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ON CONSTRUCTING A NEW SERIES ON
CORPORATE FIXED INVESTMENT

by

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ON CONSTRUCTING A NEW SERIES ON CORPORATE FIXED INVESTMENT

C. Rangarajan
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Estimates of the gross fixed investment in the corporate sector are a pre-requisite to any systematic attempt to understand the corporate growth process in the economy. At present three different estimates are available. These are provided by the Reserve Bank of India, the Central Statistical Organisation and the Economic Times. These estimates, however, differ from one another not only in absolute amount but also in terms of relative changes for several years. In the absence of a reliable and generally accepted series on corporate investment, it becomes difficult to discuss such questions as the deseleration in corporate investment in recent years. In this paper we attempt to focus on some of the theoretical and practical issues that arise in constructing a series on gross fixed investment in the corporate sector. The purpose of this paper is, therefore, three-fold:

1. To examine the methodology so far used for constructing the series of gross fixed investment;
2. To examine and understand the reasons for differences among the estimates; and
3. To provide a basis for the construction of a new series on corporate investment.

Section I of the study presents ^{the} three different estimates on gross fixed investment and discusses the form and coverage of these estimates. Section II makes a comparison of these estimates using different statistical criteria of comparability. Section III presents the methods followed by ^{the} different estimating authorities and examines the theoretical and practical problems in the methodologies followed. Section IV presents our estimates of gross fixed investment for the Indian private corporate sector.

I. AVAILABLE ESTIMATES

As mentioned previously, three time series on gross fixed investment in the private corporate sector are available. These are published by the Reserve Bank of India, the Central Statistical Organisation and the Economic Times. We have presented these series in Table 1.

Based on a sample study of public limited companies and private limited companies, the Reserve Bank of India has presented gross fixed investment in the entire corporate sector for the period 1955-56 to 1962-63. Thereafter, the Reserve Bank of India has not provided data on gross fixed investment for the entire corporate sector. However, data on investment by the corporate sector are available from the flow of funds studies which are also constructed by the Reserve Bank of India. But the data on investment provided in the flow of funds accounts appear to be net capital formation for the corporate sector.

The Central Statistical Organisation also presents data on gross fixed investment. From their white papers on national income statistics, one can get a series on gross fixed investment for the period 1960-61 to 1974-75. But these estimates include the gross fixed investment in the cooperatives also.

The Economic Times' estimates are available for the period 1951-52 to 1975-76. Both the Central Statistical Organisation and the Economic Times present data on inventory investment and the depreciation component of the gross fixed investment.

II. COMPARABILITY OF ESTIMATES

Even a cursory review of the data presented in Table 1 reveal that there are considerable differences in the estimates provided by the three different organisations. We have compared these three series using the following three criteria:

1. Absolute value criterion: By this criterion we compare the absolute values of the alternative estimates for the various years. Obviously if these estimates are close to each other, there would be no reason for any further enquiry.
2. Relative change criterion: Differences in absolute levels can arise as a result of different types of basic data used by the estimating authorities. Often

times, one should be satisfied if the rates of change predicted by the different estimates are the same. We therefore, use the year to year percentage changes as a basis of comparison.

3. Direction of change criterion: This is the most liberal of all the three criteria. One is trying to find out by this criterion whether the direction of changes has at least been the same for different years according to all estimates.

By the absolute value criterion we find the differences among the different estimates to be extraordinarily large. The Central Statistical Organisation estimates are larger than the Economic Times estimates in 1963-64 and 1964-65 by Rs.283 crores and Rs.231 crores respectively. This difference increased to more than Rs.300 crores in 1971-72 and 1972-73 and to Rs.531 crores in 1975-76. The Central Statistical Organisation estimates for 1975-76 are one and a half times that the Economic Times estimates for the same year. The Economic Times estimates are larger than the Reserve Bank of India estimates by about Rs.200 crores in the years 1967-68, 1968-69 and 1969-70. However, if the RBI flow of funds data refer to net capital formation, the two series are not strictly comparable.*

*A study comparing the RBI data and the CSO data had pointed out that the net capital formation of the entire private corporate sector as estimated by the CSO for the years 1966-67 and 1970-71 were lower than the corresponding investment in the physical assets of the sample companies covered in the RBI studies. See, Estimates of Saving and Investment, RBI Bulletin, August 1975, p.539.

One also observes that the estimates of capital formation undergo drastic changes from one revision to another. We have provided in Table 2 the gross fixed assets formation according to the Economic Times estimates for the years beginning 1971-72 published at different dates. For example, the gross fixed assets formation in 1971-72, according to the first estimate was Rs.608 crores, according to the first revision Rs.590 crores and according to the third revision Rs.479 crores. These revisions sometimes totally change the picture. According to the first estimate presented in 1976, the gross fixed asset formation in 1975-76 was lower than that for 1974-75 but according to the revised estimates presented in January 1978, the gross fixed asset formation in 1975-76 was higher than for 1974-75.

