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THE STRUCTURE OF CORPORATE FINANCE AND SOME RELATED POLICY ISSUES

D. C. Rao*

I. Introduction

The commercial banks have traditionally been a major source of finance for industry. However, with the reordering of priorities in recent years an increasingly large proportion of resources of the commercial banks are channelled to other uses such as for meeting increased reserve requirements and credit to priority sectors. Moreover, the term lending institutions are also faced with a resources constraint particularly as the demand on their resources is greater because of escalation in project costs. Generous provision of institutional credit to agriculture and other sectors which have earlier been neglected is both necessary and desirable. The proper response to the emerging scarcity of funds for traditional industrial lending is not so much to slow down the pace of sectoral reorientation of institutional lending but to develop alternative sources of financing industrial units, especially those which are already well established.

Companies will be able to meet a larger proportion of their financing requirements from outside the financial institutions *i.e.* from retained profits, new issues of equity and from market borrowings, only if they are given enough incentives to go outside the financial institutions for finance, if market conditions are favourable and if official regulations do not hinder the companies' efforts. An evaluation from this perspective of the framework in which companies operate will necessarily have to cover a wide gamut of regulations framed under the Companies Act, MRTP Act, The Capital Issues Control Act and FERA. What is attempted here is only a preliminary evaluation, exploring the various sources of finance in an integrated approach. The focus throughout is on medium and large, public limited, non-financial, industrial companies. The special problems concerning finance for the rehabilitation of sick units are not discussed.

Part II consists of a brief review of the structure of financing of medium and large public limited companies. Part III discusses the factors influencing the use of each of the sources of finance, with special emphasis on the role of official regulations. Part IV presents some broad conclusions of the analysis.

Access to external finance is regulated by a number of agencies. The most important of these is the Controller of Capital Issues (CCI), who must approve issues by public limited companies at a premium or in excess of Rs. 50 lakhs, issues by MRTP and FERA Companies, all bonus issues, debenture issues exceeding Rs. 25 lakhs, all convertible and rights debentures, preference shares with participation or conversion rights and issues requiring relaxations of conditions laid down in the Capital Issues (Exemption) Order. The CCI also determines the price at which shares can be issued and the maximum interest/dividend that can be paid on debentures and on pre-

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ference shares. The MRTP Act regulates the expansion of large industrial houses and dominant undertakings. FERA regulates the capital structure and some aspects of the operations of companies that have more than 40 % foreign ownership. The Department of Company Affairs enforces the Companies Act and regulates the acceptance of deposits from the public by non-financial companies. As financing institutions (term lending institutions, LIC, UTI) are all government owned, their activities are supervised by the Ministry of Finance in addition to being governed by their respective charters. Under the credit authorisation scheme, the Reserve Bank has to approve lending by commercial banks to large borrowers (with credit limits above Rs. 2 crores in the case of private sector and above Rs. 3 crores in the case of public sector borrowers). RBI specifies maximum and minimum interest rates for credit from commercial banks. Money lender's Acts legislated by the States prescribe maximum interest rates for loans by indigenous bankers.

II. The Structure of Corporate Finance

This section analyses, in broad categories, data on the structure of financing as revealed in company balance sheets. Data are drawn mainly from RBI studies on company finances. The analysis covers two categories: a sample of slightly over 400 large Public Limited Companies (*i. e.* those with a paid-up capital of at least Rs. 1 crore) and a sample of over 1200 Medium Public Limited Companies (*i. e.* those with a paid-up capital of more than Rs. 5 lakhs and upto Rs. 1 crore). The period covered is 1971-72 to 1977-78.

RBI data for a given year combine the balance sheets of companies that have closed their accounts during that year and, therefore, reflect the financing that has taken place over an elapsed time of nearly two years. Year to year comparisons of such data are not very meaningful, which is why the analysis is conducted on the basis of aggregates for the whole period. Since the present study is interested in broad structural characteristics rather than fluctuations in response to changing conditions, this is not a serious handicap.

Table 1 shows the financing of gross fixed assets and net working capital, which must be financed by long term funds. These companies show a heavy dependence on internal generation of funds and long-term borrowings, partly from institutions and partly in the form of deposits. The contribution of the capital market in financing asset formation is very small, barely 5 per cent even for the large companies which may be expected to have relatively good access to the capital market. The contribution of debentures is negligible, amounting to less than 1 per cent of the increase in gross financing. Deposits constituted the biggest external source of medium funds. Internal funds provided more than three quarters of the gross financing and non-market long term borrowing contributed around a fifth.

While year to year comparisons are of doubtful validity, some broad trends in the data may be noted. Internal funds have continued to be the

TABLE 1: SOURCES AND USES OF FUNDS OF LARGE AND MEDIUM SIZE PUBLIC LIMITED COMPANIES 1971-78

(Data on 404 large and 1246 medium companies for 1971-72 to 1975-76 and 441 large and 1279 medium companies thereafter ; excludes government and financial companies)

(All figures represent annual averages of flows for the whole period)

	Large Companies		Medium Companies	
	Rs. Cr.	Percentage of Gross Total Assets	Rs. Cr.	Percentage of Gross Total Assets
Net Fixed Assets	211	37	43	41
Net Working Capital ¹	79	14	— 1	— 1
Depreciation	282	49	62	59
Total	573	100	104	100
Depreciation	282	49	62	59
Other Internal Funds ²	181	32	18	17
Capital Issues	26	5	5	5
(Shares ³)	(22)	(4)	(5)	(5)
(Debentures ⁴)	(4)	(1)	(—)	(—)
Other Long-term Borrowing	94	16	22	21
(Deposits)	(52)	(9)	(9)	(9)
Banks	(5)	(1)	(4)	(4)
(Institutions)	(5)	(1)	(4)	(4)
(Governments)	(22)	(4)	(—)	(—)
(Other)	(11)	(2)	(4)	(4)
Other (net)	—11	— 2	— 2	— 2
Total Financing	573	100	104	100

1. Current assets minus current liabilities.

2. Paid-up capital, reserves other than depreciation, surplus and non-current provisions.

3. Represents shares issued, fresh calls, calls in arrears, premium on shares and return of capital.

4. Net of debentures redeemed and converted into shares. Until 1975-76, also includes debentures pledged or offered as collateral security.

