The other recommendations of the Report included the establishment of large size Primary Agricultural Credit Societies (PACs), financial and technical strengthening of the cooperative credit structure and nationalisation of the Imperial Bank of India into State Bank of India to extend banking facilities in the countryside. This resulted in an increased share of institutional credit from 7.3 per cent in 1951 to

18.4 per cent in 1961. In 1963, Agricultural Refinance Corporation (ARC) was established with a view to supplementing long term resources of credit institutions. In July 1966, the RBI set up an All India Rural Credit Review Committee to undertake a comprehensive review of the agricultural credit system so that bottlenecks which emerged in the course of the implementation of the recommendation of the Rural Credit Survey Committee might be identified and remedied. Since then, a great change has taken place in the agricultural credit system.

(Rs crore)

Year	Net Bank Credit	Advances to Agriculture	Percentage of total agricultural advances to net bank credit	Percentage of direct agricul- tural advances to net bank credit
 				·
		Pre-Nationalis	sation	
1951	48.00	1.20	2.50	
1956	76.19	1.60	2.10	
1961	132.26	4.10	3.10	
1964	189.29	5.30	2.80	
1965	207.14	5.80	2.80	
1966	237.50	5.70	2.40	
1967	271.43	5.70	2.10	
		Post Nationali	sation	
	(Da	ta relate to 28 publi	c sector banks)	
1969	363.38	25.80	7.10	3 20
1970	449.44	40.00	8 90	5 30
1971	505.13	39.40	7.80	5.20
1972	558.05	48.55	8.70	N A
1973	709.54	61.73	8.70	N A
1974	805.16	78.10	9.70	6.70
1975	994.18	102.40	10.30	7.30
1976	1,321.68	133.49	10.10	7.60
1977	1,487.39	165.10	11.10	8.50
1978	1,847.93	223.60	12.10	9.00
1979	2,125.93	287.00	13.50	10.30
1 98 0	2,397.99	357.30	14.90	11.60
1981	2,910.63	465.70	16.00	12.30
1982	3,433.12	528.70	15.40	11.90
1983	4,127.55	623.26	15.10	11.90
1984	4,618.85	762.11	16.50	13.30
1985*	4,516.02	817.40	18.10	15.10
(Sept.)	-			13:10

Sources: Chanana (1967); Ojha (1986)
The introduction of High Yielding Varieties (HYV) in 1966 required greater use of improved seeds and fertilizers and increased application of ground water through minor irrigation. Both led to substantial increase in demand for credit. The cooperatives which until then were the sole purveyors of agricultural credit could not cope with the new challenge. A multi-agency approach was recommended as an immediate solution to the problem. The commercial banks thus entered the sphere of agricultural credit particularly after nationalization of 14 major commercial banks in 1969 and 6 more banks later. The share of agriculture in total credit disbursed by scheduled commercial banks, which was between 2.1 to

3.1 per cent between 1951 to 1967 increased to about 15.1 per cent in 1985 (Table 2). About one half of the total agricultural credit supplied by different institutional agencies, now comes from commercial banks. With the establishment of the Regional Rural Banks (RRBs) in 1975, another wing was added to the agricultural credit structure. RRBs were to be: (a) low cost institutions like cooperatives; and (b) professionalised in their management like commercial banks. Their target group was the weaker sections and their area of . operation was generally limited to specified districts. Their share in total agricultural credit in 1989 was 11.4 per cent (Table 3).

						(Rs crore)
Particulars	1979-80	1980-81	1985-86	1986-87	1987-88	1988-89
Deposits						
CBs		37,988	85,404	102.724	118.045	140.150
RRBs		336	1.714	2.306	2,966	3,159
PACs		291	572	710	808	1.227
LDBs		20	N.A.	28	34	N.A.
Total		38,635	87.690	105.768	121.853	144.536
Loans Outstanding			•			
CBs	1,901	2,326	7,998	9,396	10.891	13,113
RRBs	227	385	1.747	2.193	2.761	2,896
PACs	2,374	2.621	4.323	4.636	5.262	6.240
LDBs	1,535	1.697	2.625	2.829	3.085	3,167
Total	6,036	7.029	16,693	19.054	21,999	25,416
Overdues		•	,			,
CBs	563	727	1.744	1.970	2.267	2.568
RRBs	41	68	437	570	703	815
PACs	1.089	1.086	1.806	1.896	2,132	2.407
LDBs	205	243	323	405	495	626
Total	1.898	2.124	4.310	4.841	5.597	6 4 1 6
Percentage of	•,••	-,	.,	.,	-,	0,110
Overdues to						
demand						
CBs		47	43	43	43	43
RRBs		48	51	N.A.	N.A	NĂ
PACs		43	41	41	40	43
LDBs		46	45	48	50	56

TABLE 3. DEPOSITS, LOANS OUTSTANDING (DIRECT) & OVERDUES: ALL INSTITUTIONS

Sources: 1. Report on Currency and Finance, Part II, RBI (different years), for RRB figures. 2. Statistical Statements Relating to the Cooperative Movement in India, Part-I, Credit Societies, NABARD (different years) for PAC and LDB figures. 3. Special Returns of Indian Scheduled Commercial Banks (unpublished), Ministry of Banking (different years). Notes :1. RRBs = Regional Rural Banks; CBs = Commercial Banks; PACs = Primary Agricultural Credit Societies; LDBs = Land Development Banks.

agriculture, the multi-agency approach gave rise to certain problems. In 1978, RBI set up a Committee to Review Arrangements for Institutional (CRAFICARD), the third in a series of studies

Though this improved the flow of credit to credit. The major outcome of the CRAFICARD's recommendations was the separation of the Agricultural Credit Department (ACD) from RBI, which handled refinance for the cooperative Credit for Agricultural and Rural Development credit system, and its merger with Agricultural Refinance and Development Corporation RBI had undertaken in the field of agricultural (ARDC) which was earlier set up by RBI to exclusively handle investment finance for agriculture. As a result, the National Bank for Agricultural and Rural Development (NABARD) was set up, in July 1982, completing the evolution of the structure of rural credit institutions to-date. NABARD was to be the central agency of the rural credit system, its three main functions being refinancing, inspection, and institutional development.

Organisational Set Up And Expansion

The institutional credit to agriculture now flows through a multi-agency framework with RBI at the apex which directs the overall policies of agricultural credit. Next in the hierarchy comes NABARD which extends refinance to the field level agencies comprising (a) Cooperative Credit Institutions, (b) Commercial Banks (CBs), and (c) Regional Rural Banks (RRBs). The cooperative credit institutions, in turn, form a three-tier structure for short term credit. The State Cooperative Banks (SCBs) are the apex (state) level agencies and finance District Central Cooperative Banks (DCCs) which in turn finance Primary Agricultural Credit Societies (PACs). The long term agricultural credit is extended by field level Primary Land Development Banks (PLDBs) or branches of State Land Development Banks (SLDBs), which actually are state level institutions in the federal framework and also by DCCs in the three tier structure. Since 1961, there has been a rapid expansion in the overall credit system. Between 1969 and March 1990, number of branches of commercial banks increased from 8,262 to 58,901 and rural branches from 1,832 to 34,053; rural branches now constitute 57.8 per cent of the total branches. During 1961-1990, deposits of commercial banks have increased from Rs 1,745 crore to Rs 173,366 crore with an annual growth rate ranging from 11 to 28 per cent. Even in the 10 years, 1976-86, short term loans and advances of commercial banks to the agricultural sector have gone up from Rs 212 crore to Rs 1,252 crore while term loans have increased from Rs 192 crore to Rs 1,476 crore [RBI, 1989] (a)].

The RRBs also multiplied from 6 in 1975 to 196 in 1989 and their branches from 17 in 1975 to

14,155 in 1989. Their deposits increased from Rs 7 crore in 1976 to Rs 336 crore in 1981 and to Rs 3,159 crore in 1989. Starting with negligible figures, their short term and long term loans issued during 1986 have reached Rs 672 crore [RBI, 1989 (a), p. 10 and Table 3].

As a result of reorganisation, though the number of Primary Agricultural Credit Societies (PACs) declined, from 2,12,129 in 1961 to 87,305 in 1989, their short term and long term loans increased from Rs 203 crore in 1961 to Rs 3,140 crore in 1986 - over 15 times increase in 25 years. They stood at Rs 4,364 crore in 1989. Taking PACs together with DCCs and SCBs, total deposits increased from Rs 199 crore in 1961 to Rs 141,377 crore in 1989 - the annual growth ranging between 13 and 21 per cent. Finally, outstanding loans of Land Development Banks (LDBs) grew from Rs 1,697 crore in 1981 to Rs 3,167 crore in 1989 - a two fold increase in 8 years.

While total outstanding (direct) advances to agriculture multiplied more than four times during the decade 1979-80 to 1988-89, there was a shift in the share of the several agencies (Table 3). Share of both CBs and RRBs increased while that of PACs and LDBs declined. In fact, CBs have displaced PACs in a major way. PACs supplied 37.29 per cent of total credit in 1979-80 but only 24.55 per cent in 1988-89. The share of LDBs is reduced to half, from 25.43 per cent in 1980-81 to 12.46 per cent in 1988-89. On the other hand, the share of CBs increased from 31.49 per cent to 51.59 per cent.

Consequently, borrowers have shifted from non-institutional money-lenders to banking institutions and cooperatives. The 'dual economy' has melted away substantially but the money-lender survives though on interest rates lower than before. In fact, a Committee to review the Administrative Arrangements of Rural Development (CAARD) set up by the Ministry of Agriculture, in its report submitted in December 1985, established that only 40 per cent of rural credit was provided by these institutions while money-lender still supplied the balance 60 per cent [Dandekar and Wadia, 1989, p. 199].

Bell also feels that the RBI's report has grossly exaggerated the erosion of the money-lenders power. Although the money-lender did lose ground relative to institutions over the period 1951 to 1981, he remained a very important source of finance to rural households, and the expansion of aggregate debt was so great as to imply that his absolute volume of business grew. Also, public policies that have promoted the growth and commercialisation of Indian agriculture, have encouraged the rise of the trader and his associated lending activities. Finally, Bell talks of the extent to which the expansion of credit from state agencies has created opportunities for financial intermediation by informal lenders [Bell, 1990].

Interest Rates: An Aspect Of Viability

Government intervention in the credit market has been generally in favour of rural sector. creating and maintaining a gap between rural rate of interest and urban rate of interest though we should note that there are concessional loans for urban poor also. Over the years, financial assistance to the rural sector has been on an increase. Cooperatives (which mostly cater to rural sector) get a preferential treatment in the matter of monetary policy. For example, they are required to maintain their Cash Reserve Ratio (CRR) at 3 per cent and SLR (Statutory Liquidity Ratio) at 25 per cent, whereas, over the years, these ratios have been on an increase for CBs. Of course, such preferential treatment to credit cooperatives is balanced by corresponding responsibilities and restrictions placed on them. For instance, 25 per cent of the lendable resources of SCBs and 40 per cent of DCCs have to be used for crop loans. There are also restrictions on their giving commercial loans at high interest rates.

The structure of interest rates in the cooperative credit sector is different from that prevailing in other segments of the organised sector. On direct agricultural loans, interest charged to the ultimate borrowers (Table 4), in general, is lower on investment loans than on production credit. The rates vary from a minimum of 10 per cent to a maximum of 15 per cent for production credit and 10 per cent to 12.5 per cent for investment loans. Compared with an interest rate (of about 17.5 per

cent) for non-priority commercial loans, the agricultural loans are quite concessional. The interest rate structure has been revised recently (October, 1991) and therefore these figures might be somewhat different from the latest ones. Besides, while the rates are uniform for all credit agencies, they vary with size of loan. The rates on loans for investment vary both with the nature of investment and the size of the farm. For instance, loans for minor irrigation and land development are lower than for other investments, irrespective of size of loan, while the rates on loans for other investments discriminate between small and other farmers. This creates complications. For example, in one categorization, size of farm is determined by converting an estimated income into acreage held by different farmers. Accordingly, borrowers are defined as marginal farmers (about 0-1 hectare), small farmers (generally 1-2 hectares), and middle and large farmers. An alternative categorization is by the size of loan, e.g., less than Rs 7,500, between 7,500 and Rs 15,000, between 15,000 and Rs 25,000, etc. The latter categorization is not quite logical because a large farmer (say 5 hectares) may borrow only Rs 7,500 and qualify for a low interest rate. Gadgil [1986] questions the prevailing system on equity grounds particularly because it benefits only 25 per cent of the farming population. Moreover, the rates do not vary from region to region according to difference in resource endowment or the degree of instability arising from weather or the variation in risk from natural factors for investments such as dugwells and tubewells [Gadgil, 1986, p. 303].

Concessions in interest rates automatically bring up the issue of cross subsidization. Of the three systems of banking, i.e, Commercial Banks, RRBs and Cooperatives, it is only in the case of commercial banks that there is real scope for meaningful cross subsidization because they lend to a wide variety of sectors. The main scope of cross subsidisation for the commercial banks is the bracket which earns above 16 per cent return. RRBs and Cooperatives lend mainly to weaker sections and hence have little or no scope for cross subsidisation though we may note that SCBs and DCCs do lend at 16 per cent for certain purposes.

Credit Agencies	Rate of Interest (per cent per annum)
(A) Primary Agricultural Credit Societies	
(i) Short-term loans (Production credit)	1150
Loans up to Rs 5,000	11.50
Over Rs 5,000 and up to Rs 10,000	14.00
Over Rs 10,000	14.00
(ii) Medium-term loans (Non-schematic)	10.25
(a) Minor irrigation and land development	10.25
(b) Other purposes	10.25
Small farmers	10.25
Other farmers	12.50
(B) Land Development Banks (Investment credit)	10.00
(a) Minor irrigation and land development	10.00
(b) Other purposes	10.00
Small famers	10.00
Uther farmers	12.30
(C) Commercial Banks and Kegional Kural Banks	
(1) Production credit	10.00
Loans to small farmers up to Ks 7,500	11.50
Loans above Ks $(.500 \text{ and up to Ks } 15,000 $	12.00
Loans over Ks 15,000 and up to Ks 25,000 Loans suce $D_{2} \simeq 25,000$ and up to Ks 25,000	12.00
Loans over Ks 23,000 and upto KS $50,000$	14.00
(ii) Investment condit	14.00
(II) Investment creation and land development	10.00
(a) winor inigation and rand development	10.00
(b) Oner purposes	10.00
Other formers	12.50
(iii) Integrated Dural Development Programme	12.50
(iii) integrated Kurai Development Programme	10.00
(iv) Sen-employment Scheme for Educated Unemployed	
I outh (Scheme not applicable to KKDS)	10.00
Dackwaru areas	10.00
Culler areas	12.00
(v) Differential Rate of Interest Scheme	4.00

PARTY A LENTRONG DATES ON ACRICULTURAL ADVANCES (1991)

Source: Report on Trends and Progress of Banking in India, 1990-91, Reserve Bank of India, Bombay.

A Committee appointed by RBI (1985), commonly known as Sukhamoy Chakravarty Committee, emphasised the need to rationalise the number of concessional interest rates, particularly because the interest rates applicable to a substantial portion of a banks' assets portfolio are either lower than or barely above the cost of their funds [RBI, 1985]. The Committee suggested that, for priority sector, there should be only two concessional rates, one being equivalent to the basic (minimum) lending rate, and the other somewhat below this rate. However, the Committee does not specify the basic minimum rate and the other below this one. Obviously, unless lending to rural sector proves to be cost effective, it cannot be sustained in the long run.

Overdues: A Chronic Problem

pensing agricultural credit, effective recycling of credit is of paramount importance. The credit cycle has three major segments: the first is to mobilize resources, second to lend them to creditworthy borrowers, and third to recover whatever has been lent, so that the recovered amounts may be recycled. A study by RBI [1989(a)] has made a thorough analysis of the three main credit systems - the commercial banks, RRBs and the cooperatives - and has highlighted the common as well as specific weaknesses of these systems in generating, sustaining, and augmenting the credit cycle. The study comes to the conclusion that the credit cycle is in a battered shape on all the three counts - deposit mobilization, lending, and recovery - in all the three systems except that deposit mobilization is better in the commercial bank system.

Repayment of loans together with interest If the institutional network is to continue dis- thereon by the borrowers is central to the smooth functioning of the institutional credit and overdues and defaults is now threatening the very life cycle of institutional credit. Overdues are not the same thing as bad debts. They are simply loans and interest thereon not repaid on due dates and indicate the financial health of a lending institution. A substantial portion is often of a traditional nature. A number of recoveries come belatedly suggesting that the due date should be changed. Overdues which are not realised over a period of 5 to 7 years are considered doubtful of recovery and therefore bad debts.

The first major comprehensive study on the subject was the one undertaken in 1974 by a Study Team set up by the RBI under the chairmanship of C.D. Datey [RBI, 1974]. One may analyze overdues from many different angles, such as by type of credit institutions, by purpose of borrowing, by class of borrowers, by type of area such as irrigated/dry or hilly and tribal, or simply by administrative regions, such as states or districts.

The overdues in the commercial banking system were around 43 per cent of demand during the second half of 1980s. In the case of RRBs they were around 51 per cent. In the short term cooperative system (PACs), they were between 41 and 43 per cent. In the cooperative long term credit system (LDBs) they varied between 45 per cent and 56 per cent (Table 3). Clearly, overdues are very large in all the systems.

Nevertheless, we may note that overdues in the aggregate grew at a slower rate than the issue of loans during the period 1979-80 to 1988-89. While the total loans issued by different institutions increased from Rs 6,036 crore in 1979-80 to Rs 25,416 crore in 1988-89 showing an annual average growth rate of 15.4 per cent, the total overdues against ultimate borrowers increased from Rs 1,898 crore to Rs 6,416 crore showing an annual growth rate of 12.95 per cent (Table 3).

One may look at agencywise share of overdues (Table 3). The trend is the same as in the case of loans outstanding. Both CBs and RRBs show an increasing trend while PACs and LDBs show a declining trend because their share in the outstandings had also declined. However, overdues in the case of CBs have grown at a slower rate than loans outstanding. The share of CBs in total overdues has increased from 30 per cent to 40 per

cent over the period, 1979-80 to 1988-89, while the share of PACs has declined from 57 per cent to 38 per cent, the two together accounting for almost 80 per cent of overdues in 1989. The share of RRBs has increased from 2 per cent to 13 per cent while the share of LDBs has remained more or less constant at 10 per cent. LDBs have shown a very poor performance in recovery; while their share in loans outstanding is reduced to half, their share in total overdues remains the same.

The aggregate overdues of different institutions ranged between 42 per cent and 56 per cent of demand in 1988-89. The recovery position of PACs is relatively better than that of others though in the case of commercial banks the percentage of overdues to demand has declined from 47 in 1979-80 to 43 at the end of 1988-89. The recovery is quite low in the case of RRBs, around 50 per cent, and has deteriorated over the years. The position of LDBs is the worst; their overdues to demand have gone up to 56 per cent by 1989.

Statewise comparison of overdues reveals some interesting facts. While Tamil Nadu topped the list in 1979-80 with its overdues amounting to Rs 283.42 crore (15 per cent of total overdues), it came down to the fifth position over a span of ten vears, its total overdues being Rs 541.07 crore (8.5 per cent) in 1988-89. This is despite the fact that its outstanding direct advances quadrupled in the same period. Both Maharashtra and Andhra Pradesh moved up by one position. In 1988-89 Maharashtra topped the list with total overdues amounting to Rs 735.64 crore (11.46 per cent) followed by Andhra Pradesh (Rs 711.20 crore, i.e., 11.08 per cent) and Uttar Pradesh (Rs 693.23 crore, i.e, 10.8 per cent), the three together accounting for one-third of all India overdues in 1988-89.

Assam, Gujarat, and Tamil Nadu showed an excellent recovery performance over the decade 1979-80 to 1988-89. Overdues as a proportion to loans outstanding declined steeply: from 57 per cent in 1979-80 to 22 per cent in 1988-89 in Assam, 42 per cent to 26 per cent in Gujarat and from 48 per cent to 25 per cent in Gujarat and from 48 per cent to 25 per cent in Tamil Nadu (Table 5). In the triennium ending (TE) 1988-89, overdues as a proportion of loans outstanding ranged between 25 to 30 per cent in almost all the states. Irrespective of the agency disbursing shown a better performance as far as recovery of (Table 5A).

credit, states like Kerala (18.03 per cent), Punjab loans is concerned. However, recovery was far (19.25 per cent) and Assam (21.33 per cent) have from satisfactory in Tripura (31.55 per cent)

		TABLE J. OVERDUES AS A TROFORMON TO BOARD OD TOTALD 210							(per cent)		
States	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average
Andhra Pradesh	27.90	23.69	24.43	28.13	25.83	26.26	25.10	27.87	26.13	24.63	26.00
Assam	57.01	54.34	38.88	41.63	34.24	28.74	25.09	17.75	22.89	22.45	34.30
Bihar	38.11	27.23	30.60	31.06	29.77	30.17	25.79	22.68	31.89	30.81	29.81
Guiarat	42.40	46.14	30.79	32.53	30.69	28.81	27.75	26.84	22.55	26.13	31.46
Harvana	16.83	21.32	19.82	21.19	23.90	23.59	24.03	28.45	26.84	25.03	23.10
Himachal Pradesh	31.06	34.09	26.03	23.28	21.95	18.93	24.74	28.47	25.69	26.44	26.07
Jammu & Kashmir	32.46	40.55	28.73	26.91	31.97	20.49	25.89	29.46	37.92	17.73	29.21
Karnataka	38.03	38.17	33.78	32.63	30.68	27.96	26.45	27.78	26.38	28.79	31.07
Kcrala	14.80	16.23	15.99	16.67	15.63	14.78	14.73	14.60	17.62	21.13	16.22
Madhya Pradesh	32.75	31.04	31.86	32.07	31.78	29.97	29.50	25.15	26.37	27.87	29.84
Maharashtra	40.60	34.88	31.39	32.17	30.19	27.30	27.23	28.31	26.54	24.32	30.29
Orissa	23.95	28.55	26.62	28.76	28.78	31.45	29.29	31.94	29.56	28.74	28.76
Punjab	20.00	14.05	18.57	15.55	15.94	26.59	20.05	20.21	20.18	17. 72	18.89
Rajasthan	25.92	24.76	24.68	24.10	26.73	28.43	28.50	27.57	26.52	27.46	26.47
Tamil Nadu	48.23	46.10	33.22	36.33	28.81	27.86	25.44	24.83	26.40	24.86	32.21
Tripura	38.26	30.12	29.50	35.86	47.46	48.97	45.69	41.95	31.98	25.39	37.52
Uttar Pradesh	23.27	27.39	27.01	28.39	28.92	27.50	25.40	24.58	23.45	27.12	26.30
West Bengal	28.11	41.22	40.06	42.25	40.38	44.91	32.86	30.92	27.91	25.00	35.36
Others	45.37	38.08	52.35	46.13	40.48	39.18	54.58	26.01	66.27	22.59	43.10
All India	31.45	30.21	27.74	28.56	27.31	26.55	25.82	25.41	25.44	25.24	27.37

TABLE 5A. CLASSIFICATION OF STATES ON THE BASIS OF OVERDUES AS A PROPORTION TO LOANS OUTSTANDING (TE 1988-89)

Range of Overdues as a percentage of Loans Outstanding	States
Below 20	Punjab (19.25), Kerala (18.03)
20 to 25	A ssam (21.33)
25 to 30	Gujarat (25.08), U.P. (25.11), T.N. (25.34), A.P. (26.02) Maharashtra (26.15), Haryana (26.62), M.P. (26.64), H.P. (26.77) J & K (26.93), Rajasthan (27.18), W.B. (27.59), Karnataka (27.7) Bihar (29.05), Orissa (29.95).
Above 30	Tripura (31.55)

A field survey (covering 73 commercial banks 1989 (a), p. 546]. It does not show any definite branches, 34 RRBs, 14 PACs and 30 LDBs was relationship of overdues with the class of borconducted as a background study for the Khusro rowers (Table 6). Committee and forms part of its Report [RBI,

TABLE 6. OVERDUES AMONG DIFFERENT CLASSES OF BORROWERS

					(per cent)
	Large farmers	Small farmers	Marginal farmers	Landless labourers	Overall for the survey sample
CBs	46	42	37	45	43.4
RRBs	46	66	48	34	51.0
PACSs	37	40	45	47	42.0
LDBs	39	49	44	-	42.0

Note: Marginal farmers (0-1 hectare), Small farmers (generally 1-2 hectares), Large farmers (generally 5 hectares and above)

Overdues by purpose, agency, and, by different areas classified mainly by irrigation, are presented in Table 7. It shows that the overdues of commercial banks and RRBs under crop loans were much lower than under term loans, whereas in the case of PACs the situation was the opposite. As a general trend, the overdues under loans for farm mechanization were lower than those under minor irrigation, land development, bio-gas, and

horticulture in that order. But, it shows a significant difference in the average proportion of overdues to demand in different areas (Table 7A). The performance of recovery was in the following order: highly irrigated/assured rainfall areas followed by the dry and monetised area, moderately irrigated, less monetised and unirrigated areas and finally hilly and tribal areas.

	(1986-87)									
	Crop Ioan	Minor Irriga- tion	Land Develop- ment	Farm Mechani- sation	Horti- culture	Bio- gas	Others	Over all		
Commercial Banks										
Group I	19	54	40	34	-	38	23	24		
Group II	25	55	56	46	60	59	43	41		
Group III	29	39	67	37	74	60	69	38		
Group IV	23	35	100	27	-	84	53	36		
Group V	71	61	88	54	-	47	49	55		
Regional Rural Banks										
Group I	41	61	50	-	-	64	53	46		
Group II	69	82	92	67	-	-	58	66		
Group III	20	38	-	-	-	-	40	32		
Group IV	55	76	100	100	-	-	23	44		
Group V	59	78	70	-	33	-	73	70		
PACSs										
Group I	40.1	-	-	-	-	-	8.1	32.6		
Group II	52.0	-	-	-	-	-	15.3	47.3		
Group III	25.0	-	-	-	-	-	44.0	27.6		
Group IV	44.0	-	-	-	-	-	56.6	45.2		
Group V	23.1	-	-	-	-	-	-	23.1		
PLDBs										
Group I	-	3,4.6`	25.7	17.4	40.2	8.6	27.0	30.7		
Group II	-	32.0	56.7	3.0	49.6	57.1	82.4	45.2		
Group III	•	39.3	44.4	18.4	52.9	75.8	82.2	36.9		
Group IV	-	64.0	12.0	42.8	16.6	-	69.8	63.7		
Group V	-	40.3	31.3	13.4	46.7	38.7	20.0	38.5		

TABLE 7. PURPOSE-WISE OVERDUES OF DIFFERENT CREDIT INSTITUTIONS AS PERCENTAGES TO D	EMAND
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Group I: Highly irrigated and assured rainfall areas, Group II: Moderately irrigated areas, Group III: Dry and monetised areas, Group IV: Unirrigated and less monetised areas, Group V: Hilly and tribal areas. Source: RBI, 1989 (a), p. 545.

TABLE 7A. GROUP-WISE DATA ON AVERAGE AND STANDARD DEVIATION OF PROPORTION OF OVERDUES TO DEMAND

Group	No. of districts	Avg prop of over- dues to demand	Standard deviation of overdues to demand	
Highly Injected/ Assured Rainfall	<u>a</u>	34.1	10.7	
Moderately Irrigated	7	50.7	14.1	
Dry and Monetised	6	38.7	15.3	
Less Monetised and Unirrigated	7	57.7	25.9	
Hilly and Tribal	6	60.8	19.5	

Source : RBI, 1989 (a), p. 548.

							(Rs crore)
Year	Total	U	pto 1 Yr	1-2 Yrs	2-3	Yrs	Over 3 Yrs
			Commercial	Banks			<u> </u>
1987 1989	1,969.63 2,568.28	5	28.62 28.85	21.56 20.57	17 18	7.53 3.26	32.28 32.32
		Primar	y Agricultural (Credit Societies			
1979-80 1980-81 1981-82 1982-83 1983-84	1,088.55 1,086.39 1,248.14 1,417.26 1,531.34		39.35 35.81 35.23 38.22 36.49	20.76 23.33 26.68 22.70 23.60	16 17 15 15	5.51 7.67 5.56 5.69 5.76	23.37 23.17 22.51 23.39 23.14
		L	and Developme	ent Banks			
	Total (Crore)	U	pto 1 Yr	1-3 Yrs	3-5 1	Yrs	Over 5 Yrs
1987 1988 1989	262.78 308.58 212.36	3 3 5	30.01 26.46 33.38	30.30 3.27 29.99	23 21 18	1.69 1.67 3.54	16.01 19.14 18.09
			Regional Rura	Banks			
<u></u>	Total (Crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	3-5 Yrs	5-8 Yrs	Over 8 Yrs
1989	796.32	31.28	19.35	17.16	20.26	8.14	3.83

THE A REAL PROPERTY OF AN OLD THE OF THE OWNER DUES IN DIFFERENCE YEARS	
TABLE 8. AGE-WISE DISTRIBUTION OF AMOUNT OF INSTITUTIONAL OVERDOES IN DITERCENT TESTING	-

TABLE 8A. AGE-WISE DISTRIBUTION OF AMOUNT OF INSTITUTIONAL OVER DUES (1986)

								(Rs crore)
	CBs		RRBs		PZ	ACs	LĽ	DBs
Age Group	Amount	Per cent						
Less than								
1 years	200	11.5	37	13.1	271	16.7	48	16.2
1-2	319	18.3	86	30.1	427	26.5	43	14.3
2 - 3	291	16.7	81	28.3	94	5.8	31	10.3
Upto 3 yrs	810	46.5	204	71.5	792	49.0	122	40.8
3-4	399	22.9	21	7.3	292	18.1	27	9.3
4 - 5	138	7.9	11	3.7	133	8.3	38	12.7
3 to 5 yrs	537	30.8	32	11.0	425	26.4	65	22.0
5-6	61	3.5	10	3.6	153	9.5	36	12.1
6-7	73	4.1	23	8.2	49	3.0	24	8.0
5 to 7 yrs	134	7.6	33	11.8	202	12.5	60	20.1
Above 7 yrs	263	15.1	16	5.7	196	12.1	51	17.1
Total	1,744	100.0	285	100.0	1,615	100.0	298	100.0

Source: RBI, 1989 (a), based on survey conducted in Study II.

In Table 8, we give the age-wise distribution the years 1986-87, 87-88 and 88-89. These figures

of overdues in different institutions. In the case are different from the figures in Table 8A, taken of CBs and RRBs approximately 32 per cent of from RBI Study II, where overdues over 3 years overdues belong to the over 3 years category are 53.5 per cent of total overdues of CBs, 28.5 during late 1980s, about 23 per cent in the case per cent of RRBs, 51 per cent of PACs and 59.2 of PACs during first half of 1980s and they ranged per cent of LDBs. The difference is because the between 36 to 40 per cent in the case of LDBs for RBI figures (Table 8A) are based on a field survey and pertain to the year 1985-86. Our figures for CBs, RRBs and LDBs (Table 8) are based on data obtained from NABARD (unpublished), and the figures for PACs are based on published data for five years, 1979-80 to 1983-84 (*Statistical Statements Relating to Cooperative Movement in India*). The ratio of overdues over 3 years to total overdues for these five years is a hard constant (23 per cent) and it is unlikely that it has more

than doubled (51 per cent) by 1985-86 as appearing in the RBI Study II.

Causes of defaults as reported by the borrowers are given in Table 9. It will be seen that 22.6 per cent attributed the default to adverse weather conditions, 17.1 per cent to inadequate income generation, and 3.9 per cent to unforeseen circumstances; more than 50 per cent did not indicate any specific reason.

TABLE 9. BORROWERS'	VIEW OF CAUSALITY OF DEFAULTS	

Particulars	Commercial Bank Branches	RRBs	PACSs	PLDBs
1. Crop failure due to weather	10.9	33.2	23.5	19.4
2. Crop failure due to other reasons	0.6	1.0	0.7	1.5
3. Income generation inadequate	17.0	31.6	11.0	11.0
4. Instalment of repayment too high	0.4	1.6	0.4	0.3
5. Repayment schedule not suitable	0.2	-	0.4	-
6. Diversion of amount for other purposes	2.3	6.2	2.6	1.0
7. Political interference and mis-guidance	0.5	1.6	1.1	2.0
8. Lack of understanding of terms	1.1	-	0.6	1.0
9. High interest rate	0.3	0.5	0.1	-
10. Non-adjustment of earlier paid instalment	0.6	2.6	0.7	0.5
11. Unforseen development in the household	3.9	3.6	3.0	2.3
12. Any other	7.5	5.7	3.9	6 .6
13.None (No problem)	54.7	12.4	52.0	54.4
	100.0	100.0	100.0	100.0

Source: RBI, 1989 (a), p. 551.

Causes of default may be broadly divided into two categories: external and internal to the credit system. The former are essentially non-viability of agriculture. The latter are internal to the system. Defective loan policies and procedures such as delays in sanction and disbursement of loans and fixation of due dates which are incompatible with the harvesting and marketing seasons are common. Sometimes, the loan amount is not enough to fulfil the needs of the borrower and he has to borrow from the money-lender or other informal sources which receive a higher priority in repayment. With regard to term loans, certain schemes that have been promoted are not suited to particular areas and borrowers. In certain cases, the economic significance of the scheme is lost due to over emphasis on the target approach and fixation of low unit costs leading to misutilisation of the loans. Other reasons of default due to faulty policies are, inadequate initial grace period

especially in the case of investments where the gestation period is fairly long and financing of assets not in keeping with the actual farming occupation of the borrowers.

For effective recovery, it is recognised that credit must be linked to marketing. However, except in a few cases, this has not been effective. Absence of proper synchronisation of investment credit with working capital provision is another cause of overdues. Virtually non-existent or ineffective supervision gives rise to many malpractices, resulting in overdues. Lack of supervision leads to misutilisation of credit, namely, diversion of funds obtained at concessional rates to non-agricultural purposes and for lending at higher rates of interest to the needy.

Of course, there are factors over which the credit institutions have little control, as for instance the non-viability of the majority of holdings and the natural calamities which affect agricultural production. Another development in the last few years is the growing politicisation of the credit system. With arbitrary announcements and sanctioning of loans by political dignitaries, popularly known as 'Loan Melas', the beneficiaries treat loans as aid with no obligation to repay. In 1990, Government instituted a scheme to write-off agricultural loans to compensate farmers for bad years between 1986 and 1989 which was estimated to cost Government eventually Rs 8,000 crore. Apart from cost to Government, such write offs generate an attitude of non-repayment which, in the long run, can undermine the entire credit structure.

CREDIT SUBSIDY

Credit subsidy may be looked at from three different angles, namely, the borrower's, the lender's, and the society's. This paper mainly attempts to estimate credit subsidy from the lender's point of view under alternative hypotheses. The first perceives credit subsidy to consist of two components: (a) interest subsidy that accrues to agriculture due to concessional rate of interest being charged to this sector vis-a-vis the other sectors of the economy; and (b) default subsidy which accrues to agriculture in the form of bad debts. Accordingly, interest and default subsidy has been calculated separately and then added to get credit subsidy to Indian agriculture. It should be mentioned that default also occurs in credit to non-agricultural sector and that therefore properly speaking we should take into account only the additional default in credit to agriculture.

The second concept perceives credit subsidy as the difference between cost of supplying credit to agricultural sector (including defaults) and rate of interest received from agricultural sector only. We shall compare agricultural vis-a-vis nonagricultural sector and see whether the nonagricultural sector subsidises the agricultural sector.

Credit Subsidy: Concept I

We have already referred to interest rates being charged to agricultural sector by various institu-

tions (Table 4). It will be seen that interest rates for agriculture range between 10 to 15 per cent, that rates for production credit are higher than those for investment credit, and that rates for production credit are higher for larger loans. In the absence of more detailed information on the quantum of loan disbursed by different credit agencies for different purposes at different interest rates, it is not possible to work out the weighted average rate of interest charged to agricultural sector. However, Morris [1985], provides the weighted interest rate charged to agricultural sector by commercial banks as 12.7 per cent in 1981. Adjusting this for long term loans by LDBs where interest is 10 to 12.5 per cent, and the small loans extended by PACs and RRBs where again the interest is lower than that estimated by Morris, the weighted average rate of interest for agriculture may be about 11.7 per cent. Morris estimates interest rate for retail trade at 16.2 per cent [Morris 1985, p. 69]. Taking the difference between this and the average rate for agriculture, the interest subsidy to agriculture would be of the order of 4.5 per cent. Multiplying this by total outstanding agricultural loans, interest subsidy to agriculture turns out to be about Rs 1,143 crore in 1988-89 (Table 10). Of this, Maharashtra accounts for 11.9 per cent, followed by Andhra Pradesh (11.4 per cent) and Uttar Pradesh (10.1 per cent).

The default subsidy is estimated on the basis of certain reasonable assumptions regarding the likelihood of eventual bad debts that would be written off. The need for this approximation arises as no data really exists about actual bad debts. Some data pertaining to bad and doubtful debts of PACs are published (Table 11) in Statistical Statements Relating to Cooperative Movement in India (RBI), but they are very different from what are referred to in the High Powered Committee Report [RBI, 1989(a), p. 597]. Presumably, this is due to different assumptions underlying the two estimates. Our own assumptions and estimation procedures are closer to those adopted by the High Powered Committee and consequently our estimates are not comparable with those published in the Statistical Statements of PACs.