By the relative change criterion also the alternative estimate do not appear to be in harmony with one another. According to the CSO estimate, the gross fixed investment in 1969-70 increased by 22.8 per cent over the previous year, while according to the Economic Times estimate there was practically no increase between these two years. In 1974-75, according to the Economic Times estimate, the increase was of the order of 33 per cent whereas in the case of CSO estimates, the increase was just half of it by 16 per cent. The position is reversed in 1975-76. According to the Economic Times estimate the increase is of the order of 11 per cent, while in the case of the CSO estimate, the increase is approximately double of

that by 21 per cent. The discrepancies in the rates of growth are even wider where RBI estimates are compared with the Economic Times estimates.

Going by the most liberal criterion of comparing only the direction of change, one finds again sufficient number of distributing discrepancies. In 1967-68, according to the Economic Times estimate, there was a fall of 1.7 per cent but according to the CSO estimate, there was a rise of 16.2 per cent. According to the Economic Times estimate, there was a fall of 15.5 per cent in 1971-72 whereas according to the CSO estimate, there was a rise of 24 per cent. In 1963-64, there was a fall of 10 per cent according to the Economic Times estimate and a rise of 62 per cent according to the CSO estimate.

Thus the data presented by the three organisations reveal that up to 1962-63 the estimates were close to each other. But from 1963 onwards one finds not only differences in absolute amount but also discrepancies in directional changes. It becomes therefore necessary to enquire further into the basic methodology adopted by these different organisations in arriving at the estimates.

III. METHODS OF ESTIMATION

The Reserve Bank of India used to estimate the gross fixed assets for the entire corporate sector by blowing up the figures obtained for a sample number of companies. The Reserve Bank of India in order to understand the performance of the corporate sector has been conducting periodic surveys. They select a certain number of public limited and private limited companies and study intensively the financial performance of these companies. The data obtained on gross fixed assets of these sample companies are blown up to arrive at the gross fixed assets for the entire corporate sector. During the period 1956-57 to 1962-63 when the Reserve Bank of India provided data on the gross fixed assets formation of the entire corporate sector, in relation to public limited companies, they followed the procedure of blowing up the sample gross fixed assets of each industry by the ratio of total paid up capital in that industry to the sample paid up capital. The estimated gross fixed assets of all the industries thus obtained were aggregated to get the gross fixed assets of all public limited companies. In the case of private limited companies, the estimates were made separately for six major industrial groups and then aggregated to arrive at global estimates of gross fixed assets of all private limited companies. Having obtained the gross fixed assets of the entire corporate sector in this manner, the difference between two successive years is treated as the gross fixed investment.

The number of companies surveyed by the Reserve Bank of India has been increasing every five years. Therefore, the ratio of paid up capital of sample companies to the paid up capital of all companies has been increasing. One of the reasons for using this blow up factor is the easy availability of the data on the paid up capital of all companies.

The Economic Times studies do not explicitly outline the method of estimation. However, the underlying method appears to be the same as that of the Reserve Bank of India. The Economic Times also conducts surveys of select companies in order to understand the financial performance of the corporate sector. The sample survey of the Economic Times is confined only to public limited companies. In relation to private limited companies, perhaps an assumption is made that the rate of growth in fixed assets in the companies will be the same as that of public limited companies.

The basic data for the CSO estimates are also derived from the RBI studies in respect of medium and large public and private limited companies. In addition they also make use of the data available from the annual survey of industries. The exact method CSO uses for accounting for the limited coverage of the data and obtaining global estimates is not clearly known. However, the blow up method is perhaps the procedure followed by them also.

Thus the general method followed is to blow up the gross fixed assets obtained from a sample survey by a factor which is normally the ratio of total paid up capital to the paid up capital of sample companies. Symbolically this can be stated as follows:

$$\begin{aligned} GFA_T &= GFA_S \times \frac{PUC_T}{PUC_S} \\ &= GFA_S \times b \quad \text{where 'b' is the blow up factor} \end{aligned}$$

Alternatively, this can be written as

$$\begin{aligned} GFA_T &= \frac{GFA_S}{PUC_S} \times PUC_T \\ &= K \cdot PUC_T \end{aligned}$$

GFA_T = Gross fixed assets of all companies

GFA_S = Gross fixed assets of sample companies

PUC_S = Paid up capital of sample companies

PUC_T = Paid up capital of all companies

Thus the implicit assumption in the blow up method is that the average ratio of gross fixed assets to paid up capital found in the sample companies holds good for the uncovered group of companies also.

The ratio of gross fixed assets to the paid up capital need not necessarily be the same for all the industries and for all companies within the same industry. Paid up capital is only one of the many sources for financing fixed capital formation. Therefore this ratio should differ between old and new companies and also between different

categories of industries. We have given in Table 3 data on this ratio in relation to large public limited companies and large private limited companies. The ratio is definitely higher in the case of large public limited companies than in the case of large private limited companies. We have provided in Table 4 this ratio for a variety of industries for the year 1975-76. These ratios are drawn from the sample survey of large and medium public limited companies of the Reserve Bank of India. The ratio varies from 1.6 to 15.6.