Source : Department of Statistics, RBI : Special tabulations.

largest source of finance throughout the period but their share in total financing has declined. In compensation, long-term borrowings have increased in importance over the period, even if one excludes government loans which were rather high since 1975-76 to the large companies. The contribution of the capital market has not shown any clear trend.

One indication of the deterioration in the capital structure of industrial units is the ratio of current assets to current liabilities. On the principle that current assets should be at least partially financed by long term funds, the Tandon Committee* recommended that the current ratio should normally be 1.3. Analysis of the balance sheets shows that the current ratio of large public limited companies in the RBI sample has declined more or less steadily from 1.9 in 1972-73 to 1.0 in 1977-78. For medium sized companies, the current ratio has also been well below 1.3 and even less than 1.0 in some years. It may be added that the capital structure of smaller companies probably is even less satisfactory.

The finance of inventory accumulation is shown in Table 2. The principal source of finance has been short term borrowings. Long term funds contributed significantly in the case of large companies but not at all in medium sized companies. Net trade credit was a significant source of finance for both large and medium companies. Through trade credit, these corporations allocate much larger volumes of funds than they borrow short term from the banking system. On an average, trade credit extended increased by Rs. 237 crores a year and trade credit received increased by Rs. 319 crores a year, while short term borrowing increased by Rs. 149 crores a year. In outstanding amounts too, trade debt exceeds short term borrowing from banks.

As a background for the subsequent discussion, it is useful to review the data on the ratio of long term debt to equity. As shown in Table 3 (using data for 1975-76) the average debt/equity ratio for medium and large public limited companies is 0.39 and only one quarter of the companies have ratios exceeding 0.51. There is considerable variation in the ratios for different industries. The only industry in which the average debt/equity ratio exceeds one is shipping, which has a ratio of 1.5. Some of the other industries which have above average debt/equity ratios are electricity generation (0.61), cotton textiles (0.55), motor vehicles (0.54) and cement (0.5).

III. The Sources of Finance

This part consists of notes on each of the main sources of finance available to companies, discussing the factors influencing their demand and supply and the extent to which each of the sources is used in practice. Particular attention is given to official regulations.

* The Report of the Study Group to Frame Guidelines for follow up of Bank Credit, R.B.I., Bombay 1975.

TABLE 2 : FINANCE OF INVENTORY ACCUMULATION, LARGE AND MEDIUM PUBLIC LIMITED COMPANIES, 1971-78

(Figures represent annual averages of flows for the whole period)

	Large Companies		Medium Companies	
	Rs. Cr.	Percentage	Rs. Cr.	Percentage
Increase in Inventories	226	100	86	100
Financed by :				
Short term borrowings (banks and others)	101	45	49	58
Net trade credit ¹	44	19	37	44
Long term funds	79	35	— 1	— 1
Other (net) ²	2	1	—	— 1
Total ..	226	100	86	100

1. Defined as Trade dues (including miscellaneous current liabilities) less loans, advances and other debtor balances.

2. Comprises provisions (current and taxation, net of advance of income-tax) less cash, bank balances and investments in quoted securities.

Source : Department of Statistics, RBI, Special Tabulations.

TABLE 3 : DEBT EQUITY RATIOS 1975-76

(Medium and large public limited companies)

Size of paid-up capital (Rs. lakhs)	Debt/Equity (%)	
	Industry Average	Third quartile level ¹
5 — 10	0.21	0.27
10 — 25	0.26	0.40
25 — 50	0.33	0.57
50 — 100	0.35	0.60
100 — 200	0.58	0.56
200 — 500	0.39	0.52
Over 500	0.37	0.49
All sizes	0.39	0.51

1. i.e. the level exceeded by one quarter of the companies in the sample.

Source : "Selected Financial and Other Ratios" RBI, October 1978.

1. Internal Sources

This source is defined as the sum of paid-up capital, reserves, surplus and non-current provisions. On a net basis, depreciation reserves are excluded; on a gross basis they are included. Internal funds are generally the single most important source of finance for a company. For large public limited companies during 1971-78, internal funds accounted for 62% of the increase in net total assets (fixed and working capital) and 80% of the increase in gross total assets.

The growth of internal sources of finance depends entirely on the availability of profits after taxation. The rate of profit earned by a company will depend both on internal considerations such as management efficiency and external factors such as government control on prices of output. Discussion of these aspects of a company's profitability is beyond the scope of this note. Currently, the rate of taxation of company profits is 45-55 per cent for a domestic company which is widely held. The rate of tax is higher for a domestic company which is closely held (55-65 per cent) and for a foreign company (70 per cent). In addition, there is a surcharge of 7.5% of income tax levied on all companies. On the other hand various concessions are available that will reduce the effective tax payable by a company. For example, a company is permitted to deduct expenditure on account of investments in new machinery and plant, rehabilitation after a natural calamity, development of export markets, and scientific research. Tax concessions are also available for new companies and for incomes derived from operations in backward districts, small scale enterprises in rural areas, dividends and royalty from inter-corporate investments. Taking these concessions into account, the effective rate of tax would be lower than the nominal tax rates cited above. In comparison with tax rates in other countries, company taxation is at a high rate in India. From a domestic financial perspective, the chief effect of a high rate of corporate tax is to raise the cost of equity capital. In order to market new issues of capital successfully, it is necessary that a company should earn a rate of return of at least around 10 to 12 per cent of its net worth, after payment of tax and interest. In the prevailing circumstances, this is difficult.