States	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average
Andhra Pradesh	32.58	37.66	44.32	52.27	63.19	71.02	83.66	91.71	103.86	129.92	71.02
Assam	0.72	0.85	1.31	1.51	2.25	3.34	4.72	5.64	6.98	8.32	3.56
Bihar	10.76	12.26	16.10	19.70	22.40	27.31	31.74	38.63	50.30	58.58	28.78
Gujarat	19.13	20.23	25.32	26.97	29.94	33.41	42.25	47.18	56.59	57.10	35.81
Haryana	13.12	15.30	20.15	22.91	26.79	30.51	34.95	41.12	48.61	54.22	30.77
Himachal Pradesh	1.11	1.26	1.83	2.20	2.61	3.51	3.54	4.50	5.28	5.94	3.18
Jammu & Kashmir	0.79	0.96	1.47	1.65	1.98	2.81	1.99	2.57	2.76	4.00	2.10
Karnataka	19.11	22.07	28.78	31.67	40.78	50.38	62.19	73.76	80.82	92.24	50.18
Kerala	15.51	19.91	24.19	28.06	34.67	41.91	51.99	57.83	65.00	72.71	41.18
Madhya Pradesh	17.62	20.51	24.98	27.52	33.24	38.17	47.33	56.56	69.39	83.36	4 1. 8 7
Maharashtra	31.04	36.61	46.04	50.88	60.93	73.17	82.52	93.84	116.20	136.10	72.73
Orissa	8.75	10.64	13.93	17.86	21.91	21.73	25.67	27.47	31.76	34.59	21.43
Punjab	15.70	21.9 7	27.49	32.55	42.98	44.85	48.22	54.89	62.32	72.24	42.32
Rajasthan	12.63	15.81	20.57	25.12	28.80	32.68	38.16	43.96	51.07	56.49	32.53
Tamil Nadu	26.44	25.42	34.46	38.43	47.05	60.87	64.90	73.50	78.90	97.95	54.79
Tripura	0.35	0.56	0.88	1.07	1.23	1.53	1.90	2.14	2.96	3.83	1.64
Uttar Pradesh	34.35	40.51	50.04	57.47	67.03	76.89	86.07	97.83	107.50	115.04	73.27
West Bengal	10.62	11.75	13.92	15.57	17.76	23.74	26.81	30.27	35.68	43.13	22.9 2
Others	1.31	2.10	3.57	4.56	6.16	9.26	12.57	14.02	13.98	18. O 0	8.55
All India	271.62	316.36	399.35	457.98	551.71	647.08	751.19	857.43	989.95	1143.74	638.64

TABLE 10. INTEREST SUBSIDY ON LOANS OUTSTANDING TO AGRICULTURE
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						(Rs crore)
States	1980	1981	1982	1983	1984	Average
Andhra Pradesh	5.35	2.31	5.80	5.94	8.66	5.61
Assam	0.07	0.06	0.06	0.06	0.06	0.06
Bihar	0.17	0.15	0.15	0.17	0.14	0.16
Gujarat	0.61	0.69	0.34	0.44	0.47	0.51
Haryana	-	-	-	-	-	-
Himachal Pradesh	-	-	-	-	-	-
Jammu & Kashmir	0.02	0.02	0.02	-	-	0.01
Kamataka	0.49	1.46	0.24	0.13	0.19	0.50
Kerala	0.82	5.21	4.06	4.06	4.26	3.68
Madhya Pradesh	12.60	7.36	8.68	8.09	12.00	9.75
Maharashtra	0.12	0.13	0.24	0.13	0.01	0.13
Orissa	0.25	0.30	-	0.31	0.51	0.27
Punjab	-	-	0.37	0.11	0.11	0.12
Rajasthan	0.08	0.09	0.23	0.06	0.18	0.13
Tamil Nadu	2.54	2.67	2.73	5.51	6.48	3.99
Tripura	-	-	-	-	-	-
Uttar Pradesh	0.27	0.66	1.34	1.55	1.20	1.00
West Bengal	1.16	1.33	1.48	1.80	1.67	1.49
Others (including UTs)						1.08
All India	24.64	22.80	25.85	28.48	36.10	27.57

Source: Statistical Statements Relating to the Cooperative Movement in India. (different years), Reserve Bank of India, Bombay.

(Rs crore)

(Rs crore)

What we have is, for different states, the age distribution of overdues of PACs for 1980-1984, of CBs for 1987 and 1989, of RRBs for 1989 and of LDBs for 1986-89 (Table 8). On this basis, we propose to consider 40 per cent of the overdue of more than 3 years in the respective years as bad debts. Applying this to total outstanding, the default subsidy works out to be Rs 726 crore in 1988-89 (Table 12). Of this, Maharashtra accounts for 16.75 per cent, followed by Karnataka (9.8 per cent) and Madhya Pradesh (9.3 per cent).

States	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average
Andhra Pradesh	16.69	19.29	22.70	26.77	32.36	36.38	42.85	46.97	53.19	66.54	36.37
Assam	0.63	0.75	1.14	1.32	1.97	2.92	4.13	4.93	6.10	7.28	3.12
Bihar	8.94	10.19	13.39	16.37	18.62	22.70	26.38	32.11	41.81	48.69	23.92
Guiarat	14.58	15.42	19.30	20.55	22.82	25.47	32.20	35.96	43.14	43.52	27.30
Harvana	4.93	5.75	7.58	8.62	10.08	11.48	13.15	15.47	18.29	20.40	11.58
Himachal Pradesh	0.68	0.78	1.13	1.36	1.61	2.17	2.18	2.78	3.26	3.67	1.96
Jammu & Kashmir	0.93	1.13	1.73	1.95	2.33	3.31	2.34	3.02	3.24	4.71	2.47
Karnataka	14.75	17.04	22.22	24.45	31.49	38.89	48.02	56.94	62.40	71.21	38.74
Kerala	3.37	4.32	5.25	6.09	7.52	9.09	11.28	12.55	14.11	15.78	8.94
Madhya Pradesh	14.33	16.69	20.32	22.39	27.05	31.05	38.51	46.02	56.45	67.82	34.06
Maharashtra	27.75	32.73	41.16	45.49	54.48	65.41	73.78	83.90	103.89	121.68	65.03
Orissa	4.57	5.56	7.29	9.34	11.46	11.36	13.43	14.37	16.61	18.09	11.21
Puniab	5.14	7.19	8.99	10.65	14.06	14.67	15.78	17.96	20.39	23.64	13.85
Raiasthan	10.03	12.56	16.34	19.96	22.88	25.96	30.32	34.92	40.57	44.87	25.84
Tamil Nadu	13.39	12.87	17.45	19.46	23.83	30.83	32.87	37.23	39.96	49.61	27.75
Tripura	0.25	0.39	0.62	0.76	0.87	1.08	1.34	1.51	2.09	2.71	1.16
Uttar Pradesh	19.97	23.55	29.09	33.41	38.97	44.70	50.04	56.87	62.50	66.88	42.60
West Bengal	9.09	10.06	11.92	13.33	15.20	20.33	22.95	25.91	30.55	36.93	19.63
Others	2.42	4.59	5.91	8.48	12.66	13.00	15.36	14.92	9.95	12.12	9.94
All India	172.44	200.84	253.54	290.76	350.27	410.81	476.91	544.35	628.49	726.13	405.45

TABLE 12. DEFAULT SUBSIDY TO INDIAN AGRICULTURE

The assumption of 40 per cent of the overdue of more than 3 years to be bad debts is supported by the RBI Report [1989(a)], whereby age-wise pattern of overdues, as obtained from a field survey, is taken as representative of the pattern of overdues at the aggregate level and some provisions for bad and doubtful debts are made. 'In our view it would be reasonable to make bad debts provisions at one per cent of overdues up to three years, 15 per cent for overdues between three and five years and 70 per cent for those exceeding five years' [RBI, 1989(a), p. 597]. According to RBI figures, 39.29 per cent of overdues over 3 years are bad debts in the case of CBs, 50.60 per cent in the case of RRBs, 42.53 per cent in the case of PACs and 50 per cent in the case of LDBs (Table 8A). At all India level, 42.01 per cent of overdues of more than 3 years are regarded as bad debts. This is very close to 40 per cent used by us.

level, for the year 1985-86, estimate of bad debts as a percentage of total outstanding is 5.10 per cent. This is very different from our estimate of 2.86 per cent. The difference is probably due to different data bases.

The interest and default subsidy together make credit subsidy to agriculture (Table 13). The average results for the period 1979-80 to 1988-89 indicate that credit subsidy was of the order of Rs 1,044 crore per annum constituting 7.36 per cent of loans outstanding of which 4.50 per cent was on account of interest and 2.86 per cent on account of default. Since interest subsidy is assumed to be uniform throughout, the variation at state level is on account of default subsidy.

PACs and 50 per cent in the case of LDBs (Table 8A). At all India level, 42.01 per cent of overdues of more than 3 years are regarded as bad debts. This is very close to 40 per cent used by us. However, according to RBI figures, at all India

INSTITUTIONAL CREDIT TO AGRICULTURE

				TAB	LE 13. CRED	IT SUBSIDY T	IO AGRICULTI	URE				(Rs crore)
States	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average	Percentage to loans outstanding
Andhra Pradesh	49.273	56.943	67.018	79.035	95.552	107.400	126.510	138.677	157.051	196.465	107.392	6.80
Assam	1.348	1.602	2.454	2.837	4.225	6.266	8.845	10.565	13.074	15.601	6.682	8.43
Bihar	19.697	22.452	29.489	36.070	41.018	50.002	58.127	70.745	92.115	107.264	52.698	8.24
Gujarat	33.707	35.642	44.618	47.520	52.765	58.878	74.451	83.148	99.729	100.628	63.109	7.93
Haryana	18.050	21.050	27.725	31.533	36.865	41.982	48.105	56.594	66.892	74.616	42.341	6.19
Himachal Pradesh	1.793	2.041	2.956	3.559	4.228	5.673	5.720	7.276	8.540	9.603	5.139	7.28
Jammu & Kashmir	1.723	2.083	3.194	3.600	4.311	6.125	4.333	5.592	5.998	8.706	4.567	9.80
Kamataka	33.866	39.100	50.999	56.124	72.272	89.274	110.210	130.696	143.221	163.443	88.920	7.97
Kerala	18.879	24.228	29.441	34.149	42.192	51.000	63.276	70.379	79.102	88.486	50.113	5.48
Madhya Pradesh	31.948	37.201	45.304	49.904	60.290	69.227	85.839	102.581	125.831	151.177	75.930	8.16
Maharashtra	58.782	69.337	87.207	96.375	115.411	138.580	156.301	177.739	220.085	257.771	137.759	8.52
Orissa	13.322	16.203	21.215	27.201	33.370	33.090	39.098	41.836	48.365	52.688	32.639	6.85
Punjab	20.838	29.161	36.479	43.205	57.036	59.526	64.002	72.854	82.707	95.882	56.169	5.97
Rajasthan	22.661	28.373	36.913	45.077	51.679	58.633	68.478	78.884	91.645	101.359	58.370	8.07
Tamil Nadu	39.838	38.294	51.909	57.897	70.886	91.691	97.764	110.731	118.861	147.553	82.542	6.78
Tripura	0.592	0.949	1.505	1.828	2.100	2.617	3.240	3.657	5.051	6.532	2.807	7.68
Uttar Pradesh	54.315	64.058	79.133	90.880	105.999	121.585	136.114	154.701	170.005	181.915	115.871	7.12
West Bengal	19.704	21.800	25.846	28.905	32.956	44.073	49.756	56.176	66.234	80.062	42.551	8.35
Others	3.723	6.685	9.483	13.035	18.822	22.268	27.929	28.947	23.927	30.121	18.494	ı
All India	444.059	517.201	652.888	748.734	901.977	1,057.890	1,228.098	1,401.778	1,618.431	1,869.870	1,044.093	7.36

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overdues of only PACs for three years 1979-80 to 1981-82 when PACs accounted for more than 50 per cent of total overdues. However, over time, the share of other agencies has increased and the share of PACs has declined; for instance, in 1988-89, PACs accounted for only 38 per cent of the total overdues. These estimates are considered to be conservative by the World Bank [World Bank, 1991, P. 31].

On per hectare of Gross Cropped Area (GCA)

basis, credit subsidy on an average comes to Rs 63.26/ha at all India level for the period to 1988-89. Kerala stands first with Rs 186.23/ha, followed by Tamil Nadu (Rs 130.14/ha) and Andhra Pradesh (Rs 92.35/ha). States having subsidy of less than Rs 40/ha are Rajasthan (Rs 38.83/ha), Orissa (Rs 38.51/ha), Madhya Pradesh (Rs 35.96/ha) and Assam (Rs 19.81/ha) (Table 14).

TARLE 14	CREDT SUBSIDY PER	HECTARE OF GCA TO	AGRICULTURE
IABLE 14.	UKEDH SUBSIDI PER	HELIAKE UP UCA IU	AGRICULIURG

	17	10LE 14. C	KED11 JUB	SIDIFERI			AGRICOLI	ORD	(Rs	/ha. GCA)
States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average
Andhra Pradesh	46.37	51.37	61.90	71.35	87.95	104.55	116.80	129.21	161.63	92.35
Assam	4.75	7.12	7.98	11.81	16.85	23.31	28.99	35.34	42.17	19.81
Bihar	20.14	27.75	37.41	39.98	48.50	55.27	67.82	89.20	103.87	54.44
Gujarat	33.33	40.92	46.64	50.30	57.36	67.92	75.85	96.04	96.91	62.81
Haryana	38.54	47.59	59.43	64.81	76.16	85.89	99.9 7	142.75	159.23	86.04
Himachal Pradesh	21.58	31.15	37.15	43.55	57.42	58.73	74.02	87.59	98.49	56.63
Jammu & Kashmir	21.38	32.66	35.93	42.64	60.59	42.86	55.32	57.51	83.47	48.04
Karnataka	36.68	45.42	50.33	62.98	76.57	98.88	110.56	116.96	133.48	81.32
Kerala	84.65	101.35	1 19.32	147.47	178.26	221.17	246.00	272.77	305.12	186.23
Madhya Pradesh	17.38	20.82	22.46	26.64	30.79	37.30	46.18	55.45	66.62	35.96
Maharashtra	34.44	42.78	48.29	55.31	67.84	76.42	89.60	106.10	124.27	71.67
Orissa	18.53	24.27	32.66	34.90	37.71	42.23	45.13	53.19	57.95	38.51
Punjab	43.12	52.65	62.48	81.75	84.88	89.41	100.95	112.89	130.88	84.33
Rajasthan	16.35	19.85	24.50	27.38	33.92	37.76	44.72	68.86	76.16	38.83
Tamil Nadu	59.19	75.13	96.02	102.07	129.36	143.37	170.15	176.67	219.31	130.14
Uttar Pradesh	26.07	31.94	36.78	42.29	48.40	53.82	61.39	69.59	74.47	49.42
West Bengal	28.61	34.94	41.27	42.03	58.11	62.30	68.42	79.05	95.55	56.70
All India	29.88	36.88	43.18	50.06	59.96	69.25	78.39	93.62	108.16	63.26

Note : GCA of 1987-88 is used for subsequent years due to its non-availability for later years.

Credit subsidy for agriculture may also be related to State Domestic Product (SDP) from agricultural sector. This amounted to 1.98 per cent and ranged from 1.29 per cent to 2.13 per cent between 1980-81 to 1988-89. In 1988-89, states in which credit subsidy amounted to more than 3 per cent of SDP from agriculture are Tamil Nadu

(3.3 per cent), Tripura (3.3 per cent), Maharashtra (3.24 per cent) and Karnataka (3.08 per cent). In Kerala, Andhra Pradesh, Madhya Pradesh and Haryana, credit subsidy was between 2 to 3 per cent of SDP from agriculture. In the remaining states it was between 1 to 2 per cent. In Assamit was less than 1 per cent (0.61 per cent) (Table 15).

States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Andhra Pradesh	1.80	1.70	2.01	1.95	2.31	2.68	2.97	2.71	2.57
Assam	0.14	0.21	0.20	0.28	0.30	0.41	0.47	0.53	0.61
Bihar	0.74	0.97	1.07	1.01	1.03	1.09	1.11	1.43	1.27
Gujarat	1.48	1.44	1.67	1.35	1.62	3.04	2.71	4.72	1.95
Haryana	1.29	1.58	1.62	1.76	1.90	1.84	2.15	2.55	2.02
Himachal Pradesh	0.76	0.97	1.24	1.17	1.65	1.36	1.64	1.90	1.85
Jammu & Kashmir	0.56	0.80	0.79	0.77	1.06	0.65	0.77	0.83	1.20
Kamataka	1.63	1.85	2.07	2.08	2.38	3.12	3.02	3.12	3.08
Kerala	1.87	2.24	2.22	2.12	2.37	3.09	2.97	2.96	2.89
Madhya Pradesh	1.29	1.50	1.53	1.39	1.82	1.82	2.17	2.10	2.16
Maharashtra	1.85	2.13	2.41	2.22	2.62	2.91	3.59	3.21	3.24
Orissa	0.99	1.12	1.50	1.29	1.43	1.34	1.49	1.84	1.44
Punjab	1.26	1.36	1.46	1.80	1.64	1.57	1.66	1.61	1.67
Rajasthan	1.43	1.54	1.65	1.46	1.77	1.95	2.28	2.55	1.66
Tamil Nadu	2.16	2.29	3.26	2.74	3.07	2.88	3.15	2.61	3.30
Tripura	0.78	1.35	1.26	1.38	1.44	1.72	1.85	2.55	3.30
Uttar Pradesh	0.93	1.14	1.16	1.25	1.34	1.30	1.41	1.40	1.24
West Bengal	0.88	0.98	1.01	0.83	0.93	1.04	1.03	1.03	1.17
All India	1.29	1.47	1.61	1.56	1.75	1.91	2.06	2.13	1.98

TABLE 15. CREDIT SUBSIDY TO AGRICULTURE AS PER CENT OF SDP

Credit Subsidy: Concept II

Here we define credit subsidy as the difference between cost of providing credit to agricultural sector and interest rate earned on outstanding agricultural advances adjusted for defaults. An RBI study in 1989 [RBI, 1989(b)] on Lending Costs and Margins by Satish and Swaminath (S & S study) has envisaged three broad categories of costs in the agricultural credit system. These are: financial costs, transaction costs, and risk costs or costs of bad debts. Financial costs refer

to actual costs of raising financial resources. It is computed as the interest on borrowings and deposits. Transaction costs are organisational costs for carrying out the day to day institutional operations such as staff salaries and allowances, building rent, travel, printing and stationary, postage and telegram, audit and training, etc. These can be categorised under the heads: (i) Manpower related, (ii) Office/space related, (iii) Statutory/need related, and (iv) Others [RBI, 1989 (b)]. Risk costs consists of actual write-offs or reserve created for bad and doubtful debts.

TABLE 16. COST OF LENDING TO AGRICULTURAL SECTOR

											(P	er cent)
		Financia	l Cost			Transacti	on Cost			Total	Cost	
State	CBs	PAC ₅	RRBs	LDBs	CBs	PACs	RRBs	LDBs	Avg FC	Avg TC	Avg RC	Total Cost
A.P.	7.48	9.80	5.66	6.74	6.75	4.38	3.78	0.61	7.42	3.88	2.30	13.60
Tamil Nadu	7.48	10.18	6.31	725	6.75	5.34	4.26	1.22	7.81	4.39	2.28	14.48
Kerala	7.48	7.60	5.18	6.64	6.75	5.47	4.83	0.66	6.73	4.43	0.98	12.14
Maharashtra	7.48	8.30	6.37	6.48	6.75	6.32	6.56	3.18	7.16	5.70	4.02	16.88
Haryana	7.48	11.20	5.95	6.44	6.75	4.30	3.71	0.43	7.77	3,80	1.69	13.26
H.P.	7.48	11.50	6.53	6.75	6.75	5.40	4.07	2.80	8.07	4.76	2.78	15.61
Assem	7.48	7.60	4.98	4.60	6.75	10.80	6.06	1.97	6.17	6.40	3.93	16.50
Orissa	7.48	9.90	5.35	6.64	6.75	1.65	4.84	1.79	7.34	3.76	2.35	13.45
U. P .	7.48	10.75	6.01	6.53	6.75	5.19	7.65	4.90	7.69	6.12	2.62	16,43

Note: Data is an average of the period 1983-84 through 1985-86. RC = Risk Costs Source: RBI, 1989 (b).

(per cent)

(ner cent)

							(por com)
		Interest Inco	me from Agri	cultural Secto	n	Total	Cost - Income=
State	CBs	PACs	RRBs	LDBs	Average	Cost - J Total arage Cost Sub 0.01 13.60 3.4 0.59 14.48 3.3 1.13 12.14 1.0 0.45 16.88 6.4 0.59 13.26 2.0 1.15 15.61 4.4 0.94 16.50 5.5 9.67 13.45 3.1 1.76 16.43 4.4	Subsidy
A.P. Temil Nedu	11.62	11.38	8.70 10.96	8.35 8.60	10.01	13.60 14.48	3.59 3.89
Kerala	11.62	14.31	10.30	8.30	11.13	12.14	1.01
Maharashira Haryana	11.62 11.62	10.92 13.00	10.32	8.95 7.53	10.45	13.26	2.67
H.P.	11.62	13.00 13.50	11.39 11.62	8.60 7.00	11.15 10.94	15.61 16.50	4.46 5.56
Orissa U.P.	11.62 11.62	11.30 13.60	9.00 11.00	6.76 10.80	9.67 11.76	13.45 16.43	3.78 4.67

TABLE 17. COST, INTEREST INCOME, AND SUBSIDY TO AGRICULTURAL SECTOR

Source: RBI, 1989 (b).

S & S study has adopted two different approaches for estimating the risk cost in respect of PACs; first, as the proportion of reserves created for bad debts in total agricultural advances and second as a proportion of overdues above three years to demand. Admittedly, the former has a downward bias while the latter has an upward bias because not all overdues above three years are written off. They have therefore settled for an interval between the two estimates. The results of the study are based on a sample survey of 300 institutions majority of which (85 per cent) are ground level units. The reserves created for bad debts amount to 1.05 per cent of the outstanding agricultural advances while overdues above 3 years amount to 1.78 per cent of demand. As an approximation estimate, risk cost is placed at 1 per cent of the outstanding advances for the period 1985-86. However, this is very different from the results the RBI Study II which is also based on a field survey but estimates the risk cost PACs at 8.1 per cent of total outstanding as on June 1986. The two estimates are poles apart and one does not know which to choose.

We have calculated statewise risk cost for the 1980s on a set of assumptions which are quite similar to those adopted by RBI's Study II. However, at all India level, our estimate of risk cost at 2.86 per cent of outstanding is different from theirs (5.1 per cent) because, as earlier mentioned, of different data bases used. To calculate credit subsidy we have used our estimates of risk costs (Table 12).

To estimate credit subsidy (concept II), we add all three costs, viz., financial costs, transaction costs as in S&S study, and risk costs as in Table 16. This gives per unit total cost of supplying credit to agricultural sector in different states (Table 16). From this we subtract the interest earned on outstanding agricultural advances as in S&S study (Table 17). The resulting figures are multiplied by total outstanding irrespective of the credit institution which gives us an estimate of credit subsidy (Table 18). We have considered only nine states since financial and transaction costs are available only for these states.

Average results for the period 1979-80 to 1988-89, show that among the nine states considered, Maharashtra accounts for the highest credit subsidy (18 per cent) followed by Uttar Pradesh (13.13 per cent) and Andhra Pradesh (9.8 per cent). To obtain all India estimates of credit subsidy, we first calculate the weighted averages of transaction cost, financial cost, risk cost and income from agricultural sector of the nine states in question. The resultant estimate is then applied to total outstanding loans at all India level.

There is often disagreement about whether one can segregate cost of supplying credit to agricultural sector from that of non-agricultural sector. Keeping this in mind if we consider cost of lending to the banking sector as a whole minus income accrued from the agricultural sector, then only two states, namely, Assam and Maharashtra, are being subsidised. Here the approach is exactly the same as in the previous method except that, instead of taking cost to agricultural sector only, we consider cost to the banking sector as a whole. Therefore, credit subsidy according to this concept is calculated by subtracting per unit income from agricultural sector from the total per unit cost (Table 19). The resultant figures are multiplied with total outstanding in the agricultural sector to obtain credit subsidy (Table 20). Most states show a negative credit subsidy indicating that their earnings are more than their costs and hence they are not being subsidised. All India results (which include all states) also show the same. Of the nine states considered, Kerala shows the best performance, followed by Uttar Pradesh and Tamil Nadu. If we consider the difference between per unit cost of supplying credit to the bank as a whole and per unit income to the bank then in most states income is more than the cost proving sustainability of the institutions. However, the situation is different in Andhra Pradesh, Maharashtra, and Uttar Pradesh. These states show opposite results, i.e, per unit cost is greater than per unit income (Table 21).

											(Rs crore)
States	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average
Andhra Pradesh	26.00	30.04	35.36	41.70	50.41	56.66	66.74	73.16	82.86	103.65	56.66
Assam	0.89	1.06	1.62	1.87	2.79	4.13	5.83	6.96	8.62	10.28	4.40
Haryana	7.78	9.08	11.95	13.59	15.89	18.10	20.74	24.40	28.84	32.17	18.25
Himachal Pradesh	1.10	1.25	1.81	2.18	2.59	3.48	3.50	4.46	5.23	5.88	3.15
Kerala	3.48	4.47	5.43	6.30	7.78	9.41	11.67	12.98	14.59	16.32	9.24
Maharashtra	44.35	52.31	65.79	72.71	87.07	104.55	117.92	134.09	166.03	194.47	103.93
Orissa	7.35	8.94	11.70	15.00	18.40	18.25	21.56	23.07	26.67	29.06	18.00
Tamil Nadu	22.86	21.97	29.79	33.22	40.68	52.61	56.10	63.54	68.21	84.67	47.36
Uttar Pradesh	35.64	42.04	51.93	59.64	69.56	79.79	89.32	101.52	111.56	119.38	76.04
All India	248.09	287.77	364.05	415.17	498.86	586.32	674.64	771.85	899.63	1040.86	578.73
	(4.11)	(4.09)	(4.10)	(4.08)	(4.07)	(4.08)	(4.04)	(4.05)	(4.09)	(4.09)	(4.08)

Note: Figures in parentheses are percentages to loans outstanding.

TABLE 19. COST OF LENDING TO BANKING SECTOR AS A WHOLE, INCOME FROM AGRICULTURE AND SUBSIDY TO AGRICULTURAL SECTOR

State A.P. Tamil Nadu Kerala Maharashtra Haryana H.P. Assam Orissa	(Cost of Lending	to Banking Sec	tor			
	CBs	PACs	RRBs	LDBs	Average Cost	Income from Ag.	Subsidy
A.P.	9.46	12.70	8.88	6.32	9.34	10.01	-0.67
Tamil Nadu	9.46	11.98	9.61	6.14	9.30	10.59	-1.29
Kerala	9.46	8.10	9.21	5.80	8.14	11.13	-2.99
Maharashtra	9.46	18.01	11.46	9.81	12.19	10.45	1.74
Harvana	9.46	12.40	8 89	6.08	9.21	10.59	-1.38
H.P.	9.46	14.10	9 40	8.36	10.33	11.15	-0.82
Assam	9.46	13.40	20.14	5.58	12.15	10.94	1.21
Orissa	9.46	8.10	8.61	3.62	7.45	9.67	-2.22
U.P.	9.46	10.70	11.50	9.10	10.19	11.76	-1.57

TABLE 20. CREDIT SUBSIDY AN ALTERNATIVE ESTIMATE

											(Rs crore)
States	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	Average
Andhra Pradesh	-4.85	-5.61	-6.60	-7.78	-9.41	-10.57	-12.46	-13.65	-15.46	-19.34	-10.57
Assam	0.19	0.23	0.35	0.41	0.61	0.90	1.27	1.52	1.88	2.24	0.96
Haryana	-4.02	-4.69	-6.18	-7.03	-8.21	-9.35	-10.72	-12.61	-14.91	-16.63	-9.43
Him achal Pradesh	-0.20	-0.23	-0.33	-0.40	-0.48	-0.64	-0.64	-0.82	-0.96	-1.08	-0.58
Kerala	-10.31	-13.23	-16.07	-18.64	-23.03	-27.84	-34.55	-38.42	-43.19	-48.31	-27.36
Maharashtra	12.00	14.16	17.80	19.67	23.56	28.29	31.91	36.29	44.93	52.62	28.12
Orissa	-4.32	-5.25	-6.87	-8.81	-10.81	-10.72	-12.66	-13.55	-15.67	-17.07	-10.57
Tamil Nadu	-7.58	-7.29	-9.88	-11.02	-13.49	-17.45	-18.60	-21.07	-22.62	-28.08	-15.71
Uttar Pradesh	-11.98	-14.13	-17.46	-20.05	-23.39	-26.82	-30.03	-34.13	-37.51	-40.13	-25.56
All India	-287.90	-341.14	-433.35	-496.89	-600.01	-702.64	-831.21	~962.66	-1,115.88	-1,275.41	-704.71

Computed from RBI, Agricultural Credit Review, Bombay, "Lending Costs and Margins" by S. Satish & K.K. Swaminath.

(per cent)

(per cent)

							and the second sec
State	CBs	PACs	RRBs	LDBs	Average	Avg.Cost	Cost-Income
A.P. Tamil Nadu Kerala Maharashtra Haryana H.P. Assam Orissa	9.17 9.17 9.17 9.17 9.17 9.17 9.17 9.17	13.00 11.60 8.20 17.81 22.80 24.60 13.00 12.10	8.08 9.82 9.36 11.45 8.68 8.60 21.50 6.58 8 91	6.76 6.83 7.83 7.20 7.20 8.44 6.23 7.40 9.10	9.25 9.36 8.64 11.41 11.96 12.70 12.48 8.81 9.75	9.34 9.30 8.14 12.19 9.21 10.33 12.15 7.45 10 19	0.09 -0.06 -0.50 0.78 -2.75 -2.37 -0.33 -1.36 0.44
U.P.	9.17	11.90	8.81	9.10	9.75	10.19	0.44

TABLE 21. A VERAGE COST OF LENDING, A VERAGE INCOME AND OVERALL SUBSIDY

It is a clear indication that banking operations are following the policy of cross subsidisation. Non-agricultural sectors subsidise the agricultural sector and credit institutions as a whole can make up the losses incurred in their agricultural operations.

Concluding Remarks

Institutional credit to Indian agriculture has increased rapidly both in terms of coverage and quantum. This is particularly so during the post bank nationalisation phase. The concessional rate of interest for agriculture and high default rate in this sector appear to affect adversely the financial viability of credit institutions. Our analysis shows that credit subsidy to agriculture is about 7.36 per cent of outstanding during 1980s (average of 1979-80 to 1988-89). Of this, about 61 per cent is accounted for by concessional interest rates and the rest by defaults not likely to be repaid. This estimate is based on the 'opportunity cost' principle especially in the case of concessional rate of interest subsidy. The opportunity cost of extending loans to agricultural sector is taken as 4.5 per cent points higher than the rate being charged to it. If, however, one follows the 'cost approach' and takes credit subsidy as the difference between cost of extending loans to agricultural sector and the interest received therefrom, and combines it with default subsidy, the estimate turns out to be only 4.08 per cent of the outstanding. The credit subsidy disappears altogether if one considers the relevant cost of banking sector as a whole for its lending to all sectors, indicating a high degree of cross subsidisation within the lending operations of credit institutions.

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Kerala

Orissa

Punjab

Rajasthan

Tripura

Others

All India

Tamil Nadu

Uttar Pradesh

West Bengal

Madhya Pradesh

Maharashtra

40.05

30.85

8.10

53.50

42.48

16.76

11.49

104.46

22.14

~

169.16

194.82

328.77

74.68

330.67

147.08

337.82

407.06

142.45

67.05

3.68

242.41

219.22

441.11

125.20

146.07

187.67

258.28

340.18

100.43

11.99

551.70 3496.36 2965.20 1861.22 8874.48

3.16

85.95

110.25

56.17

134.06

79.92

152.87

1.26

44.42

0.66

245.20 1023.18

260.30 1112.00

537.57

555.14

309.55

610.80

457.15

765.73

19.59

309.44

79.42

		TABLE	COUSTA		RECI) ADV	AICES 10	IANMERS			(Rs crore)
States			1980					1981		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	45.92	280.48	169.23	228.47	724.10	65.25	313.36	185.46	272.74	836.81
Assam	0.89	5.40	7.45	2.24	15.98	3.04	6.02	7.46	2.47	18.99
Bihar	19.53	87.82	53.44	78.24	239.03	44.78	112.34	45.69	69.65	272.46
Gujarat	0.58	92.80	266.84	64.85	425.07	1.27	118.51	269.22	60.47	449.47
Haryana	5.76	102.97	101.60	81.12	291.45	12.45	112.77	116.69	97.98	339.89
Himachal Pradesh	1.74	6.52	14.09	2.28	24.63	2.58	7.91	15.24	2.31	28.04
Jammu & Kashmir	1.88	3.63	9.31	2.77	17.59	3.01	6.26	9.31	2.68	21.26
Kamataka	17.45	153.33	143.85	110.07	424.70	31.29	172.77	168.52	117.76	490.34
Kerala	23.88	96.53	171.37	52.93	344.71	34.92	115.91	219.82	71.73	442.38
Madhya Pradesh	10.03	109.41	171.22	100.82	391.48	20.00	139.43	193.46	102.96	455.85
Maharashtra	2.56	158.87	333.43	194.81	689.67	5.73	194.31	383.45	230.02	813.51
Orissa	25.36	35.07	91.12	42.83	194.38	35.56	41.41	109.77	49.67	236.41
Punjab	-	156.25	104.72	87.93	348.90	-	240.77	139.39	108.10	488.26
Rajasthan	19.20	82.18	119.58	59.68	280.64	30.46	104.20	147.56	69.16	351.38
Tamil Nadu	11.41	199.75	230.76	145.74	587.66	16.53	207.27	200.14	140.95	564.89
Tripura	3.33	1.67	2.30	0.41	7.71	6.86	1.76	2.77	0.96	12.35
Uttar Pradesh	31.26	219.62	270.44	241.94	763.26	59.00	286.92	297.58	256.67	900.17
West Bengal	5.85	91.90	101.16	37.00	235.91	12.50	110.27	98.17	40.06	261.00
Others	-	16.48	11.88	0.73	29.07	0.02	34.21	11.70	0.74	46.67
All India	226.61	1900.68	2373.79	1534.86	6035.94	385.25	2326.40	2621.40	1697.08	7030.13
			1000					1000		••• ^{•••} ••••••••••••••••••••••••••••••
States	<u> </u>		1982			<u> </u>		1983	<u> </u>	
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	74.67	444.18	182.31	283.71	984.87	88.04	534.75	222.70	315.99	1,161.48
Assam	5.38	12.64	7.60	3.47	29.09	7.57	13.93	7. 6 0	4.53	33.63
Bihar	67.91	149.67	55.16	85.11	357.85	94.67	175.80	72.82	94.43	437.72
Gujarat	2.21	200.58	285.86	74.01	562.66	3.97	220.08	296.19	79.02	599.26
Haryana	15.01	171.74	144.17	116.76	447.68	18.92	197.32	161.28	131.65	509.17
Himachal Pradesh	3.99	16.90	16.79	2.92	40.60	5.85	20.81	18.74	3.48	48.88
Jammu & Kashmir	5.41	14.85	9.31	3.04	32.61	7.59	16.83	8.66	3.67	36.75
Karnataka	47.57	282.56	188.28	121.14	639.55	65.70	334.30	173.76	130.06	703.82

202.65

216.03

378.60

101.06

383.15

191.07

446.06

488.59

159.74

87.33

722.41 4172.60 3233.44 2048.84

4.50

44.55

42.44

8.14

71.96

0.30

55.90

20.04

14.61

35.86

0.41

135.89

276.68

234.40

467.27

162.15

185.37

218.31

228.15

379.46

103.64

12.80

3.46

99.66

118.64

276.73

61.71

154.59

92.97

159.81

273.14

46.83

0.71

1.22

APPENDE	K
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TABLE I. OUTSTANDING (DIRECT) ADVANCES TO FARMERS

(Contd.)