The disparities in the ratio among industries can perhaps be taken care of (as the Reserve Bank of India did earlier) by obtaining the gross fixed assets of each industry by blowing up the sample figures in relation to that industry. However, there are some difficulties in resorting to this method because there is no uniform criterion for classification of companies falling into various industry groups. It is easier to get data on the total paid up capital of all companies than data classified according to industry. The other alternative is to blow up the gross fixed assets of all sample companies by the ratio of paid up capital of all companies to the paid up capital of sample companies. This procedure will be justified if the distribution of sample companies according to industries is the same as the distribution of all companies according to industries. In Table 5 we have provided the coverage of the Reserve Bank of India in different industries. Though the coverage is not the same in all the industries, they are generally close to the figure of 70 to 80 per cent. The

coefficient of variation of blow up factors is 11.25 per cent. While obtaining industrywise gross fixed assets by blowing up separately for each industry may be the most appropriate method to follow, in view of the difficulty in obtaining data on total paid up capital industrywise, we have examined the result of using a single blow up factor. In Table 6 we have provided for the years 1956-57 to 1962-63 estimates arrived at by blowing up industry by industry and by using one single blow up factor. The results show very small variation between the two methods as the sample coverage is quite large.

The basic assumption of the blow up method is that the ratio of gross fixed assets to paid up capital in the non-sample companies is the same as the sample companies. In view of the fact that the sample companies constitute a large proportion of the total, the errors that might creep in because of the difference in the ratio may be minimal.

IV. OUR ESTIMATE

Though the method adopted by all the three estimating authorities is more or less the same, as mentioned previously, there is considerable difference in the estimates provided by them. We have, therefore, presented in this section a detailed account of the method followed by us to arrive at our estimates. The details that we have provided should indicate to others whether any part of our data is subject to

errors or not. The basic data we have used are those provided by the Reserve Bank of India in their survey of large and medium public and private limited companies. We have blown up the gross fixed assets separately for the public limited companies and the private limited companies and arrived at an aggregate for the entire corporate sector. We have used one blow up factor rather than industrywise blow up factors primarily because of the non-availability of data on total paid up capital industrywise. It may be noted that the estimates are very sensitive to the blow up factor used. Since the stock of gross fixed assets is in the neighbourhood of Rs.4,000 crores even a variation by two per cent in the blow up factor means an over-estimation or under-estimation of gross fixed investment by Rs.80 crores. This will amount to a 15 to 25 per cent variation in gross fixed investment. Since the estimates are thus highly sensitive to the blow up factor, extreme care has to be exercised in finding out the appropriate factors.

One would have thought the task of obtaining the total paid up capital of all companies is a simple one. However, as we attempted to put together the relevant data, we found a large number of discrepancies among the data provided by the basic data gathering agencies. The first thing that we did was to collect the data given by the Department of Company Affairs on the paid up capital of non-government public limited and private limited companies. We have provided in

Table 7 these data. Since the data provided by this agency includes also data on financial companies, we had to deduct this from the total of all non-government public limited companies. But the resulting figures show a trend which is unacceptable. For 1971-72 the derived figures indicate that the paid up capital of the sample companies included in the Reserve Bank of India survey was almost equivalent to that of the paid up capital of all companies. For the same year RBI claims that the coverage of its sample is about 80 per cent. This inconsistency raises serious doubts about using the data on the paid up capital presented by the Department of Company Affairs for the purpose of blowing up.

We therefore resorted to constructing a series on the total paid up capital of all non-government non-financial companies by using the data supplied by the Controller of Capital Issues. Data on capital raised by all public limited companies and private limited companies against consents, acknowledgment of proposals and exemption orders are available. Starting from 1962-63 by adding up the capital raised in each year, we have estimated the total paid up capital for public limited companies. These are given in Table 8. In Table 9 we have provided the data on the total paid up capital for private limited companies.

In Tables 10 and 11 we have presented the blow up factor used in relation to public limited companies and private limited companies respectively. The estimates of gross fixed investment for all public limited companies and for all private limited companies are also provided in these tables. In Table 12 we have provided our estimate of gross fixed investment for the entire private corporate sector. Our estimates are in nominal terms. In Table 13 we have provided the series in real terms. For the purpose of deflation, we constructed a composite index by combining the deflator available for machinery and equipment and for construction and by weighing them in the ratio of one component to another in the RBI sample. In real terms, over the period 1960-61 to 1974-75, gross fixed investment has grown at an average annual rate of 2.03 per cent. Between 1965-66 and 1969-70 the annual rate of growth was negative. Between 1970-71 and 1974-75 the rate of growth was approximately nine per cent.

The estimates that we have provided in Table 12 show considerable differences from the estimates provided by the Economic Times and the Central Statistical Organisation. Even looking at the more recent period beginning 1970-71, there are marked differences in the rates of growth. For 1971-72 the Economic Times series show a drop by 15.5 per cent, the Central Statistical Organisation series a rise by 24 per cent and our estimates a rise of 3.4 per cent. For 1973-74 our estimates show a fall whereas both the Economic Times

estimates and the Central Statistical Organisation estimates show a rise around seven per cent. We have given in Table 15 the behaviour of gross fixed investment in the RBI sample companies alone. According to the data on sample companies, during 1973-74 the investment rose by 6.6 per cent. We have probed to find out as to why our aggregate estimates show a decline whereas in the sample companies, there was a rise. This is due to the fact that for 1972-73 the blow up factor in relation to public limited companies was 1.334 as compared with 1.28 for 1971-72. This resulted in a sharp rise in investment for 1972-73 and a decline in the rate of growth of investment for 1973-74.