Although bonus issues do not directly add to the resources available to the company, (as they are simply a conversion of reserves into paid-up capital), they are an important means of enhancing the attractiveness of the share in the eyes of investors and, consequently, the marketability of subsequent issues of fresh equity. The attraction of a bonus issue to the investor is based on the expectation that the future dividend per share will not drop commensurately with the rate of bonus issue (*i. e.* his total dividend income will increase) and on the tendency in the stock market for share prices to respond more to dividend anticipations than to profit prospects.

Bonus issues are cleared by CCI subject to the following criteria (in effect from 1974) :

- (i) Profits : (a) After the bonus issue, residual reserves should be at least one third of the increased paid-up capital; (b) 30% of the average profit before tax of the previous three years should yield a dividend of 9% on the expanded capital base; (c) the company should declare its dividend intention for the following year;

- (ii) Timing : Not more than 2 issues in 5 years and minimum lapse of 18 months between successive issues ;
- (iii) existing shares should be fully paid up ; and
- (iv) Bonus capitalisation should not exceed paid up capital. (This criterion has since been relaxed in some cases).

2. Ordinary Shares

New issues of shares (also debentures) can be made through a rights issue to share holders or to the public by prospectus. In 1974 and 1975, rights issues have accounted for about 10% of share capital and 13% of debenture capital raised by public limited companies (other than term lending institutions). Of the amount issued by prospectus, about a third is usually allotted prior to the public offer, to directors, share holders institutions and government; the balance is offered to the public.

RBI surveys by questionnaire the companies that make new issues of capital by prospectus. Analysis of the available data (upto 1979, see Table 4) shows that the amounts issued have fluctuated from year to year with no clear upward trend even in nominal values. The amount of capital so raised is barely of the order of Rs. 50 crores per year.

Analysis of the public's response to these issues shows that there has generally been over-subscription of a large proportion of issues by existing companies and a smaller proportion of issues by new companies; and substantial under-subscription of some issues, specially of new companies. During 1975 to 1978, the majority of issues by new companies have been undersubscribed. (See Table 5).

In discussing why only relatively small amounts of capital are being raised from the public, one should emphasise the thinness of trading in the shares of existing companies. There were (as on March 1978) 7,886 public limited companies and 40,548 private limited companies. Shares of private limited companies are not eligible for listing on the Stock Exchanges and their stocks are not in the market. Of the public limited companies, the Stock Exchanges list about 2,000 companies with a paid-up capital of about Rs. 2,300 crores. Listing on the Stock Exchange is important for a company's shares to be easily traded even for companies that are widely held. But not all companies whose shares are listed are widely held, because some of them might have been listed under the rules of different stock exchanges before the Securities Contracts (Regulation) Act 1957 came into force. Even at present FERA companies have not offered 60% of their capital to the Indian public. Of the listed companies, only a small proportion are on the cleared/forward list with the remainder on the cash list. For securities on the cleared list, purchases and sales made on any day may be crossed out by subsequent sales and purchase made during the same settlement period of about 14 days. Of the securities on the forward list, only around 30 scrips are said to be actively traded. For securities on the cash list, each transaction necessarily leads to delivery. For the ordinary investor, the forward list is not of much relevance. What is relevant is that of the listed companies currently only about 200 or so are said to have good financial prospects.

TABLE 4: CAPITAL ISSUES THROUGH PROSPECTUS

(for public limited companies (other than term lending institutions) excluding issues in the form of offer for sale)

A. Number of issues

			1973	1974	1975	1976	1977	1978	1979
Equity	..	..	117 (101)	94 (92)	99 (95)	87 (75)	93 (85)	101 (89)	112 (81)
New Cos.	..	..	89 (79)	66 (64)	69 (66)	58 (47)	54 (48)	67 (61)	72 (48)
Existing Cos.	..	..	28 (22)	28 (28)	30 (29)	29 (28)	39 (37)	34 (28)	40 (33)
Preference	..	..	46 (40)	28 (28)	33 (32)	28 (21)	15 (15)	13 (12)	5 (4)
New Cos.	..	..	33 (28)	18 (18)	26 (25)	24 (17)	11 (11)	9 (9)	3 (2)
Existing Cos.	..	..	13 (12)	10 (10)	7 (7)	4 (4)	4 (4)	4 (3)	2 (2)
Debentures	..	..	4 (4)	4 (4)	4 (3)	1 (1)	1 (1)	1 (1)	1 (1)
New Cos.	..	..	—	—	—	—	—	—	—
Existing Cos.	..	..	4 (4)	4 (4)	4 (3)	1 (1)	1 (1)	1 (1)	1 (1)
Total	..	..	167 (145)	126 (124)	136 (130)	116 (97)	109 (101)	115 (103)	118 (86)
New Cos.	..	..	122 (107)	84 (82)	95 (91)	82 (64)	65 (59)	76 (71)	75 (50)
Existing Cos.	..	..	45 (38)	42 (42)	41 (39)	34 (33)	44 (42)	39 (32)	43 (36)

B. Amount offered to Public

(only issues on which data on public response are available)

(Rs. crores)

			1973	1974	1975	1976	1977	1978	1979
Equity	..	..	25.3	25.5	47.6	26.3	47.0	53.6	35.7
New Cos.	..	..	20.1	13.0	30.6	17.7	25.7	42.8	19.1
Existing Cos.	..	..	5.2	12.5	17.0	8.6	21.3	10.8	16.6
Preference	..	..	5.7	4.9	7.3	4.7	2.1	7.8	0.3
New Cos.	..	..	3.7	2.0	4.1	3.1	1.3	6.7	0.1
Existing Cos.	..	..	2.0	2.9	3.2	1.6	0.8	1.1	0.2
Debentures	..	..	2.2	5.0	1.3	1.0	5.5	1.5	7.0
New Cos.	..	..	—	—	—	—	—	—	—
Existing Cos.	..	..	2.2	5.0	1.3	1.0	5.5	1.5	7.0
Total	..	..	33.3	35.4	56.2	32.0	54.6	62.9	43.0
New Cos.	..	..	23.9	15.0	34.7	20.8	27.0	49.5	19.2
Existing Cos.	..	..	9.4	20.4	21.5	11.2	27.6	13.4	23.8

(figures in brackets are the number of issues to which data in Part B refer)

Source : RBI Bulletin, September 1976 for data upto 1975. Thereafter Provisional data provided by the Economic Department for 1976 to 1979 cover all public limited companies which made issues through prospectus on the market.