623.54

611.51

396.88

723.41

558.25

854.06

1.277.08

346.07

101.25

10,177.29

23.79

1,130.74

States			1984					1985		<u></u>
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	122.94	685.62	264.23	331.42	1404.21	173.77	875.46	195.97	333.1'2	1578.32
Assam	13.39	23.41	7.60	5.69	50.09	21.51	38.32	8.77	5.69	74.29
Bihar	133.69	209.90	59.79	94.38	497.76	170.76	263.13	73.12	99.78	606.79
Gujarat	7.62	280.27	302.79	74.71	665.39	12.34	357.03	293.80	79.31	742.48
Haryana	25.19	243.40	180.11	146.56	595.26	32.63	287.73	189.99	167.54	6 7 7.89
Himachal Pradesh	8.48	24.34	2 1. 1 7	4.09	58.08	10.62	39.02	23.55	4.73	77.92
Jammu & Kashmir	9.80	22.02	8.04	4.15	44.01	12.40	40.75	5.53	3.85	62.53
Karnataka	104.49	426.68	220.95	154.21	906.33	140.74	577.81	217.74	183.25	1119.54
Kerala	58.97	253.65	341.89	115.89	770.40	78.22	323.62	394.57	134.82	931.23
Madhya Pradesh	70.03	272.07	261.86	134.81	738.77	101.62	347.08	245.35	154.23	848.28
Maharashtra	15.97	495.92	532.25	309.94	1354.08	27.92	645.10	622.00	330.90	1625.92
Orissa	95.56	151.35	174.59	65.40	486.90	109.62	156.36	150.35	66.48	482.81
Punjab	1.11	507.38	262.75	183.76	955.00	4.64	535.70	270.57	185.78	996.69
Rajasthan	72.50	237.74	230.52	99.26	640.02	91.35	283.71	245.04	106.04	726.14
Tamil Nadu	24.28	560.46	296.20	164.72	1045.66	28.73	726.10	432.52	165.21	1352.56
Tripura	16.28	6.04	3.74	1.27	27.33	20.13	8.62	3.9 7	1.34	34.06
Uttar Pradesh	213.40	576.81	407.94	291.38	1489.53	262.09	699.83	433.73	312.91	1708.56
West Bengal	53.23	185.32	106.46	49.56	394.57	72.14	235.57	169.17	50.78	527.66
Others	1.31	120.22	14.68	0.66	136.87	2.99	197.32	4.91	0.65	205.87
All India	1,048.24	5282.60	3 6 97. 5 6	2231.86	12260.26	1374.22	6638.26	3980.65	2386.41	14379.54

TABLE I. (Contd.)

States			1986					1987		
	RRBs	СВ	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	217.18	1016.07	277.62	348.29	1859.16	264.62	1115.21	315.22	342.91	2037.96
Assam	32.55	54.90	8.72	8.69	104.86	45.77	71.24	-	8.25	125.26
Bihar	211.16	321.36	62.57	110.29	705.38	263.88	394.04	60.33	140.25	858.50
Gujarat	19.77	443.57	370.75	104.78	938.87	28.28	513.99	397.79	108.48	1048.54
Haryana	45.88	337.14	197.57	196.16	77 6 .75	63.34	396.65	233.36	220.48	913.83
Himachal Pradesh	12.62	32.80	27.41	5.74	78.57	14.44	48.46	30.28	6.76	99.94
Jammu & Kashmir	15.73	19.22	5.43	3.85	44.23	19.57	28.14	5.53	3.85	57.09
Kamataka	189.77	727.63	238.65	226.04	1382.09	234.03	873.80	284.91	246.26	1639.00
Kerala	103.96	367.21	522.84	161.36	1155.37	127.08	443.10	539.41	175.49	1285.08
Madhya Pradesh	128.12	430.99	316.57	176.16	1051.84	164.29	518.94	378.06	195.70	1256.99
Maharashtra	47.11	760.45	670.00	356.28	1833.84	68.03	905.10	720.01	392.22	2085.36
Orissa	126.69	206.73	164.68	72.38	570.48	150.88	236.48	146.05	77.01	610.42
Punjab	9.98	633.11	242.64	185.90	1071.63	17.51	747.56	252.58	202.20	1219.85
Rajasthan	109.22	359.24	264.62	114.99	848.07	130.31	434.80	287.51	124.32	976.94
Tamil Nadu	29.27	867.64	382.56	162.67	1442.14	34.73	1030.11	392.77	175.81	1633.42
Tripura	24.39	11.80	4.59	1.40	42.18	30.79	12.37	4.44	-	47.60
Uttar Pradesh	328.56	825.06	426.77	332.33	1912.72	415.24	950.05	452.17	356.45	2173.91
West Bengal	90.36	327.55	126.29	51.50	595.70	112.41	382.37	126.29	51.50	672.57
Others	4.95	255.34	12.92	6.02	279.23	7.75	293.26	9.15	1.47	311.63
All India	1747.27	7997.81	4323.20	2624.83	16693.11	2192.95	9395.67	4635.86	2829.41	19053.89

(Contd.)

TABLE I. (Concld.)

States			1988					1989		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	334.10	1,315.74	315.22	342.91	2,307.97	332.18	1,599.31	523.13	432.57	2,887.19
Assam	61.81	84.08	-	9.11	155.00	63.43	112.42	-	9.11	184.96
Bihar	327.94	469.31	129.19	191.39	1,117.83	346.96	629.13	138.60	186.98	1,301.67
Gujarat	40.27	637.50	434.26	145.61	1,257.64	40.87	647.84	446.40	133.86	1,268.97
Haryana	78.38	495.49	273.23	233.02	1,080.12	83.30	555.22	328.91	237.41	1,204.84
Himachal Pradesh	17.58	55.9 9	35.00	8.73	117.30	19.12	60.54	41.18	11.06	131.90
Jammu & Kashmir	23.46	37.77	-	-	61.23	24.46	64.41	-	-	88.87
Kamataka	283.77	993.83	259.20	259.27	1,796.07	296.49	1,145.99	274.66	332.53	2,049.67
Kerala	149.60	497.78	592.13	204.84	1,444.35	153.49	531.38	710.47	220.35	1,615.69
Madhya Pradesh	209.37	628.15	483.12	221.25	1,541.89	221.83	853.30	531.56	245.78	1,852.47
Maharashtra	91.23	1,069.36	991.50	430.10	2,582.19	101.42	1,305.47	1,125.00	492.46	3,024.35
Orissa	190.41	267.17	169.62	78.48	705.68	189.52	321.03	175.03	83.18	768.76
Punjab	25.79	808.90	319.79	230.34	1,384.82	28.11	918.31	402.62	256.38	1,605.42
Rajasthan	160.69	516.25	317.58	140.45	1,134.97	166.91	617.56	317.58	153.23	1,255.28
Tamil Nadu	44.71	1,224.43	305.93	178.29	1,753.36	48.58	1,433.19	502.76	192.07	2,176.60
Tripura	44.83	14.83	4.53	1.56	65.75	59.02	19.84	6.16	-	85.02
Uttar Pradesh	520.92	1,071.81	447.26	348.98	2,388.97	545.94	1,373.30	521.84	115.26	2,556.34
West Bengal	146.04	420.42	168.08	58.44	792.98	161.94	559.30	174.96	62.34	958.54
Others	10.01	282.50	16.08	2.07	310.66	12.06	365.69	1 9 .49	2.72	399.96
All India	2,760.91	1,0891.31	5,261.72	3,084.84	21,998.78	2,895.63	13,113.23	6,240.35	3,167.29	25,416.50

Sources: 1. Report on Currency and Finance, Part II, RBI(different years), for RRB figures. 2. Statistical Statements Relating to the Cooperative Movement in India, Part-I, Credit Societies, NABARD (different years), for PAC and LDB figures. 3. Special Returns of Indian Scheduled Commercial Banks (unpublished), Ministry of Banking (different years).

Notes :1. RRBs = Regional Rural Banks; CBs = Commercial Banks; PACs = Primary Agricultural Credit Societies; LDBs = Land Development Banks. 2. a) Figures for RRBs are for December end in the respective years. b) Figures for CBs, PACs and LDBs pertain to June end of each respective year except for 1980 and 1981 where figures for CBs pertain to March end.

(Rs crore)

States			1980					1981		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	10.27	112.57	70.37	8.85	202.06	10.63	105.39	62.90	19.35	198.27
Assam	0.45	2.39	6.10	0.17	9.11	0.57	3.37	6.16	0.22	10.32
Bihar	2.54	26.80	37.47	24.29	91.10	5.74	35.92	32.41	0.11	74.18
Guiarat	0.60	41.84	108.23	29.56	180.23	0.17	47.03	119.46	40.74	207.40
Harvana	0.91	13.12	35.02	-	49.05	2.37	19.68	50.40	•	72.45
Himachal Pradesh	0.24	2.80	4.38	0.23	7.65	0.35	4.07	4.68	0.46	9.56
Jammu & Kashmir	0.24	1.27	3.81	0.39	5.71	0.65	3.69	3.81	0.47	8.62
Kamataka	4.94	65.01	77.37	14.20	161.52	8.17	78.17	86.97	13.84	187.15
Kerala	2.66	14.43	33.58	0.33	51.00	4.62	21.22	45.68	0.28	71.80
Madhva Pradesh	1.44	35.10	79.49	12.18	128.21	2.88	40.41	85.75	12.47	141.51
Maharashtra	0.48	83.32	165.27	30.97	280.04	0.00	94.59	149.64	39.54	283.77
Orissa	4.96	12.01	25.67	3.91	46.55	9.48	22.56	31.92	3.54	67.50
Punjab	-	16.12	53.09	0.57	69.78	-	27.80	40.59	0.23	68.62
Rajasthan	2.75	18.61	47.07	4.32	72.75	6.12	27.17	49.26	4.44	86.99
Tamil Nadu	0.89	55.90	165.07	61.56	283.42	2.10	72.43	111.22	74.64	260.39
Tripura	0.52	0.87	1.54	0.02	2.95	1.13	0.82	1.74	0.03	3.72
Uttar Pradesh	4.81	50.54	111.41	10.86	177.62	7.66	6 8 .97	143.63	26.26	246.52
West Bengal	3.32	3.20	57.06	2.73	66.31	5.48	43.03	53.35	5.72	107.58
Others	-	6.93	6.54	0.27	13.19	-	10.70	6.82	0.26	17. 7 7
All India	41.47	562.83	1,088.54	205.41	1,898.25	68.11	727.02	1,086.39	242.60	2,124.12

TABLE II. OVERDUES FROM DIRECT ADVANCES TO FARMERS

All India	41.47	562.83	1,088.54	205.41	1,898.25	68.11	727.02	1,086.39	242.60	2,124.12
States			1982			<u></u>		1983		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	14.44	127.93	73.96	24.31	240.64	25.00	156.67	111.27	33.81	326.75
Assam	1.51	3.55	5.95	0.30	11.31	3.29	4.32	5.95	0.44	14.00
Bihar	13.75	35.95	50.22	9.58	109.50	18.44	41.35	59.23	16.95	135.97
Gujarat	0.41	57.15	99.06	16.64	173.26	0.84	67.33	104.98	21.79	194.94
Haryana	4.28	28.99	55.48	0.00	88.75	5.29	33.59	68.97	0.05	107.90
Himachal Pradesh	0.66	4.61	4.86	0.44	10.57	0.64	5.73	4.76	0.25	11.38
Jammu & Kashmir	1.18	4.00	3.81	0.38	9.37	1.55	4,43	3.25	0.66	9.89
Kamataka	14.36	97.78	89.60	14.28	216.02	20.63	118.67	77.61	12.78	229.69
Kerala	6. 9 7	25.94	52.52	0.54	85.97	9.17	34.29	59.40	1.08	103.94
Madhya Pradesh	5.53	51.59	104.74	15.00	176.86	8.38	59.09	118.25	10.38	196.10
Maharashtra	3.38	108.00	176.78	33.00	321.16	4.23	124.15	198.26	37.15	363.79
Orissa	13.27	24.75	39 .07	5.32	82.41	21.23	29.06	56.18	7.69	114.16
Punjab	-	45.36	67.59	0.46	113.41	0.30	55.95	56.10	0.17	112.52
Rajasthan	12.62	34.72	60.69	4.81	112.84	16.03	41.55	70.38	6.60	134.56
Tamil Nadu	4.21	87.43	126.48	36.23	254.35	6.84	114.37	141.39	47.66	310.26
Tripura	1.95	1.06	2.68	0.09	5.78	4.86	0.81	2.63	0.23	8.53
Uttar Pradesh	21.14	91.02	168.00	20.16	300.32	30.59	112.73	198.48	20.80	362.60
West Bengal	8.33	46.51	59.50	9.61	123.95	14.60	48.98	72.70	9.93	146.21
Others	0.08	17.14	7.42	0.30	41.58	•	16.30	7.46	0.32	46.71
All India	128.07	893.48	1248.41	191.45	2461.41	191.71	1069.37	1,417.25	228.74	2,907.07

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(Contd.)

States			1984					1985		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	28.60	184.11	112.58	37.46	362.75	36.91	221.82	108.66	47.13	414.52
Assam	4.98	5.70	5.95	0.52	17.15	7.24	6.50	6.52	1.09	21.35
Bihar	24.37	55.87	51.76	16.18	148.18	41.49	71.63	52.72	17.20	183.04
Gujarat	1.34	79.96	100.43	22.47	204.20	2.36	93.59	91.47	26.49	213.91
Haryana	7.50	46.73	87.72	0.32	142.27	9.52	55.76	94.38	0.28	159.94
Himachal Pradesh	-	7.37	5.12	0.26	12.75	1.43	6.89	5.98	0.45	14.75
Jammu & Kashmir	3.44	6.15	3.94	0.54	14.07	3.48	6.61	2.18	0.54	12.81
Karnataka	27.87	141.32	95.33	13.55	278.07	42.21	162.92	91.84	16.09	313.06
Kerala	12.53	37.62	68.98	1.30	120.43	13.75	46.01	75.49	2.38	137.63
Madhya Pradesh	12.03	71.74	135.64	15.36	234.77	20.11	82.75	136.72	14.65	254.23
Maharashtra	5.87	157.22	221.11	24.63	408.83	7.49	188.01	225.00	23.32	443.82
Orissa	29.25	36.84	69.80	4.22	140.11	35.18	43.16	63.15	10.35	151.84
Punjab	0.01	95.21	48.47	8.56	152.25	0.14	211.71	48.46	4.70	265.01
Rajasthan	20.00	59.48	82.92	8.70	171.10	23.40	65.70	105.99	11.36	206.45
Tamil Nadu	8.46	138.78	134.43	19.63	301.30	8.28	158.68	157.45	52.48	376.89
Tripura	7.03	2.48	3.12	0.34	12.97	9.90	3.03	3.31	0.44	16.68
Uttar Pradesh	50.29	138.99	224.08	17.44	430.80	59.96	157.00	224.89	27.93	46 9 .78
West Bengal	21.69	58.26	71.20	8.19	159.34	28.76	68.56	128.92	10.74	236.98
Others	0.15	27.45	8.76	0.26	55.40	0.32	-	7.12	0.16	80.65
All India	265.41	1,351.28	1,531.34	199.93	3,347.96	351.93	1,568.05	1,630.25	267.7 8	3,818.01

TABLE IL (Contd.)

States			1986					1987		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	59.25	237.94	94.70	74.72	466.61	78.12	267.76	130.03	91.98	567.89
Assam	7.64	11.06	6.52	1.09	26.31	10.04	10.69	-	1.50	22.23
Bihar	51.04	67.53	56.47	6.90	181.94	59.90	82.38	47.06	5.33	194.67
Gujarat	3.09	105.85	130.61	20.99	260.54	3.62	121.22	130.15	26.48	281.47
Haryana	12.11	65.95	104.90	3.71	186.67	17.32	82.09	135.62	24.99	260.02
Himachal Pradesh	2.03	9.54	7.15	0.72	19.44	2.47	16. 6 4	8.68	0.66	28.45
Jammu & Kashmir	3.03	5.70	2.18	0.54	11.45	4.95	9.15	2.18	0.54	16.82
Kamataka	47.63	183.00	112.64	22.23	365.50	68.56	228.66	130.51	27.61	455.34
Kerala	17.23	57.39	92.78	2.74	170.14	22.29	54.17	103.47	7.6 9	187.62
Madhya Pradesh	29.51	102.51	161.65	16.58	310.25	15.54	1 19.16	160.41	21.08	316.19
Maharashtra	10.10	185.12	265.00	39.05	499.27	39.12	219.14	281.00	51.08	590.34
Orissa	20.79	45.41	86.00	14.92	167.12	38.34	49.29	87.00	20.32	194.95
Punjab	0.42	107.22	102.43	4.75	214.82	0.84	120.10	117.54	8.01	246.49
Rajasthan	32.53	80.44	111.68	17.01	241.66	31.62	92.22	123.29	22.20	269.33
Tamil Nadu	11.13	187.53	109.82	58.34	366.82	10.09	209.12	146.91	39.43	405.55
Tripura	11.60	3.96	3.39	0.32	19.27	12.95	3.60	3.42	-	19. 9 7
Uttar Pradesh	82.58	170.07	206.07	27.11	485.83	107.81	182.42	200.46	43.73	534.42
West Bengal	34.75	65.43	82.90	12.64	195.72	44.82	67.58	82.90	12.64	207.94
Others	0.62	52.00	69.19	-	152.41	1.32	34.24	5.62	0.06	81.04
All India	437.08	1,743.65	1806.08	323.22	4,310.03	569.72	1,969.63	1,896.25	405.33	4,840.93

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States			1988	<u></u>				1989		
	RRBs	CBs	PACs	LDBs	Total	RRBs	CBs	PACs	LDBs	Total
Andhra Pradesh	87.66	293.43	130.03	91.98	603.10	106.25	346.74	139.28	118.93	711.20
Assam	14.90	17.78		2.80	35.48	16.82	21.90	-	2.80	41.52
Bihar	70.03	89.33	119.20	77.89	356.45	78.28	109.67	127.85	85.24	401.04
Gujarat	4.47	112.59	153.47	13.12	283.65	7. 50	144.67	157.94	21.44	331.55
Haryana	22.24	105.95	131.04	30.67	289.90	22.0 0	115.83	132.56	31.23	301.62
Himachal Pradesh	2.66	17.89	9.03	0.56	30.14	2.61	19.50	11.86	0.90	34.87
Jammu & Kashmir	5.71	17.51	-	-	23.22	6. 6 4	9.12	-	-	15.76
Kamataka	82.48	285.51	92.08	13.82	473.89	1 19.66	314.99	124.89	30.48	590.02
Kerala	35.74	73.61	131.86	13.26	254.47	34.51	92.89	196.46	17.53	341.39
Madhya Pradesh	47.51	118.62	215.55	24.86	406.54	66.90	138.88	255.24	55.26	516.28
Maharashtra	23.13	257.14	349.90	55.18	685.35	30.84	266.79	370.00	68.01	735.64
Orissa	51.73	62.99	84.53	9.33	208.58	51.65	64.57	89.68	15.04	220.94
Punjab	1.45	144.14	120.67	13.14	279.40	2.44	152.32	128.58	1.11	284.45
Rajasthan	43.57	103.80	131.55	22.08	301.00	45.8 0	144.98	131.55	22.40	344.73
Tamil Nadu	13.96	226.69	153.60	68.69	462.94	15. 8 7	270.18	175.34	79.68	541.07
Ттірига	12.94	4.36	3.43	0.30	21.03	12.95	4.93	3.71	-	21.59
Uttar Pradesh	128.41	194.76	19 2 .58	44.45	560.20	134.78	235.57	258.32	64.56	693.23
West Bengal	50.73	72.22	85.63	12.76	221.34	56.04	79.67	93.04	10.89	239.64
Others	3.33	68.99	27.82	0.13	205.86	3.79	35.08	10.78	0.17	90.37
All India	702.65	2,267.31	2,131.97	495.02	5,596.95	815.33	2,568.28	2,407.08	625.67	6,416.36

TABLE IL (Concld.)

Sources: 1. Report on Currency and Finance, Part II, RBI(different years), for RRB figures. 2. Statistical Statements Relating to the Cooperative Movement in India, Part-I, Credit Societies, NABARD (different years), for PAC and LDB figures. 3. Special Returns of Indian Scheduled Commercial Banks (unpublished), Ministry of Banking (different years).

Notes :1. RRBs = Regional Rural Banks; CBs = Commercial Banks; PACs = Primary Agricultural Credit Societies; LDBs = Land Development Banks. 2. a) Figures for RRBs are for December end in the respective years. b) Figures for CBs, PACs and LDBs pertain to June end of each respective year except for 1980 and 1981 where figures for CBs pertain to March end.

TABLE III. AGEWISE DISTRIBUTION OF O	VERDUES ACROSS STATES
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Comm	ermal	Ranke
Comm	CICIAI	Dailes

										(per cent)
			1987					1989		
State	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs
A.P.	267.77	32.32	25.58	14.78	27.33	346.75	33.23	21.91	17.49	27.37
Assam	10.69	25.72	21.33	21.52	31.43	21.90	23.74	22.56	20.55	33.15
Bihar	82.38	31.12	19.83	16.22	32.82	109.67	28.54	19.89	20.33	31.24
Gujarat	121.32	29.31	16. 8 6	14.65	39.18	144.68	34.15	17.83	14.69	33.34
Haryana	82.09	30.54	23.71	18.04	27.71	115.83	25.92	18.47	20.68	34.94
H.P.	16.64	18.33	40.63	16.23	24.82	18.56	17.30	19.18	39.06	24.46
J & K	9.15	12.24	10.38	23.06	54.32	9.13	13.69	12.27	18.84	55.20
Karnataka	228.67	26.75	19.83	18.14	35.28	315.00	24.61	21.11	19.23	35.04
Kerala	54.18	46.27	19.60	15.12	19.01	92.89	47.76	18.95	14.26	19.03
M.P.	119.17	23.99	20.06	18.86	37.08	138.89	29.01	20.32	17.40	33.28
Maharashtra	219.14	29.49	18.85	15.30	36.37	266.79	26.94	19.32	16.67	37.07
Orissa	49.30	21.14	22.58	22.62	33.67	64.58	21.72	19.93	23.52	34.83
Punjab	120.11	31,46	23.75	20.05	24.74	152.53	30.17	22.43	18.08	29.33
Rajasthan	92.22	26.77	21.30	15.93	36.00	144.98	30.46	17.33	13.37	38.84
T.N.	209.12	28.65	24.25	17.89	29.21	270.18	28.02	23.31	18.65	30.03
Tripura	3.60	21.67	20.00	17.50	40.83	4.93	21.50	17.04	30.22	31.24
U.P.	182.42	27.31	21.91	20.83	29.95	235.57	27.89	19.93	21.09	31.10
W.B.	67.59	17.65	17.77	21.97	42.61	79.47	23.77	19.93	20.41	35.89
Others	34.07	27.24	17.79	18.20	36.78	35.95	16.02	30.51	13.88	39.58
All India	1,969.63	28.62	21.56	17.53	32.28	2,568.28	28.85	20.57	18.26	32.32

Primary Agricultural Credit Societies

				2.0						(per cent)
			1979-80					1980-81		
State	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs
A.P.	70.37	40.67	24.58	15.65	19.10	62.90	41.07	24.18	21.03	13.72
Assam	6.10	13.77	8.52	24.75	52.95	6.17	13.61	11.67	27.23	47.49
Bihar	37.47	44.36	19.32	13.69	22.63	32.42	62.58	16.22	16.93	4.26
Gujarat	108.24	36.74	22.51	15.60	25.14	119.46	37.02	23.16	17.02	22.80
Haryana	35.03	44.88	23.15	18.33	13.65	50.40	51.05	25.75	12.94	10.26
H.P.	4.38	24.20	21.69	24.43	29.68	4.68	30.56	18.38	23.08	27.99
J& K	3.82	24.08	18.59	21.47	35.86	3.81	24.15	18.64	21.52	35.70
Karnataka	77.37	32.57	25.94	19.74	21.75	86.97	28.85	27.80	21.05	22.30
Kerala	33.59	50.10	25.84	12.71	11.34	45.69	49.09	23.64	16.00	11.27
M.P.	79.49	21.51	17.86	15.55	45.07	85.75	29.00	15.74	13.40	41.85
Maharashtra	165.28	23.83	16.44	19.91	39.82	149.65	20.76	21.08	14.83	43.34
Orissa	25.67	36.66	23.96	19.63	19.75	31.93	39.81	28.25	17.73	14.22
Punjab	53.10	53.33	19.68	13.80	13.18	40.59	52.28	24.46	14.56	8.70
Rajasthan	47.07	35.39	22.92	19.61	22.07	49.27	31.24	24.07	18.06	26.63
T.N.	165.07	71.77	12.78	8.49	6.96	111.22	43.56	24.54	20.30	11.60
Tripura	1.55	12.90	11.61	10.32	65.16	1.75	39.43	14.86	10.86	34.86
U.P.	111.42	32.79	26.65	20.76	19.81	143.63	36.77	26.67	18.68	17.89
W.B.	57.07	26.35	29.63	20.96	23.06	53.35	24.85	22.87	22.53	29.75
Others	6.46	24.92	21.98	18.73	32.97	6.75	27.41	17.04	21.19	32.00
All India	1,088.55	39.35	20.76	16.51	23.37	1,086.39	35.81	23.33	17.67	23.17

(Contd.)

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			1981-82					1982-83		
State	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs
A.P.	73.96	43.66	25.68	14.28	16.39	112.27	43.10	27.15	15.60	13.26
Assam	5.95	8.07	14.12	17.14	60.67	5.95	8.07	14.12	17.14	60.67
Bihar	50.22	35.44	40.40	10.47	13.68	59.23	18.89	20.70	15.63	44.77
Gujarat	99.06	33.11	21.46	18.54	26.88	104.98	31.23	22.02	17.26	29.48
Haryana	55.48	53.95	22.53	13.88	9.64	68.97	48.92	21.11	18.05	11.92
H.P.	4.86	31.69	20.37	19.34	28.60	4.76	31.30	19.12	19.75	29.83
J&K	3.81	24.15	18.64	21.52	35.70	3.25	15.08	12.62	5.54	6 6. 77
Kamataka	89.60	30.56	24.64	18.92	25.88	77.61	32.30	23.17	20.49	24.03
Kerala	52.52	48.06	23.55	15.40	12.99	59.40	45.61	27.39	14.56	12.44
M.P.	104.74	32.37	18.26	12.74	36.63	118.25	31.30	19.58	14.71	34.42
Maharashtra	176.78	31.49	14.46	15.08	38.97	198.27	30.70	21.21	12.55	35.54
Orissa	39.07	37.42	26.70	20.42	15.46	56.18	40.21	26.20	16.70	16.89
Punjab	67.59	59.73	15.74	13.86	10.67	56.11	36.7 3	37.55	13.26	12.46
Rajasthan	60.69	35.69	22.62	18.49	23.20	70.38	30.52	23.12	20.82	25.55
T.Ň.	126.48	22.62	64.45	6.36	6.57	141.40	70.35	10.86	8.75	10.05
Tripura	2.68	28.36	26.12	9.70	35.82	2.63	28.52	28.14	19.39	23.95
U.P.	168.00	35.16	27.87	20.54	16.43	198.48	35.00	28.10	20.03	16.87
W.B.	59.50	24.64	22.17	20.37	32.82	72.70	36.59	19.49	15.16	28.76
Others	7.15	28.53	17.90	15.10	35.80	6.44	31.52	· 24.22	13.66	43.48
All India	1,248.14	35.23	26.68	15.56	22.51	1,417.26	38.22	22.70	15.69	23.39

TABLE III. (CONTD.)

TABLE III.	(Contd)
I ADDO III.	Conauly

			1983-84		
State	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	Over 3 Yrs
A.P.	112.58	41.85	26.48	15.54	16.12
Assam	5.95	8.07	14.12	17.14	60.67
Bihar	51.77	19.26	20.55	19.61	40.58
Gujarat	100.44	30.80	21.58	17.81	29.81
Haryana	87.72	57.66	18.82	14.47	9.05
H.P.	5.12	34.18	20.12	17.77	27.93
J & K	3.94	25.89	9.39	5.33	59.39
Kamataka	95.33	37.47	23.68	17.54	21.32
Kerala	68.98	48.90	25.51	14.70	10.89
M.P.	135.64	33.11	20.95	15.50	30.44
Maharashtra	222.11	33.05	18.74	14.29	33.92
Orissa	69.81	43.13	28.96	18.06	9.84
Punjab	48.47	15.35	39.80	27.36	17.50
Rajasthan	82.92	33.31	23.64	19.62	23.43
T.N.	134.44	48.07	21.89	11.45	18.61
Tripura	3.13	40.58	23.00	12.46	23.96
U.P.	224.09	33.99	28.29	21.04	16.67
W .B.	71.20	27.06	22.96	15.10	34.87
Others	7.70	34.55	17.92	10.26	35.19
All India	1,531.34	36.49	23.60	16.76	23.14

(Contd.)

TABLE III. (CONTD.)

Land Development Banks

			1987				1988					
State	Total (Rs crore)	Upto 1 Yr	1-3 Yrs	3-5 Yrs	Over 5 Yrs	Total (Rs crore)	Upto 1 Yr	1-3 Yrs	3-5 Yrs	Over 5 Yrs		
A.P.	45.82	61.00	17.33	12.37	9.28	N.A.	N.A.	N.A.	N.A.	N.A.		
Assam	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
Bihar	N.A.	N.A.	N.A.	N.A.	N.A.	75.52	15.36	33.86	29.44	21.35		
Gujarat	26.10	9.39	36.40	54.25	0.00	12.33	14.36	50.36	0.00	35.20		
Haryana	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
H.P.	0.66	21.21	43.94	24.24	10.61	0.56	23.21	42.86	23.21	10.71		
J & K	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
Karnataka	27.01	19.99	36.32	24.88	18.81	21.58	22.01	34.85	20.85	22.29		
Kerala	7.26	24.38	35.26	32.51	7.85	N.A.	N.A.	N.A.	N.A.	N.A.		
M.P.	N.A.	N.A .	N. A .	N.A.	N.A.	24.86	57.64	29.57	12.83	0.00		
Maharashtra	50.90	19.00	34.64	23.36	23.01	55.18	16.04	33.58	20.01	30.37		
Orissa	8.92	39.46	31.84	14.35	14.35	9.33	44.80	28.83	16.72	9.65		
Punjab	N.A.	N.A.	N.A.	N.A.	N.A.	24.60	43.37	33.17	17.07	6.38		
Rajasthan	29.36	20.44	35.12	23.19	21.25	36.74	25.07	27.33	24.82	22.78		
T.Ň.	22.61	22.73	26.23	17.82	33.26	N.A.	N.A.	N.A.	N.A.	N.A.		
Tri_xura	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
U.P.	43.73	38.28	29.00	20.72	12.01	47.45	33.83	30.64	22.82	12.71		
W.B.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
All India	262.78	30.01	30.30	23.69	16.01	308.58	26.46	3.27	21.67	19.14		

TABLE III.	LDBS	(Concld.)

			1989					Regiona	l Rural Ba	nk 1989		
State	Total (Rs crore)	Upto 1 Yr	1-3 Yrs	3-5 Yrs	Over 5 Yrs	Total (Rs crore)	Upto 1 Yr	1-2 Yrs	2-3 Yrs	3-5 Yrs	5-8 Yrs	Over 8 Yrs
A.P.	57.00	49.61	24.30	14.51	11.56	110.81	31.49	19.65	13.77	14.35	8.77	11.97
Assam	N.A.	N.A.	N.A.	N.A.	N.A.	16.29	42.12	21.88	17.55	17.36	1.09	N.A.
Bihar	N.A.	N.A.	N.A.	N.A.	N.A.	83.23	18.80	12.94	20.75	30.99	10.95	5.57
Gujarat	N.A.	N.A.	N.A.	N.A.	N.A.	7.49	40.24	20.87	12.07	16.60	9.19	1.03
Haryana	N.A.	N.A.	N.A.	N.A.	N.A.	22.87	14.09	24.80	25.37	27.17	7.65	0.91
H.P.	N.A.	N.A.	N.A.	N.A.	N.A.	3.25	37.41	21.50	16.82	19.68	4.52	0.06
J & K	N.A.	N.A.	N.A.	N.A.	N.A.	6.57	17.35	19.23	14.81	25.42	17.02	6.16
Karnataka	37.58	22.01	34.83	20.86	22.30	97.02	42.00	17.78	14.49	16.54	8.55	0.63
Kerala	11.14	28.37	31.51	18.49	21.63	36.81	67.85	8.33	5.56	18.26	N.A.	N.A.
M.P.	N.A.	N.A.	N.A.	N.A.	N.A.	62.33	29.00	22.61	16.76	22.51	8.21	0.92
Maharashtra	N.A.	N.A.	N.A .	N.A.	N.A.	32.31	38.04	28.21	13.94	10.18	7.04	2.59
Orissa	15.04	31.12	35.77	21.01	12.10	49.28	27.60	21.32	18.80	18.23	9.15	4.90
Punjab	26.09	42.89	37.52	15.29	4.29	2.08	67.00	27.45	3.46	2.09	N.A.	N.A.
Rajasthan	33.56	18.65	25.48	26.58	29.29	39.45	307.00	17.63	18.71	18.87	12.04	2.74
T.N.	31.41	28.40	29.80	16.01	25.79	17.53	38.02	18.41	17.55	26.02	N.A.	N.A.
Tripura	N.A.	N.A.	N.A.	N.A.	N.A.	12.94	60.03	15.15	12.13	12.69	N.A.	N.A.
U.P.	N.A.	N.A.	N.A.	N.A.	N.A.	139.39	21.31	22.90	22.09	21.73	8.67	3.31
W.B.	N.A.	N.A.	N.A.	N.A.	N.A.	13.54	28.45	16.31	16.69	25.63	9.57	3.35
All India	212.36	33.38	29.99	18.54	18.09	796.32	31.28	19.35	17.16	20.26	8.14	3.83

Sources: 1. NABARD (unpublished), for CBs, LDBs and RRBs. 2. Statistical Statements Relating to Cooperative Movement in India (different years), for PACs.

FINANCING GOVERNMENT EXPENDITURE WITH MINIMAL INFLATION An Optimal Control Formulation

Abhay Pethe and Ajit Karnik

This paper is concerned with examining the inflationary impact of financing government expenditures via budget deficit, changes in tax rate and changes in administered prices. The problem is studied within the framework of a small prototype macroeconometric model for the Indian economy. Our optimal control exercises enable us to rank the three instruments at the disposal of the government with respect to their finance generation per unit inflation. We also try and suggest an optimal policy mix of these instruments for financing incremental government expenditures.

INTRODUCTION

The resource needs of development planning and corresponding pressure to raise additional revenues as far as possible in a non-inflationary manner have been ever increasing. There is no denying that inflation hurts the people and in turn - especially in a democratic set up - the government.

Main instruments for financing government expenditure are taxation, administered prices, net borrowing, and budget deficit. In the following, we shall not consider net borrowing and instead confine the discussion to the other three instruments, namely, taxation, administered prices, and budget deficit. There has been much discussion recently about the superiority of one instrument over another [Government of India (1986), Jha and Mundle (1987), Rakshit (1987), Sundaram and Tendulkar (1986, 1987)]. The judgments offered have depended rather crucially on the methodology adopted. The matter is further complicated because the premises are not always made explicit. Moreover, strict ranking of instruments is almost never satisfactory in practical affairs. A more fruitful approach is to obtain an optimal policy mix by using different instruments with differing levels of intensity. This requires an understanding of the interdependencies of different policy instruments and it seems that this is best done within the framework of a macroeconometric model, rather than through adopting a fragmented, piecemeal, or partial approach. This may be supplemented by the use of optimal control methods for carrying out certain experiments. The optimal control

technique is an optimisation technique with a tremendous potential. When used sensibly it can be seen to be a tool which makes possible a wide range of policy experimentation yielding sharp insights into the model dynamics.

The present paper addresses itself to the problem of ranking instruments, such as budget deficit, tax rate and administered prices, from the point of view of financing a given increase in government expenditures and determining optimal levels of intensity of using various instruments to arrive at an optimal policy mix. The macroeconometric model used by us is admittedly an oversimplified one. To obtain richer and more meaningful results, must entail an elaboration of the model itself.

The Model

The model consists of 7 behavioural equations and 3 identities estimated using OLS. Being a simple model, only the most crucially relevant relations are included leaving out a large exogeneity factor. The functional form of the model is set below with a listing of the variables set out in Table 1.

1. YNFR	$=\phi(YNFA, YNFM, GE)$
2. YNFM	$= \phi(YNFT, APTL)$
3. YNFA	$=\phi(\mathbf{R},\mathbf{GIA})$
4. NTR	$=\phi(PUC, YNFN)$
5. TR	$= \phi(YNFN, TXRT)$
6. PUC	$= \phi(PUC_1, APTL)$
7. NAP	$=\phi(TXRT, BD)$
8. WPI	APTL + NAP
9. YNFN	YNFR * WPI
10. GE	BD + NTR + TR

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Symbol	Variable	Units
Endogenous	Variables	
YNFR	NDP at factor cost	Rs crore (1970-71 prices)
YNFM	NDP at factor cost from mining, manufacturing, construction, etc.	do
YNFA	NDP at factor cost from agriculture and allied sectors	do
YNFN	NDP at factor cost	Rs crore (current prices)
NTR	Non tax revenue	do
TR	Tax revenue	do
PUC	Contributions of public sector undertakings	do
GE	Total government expenditures	do
NAP	Non-administered prices	Index
WPI	Wholesale price index	1970-71 = 100
Control Varia	bles	
BD .	Budget deficit	Rs crore (current prices)
TXRT	Tax rate	Units
APTL	Administered prices	Index
Exogenous V	ariables	
YNFT	NDP at factor cost from transport, storage and communications	Rs crore (1970-71 prices)
R	Rainfall index	100 = normal
GIA	Gross irrivated area	'000 Hectares

TABLE 1, LIST OF VARIABLES

The data on all the variables, except administered prices, are collected from standard Government and Reserve Bank of India publications. Construction of the series on administered prices is as in Rao [1984] and Karnik [1990]. For each equation we give the estimated coefficients along with adjusted R^2 , standard error of the estimate, and the DW statistic (or Durbin's h statistic when a lagged dependent variable is present as an explanatory variable). The figures in parentheses under each estimated coefficient are the t statistics. The range of data used for estimation of the model is 1960-61 through 1983-84 (See Annexure).