For the past several years an attempt has been made to forecast corporate investment by one of the authors. The methodology used to forecast corporate investment relies on the data available with the term lending institutions on the phasing of capital expenditures of projects sanctioned by them. By aggregating the information on the phasing of capital expenditure of proposals sanctioned in the various years, one is able to arrive at the total capital expenditures to be incurred in a year on all projects approved by the institutions. Obviously the coverage of this is less than the entire corporate sector. Not all companies approach the term lending institutions every year. However, while examining the phasing of capital expenditures of projects approved by the term lending institutions the normal capital expenditures are also taken into account. We have presented in Table 14

the figures for the various years based on these data. Obviously the absolute values of the estimates are not comparable with the other estimates as the coverage by definition is less than the entire corporate sector.* However, if this is to represent the total picture relating to corporate investment, the rates of change must be comparable. In all estimates, one finds more or less an equal rise for the year 1974. Similarly a rise is forecast in all estimates in 1972-73. For 1973-74 our estimate shows a fall whereas all the other estimates including data collected from the term lending institutions show a rise. A fall in corporate investment in 1971 according to the data of term lending institutions is confirmed only by the Economic Times estimate.

SUMMARY

In this paper we have attempted to look at the various estimates that are currently available in relation to gross fixed investment in the corporate sector. These various estimates differ considerably among themselves not only in absolute amount but also in terms of year to year changes. Using the sample data provided by the Reserve Bank of India on the finances of public and private limited companies we have constructed a new series on corporate investment. We first estimated a series of total paid up capital in relation to public and private limited companies. These gave us the blow up factors to be used on the sample data.

*In addition there are problems relating to definition of years. The data gathered from the term lending institutions deal with calendar years.

There is no reason to claim that our estimates are superior or better. However, we have in this paper brought out explicitly all the assumptions made in arriving at the estimates. Our study indicates very clearly that unless one is able to construct a reasonably reliable series on paid up capital of public and private limited companies, differences will continue to exist among the series provided by the different agencies as the estimates of gross fixed assets and therefore of gross fixed investment are extremely sensitive to the blow up factors used.

TABLE 1

COMPARISON OF VARIOUS ESTIMATES OF GROSS FIXED INVESTMENT

(Rs. in crores)

| Year | RBI* | | Economic Times | | CSO** | |
|---------|-----------------|--|-----------------|--|-----------------|---|
| | Invest- ment | Vari- ation over previous year (%) | Invest- ment | Vari- ation over previous year (%) | Invest- ment | Variation over pre- vious year (%) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1956-57 | 170 | - | 181 | - | NA | - |
| 1957-58 | 261 | 53.5 | 300 | 65.7 | NA | - |
| 1958-59 | 188 | (-) 28.0 | 197 | (-) 34.3 | NA | - |
| 1959-60 | 192 | 2.1 | 201 | 2.0 | NA | - |
| 1960-61 | 355 | 84.9 | 378 | 88.0 | 326 | - |
| 1961-62 | 482 | 35.8 | 499 | 32.0 | 506 | 55.2 |
| 1962-63 | 375 | (-) 22.2 | 404 | (-) 19.1 | 400 | (-) 21.0 |
| 1963-64 | NE | - | 365 | (-) 9.7 | 648 | 62.0 |
| 1964-65 | NE | - | 367 | 0.5 | 588 | (-) 09.3 |
| 1965-66 | NE | - | 395 | 7.6 | 398 | (-) 32.4 |
| 1966-67 | 576 | - | 599 | 51.6 | 464 | 16.6 |
| 1967-68 | 406 | (-) 29.6 | 589 | (-) 01.7 | 539 | 16.2 |
| 1968-69 | 230 | (-) 43.4 | 468 | (-) 20.6 | 527 | (-) 02.2 |
| 1969-70 | 355 | 54.3 | 564 | 20.5 | 530 | 00.6 |
| 1970-71 | 542 | 52.7 | 567 | 00.5 | 651 | 22.8 |
| 1971-72 | 606 | 11.8 | 479 | (-) 15.5 | 807 | 24.0 |
| 1972-73 | - | - | 682 | 42.4 | 1060 | 31.4 |
| 1973-74 | - | - | 726 | 6.5 | 1137 | 7.3 |
| 1974-75 | - | - | 964 | 32.8 | 1323 | 16.4 |
| 1975-76 | - | - | 1068 | 10.8 | 1599 | 20.9 |

Sources: Column (2) 1956-57 to 1962-63, Reserve Bank of India, Financial Statistics of Joint Stock Companies in India, 1950-51 to 1962-63.

*Data since 1966-67 refer to net capital formation.

**Estimates include the gross fixed investment by cooperatives also.

Column (4) The Economic Times, November 4, 1974, and January 1, 1978

Column (5) Central Statistical Organisation, National Accounts Statistics, 1961-62 to 1972-73, CSO, National Accounts Statistics, 1970-71 to 1975-76.