TABLE 5 : OVER SUBSCRIPTION AND UNDERWRITING OF EQUITY ISSUES

(Relates to issues through prospectus on which data are available, by non-government, non-financial public limited companies, excluding prior allotment and excluding issues in the form of offer for sale).

			Number of issues			Subscription rate ¹			Percentage of amount devolved on underwriters
			A	B	C	A	B (per cent)	C	
New Companies									
1973	..	..	66	3	10	1226	100	21	81
1974	..	..	47	2	15	147	100	65	35
1975	..	..	29	5	32	135	100	50	49
1976	..	..	18	1	28	131	100	54	52
1977	..	..	11	4	33	213	100	21	86
1978	..	..	28	3	30	207	100	22	68
1979	..	..	33	5	10	367	100	27	77
Existing Companies									
1973	..	..	21	—	1	1410	—	73	—
1974	..	..	24	1	3	299	100	30	67
1975	..	..	21	3	5	138	100	71	29
1976	..	..	20	1	7	245	100	53	49
1977	..	..	32	2	3	520	100	64	36
1978	..	..	21	—	7	1858	—	11	88
1979	..	..	30	1	2	1182	100	81	68

1. Public response as % of amount offered to public.

A. Over subscribed issues.

B. Fully subscribed issues.

C. Under subscribed issues.

Source : RBI Bulletin, September 1976 and provisional data provided by Economic Department, RBI.

There is no recent data on the pattern of ownership of shares. An R.B.I. survey enquiring into the pattern of ownership as of the end of December 1978 is currently being processed. An earlier survey as of 1965 showed that the pattern was very highly skewed. Some data released by the Bombay Stock Exchange (pertaining to 1968/69) shows that shareholdings of over Rs. 50,000 accounted for 65 per cent of the total capital of listed companies. There were then 8,800 shareholders in this category including institutions. About a quarter of the capital was in the hands of an estimated 2 million book shareholders (including holders of UTI units) each with a holding of less than Rs.10,000*. With the growing importance of institutional holdings, it is likely that the pattern of shareholding has become even more skewed in the past decade. It is commonly stated that the dominant shareholders and the financial institutions together often hold upto 80 per cent of the outstanding share capital of existing companies. Both of these groups tend not to sell their shares. Consequently, the floating stock available for trading in the market tends to be very small. This is one of the reasons why the prices of shares can move substantially in response to small shifts in supply or demand.

In an attempt to remedy this situation a variety of measures have been instituted to widen the ownership of shares. The most important of these measures is the set of guidelines issued by the Controller of Capital Issues defining the minimum requirements for a company's shares to be listed on the Stock Exchange. In essence, the guidelines require that the public offer of shares be greater than a specified minimum percentage of issue capital—49 percent in the case of long established non-FERA companies and 60 percent in the case of new companies. Listing on the Stock Exchange confers two benefits to the owner/managers of companies. The shares are more easily sold and the market price of the share becomes the basis for the calculation of wealth tax. Hence, the desire of a company to have its shares listed on the Stock Exchange is seen by the authorities as an opportunity to impose conditions resulting in the dilution of ownership of dominant shareholders. This approach has considerable merit, but one must also be conscious of the danger that excessively stringent conditions may keep well established companies off the Stock Exchange. It may be possible to allow listing of existing companies provided they agree to implement a phased programme of dilution, and provided failure to dilute as agreed is met by stiff penalties (*e.g.* a cash fine).

A second means of encouraging wider distribution of share ownership is the prescribed procedure for the allotment of shares when a public issue is over subscribed. In the present rules the allotment is strongly biased against large applications. This serves to keep away speculative activity at the time of public issues. Combined with a policy of allowing relatively low premia on the issue price of shares of existing companies (which tends to lead to over-subscription of public issues) this allotment procedure has been effective in widening the distribution of shareholdings. But once again one must be conscious of the danger that a downward bias in the calculation of price premia may wholly discourage new issues of capital by established companies.

* "Present position of the stock market in India", The Stock Exchange, Bombay 1978, page 19.

A third means of widening ownership has been implemented in one instance recently, where the dominant shareholder was permitted to take up only a fraction of his entitlement of a rights issue. This meant that new shareholders had to be brought in to raise the required amount of capital. Although an effective means of widening distribution, this procedure is available only in the case of MRTTP companies and, even so, can be blocked by the existing shareholders.*

Despite all these measures to widen ownership, the Stock Market is often described as sluggish. This is primarily due to the unsatisfactory return on equity investment. The dividend yield on ordinary shares tends to average around 6 per cent, which is low in relation to the return on bank deposits. New companies do not generally declare dividends for the first five or six years and even some older companies skip dividends. Thus, the main attraction of ordinary shares is the potential for capital gains. However, the capital gain element is highly variable from year to year and from scrip to scrip (see table 6). The total return from an investment in shares is the sum of both dividend and capital gain when the scrip is sold. Using RBI indexes of dividend yields and prices of industrial securities, it is possible to calculate the total return earned by an "average" shareholder who holds the "average" scrip for one year. These rates of return are presented in the last column of Table 6, and display wide variation from year to year.