1. The first equation estimated is for the real income (YNFR).

YNFR	= 500.52 + 1.0385 YNFA (12.5)	
	+2.1529YNFM+0.1518GE	(1)
ADJ. R ²	= 0.9984	
SEE	= 350.73	
DW	= 1.16	

Real income is explained as a function of the performance in the agricultural and manufacturing sectors as reflected in YNFA and YNFM respectively. We are modelling YNFR, not as an identity but as an equation, and focussing on only two of its main components, viz., YNFA and YNFM which are likely to be affected by APTL. It is also seen to be related in an expected way to government expenditures GE.

2. The second equation of the model is concerned with the output of the manufacturing sector, YNFM.

$$YNFM = 822.46 + 0.2065 YNFM_{-1}$$

$$+ 3.4007 YNFT - 33.9340 APTL(2)$$

$$ADJ. R^{2} = 0.9950$$

$$SEE = 151.34$$

$$DW = 1.63; Durbin's h = 0.52$$

Income from the manufacturing sector is explained in a partial adjustment framework with $YNFM_1$ appearing as a lagged independent variable, YNFT, and APTL. The income from the transport sector (YNFT) serves as an important variable in the equation and its obvious positive impact is due to the fact that it ensures availability of inputs and facilitates marketing of produced products. We may note that we have taken YNFT to be exogenous purely on dimensional consideration since we are using a highly simplified model. Endogenising YNFT would increase the size of the model with possibly no commensurate gain in understanding the problem at hand. The detrimental effect of a hike in administered prices is seen in its negative coefficient.

3. This equation models the output of the agricultural sector (YNFA).

$$YNFA = -6248.7 + 116.70RA IN$$

$$+ 0.3016GIA \qquad(3)$$

$$ADJ. R^{2} = 0.9480$$

$$SEE = 615.62$$

$$DW = 2.07$$

Agricultural income is estimated as a function of the rainfall index (R) and gross irrigated area (GIA). The significance of both these variables is as expected. We may note that agricultural output uses inputs whose prices are administered. However, we could not estimate an equation for YNFA which had APTL as a significant variable. Possibly, GIA would capture indirectly the effect of variation in the cost of inputs such as irrigation.

4. In this equation we estimate the non-tax revenue (NTR) collected by the government.

NTR =
$$-364.71 + 5.4170$$
 PUC
(3.1)
+ 0.0181 YNFN
(4.2)
ADJ. R² = 0.9840
SEE = 189.44
DW = 2.07

Non-tax revenue is obtained as a function of the SEE contribution of public sector undertakings (PUC) DW

and nominal income (YNFN). The signs associated with the coefficients of these two variables are as expected.

5. The fifth equation of the model deals with tax revenue (TR).

$$TR = -1,575.20 + 0.0808 \text{ YNFN}_{(14.1)} + 15,792.TXRT(5)$$

$$ADJ. R^{2} = 0.9826$$

$$SEE = 542.95$$

$$DW = 1.28$$

The tax revenue equation is worked out in a straight forward fashion from the buoyancy due to increases in nominal income (YNFN) and an increase in the tax rate (TXRT). The insignificance of the tax rate variable as reflected in its t-value underlines the overwhelming importance of YNFN in the determination of TR.

6. The sixth equation of the model is concerned with modelling the contribution of public sector undertakings (PUC), specified as a function of administered prices (APTL) within a partial adjustment with PUC_1 appearing as a lagged independent variable,

PUC =
$$9.9550 + 0.6818PUC_{-1}$$

+ $1.9895APTL$ (6)
ADJ. R² = 0.9650
SEE = 21.49
DW = 2.46 ; Durbin's h = -1.70

7. Non-administered prices (NAP) are modelled in this equation.

NAP =
$$-52.042 + 1145.30TXRT$$

+ 0.00796BD(7)
ADJ. R² = 0.9278
SEE = 15.765
DW = 1.45

NAP or the freely moving component of prices in the economy are determined by the two instruments in our model, viz., Tax rate (TXRT) and budget deficit (BD).

8. The eighth equation of the model is an identity for the wholesale price index (WPI).

$$WPI = NAP + APTL \qquad(8)$$

The wholesale price index is worked as an identity comprising a simple sum of administered prices (APTL) and the non-administered prices (NAP).

9. The next identity defines nominal income (YNFN).

Nominal income is a straight forward product of the real income (YNFR) and the wholesale price index (WPI). It may be noted that a separate national income price deflator has not been used in this model. This, again, has been prompted by the need to maintain the dimensionality of the model at the minimal level.

YNFN as given in CSO statistics is YNFR times the GDP (i.e. YNFR) deflator. Our model does not have GDP deflator in its specification whose role is played by WPI. Therefore, YNFN as used in Eq. (9) is a constructed series.

10. The third identity which models government expenditures (GE) is a crucial equation in our study.

$$GE = NTR + TR + BD \qquad \dots (10)$$

Government expenditures are obtained definitionally as the sum of revenues from tax and non-tax sources and the budget deficit.

As a general observation it may be noted that almost all the equations have excellent fits and the corroborating statistics such as the DW and t are consistently of a very high quality.

Optimal Control Experiments

Since optimal control techniques have been extensively used to study economic problems, we do not discuss these in any detail over here. Interested reader may see Pindyck [1976] or Rao [1987] for a lucid exposition. In its essence, the technique consists of minimising a quadratic cost functional of the form

$$J = 1/2\sum\{(x_t - \overline{x}_t)'Q(x_t - \overline{x}_t) + (u_t - \overline{u}_t)'R(u_t - \overline{u}_t)\}$$

subject to the systems equations and conditions on the initial values of the state or endogenous variables. In the cost functional expression J, \bar{x}_t and \bar{u}_t are the nominal or desired paths of the state and control variables respectively. Q and R, which are called the penalty matrices, are normally diagonal. The elements of Q give the relative costs of deviating from the desired path of each state variable while the elements of R give the relative costs of deviating from the desired path of each control variable.

The solutions for our experiments were obtained using the non-linear programming routine in the GAMS (Generalized Algebraic Modelling Systems) software. There were basically two sets of experiments that we conducted. The first set of experiments consisted of four subexperiments while the second set consisted of a single experiment.

Experiment 1

Base Run: In the base run under this set of experiments we were mainly concerned with obtaining bench mark or reference profiles over the period 1978-1984 of the various variables with which comparisons could be made in the subsequent experiments. Since this is similar to the simulation technique used in standard econometric studies, the desired trajectories of all the variables were kept at their historical values. For this run the penalty matrix associated with the three control variables, administered prices (APTL), tax (TXRT) and budget deficit (BD), is given below. It may be noted that the matrix is constructed in such a way that the relative weights on all the three controls are equivalent [Pindyck, 1973].

Variables	Weights
APTI.	37,000
TXRT	5.43 E+ 09
BD	1

The penalty matrix in optimal control, using Quadratic Linear Penalty Functions, is diagonal and hence we have listed above the diagonal elements of the penalty matrix on the control variables. Of all the endogenous variables only real income was tracked with a weight of unity in the penalty matrix associated with the endogenous variables.

Runs 1 through 3 consist of policy experiments carried out over the same period as in the Base Run, viz., 1978 - 1984.

Run 1: In this run the desired path of APTL was changed to 10 per cent higher than its historically observed path. The desired paths for all the other variables were maintained at their historical values. The penalty matrix associated with the endogenous variables were kept unchanged though the penalties on the controls were modified as follows:

Variables	Weights
APTL	3.70 E + 06
TXRT	5.43 E + 09
BD	1

The weights on TXRT and BD are maintained at the same level as the Base Run though that on APTL was increased hundred times. The rationale behind this weighting pattern was that since we had modified the trajectory of APTL from its historical values we had to ensure that the optimal path of APTL tracked its desired path.

Run 2: For this run the desired path of TXRT was specified at 10 per cent above its historical path. The desired paths of all other variables were maintained at their historical values. The penalty matrix on the endogenous was unchanged from Run 1 while the penalties on the controls were as follows:

Variables	Weights
APTL	37,000
TXRT	5.43 E + 12
BD	1

For this run the objective was to track the desired path of TXRT as closely as possible and hence the penalty on it was increased a thousand times as compared to the Base Run.

Run 3: For the final run of this set of experiments the desired path of BD was increased by 10 per cent over its historical observed values. The desired paths of all other variables were specified at their historical levels. Again the penalty matrix with respect to the endogenous variables remained unchanged though the penalty matrix with respect to controls were modified as follows:

Variables	Weights
APTL	37,000
TXRT	5.43 E + 09
BD	1,000

Since for this run the objective was to track as closely as possible the desired path of BD the weight associated with it was increased by a thousand times.

The major results of Experiment 1 pertain to the paths of WPI obtained in response to hikes in the control variables. Figures 1 through 3 show these results. A casual inspection of these figures seems to suggest that a 10 per cent hike in tax rate (TXRT) leads to the highest path of WPI (Figure 2) vis-a-vis the paths obtained from 10 per cent hikes in administered prices (APTL) and budget deficit (BD) as seen in figures 1 and 3, respectively. However, such a judgment, based merely on the paths of WPI without considering the revenue raised through the instruments, would not be proper.

The proper approach is to compare the revenues generated per unit inflation through effecting a 10 per cent hike in each of the instruments. That instrument which raises the largest quantum of revenue per unit inflation would clearly be the least inflationary. In Figure 4, we have compared the APTL, TXRT and BD on precisely this basis. Evidently, TXRT generates more revenue per unit inflation and is thus the least inflationary. APTL generates the least revenue per unit inflation and is thus the most inflationary. The performance of BD is intermediate between that TXRT and APTL. WPI

FIGURE 1. RUN 1: 10% HIKE IN APTL



FIGURE 2. RUN 2: 10% HIKE IN TXRT





BASERUN

+ WPI - RUN 2

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FIGURE 3. RUN 3: 10% HIKE IN BD



FIGURE 4. REVENUE GENERATION PER UNIT INFLATION

RS CRORE



RUN 1: APTL



Experiment 2

In the second type of experiment, the time horizon and the instrument paths were maintained at their historical values as in the Base Run or the 'simulation' run. Government expenditures (GE) were hiked by 10 per cent over the optimal path obtained from the Base Run. The optimal paths of all the other endogenous variables, derived from the Base Run, were specified as the desired paths for this experiment. For this run three of the endogenous variables had non zero weights in the penalty matrix associated with endogenous variables.

Variables	Weights
YNFR	1
NAP	100
GE	1,000

A non zero weight on YNFR was designed to avoid any real effect of a hike in GE, and the consequent changes in the instruments, so that we could focus on the purely inflationary impact of using the instruments at various levels of intensity. The weight on NAP was set so as to obtain as non-inflationary a regime as possible. The large weight on GE was necessary to ensure that its path was tracked closely.

The weighting pattern on the controls was the same as in the Base Run:

Variables	Weights
APTL	37,000
TXRT	5.43 E + 09
BD	1

The optimal trajectories of the control variables obtained from this run enable us to judge the effect of incremental intensity with which each of the instruments was exercised and thus to derive an optimal mix of the three instruments in financing a 10 per cent increase in GE in a minimal inflationary regime. In the optimal mix, APTL is seen to be employed at a level on an average 3 per cent above its use in the Base Run while TXRT and BD are employed at levels on an average 8 per cent and 11 per cent, respectively above their use in the Base Run.

Conclusions

The objective of this paper is to embed, in a macroeconometric framework, the problem of devising designs to raise government finances with minimal inflation. To this purpose, we have suggested an optimal control formulation in the context of a highly simplified macroeconometric model. This has enabled us to conduct some policy experiments which help us, in the first place, to ascertain the 'optimal' increase in the intensity of use of each of three instruments, viz., administered prices, tax rate, and budget deficit and then to make use of the 'optimal' ranking of the instruments to raise the requisite finance. Obviously, this is an empirical problem and the solution in each case must be sought from an on-line model.

The nature of the experiments has been advisedly simple. Instead of over-using an obviously prototype model, it was felt that the comparative advantage lies in focusing research on enriching the model itself. This involves both intensive and extensive effort. For instance, looking into the expenditure pattern, with its real and purely inflationary effects, could set up a chain in the research agenda leading to the comprehensive problem of evolving an effective development strategy.

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							AN	VEXURE							(Units as	in Table 1)
YEAR	YNFR	YNFM	YNFA	YNFN	NTR	ĸ	PUR	GE	NAP	MPI	BD	TXRT	APTL	YNFT	R	GIA
19-09-61	24,360	4,360	13,575	13,422.36	35	730	53	1,855	45.09	55.1	1,090	0.0710	10.01	936	66	27,980
1961-62	25,186	4,681	13,686	13,902.67	162	875	8	2,108	45.02	55.2	1,071	0.0767	10.18	1,009	97.4	28,460
1962-63	25,583	5,002	13,223	14,659.05	367	1,061	56	2,500	46.78	57.3	1,072	0.0848	10.52	1,084	94.7	29,450
1963-64	26,916	5,477	13,694	16,391.84	472	1,374	70	3,394	48.87	60.9	1,548	0.0916	12.03	1,165	85.9	29,710
1964-65	29,026	5,872	14,932	19,592.55	518	1,563	70	3,898	55.25	67.5	1,817	0.0886	12.25	1,215	97.5	30,700
1965-66	27,335	6,049	12,842	19,872.54	536	1,784	6L	4,198	60.06	72.7	1,878	0.1001	12.64	1,282	80	30,900
1966-67	27,524	6,121	12,678	22,789.87	539	1,934	87	5,221	69.11	82.8	2,748	0.0906	13.69	1,322	87.9	32,680
1967-68	29,993	6,319	14,633	27,713.53	617	1,937	102	5,011	77.93	92.4	2,457	0.0856	14.47	1,397	92	33,210
1968-69	30,778	6,587	14,711	28,100.31	741	2,019	106	5,100	76.19	91.3	2,340	0.0946	15.11	1,490	93.5	35,480
1969-70	32,692	7,089	15,636	30,992.01	866	2,201	124	5,622	79.01	94.8	2,555	0.0957	15.79	1,569	76	36,970
17-0701	34,519	7,207	16,989	34,519.00	891	2,451	124	6,151	83.51	100.0	2,809	0.1022	16.49	1,580	96.5	38,190
1971-72	35,026	7,390	16,883	36,987.45	1,100	2,928	144	7,578	88.16	105.6	3,550	0.1109	17.44	1,658	66	38,430
1972-73	34,526	7,642	15,793	40,119.21	1,135	3,443	164	8,421	<i>11.1</i> 2	116.2	3,843	0.1138	18.43	1,739	86	39,060
1973-74	36,269	7,724	16,955	50,667.79	1,173	3,900	157	9,047	117.02	139.7	3,974	0.1018	22.68	1,760	99.5	40,280
1974-75	36,712	7,921	16,618	64,209.28	1,460	5,097	208	10,574	141.41	174.9	4,017	0.1062	33.49	1,985	85.5	41,740
1975-76	40,365	8,348	18,777	69,831.45	2,066	6,010	195	13,139	136.62	173.0	5,063	0.1240	36.38	2,165	97	43,360
1976-77	40,513	9,140	17,575	71,545.95	2,158	6,581	237	14,477	138.89	176.6	5,738	0.1269	37.71	2,329	94.3	43,550
81-7791	44,137	19,780	19,689	82,006.54	2,732	7,060	279	16,314	147.55	185.8	6,522	0.1172	38.25	2,443	98.5	46,030
1978-79	46,606	10,486	20,250	86,593.94	2,672	8,568	264	19,684	145.62	185.8	8,444	0.1299	40.18	2,618	97.5	48,310
1979-80	44,043	10,259	17,532	95,837.56	2,958	8,219	302	20,030	168.66	217.6	8,853	0.1382	48.94	2,724	85	49,180
1980-81	47,419	10,480	19,735	122,009.00	3,558	9,341	292	22,808	196.40	257.3	606'6	0.1309	60.90	2,856	76	49,580
1981-82	49,633	10,900	20,365	139,617.60	3,790	10,537	321	24,871	210.38	281.3	10,544	0.1395	70.92	3,002	66	51,550
1982-83	50,633	11,267	19,776	146,177.40	5,035	13,056	419	33,034	213.75	288.7	14,943	0.1441	74.95	3,182	89.4	52,120
1983-84	54,890	12,383	21,953	173,452.40	5,016	15,477	451	37,772	237.18	316.0	17,279	0.1367	78.20	3,412	95	53,940
1984-85	56,891	13,160	21,924	192,519.10	6,690	17,694	407	45,897	253.00	338.4	21,513	0.1341	85.40	3,669	90	54,100
1985-86	59,712	14,256	21,955	213,649.50	8,026	21,180	515	50,906	262.27	357.8	21,700	0.1494	95.53	4,090	90	65,050
Sources: ((ii) RBI B (iii) Econ	 CSO, N, ulletin for omic Surve f computed 	ational Acc NTR, TR, y for WPI 1 from data	PUC, BD. , R.	istics for data of CSO.	n YNFR,	YNFM, YN	IFA, YNI	N, YNFT	GE, GIA							
(v) NAP,	APTL con	nputed as p	er Kamik ((1990).												

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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, and agencies of central and state governments 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. 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 recommendations of official documents or parts thereof for inclusion in this section.

In the present section we publish:

- 1. Estimates of Capital Stock of Indian Economy as on 31 March, 1981; Central Statistical Organisation, Department of Statistics, Ministry of Planning Government of India, 1988.
- 2. Recommendations and Conclusions of the Administrative Reforms Commission: Chapter on Public Sector Undertakings; The Administrative Reforms Commission (Secretariat), Compendium, July, 1970.

ESTIMATES OF CAPITAL STOCK OF INDIAN ECONOMY AS ON 31 MARCH, 1981. (CENTRAL STATISTICAL ORGANISATION, DEPARTMENT OF STATISTICS, GOVERNMENT OF INDIA - 1988)

I. INTRODUCTION

Capital stock of a country is broadly referred to as that part of national wealth which is reproducible; it consists of all resources which contribute to the production of goods and services. The changing relationship between output and capital stock is an import aspect of the study of changes in productive efficiency in the various industries of a developing economy. Firm estimates of capital stock enhance the ability to associate capital formation with economic growth and to project future production possibilities thereby leading to formulation of policies designed to achieve the desired economic objectives. This also provides a firm basis for estimating capital consumption needed to arrive at the estimates of various macro-economic aggregates on net basis.

2. The work on the estimates of capital stock has been in progress in the Central Statistical Organisation (CSO) for the past few years. Several studies have been undertaken in the National Accounts Division (NAD) from time to time. The estimates of capital formation and consumption of fixed capital (CFC) in respect of agriculture and ownership of dwellings relating to the households in National Accounts Statistics (NAS) were being based on the estimates of fixed capital stock available from the results of the All India Debt & Investment Surveys (AIDIS) of Reserve Bank of India (RBI). The estimates in respect of other industries and by type of institution were also attempted. However, till the release of the "New Series on National Accounts Statistics" in February, 1988, official estimates of capital stock by industry of use and by type of institution were not available. As early as 1981 the estimates of fixed capital stock by industry of use were prepared by NAD. These estimates were compiled by carrying forward the bench-mark estimates of net fixed capital stock (NFCS) at the end of the year 1949-50 of Mukherjee and Sastry (1959) using the official estimates of net fixed capital stock formation (NFCS) as available in the

NAS [Mukherjee and Sastry, 1959]. These estimates were placed before the Advisory Committee on Compilation and Analysis of National Accounts (predecessor of Advisory Committee on National Accounts) in 1982. The Advisory Committee suggested further studies on capital stock to be carried out following the Perpetual Inventory Method (PIM) by constructing lifetable of various types of assets. Meanwhile, the Working Group on Savings, set up by the Government of India in May, 1981 under the chairmanship of Prof. K. N. Raj, also examined critically the estimates of CFC used in NAS. The Working Group in its report submitted to the Government of India in 1982 recommended adoption of PIM to prepare the estimates of CFC for all the sectors. The relevant extracts from the report are reproduced below.

"Another area in which improvements in estimation can and should be made relates to the provisions for depreciation (i.e. capital consumption). As described earlier, the existing practices and the underlying criteria vary from sector to sector. There are such extremes as no provision at all being made for depreciation in the case of physical assets used for government administration; in others, the provision made is on the basis of what income tax laws permit, as in the case of private sector companies, public corporations and companies, and even some departmental undertakings. It is important that the criteria and methods adopted are put on a more rational and uniform basis. In this regard, the methodology now adopted for estimating capital consumption in 'agriculture' appears in principle very logical and appropriate. Estimates of capital stock for each of the years are first built up on the basis of the perpetual inventory method with the help of independent data on the average age-structure of assets (separately for different types of assets), the rate of consumption of fixed capital is then arrived at as a proportion of the value of stock in each case. This method needs to be extended to all other sectors. It would require building up of a comprehensive life-table of physical assets in each sector and sub-sector, based on detailed and painstaking analysis of the average life of each major group of physical assets. But such exercises alone can provide reasonably realistic estimates of the consumption of fixed capital and make the distinction drawn between gross and net capital formation more meaningful and dependable."

3. In pursuance of the recommendations of the Advisory Committee on National Accounts and of the Working Group on Savings, studies on the construction of life-table of assets and estimation of NFCS using PIM were initiated in the NAD. The NAD concentrated its efforts to prepare firm estimates of capital stock as on 31 March, 1981 so that the corresponding estimates of CFC based on these estimates could be prepared for use in the New Series with base 1980-81. To begin with the estimates of NFCS were attempted by type of institution, i.e., public sector, private corporate sector and household sector. These estimates were, however, deficient in as much as the private non-profit institutions were not covered for want of data. The NAD in its subsequent exercise constructed life-table of assets, separately, for the public and private sectors and prepared the estimates of NFCS by industry of use. These estimates were discussed in various forums including the Advisory Committee on National Accounts. the Sub-Committee on Capital Stock set up by the latter for the purpose. The Sub-Committee preferred a combined life-table of assets for public and private sectors. The Sub-Committee also suggested that for irrigation dams, some definite life might be assumed whereas for roads and canals the current expenditure on their repairs and maintenance provided in the budget documents could be assumed to be sufficient to keep these assets intact. Accordingly, a combined life-table of assets was attempted (as discussed in para 14) and the estimates of NFCS attempted afresh. These estimates were found to be only marginally different from the estimates attempted by the NAD earlier. Finally, the estimates of CFC based on the latest estimates of NFCS by industry of use were prepared and after these had been considered and found in order, were used in the "New Series on National Accounts", issued in February, 1988.

4. Subsequent to the issue of the new series, estimates of stock of inventories were also worked out in order to arrive at the estimates of total capital stock, which includes NFCS as well as stock of inventories. This publication presents the estimates of capital stock as on 31 March, 1981. The conceptual details and the method of estimation used in working out the estimates are discussed in the following paragraphs.

II. CONCEPTS OF CAPITAL STOCK AND CONSUMPTION OF FIXED CAPITAL

5. The guidelines issued by the United Nations Statistical Office (UNSO) in 1977 defined the national wealth as 'total of various kinds of net tangible and intangible non-financial assets of residents plus financial claims on non-residents less financial liabilities to non-residents'. Tangible assets have been further classified into (i) reproducible tangible assets (i.e., capital stock) comprising fixed assets and stocks (i.e., inventories) and (ii) non-reproducible tangible assets comprising land, timber tracts and forests, sub-soil assets & extraction sites, fisheries and historical monuments. The reproducible fixed tangible assets (i.e., fixed assets used for the production of goods and services) commonly known as fixed capital stock comprise assets in the form of residential buildings, non-residential buildings, dams, irrigation & flood control projects, other construction works, transport equipment, machinery and equipment, breeding stock, draught animals, dairy cattle and the like, and capital expenditure on land improvement, plantations, orchard developments and afforestation. The fixed assets include uncompleted construction assets also. The stocks include the inventories of goods producing industries, trade, other industries and stocks of government services. These comprise stocks of finished and semi-finished goods and young livestock except breeding stock, dairy cattle and the like which form part of the fixed assets. It may, however, be clarified that the durable goods in the hands of households which are not used for further production of goods and services such as automobiles, refrigerators, washing machines, furniture, sewing machines, etc., as well as fixed assets mainly meant for defence purposes such as warships, fighter aircrafts, transport vehicles and war materials do not form part of the fixed capital stock as these are assumed to have been consumed as soon as these are purchased. However, the construction works undertaken by the households including buildings and capital expenditure on residential dwellings for defence personnel, border roads, ordnance factories, etc., form part of the fixed capital stock.

6.CFC as per UN System of National Accounts (SNA) may be defined as that part of gross product which is required to replace fixed capital used up in the process of production during the period of account. This flow is based on the concept of economic life time of the individual assets. As such, the estimates of CFC at replacement cost are necessary so as to derive the estimates of net product, net capital formation as well as net saving on a realistic basis.

7. Capital is an important input in the production process. The quantity and quality of capital influence not only the productivity of capital but also that of labour and total output. The guidelines issued by United Nations Statistical Office on the National and Sectoral Balance-sheet and Reconciliation Account of the System of National Accounts [UNSO, 1977] and on Tangible Assets [UNSO, 1979] prescribe the estimation of CFC at current replacement cost for use in national accounts estimates on the basis of the estimates of gross fixed capital stock (GFCS) at current market cost for each type of assets used in production process and their expected average life using the PIM. The PIM also provides the estimates of NFCS at current market prices. Several developed countries like Australia, Japan, United States of America and United Kingdom are already preparing the estimates of fixed capital stock and the CFC based thereon and are using the same in their national accounts aggregates.

8. According to the guidelines issued by the UNSO on Tangible Assets referred to in para 7,

the value of the stock of inventories can be estimated more easily by using book value data gathered from balance sheets of enterprises or records of establishments. This is because of the nature of inventories, which are generally turned over frequently. Most of the stock at the end of the year will, therefore, have been purchased fairly recently except in exceptional cases where the turnover frequencies happen to be low. As a result book values in such cases normally reflect relatively up-to-date prices. Therefore, the book value of the stocks, according to the guidelines, can be used for the statistics of tangible assets without any adjustments.

III. PAST STUDIES

9. The estimates of net capital stock of the Indian economy have been prepared in the past by various scholars using the bench-mark estimates of capital stock and carrying forward these estimates by official estimates of net capital formation prepared by the CSO. The first comprehensive estimates of capital stock were prepared for the year ending 1949-50 [Mukherjee and Sastry, 1959; Uma Datta and Vinod Prakash, 1960]. Later, a series of estimates of capital stock at current and constant prices [Mukherjee, 1964] were prepared for the period 1950-51 to 1961-62. The detailed estimates of tangible wealth for the year 1960-61 were brought out by the Reserve Bank of India [RBI, 1963]. These were subsequently revised on the availability of fresh data [RBI, 1965]. Later a paper on the subject by Gothoskar and Kripa Shankar was also published in the RBI Bulletin [1972]. Uma Roy Chaudhury and Pratap Narain & R. P. Katyal in their papers published in 1977 and 1980 respectively had also tried to present the estimates at the sectoral level and adjust some of the previous bench-mark estimates to provide a comparative picture of the growth of the capital stock in various industrial sectors of the economy over the years. In the above mentioned studies, the estimates were compiled by taking the bench-mark estimates of capital stock and adjusting the same with the official estimates of capital formation, net of consumption of fixed capital, the latter having been arrived at primarily on the basis of allowance for depreciation as per Income Tax Rules. The limitations of official estimates of CFC used in the 1970-71 series are given in the 'National Accounts Statistics, Sources and Methods', April, 1980 and have been further elaborated by Katyal and Gupta [1984], while illustrating the use of PIM for estimation of fixed capital stock and consumption of fixed capital. Chaturvedi and Bagchi [1985] also used PIM for arriving at the industry-wise estimates of fixed capital stock and CFC and tried to show that the official estimates of CFC used in 1970-71 series were being grossly under-estimated. A number of other studies have also been conducted in India and abroad, the details of which have been cited in the references.

IV. PERPETUAL INVENTORY METHOD

10. The common method of making the estimates of written-down replacement cost for fixed capital stock is the PIM. Figures of the written-down replacement value of the stock of fixed assets on a given date, say the beginning of a year, are based first of all on figures of gross fixed capital formation (GFCF), classified as much as possible according to type of fixed asset and year of acquisition, accumulated over a period to cover the acquisition of all fixed assets. The period should be long enough so that the fixed assets acquired before that period would have been retired, that is, their average useful life would have run out. Conceptually, the cost of acquisition of each class (same type and same year of acquisition) of fixed assets is adjusted to current gross replacement cost by an index of the average change in prices from the year of acquisition to the date in guestion; and allowance. valued at current replacement cost, for accumulated depreciation between the two dates is deducted in order to arrive at its written-down current replacement cost. In practice, the perpetual inventory may be built year-by-year at the constant prices of a given year. Net capital formation (gross capital formation less the allowance for depreciation) during a year, adjusted to constant prices, for a class of fixed assets is added to the written-down value of its

accumulated net capital formation as of the beginning of the given year at constant prices. The resulting constant price value of the net capital stock as of the beginning of the next year is converted to current replacement cost as of the later date. There are a number of approaches to writing off the value of fixed assets, such as straight line depreciation, declining balance and declining rate of depreciation, but in PIM, the straight line approach is recommended as this approach is most commonly used in business accounting. Once the perpetual inventory is built, it is to be maintained year-by-year by the same means as are outlined above. Alternatively, the PIM may be used on the basis of year-by-year extension of data gathered in national censuses or from fire insurance records on the written-down value of the stock of fixed assets as of a given date, classified to the extent possible according to type and age. The PIM can, of course, also be used to estimate the gross replacement value of fixed assets. Accumulated depreciation in that case need not be deducted for arriving at the initial estimates of the gross replacement cost of the capital stock, and the value of constant prices of gross rather than net fixed capital formation added year-by-year.

11. The UNSO document (1977) acknowledges that gathering and compilation of appropriate price index numbers on capital goods for purposes of the PIM raises difficult conceptual and practical problems. Since each construction project and each piece of highly fabricated heavy machinery and equipment is produced on contract and usually consists of unique features, the compilation of comparable series of price indices must be based on pricing representative model of proxies. Price series on the models my be based on direct estimates of producers, on the combination of comparable prices of components or on regressions of the transaction values (costs) of completed projects on their strategic characteristics. Even in the pricing of less complex capital goods, as proxies or in their own right, serious problems of inadequacies in accounting for quality changes are encountered. The replacement cost arrived at from these price series can be taken as only approximations to market values. In addition to the complications and deficiencies mentioned above, many of the price series gathered on capital goods give too little attention to the valuations of purchasers and, therefore, do not reflect the forces of demand which, together with those of supply, determine the market prices.

12. The various steps involved in PIM are as follows:

- i) Assumptions are made about the average length of life of each class of assets separately distinguished;
- ii) GFCF is then estimated for each class of assets for 'L' years prior to 'Y', where 'L' is the average life of an asset and 'Y' is the year for which capital consumption and gross stock are to be estimated;
- iii) Appropriate price indices are to be identified and applied to the estimates of GFCF to convert them to constant prices;
- iv) The estimates of GFCF at constant prices are then aggregated for 'L' years to obtain the estimates of gross fixed capital stock at constant prices at the end of the year;
- v) The GFCS of an asset is then divided by 'L' to obtain the estimate of capital consumption at constant prices;
- vi) The price indices are used to convert the estimates of capital consumption to current prices or to another price base;
- vii) The estimates of NFCS (i.e. GFCS for the year 'Y' minus accrued capital consumption during 'L' years) for the year 'Y' are first calculated at constant prices and then converted to current prices using appropriate price indicators; and
- viii) Having arrived at the capital stock at the end of the year 'Y', it is maintained year-by-year by the same procedure as outlined above.

13. The above steps obviously involve collection, compilation and categorisation of considerable amount of data on various types of assets and their prices for estimation of fixed capital formation and CFC separately for each class of assets and working out the same at constant prices under certain assumptions about their average life.

V. ASSUMED LIFE OF ASSETS

14. As mentioned earlier, PIM necessitates the availability of reliable estimates of average age of various types of fixed assets in different industries. However, no life table of fixed assets is currently available in India. A paper presented at a seminar organised by United Nations Industrial Development Organisation (UNIDO) at Prague in 1970 provides information with regard to age of assets in different industries for developing countries. Katyal and Gupta [1984] presented a table giving average life for 32 types of assets. Chaturvedi and Bagchi [1984] presented assumed average life of construction and machinery assets in each industry of the economy. Detailed discussions were held by CSO with the concerned agencies like Directorate General of Technical Development; Ministry of Industry; Railway Board; Bureau of Industrial Costs & Prices: National Productivity Council; Delhi Electric Supply Undertaking; Departments of Posts & Tele-communications; Central Road Research Institute; Central Water Commission; Ministry of Shipping & Transport and Indian Roads Congress and the requisite information on average age of various assets obtained. Data on average life of machine tools in the reports of Censuses of Machine Tools [1968 & 1986] conducted by Central Machine Tools Institute, Bangalore, were also examined. The information on average life in certain industries is also available from Koti and Somayajulu [1971]. The average life of assets on the basis of depreciation provision under Income-tax Rules as well as in the Companies (Amendment) Act, 1988 have also been considered. On the basis of the above material as well as discussions held with concerned experts, the average life for each type of assets was attempted and the same is given in Table 1. In the case of roads and canals, it was felt that the current expenditure on repairs and maintenance are sufficient to maintain these assets for a long time. As such no depreciation need be provided for such assets.

TABLE 1. AVERAGE AGE OF FIXED ASSETS

Sl. No.	Type of assets	Age in years
	Construction	
1.	Buildings (residential/non-residential)	
	a) Pucca	80
	b) Kutcha	20
2.	Bridges	100
3.	Irrigation works including dams, canals, etc.	100
4.	Improvement of land and irrigation works	30
5.	Plantations	20
6.	Railway track	55
7.	Electricity transmission works	45
8.	Other construction works	35
9.	Aggregate construction (i.e. where break up of expenditure into buildings, etc., is not available)	
	a) Manufacturing (comprising buildings, workshops, sheds, etc.)	50
	b) Others (comprising mainly of buildings both pucca and kutcha)	65
	Plant & Machinery	
10.	Agricultural machinery	9
11.	Manufacturing machinery	20
12.	Mining machinery	10
13.	Construction machinery	10
14.	Electricity generators & plants	25
15.	Railway plant & machinery	20
16.	Other plant & machinery	15
17.	Furniture	20
	Transport Equipment	
18.	Railway coaches, wagons & engines	33
19.	Ships, vessels, motor boats, trawlers, etc.	15
20.	Aeroplanes	10
21.	Buses, trucks, jeeps cars, etc.	10
22	Tongas, rickshaws, carts, etc.	8

VI. PROCEDURE OF ESTIMATION

15. The estimates of net capital stock separately for NFCS and stock of inventories as on 31 March, 1981 and the CFC during the year 1980-81 have been prepared by type of institution and by industry of use for each type of asset. For estimation of CFC, the straightline method as recommended in the UNSO guidelines (1977) has been utilised. The PIM as outlined in the UNSO guidelines does not provide for adjustment of capital losses in the estimates of capital formation. It recommends that the capital losses may be adjusted in the Reconciliation Account. However, in principle, there does not seem to be any justification not to adjust the capital losses that have taken place during a year in the estimates of capital stock. At the same time, it is difficult to make these adjustments in the Indian conditions as the necessary data on capital losses are rather scanty [Jagdish Kumar *et al*, 1986]. It is for this reason that no adjustment for capital losses has been possible in this study.

16. As in the NAS, the economy is divided into three broad institutional sectors, i.e., public sector; private corporate sector; and household sector (residual), as also into various industry groups, i.e. agriculture; forestry & logging; fishing; mining & quarrying; manufacturing; construction; electricity, gas and water supply; transport, storage & communication; trade, hotels & restaurants; banking & insurance; real estate, ownership of dwellings & business services; public administration & defence; and other services. The annual estimates of gross capital formation at constant (1970-71) prices are available in the regular publications of NAS. Since these estimates are not prepared for each type of assets as required by PIM, the estimates at current prices

have been made use of. These have been converted to constant (1980-81) prices using appropriate price indices as described in the subsequent paragraphs. The procedure of estimation of NFCS, CFC and stock of inventories for each of of assets by applying the undermentioned relethe institutional sectors/sub-sectors and for industries within these institutional sectors is described in the following paragraphs.

A. NET FIXED CAPITAL STOCK

Public Sector

17. Public sector comprises administrative departments, departmental enterprises (DEs) and non-departmental commercial undertakings (NDCUs). For each of the sub-sectors industrywise estimates of NFCS and CFC have been attempted separately.