TABLE 2
 GROSS FIXED ASSET FORMATION : ECONOMIC TIMES' ESTIMATES
 (Rs. in crores)

| Year | (1) | (2) | (3) |
|---------|-----|------|------|
| 1971-72 | 608 | 590 | 479 |
| 1972-73 | 674 | 750 | 682 |
| 1973-74 | 733 | 791 | 726 |
| 1974-75 | 971 | 1048 | 964 |
| 1975-76 | - | 1022 | 1068 |
| 1976-77 | - | - | 976 |

Sources: (1) Economic Times, January 16, 1976
 (2) Economic Times, December 16, 1976
 (3) Economic Times, January 1, 1978

TABLE 3

RATIOS OF GROSS FIXED ASSETS TO PAID UP CAPITAL IN
RBI SAMPLE COMPANIES

| | 1974-75 | | | 1975-76 | | |
|--|--------------------|--------------------------|---------------------------|--------------------|--------------------------|---------------------------|
| | Paid up capital | Gross fixed assets | Ratio of GFA to PUC | Paid up capital | Gross fixed assets | Ratio of GFA to PUC |
| 385 Large Public Limited Companies | 1361 | 5518 | 4.054 | 1432 | 6104 | 4.262 |
| 1650 Selected Large and Medium Public Limited Companies | 1808 | 7274 | 4.023 | 1899 | 8043 | 4.235 |
| 1001 Large and Medium Private Limited Compa- nies | 172 | 603 | 3.506 | 177 | 651 | 3.678 |

TABLE 4

RATIOS OF GROSS FIXED ASSETS TO PAID UP CAPITAL
IN DIFFERENT INDUSTRIES IN 1975-76

| Industries | Gross fixed assets | Paid up capital | Ratio of gross fixed assets to paid up capital |
|---|-----------------------|--------------------|---|
| Agricultural & allied activities | 137.28 | 46.44 | 2.956 |
| Mining & Quarrying | 137.53 | 33.01 | 4.166 |
| Processing & Manufacturing Foodstuffs, Textile, Tobacco and Leather and its products | 2141.55 | 436.64 | 4.904 |
| (a) Sugar | 215.19 | 50.75 | 4.240 |
| (b) Tobacco | 51.19 | 31.28 | 1.642 |
| Processing & Manufacturing Metals, Chemicals and products | 3496.51 | 947.77 | 3.689 |
| (a) Iron & steel | 576.49 | 77.56 | 7.432 |
| (b) Aluminium | 188.88 | 42.55 | 4.439 |
| (c) Engineering | 1575.55 | 496.57 | 3.172 |
| (d) Chemicals | 1120.86 | 318.13 | 3.523 |
| Cement | 272.55 | 65.37 | 4.169 |
| Rubber and Rubber products | 127.35 | 37.08 | 3.434 |
| Paper and Paper products | 322.09 | 70.90 | 4.542 |
| Shipping | 611.99 | 39.07 | 15.663 |
| Other Industries | 1075.27 | 171.93 | 6.254 |

TABLE 5

COVERAGE OF RBI SAMPLE OF NON-GOVERNMENT
NON-FINANCIAL PUBLIC LIMITED COMPANIES

| S.No. | Industrial sub-group (1) | Number of companies (2) | Coverage in terms of paid up capital (%) (3) |
|-------|-----------------------------|----------------------------|---|
| 1. | Tea plantation | 135 | 72 |
| 2. | Coffee Plantation | 20 | 90 |
| 3. | Rubber plantation | 21 | 61 |
| 4. | Coal mining | 40 | 73 |
| 5. | Sugar | 77 | 88 |
| 6. | Cotton textiles | 261 | 78 |
| 7. | Jute textiles | 44 | 72 |
| 8. | Iron & steel | 2 | 100 |
| 9. | Engineering | 290 | 84 |
| 10. | Chemicals | 130 | 72 |
| 11. | Cement | 16 | 93 |
| 12. | Paper and Paper products | 30 | 85 |
| | ALL INDUSTRIES | 1501 | 80 |

Note: (1) Coverage is measured as the proportions which the non-government non-financial public limited selected companies formed of the total paid up capital of all non-government non-financial public limited companies at work as at the end of March 1966.

Source: Reserve Bank of India Bulletin, September 1972.

TABLE 6
COMPARISON OF THE ESTIMATES BY ALTERNATIVE BLOW UP FACTORS

(Rs. in crores)

| Gross fixed investment | 1956-57 | 1957-58 | 1958-59 | 1959-60 | 1960-61 | 1961-62 | 1962-6 |
|---|---------|---------|---------|---------|---------|---------|--------|
| 1. Public Limited Companies | | | | | | | |
| (a) RBI Estimates (industrywise blow up) | 133 | 225 | 160 | 130 | 376 | 402 | 304 |
| (b) Estimates by aggregate blow up factors | 136 | 247 | 160 | 126 | 378 | 344 | 323 |
| 2. Private Limited Companies | | | | | | | |
| (a) RBI Estimates (industry group-wise blow up) | 37 | 36 | 28 | 62 | - 21 | 80 | 71 |
| (b) Estimates by aggregate blow up factors | 43 | 29 | 28 | 68 | - 33 | 72 | 70 |

Source: For RBI estimates, Reserve Bank of India, Financial Statistics of Joint Stock Companies in India, 1950-51 to 1962-63.