TABLE 6 : ANNUAL RETURN ON ORDINARY SHARES¹

(percent per annum)

			Gross dividend yield ²	Capital Gain over previous year ³	Total return ⁴
1970-71	..	..	5.5	4.4	10.0
1971-72	..	..	6.5	— 4.1	2.4
1972-73	..	..	6.9	1.4	8.2
1973-74	..	..	5.6	18.9	24.5
1974-75	..	..	3.8	— 1.8	2.0
1975-76	..	..	5.4	—13.5	— 8.1
1976-77	..	..	6.1	6.8	12.9
1977-78	..	..	6.5	3.4	9.8
1978-79	..	..	5.7	21.4	27.1

1. Using RBI indices on industrial securities' yields and prices, based on the 1961-62 series upto 1972-73 and on the 1970-71 series thereafter. (Report on Currency and Finance, Vol. II, RBI).
2. Average of dividend paid divided by average market price (adjusted for bonus and rights issues) of each security in the sample. The sample consists of 356 securities that cover over 80% of aggregate market value of quoted securities. It may be noted that dividend rates were restricted in 1974-75.
3. Rate of change in average annual index of prices. This represents the capital gain that could be realised by the "average" shareholder in the year. The price index is adjusted to compensate for price changes resulting from the issue of bonus and rights shares.
4. Sum of dividend yield and capital gain. This approximates the pre-tax return to the "average" shareholder on an annual basis.

Source : RBI, Department of Statistics.

* Under Section 81 of the Companies Act, the existing shareholders of a company have the first right to take up any new issue of capital unless they forego this right by means of a special resolution.

The variability of returns on ordinary shares is enhanced by the following factors :

- (a) The lack of widely disseminated systematic information on the operating performance and financial status of individual companies and specially on their prospects; even most stock brokers are poorly qualified and not in a position to counsel investors well.
- (b) The speculative manipulation of prices of individual shares in heavy trading of large blocks of shares among relatively few investors.
- (c) The tendency to declare substantial periodic bonus issues rather than a higher annual dividend. This leads the market to speculate on the timing and quantum of the bonus issue (prior to its announcement) introducing price gyrations which tend to discourage individual investors who do not have inside information.
- (d) A general lack of confidence in the integrity of promoters, particularly of new enterprises. It is commonly believed that the promoter recovers his investment fully before the project comes on stream, leaving the market investors to bear the brunt of the risk thereafter. In any case, new companies generally do not pay dividends for the first 5 years or so, often longer.
- (e) Sudden changes in Government policies e.g. dividend ceilings and taxation of capital gains.

In an attempt to overcome these problems and build public demand for shares the Government has allowed various tax concessions to encourage investment in shares. Dividend earned from Indian companies along with income from other specified financial assets upto a total of Rs. 3,000 per year are exempted from income tax. Expenditures on the purchase of equity shares of new companies can be deducted from total income to the extent of 50% of the cost of the shares or Rs. 5,000 whichever is lower.

There is a proliferation of suggestions to liberalise these tax concessions. For example, it is suggested that the exemption relating to purchase of shares of new companies be extended also to investors in existing companies; that investment in shares be wholly deductible from income as in the case of contributions to Provident Funds and payment of LIC premium. These and other similar suggestions would certainly improve the returns on equity investment, but they suffer from two drawbacks: First, they are unlikely to draw in new share-holders unless there are structural changes in the Stock Market that will inspire greater confidence among ordinary shareholders. Second, under present circumstances, the benefit of tax concessions is derived only by those who currently hold shares which, as noted earlier, constitute a small class. An important undesirable feature of such tax concessions is their regressivity i.e. greater benefit is derived by those who are in higher income-tax brackets.

In the long run, widening the distribution of share ownership will not be possible without tapping the market outside the metropolitan centres. The complexity of current procedures for the transfers of shares constitutes a serious obstacle for shareholders outside the 9 centres which have Stock Exchanges.* Shareholders outside metropolitan centres have to cope with postal delays, poor service from brokers and, most importantly, problems in verification of the signature of the transferer. Without drastic simplification of the transfer procedures, a very large part of the market for shares will remain unexploited.

All of the above discussion is concentrated on measures designed to step up the demand for shares. It is widely held, however, that the real problem is one of a shortage of supply of good scrips. Recent experience with FERA issues has amply confirmed that there is adequate public demand for scrips of well managed companies that have a good dividend record. Non-FERA issues of high quality have also been received well in the market. But even companies with a good profit record may be extremely reluctant to raise additional capital on the market if it means dilution of the share of the owner/managers of the companies. It is surmised that there are perhaps less than 100 companies which are willing to live with a truly broad distribution of shares. For the most part, owner/managers are not willing to let their proportionate share of a company's capital fall to such a level that another group may gather enough strength to challenge their position. This threshold level may vary from company to company depending on whether the balance of the shareholding is held only by small shareholders or held in large lots. The large shareholdings of financial institutions has made the dominant shareholders even more reluctant than before to dilute their ownership. The reluctance to dilute ownership may make the companies hesitant even to raise capital through a rights issue when the dominant share holders themselves lack funds to take up their full entitlements.

In this context, one should note a special impediment caused by the existence of the mandatory convertibility clause attached to assistance from financial institutions. Units which have borrowed heavily from term lending institutions fear the possibility that financial institutions may become the dominant shareholders of the company. As financial institutions have tended to act in concert, it is the aggregate holding of all the public financial institutions that is relevant. Consequently, the owner/managers are reluctant to let their share fall below the aggregate shareholding that might be achieved by all financial institutions if they were to exercise their conversion rights. In practice, this may mean a reluctance to raise new capital from the market. This problem has been alleviated by the recent announcement that the financial institutions will not acquire more than 40 percent of the share capital through conversion except in special circumstances such as persistent default or mismanagement. One of the fears of the dominant shareholders is that the shares sold by the financial institutions may be acquired by a rival group. This eventuality is not in the public interest since companies riven by strife between rival groups are prone to financial trouble. Therefore, financial

* Stock Exchanges have been established at (in chronological order) Bombay, Ahmedabad, Calcutta, Indore, Madras, Hyderabad, Delhi, Bangalore and Cochin.

institutions may consider selling shares acquired through conversion only by means of a public offer for sale through a prospectus rather than through normal market channels. These steps may serve to reduce the apprehensions of the dominant shareholders concerning the operation of the convertibility clause, thereby weakening one of the impediments to public issues by companies with good financial performance and market reputation.