Administrative Departments

18. Data on capital outlays in administrative departments up to the year ended 1949-50 at book value have been collected from the Report of Combined Finance & Revenue Accounts (CFRA) of the Central and State governments, 1949-50. The book value of these assets up to the year ended 1949-50 has been converted at replacement cost using the revaluation ratio of 2.8 worked out from the data on book value and replacement cost in respect of railways and irrigation assets discussed under the departmental enterprises (Para 22). Annual data on GFCF by type of assets and industry of use are available in the NAS and the CSO (1983) publication dealing with transactions of public sector. These estimates have been further disaggregated into those relating to buildings, roads & bridges, other construction works, transport equipments, machinery & equipments and net purchase of second hand physical assets (NPSA). From the year 1980-81 onwards, NPSA has been appropriately assigned in NAS to the respective categories on the basis of details available in budget documents and reports of the undertakings. For the years prior to 1980-81, NPSA has been distributed into above categories ^eexcept roads and bridges and other construction works on pro-rata basis. The capital outlays up to

the year 1949-50 at replacement cost and the estimates of GFCF at industry level at current prices have been converted into constant (1980-81) prices for all industries and for all types vant price indices.

Type of asset	Index used (Please see Annex for details)
Buildings	Index number of cost of con- struction of urban buildings
Other construction	Index number of cost of con- struction of other construction works (accounted)
Roads & bridges	Index number of cost of con- struction of roads & bridges
Transport equipment	Wholesale price index for transport equipment
Machinery & equipment	Wholesale price index for machinery & machine tools

19. The estimates of NFCS and CFC for the year 1980-81 have been attempted separately for the assets created before and after 1949-50. These have been aggregated to arrive at the total NFCS and CFC for the year 1980-81.

20. The assets prior to 1949-50 accumulated over the past years are assumed to have outlived half of their life. As such for applying PIM half of the assumed life has been taken for such assets and annual CFC has been kept constant till these assets have retired i.e., without decreasing GFCS until it depreciates in full. Further, in this case only construction assets have been taken into account as the assets in respect of plant and machinery created prior to 1949-50 would have retired by 1980-81.

21. For the assets created from 1950-51 onwards the estimates of GFCS at constant (1980-81) prices have been accumulated to estimate GFCS at the end of each year. The NFCS and CFC have been estimated by PIM taking average ages as given in Table 1.

Departmental Enterprises

22. For railways and irrigation projects data on capital outlays were compiled from the year 1853 and 1876 onwards from the Ministry of Railways and Report of the CFRA respectively. For other industries book value of assets for the year ended

1949-50 have been compiled from the report of the CFRA for want of details for earlier years. An examination of the balance sheet of the Railways followed by discussion with the Railway authorities revealed that the total capital outlays upto the end of a particular year were net of capital expenditure on renewals and replacement for like by like items as these are not treated as new capital outlays by the Railways. However, these outlays include capital outlays of land and stocks (inventories) as well. Besides, the series of estimates of capital outlays for the Railways and also for irrigation are not comparable over all the years as in 1937 Burma was separated from India and in 1947 due to creation of Pakistan assets were transferred to these countries. These assets have been suitably readjusted for the previous years by applying a proportion of the assets which remained in India to the total assets as existing before 1937-38 and 1947-48 respectively. From this derived series of total capital outlays at historical prices which is net of expenditure on renewal and replacements, the series of net capital formation at book value has been obtained on the assumption that expenditure on renewal and replacements compensates for the allowance for depreciation. The same has been converted into 1949-50 prices with the help of general index of wholesale prices for all commodities available since 1861 from Directorate General of Commercial Intelligence & Statistics (DGCI&S) and Office of the Economic Adviser with different base years by suitably linking the series. It may be pointed out that the commodity-wise indices for machinery and inputs of items of construction, i.e. steel, cement, etc., prior to 1949-50 are not available. Moreover, since most of the assets prior to 1950 would have retired by 1981, the use of general index does not vitiate the estimates of fixed capital stock and CFC after 1981. Incidentally, it may be added that in spite of best efforts it has not been possible to obtain corresponding representative indices from the Central Statistical Office of the United Kingdom. The estimates of net capital formation at 1949-50 prices so arrived at have been accumulated over the years to obtain the total net capital stock at the end of the year 1949-50 at current prices. The net capital stock at the end of 1949-50 so arrived is inclusive of land

value and inventories as mentioned above. In order to derive the NFCS, the value of land and inventories has been excluded with the help of detailed break up available in Railway budget explanatory memorandum since late fifties. This estimate of total NFCS is disaggregated into buildings, roads and bridges, track, rolling stock and plant & machinery in the ratio of the break up of the total fixed capital of Railways in the late fifties to arrive at the total fixed capital at the end of 1949-50 for each type of assets in the Railway. It has been assumed that the assets existing at the end of the year 1949-50 have completed half of their average life.

23. The estimates of capital outlays prior to 1949-50 are available for all departmental enterprises and separately only for railways and irrigation (which accounted for majority of the total fixed assets in departmental enterprises in 1950). For the departmental enterprises other than railways & irrigation, industry-wise capital outlays are not available and as such the procedure followed above cannot be used to revalue the assets of these departmental enterprises. The book values of assets prior to 1949-50 for these industries have been converted to replacement cost using the combined replacement ratio of 2.8 obtained for railways and irrigation.

24. These assets at the end of 1949-50 (at current prices) have been converted to 1980-81 prices with the help of relevant price indices. The data on GFCF have been compiled from the budget documents and CSO (1983) publication dealing with transaction of public sector. The estimates of GFCF at 1980-81 prices have been prepared using the price indices as for the administrative departments except for the railways permanent way and rolling stock. For these, the 'Index of cost of construction of railway permanent way' and 'Wholesale price index for rolling stock' have been used respectively.

25. The PIM was applied as in the case of administrative departments separately for the stock of assets existing at the end of 1949-50 and created after 1949-50 for each type of assets under each industry separately taking ages of assets as given in Table 1.

Non-Departmental Commercial Undertakings

26. The data on stock of fixed assets at the end of the year 1949-50 for Non-departmental Commercial Undertakings (NDCUs) in case of mining and transport undertakings have been collected from the report of Taxation Enquiry Commission [Ministry of Finance, 1958]. The book value of these assets is only about Rs 1 crore. As these assets may be of recent origin, revaluation has not been done. For manufacturing, electricity and other industries, these are assumed to be negligible as most of the undertakings were established after 1950-51. The data on GFCF for the period 1948-49 to 1959-60 in case of manufacturing industry and at the aggregate level have been taken from a paper by Jagdish Kumar et al [1963]. Use has also been made of 'Transactions of Public Sector' [CSO, 1983] and the various issues of NAS. The estimates of GFCF at current prices have been compiled by industries with break up into buildings, other construction works, capital work in progress (CWP), expenditure during construction (EDC), transport equipment, plant & machinery and NPSA. For adjustment of CWP and EDC, the reports of the NDCUs have been analysed in detail with a view to knowing the type of these entities. On the basis of the analysis, the EDC has been distributed appropriately.

27. The estimates of GFCF at current prices have been converted into constant (1980-81) prices with the help of relevant price indices as in the case of administrative departments. The estimates of NFCS and CFC have been prepared by PIM using the age of assets as given in Table 1.

Private Corporate Sector

28. This sector comprises public limited companies and private limited companies i.e., companies in the private sector set up under the Companies Act and credit and non-credit co-operative societies. The RBI have published the industry-wise all-India data on fixed capital

stock based on sample studies for the nongovernment, non-financial public limited companies for the year ended 1949-50. In regard to private limited companies, data on fixed assets based on RBI sample studies are available for 1949-50 in the report of Taxation Enquiry Commission, 1958. These estimates have been blown up with the help of data on paid-up capital for sample companies to all companies at the industry level. The estimates for the banks and other financial institutions are adopted from the paper by Mukherjee & Sastry [1959]. The estimates of GFCF in private corporate sector for 1950-51 onwards at the aggregate level are published in various issues of NAS separately for joint stock companies and co-operative societies and these estimates are built up at the industry level. The estimates of fixed assets at the end of 1949-50 for co-operative societies are not available. These are, however, expected to be negligible as the co-operative institutions are of recent origin.

29. As the stock of fixed assets as on 31 March, 1950 is available at book value, it is to be revalued at 1949-50 prices and later converted to 1980-81 prices. The revaluation ratio as used in public sector could not be used in private corporate sector as the proportion of the construction assets is much larger in case of railways and irrigation compared to private corporate units. Also the various industries in private corporate sector, set up at different points of time, may not be as old as establishment of railways and irrigation system in India. In view of this an exercise was attempted by carrying backward the estimates of fixed capital at book value for 1949-50 as far back as 1900-01 on the basis of index of industrial production as given in 'The Note on the Long Term Growth of National Income in India, 1900-01 to 1952-53' [Mukherjee, 1960] and index number of wholesale prices. As already explained, the indices of wholesale prices of capital goods are, however, not available prior to 1950. The series of fixed capital formation so derived at 1949-50 prices has been accumulated over the years to derive the estimates of fixed capital stock as on 31 March, 1950 at replacement cost. The ratio of this estimate at replacement value to that of book value works out to 2.4 which when compared with the ratio of 2.8 for railways and irrigation seems to be reasonable. As the replacement ratios are expected to vary over the industries, the overall ratio of 2.4 was adjusted suitably at the industry level. This adjustment has been done on the basis of data on proportion of value of depreciated stock

to total value of fixed assets as available in the RBI study on Finances of Joint Stock Companies [1948] and the proportion of construction assets to total assets in various industries.

30. The estimates of capital stock as on 31 March, 1950 and GFCF from 1950-51 onwards at current prices have been converted to 1980-81 prices with the help of price indices given below:

	Industry		Type of asset	Index
1.	Agriculture	1.1	Non-residential buildings	Index of cost of other construc- tion works (accounted)
		1.2	Other construction works (im- provement of land and irrigation works)	
		1.3	Agricultural plantations	Index of cost of construction of other construction works (un- accounted)
		1.4	Machinery & Equipment (pro- duced in organised sector)	Wholesale price Index (WPI) for non-electrical machinery
		1.5	Machinery & equipment (pro- duced in unorganised sector)	Wholesale price Index for tools and implements
2.	Forestry	2.1	Construction	Index of cost of construction of other construction works (un- accounted)
		2.2	Machinery	Wholesale price Index for tools and implements
3.	Fishery		Machinery	Weighted index of wholesale price index in respect of timber, diesel, oil, nylon, terene and mixed cotton
4.	Construction		Machinery	Wholesale price index for non- electrical machinery
5.	Residential dwellings	5.1	Rural residential buildings	Index of cost of construction of nural buildings
		5.2	Urban residential buildings	Index of cost of construction of urban buildings
6.	Mechanised road transport		Machinery	Wholesale price index for trans-
7.	Non-mechanised road transport		Machinery	Wholesale price index for non- electrical machinery
8.	Water transport		Machinery	Wholesale price index for trans-
9.	Other industries		Construction & machinery	Implicit price indices available in the NAS

31. The PIM has been applied to estimate NFCS, CFC for all industries using the age of assets given in Table 1.

Household Sector

32. This sector comprises household and nonhousehold unincorporated enterprises and nonprofit institutions. The estimates of NFCS of household enterprises in respect of agriculture (excluding land improvement and livestock) and ownership of dwellings have been prepared as on 31 March, 1981 on the basis of data of net capital stock available from the results of All India Debt & Investment Survey (AIDIS), 1981-82 as contained in National Sample Survey Organisation (NSSO) report No. 318 and some data specially got tabulated. It may, however, be mentioned that separate data on capital expenditure on land and plots are not available as the same are included in the expenditure on fixed assets. The expenditure on land & plots has been excluded using the ratio as obtained from the detailed analysis of capital expenditure available from AIDIS, 1971-72 as

similar data from AIDIS, 1981-82 are not yet in the paper by Mukherjee and Sastry [1959] have available. Moreover, AIDIS, 1981-82 does not give separately value of improvement of land and irrigation works but the same are merged with the value of land. Such expenditure during the year is, however, treated as part of capital formation. The estimates of NFCS of this category have. therefore, been prepared using estimates of gross capital expenditure at current prices on the basis of data available from All India Rural Credit Survey (AIRCS), 1951-52; All India Rural Debt and Investment Survey (AIRDIS), 1961-62; AIDIS, 1971-72 and 1981-82. The estimates of capital formation at current prices have been converted to constant prices using index of other construction works.

33. In the case of livestock, AIDIS provide data on capital stock inclusive of poultry and young livestock. However, poultry and young livestock form part of inventories. The estimates of net capital stock available from AIDIS have been divided into fixed assets and inventories on the basis of state-wise analysis of livestock census data and the average price per head of various types of livestock available from the state governments. Thus, the estimates as on 31 March, 1981 are based on AIDIS data for 1981-82.

34. The AIDIS, 1981-82 does not provide the estimates of gross capital stock. As such, it is not possible to attempt the estimates of CFC in respect of agriculture and ownership of dwellings on the basis of data available from AIDIS, 1980-81. However, as mentioned, the estimates of GFCF are available in NAS in respect of these industries. In the case of agriculture, the stock of fixed assets at the end of 1949-50 have not been taken into account as the same would have retired by 1980-81. In the case of ownership of dwellings, the estimates of net fixed capital stock for rural and urban residential buildings as given in the paper by Mukherjee & Sastry [1959] have been made use of. The estimates of CFC for these two categories have been prepared using PIM.

35. For the remaining industries in the household sector, AIDIS does not provide data at the industry level. Furthermore, AIDIS does not cover non-profit institutions. In order to prepare the estimates of NFCS for these industries, the estimates at the end of the year 1949-50 as given been taken as the base. For the subsequent years, data on GFCF at current prices as available from the NAS have been utilised. The estimates of GFCF at current prices have been converted to constant prices using the price indices in respect of construction and machinery as in the case of private corporate sector. The estimates of NFCS and CFC for the year 1980-81 have been prepared using the age of assets as given in Table 1.

B. STOCK OF INVENTORIES

36. In order to estimate the stock of inventories as on 31 March, 1981 an attempt has been made to compile such estimates by type of institution, i.e., public sector, private corporate sector and household sector within each industry group using available source material. The method of estimation is described in the following paragraphs.

Public Sector

37. The estimates of inventories within the public sector have been compiled separately for administrative departments, departmental enterprises and non-departmental enterprises. In the case of administrative departments of the Government, the stocks held are (i) in the nature of policy stocks like food, fertilizers, etc., and (ii) work stores under the civil works departments and consist of cement, bricks, steel, etc. The policy stocks are given in the form of purchases and sales during the year and the net purchases during the year as obtained from the economic & purpose classification of the budget documents are classified as change in stock. However, the CFRA give net purchases as on 31 March of each year. Net purchases as on 31 March, 1981 have, therefore been taken from the CFRA. In the case of work stores, suspense accounts are maintained by the Government under the appropriate heads of account. Addition to the stocks is shown against the suspense appearing in the expenditure side, while the withdrawals out of these stocks during the year are shown against the 'receipts and recoveries on capital account'. The purchases during the year minus withdrawals are treated as change in stocks. In the case of works stores, however, it has been noticed that the change in stocks during the year in most of the years is negative. The corresponding figures as on 31 March available from CFRA are also substantially negative year after year. Discussions were held with the officers of the Ministry of Finance as well as Central Public Works Department (CPWD) to find out the possible reasons for the negative stocks as on a particular date as well as during the year. Both the Ministry of Finance and CPWD clarified that the procurement of stock of inventories are shown in the suspense account under the expenditure account and withdrawals are shown under recoveries. As such, the procedure followed by the NAD so far was in order. However, they were not able to assign any reason why the stock of inventories on a particular date could be negative and that also year after year. The issue was, therefore, further discussed with other knowledgeable people in this field. They felt that normally stock of stores and raw materials at least for one month at any point of time are scrupulously maintained. For instance, in the case of thermal power station, the minimum stock of coal required for one month is generally maintained.

38. Considering, therefore, the abnormal results obtained in the case of change in stocks for work stores out of the economic and purpose classification of government budgets and also the discussions with the concerned authorities, it was not possible to arrive at the stocks as on a particular date on the basis of suspense account relating to work stores as contained in the budget documents. However, it is a common practice to maintain the stock of commodities to last for about a month. On this supposition the stock of work stores at the end of the year in the Administrative Departments can be estimated by taking 1/10th of the capital formation undertaken during that year and balance the capital finance account of Administrative Departments by making suitable adjustments in the 'other liabilities'. Based on this proposition, the stocks have been reworked and used in the present exercise.

39. In the case of departmental enterprises like railways, communication, etc., the stocks of inventories as on 31 March, 1981 are available from their annual reports as well as from budget documents. In the case of non-departmental enterprises data on stock of inventories as on date are available from their balance sheets and for 31 March, 1981, these have been compiled for all the undertakings from their balance sheets, separately for each industry group.

Private Corporate Sector

40. The private corporate sector comprises joint stock companies and co-operative societies. In the case of joint stock companies, RBI's sample studies of public and private limited companies carried out annually provide the industry-wise estimates of total stock of inventories as on 31 March each year. For 31 March, 1981, the same have been used in the present study. In the case of co-operative societies, data on stock of inventories are available from the National Bank for Agriculture and Rural Development (NA-BARD) publication 'Co-operative Movement in India'. For 31 March, 1981, the estimates of stock as obtained from this publication have been adopted.

Household Sector

41. Agriculture: The household inventories in agriculture pertain to livestock only. Inventories in case of cash crops, as mentioned in the Brochure on New Series of NAS brought out by CSO in February, 1988 have been assumed to be negligible. The inventories in case of livestock have been obtained after a detailed exercise using the estimates of number of cattle of different categories and the corresponding prices in different states. Inventories in respect of foodgrains with producers and consumers, if any, are covered under the trade sector.

42. Manufacturing (Registered): The Annual Survey of Industries (ASI) covers total inventories of public sector, private corporate sector and households. The book value of these inventories have been adjusted for the inventories of defence factories not covered in ASI on the basis of special returns received from the Ministry of Defence and the same have been adopted for the present exercise.

43. Manufacturing (Unregistered): The inventories in unregistered manufacturing are being estimated as 36 per cent of the gross value added (GVA) in connection with the annual estimates of NAS on the basis of the data available from (a) the NSSO Report No. 280/6, Table with Notes on Survey of Self Employed Households in Non-Agricultural Enterprises - Detailed results for All India, 29th round (1974-75) [NSSO, 1978], (b) Survey of Small Scale Industries in the Unorganised Sector in Urban Areas, 1971-72, mimeograph [CSO, 1975], and (c) Special Tabulation of Census of Small Scale Industries undertaken by Development Commissioner, Small Scale Industries (DCSSI) in 1977. These estimates have been adopted for the present exercise.

44. Transport by other means: For want of any data, the ratio of GVA and inventories observed in road and water transport in the public sector has been applied to obtain the inventories of the household sector.

45. Trade: As mentioned above, the estimates of stock of foodgrains with the private traders. producers and consumers have been worked out on the basis of the method followed by Dandekar (1986) in his recent work "Agriculture, Employment and Poverty" - a paper presented in the conference organised by the Centre for Asian Development Studies, Boston University, October, 1986. According to this method, consumption of foodgrains has been subtracted from the net availability with the public to arrive at the estimates of stocks. The quantitative stock of cereals and pulses as on 31 March, 1981 has been evaluated with the help of corresponding prices. The inventories of commodities other than foodgrains in household trade have been worked out on the basis of bank advance to traders against the stock held by them. The banks normally keep a margin of about 45 per cent while making the advances. For example, against a stock of Rs. 1,00,000, the bank normally will advance Rs. 55,000. This bank margin has accordingly been taken into account while estimating the stocks with the traders.

VII. ESTIMATES OF CAPITAL STOCK

46. The estimates of NFCS, inventories and net capital stock by type of institution and by industry of use at the overall level and separately for the public sector at current prices as on 31 March, 1981 are presented in Statements 1 & 2 respectively. The corresponding estimates of CFC at current prices, along with the corresponding estimates as per the 1970-71 series at current prices are presented in Statements 3 & 4. It may be seen from Statement 3 that the CFC as per PIM and used in NAS, 1988 is significantly higher in the case of public sector and only somewhat higher in the case of private sector. Within the public sector, CFC has been provided for administrative departments (public administration & defence) beginning with NAS, 1988, whereas upto NAS, 1987 no such provision was made. This accounts for about 16 per cent of the total estimates of CFC in the public sector. In the case of departmental enterprises. CFC based on PIM is about 4 times that of the NAS, 1987 estimates whereas in the case of NDCUs it is 65 per cent more than that of NAS, 1987 estimates. At the industry level (Statement 4), CFC as per PIM is generally higher than that presented in NAS 1987, except in the case of trade; hotels & restaurants; and real estate, ownership of dwellings & business services where it is somewhat lower. The major increase in CFC at the industry level is accounted for by agriculture; manufacturing; electricity, gas & water supply; transport; and public administration & defence. It may be seen from the same table that bulk of the increase in these industries is in the public sector. This indicates that the public sector enterprises have not been making sufficient provision for depreciation in their annual accounts. For example, the railways, which is the major departmental enterprise, had not been making adequate provision for depreciation and as such had not been maintaining their assets properly. This was adversely commented upon by the Railway Reforms Committee in its report on Railway Reserve Funds (1982). Thereafter, the railways have stepped up their provision for depreciation as well as withdrawals from Depreciation Reserve Fund for renewals and replacements.

47. The overall fixed capital output and capital output ratio for 1981-82 with respect to net domestic product (NDP) work out to 2.5 and 2.9 respectively. The corresponding ratios at the industry level are presented in Statement 5. As may be seen from this Statement the ratios for electricity, gas and water supply, railways and ownership of dwellings are very high. For other sectors these vary from 0.3 in the case of forestry and banking & insurance to 5.9 for public administration & defence. In the case of public administration & defence, excluding roads and bridges used by all the industries, the fixed capital output ratio to 2.7.

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ANNEX

INDICES USED FOR DEFLATION OF ESTIMATES OF CAPITAL FORMATION, CAPITAL STOCK AND CONSUMPTION OF FIXED CAPITAL

I. Index of wholesale prices:

The general index of wholesale prices with base 1873=100 is available from 1861 to 1939. This index was compiled by the Department of Commercial Intelligence and Statistics (DCI&S). The index covered only a few commodities and mainly catered to the food articles. The preparation of the index of wholesale prices was taken up by the office of the Economic Adviser in 1942 and this series, with base 1939=100, assigned equal weights. The series was, however, revised with the same base by including as many as 78 commodities in order to have a complete picture of the price movements of all important commodities. This index had some items of machinery. The subsequent series with base 1952-53 also covered comprehensively agricultural commodities and the coverage of non-agricultural commodities became increasingly inadequate. This index was subsequently revised to base 1960-61 and the present series has got the base 1970-71. The latest series cover adequately the manufacturing products and provided reliable index at group and sub-group levels for various groups of items. Thus, prior to Independence the representative index of wholesale prices of capital stock is not available and one has to have a recourse for conversion of the estimates of fixed capital formation from current to constant prices to all commodities index. After Independence the group indices of plant and machinery, transport equipment, etc., are regularly available and the indices with various bases could be linked up suitably for deflation purposes. The index of wholesale prices have been used in the paper for the following items:

	Used as a deflator for capi- tal formation and capital stock
(i) DGCIS general index of wholesale prices/Eco- nomic Advisor's index of wholesale prices from 1861 to 1949-50 with suitable link up	For all assets prior to 1949-50 in respect of public sector, private sector and co-operatives
(ii) Economic Advisor's index of wholesale prices for machinery and machine toole	For plant and machinery
	

(iii) Economic Advisor's index Rolling stock of railways of wholesale prices for and transport equipments transport equipments

II. Indices of cost of construction:

These indices are specially prepared regularly and used for the estimates prepared in NAS in respect of (i) urban residential buildings, (ii) Rural residential buildings, (iii) other construction works (accounted), (iv) other construction works (unaccounted) and (v) general pucca construction by taking into account item wise material inputs and labour in proportion

of their value in the total cost of construction in respect of each category separately in base year as weights with base 1980-81=100. The weights allotted to different materials and labour inputs in preparation of these indices which have been decided in consultation with CPWD and other agencies are given in Table 2.

The indices of cost of construction used for various categories are as below:

j)	Index of cost of urban	All public sector and pri-
	residential buildings	vate corporate sector
		buildings and urban residential buildings
(ii)	Index of cost of rural res-	Rural residential buildings
	idential buildings	and rural non-residential
	-	buildings
(iii)	Index of cost of other construction works (ac- counted)	Non-residential buildings and other construction works and irrigation
(iv)	Index of cost of other construction works (un-	Construction in plantation and forestry

accounted)

v) Index number of railways assets:

- a) Rolling Stock: This index is prepared by taking weights of value of wagons, coaches and engines. These weights are decided on the basis of proportion of value of these assets in railways. Prices of these items were available from DGS&D index of government purchases up to 1976-77. After that the same index has been moved with the help of index for transport equipments.
- b) Permanent way material: This index has been prepared taking into account the prices of rails and fastenings and prices of railway sleepers as available from DGS&D up to 1976-77. After that this index has been moved with the help of price index for iron and steel.
- vi) Price index for fishing machinery:

This index is based on weighted wholesale price indices of timber, diesel engine, nylon, terene & mixed cotton. The prices for timber are taken from the Bulletin of the National Buildings Organisation and for diesel engine and nylon, terene and mixed cotton from Economic Adviser's wholesale price index.

vii) (a) Wholesale price index for non-electrical machinery:

This index is available from Economic Adviser's Office. It has been used for the agriculture machinery produced in organised sector and construction industry in organised sector.

(b) The wholesale price index for tools and implements:

It is available from the Office of the Economic Adviser. It has been used for machinery used in agriculture produced in unorganised sector.

III) Index of cost of construction of roads and bridges:

This index was prepared with the help of price indices for different materials, wage rates of labour and equipments used in construction of roads and bridges with respective weights in input structure as given in Table 2. These weights have been decided taking into account the requirement of road and bridge materials and technical and manual labour on the basis of the discussions held with the officers of Ministry of Transport and Central Road Research Institute. The prices of these materials and wages of labour are taken from NBO Bulletin and other sources used in NAD for relevant prices.

IV) Implicit Price Deflators:

As part of the capital formation the implicit indices of fixed capital formation (i.e. current price estimates/constant price estimates multiplied by 100) are worked out in respect of construction and machinery & equipment separately and are presented in the various issues of NAS. These indices are used for deflation of estimates for fixed capital formation and fixed capital stock in construction and machinery, respectively for the private sector. A similar implicit price index for livestock has been specially prepared for use in the household sector.

Sl. No.	Input	Index of cost of construc- tion of roads & bridges	Rural resi- dential build- ings	Urban resi- dential build- ings	Rural & Urban non-re sidential bldgs. & other con- struction works (accounted)	Other con- struction works (unaccounted)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Cement	8.5	4	. 11	1	-
2.	Iron and steel	0.7	4	7	1	-
3.	Bricks	-	21	18	20	-
4.	Logs and timber	-	36	27	-	-
5.	Paints & varnish	-	-	7	-	-
6.	Glass and glass products	-	-	2	-	-
7.	Stone	49.3	-	-	-	-
8.	Lime	-	4	1	-	-
9.	Sand	1.1	-	-	-	-
10.	Electrical goods	-	-	3	•	-
11.	Rural construction worker	-	31	-	13	4
12.	Urban construction worker	11.0	-	24	-	29
13.	Rural unskilled worker	28.8	-	-	65	67
14.	Tools & implements	0.6	-	-	-	-

TABLE 2. WEIGHTS ASSIGNED TO INDICES

STATEMENT 1. ESTIMATES OF CAPITAL	STOCK AS ON 31 MARCH,	1981 BY TYPE OF	INSTITUTION (AT C	URRENT PRICES)
				(Rs crore)

Institution (1)	Net fixed cap- ital stock (2)	Inventories (3)	Net capita stock (4)
1. Public sector	128,607	15,586	144,193
1.1 Administrative departments	38,974	416	39,390
1.2 Departmental enterprises	47,105	2,890	49,995
1.3 Non-departmental commercial undertakings	42,528	12,280	54,808
2. Private sector	166,815	24,080	190,895
2.1 Private comorate sector	23,226	9,877	33,103
2.1.1 Joint stock companies	20,558	8,855	29,413
2.1.2 Co-operatives	2,668	1,022	3,690
2.2 Households	143,589	14,203	157,792
3. Total	295,422	39,666	335,088

		Public sector			Total	
Industry	Net Fixed Capital Stock	Inventories	Net Capital Stock	Net Fixed Capital Stock	Inventories	Net Capital Stock
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Agriculture	22,772	234	23,006	62,778	3,750	66,528
2. Forestry & logging	867	8	875	915	8	923
3. Fishing	3	-	3	558	-	558
4. Mining & quarrying	4,984	987	5,971	5,766	1,180	6,946
5. Manufacturing	15,160	9,005	24,165	46,944	20,916	67,860
5.1 Registered	15,160	9,005	24,165	33,736	17,512	51,248
5.2 Unregistered	-	-	-	13,208	3,404	16,612
6. Electricity, gas & water supply	23,640	1,151	24,791	24,422	1,252	25,674
7. Construction	461	239	700	2,158	1,104	3,262
8. Trade, hotel & restaurants	655	2,681	3,336	7,495	9,658	17,153
8.1 Trade	479	2,675	3,154	5,295	9,640	14,935
8.2 Hotel & restaurants	176	6	182	2,200	18	2,218
9. Transport, storage & communi- cation	22,470	752	23,222	27,517	1,214	28,731
9.1 Railways	14,836	348	15,184	14,836	348	15,184
9.2 Transport by other means	4,384	254	4,638	9,373	715	10,088
9.3 Storage	378	2	380	436	3	439
9.4 Communication	2,872	148	3,020	2,872	148	3,020
10. Banking & insurance	799	14	813	1,238	16	1,254
11. Real estate, ownership of dwellings and business services	2,528	-	2,528	77,938	17	77,955
12. Public administration	31,352	416	31,768	31,352	416	31,768
& defence	(13,969)*	(416)*	(14,385)*	(13,969)*	(416)*	(14,385)*
13. Other services	2,916	99	3,015	6,341	135	6,476
14. Total	128,607	15,586	144,193	295,422	39,666	335,088

STATEMENT 2. ESTIMATES OF CAPITAL STOCK AS ON 31ST MARCH, 1981 BY INDUSTRY OF USE (AT CURRENT P	RICES)
	(Rs crore)

- Indicates nil

* Excluding roads and bridges

STATEMENT 3. ESTIMATES OF CONSUMPTION OF FIXED CAPITAL DURING 1980-81 BY TYPE OF INSTITUTION (AT CURRENT PRICES)

		(Rs crore)
Institution	As per PIM	As per 1970-71 series
(1)	(2)	(3)
1. Public sector	4,895	1,978
1.1 Administrative departments	764	-
1.2 Departmental enterprises	1,461	365
1.3 Non-departmental commercial undertakings	2,670	1.613
2. Private sector	7,192	6,046
2.1 Private corporate sector	1.699	1.418
2.1.1 Joint stock companies	1,565	1.332
2.1.2 Co-operatives	134	86
2.2 Households	5,493	4.628
3. Total	12,087	8,024*

* Adjusted to exclude revaluation of assets, loss on sale/purchase of assets, etc., in respect of commercial banks in the published figures.

		Public Sector		Total	
	Industry	As per PIM	As per 1970-71 series	As per PIM	As per 1970-71 series
	(1)	(2)	(3)	(5)	(6)
1.	Agriculture	333	17	2,410	1,589
2.	Forestry & logging	31	-	33	11
3.	Fishing	-	-	115	64
4.	Mining & quarrying	350	391	413	299
- 5.	Manufacturing	1,029	565	2,946	1,986
	5.1 Registered	1,029	565	2,231	1,706
	5.2 Unregistered	-	-	715	280
6.	Electricity, gas & water supply	1,120	340	1,158	345
7.	Construction	70	27	343	287
. 8.	Trade, hotel & restaurants	28	23	391	670
	8.1 Trade	19	-	284	-
	8.2 Hotel & restaurants	9	-	107	-
9.	Transport, storage & communication	1,252	581	2,000	1,084
	9.1 Railways	565	206	565	206
	9.2 Transport by other means	495	305	1,242	808
	9.3 Storage	7	-	8	-
	9.4 Communication	185	70	185	70
10.	Banking & insurance	33	31	64	51*
11.	Real estate, ownership of dwellings and business services	38	-	1,463	1,541
12.	Public administration & defence	487	-	487	
13.	Other services	124	3	264	97
14.	Total	4,895	1,978	12,087	8,024*

STATEMENT 4. ESTIMATES OF CONSUMPTION OF FIXED CAPITAL DURING 1980-81 BY INDUS	TRY OF USE (AT CURRENT PRICES)
	(Rs crore)

- Indicates nil * Adjusted to exclude revaluation of assets, loss on sale/purchase of assets, etc., in respect of commercial banks included in the published figures.

	Industry (1)	Fixed capital output ratio (2)	Capital outpu ratio (3)
1	Agriculture	15	16
2.	Econstra: & logging	1.5	03
2.	Foreshing Schogging	0.5	0.5
э. Л	rising howarding	2.4	4.2
4.	Manufa atoming	0.4	7.2
э.	Manufacturing 51 Decistored	2.5	J.J A 7
	5.2 University and	J.1 1 A	1.2
4	5.2 Unregisieren	27.1	285
7	Construction	27.1	20.5
7. o	Troda batal & mataumanta	0.4	11
σ.	Rade, noter of restaurants	0.5	1.1
	8.2 Hotel & restaurants	2.4	27
0	Transmost storses & communication	67	70
9.	0 1 Pailwaya	23.5	24.0
	0.2 Transport by other means	35	38
	0.3 Stornge	3.5	36
	9.5 Storage	4.3	46
10	Banking & insurance	0.3	03
11	Peal actate ownership of dwellings and husiness services	12.7	127
12	Public administration & defence	58	50
14.	I WOLL AUTOMISMATION & WEICHEC	(2.6)*	(2,7)*
12	Other services	0.9	09
14	Total	2.5	29

STATEMENT 5. CAPITAL OUTPUT RATIOS WITH RESPECT TO NET DOMESTIC PRODUCT: 1981-82

* Excluding Roads & Bridges.

RECOMMENDATION AND CONCLUSIONS OF THE ADMINISTRATIVE REFORMS COMMISSION ON PUBLIC SECTOR UNDERTAKINGS

Organisational Structure

370. (1) The form of a statutory corporation should in general be adopted for public sector projects in the industrial and manufacturing field.

(2) For projects in which there is an element of private participation, the Government company form may be adopted.

(3) Promotional and developmental agencies should as far as possible, be run as statutory corporations or departmental concerns.

(4) Undertakings which are predominantly trading concerns or which are set up to improve and stabilise particular areas of business may have the company form.

371. (1) All the industrial and manufacturing concerns in the areas mentioned in paragraph 12 and the concerns in the fields of air transport, shipping and hotels and tourism should be grouped into sector corporations as indicated in Annexure. The State-owned shares in an undertaking in which there is private participation should be transferred to the sector corporation.

(2) A sector corporation should also be set up in the field of Electronics when a programme for a large-scale expansion in this field is decided upon.

372. (1) The powers of the Government *vis-a-vis* the sector corporations and the functions of the corporations should in general be as follows: Powers reserved to the Government:

- (i) to appoint the Chairman of the Corporation and the Government representatives on the board of the corporation;
- (ii) to appoint in consultation with the Chairman, other members of the board of the corporation;
- (iii) to give directions to the corporation as to the exercise and performance of its functions in matters involving national security or substantial public interest and to ensure that the corporation gives effect to such directions;
- (iv) to call for such returns, accounts and other information with respect to the property and activities of the corporation as may be required from time to time;

- (v) to authorise the amount of capital to be raised and the terms and conditions on which it may be raised;
- (vi) to approve the corporation's five year and annual plans of development and the corporation's capital budget;
- (vii) to approve the corporation's revenue budget in case there is an element of deficit which is proposed to be met by obtaining funds from the Government; and
- (viii) to approve agreements involving foreign collaboration proposed to be entered into by the corporation and to approve purchases and contracts of a major nature involving substantial capital outlay which are in excess of the powers vested in the corporation.

Functions of the Sector Corporations:

- (i) to advise the Government on general matters affecting industry in the public sector;
- (ii) to promote and develop industry in the public sector including the setting up of new projects in accordance with the Plan;
- (iii) to promote, provide or coordinate activities relating to -
 - (a) training of personnel;
 - (b) research and consultancy;
 - (c) sales promotion; and
 - (d) such other common services as the constituent units may agree to be provided by the corporation.
- (iv) to evolve a common policy for the wages and salaries and other terms and conditions of service of the employees of the corporation;
- (v) to approve the revenue budgets of the constituent units;
- (vi) to scrutinise the capital budgets of the constituent units and submit a consolidated budget to the Government;
- (vii) to make appointments to posts below the board level in the sector corporation;
- (viii) to appoint the chief executive of the constituent units in consultation with the Government.
- (ix) to appoint heads of departments in the constituent units in consultation with the chief executive of the unit concerned.