TABLE 7
ESTIMATION OF AGGREGATE BLOW UP FACTOR

| Year | Paid up capital of all non-govt. public ltd. companies | Paid up capital of all non-govt. financial public ltd. companies | Paid up capital of all non-govt. non-financial public ltd. companies | Sample paid up capital of non-govt. non-financial public ltd. companies | Blow up factor |
|---------|--|--|--|---|----------------|
| (1) | (2) | (3) | (4)=(3)-(2) | (5) | (6)=(4)/(5) |
| 1957-58 | 756 | 82 | 664 | 538 | 1.23 |
| 1958-59 | 782 | 87 | 695 | 567 | 1.23 |
| 1959-60 | 814 | 89 | 725 | 595 | 1.22 |
| 1960-61 | 915 | 91 | 824 | 615(716) | 1.34(1.15) |
| 1961-62 | 1093 | 94 | 999 | 757 | 1.32 |
| 1962-63 | 1171 | 97 | 1074 | 796 | 1.35 |
| 1963-64 | 1282 | 111 | 1171 | 829 | 1.41 |
| 1964-65 | 1353 | 119 | 1234 | 890 | 1.45 |
| 1965-66 | 1407 | 119 | 1288 | 880(1050) | 1.46(1.23) |
| 1966-67 | 1426 | 132 | 1294 | 1173 | 1.10 |
| 1967-68 | 1490 | 139 | 1351 | 1243 | 1.09 |
| 1968-69 | 1712 | 153 | 1559 | 1299 | 1.20 |
| 1969-70 | 1741 | 153 | 1588 | 1369 | 1.16 |
| 1970-71 | 1775 | 167 | 1608 | 1421(1552) | 1.13(1.04) |
| 1971-72 | 1800 | 186 | 1614 | 1599 | 1.01 |

Sources: Column (2) The Stock Exchange Official Directory, Vol.2, August 1977, Bombay.

Column (3) CSO, Statistical Abstract, India 1975.

TABLE 8

ESTIMATION OF BLOW UP FACTOR FOR PUBLIC LIMITED COMPANIES.

(Rs. in crores)

| Year | Estimated total paid up capital | Capital raised* by non-government public limited companies | Paid up capital of sample companies | Blow up factor |
|---------|---------------------------------|--|-------------------------------------|----------------|
| (1) | (2) | (3) | (4) | (5) = (2)÷(4) |
| 1962-63 | 1076 | | 796 | 1.35 |
| 1963-64 | 1166 | 90 | 828 | 1.41 |
| 1964-65 | 1251 | 85 | 849 | 1.47 |
| 1965-66 | 1346 | 95 | 1879 | 1.53 |
| 1965-66 | 1346 | 95 | 1049 | 1.28 |
| 1966-67 | 1485 | 139 | 1173 | 1.26 |
| 1967-68 | 1627 | 142 | 1243 | 1.31 |
| 1968-69 | 1734 | 107 | 1299 | 1.33 |
| 1969-70 | 1836 | 102 | 1369 | 1.35 |
| 1970-71 | 1956 | 120 | 1420 | 1.38 |
| 1970-71 | 1956 | 120 | 1552 | 1.26 |
| 1971-72 | 2047 | 91 | 1600 | 1.28 |
| 1972-73 | 2203 | 156 | 1652 | 1.334 |
| 1973-74 | 2322 | 119 | 1711 | 1.357 |
| 1974-75 | 2498 | 176 | 1813 | 1.378 |

Sources: Column (2) Figure for 1962-63 from Reserve Bank of India, Financial Statistics of Joint Stock Companies in India, 1950-51 to 1962-63, 1967. Other figures calculated by adding column (3) to the previous year's paid up capital.

Column (3) Office of the Controller of Capital Issues, Ministry of Finance, Government of India.
Secondary source: RBI, Report on Currency & Finance (Various Issues)

Column (4) Finances of Medium and Large Public Limited Companies, RBI Bulletin (Various Issues)

*Capital raised against consents/acknowledgment of proposals and under exemption order during calendar years.

TABLE 9

ESTIMATION OF BLOW UP FACTOR FOR PRIVATE LIMITED COMPANIES

(Rs. in crores)

| Year | Estimated total paid up capital | Capital raised* by non-government private limited companies | Paid up capital of sample companies | Blow up factor |
|---------|---------------------------------|---|-------------------------------------|----------------|
| (1) | (2) | (3) | (4) | (5)=(2)÷(4) |
| 1962-63 | 290 | | 91.4 | 3.170 |
| 1963-64 | 306 | 16 | 93.1 | 3.287 |
| 1964-65 | 316 | 13 | 94.4 | 3.379 |
| 1965-66 | 332 | 13 | 99.5 | 3.337 |
| 1965-66 | 332 | 13 | 93.4 | 3.374 |
| 1966-67 | 362 | 31 | 113.2 | 3.207 |
| 1967-68 | 391 | 28 | 121.1 | 3.229 |
| 1968-69 | 408 | 17 | 124.3 | 3.282 |
| 1969-70 | 431 | 23 | 129.3 | 3.333 |
| 1970-71 | 453 | 22 | 133.8 | 3.386 |
| 1970-71 | 453 | 22 | 166.0 | 2.729 |
| 1971-72 | 481 | 28 | 171.0 | 2.813 |
| 1972-73 | 511 | 30 | 174.7 | 2.925 |
| 1973-74 | 554 | 43 | 185.1 | 2.993 |
| 1974-75 | 589 | 35 | 172.4 | 3.416 |

- Sources: Column (2) Figure for 1962-63 from Reserve Bank of India, Financial Statistics of Joint Stock Companies in India, 1950-51 to 1962-63, 1967. Other figures calculated by adding column (3) to the previous year's paid up capital.
- Column (3) Office of the Controller of Capital Issues, Ministry of Finance, Government of India. Secondary source: RBI, Report on Currency & Finance (Various Issues)
- Column (4) Finances of Medium and Large Private Limited Companies, RBI Bulletin (Various Issues)

*Capital raised against consents/acknowledgment of proposals and under exemption order, during calender years.