Financial institutions may act directly to increase the supply of good scrips on the market by steadily unloading part of their portfolio of shares. This policy is of particular relevance to the term lending institutions whose shareholdings are a result of their underwriting or conversion activities. The objective of the term lending institutions should be to generate more resources and maximise their financing of additions to capacity. Towards this end it is desirable that they actively seek to unload their investments to the maximum extent possible and use these resources for assisting new clients. There is a strong case for unloading even those investments that may have depreciated since the time of their acquisition by the term lending institution. As for the other financial institutions, such as UTI, LIC and GIC, there cannot be a policy of sustained unloading of shares from their investment portfolio. These are investment institutions whose shareholdings constitute an important source of earnings with which to service their insurers and unit holders. Nevertheless, the market for the ordinary investors may improve if these institutions traded more actively and turned over their portfolio. GIC is inhibited from doing so to the same extent as UTI because it does not enjoy the same tax status. Exempting GIC from tax on capital gains recorded on their investments might remedy this situation.

Financial institutions can improve the supply of good scrips to the market by improving their capacity to hold the shares of new companies during the initial gestation period. As noted earlier, issues by new companies are generally under-subscribed and tend to quote at a discount on the market immediately after the public issue. This happens because new companies are unlikely to pay dividends for a number of years and their future profitability remains quite uncertain until they have come into full production. During this gestation period it is highly desirable that the shares be held by a public financial institution that is specifically charged with this responsibility. Once the company is in full production and is in a position to offer a dividend, its shares would be more acceptable to the public. This is the stage at which they should be sold on the market. If the financial institutions have chosen their projects well and exercised the necessary supervision over the promoters during the construction phase of the project, the sale of shares at the end of the gestation period should normally yield a profit.

The sale of limited numbers of shares of public sector enterprises could increase the supply of good scrips on the Stock Market while, at the same time, relieving the Government budget of the burden of supplying additional equity to these enterprises. Not all public sector enterprises will be readily accepted by the public. The enterprises whose shares may be offered to the public will have to be carefully chosen, being those enterprises which have reasonable profit records without being too closely dependent on Government pricing

decisions for their profits. The public may be offered a minority share of these companies with the Government maintaining at least 75 per cent of the shareholding so that it has complete control over the passing of special resolutions. Alternatively, the Government may sell to the public participating preference shares, so that resources can be mobilised without any dilution of control. It is possible that the investing public might be attracted to participating preference shares (provided there is a generous linkage to profit) because they would carry the guarantee of a minimum rate of return independent of dividend policy as long as the Company earns a profit.

It has also been suggested that the reluctance of companies to issue new share capital is partly the result of interest on borrowings being deductible for tax purposes. On an after tax basis, commercial bank borrowing is currently only half as costly as raising new equity. Hence, it is argued, companies prefer to incur debt rather than expand their equity base. This imbalance could be remedied if a part of interest payments were not deductible or if dividend payments up to some limits were made deductible. These suggestions have far reaching implications which would have to be explored further. For instance, the rate of corporation tax would have to be changed if aggregate tax revenue were to remain the same.

3. Preference Shares

Issues over Rs. 50 lakhs are covered by CCI guidelines : Preference Capital cannot exceed one-third of total paid-up capital and reserves; maximum dividend is 11%; and preference shares redeemable within 12 years are included in computation of the debt/equity ratio which is generally expected to be below two. Higher debt/equity ratios are permitted in capital intensive industries such as fertiliser, aluminium, paper, cement and shipping.

Compared with debentures, preference shares are decidedly more risky because :

- (a) A preference share holder gets no dividend if the company makes no profit, whereas a debenture holder is entitled to his interest anyway. However on cumulative preference shares, a company that does not pay the full dividend in some years because of inadequate profit is required to make up the deficit in years when profits are available for distribution.
- (b) There is no guarantee of repayment of principal on maturity.

To compensate for the additional risk, preference shares offer a higher return than debentures, but the premium is small, even after allowing for the fact that dividends are included in the sources of income which are exempt from income-tax (upto Rs 3,000) and debentures are not. CCI imposes a ceiling on preference dividend, currently at a level half a per cent higher than the ceiling on debenture interest. The ceilings on preference dividend and rights debentures interest are set at the same level. It is not clear what purpose is served by the imposition of a ceiling on the rate of preference dividends.

Compared with ordinary shares, preference shares are less risky for the investor but, on the other hand, do not benefit from high earnings as ordinary shares do. A few companies, however, have issued "participating preference shares" whose dividend is increased in years of high profitability.

From the point of view of the company, preference dividends offer no tax advantage as they are paid from after tax profit. Thus, they are substantially more expensive than debentures, and may be used only to get around the debt equity ceiling. An advantage over ordinary shares, however, is that preference shareholders have restricted voting rights.

Companies holding preference shares benefit from the tax concession granted to inter-company dividends, which is not applicable to debentures. This is of special relevance to GIC which is subject to normal taxation provisions. UTI's holdings of preference shares have remained steady from 1974 to 1980 at around Rs. 16 crores, their share of investible funds declining from 9.5% to 3.4%.

A point worth exploring is whether participating preference shares would appeal much more to the ordinary investor than ordinary shares. The ordinary investor may find the guaranteed minimum return assuring and the possibility of higher returns attractive. The degree of control of the dominant shareholders is not diluted. It might then be possible to encourage companies to issue participating preference shares by allowing a part of preference dividends as a deductible item in assessing company tax. This tax concession does not suffer the disadvantage of regressivity of incidence. Simple preference shares could also be made more attractive by removing the regulatory ceiling on preference dividends.