- information with respect to properties and activities of each of the constituent units as the corporation may require from time to time.
- (xi) to secure the largest degree of decentralisation constituent with the proper discharge by the corporation of their duties and function; and
- (xii) to set up an effective machinery for the speedy disposal of grievances and complaints pertaining to maladministration and abuse of authority by officers subordinate to the corporation.

(2) Subject to the above, all the necessary powers required by the constituent units to discharge their duties and functions should be conferred on the managements at the unit level.

373. (1) The boards of management of sector corporations should be of a mixed type. The board should consist of -

(a) а full-time Chairman-cum-Managing Director;

(b) full-time functional directors, their number depending on the needs of the case;

(c) not more than two part-time Government representatives; and

(d) two or three part-time members from outside the Government.

(2) The Government representatives should be selected on the basis of their qualifications and experience and not by virtue of the office which they hold in a particular Ministry.

(3) Part-time members from outside the Government should be persons with proven ability in the fields of industrial, commercial or financial enterprise or in administration or in trade union organisation. These qualifications should be laid down in the Act, or, in the case of Government companies in the Articles of Association. These members should have faith in public enterprise and should not have such business or other interests as may affect their objectivity in the discharge of their duties on the board.

374. (1) The constituent unit of a sector corporation which has an element of private participation and, therefore, the form of Government company should have a board of directors as envisaged at present under the Companies Act.

(x) to call for such returns, accounts and other No Government representative need be appointed on these boards and the sector corporation which holds the State-owned shares should nominate its representatives from among its directors and the executive heads of departments to serve as parttime members on the boards of such companies. The composition of these boards will depend upon the extent of shares held by the sector corporation and the private parties and the agreement between them.

> (2) For a constituent unit which is wholly owned by the Government, there should be a committee of management if the size and nature of the operations of that unit so require. This committee should be functional and have the chief executive of the unit as the Chairman and the heads of key departments as members. For the smaller wholly-owned units there need only be a single executive, who may function directly under the board of the sector corporation.

> (3) The organisational structure of the constituent units of a sector corporation should also be defined in the Act setting up the corporation, but only in broad terms so as to enable the corporation to devise specific structures in individual cases in consultation with the Government and within the framework laid down in the Act. Provision should also be made in the Act to enable the corporation to devise the organisational structure for a new unit in the same way.

> 375. (1) Until such time as the necessary legislation is enacted for giving effect to proposals relating to sector corporation, Government may, under the provisions of the Companies Act, bring about the amalgamation of the existing Government companies which are functioning in the same major area of enterprise and which are wholly owned by the Government and transfer the State-owned shares held in public undertakings not wholly-owned by Government to the appropriate multi-unit undertaking. In the amalgamated company, powers and functions will be distributed between the top management and the operating units in a manner similar to that contemplated for the distribution of powers between the sector corporation and the operating units. Subsequently, the multi-unit companies can be transformed into statutory corporations under Acts of Parliament.

(2) The Indian Oil Corporation and the Oil and Natural Gas Commission should be grouped together to form one sector corporation by an Act of Parliament.

376. (1) Full and effective use should be made of Section 620 of the Companies Act for exempting a Government company from such provisions of that Act which are not meaningful in their application to it.

(2) The definition of a "Government company" should be enlarged so as to include a company not less than 51 per cent of whose shares are held by a sector corporation.

Public Enterprises, Parliament and Government

377. Parliament may be approached to agree to earmark, a number of days for discussion of the working of public sector undertakings.

378. The Committee on Public Undertakings may consider taking up for examination a group of undertakings falling within one major area of enterprise and bringing out a consolidated report thereon.

379. (1) The Bureau of Public Enterprises, in consultation with the Ministries and public undertakings, should work out a model form for the Annual Reports of public undertakings. Standard operational indices should also be prepared for use by the public undertakings in order that essential information relating to their working is brought out in the Annual Reports in a readily intelligible form.

(2) Each Annual Report should cover *inter alia* the following points:

(a) information about the adequacy of the quantity and quality of output and reduction in cost;

(b) information relating to the utilisation of the principal ingredients of production viz. labour materials and installed capacity; in the case of undertakings not concerned with manufacture like transport and trading concerns the corresponding information should relate to factors relevant to such concerns.

(c) comparative performance between different parts of the undertaking, between one undertaking and another and in relation to similar undertakings

abroad;

(d) a brief report of the future plans indicating the extent of demand for the product proposed to be met, the variations in the quantity and quality of supply and the steps planned to reduce costs; and

(e) a brief summary of the past operational results with comparisons of the results achieved during a specified period in order to bring out long-term trends.

380. The Ministries should not fail to bring to the notice of the Speaker questions which under the rules in force are not admissible.

381. (1) No officer of a Ministry should be made Chairman of a public undertaking, nor should the Secretary of a Ministry be included in its board of management,

(2) The top management posts, like those of the Chairman or full-time members of the board, should be filled by officers on deputation only when there is no suitable alternative available. As a general rule, Government servants selected for appointments to these posts should, on appointment thereto, opt out permanently for service in the public sector.

(3) The government officers appointed as part-time members of the board should be fairly senior and not below the rank of a Joint Secretary. These officers should not be taken as representing any particular Ministry so that even when they are transferred, they continue on the boards, the Ministry concerned making the necessary arrangements to keep the officer informed of its views.

(4) The chairmen of the sector corporations should be accorded a status consistent with the requirements and importance of their functions without the limitations as to emoluments as exist at present.

(5) All appointments below the board level should be made by the board itself. However, in the case of the chief executive of a constituent unit and its Financial Adviser the appointment should be made by the board in consultation with the Government.

(6) The power vested in the managements for sanctioning capital expenditure should be reviewed with a view to making upward revisions in the case of the larger undertakings.

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(7) The board should have full freedom in delegating its powers to its executive officers whenever necessary.

(8) Any suggestion from Government to a public undertaking asking it to act in a manner different from that dictated by economic considerations should invariably be in the shape of a formal directive and it should be duly brought out in the Annual Report of the undertaking.

382. (1) The Bureau of Public Enterprises should be invested with authority appropriate to its responsibilities. It should be headed by a person of the status of Secretary who should hold a full-time charge of it.

(2) The person heading the Bureau should be acquainted with the working of public undertakings and should be competent to deal with problems of economic and statistical nature.

(3) The work at present being looked after by the Project Coordination Division of the Ministry of Industrial Development and Company Affairs and the Management Division (COPP) of the Planning Commission and the work of the Home Ministry relating to the Industrial Management Pool should be transferred to the Bureau of Public Enterprises.

(4) The functions of Bureau, in broad terms, should be:

- (a) to maintain panels of suitable persons with a view to assisting the administrative Ministries in making appointments to the boards of public undertakings and providing consultation for such senior posts under the corporations as may be prescribed;
- (b) to furnish periodical reports to Parliament and Government on the working of public undertakings;
- (c) to act as a data bank and as a clearing house of information in respect of important matters of common interest including information about organisational structure and pricing policies in public sector undertakings in other countries of the world;
- (d) to coordinate the work relating to the examination of public undertakings by Parliamentary Committees;

- (e) to compile information on the terms and conditions of service of employees and to advise public undertakings with a view to ensuring desirable uniformities in these matters.
- (f) to maintain liaison with the Department of Administrative Reforms in respect of matters like work-study, operations, research and improved reporting systems;
- (f) to assist the concerned Ministries and Finance Ministry in making a more expert scrutiny and evaluation of feasibility studies/DPRs;
- (h) to assist the Ministries in controlling expenditure on residential and administrative buildings, residences of senior executives, townships and ancillary facilities; and
- (i) to advise public undertakings on matters on which advice is sought.

383. The Bureau of Public Enterprises should continue to be located in the Ministry of Finance.

384. A small technical cell should be set up in each Ministry concerned with public undertakings to assist in the scrutiny and evaluation of feasibility studies and detailed project reports and for the analysis and utilisation of progress reports and returns received from public undertakings. These cells need not be on an elaborate scale in view of the proposed strengthening of the Bureau of Public Enterprises and the building up of the technical organisations in the sector corporations.

385. The location of public undertakings under the different Ministries should be as indicated in Annexure.

386. (1) An expert Study Group, under the Bureau of Public Enterprises should be set up to make a detailed examination of reporting by the public undertakings to the Government. This group can enlist the help of officers concerned in the Ministries and public undertakings as well as of the external consultants in the field. The information requirements of the controlling Ministries and other Government agencies should be reviewed to avoid overlapping and to enable standardised returns to be developed. (2) The forms devised for the submission of information by the public undertakings to the Government should, as far as possible, be identical with the forms adopted for submitting similar information to the management board.

(3) The administrative Ministry should periodically review the extent of utilisation of the reports and returns obtained from public undertakings in order to cut out non-essential items of information and to strengthen their own organisation, if necessary, for carrying out the processing and analysis of information received through the reports, and for taking follow-up action on them.

Planning and Construction of Projects

387. (1) Planning Commission's Memorandum on 'Feasibility Studies for Public Sector Projects' should be adopted as a guide for the steps to be taken including the preparation of documents, before sanctioning a project.

(2) For every project involving investment above, say, Rs 5 crore a feasibility study should be made along the lines set out in the Memorandum.

(3) Before going in for additional capacity in the public sector, the agency concerned should assess the demand for the product after taking all relevant factors into consideration.

(4) A project should not be included in the Plan unless the feasibility study has been completed and it has been found to be satisfactory on scrutiny. However, when such a study is not complete the project may be mentioned only as a notional target without mentioning locations.

388. (1) For projects not requiring foreign collaboration, Government approval to go ahead with the initial work on the project may be given on the basis of the feasibility report and final sanction for the release of funds should be given after supplementary project estimates taking the necessary changes into account have been prepared. (2) For projects that require the detailed project report to be prepared by a foreign technical collaborator, the Government of the public undertaking should prepare a feasibility study from the stand-point of national economic benefit and the approval of the project should be based on this report.

389. (1) Government and the Planning Commission should evolve and lay down standard guidelines clearly for ascertaining the national economic profitability.

(2) Immediately on receipt of the feasibility study/DPR, a piloting committee should be set up consisting of the representative of all the Ministries and agencies concerned and this committee should undertake a concurrent and collective examination of the feasibility study/DPR so that delays due to successive examination by different agencies may be avoided.

390. (1) Public undertakings should be encouraged and assisted to set up adequate designing and consultancy organisations.

(2) The work of project planning and formulation should be handed over to the sector corporations.

(3) Turnkey contracts with foreign collaborators should ordinarily be avoided. In the special case when it is decided to ward such a contract, care should be taken to see that complete drawings and designs are supplied by the foreign contractors, and that Indian engineers and technicians are given full and adequate training and associated with the construction work.

391. (1) Once a project has been approved, systematic and thorough planning of the construction programme should be undertaken before starting actual construction.

(2) For all projects involving sizeable investment, say, of Rs 5 crore and above, a complete master plan of construction should be drawn up with the help of network techniques like the PERT and CPM (Programme Evaluation and Review Technique and Critical Path Method).

392. (1) The construction effort under each contract should be scheduled and coordinated within the framework of a master plan.

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(2) For various types of items of work, model contract papers should be drawn up for the use of project authorities so that vagueness in defining the obligations of different parties is avoided.

(3) Contracts should provide for incentives as well as penalties. The penalty clauses will be more effective if instead of being linked to a single completion data; they are linked to key stages of work to enable management to ensure adherence to the time schedule. Incentive payments for the completion of a project on a date earlier than that specified in the agreement should be provided for whenever such earlier completion of the contract would facilitate the earlier completion of project as a whole.

(4) Performance data should be collected about contractors doing work on public sector projects so that sufficient documentation may be available to the management for supporting their decision to reject the lowest tender in case of the contractor making it is adjudged unsuitable.

393. The net-work techniques should be adopted for monitoring the progress of construction.

394. Till such time as the corporations are set up, the Bureau should compile information about the surpluses, or likely surpluses, of construction personnel and equipment and disseminate this information among the public undertakings with a view to securing their more efficient utilisation.

395. (1) Detailed information should be compiled about deviations from earlier estimates and this information should be communicated to the agencies connected with the technical scrutiny of feasibility studies of similar projects.

(2) A project completion report should be drawn up for each project containing such information as may be found useful during the construction of similar projects in the future.

(3) Work on the project completion report should preferably be undertaken from the start so that all useful data at every stage of construction is sifted, analysed and recorded while events are still fresh in memory.

(4) Case histories based on the project completion report, bringing out the problems encountered and measures adopted to overcome them, should be prepared and circulated to all the agencies who are likely to find them useful.

Resources - External and Internal

396. (1) A uniform loan-equity ratio need not be adopted for all public enterprises irrespective of their size, productive function and borrowing capacity.

(2) The administrative procedures for releasing funds to the public undertakings should be liberalised to ensure that work is not held up while projects wait for an elaborate pre-scrutiny of proposals asking for the release of already budgeted amounts. It should be possible for the Government to exercise post-withdrawal scrutiny of the manner in which the funds have been released to and utilised by the public undertakings.

397. (1) Government should be willing to provide the necessary guarantee if a public enterprise is unable to secure funds otherwise.

(2) Public enterprises should be free to have cash credit arrangements with any scheduled bank that has deposits above a certain limit. Government should be kept informed of such arrangements.

398. A public undertaking, whether a Government company or a statutory corporation, should not be required to submit its revenue budget to Government or Parliament for prior approval except in cases where the Government is expected to make up the deficit, if any, in the budget.

399. Government should make a comprehensive and clear statement on the objectives and obligations of public undertakings. This statement should lay down the broad principles for determining the precise financial and economic obligations of the enterprises in matters such as creation of various reserves, the extent to which enterprises should undertake the responsibilities of self-financing, the anticipated returns on the capital employed, and the basis for working out rational wage structures and pricing policies. These governing principles should be formulated in consultation with the public enterprises. There should also be regular consultation between the Government and public enterprises to review the extent to which they can expect additional finance from Government for their capital requirements and the amount of surpluses that are expected from the undertakings.

400. The Bureau of Public Enterprises should be asked to work out standard scales in such matters as housing accommodation, hospitals and education facilities and other amenities provided to the employees. These standards should be worked out in consultation with the public undertakings and the Ministries concerned, note being taken of the varying conditions in different projects. The Ministry of Finance should ensure that scales prescribed are actually complied with.

401. In view of the fact that capital for construction of township is, in any case, provided by the Central Government, the provisions of the subsidy, as may be admissible under the Subsidised Housing Scheme, should be made at the very start.

402. In formulating the pricing policies of public enterprises the following principles should be kept in view:

(1) Public enterprises in the industrial and manufacturing field should aim at earning surpluses to make a substantial contribution to capital development out of their earnings besides making a contribution to the Exchequer.

(2) Public enterprises should in any event pay their way and should not run into losses except in pursuance of express directives issued by Government in public interest.

(3) In the case of public utilities and services, greater stress should be laid on output than on return on investment, the former being extended upto a level at which marginal cost is equal to price.

(4) While determining the price structure commensurate with the surpluses expected from them, public enterprises should keep the level of output as near the rated capacity as possible subject, of course, to the volume of demand for the product.

403. (1) If in the public interest, Government require an undertaking to keep prices at an artificially low level, the financial obligations of that undertaking should be revised.

(2) Whenever public undertakings are operating under non-competitive conditions or where the number of buyers of the product is limited, the price levels should be determined on the basis of the c.i.f. value of similar items in preference to the cost plus formula. In cases where the imported goods have the benefit of export subsidies in the countries of origin, the c.i.f. prices should be proportionately weighted.

(3) As the ability to produce goods at costs matching the c.i.f. price of similar goods will differ from undertaking to undertaking, a detailed examination of the cost structure of the products of such undertakings should be made to determine the levels of permissible deviations. For this purpose, Government can utilise the machinery of Tariff Commission or the Cost Accounts Organisation of the Ministry of Finance.

404. (1) Consumers' Consultative Councils should be set up in each sector of public enterprise. These Councils should consist of the representatives of organised bodies of consumers concerned with the products of the undertaking, the controlling Ministry, the sector corporation concerned and other interested Government departments and public undertakings.

(2) Parliament may elect two members to serve on each of these Councils.

(3) The Councils should deal with matters involving the interest of the consumers and further advise Government or Sector Corporation on such matters as may be referred to them by the latter.

405. (1) High-powered standing committees consisting of the representatives of the public undertakings and the Ministries concerned should be constituted for deciding matters under dispute between Central public undertakings. The Chief Economic Adviser or his nominee should be included in these committees so that he might be able to provide expert advice to them.

(2) In case the dispute over prices is between undertakings under the control of different Governments, the decision will have to come from a statutory body. In such cases, the agency and expertise of the Tariff Commission can be utilised or a special tribunal set up, with the statutory authority necessary to ensure that its decisions are binding on the disputants.

Financial and Materials Management

406. (1) Budget should be viewed as embodying a programme of action which enables those who are responsible for the use of resources to project their ideas into the future, and concurrently to look back and review actual performance and progress as compared with promise and intentions. It should not be looked upon merely as a device for obtaining funds and as an instrument of control over those who are authorised to spend.

(2) Public undertakings should prepare comprehensive budgets to embrace the entire organisation and to cover *inter alia* the following range of budgeting activities:

- (a) Production Estimates;
- (b) Sales Estimates;
- (c) Cost of Production Budget with its necessary sub-divisions, e.g.,
 - . Materials Purchase Estimates,
 - . Labour and Personnel Estimates,
 - . Overheads Estimates,
 - . Plant Maintenance Estimates, etc.
- (d) Manpower Budget;
- (e) Township and Welfare Estimates;
- (f) Research and Development Estimates;
- (g) Capital Expenditure Budget;
- (h) Profit and Loss Estimates;
- (i) Cash Flow Estimates;
- (j) "Capital Employed" Budget Fixed and Working Capital.

407. (1) The preparation of the revenue budget should be taken as an opportunity to make a comprehensive and forward-looking review of plans and standards. The work of budget preparation should begin sufficiently in advance to enable every part of the enterprise to be associated in the preparation of estimates and to have their own separate budgets within the overall budget of the enterprise.

(2) The comparison of performance data with budget estimates should be undertaken periodically during the currency of the budget itself. Expenditure budgets in general may be reviewed at least twice a year to enable the management to obtain some mid-year knowledge of how expenditure is faring so that they may take corrective steps, where necessary, before the year has ended.

(3) Monthly reviews should be undertaken of sales, production, consumption and yield figures at each plant and unit profit and loss accounts and balance sheets as well as cost statements should also be prepared every month.

(4) All management levels required to submit reports and returns should themselves be encouraged to analyse and make use of the data, with the assistance that the finance and accounts organisation of the undertaking can provide.

408. (1) Every public undertaking should have a fairly long-term capital expenditure budget to serve as a framework within which individual schemes can be planned, approved by the Government and taken in hand.

(2) To enable public enterprises to undertake long-term capital planning on a realistic basis, Government should each year discuss with the enterprises and approve its plans for development and capital expenditure for the next five years, agreeing to appropriate long-term commitments as well.

(3) Proper controls may be prescribed to keep public sector investment generally within the Government's resources. For instance, Government may each year fix an upper limit on the expenditure to be incurred in capital account by the enterprises during a shorter period, ahead, say, 2 years.

409. The cash budget and the periodical budget-performance comparison statements and cash flow statements should be treated as an integral part of the budgetary process.

410. (1) Improvement in budgetary and financial control should be accompanied by a greater delegation of authority as well as reduction in the number of cases requiring prior financial concurrence. The need for prior financial concurrence can be further reduced or eliminated by increasing the financial powers of managers, purchase officers, etc., and providing for interbranch standing committees for such purposes as review of tenders, purchase of equipment and stores. (2) Each public enterprise should be asked to compile a comprehensive budget manual to cover the various forms for compiling information for the budget, the time schedule for its preparation, the responsibility/cost centres and the financial powers related to budgetary levels at each responsibility centre, budget committees and the procedures for carrying out periodical budgetary reviews.

411. (1) Internal audit should be effectively organised in every public enterprise as a staff function.

(2) The principal tasks of internal audit should be:

- (a) to review the soundness, adequacy and application of accounting, financial and operational controls;
- (b) to ascertain the extent of compliance with prescribed plans and procedures and accuracy of accounts and other data developed within the organisation;
- (c) to make constructive suggestions for improvement; and
- (d) to review and report the action taken by line authorities on the points brought out in previous audit reports of internal as well as external auditors.

(3) Other duties that may be assigned to the internal audit organisation are:

- (a) to verify that proper authorisations exist for the acquisition and disposal of assets of the enterprise; and
- (b) to test-check a certain percentage of transactions and verify inventories with a view to helping in the prevention and detection of frauds, misappropriation and pilferage.

412. (1) It is of the utmost importance that the Financial Adviser of an enterprise should regard himself as an integral part of the management team and not look upon himself as an outsider representing the financial interests of the Government.

(2) The Financial Advisers of undertakings, both at the sector level and at the unit level, should be encouraged to place greater emphasis on the management accounting aspect of their working. 413. (1) Materials management should be accorded due recognition at the top management level where a Central Control Section should be set up for materials planning and for securing the introduction of modern techniques.

(2) A Materials Management Manual should be drawn up to give concrete shape to the relevant scientific concepts in each public undertaking and to outline the prescribed procedures in order to facilitate the general adoption of improved techniques.

(3) Training in materials management should be given greater importance. In addition to having fully trained staff in the materials management organisation, it will be advantageous to have short-term training imparted to the personnel of other departments as well.

(4) The operating procedures in the public undertakings should be simplified by taking among others, the following measures:

- (a) on the basis of the annual and longer term plans of the undertaking, the Central Control Section for materials management and planning should draw up its own plan and assess the volume of work to be done and the amount and type of materials to be procured;
- (b) rules involving financial concurrence should be clearly laid down for open tender as well as limited enquiry tenders and standing committees should be set up for scrutiny and sanction of tenders to avoid inter-branch references within the undertaking.
- (c) purchase within predetermined financial limits laid down in the budget should not normally require prior financial concurrence except for the very costly items; and
- (d) procedure for purchasing low cost items should be very much simplified, reducing, or, if possible, even eliminating the need for enquiry and quotations.

414. (1) Project authorities should be precise in estimating the requirements of items like earthmoving equipment, vehicles, common tools, etc. needed during the construction phase. In the larger projects a Central Planning Group for materials should be set up, under the engineer in charge of construction, for planning the total requirements and phasing their procurement. (2) The recommendations made by foreign collaborators on the provision of spares should be scrutinised in comparison with the position prevailing in similar plants abroad, including the foreign collaborators' own plants.

(3) A small cell comprising technical experts and materials management experts should be formed in each large project, and especially in those with substantial dependence on imported items, to identify and catalogue the spares and to obtain their manufacturing, drawings and specifications as a first step towards establishing their indigenous manufacture. Project authorities should take timely steps to create their own workshop facilities in respect of items required in small quantities and non-repetitively.

(4) Government should evolve effective inspection arrangements to keep sufficient check on the quality of the products of indigenous manufacturers. They should not come to enjoy a monopolistic position *vis-a-vis* the purchasing public enterprises under the shelter of Government's understandable desire to promote import substitution. Government should also formulate a uniform policy for the price preference that the public enterprises should extend to indigenous manufacturers to serve as guidelines for the public enterprises, the indigenous manufacturers and the Directorate General of Technical Development.

(5) The recommendations made by the Mathur Committee for facilitating imports by public enterprises, and accepted by the Government, should be effectively implemented as soon as possible, particularly, the recommendations relating to the facilities of annual licensing and vesting of powers in project authorities to operate on foreign exchange within the sanctioned allocations.

Personnel

415. (1) While making appointments to the board, preference should be given to the officers working within the undertaking. The system of appointments should be in accordance with the basic principle that a person from the lowest ranks of service can rise to the top if he has acquired the necessary qualifications, and if his performance has been outstanding.

(2) The whole procedure for the appointment of members of the board should be systematised. Action to fill these posts should be taken well in advance to avoid vacancies remaining unfilled and making appointments in haste. The new appointee should be placed in position as an understudy for the brief period of a month or so to get acquainted with the job before taking over the post.

(3) The Bureau should draw up panels of suitable persons for board appointments. Selections to these panels should be made by a committee consisting of the Director-General of the Bureau of Public Enterprises and two chairmen of sector corporations. This committee should be reconstituted periodically to enable the chairmen of different sector corporations to be associated with it.

(4) If sufficiently experienced and senior men are not available within the public undertakings for holding board memberships, suitable persons may be selected from among Government officers, leading industrialists and businessmen, and professional managers and specialists in the private sector. In such cases, persons selected should sever their connections with their previous organisations. In particular, Government officers selected for these posts should be asked to resign their service with the Government.

(5) Certain general qualifications should be prescribed for the members of the board, *e.g.* experience of industrial, commercial or financial matters, applied sciences or administration or trade union organisation. The Chairman of the public undertaking concerned should be consulted before Government makes appointments to the board except in the case of part-time official nominees of the Government

(6) While appointing the part-time official nominees to the board Government should see that persons nominated do not have to serve on more than two or three boards and are not so burdened with their substantive work that they find it difficult to play a useful part in board meetings. (7) Frequent changes and long vacancies in top posts must be avoided. The Chairman and full time functional members of the board should have a fairly long period of tenure to enable them to make a significant contribution on the basis of experience gained in the undertaking. A period of 5 years should be regarded as the minimum for the Chairman and the full-time members of the board and a period of not less than two years for the part-time non-official members.

(8) Salaries of persons occupying top posts in public undertakings should be fixed on the basis of the responsibility attaching to the posts and the needs of the situation, and need not necessarily be pegged to the scales obtaining in Government service.

416. (1) Every sector corporation should evolve a common policy for laying down, on a uniform basis, the terms and conditions of service of employees of the corporation.

(2) Except for the higher levels of managerial and technical personnel, such as posts with a minimum starting salary of Rs. 1,300 per month or so, full powers of recruitment, promotion and disciplinary and administrative control of staff employed in a constituent unit should be with the unit itself. The sector corporation should, however, have the authority of making inter-unit transfers within the corporation in consultation with the units concerned.

(3) Authority for recruitment, promotion and transfer, etc., of persons occupying senior posts described at (2) above, should be vested in the sector corporation. However, all officers in the constituent unit should be under the administrative and disciplinary control of that unit, provided that powers of deciding appeals and of imposing a punishment involving termination of services of a person occupying a senior post should remain with the sector corporation. In respect of heads of departments, the power to impose punishment involving reduction in rank should also be reserved to the sector corporation. An appeal should lie to the Government against an original order passed by the sector corporation if it is one of dismissal, removal from service or reduction in rank. The appeal should be decided in consultation with the Union Public Service Commission.

(4) The sector corporations and their constituent units should make their own administrative arrangements for carrying out the recruitment and training programmes.

(5) Arrangements should be made for providing from sector corporations suitable officers to the smaller public undertakings which do not belong to a sector corporation. The possible requirements of such smaller public undertakings for experienced personnel should be kept in view by the appropriate sector corporation. The Bureau should draw up panels under the direction of the committee, consisting of the Director-General of the Bureau and two Chairmen of sector corporations, for facilitating such inter-undertaking transfers. The assistance of the committee can also be taken when inter-corporation transfers are found to be necessary.

417. (1) All necessary steps should be taken to reduce and eliminate the dependence on deputationists in manning posts in the public sector.

(2) For manning senior posts, preference should be given to persons working the undertaking. If no suitable person is available in the undertaking, the best available person may be selected by tapping all possible sources including other public undertakings, the Government and the private sector. The appointment should, as far as possible, be on a regular basis and not on terms of deputation.

(3) In the rare case when it becomes unavoidable to take an officer on deputation for want of a suitable alternative, the term of employment in the undertaking should under a contract, normally be for a period of five years with a provision for review at the end of the first year to enable termination of cases of mal-adjustment.

(4) Service rules relating to Government officers should be liberalised for facilitating the permanent absorption of deputationists at any level in the service of the undertaking. Similarly, rules standing in the way of sufficiently long term of deputation in the public undertakings should be modified to ensure a minimum five-year period. 418. (1) Enforcement of a uniform pattern in the matter of pay and allowances of employees in the public sector will neither be advisable nor practicable in view of the number and variety of jobs. The best way to ensure rationality and a degree of uniformity in these matters would be to provide information as an advisory service instead of insisting on prior Government approval or conformity with rigid guide-lines.

(2) The bureau should act as a clearing house of information relating to service conditions, pay scales and allowances in force in different public undertakings. This information should be made available to public undertakings and the controlling Ministries. In case, any undertaking goes seriously out of the line without due justification, Government will always be in a position to correct the situation by issuing a directive.

419. (1) The survey of additional requirements for managerial and technical manpower for the Fourth and Fifth Plan periods, made recently by the public undertakings should be further examined by a body of experts with the assistance of the Institute of Applied Manpower Research. A much more detailed assessment of manpower requirements is necessary to formulate a concrete programme, particularly for the specialised branches.

(2) Public enterprises need not assume responsibility for basic training in general management, and training in professions. The existing training institutes should be utilised for imparting this type of training.

(3) The Bureau, in cooperation with the public undertakings and the Ministries concerned, should:

- (a) review the existing training facilities and programmes to avoid duplication of effort;
- (b) identify areas where training facilities need to be extended or increased; and
- (c) evaluate the suitability of training programmes to the requirements of the public sector.

(4) Training of specialists and technicians required only by the public undertakings will have to be taken care of by the undertakings themselves. Undertakings operating in the same field

of technology should do this in cooperation with each other. Where sector corporations are set up they should provide common training facilities.

420. (1) Proper work standards and other control techniques should be adopted from the very beginning to avoid over staffing.

(2) In the undertakings where over-staffing has become chronic, work studies should be undertaken by industrial engineers to find out the extent and area of over-staffing.

(3) The normal vacancies occurring in the over-staffed department may be left unfilled; employees who are found surplus may be allowed to freely apply for jobs outside. Skilled workmen should be persuaded with the help of incentives, if necessary, to do without the assistance of helpers. The practice of having helpers should not be allowed in the new projects.

(4) Greater use should be made of the construction corporations in the public sector and non-departmental agencies wherever such a course is feasible.

421. (1) Any advanced training programme given during the course of a period of service should be linked to a definite ladder of promotion so that technical personnel after such training can look forward to comparatively early promotions to higher grades.

(2) Persons selected for training should be required to execute a bond to render service for a minimum period of five years after the completion of training. The amount for which the bond should be executed should be a fair proportion of the total amount spent during the training course, and, in the event of infringement, the conditions of the bond should be rigidly enforced. Provision should be made, by a special enactment, if necessary, to enable the recovery of the amount of the forfeited bond in a manner similar to the recovery of arrears of land revenue.

(3) A person who resigns or deserts from the service of a public undertaking within the period for which he has bound himself to serve the undertaking should not be employed under the Government or in a public undertaking till the amount due from him has been fully paid to the undertaking concerned.

422. (1) The special obligations of managements in the public sector with regard to labour matters should be spelt out more clearly by the Government.

(2) Managements of public undertakings should evince keen interest in the welfare of the workers. The personnel policies of public undertakings should be such as would develop the skills and capabilities of the workers and improve their prospects and standard of living.

(3) The model employer concept should not be construed to mean that supervising officers should condone or be lenient towards indifferent work or acts of indiscipline.

423. (1) It should be ensured that every public undertaking effectively discharges all the statutory obligations imposed on the employers by the labour laws. The controlling Ministry and the Ministry of Labour, Employment and Rehabilitation should undertake periodic reviews for this purpose.

(2) Public undertakings should have their personnel managers trained in industrial relations and labour management and should adequately strengthen their personnel departments.

(3) A professionally qualified and experienced labour officer should be available at a sufficiently senior level in the personnel department. He should have the facility of direct approach to the chief executive in case he felt that his advice was being unjustifiably disregarded by any line authority.

(4) Officers entrusted with labour relations should not shoulder any direct responsibility in matters like recruitment, promotions and disciplinary action against workers.

(5) As a rule, a separate section should be established exclusively for labour relations within the personnel department, in the larger undertakings, a separate department should be organised solely for labour relations.

(6) The labour officers of the Central Pool maintained by the Ministry of Labour, Employment and Rehabilitation may, in suitable cases, be got permanently absorbed in the service of the public undertakings. An outside pool need not be maintained for the purpose of deputing officers to the undertakings.

424. (1) Township and connected facilities should form a separate unit of administration managed by a committee consisting of the officers concerned of the public undertaking and a few representatives elected by the staff and workers living in the township from among themselves.

(2) The township administration, in discharging its responsibilities for maintaining sanitation and other municipal services should be required, as far as possible, to pay its way with the help of recoveries of rent and such taxes as may be imposed by the management committee of the township.

(3) Variations in the amount of subsidy given by different public undertakings in respect of expenditure incurred on various items of workers' welfare should be examined by a committee comprising the representatives of selected public undertakings and the Ministries concerned with a view to laying down guide-lines and norms.

425. (1) Labour laws applying to public undertakings need not be identical with those applicable to private concerns.

(2) Cases of illegal strike in public undertakings should be dealt with firmly. The union responsible for launching such a strike should, if it is a recognised union, be immediately de-recognised. Provision should also be made to remove from service, after summary inquiry held in consonance with principles of natural justice such workers as are proved to have taken part in an illegal strike.

(3) Feasibility of adopting the 'check-off system' (under which union dues are collected by making deductions from wages) in the public sector should be examined.

(4) Labour Councils with a prescribed number of members, should be formed for conducting negotiations with the management on labour matters. The members of the Council should be elected once in two years by all the workers, each of them having one vote.

426. For matters relating to settlement of disputes, the Central Government should be designated as the appropriate Government under the Industrial Disputes Act, 1947, for certain additional categories of heavy industries which would cover units like the steel plants, heavy electricals plants, fertilisers and chemicals plants, aircraft manufacturing units and shipyards.

427. Managements should regard Works Committee meetings as opportunities to inform the workers of their plans and difficulties and to explain the reasons for the changes being initiated. Due publicity should be given to the proceedings of the Works Committee so that the workers' representatives may feel more interested and responsible for what emerges from the discussions.

428. In the Joint Management Councils the workers' representatives should be elected by all the workers and not nominated by the unions.

429. Steps should be taken immediately to introduce effective incentive schemes for the employees of the public undertakings. The basic approach in working out such a scheme should be to link the earnings of workers to their productivity and performance subject to certain prescribed minima and maxima. The scheme should take into account the existing levels of productivity and prescribe realistic targets in terms of production as well as reductions in costs.

Audit and Appraisal

430. (1) Four or five Audit Boards should be constituted, each Board dealing with specified sectors of public enterprise. These Boards have to function under the general supervision of the C&AG.

(2) Each of these Boards should have five members; three should be permanent members common to all the Boards and should be senior officers belonging to the organisation of the C&AG. One of these members of the rank of an Additional Deputy Comptroller and Auditor-General should be the chairman of all the Boards. Each Board should have two part-time members to be appointed by the Government in consultation with the C&AG. These part-time members

should be selected having in view the area of enterprise the Audit Board is required to deal with. Part-time memberships need not be restricted to serving officials. Selections may be made from the ranks of senior experienced persons working in public enterprises or from among experts in commercial or financial matters.

(3) The staff required for the Audit Boards should be recruited through the Union Public Service Commission. Those who are already working in the audit offices may also apply for posts in the Audit Boards. The selected staff should undergo a course in orientation for which arrangements should be made. The existing departmental set-up of the Directorate of Commercial Audit should be utilised until the new recruits take over the work.

431. (1) Combined audit parties comprising the staff of the Audit Boards and the professional auditors should be formed for carrying out their work in an undertaking concurrently and collectively.

(2) An Audit Board should finalise its reports on an individual undertaking after a discussion in the presence of the representatives of the public undertaking and the Ministry concerned.

(3) The reports of the Audit Boards, with such comments as the C&AG may wish to make, should be placed before Parliament.

432. (1) A systematic appraisal of the performance of public undertakings should be undertaken and this task should be entrusted to the Audit Boards.

(2) For this work the expertise of the auditors under the Audit Boards should be augmented by employing economists, management engineers, statisticians, etc., and also those who have had the experience of working in public undertakings.

(3) In evaluating the performance of the public enterprise, account should be taken of the constraints under which it functions.

GROWTH CONGENIAL TO JUSTICE: A QUEST

Anand S. Nadkarni

The book under review 'brings together a selection of papers' written by C.T. Kurien 'during the course of the 1980s on different aspects of the developmental process in the country'. All these papers 'focussed on the theme of growth and justice' (p. xii). The book comprises ten papers and is divided into three parts. The first part, 'Growth and Justice: The Problem Defined', contains three papers, (1) Development and the Livelihood of the People, (2) Reconciling Growth and Justice: Strategies versus Structure? and (3) Planning and the Institutional Transformation of the Economy. In the second part, 'A Review of Economic Performance', are included the following five papers: (4) Indian Society: Past Trends and Future Prospects, (5) The 1987-88 Budget and the New Fiscal Strategy, (6) The Indian Economy in the 1980s and on to the 1990s, (7) Decentralized Planning: The Indian Experience, and (8) The Future of Village Industries. The third and the final part, 'Some Underlying Theoretical Issues', is made up of only two papers, viz., (9) State and Market in Economic Processes: Some Basic Issues and (10) A Systemic Perspective of the Marketization Process. Each part begins with an 'Introduction', outlining in brief the linkages as between the papers brought together in that part.