TABLE 10

ESTIMATED GROSS FIXED INVESTMENT IN PUBLIC LIMITED COMPANIES

| Year | Sample gross fixed assets | Blow up factor | Total gross fixed assets | Gross fixed invest- ment |
|---------|------------------------------------|-------------------|-----------------------------------|-----------------------------------|
| (1) | (2) | (3) | (4) = (2)x(3) | (5) |
| 1955-56 | 951 | 1.2870 | 1224 | |
| 1956-57 | 1090 | 1.2477 | 1360 | 136 |
| 1957-58 | 1268 | 1.2643 | 1607 | 247 |
| 1958-59 | 1417 | 1.2471 | 1767 | 160 |
| 1959-60 | 1523 | 1.2429 | 1893 | 126 |
| 1960-61 | 1646 | 1.3797* | 2271 | 378 |
| 1960-61 | 1813 | 1.2653 | 2294 | - |
| 1961-62 | 2000 | 1.3190 | 2638 | 344 |
| 1962-63 | 2192 | 1.3510 | 2961 | 323 |
| 1963-64 | 2425 | 1.41 | 3419 | 458 |
| 1964-65 | 2648 | 1.47 | 3893 | 474 |
| 1965-66 | 2886 | 1.53 | 4415 | 522 |
| 1965-66 | 3143 | 1.28 | 4023 | - |
| 1966-67 | 3574 | 1.26 | 4503 | 480 |
| 1967-68 | 3897 | 1.31 | 5105 | 602 |
| 1968-69 | 4190 | 1.33 | 5573 | 468 |
| 1969-70 | 4498 | 1.35 | 6072 | 499 |
| 1970-71 | 4806 | 1.38 | 6632 | 560 |
| 1970-71 | 5139 | 1.26 | 6475 | - |
| 1971-72 | 5524 | 1.28 | 7071 | 596 |
| 1972-73 | 6023 | 1.334 | 8035 | 964 |
| 1973-74 | 6569 | 1.357 | 8914 | 879 |
| 1974-75 | 7301 | 1.378 | 10061 | 1147 |

Sources: Column (2) Finances of Large and Medium Public Limited Companies, RBI Bulletin (Various Issues)

Column (3) Estimated (please see the text)

*Adjusted for the transformation of some Private Limited Companies into Public Limited Companies.

TABLE 11

ESTIMATED GROSS FIXED INVESTMENT IN PRIVATE LIMITED COMPANIES

| Year | Sample gross fixed assets | Blow up factor | Total gross fixed assets (4)=(2)x(3) | Gross fixed invest- ment (5) |
|---------|------------------------------------|-------------------|--|--|
| (1) | (2) | (3) | (4)=(2)x(3) | (5) |
| 1955-56 | 69 | 3.7564 | 260 | - |
| 1956-57 | 77 | 3.9268 | 303 | 43 |
| 1957-58 | 87 | 3.8245 | 332 | 29 |
| 1958-59 | 96 | 3.7649 | 360 | 28 |
| 1959-60 | 105 | 4.0857 | 428 | 68 |
| 1960-61 | 116 | 3.9863* | 463 | 35 |
| 1960-61 | 134 | 2.9367 | 395 | - |
| 1961-62 | 152 | 3.0718 | 467 | 72 |
| 1962-63 | 170 | 3.1656 | 537 | 70 |
| 1963-64 | 183 | 3.287 | 602 | 65 |
| 1964-65 | 201 | 3.379 | 679 | 77 |
| 1965-66 | 220 | 3.337 | 734 | 55 |
| 1965-66 | 226 | 3.374 | 763 | - |
| 1966-67 | 249 | 3.207 | 798 | 35 |
| 1967-68 | 272 | 3.229 | 878 | 80 |
| 1968-69 | 292 | 3.282 | 958 | 80 |
| 1969-70 | 319 | 3.333 | 1063 | 105 |
| 1970-71 | 340 | 3.386 | 1151 | 88 |
| 1970-71 | 437 | 2.729 | 1193 | - |
| 1971-72 | 486 | 2.813 | 1367 | 174 |
| 1972-73 | 550 | 2.915 | 1603 | 236 |
| 1973-74 | 604 | 2.993 | 1808 | 205 |
| 1974-75 | 613 | 3.416 | 2094 | 286 |

Sources: Column (2) Finances of Large and Medium Private Limited Companies, RBI Bulletin (Various Issues).

Column (3) Estimated (please see the text)

*Adjusted for the transformation of some Private Limited Companies into Public Limited Companies.