4. Debentures

Debentures are a little used, meagre source of funds for companies. Since the mid-1960s public issues of debentures have been very small. The number of issues through prospectus by non-financial, non-government, public limited companies is shown in Table 7. It is striking that there have been only 3 such issues in the last 4 years, the 2 issues in 1978-79 having the attraction of a convertible component. In addition to the issues shown in Table 7, there have been 34 issues of rights debentures since October 1978, for an aggregate of Rs. 82.7 crores, including two convertible issues, one of Rs. 25 crores and another of Rs. 11.5 crores. The remaining 32 issues (for Rs. 46.3 crores) were under special conditions laid down by CCI. Each of the non-convertible rights debenture issues has been for under Rs. 2.5 crores, barring one issue which was allowed to accept subscriptions upto Rs. 3.5 crores. Apart from these, there have also been privately placed debentures.

From the point of view of the borrowing company, debentures are a very attractive means of raising long term finance. Raising debenture capital does not dilute control, unlike shares and unlike borrowing from term lending institutions with a mandatory convertibility clause. Unlike ordinary and preference shares, the servicing of debentures is tax deductible, reducing the after-tax cost by half. This is a characteristic that debentures share with

TABLE 7 : ISSUES OF DEBENTURES 1966-79

(Issues by non-government, non-financial public limited companies,
through prospectus only)

				(Rs. crores)		
Year				Number of issues	Amount offered to public	Amount subscribed
1966	..	..	..	14	14.35	5.55
1967	..	..	..	11	17.63	9.57
1968	..	..	..	19	29.25	16.23
1969	..	..	..	9	29.85	19.82
1970	..	..	..	7	12.55	9.51
1971	..	..	..	5	4.28	2.08
1972	..	..	..	5	25.00	21.68
1973	..	..	..	4	2.23	1.53
1974	..	..	..	4	5.00	2.76
1975	..	..	..	3	1.32	1.22
1976	..	..	..	1	1.00	0.28
1977	..	..	..	1	5.50	0.02
1978	..	..	..	1**	2.00	3.67
1979	..	..	..	1**	7.00	20.67

** Convertible bonds/debentures.

Source : RBI Survey of response to public issues.

other forms of borrowing, except that 15 per cent of the interest paid on deposits is not tax deductible. But compared with other borrowings, debentures are the cheapest source of funds. The present ceiling on interest payable on rights debentures is well below the rates currently payable on public deposits or short term bank borrowing.

The issue of debentures has to be cleared by CCI. MRTP regulations require that debt not exceed 50% of the company's net block. CCI requires that the debt/equity ratio at the time of the new issue be generally below 2:1 including the proposed issue. Debt is defined as borrowings repayable not earlier than 5 years from date of borrowing and preference shares redeemable within 12 years.

Rights debentures (for long term working capital requirements) have been governed by detailed CCI guidelines issued in 1978. An interest ceiling is prescribed, of 10.5% for maturities upto 7 years and 11% for longer maturities upto a maximum of 12 years*. Their use is restricted by the following

* The guidelines permit the payment of additional interest of, say, half a per cent in any year if, in that year, the company declares dividends on its equity at a rate exceeding a previously established rate (e.g. the highest of the preceding 3 years).

requirements : (i) They can be used only for working capital finance, not for additions to fixed assets; (ii) the issue cannot exceed 20% of paid up share capital including preference shares and free reserves or the working capital gap i.e. 20% of gross current assets, loans and advances less long term funds available for financing working capital, whichever is lower; (iii) the total value is subject to a maximum of Rs. 2.5 crores (this limit has been relaxed in practice); (iv) the debt/equity ratio cannot exceed one, including the proposed issue.*

Public response to rights debentures is generally said to have been very poor. Each of the three major financial institutions (UTI, LIC and GIC) have been permitted to subscribe to these rights debentures in excess of their rights as shareholders but subject to a maximum of 20 per cent of the issue. There are as yet no data on the precise proportions of the debenture issues which have been taken up by the financial institutions. The market impression is that until recently the financial institutions generally subscribed to the full extent, thereby taking up the bulk of the public issue. The issuing companies then merely had to find subscribers for another 15 per cent of the issue in order to reach the minimum subscription of 75 per cent which is required to proceed with the allotment of the issue. This amount is generally obtained from charitable trusts and other financial institutions. Purchases by the public are negligible, except in a few early issues. Unless full institutional support is assured, an issue of non-convertible rights debentures for working capital under the 1978 guidelines of CCI is doomed to fail.

The current interest rate on debentures is quite attractive to charitable trusts as the other approved securities in which these trusts can invest money at present yield between 6% and 10%. These trusts have been keen to invest their funds in secured rights debentures. However, they are constrained from holding on to their investment in these debentures after 31st March 1981. After this date, in order to get exemption from income-tax under Section 11 of the Income-Tax Act 1961, these trusts must invest their funds in certain approved forms of investments falling within the purview of Section 13(5)(a) of the Act, which permits investment in industrial debentures only if they are fully and unconditionally guaranteed by the Central or a State Government. However, as the secured rights debentures of the companies do not carry such a guarantee, charitable trusts may shy away from investment in these debentures as they would become liable to pay income-tax on their accumulated incomes.

The main cause of the low public demand for debentures is the low rate of return. The ceiling on debenture interest rates is, at least in recent years, too low in relation to other rates of return available to investors. As an illustration,

* These guidelines were extensively modified on 27th October 1980 and made applicable to the issue of secured debentures by public limited companies whose shares are listed on a stock exchange, for the purpose of financing expansion and diversification as well as working capital requirements. The main amendments are: (i) The debt/equity ceiling has been raised to 2:1, with further relaxation possible for capital intensive projects in industries like fertiliser, petrochemicals, cement, paper, shipping etc. (ii) The interest rate ceiling has been raised from 11% to 12% and made applicable to 7 year debentures; the additional interest payable has been increased from half a percent to one percent. (iii) The requirement that the debenture issue cannot exceed the working capital gap has been dropped.

one may compare the ceiling on debenture interest with the interest payable on 5-year fixed deposits with commercial banks, as shown in the following table :

TABLE 8. : INTEREST RATE ON DEBENTURES
(percent per annum)

Year	Debenture ¹ ceiling rate	5-year fixed deposits rate
1963-64	7.0	5.0
1970-71	8.0	7.25
1974-75	10.5	10.0
1979-80	11.0 ²	10.0

1. For debentures with a maturity of 12 years.

2. For rights debentures only. For other debentures, including rights debentures, of 7 year maturity, the ceiling is 10.5 per cent.