In this work Kurien is interested, as could be expected, not merely in presenting a factual account of the Indian economy in transition. There is an attempt here to understand the nature of changes that have taken place and also to discover why what has happened has, in fact, happened. This quest veritably provides a unity of focus to the analysis in these papers prepared at different points of time in the 1980s (ranging from March, 1983 to January, 1989), and consequently makes the exposition eminently readable.

A unifying exercise on these lines would necessarily require a framework of analysis to help place facts in the 'proper' perspective. The need for such framework is all the greater when one is exploring the implications of economic growth

for justice - a term which may mean different things to even different thinkers. Kurien approaches the subject from what may loosely be described as a 'political economy perspective', and what is more, for elucidating the linkage of justice to the growth process in India he seems to find considerable merit in the Marxian tools generally employed for the purpose.

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Kurien's essential thesis may now be summarized. India's development experience in the 1980s exhibits major paradoxes. 'The ten year period of rapid growth also happened to be a particularly dismal one in terms of employment generation' (p. xi). The scenario in respect of justice emerging in the course of the growth process in India is reflected in the impact of this process on different sections of society. In actual fact this process accompanied by the extension of the commercial principle to economic life in society, has brought in its train 'riches and plenty to some and deprivation and hardship to others' (p. 22). As it turns out only a small minority is at the pole of 'riches and plenty', whereas an overwhelming majority who toil are to be seen at the opposite pole of 'deprivation and hardship'.

At the root of this depressing situation in respect of the living conditions of the millions who 'are excluded from the opportunities for a richer and more varied life that are being opened up all around them' (p. 6), is the grossly unequal distribution of social power, emanating from the extreme inequality in ownership and control of (productive) non-labour resources. It is true that even in the traditional society which existed in the low-development period there was, to be sure, the utmost disparity in the ownership of resources and power, but the impact of this situation was, so to say, tempered somewhat by 'a definite social arrangement which assigns roles and claims to everyone' (p. 19). This arrangement broke down as development was accompanied by increasing privatization of resources with a more clearly

^{*} Growth and Justice, Aspects of India's Development Experience, C.T. Kurien, Oxford University Press, Madras 1992, Pp. xvi+295, Price Rs 275/-.

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demarcated right of ownership. Pari passu, came the marketization of economic transactions. 'The market can ... be described as a social mechanism under the control of those who own and control resources. The owners then use the market to acquire more resources; this is achieved by excluding others through the legitimate process of pricing' (p. 24). It is customary in economic theory to characterise market as an arrangement that works only in the case of transactions subject to the principle of exclusion. Evidently this arrangement is to the detriment of those without saleable resources. 'Marketization is a twoedged sword, conferring resources and resource power on some while denying these to others' (p. 24). Certainly all this does not mean that Kurien is opposed to development or progress. He is only pointing out 'what one group of people can do to their fellows in the name of progress, modemization and development' (p. 25).

Kurien is then of the view that the idea, underlying the mainstream economic theory, that an economic system works best when left to the forces of the market - without any external interference' (p. 221), is open to serious question. In fact 'economic processes in real life situations cannot be properly understood without taking into account the role of the State' (p. 222). The papers in Part II of this volume attempt to bring out how an activist state policy in India has actually promoted the interests of 'a tiny island of affluence' creation of which in the Indian society has been an important aspect of the pattern of growth here. Kurien analyses the New Fiscal Strategy of the 1987-88 Budget or the industrial policy in the 1980s or even the Indian experience with regard to decentralised planning, to boost his thesis.

What is the way out of this depressing situation? Kurien seems to lay great store by 'socialist' planning, understood as planning in a system of the social ownership of the means of production. 'This makes it possible for social objectives to be accepted and pursued in the planning process' (p. 177). Then again, it is argued that the control over the resources in such societies being pluralistic (collectives and cooperatives having effective control over land, for instance), there can be no national planning without drawing these micro units into the planning process, 'In this sense, the

distinctive feature of socialist planning is that both a centralized dimension and a decentralized component are systemic imperatives' (p. 177). On the other hand, 'capitalist planning [such as the one prevalent in India] does not have, and cannot have, a similar imperative' (p. 178).

There are dispersed over this volume several ideas indicating the probable route by which the present system of planning in India may give way to a form of planning which is 'used to shape the institutional structure of the economy' (p. 78). structure being 'defined as the manner in which resources are owned and controlled and the considerations that govern their use' (p. 35). There is a reference to development viewed from the perspective of the poor and the powerless becoming a reality 'only when these sections acquire effective power, and when those exercising power as their representatives become truly responsive to their needs' (p. 25). The author also sees some hope in that 'the closer involvement of people in regional politics offers them an opportunity to move beyond populism to conviction about the need for basic solutions to basic problems' (p. 105). It is further hypothesized that the toiling people whose earnings are not and cannot be indexed - small farmers, petty traders and other categories of the self-employed, rural labourers, and urban workers, -- will realize the inequities of the system that they have so patiently (and sometimes not so patiently) borne. The authority of Adam Smith is invoked by citing the following quotation from his Wealth of Nations: 'The affluence of the rich excites the indignation of the poor, who are often both driven by want and prompted by envy to invade his possessions' (p. 127). Evidently, 'when, and how, the indignation of the poor in our land will find expression', is difficult to predict (p. 127).

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In the 1950s when India set itself on the path of development many eminent economists here and abroad held strongly the view that to promote rapid development in a backward, stagnant economy and to ensure equitable distribution of the fruits of development among the population, an interventionist state policy was absolutely essential. This was the beginning of the age of 'development planning'. In fact, as Bimal Jalan points out, 'even the World Bank, a capitalist institution with a development mission, was reluctant to lend to countries that did not have a government sponsored 'Development Plan' ' [Jalan, 1991, p. 61]. Kurien is evidently an interventionist, but he is aware that interventionism, *per se*, may not produce worthwhile results. This has indeed been India's experience during the last four decades of planning.

Interventionism in India since independence enmeshed in electoral politics and with the country's glaringly unequal society, has played a havoc with the polity and economy in this country. The polity is being progressively criminalized with lumpen elements being accommodated more and more in the echelons of power and increasing sections of professional politicians being themselves lumpenized. Then again, populism being assiduously practised by all political groups competing for state power has meant indiscriminate subsidisation in different forms of the vocal sections of population resulting in a heavy burden on government finances, both at the Centre and in the States. This has been the starting-point particularly in the 1980s, of a chain of consequences from growing budget deficits - especially revenue deficits - to inflation, emergence of an uncompetitive high-cost economy, current account deficit, and increasing burden of the debt, both internal and external. The harmful implications of these developments for the growth process and the emerging scenario in respect of justice are quite well-known. In sum, the interventionism in India during the last forty years has generated corruption on a colossal scale. caused relatively much slower growth vis-a-vis several developing countries and also led to deepening poverty for millions in this country.

Hardly anyone, however, would argue in favour of dispensing with state intervention in economic affairs. What one seeks is the right type of interventionism in the proper proportion and of the needed quality. One feels that interventionism Δla Kurien, i.e. planning within a system of social ownership of the means of production, does not fit the bill. This is not so much because experiments inspired by the Marxian doctrine have uniformly come to grief throughout the world.

After all, there could be endless, inconclusive debates over whether the failure follows from the doctrine of social ownership of the means of production or is to be attributed to the logical unfolding of the consequences of the 'dictatorship of the proletariat' wielded by the 'Vanguard of the Revolution' or is due to any other reason. There is, however, considerable force in the argument that social ownership even in a nondictatorial environment, would create myriad problems for the productive efficiency of resources. In India's functioning democracy we have not subscribed to the dogma of social ownership. All the same, public sector in control of 'the commanding heights of the economy' and as a generator of surpluses for investment, was given a prominent place in our planning strategy. In actual fact these enterprises have fared very miserably during the last four decades. This is, inter alia, because 'they have spawned a number of economic interests and political constituencies which wield formidable power' [Dhar, 1991, p. 408]. It seems apparent that cent per cent social ownership will make matters worse. In any case, the functioning of an organisation depends inter alia, on the quality of the persons who work it, irrespective of the ideology they profess. It would be over-optimistic to assert that quality would be superior under a 'social ownership' milieu than under that in a 'mixed economy'. In brief, the place to be accorded to the public sector undertakings in the economy must be decided not on the basis of a doctrinnaire approach, but on the basis of pragmatic considerations.

What is required in India in the foreseeable future even from the point of view of promoting justice, is to contain inflation and widen employment opportunities consistent with a significant step-up in productive efficiency of resources. This would require, besides a macro-balance in government finances, also the dismantling of much of the control mechanism in the country since this mechanism has contributed to corruption, delays and wastes, and has severely hampered initiative and incentive in industry. In other words, there ought to be a greater degree of fair competition in economic activity in the country. It is true that Kurien makes several perceptive observations in this book critical of the belief of the neo-classical economists in the efficacy of the market from the point of view of welfare, which, in fact, requires a number of facile assumptions. But what is of relevance to India at present, considering the wasteful use of resources which the system of controls has encouraged, is recognizing 'the vital disciplining function of competition in encouraging quick learning and cost and quality consciousness' [Bardhan, 1990, p. 6]. Competition, in other words, automatically imposes, in Janos Kornai's useful phrase, a 'hard budget constraint' on the products in the market, as distinct from the 'soft budget constraint' which, according to him, was the undoing of public enterprises in the erstwhile socialist societies.

The plea being made here is rather in favour of a competitive market than of just a 'free' market. A market could be free from state-operated controls but not adequately competitive if, for example, powerful oligopoly firms are in a position to resort to restrictive trade practices. In fact, 'most economists, even in socialist countries, now agree on the virtues of the threat of entry and the fear of exit in reducing wasteful use of social resources'. This defines an important function for the State in India, which is 'to ensure the operation of dynamic competition'. As it turns out this often needs a strong state far from the minimalist state of classical liberalism [Bardhan, 1990, p. 6].

Furthermore, when the State enlivens more effectively the market mechanism, the ensuing developments are likely to hurt the lower income-groups significantly in the short run as, for example, when unemployment increases due to the collapse of non-viable units in the altered costs-prices context. Or, again even when competition brings benefits these would not reach the poor who may be outside the market system. The state will be required to undertake programmes to insulate the disadvantaged groups against the vagaries of the competitive market and also to ensure that as the more efficient use of social resources yields benefits, those at present outside the market system are helped to acquire skills which would enable them eventually to share in the benefits. Thus it would not be legitimate to posit a contrast between the State and market the

way it is done by the neo-classicists on the one hand and the radicals on the other.

One further comment relates to Kurien's observations on the Indian experience of decentralised planning. Kurien analyses the different obstacles to decentralised planning in India such as wrong approaches, bureaucratic opposition and institutional weaknesses (Pp. 173-177). However, his basic contention is that in the nature of things decentralized planning is not feasible in a capitalist economy such as India's. Consider the following: 'Since the ownership of resources is not socialized, the economy cannot be subjected to any form of comprehensive planning (although the plan models in use may pretend to be comprehensive) because the private owners of resources will determine on the basis of their inclinations and calculations how the resources are used. In this sense there can be very little centralized planning in a capitalist economy. And precisely because the primary production units are not organically linked to whatever 'planning' there may be, effective decentralized planning of the socialist kind is also not feasible' (p. 178). In brief, he is saving that there can be no comprehensive planning in a capitalist economy, either of the centralized or the decentralized variety. All the same he concedes (grudgingly?) that the capitalist economy can have some kind of planning under which a 'plan can be formulated through a network of projects and procedures, and this can influence the use of resources in the rest of the economy through incentives and directives' (Pp. 178-179). He is referring here to what may be described as planning in a mixed economy, under which the state decides in advance to use, in an inter-linked manner, its resources and the instruments at its disposal to ensure to the community a pre-determined level of goods and services it is to produce and also to induce private productive activity to conform broadly to the plan goals. Now whether comprehensive (i.e. socialist) planning is desirable or not, whether in the comprehensive socialist planning there can be scope for genuine decentralisation, are questions that need to be raised and answered. From what is said in this book, it seems to be a matter of faith with Kurien that such planning is desirable and it has 'a decentralized component' as a systemic imperative. We shall not go into this problem further here.

Kurien, however, does not address himself to the question whether the non-comprehensive planning of the non-'socialist' variety can have a decentralized component. Under this variety of planning is included the plan schemes of various types, designed, operated and funded directly by the governmental sector in the country. The whole debate about democratic decentralization in the country has been about the feasibility and desirability of assigning powers to 'local' authorities to design and implement governmental schemes of benefit mostly to local residents so as to evoke more effective participation on their part to the benefit of all concerned. One fails to understand how such a delegation of powers within the governmental sectors goes against what Kurien describes as 'systemic imperatives'. To the extent that decentralization in this sense materializes, it would help promote greater justice in so far as the wishes of the population in smaller localities also get reflected to a certain extent in the planned composition of public goods and also what are known as 'merit goods'.

Now it is a fact that there has been a stiff resistance to delegation of powers to local authorities from higher level political leadership and bureaucracy in the states in India. The developments in respect of the Panchayati Raj Institutions during the last three decades, reviewed by Kurien in the relevant chapter, brings out this fact. However, opposition of vested interests to sharing of powers with lower level representatives is a phenomenon to be found universally; even the functioning socialist economies characterised by social ownership were no exception. There seems to be no point in distinguishing between the place of a decentralized component in socialist and non-socialist planning on the basis of the existence and the lack of it of systemic imperative.

This brings us to the final point. An actual social arrangement, howsoever good, is only a parody of an ideal seen by visionaries. The movement

from the actual to the ideal is obstructed at every stage by those who are likely to lose their power and privileges. This is true whether one describes a society as socialist or otherwise. Thus, for example, an attempt to place government finances in India on sounder footings, would require, inter alia, doing away with a lot of subsidies that, in fact, benefit the relatively better-off sections. Any attempt to reform would certainly meet with their resistance. Those who are keen in effecting a change - whether in a comprehensively planned 'socialist' society or in a non-socialist society of one or the other variety - have to face up to the question of overcoming this resistance. One has to fall back on the type of speculations found in Kurien's analysis: acquisition of effective power by the relatively handicapped; involvement of people in efforts to seek basic solutions to basic problems and so on - in brief, an enlightenment on the part of those who are likely to gain from reform in the long run. It is interesting in this context that according to Kurien even though in a class-dominated society the state 'cannot but serve the interest of the dominating class', it 'can still promote 'general welfare' '(p. 238). To quote further: 'Through its influence on the State, the realm of culture or ideology makes the State something more than a simple reflection of class interests defined in economic terms; it becomes one of the forces that endow the State with relative autonomy' (p. 246). There is then reason to be optimistic that the democratic polity in India would some day assert itself to ensure that eventually an economy which reconciles growth and justice is evolved in the country.

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THE STEEL INDUSTRY IN CHINA AND INDIA

R.M. Honavar

India and China embarked upon a programme of development more or less at the same time -India in 1947 and China in 1949. Both are large countries (3.16 million sq, km, and 9.57 million sq. km. respectively) with large populations (844 million in 1991 and 1,133 million in 1990. respectively) which are becoming larger. Bulk of the people were poor when they started out on the path of development. Agriculture was the dominant occupation in both the countries and therefore both took up industrialisation and infrastructure development in a big way to improve the condition of the people as quickly as possible. While India was an ex-colony of the British, China, though nominally independent, was dominated by the colonial powers of Europe.

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As against these similarities there were important differences. Although gaining independence was a monumental political change, India inherited a reasonably good economic and administrative structure so that the task of moulding it for new initiatives was not very difficult. China, on the other hand, inherited an economy devastated by a long drawn out civil war, Japanese occupation and Russian pillage at the end of World War II. Since the Communists came to power through a victory over Cuomindang such administrative structure as there was. was lost to them as Chiang Kai Shek took the officials away to Taiwan. Although China was three times as large as India, arable land there was perhaps the same as in India. This was because vast parts of China are desert, mountainous and otherwise inhospitable territory. Nevertheless China's foodgrain production was more than twice as large as India's due to the industry of the peasants and careful management of water and manure. Also China's natural resources were vastly superior to those of India. Its reserves of coal, iron ore and crude oil were incomparably larger than those of India. While India's leadership was highly educated and western oriented, China's growth has been profoundly interrupted

Chinese leadership was less sophisticated but much closer to the people because of its revolutionary background and far more capable of organising people to achieve specific goals. Again, India had never been ruled by a single authority in its long history and therefore did not have a sense of cohesion except what was acquired in the hundred year long British rule. On the other hand, China had been ruled by a single authority, more or less continuously, for more than two thousand years as subjects of the 'Celestial Kingdom'. It had developed a common language which everybody could read though not speak whereas India had nearly a score of languages with different scripts. This gave the Chinese a sense of oneness which the Indians lacked. The heterogeneity due to caste, religion and ethnic and linguistic differences to be found in India did not exist in China because 90 per cent of the population were the 'Sons of Han' and the ethnic and religious minorities were numerically insignificant though they occupied vast territories, mostly on the periphery of the Chinese empire. Finally, while India had continuous access to aid and technology from the developed world, China hardly had any from the time their Russian allies departed in 1959 till the time she ended her isolation in the mid-seventies.

How have these two economies performed in these four decades or so? Even allowing for differing degrees of openness and availability of comparable data, it is generally agreed that China's progress has been faster than India's. The average growth rate in China was 6 per cent per annum during 1952-79 while India's was 3.5 per cent during 1950-80; it increased to 10 per cent per annum in China during 1979-88 while in India it rose only to 5 per cent per annum during 1980-89. India's growth has been more or less steady during these years except for the hiccups caused by the two wars with Pakistan in 1965 and 1971 and the severe droughts in 1966 and 1980.

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^{*} Asian Crucible: The Steel Industry in China and India, Gilbert Etienne with Jacques Astier, Hari Bhushan, Dai Zhong, Sage Publications, New Delhi, 1992, Pp. 304, Price Rs 285/-.

by the 'Great Leap Forward' in 1959 and the 'Cultural Revolution' in 1970. In spite of these major setbacks the Chinese economy has bounced back very rapidly and had resumed its high growth path. So much so that in every sector, be it agriculture, industrial goods or consumer durables, China's production is very much larger than India's.

For instance, China's current food output is 435 million tonnes as against India's 166 million tonnes, though the cultivated area is not much different. (Differences in statistical coverage would narrow this difference somewhat). The output of coal is 1,000 million tonnes as against India's 244 million; the output of steel is 61 and 14 million tonnes, respectively; the output of cement 100 million tonnes and 44 million tonnes, respectively; the output of crude oil 100 million tonnes as against India's 33 million tonnes. With regard to durable consumer goods also the story is the same with China producing much more; bicycles, 41 million and 7 millions respectively, wrist watches, 54 million and less than a million respectively; radios, 16 million and 7 million respectively. As against small quantities produced in India, China produced 7 million refrigerators and 10 million household washing machines. What is even more remarkable is that China has been able to lower its population growth rate by bringing its birth rate from 40 per thousand to 21. On the other hand, India has still to contend with a growth rate of 2 per cent or so because of her failure to reduce the birth rate by no more than 10 per thousand from the earlier level of 41. Although the World Bank estimates per capita incomes of India and China in 1990 as US\$ 350 and 360 respectively, there are others who argue that in view of the larger production in China in almost all sectors her per capita income would be US\$ 400 or more.

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This book concentrates on the relative performance of the Steel industry in the two countries. This task is done on the basis of visits to the important Steel plants in the two countries and discussions with persons connected with the industry and officials in various government organisations relevant to the industry. Etienne's team consisted of a steel expert each from France, India and China to secure an informed and balanced appraisal. Their findings are quite revealing:

(1) Although India and China started with the same level of output of a little over a million tonnes of steel at the end of the forties, there is a wide disparity in their output at the end of the eighties. China's steel output has risen to over 60 million tonnes while India's just exceeds 14 million tonnes. Per capita consumption of finished steel in China is 50 kg and in India it is only 17 kg; developed country consumption ranges between 300 and 500 kg. Though output in both the countries has risen, growth seems to be phenomenal in China, particularly in the eighties. During 1981-88 China's steel output grew at an average annual rate of 3 million tonnes whereas India's output grew only at a rate of 0.38 million tonnes. India had seven major integrated steel plants with a capacity of 1 million tonnes or more and these accounted for most of the steel production in the country. In China 12 major integrated steel plants accounted for a little over half of total steel production. In addition 14 medium size plants with outputs varying from 0.3 million to 1 million tonnes and 16 small size integrated plants together produced a quarter of the output of the large plants.

Chinese authorities have themselves stated that nearly 30 per cent of the steel output does not meet international quality standards and substantial quantities of steel are being imported despite such a large volume of production. It is, however, not clear what the basis for such a statement is. Even if we make allowance for this, steel output in China amounts to over 40 million tonnes. Although India does not import much steel, complaints of poor quality of steel are heard, particularly from tube makers and makers of other specialised engineering products. If some allowance is made for this, the divergence between the outputs in India and China would be in the neighbourhood of 1:3.5.

industry and officials in various government (2) China's steel industry is spread out over the organisations relevant to the industry. Etienne's entire eastern half of the country; on the contrary

Indian industry is concentrated in the Bengal-Bihar region. This is because coal and to a large extent good quality iron ore are to be found only in that part of India. In China, however, coal and iron ore deposits are to be found in different parts of the country.

(3) China has better quality coking coal than India. Indian coking coal has such a high ash content, that even after washing it, ash in the coke is as high as 25-26 per cent. Mixing it with imported coking coal only brings the ash in the coke down to 22-26 per cent. The ash content in coke from Chinese coal is generally 14 per cent.

On the other hand, the content of Chinese iron ore is much lower than that of Indian ore (30-34 per cent and 60-65 per cent respectively). This handicap has been overcome by the Chinese by beneficiation and sintering, a practice common in developed countries, which they seem to have begun to follow from the Great Leap Forward days. India, however, continues to use lumpy ore.

Due to these practices the coke rate varied from 504 to 550 kg in China while in India it ranged between 680 and 1,015 kg; and blast furnace productivity worked out to 1.74 t/cum/day and 0.74 t/cum/day respectively. Because of the higher blast furnace productivity for the same production of hot metal, China has 50 per cent of the coke oven capacity and less than 50 per cent of blast furnace capacity. This has obvious implications for investment.

(4) China's steel making skills seem to be superior to India's. The tap to tap time ranged from 30 to 60 minutes in China; in India the range was 60 to 100 minutes. The maximum lining life was 500 heats in India; and the minimum went down to 200. In China it was generally above 1,000 heats. The average steel output per tonne of LD capacity was 3,973 tonnes compared to 6,727 tonnes, or about 70 per cent higher. Thus, in the view of the authors, in open hearth steel making China is about 10-15 years behind Western industrialised countries and India 20-25 years behind. In converter steel making China has been moving rapidly and its percentage of oxygen converters is comparable to that of the USA. India is moving fast and catching up. In continuous casting, which improves the yield of finished steel from liquid steel by 8-10 per cent and reduces energy requirements, both China and India are said to be behind the Western countries and the NICs, where the percentage varies from 50 to 87 per cent. But both countries are moving fast to catch up. India has 136 concast machines and China has about 100. Nearly three quarters of these machines have been designed and built locally in China. In India they have all been imported from Switzerland or Germany.

(5) According to the authors, while India has been importing equipment and knowhow over time the Chinese have achieved greater selfreliance. They have developed world standard technology and manufacturing capacity with regard to blast furnaces, except those of the largest size; with regard to sinter plants and coke ovens their absorption of technology is at a fairly high level. They have also bought a large amount of secondhand equipment which they have dismantled, re-erected and commissioned successfully.

In India, on the other hand, the absorption of technology and manufacture of equipment has not taken place particularly in the public sector steel plants. Nor was this aimed at specifically. Unlike in China the design and engineering of all blast furnaces is imported and the indigenous component in all other plant facilities is much less. There is no constant upgradation and innovation in all spheres.

However, TISCO seems to be an exception. There has been a constant upgradation of technology and equipment, including introduction of sintering, improvements in blast furnace productivity, open hearth productivity, etc., on a much larger scale than elsewhere. Its own shops and equipment manufacturing plants, with close and constant interaction with steel plant operators and its R&D set-up, have played a positive and significant role in the continuous modernisation of TISCO's plant and equipment.

(6) Because of the large population in the two countries and the pressing need to provide employment, the number of employees in the steel plants is far in excess of the standards of developed countries, South Korea and Taiwan. Productivity in tonnes per man is also similar at around 38 tonnes. Although wages are lower in China, other benefits are comparable to those in India. As a result while labour costs accounted for 16.3 per cent of sales for SAIL in 1988-89 they were only 10 per cent of sales of steel plants in China in 1988. The percentage was the same in TISCO as in SAIL though productivity was higher at 56.5 tonnes.

(7) The work ethos on the part of the Chinese workers was much better than on the part of the Indian workers, in spite of lower wages. In common with many other public sector units most SAIL workers had a lesser sense of belonging to and identification with the well being and success of the plant. The number of officers also is much lower in Chinese plants than in Indian plants and their salaries are not more than twice those of workers.

This makes costs in China's steel industry much lower than in India. Greater internal purchase and speed of implementation also make for overall lower costs and diminish the need for imports. In India greater reliance on imports and delays in implementation due to lack of finance lead to higher costs. Thus capital costs per tonne of steel have risen from US \$ 150 in the fifties to \$ 500 in the seventies and for Visakhapatnam they were \$ 1,500 to 1,600 per tonne. In China they were on an average \$ 400 per tonne from 1953-80. But in the eighties they increased to \$ 1,100 to 1,200 per tonne.

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What are the factors responsible for such a wholly divergent performance of the steel industry in the two countries? They can be briefly stated as follows:

a) The Chinese economy has grown much faster than India's, as noted earlier, and it has therefore been possible to absorb the larger quantity of steel produced. The demand from major steel using industries is on a scale totally different from that in India. Thus China produces 200 million tonnes of cement as against India's 44 million tonnes and therefore has an urban housing construction

programme quite unmatched in India. The oil industry's growth has been very rapid and today China's production of crude amounts to 100 million tonnes as against India's 33 million tonnes. Similarly the scale of operation of steel using industries like machinery, tractors, bicycles, refrigerators, washing machines is very much larger than in India. Therefore, the Chinese economy needs a steel output very much larger than the Indian economy.

b) Resources seem to have been less of a constraint on growth in China than in India. The very much higher level of saving in the economy, the emphasis on capital construction by the authorities and the relatively comfortable foreign exchange position of China meant that investment would not be held up on account of lack of resources. On the other hand, India suffered continuously on account of a relatively low rate of saving and a crippling foreign exchange shortage. Relative ease of availability of resources meant greater speed of implementation and therefore lower costs; whereas a resource crunch meant delays in implementation and therefore higher costs. While the former made subsequent investment easier the latter did exactly the opposite. While the Chinese could cut costs by greater internal purchase and purchase of secondhand equipment Indians had to buy expensive equipment because their projects were tied to aid by different countries.

c) Greater indigenisation of equipment manufacture and better absorption of technology enabled the Chinese to undertake more investment at lower cost. The cutting off of aid by Russia in 1959 and the enforced isolation of China till the mid-seventies seem to have been put to good use in greater indigenisation and innovation. This seems to have been possible because of greater cooperation and coordination between the large number of R&D institutions. machinery builders, operating personnel and ministry officials. Greater continuity of senior management and greater independence in the matter of imports of technology and machinery helped in all aspects of planning, development and implementation as well as technology

absorption. For instance, the Anshan Steel Works, which is larger than all SAIL units put together, had the same Chief Executive for 26 years. The fact that most China's steel plants have been expanding over a long period helped in the acquisition of operating skills and technology absorption by the workers.

In India the picture has been quite different. All public sector units were built on green sites with the help of large amounts of assistance from abroad. Since foreigners were in the driving seat indigenisation and technology development took a back seat. Though it was an avowed objective of industrial development policy, R & D was not taken seriously because of the short tenures of Chief Executives, their risk aversion due to niggling parliamentary scrutiny and the peculiar nature of their relations with the Ministry and its

officials. Organisations like Metallurgical and Engineering Consultants (MECON) and Heavy Machine Building Plant (HMBP) which could have helped the process of indigenous manufacture of equipment were sidelined because aid finance was an important part of the expansion of these plants. Only TISCO seems to have been somewhat of an exception because its long history and the long tenure of its Chief Executive have helped technology absorption, R & D and inplant manufacture of equipment. The differing work ethos in the public sector and the private sector also seems to have contributed to this result.

Etienne and his colleagues have done an extremely useful job in this pioneering comparative study and have pointed the way for such studies in other sectors as well.

BOOK REVIEWS

Venugopal, K.R., *Deliverance from Hunger - The Public Distribution System in India*, Centre for Policy Research, Sage Publications, New Delhi, 1992, Pp. 223, Price Rs 225/-.

The system of supplying foodgrains at 'fair prices' to the 'vulnerable sections of the population' was first evolved in the late fifties and early sixties with the assured supplies of wheat and rice from USA under their Public Law 480. These supplies were released on the market through fair price shops at the low prices at which they were received, in the hope of bringing down the foodgrain prices in the open market. An extensive system of fair price shops was established for the purpose. As the accent was on creating a feeling of abundance, the system was subjected to least regulation and control. For nearly seven years from 1957 to 1963, the system functioned in an atmosphere of abundance.

However in August 1963, the prices of foodgrains began to rise in the open market and caused anxiety. By August 1964, the rise in prices became very steep, the demand for foodgrains from the fair price shops where the prices were lower expanded rapidly, and the supplies from abroad proved inadequate to meet the demand. In 1964-66, the working of the fair price shop system was examined by a Study Team on Fair Price Shops appointed by the Ministry of Food and Agriculture. This Team had commented in their report that the fair price shop system was incapable of giving adequate foodgrains at subsidised prices, to consumers who could not afford to buy at the open market prices. The Team further stated that 'we do not dispute that something must be done for this class of consumers. But we must submit that this is not a problem which can be handled by fair price distribution functioning alongside a free market. If food has to be provided to those who cannot buy it in adequate quantities at the supply-demand price, it will require a free or subsidised distribution of food and the society must bear the cost. In other words this must be conceived as a programme of subsidised distribution of food to those who need it and special funds must be provided for the purpose We should also note that if and when such a programme is undertaken on any sizeable scale, quite

apart from the question of the size of the subsidy needed, the programme will use up a large part of the foodgrains available for distribution through the fair price shops system' [Dandekar, 1966, Ch 1, para 31].

The fair price shop system, at that stage, was largely urban oriented; the problem of the poor in the rural areas was therefore still worse. While over the years the number of fair price shops has expanded in the rural areas, the problem still exists - inability of the poor to buy foodgrains even at the subsidised prices in the fair price shops - and therefore the problem of hunger and poverty. Venugopal's book deals with this problem, the issues involved, and what can be done.

The book is divided into six chapters, with chapters one and six being the introduction and conclusion, respectively. Chapter II discusses the level of poverty among the urban and rural population as defined by the Planning Commission on the basis of energy requirements in calorific terms and their statewise percentages in rural and urban areas. According to the Planning Commission estimates, the population below the poverty line declined from 306.8 million in 1977-78 to 271.0 million in 1983-84, i.e. from 48.3 per cent of the total population in 1977-78 to 37.4 per cent in 1983-84. In the latter year they comprised 40.4 per cent of the rural population and 28.1 per cent of the urban (p. 16). The author mentions that these figures are of doubtful veracity if comments of numerous experts are considered. Compared to the Planning Commission figures cited in this book, Minhas et al., had estimated in their paper in July 1991 that the extent of poverty had increased from 303.22 million in 1970-71 to 340.12 million in 1983 and still further to 355.71 million in 1987-88 [Minhas et al., 1991, Pp. 1673-1682]. These estimations, in all likelihood, must have come after the author's manuscript had gone to the publishers. The problem of poverty continues therefore to be as acute as ever, without any reduction in their numbers.

In the same chapter, after enumerating the numbers of poor, the author attempts to assess the magnitude of hunger through field visits in selected villages during 1985-86 in the States of Uttar Pradesh, Bihar, Kerala, Kamataka and Andhra Pradesh. The number of days in a year on which all or some of the members of the labour households went to bed hungry varied between 'nil' in a Kerala tribal village and up to 150 days in a village in Bihar. Other dimensions of poverty discerned in these villages included infant and maternal mortality, children of school going age tending cattle, collecting fuel or working in the fields, etc. Discussing some of the poverty alleviation schemes in these villages - initiated to raise the poor above the poverty line - the author found that 'what was universal and as widespread as hunger all over the country, in every village of the various states visited, was the phenomenon of corruption. There is no village, or programme or person that has remained untouched or unaffected by corruption. No one believed that any progress was possible so long as such institutionalised corruption was tolerated; and equally no one believed that those in political or bureaucratic authority would ever fight or put it down' (p. 46). A sad commentary on the poverty alleviation programmes introduced during the plan periods!

The author mentions the various problems that had emerged at the implementation level of the IRDP. These included (i) inadequate outlays (ii) absence of infrastructure required to sustain production and marketing, (iii) absence of consultation/involvement with the beneficiaries and of a delivery system appropriate to the poverty milieu and (iv) of course corruption. But even more than that 'hunger in its prime form is at the bottom of the schemes' failure, and is therefore the central issue'. Unless hunger was tackled directly as an issue relevant to rural development. it would not be possible to help the poor to cross the poverty line (p. 57). Some radical new thinking was needed to understand the central issue of hunger and the significance of the role of consumption assistance in the successful implementation of the special programmes designed to help the poor (p. 60). Such consumption assistance could be achieved by utilising the large foodgrains stocks available with the Government, through a public distribution system (PDS) chiefly for the poor in the rural areas. It is this theme which is discussed in the later chapters.

The objectives of the PDS, as spelt out by the author, should be (a) one aimed at serving those identified as the poor, (b) prices of goods supplied should bear a relationship to the purchasing capacity of the poor, (c) the PDS should span, largely, the rural areas, and (d) the grains supplied should meet at least part of the requirements of the needy households (Pp. 84-85). If PDS were to be successful, procurement of cereals would have to be a fundamental requirement. On the other hand, the PDS as it functions at present is more 'interventionist containment of prices in the open market and not of any relevance to the country's poor' (p. 97).

In Chapter III, a review of the Government's food management measures between 1973-74 and 1983-84 is made. Procurement of cereals had risen steadily from 8.81 million tonnes in 1973-74 to 16.17 million tonnes in 1983-84. Of this quantity, 70-80 per cent was contributed by Punjab, Haryana and Western Uttar Pradesh. Supplies from the Central Pool to the States for their PDS, rural employment programmes and to the roller flour mills varied between 6.82 million tonnes and 14.66 million tonnes during the same period. More than half the supplies were shared by five States, viz., Andhra Pradesh, Kerala, Tamil Nadu, Maharashtra and West Bengal. There was a comprehensive rationing system for all households in Kerala, and in the Calcutta and Asansol Industrial Belt in West Bengal. In Tamil Nadu and Andhra Pradesh subsidised foodgrains were sold to identified households (i.e. those below a specified income level). Bombay and a few larger cities took the lion's share of the foodgrains supplied to Maharashtra. With the increase in the quantum of procurement to 19.12 million tonnes in 1984-85 and 20.04 million tonnes in 1985-86, government also sold wheat stocks to private traders through auctions by calling of tenders. Thus, 10.31 million tonnes of wheat were channelled to roller flour mills and private traders from government stocks during 1985 and 1986. This showed a serious flaw in governments' food supply management policies given the levels of hunger prevalent in the country (p. 119). While the Planning Commission had taken pains to identify the number of people living below the poverty line, which is really the number of those living in hunger, no efforts were made to direct even a part of the foodgrains requirements of this hungry population to them by identifying it at the household level (p. 120). There was no policy directive from the Centre to the States to identify households living below the poverty line for creating a public distribution system for them. As a result, neither the States, nor the Centre, looked into the problem of requirements of the poor and the subsidised foodgrains supplied from the Centre did not go to the really poor.

Thus in Chapter IV the author works out a public distribution-cum-delivery system for those below the poverty line, plus requirements under the comprehensive, rationing system for Kerala, and for the four metropolitan cities for 1986-87. The requirement of cereals for the poor households in the rural areas was worked out at the rate of 17.5 kg per month, and for their counterparts in the urban areas at 30 kg per month. For Kerala where a comprehensive rationing system exists and the four metropolitan cities, the cereals to be supplied were at 30 kg per month for all households. Requirements for the sensitive border states were added to these estimates to come to a figure of 15.09 million tonnes to be distributed through the PDS during 1986-87 (Pp. 132-133). Those below the poverty line were to be supplied the cereals at government subsidised prices, while the rest of the households in Kerala and the metropolitan cities should be charged at a no-profit-no-loss basis to the government. The government should make the announcements of the assured quantities and prices in an open manner so that the poor were aware of their entitlement. It should be obligatory on the part of the government to fulfil such entitlement. Where employment generation schemes were in operation, supplies of cereals on a daily basis could be considered. These cereals could be distributed by regularly run fair price shops in the villages which could be kept 'under the voluntary vigil of the elders and other representatives of the public including the target group' (p. 123). While such distribution of cereals only to those below the poverty line in the rural areas is a laudable suggestion, will it be possible in the prevalent social and political milieu? The author himself remarks in an earlier chapter of the inefficient working of the public distribution system and the influence 'the village pradhan, sarpanch, mukhiya or headman' wields in the distribution of essential commodities (Pp. 85-86). Announcement of an entitlement of cereals for the poor will be of little consequence as long as the political and bureaucratic system does not change.