TABLE 12
GROSS FIXED INVESTMENT : OUR ESTIMATES

(Rs. in crores)

| Year | Public limited companies | Private limited companies | Private corporate sector | Variation from previous year investment (%) |
|---------|--------------------------|---------------------------|--------------------------|---|
| 1956-57 | 136 | 43 | 179 | |
| 1957-58 | 247 | 29 | 276 | 54.2 |
| 1958-59 | 160 | 28 | 188 | -31.9 |
| 1959-60 | 126 | 68 | 194 | 3.2 |
| 1960-61 | 378 | 35 | 413 | 112.9 |
| 1961-62 | 344 | 72 | 416 | 0.73 |
| 1962-63 | 323 | 70 | 393 | -5.51 |
| 1963-64 | 458 | 65 | 523 | 33.0 |
| 1964-65 | 474 | 77 | 551 | 5.34 |
| 1965-66 | 522 | 55 | 577 | 4.7 |
| 1966-67 | 480 | 35 | 515 | -10.7 |
| 1967-68 | 602 | 80 | 682 | 32.4 |
| 1968-69 | 468 | 80 | 548 | -19.6 |
| 1969-70 | 499 | 105 | 604 | 10.2 |
| 1970-71 | 560 | 88 | 648 | 7.3 |
| 1971-72 | 596 | 174 | 670 | 3.4 |
| 1972-73 | 964 | 236 | 1200 | 79.0 |
| 1973-74 | 879 | 205 | 1084 | -9.7 |
| 1974-75 | 1147 | 286 | 1433 | 32.2 |

TABLE 13

GROSS FIXED INVESTMENT : OUR ESTIMATE IN 1960-61

| Year | Current gross fixed investment of private corporate sector | Composite index of construction and machinery & equipments | Real gross fixed invest- ment private corporate sector |
|---------|--|--|--|
| 1960-61 | 413 | 1.00 | 413.0 |
| 1961-62 | 416 | 1.03 | 403.88 |
| 1962-63 | 393 | 0.98 | 401.02 |
| 1963-64 | 523 | 1.13 | 462.83 |
| 1964-65 | 551 | 1.15 | 479.13 |
| 1965-66 | 577 | 1.18 | 488.98 |
| 1966-67 | 515 | 1.41 | 365.25 |
| 1967-68 | 682 | 1.46 | 467.12 |
| 1968-69 | 548 | 1.48 | 370.27 |
| 1969-70 | 604 | 1.51 | 400.00 |
| 1970-71 | 648 | 1.62 | 400.00 |
| 1971-72 | 670 | 1.70 | 394.12 |
| 1972-73 | 1200 | 1.82 | 659.34 |
| 1973-74 | 1084 | 2.02 | 536.63 |
| 1974-75 | 1433 | 2.62 | 546.95 |

TABLE 14
 RATES OF CHANGE IN INVESTMENT IN SAMPLE COMPANIES

| Year | Public limited companies | Private limited companies | Total investment in private and public limited companies | Variation over previous year (%) |
|---------|--------------------------------|---------------------------------|---|--|
| (1) | (2) | (3) | (2)+(3)=(4) | (5) |
| 1956-57 | 99 | 8 | 107 | |
| 1957-58 | 218 | 10 | 219 | 104.7 |
| 1958-59 | 149 | 9 | 258 | 17.8 |
| 1959-60 | 106 | 9 | 115 | (-)55.4 |
| 1960-61 | 123 | 11 | 134 | 16.5 |
| ----- | | | | |
| 1961-62 | 187 | 18 | 205 | |
| 1962-63 | 192 | 18 | 210 | 2.4 |
| 1963-64 | 233 | 13 | 246 | 17.1 |
| 1964-65 | 223 | 18 | 241 | (-)2.0 |
| 1965-66 | 238 | 19 | 257 | 6.6 |
| ----- | | | | |
| 1966-67 | 431 | 23 | 454 | |
| 1967-68 | 323 | 23 | 346 | (-)23.8 |
| 1968-69 | 293 | 20 | 313 | (-)9.5 |
| 1969-70 | 308 | 27 | 335 | 7.1 |
| 1970-71 | 308 | 21 | 329 | (-)1.8 |
| ----- | | | | |
| 1971-72 | 385 | 49 | 434 | |
| 1972-73 | 499 | 64 | 563 | 29.7 |
| 1973-74 | 546 | 54 | 600 | 6.6 |
| 1974-75 | 732 | 9 | 741 | 23.5 |

TABLE 15

GROSS FIXED INVESTMENT IN CORPORATE SECTOR
 BASED ON DATA FROM TERM LENDING INSTITUTIONS

| Year | Gross Fixed investment | Change from previous year (%) |
|------|------------------------|-------------------------------|
| 1969 | 337 | |
| 1970 | 340 | 8.9 |
| 1971 | 318 | (-)6.5 |
| 1972 | 462 | 45.3 |
| 1973 | 530 | 14.7 |
| 1974 | 681 | 28.5 |
| 1975 | 530 | (-)22.2 |
| 1976 | 702 | 32.5 |
| 1977 | 955 | 36.0 |

Source: C. Rangarajan, "Private Corporate Investment in 1978: A Forecast," Economic and Political Weekly, Vol. XIII No. 10, March 11, 1978, pp. 496-499.