The author discusses in Chapter V the working of the Andhra Pradesh subsidised rice scheme. The scheme has been providing rice at subsidised prices to all households below an income level of Rs 6,000 per annum. For all the benefits that were derived under the scheme, the author found a number of flaws - Thus 'in view of the benefits they conferred on the holders in the form of subsidised rice, it would not be incorrect to assume that a major portion of these' were 'ghost cards'. Again 'a situation of political instability gives rise to a demand for more and more benefits for the ineligible, and the political will so necessary to resist it becomes conspicuous by its absence' (Pp. 176-177). It was found in the villages that 'while the ration rice or quota rice ---- does eventually reach the villages, it does not become available to the beneficiaries on the first of every month or in the first week of every month or on any specific date within a month' (p. 182). Further 'it was found that the fair price shop dealers insisted that the total monthly entitlement of rice amounting to 25 kg per family and costing Rs 50, be purchased by the beneficiaries in one single instalment, that is, all at one time' (p. 183). Corrupt practices by the fair price shop dealers, leakage of subsidised rice into the open market, resource constraints, etc., were other flaws found. If all this could happen in a State like Andhra Pradesh where the scheme has been in operation for more than six years, one wondershow apublic distribution system for only those below the poverty line, as suggested by the author, would work in States like Uttar Pradesh, Bihar, Madhya Pradesh and Orissa, where food distribution is largely in the urban areas at present. The author has mentioned that studies of the Bihar villages show that distribution of foodgrains through village fair price shops is more or less non-existent (p. 107).

To revert to the earlier chapter, the author mentions that supplies of 15.09 million tonnes of cereals through the public distribution system, would require stepping up of the procurement efforts in the country. This would be most necessary in the case of coarse grains, which is consumed largely by the poor. Acknowledging that the shelf life of storing coarse grains is short, the author suggests that states like Maharashtra, Gujarat, Madhya Pradesh and Karnataka which consume coarse grains on a large scale, and those like Andhra Pradesh and Tamil Nadu where they are consumed in certain districts, should be assisted by the Centre with concessional finance from the Reserve Bank of India to make their procurement locally and distribute the coarse grains to the poor through the fair price shops. These states could coordinate their purchase and distribution efforts (Pp. 141-142). Of all these states, at present Maharashtra alone purchases small quantities of jowar as a price support measure and supplies it through its fair price shops in the urban areas. Except during periods of monopoly procurement of coarse grains, even Maharashtra's efforts in this regard have been limited. Whether coordinated activities by these six states would succeed is a moot question.

Lastly, in the views of the author, public distribution does not require a buffer stock of 10 million tonnes, particularly with the increase in food production in the country and also the rise in the level of procurement every year. Adequate stocks could be utilised for the public distribution system, instead of holding them as buffer, with the assured levels of procurement. At the time of writing of this publication, the stocks with the government in July 1985 and July 1986 were around 21 million tonnes. By July 1992, the stocks were as low as 15 million tonnes, i.e. less than the amount calculated by the author for 1986-87 to alleviate hunger - Government has had to take recourse to imports of wheat this year - With the increase in population, as well as the number of

households below the poverty line between 1986-87 and 1992-93, nearly all the stocks with the government would have to go for their amelioration.

The fact that hunger and poverty go together and something needs to be done cannot be denied. The author has discussed this issue with facts and figures cogently and with a humane thought for the poor in our country.

Finally it would have been useful if an index and a list of references had been given at the end of the book for facility of the reader.

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- Minhas, B.S., L.R. Jain and S.D. Tendulkar, 1991; 'Declining Incidence of Poverty in the 1980s, Evidence versus Artefacts', *Economic and Political Weekly*, July 6-13, 1991, Bombay.

F.K. Wadia, Indian School of Political Economy, Pune.

Madhu Limaye, Socialist Communist Interaction in India, Ajanta Publications, Delhi, 1991, Pp. 393, Price Rs 320/-.

In the last ten years or so Madhu Limaye has written so much that it has now become difficult to keep track of his writings. He has been writing on the political movements in which he participated and also on leaders with whom he interacted. He seems to be basically interested in giving his point of view about politics in and outside the country in the contemporary period. While doing this exercise he does not depend only on his subjective analysis but also presents objective data wherever it is necessary. And therefore his writings have not become autobiographical as has been the case with most of the writings of the political leaders. The leaders of the Madhu Limaye's stature can not resist the temptation to throw light either on the hidden aspects of politics or the line which they followed when they were at the helm of affairs. Limaye probably is the exception because he goes beyond his personal experiences and tries to give historical perspective as well as account of contemporary facts.

The book under review is one more attempt in this direction. This time he has chosen the theme which is dear to his heart. It is an account of the interaction between the socialist and the communist parties in India. It is one of the three volumes which were presented to George Fernandes as a tribute on his 60th birthday. Limaye returned to the theme of socialist - communist relationship as he himself points out after four decades. It was in 1951 that he published a book on the communist party in India. In the last forty years or so vast changes have taken place in the communist world as well as in Indian politics. The new book takes note of these changes.

Limaye begins his story with the formation of the communist party and the socialist party in India and goes on to tell us the details about the issues on which these parties differed from each other in the last forty years. The theme which runs throughout the book is the way in which the policies of the Indian communist were influenced by the perceptions of the communist parties of Russia and China. That the analysis and objectives of the communist in India changed according to the changes in the policies of Moscow and Peking is not a new discovery. But what is new in the presentation by Limaye is that he brings together both the communist and socialist points of views on the same issue and supports his narration with the official documents of both the parties. That helps the reader to locate the terrain on which these parties differed from each other. Limaye also identifies the times and occasions when the socialists and the communists came together. He is at his best when he narrates the story about the days of non-Congressism and the Janata Rule when these parties had joined hands against the Congress. The history of the interaction of the communist with the socialist in this book ends with the coming of the V.P. Singh Government.

The third and the last part is devoted to the discussion on the failure of the left parties and the prospects of socialism in India. Those who are not interested in the history of relationship between the communists and the socialists would at least find this part of the book worth reading. Bhai Vaidya, a socialist leader from Pune, has translated this portion into Marathi. The question which Limave asks is why are the left forces marginalised and localised. While answering this question he points out that the rift between the socialists and the communists is one of the main reasons for their failure. But he does not care to support this statement. One wonders whether the unity between the socialists and the communists would have made a real difference. He finds fault mainly with the communists. Their subordination to the international communist movement, their dependence on class analysis, neglecting the significance of the factors such as caste, religion and ethnicity, and their belief in democratic centralism, dictatorship of the proletariat and violence, are identified as the major factors which put the limits on the growth of the left movement in this country. In this discussion Limaye unnecessarily makes reference to the passages from the writings of Marx or Lenin to explain the Marxist position on these issues. Instead of giving these references he should have substantiated his own argument and established the relation between these factors and the failure of the left. Even if we agree that these are the defects in the communist movement that does not automatically prove that these defects are responsible for the failure of the left in India. However, his point that the parliamentary politics had a corrupting influence on both socialists and communists, is well taken.

Then Limaye enters into an exercise of selfcriticism and points out the errors committed by the socialists. The personality clashes, lack of discipline among the rank and file, attempts to cooperate with the Congress, are cited as the major pitfalls of the socialists parties. He, however, does not discuss the pros and cons of the merger of the socialist party into the Janata party. It could be argued that the socialists lost their identity due to the merger. Limaye only mentions how this merger bred opportunism and lust for power. The discussion on the non-Congressism should have been coupled with the discussion on backward caste politics. In fact Limaye is the right person to analyse the way the other backward castes elite used the bogie of non-Congressism and its logical offshoot the Janata Party to capture power in the north and to explain in what way the socialist leaders were marginalised and by-passed in this process. It is true that this politics challenged the hegemony of the upper castes in the north and in that sense it could be seen as a progressive step.

At the end it must be noted that this book gives a testimony to the fact that Madhu Limaye has been a follower of Lohia's ideas and that his faith in socialism of Lohia has not shaken after all that has happened in India and abroad during the last fifty years. As a true Lohia socialist, Limaye should have done caste-analysis of the socialist and the communist movement and also of their successes and failures. Unfortunately he refuses to do so. The caste analysis would have made the discussion on official positions and lines of parties secondary in importance.

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Kanwar Sain, Reminiscences of an Engineer, Young Asia, N-126, Panchashila Park, New Delhi-110017, 1978.*

This highly readable book is by one of the most distinguished and much honoured engineers of the post-Independence era of this country. Dr. Kanwar Sain was the doyen of Indian water resource engineers till his death, three years ago, at the ripe age of 90 plus. He lived through those times when gifted possessors of engineering skills were looked upon with awe. One is struck by the ethical content of the reminiscences in the context of the tarnished image of an engineer today,

especially when he is in the employ of the government departments like the PWD and the irrigation.

Besides great honours at home and abroad -Padma Bhushan, the O.B.E., Order of the Elephant by the Government of Thailand -, he held high offices with probity and warmth for his fellow workers. The book provides glimpses of the great rise of the young country lad, from the lowly position of a junior engineer to that of the Chairman, Central Water and Power Commission (CWPC, now CWC) which post as of today is of the rank of the Secretary. In the author's own words, this is not an attempt at writing an autobiography nor is it an engineering treatise giving details of projects mentioned therein. It is not even a memoir giving events in the strict sequence of their occurrence. It is nothing more than reminiscences relating to the author's career as an engineer, bringing out points which may not find a place in the engineering history of projects.

Why should non-engineers find this book of some interest? And why is it being reviewed almost 15 years after its publication? The reviewer could not readily procure a copy for his own professional reading till 1990 when a complimentary copy was made available to him at the inaugural Kanwar Sain Memorial Lecture in Delhi. Unfortunately, he could not speedily go through its 37 chapters (nearly 500 pages). The need for a review, belated though it is, was felt because of inter alia the contents of the book about the Narmada dams. The book is of some historical value; if only more irrigation engineers commit themselves to writing in a similar vein, we would have an additional source material in the realm of history of Indian irrigation. Its last two chapters are quite instructive in comprehending the Narmada debate of recent years. Whereas the Master Plan for the Development of the Narmada for the benefit of Madhya Pradesh State is discussed in chapter 36, the vital question of optimum height of the Navgam dam of the Sardar Sarovar Project is taken up in the chapter 37, entitled 'Narmada Water Disputes Tribunal'.

^{*} The copy with me gives the name of the publisher on the hardbound cover of the book but without the address. A sticker on the first page mentions only the address of Dr. Kanwar Sain as given above.

As for social scientists, it is enough to point out that Dr. Sain, as honorary visiting professor of the I.I.T., Delhi, delivered lectures on economic, social and legal aspects of water resource planning to the M.Tech students.

The book opens with an interesting anecdote, namely, expulsion notice served on the author as a student at his Alma Mater (Roorkee University) for being a member of the procession in support of the non-cooperation movement of our freedom struggle. While promising the authorities that he would never take part in active politics, he vowed to himself to serve the nation as an engineer as best as he could have done had he entered politics. This is followed by an interesting narration of (i) his first exciting apprenticeship under H. W. Nicholson, the engineer who first prepared back in 1919 the blue prints for the Bhakra Dam Project and (ii) his courage in standing up to Nicholson's successor, A.M.R. Montague, on a matter of personal honour.

Among the numerous Indian water projects Dr. Sain writes about, the following ones may be mentioned: D.V.C. Project (Ch. 8), Bhakra Dam Project (Ch. 9 and Ch. 28), Rajasthan Canal (Ch. 12 and Ch. 26), Hirakud Dam (Ch. 15), Kosi flood problem (Ch. 17), Nagarjuna Sagar (Ch. 20), Farrakka Barrage (Ch. 25), Narmada dams (Ch.36 and Ch. 37).

Dr. Sain had been abroad on several occasions to different countries, and has left accounts of such visits. His first visit to the mecca of dam building (i.e., the U.S.A.) is described in Chapter 5. Visits to China, the Soviet Union, Iraq, Egypt, Italy, Yugoslavia, Israel, and Switzerland are narrated in subsequent Chapters. One Chapter is devoted to his 20-year association with the United Nations, and another to his developmental work on the Mekong River Basin (Cambodia).

Dr. Sain did not like the idea of adjudication of inter-state water disputes by courts or water tribunals. Instead, he favoured mutual agreements among the disputing riparian states. He does not envisage the possibility of an impasse in such bargaining, and what to do in that event. However, an impasse could arise as much from

the political interests as from the genuine differences among experts even on concrete scientific matters such as the quantum of flows in a river. In the case of Tehri dam, the expert opinion on its seismic vulnerability is poles apart; see, for example, this reviewer's 'What is Wrong with Tehri Dam?; *Facts for You*, Vol. 14, No. 4, October 1992.

In a very discerning note (reproduced in full on Pp.446-55) he tackles the ticklish issue of desired height of the Navgam dam of the Sardar Sarovar Project. It may be clarified that he wrote this note in his personal capacity, while he was still in the service of the M. P. government, in response to a letter from V. Shankar, the then Principal Secretary to the Prime Minister, Morarji Desai, who desired his views on how best in his opinion the Narmada dispute could be settled.

To minimise the crucial costs of submergence arising due to the formation of reservoir, he opted for a height of 440 feet (FRL), full 15 feet less than the level finally indicated by the Narmada Water Disputes Tribunal (NWDT) in its award a year later. He took this stand knowing full well that another very eminent water engineer, Dr. A. N. Khosla (of the Khosla Committee and the founder Chairman of CWPC) had strongly opted for a height of 465 feet back in 1964. In fact, Dr. Khosla had suggested even a still greater height at 500 feet so as to fully harness the hydro power potential of the Narmada Waters whose flows were reckoned by him at 36 million acre-feet (MAF) as against 28 MAF by NWDT as well as by Dr. Sain. Dr. Sain opted for 440 feet because at this height the submergence cost, as reflected in the culturable area lost and the number of persons affected, would be much lower than that at 455 or 465 feet as per his following estimates:

Reservoir level (feet)	CA submerged (acres)	Population Affected (No. of persons)
440 (Sain)	14,495 (56)	12,289 (31)
455 (NWDT)	26,065 (100)	39.636 (100)
465 (Khosla)	38,000 (146)	57,100 (144)

Figures in brackets show relative magnitudes, with NWDT height = 100.

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These numbers partly do reveal that Dr. Sain, unlike Dr. Khosla, attached far more weight to the submergence costs than to material benefits arising from the use of water resources. This comes out in his following observations on storage dams while drawing up the long-run water plan for Madhya Pradesh in 1970: 'In view of the possibility of using regulated flows repeatedly for power generation and conservation, storages have been provided as high up in the (Narmada) basin as possible. Storage dams involve submergence of land with all the accompanying problems - the loss of land as a development resource, consequent loss of employment facilities, uprooting people from their homes and farms and their rehabilitation involving economic, social and human problems. Whereas some submergence is unavoidable in any storage scheme, an attempt has been made in the (Master) Plan to keep the extent of damage to the minimum. Also, an attempt has been made to avoid undue discontent on account of concentrated dislocation of population in one locality' (p.439).

This clearly shows that Dr. Sain, while subscribing to the big dam idea, was not for mega dams like those built in the United States to impound all river flows (including exceptional floods) without much regard to the submergence angle. It should be noted that the American situation is different from ours where land is scarce and population density is very high. For example, in the building of Hoover dam, which could impound three times the mean annual flow of the mighty Colorado river, the submergence cost was practically nil because no settlements and cultivated lands (nor forests) were involved.

So, 31 big dams (plus thousands of small dams) on the Narmada were proposed in the Master Plan of M.P. Flood moderation was one of the eight objectives of this Plan. But the need for flood control is more in the basin outside M.P. So, Gujarat's human interests have been fully reckoned with while drawing up the Plan. He writes: 'The Plan took note of the fact that soon after leaving the boundaries of M.P. and Maharashtra, the river enters the Gujarat plains which offers only a limited scope for conservation storage' (p.439). According to him, the flood waters of the Narmada would be moderated to about one million cusecs, less than half the exceptional high flood discharge of 2.3 million cusecs recorded in 1970.

Thus, one sees in this book a very humane face of an engineer, both in his professional conduct and personal life, which was imbued with moral values of high order: integrity, unselfishness, courage, and consistency.

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Doshi, R.R. *Economics of Tobacco*, Vishwanil Publication, Poona, 1991, Pp. xii+202, Price Rs 125/-.

The book studies the economics of bidi tobacco cultivation in the Nipani tract of Belgaum district in Karnataka State. The Nipani tract was divided into four divisions corresponding with the Multiple Officers' Ranges (MOR), which had been in operation until 1979 when the Central Excise Control was in force over the cultivation, movement, storage, processing, etc., of bidi tobacco. The four MORs covered in the study were MOR Nipani with 27 villages, MOR Soundalga with 14 villages, MOR Khadaklat with 12 villages, and MOR Galatga with 7 villages. 16 villages from among these 60 villages and 187 growers (85 owners-cultivators and 102 share-croppers) were selected for the study. Data was collected for the 1982-83 and 1983-84 tobacco seasons from the growers who were clubbed as small (below 5 acres), medium (5-10 acres) and large (above 10 acres) farmers.

Data on costs of cultivation was collected for working, capital and managerial costs. Working cost included costs for all inputs, imputed value of owned labour, working capital, transport cost of inputs and farm produce, land taxes and expenses for tare, tarpaulin, etc. Capital costs included depreciation of farm assets, interest on block capital investment in farm assets and rental value of owned land. Managerial costs pertained to cost of management work and allowance for the risk factor. Taking these three costs together, the study found that the average cost of cultivation per acre in the selected villages and farms worked out to about Rs 4,000/-. The costs varied according to the size of holdings, and among the owner-cultivators and share-croppers. The average cost of cultivation per kilogram of bidi tobacco came to Rs 8.26 in 1982-83 and Rs 8.14 in 1983-84. The cost range varied between Rs 5.38 per kg and Rs 9.17 per kg in 1982-83 and Rs 5.29 per kg and Rs 9.81 per kg in 1983-84 among different farm sizes and cultivators. The cost of marketing of bidi tobacco amounted to Rs 287 per acre and Rs 0.57 per kg in 1982-83 and Rs 279 per acre and Rs 0.54 per kg in 1983-84. The prices received by the growers ranged between Rs 7 and Rs 11 per kg with a mean of Rs 9.37 per kg. If marketing costs were also taken into account in the costs of cultivation, the study revealed that the net returns to the growers for their produce was extremely small. The small farmers were the main losers. Share-croppers appeared to be in a better position.

The study found that the Agricultural Produce Market Committees were most ineffective in the Nipani tract. The trade was in a few hands who operated in the market and decided on the prices to be paid to the farmers. The cooperatives were also not functioning satisfactorily. There was little choice to the farmers but to sell their produce to these private traders. The lack of an alternative cash crop, particularly in the rain-fed areas, also made it necessary for the farmers to continue to grow tobacco.

The study will be of use to all researchers undertaking cost of cultivation studies, whether for tobacco or any other crop. This is particularly so as the author has explained in detail the manner of computation of costs and the various theoretical facets in arriving at costs of cultivation.

> F.K. Wadia, Indian School of Political Economy, Pune.

Institute of Development Studies, Rural Credit: Issues for the Nineties, Oxford and IBH, New Delhi, 1991, Pp. vii+202, Price Rs 100/-.

Rural credit structure and its performance formed an important component of the policy discussion in the recent past. New technological phase in the agricultural sector and related agroprocessing activities have increased the cash requirements. Two committees have recently gone through the system of agricultural credit in the country and the recommendations are far reaching. Khusro committee recommended for direct lending with increased interest rates but subjected to a ceiling of 15.5 percent; merger of RRBs and establishment of National Cooperative Bank [RBI, 1989]. Narasimham Committee went into recommending fundamental changes in the banking structure and even went on suggesting a move towards market determined interest rates [GOI, 1991]. Both the committees took a view that poor repayment performance and the concessional interest rates charged to agricultural sector had caused the non-viability of financial institutions [Gadgil, 1992]. Both the reports generated intensive debate in the academic as well as the banking sector. On the one hand, we have a view that the approach of the respective committee and recommendations have touched the right fibre of the problem, whereas, on the other hand, the opinion expressed is that: 'The committee's (Narasimham) proposals with regard to the agricultural sector amount to a restart with a reversal to the colonial period when the rural sector was left to the vagaries of nature and money lenders, landed or userers' [Narayana, 1992, p. A-122]. Thus the debate has come to a critical position now. However, the issues were ripe and debated even before the submission of Narasimham committee's report. The book under review is an outcome of one such debate and provides a good background material.

This is an outcome of a seminar held at Institute of Development Studies, Jaipur in August 1990. It is interesting that the seminar was organised with a view to bringing together the viewpoints of academicians and practitioners. The span of the issues ranges from the viability of rural credit system to an appropriate delivery net work. Dr. Surjeet Singh has edited the volume and it is appreciated that he has brought out all the major significant issues in his short editorial note. But the combination of the articles lean more towards Bankers' point of view rather than the academicians'. Malhotra, Nair and Bhave represent the top bureaucracy of RBI on one side and Anil Gupta, Rajasekhar and Vyasulu represent the academic point of view. The contribution by Ghose and Patel is a border line case between the two.

The keynote address by Shri Malhotra sets the tone of the seminar from the view point of the bankers, and the issues for future rather unidirectionally focus only on bankers' difficulties. As can be expected the chapter gives a very good overview of the developments in rural banking system. Among the issues posed by Malhotra that assume relatively greater importance are: (i) regional imbalances and need for promoting allied agricultural sector; (ii) viability of rural credit institutions in the atmosphere of low interest, unfavourable credit-deposit ratio and mounting overdues and (iii) supporting bankable projects which are ecologically desirable and link up economic institutions. What comes out in this as well in the writings of the other two bankers is more in the nature of a new approach from the bankers' point of view. Anil Gupta looks at the structure from the demand side and in a succinct paragraph lists out the problems in a cohesive manner. His approach is diagnostic and unlike most of the academicians it is rooted in the ground realities. In the first section he deals with the transitions in banking highlighting the phases in progress of rural banking, whereas he devotes the second section to sustainable agriculture and institutional development. Lastly, he covers the vast menu of issues before rural banking in the coming decade.

Gupta's paper touches the very core of the issues in rural banking, especially when viability of the sector itself is in danger. In an extremely simple and non-jargonistic manner, he puts forth five very important issues, namely, (i) clearing house

for science and technology; (ii) rehabilitation finance; (iii) human resource development approach; (iv) setting up specialised institutions; and (v) group lending through voluntary agencies. Unfortunately these simple and effective steps hardly find any place in the arguments put forth by bankers and administrators.

Ghose and Patel's analysis of institutional credit to small and marginal farmers is an extremely naive exercise, based on the piles of data from Currency and Finance reports across states. Their conclusion interestingly that this group does not suffer from discrimination is based on this number churning. It would be essential for a researcher investigating in this issue to note the micro-realities. After the land reforms and target group specific programmes the 'land based' definition of weaker section has lost its significance. During my field visits I have seen 'small and marginal farmers' owning cars and jeeps. Thus this reviewer feels training institutions in banking sector should emphasise in understanding field realities. In the same volume Gupta writes that 'disbursement is not development'. Bhave's article on rural credit delivery system also shows the intensity of field problems.

Rajsekhar and Vyasulu's article on the rural credit delivery system takes a micro level view. They have examined the delivery system in Pali district of Rajasthan. Most important aspects dealt by them include structure and programme of credit system in a drought-prone district and the process of political interference. The paper illustrates their point both with the help of primary and secondary data. Especially section five of their paper makes an important point that misutilisation is mainly due to higher political interference.

Surjeet Singh's summary of the proceedings keep a larger scope in view. He not only picked out the right kind of conclusions to be reported in summary (excluding all those obvious ones) but also added a few interesting issues. However, I felt he could have still elaborated on certain aspects. Overall the book is a good addition and gives in a gist the issues before the banking sector, the scope of which is widening every day. However, it is quite clear now that in the new policy environment 'credit' and 'price of credit' are going to play a dominant role in agricultural sector but this will be toned by the changing political process.

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R.S. Deshpande, Gokhale Institute of Politics and Economics, Pune 411 004.

Srinivas M.N., On Living in a Revolution and Other Essays, Oxford University Press, 1992, Pp. 209, Price Rs 225/-.

M.N. Srinivas, an eminent scholar of sociology and social anthropology, has, in this collection of his essays, dealt with some larger issues facing the Indian society rather than, with some classical anthropological theme such as, to use his own words, 'the father's sister among the northeastern tribes'. The essays were written over a period of twenty-nine years but except in two cases we do not know which essay was written when. We can get some indication from an unlikely place - the Acknowledgements. It would have been better if the specific year of each essay had been indicated, for, an essay written thirty years ago would have to be looked at differently from one which was written only last year.

The plan of the book is simple. The first six essays, aimed at non-professional audiences, contain the author's observations about the cultural and social change which India is undergoing. The seventh essay is a sociologist's study of one of the important facets of Indian life - religion. Two more essays follow which discuss the methodology of sociology/anthropology, the growth of these disciplines in India and the prospects for the future. After going through such a rich fare we would naturally be interested in the personality of the author. So, the last essay is a biographical sketch.

While reading the book, it would perhaps be better, even for the non-professional reader, to begin with the seventh, eighth and the ninth essays. These three essays enlighten us about what these sciences meant originally and what they mean today. Anthropology started as a study of the subject-races by the colonial powers while sociology started for the understanding of the various problems which industrialisation had created in the western countries, e.g., exploitation, urbanisation, break-up of the family system, prostitution, etc. However, in course of time, both these branches fused into an overall study of various strata or segments of society. A new method of study was developed, that of participant observation of the actual working of the social institutions, beliefs, rituals, etc., in contrast to the earlier method of relying on books, archaeological finds, etc. The new method called for a conscious effort on the part of the observer to become almost a part of the observed community by living among them, mastering their language, etc.

Having learnt that sociological studies are undertaken in such a rigorous manner, the lay reader will be inclined to read the author's other essays with more deference. But there is a small warning bell which sounds through the theoretical discussion. The author says that the end product of the sympathetic and rigorous study is that the student finds some sort of rationality in the behaviour of the community under study, that they become 'his people' and that he becomes their champion. This would make us wonder how far the scholar would understand the need for a change, which is a must in a changing world, or how far will he oppose the forces of change? Taking a concrete example, how much of the opposition to the Narmada Project is a result of a loyalty to the residents of the catchment area and

how much is due to technological and other wider considerations? There is no doubt that displacement of the local residents causes them tremendous man-made misery, thanks to the indifference of the people having social, economic and governmental power towards their weaker brethren. It is not a sociologist alone who can percieve the physical and cultural distress involved. That distress has been very powerfully depicted in the Marathi novel Zadazadti by Vishwas Patil. There are also other ways of the problem catching the public eye, for, as the author says, democracy itself is an information system. So, there is no reason to suppose that the problems remain un-understood. It is the solution that eludes the administrator. There are no clear-cut answers to some eternal questions like how much can an individual be sacrificed for a community or a nation? This particular question has troubled people from John Locke and Rousseau to the thinkers of today. Sociology per se has no answer to this question.

There is no doubt that a well trained observer of society can bring out social realities more surely and more clearly for the benefit of the persons who are engaged in formulating, implementing and evaluating the development programmes. The government has already employed quite a number of such personnel. Srinivas has however complained on more than one occasion that the social scientists are not given the importance which they merit.

Let us leave it at that and see what Srinivas has to say about the Indian scene. The author says: 'It is my view that Indians are actually living in a revolution'. His description of the existing institutions of the Indian, mainly Hindu society and the changes which are occurring in them is on the following lines: The institutions of caste, joint family, and the village community have been the major features of the Hindu community. The village community has, in addition, a patronclient division where the patrons are the landholding people. In around 1800 A.D., India's population was only 125 million. Land was not scarce but population was. This led to a competition between the patrons for having a secured

supply of people to do various jobs. This led to factionalism, bonded labour, etc. However, the lower people were treated fairly well. With the growth of population, the clients lost in bargaining power and their impoverishment set in. During the British rule, a section of the higher castes developed into an urban class and now we see three groups of people - (1) the urban, well-to-do class (2) the dominant castes holding land as well as economic power in the rural areas and (3) the poor people, consisting mostly of hierarchically lower castes, in the rural areas. The revolution, says the author, began with the introduction of adult franchise and the special programmes for the uplift of the down-trodden; but these also entailed various complications. Firstly, caste loyalties being strong, political activity became caste-based. The welfare programmes for the poor also led to a competition for gaining recognition of backwardness, which itself became a value to be protected. The author sees a duality of cultures developing in the above-mentioned three groups. The urban elite, having a western oriented culture and the rural poor having an age-old culture of their own not understood by either the urban elite or by the dominant sections of the rural society. The advanced groups have undergone a 'Sanskritisation' of their culture, which they assume to be the national culture into which the minorities and the tribal people have simply to fit themselves. However, there are numerous sub-cultures flourishing under the Hindu religion and they are all undergoing change. Before one can undertake a transformation of the rural society, one must understand all these diversities and impact on the political and economic mechanisms that are being set up.

In the introduction to this collection of essay, the author has dealt with three very important problems of today: (1) mMilitant Hinduism, the origins and background of which have not so far been systematically studied, (2) the ramifications of caste and other cultural factors on politics and economics and (3) increase of violence. He has, at various places in his essays, prescribed solutions as diverse as having smaller states and adopting the Roman script. Inspite of his mistrust he recommends the establishment of cooperatives meant exclusively for the poor and of process of understanding what is, to the visualiagro-industries in which preferential employment sation of what ought to be and can be. will be given to the landless.

It is obvious that the author is not a champion of a status quo of existing cultures or subcultures. He has pleaded passionately for a change. His

of the officialdom dominated by the urban elite, writing is thought-provoking and will help make the professionals as well as laymen go beyond the

.

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BOOKS RECEIVED

Currently, a large number of books are being published on Indian economic, political and social problems and developments. We give below a list of books we have received with a request for a review. For want of editorial resources, it is not possible to review all of them though many deserve a critical review. Interested readers are requested to write to the editor indicating which of the following books he would like to review or write a full review article on. We shall be glad to do the needful. Readers are also welcome to review books recently published, but not appearing in the following list. As the contributors to this Journal are aware, all contributions published here are adequately remunerated.

Anand, Subhas - Major Hindu Festivals - A Christian Appreciation, St. Paul's Publication, Bandra, 1991.

The studies undertaken in this book, include the Hindu festivals of Mahasivaratri, Holi, Ganesachaturthi, Durga Puja, and Diwali. These studies have been put together by the author with the desire to enable the Christians to understand and come closer to the Hindu community.

Bharadwaj, R. and M.V. Nadkarni (Editors) -Planning for Social and Economic Development - Essays in Honour of Professor D.M. Nanjundappa, Sage Publications India Pvt. Ltd., New Delhi, 1992.

This volume comprises eighteen original essays by eminent social scientists which highlight the problems involved in planning for India's social and economic development. Taken together, the essays highlight that planning is not merely a bureaucratic process but can coexist with, and function in, an economy dominated by market forces and in order to make economic development humane and purposeful. The issues discussed by the contributors include education, land reforms, food and agriculture, energy, public finance, the environment, and district and state level planning.

Caski, C., Th. J. Dams, D. Metzger, J. VanZyl (Editors) - Agricultural Restructuring in Southern Africa, Association of Agricultural Economists of Namibia, International Association of Agricultural Economists, 1992.

The International Association of Agricultural Economists organised an Interconference Symposium in Africa at Swakopmund, Namibia to discuss the problems of agricultural development in Southern Africa and the future prospects for Namibia's agriculture. This book provides an account of the papers discussed at the Symposium and the lessons learnt from them.

Dharma Kumar - Land and Caste in South India, Manohar Publishers and Distributors, New Delhi, 1992.

The book was first published in 1965. It analysed the connections between caste and agricultural labour, and estimated agricultural labour in Madras Presidency at the outset of the nineteenth century, before census data were available. It also brought together quantitative information on wages, population and famine, emigration and other agrarian themes. The reissue includes a substantial introduction, surveying work that has appeared in the last three decades, and indicating changes if any in the earlier publication.

Doshi, R.R. - Economics of Tobacco Production and Marketing, Vishwanil Publications, Poona, 1988.

The study concerns the cost of bidi tobacco production and its marketing *vis-a-vis* the price received by the growers in the Nipani Tract of Karnataka and Maharashtra. The study was undertaken in 1982-83 and 1983-84. Jalan, Bimal - The Indian Economy, Problems and Prospects, Viking, Penguin Books India (P) Ltd., New Delhi, 1992.

The Book is a collection of sixteen essays by eminent economic thinkers. The essays include an authoritative assessment of India's performance since Independence and a comprehensive examination of its policies in industry, agriculture, finance and trade. Other essays deal with key economic issues of public debt, government expenditure, energy, population and unemployment. The last two essays are concerned with political, institutional and legal aspects of economic reforms.

James, William E. and Subroto Roy (Editors) -Foundations of Pakistan's Political Economy -Towards an Agenda for the 1990s, Sage Publications India Pvt. Ltd., New Delhi, 1992.

Pakistan was founded, somewhat abruptly and through political fiat, only in 1947. Hence, it began with neither an effective political organization nor clearly defined symbols of national unity. Despite these weak foundations, Pakistan has forged a remarkable record of economic growth and industrialisation coupled with an effective and high profile foreign policy. Yet the future looks bleak unless the country is able to tackle the numerous problems which beset it, including deep-rooted structural imbalances, ethnic divisions, wasteful military expenditure and a rapidly growing population. The eleven essays comprising this volume address these critical issues from the perspective of several disciplines. The book is divided into two parts. Part I discusses the historical origins of Pakistan, its external and internal politics and the role of the administration. Part II deals with the recent macro-economic policy and performance, the agricultural and industrial sectors, human resources, education and international trade.

Krishnaji, N. - Pauperising Agriculture - Studies in Agrarian Change and Demographic Structure, Oxford University Press, Bombay, 1992.

This publication is the sixth volume brought out by the Sameeksha Trust comprising selection of articles from the *Economic and Political Weekly*, written by the author over a period of years. The essays in the first part of the book focus on trends in agricultural production, wages and prices and the role of politics and the State in shaping them. The ook's second part is concerned with the impact of demographic processes on the agrarian structure.

Muqtada, M. (Editor) - The Elusive Target, An Evaluation of Target - Group Approaches to Employment Creation in Rural Asia, Asian Regional Team for Employment Promotion, International Labour Organisation, Geneva, 1989.

The ILO-ARTEP conducted a series of evaluation studies on special employment creation schemes in selected countries of Asia, some of which have been put together in this book. The evaluation has been based essentially on primary - level survey data. Apart from an assessment of the nature, benefits and cost-effectiveness of selected programmes, these studies have attempted to investigate into their sustainability, replicability and other such issues crucial for policy makers. The studies selected for this publication include (a) an evaluation of the special employment programmes in Bangladesh, (b) poverty alleviation through special employment programmes in India, (c) a case study on small farmers development programmes in Nepal, and (d) a primary level investigation of selected programmes of self employment in Shri Lanka.

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BOOK REVIEW

Sandesara, J.C. - Industrial Policy and Planning, 1947-91, Sage Publications India Pvt. Ltd., New Delhi, 1992.

The study analyses India's industrial policy since Independence and until 1991 in terms of the realisation of stated objectives of rapid growth, diversification, promotion of small industries, reduction in regional imbalances, and restriction of concentration of economic power in private hands. The author also discusses the factors that may have furthered these objectives and draws attention to the policy issues involved. The analysis reveals that on balance, the performance of India's industrial economy has been satisfactory.

Shah, Dilip (Editor) - Milk Pricing and Marketing Practices of Cooperative Dairy Industry in Gujarat, Maricheemalee Prakashan, Pune, 1987.

The books contains the papers presented at the seminar organised by the South Gujarat University at Surat on Pricing and Marketing of Milk and Milk Products in Cooperative Dairy Industry of Gujarat. The papers pertain to two aspects, viz., pricing policies, and marketing. Papers on pricing policies deal with the theoretical base of traditional and modern pricing systems, its relationship with cost of production of milk, price spread, etc. Those on marketing examine the marketing practices including the new strategy of marketing, milk grid system, and its optimal management and questions arising out of the milk marketing strategy in the Operation Flood Projects.

Venugopal, K.L. - DeliverancefromHunger - The Public Distribution System in India, Sage Publications India Pvt. Ltd., New Delhi, 1992.

In this study the author investigates the reasons for the inequitous situation where the poor in India, especially in the rural areas, do not have enough food to eat. Among the issues discussed are (a) the intensity of hunger in rural poor households, (b) how hunger at the rural household level defeats self-employment strategies, (c) the financial constraints involved in the rational use of foodgrains in rural wage employment programmes, (d) how the public distribution system can be reoriented to serve only the poor, and (e) the need for involving the community in food management. Unless the chronic and widely prevalent problem of endemic hunger is tackled, other dimensions of poverty, including education and health, cannot be effectively addressed. The author argues that the lead role in this strategy should be that of the Central Government with support from the State Governments, so that freedom from hunger becomes an attainable basic right.

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