Because of the low rate of interest, no market has developed in debentures and, as a consequence, debentures cannot even be considered more liquid than fixed deposits with commercial banks, against which the depositor can borrow by paying a premium of 2% interest. An offsetting advantage of debentures is the provision for repurchase by the company under special conditions*.

The low return on debentures is also striking in relation to the rates of interest available on company deposits. Company deposits are unsecured and should normally be paid a higher interest than secured debentures, with some offset for the difference in maturities. Nevertheless, the premium is rather high even in the case of well established companies.

It should also be noted that the income earned by way of interest on debentures and company deposits is not eligible for exemption from income-tax. Interest income on deposits with commercial banks and dividends paid by new companies and by UTI are eligible for this exemption (upto Rs. 3,000 per year; a further amount of Rs. 2,000 can be earned from UTI without attracting tax). In this respect, debentures and company deposits are on par. In an effort to make debentures more attractive, the rate of deduction of tax at source has been reduced from 24% to 10%. But here company deposits have an advantage in that no tax is deducted at source if the annual interest payable to the depositor by each company is less than Rs. 1,000. Even this limit can be breached if the depositor files an application to the Income-tax authorities. For debentures, the procedure is more complicated, thereby further reducing the effective yield.

* Company can repurchase debentures upto the face value of Rs. 25 lakhs in any accounting year at par value provided the total holdings of the debenture holder do not exceed Rs. 10,000 and the debentures have been held for at least one year.

While the interest rate of 10.5/11.0 per cent on debentures is not attractive to the individual investor, it represents a satisfactory return for the financial institutions. Hence, debentures have become largely a means of transferring funds from the main public financial institutions to the corporate sector. In the long run, however, it would be better to channel these surplus funds from LIC, UTI and GIC to the term lending institutions which have begun to face a severe resource constraint. Raising the interest rate on debentures is, therefore, a key requirement for making the debenture market an effective means of raising long term funds from the public.

It is not clear what the rationale is for the current ceiling on debenture interest rates. Some arguments that suggest themselves are examined below :

- (a) "To keep the cost of capital low for long term investment." But by restricting the amount of long term funds that can be raised, the interest ceiling defeats the general objective of encouraging long term investment. The falling current ratio indicates that some accumulation of long term assets might have been financed by short term borrowing at interest rates that are even higher than what debenture interest rates would probably be in the absence of a ceiling.
- (b) "To prevent companies from evading RBI credit curbs by using other means of finance". This is a weak argument. Long term borrowing, especially through public issues, can easily be taken into account by banks in implementing RBI guidelines. In fact, as stated earlier, one of the objectives of policy should be to develop sources of long term financing as alternatives to commercial banks.
- (c) "To prevent bypassing of scrutiny by the term lending institutions and of their convertibility clause". But one of the problems to be remedied is the excessive reliance of companies on the term lending institutions for a high proportion of total project cost.
- (d) "To protect the market for Government securities". Since Government securities have a captive market anyway, a ceiling on debenture interest rates is irrelevant. Financial institutions are required to channel specified ratios of their funds into approved securities. There is no scope for substitution between government securities and industrial and industrial debentures on grounds of rates of return.
- (e) "To protect the equity market". It is true that if yields on debentures are increased, equities will also have to pay a higher return. But this is good for the investor and for the efficient allocation of investible funds. A stronger debenture market would also assist corporations in paying a higher return to their shareholders because additional leverage would enhance after tax profitability on equity. To the extent debentures are a substitute for more expensive short term borrowing from banks, corporation's interest burden would also decline.

There appears to be little justification for the imposition of a ceiling on debenture interest rates, especially such a low ceiling. There is no harm in allowing debenture yields to rise to the level of interest rates on working capital advances by commercial banks so that the companies have the option of financing working capital by long term funds without increasing their average cost of capital. When short term interest rates are exceptionally high, companies will wish to keep debenture interest rates well below the shortterm rates. Conversely, in periods when short term rates are exceptionally low, companies might be willing to pay even higher rates for long term finance and should not be prevented from doing so.

If companies have good growth prospects and are willing to dilute control, they can offer the investing public a higher rate of return under the existing regulations by issuing debentures that are convertible, although convertible debentures are subject to the same interest ceilings as rights debentures. The buyer of a convertible debenture is offered the option of converting into ordinary shares a specified proportion of his debenture holdings, at a specified period in the future, at a specified price. Unlike rights debentures for working capital, convertible debentures can be issued to finance capital expenditures thereby providing an effective means of raising long term finance, specially for companies embarking on major expansion. The major element in the success of convertible debentures has been the stipulation of a low conversion price relative to the prevailing market price for the share. The attractiveness of convertible debentures therefore is based on the fairly definite prospect of a capital gain on the convertible component at the time of conversion. It is possible that the capital gain will be taxed (the legal position is apparently unclear as yet) thus reducing the yield to the investor below his initial expectations. After the conversion, the attractiveness of the non-convertible portion of the debentures will be no greater than that of simple debentures. The investor will then be required to hold the balance up to maturity or sell at a substantial discount. Thus, it is possible that some disillusionment might set in after some time and convertible debentures might not turn out to be as successful a financing instrument as they now appear to be. This danger is illustrated by the poor public response to a recent issue of a rights debentures with a convertible component because the conversion terms offered were not sufficiently attractive. It is possible to prevent this flagging of public interest if the whole amount of the issue is convertible and if successive tranches of the debentures are offered for conversion over a number of years (as in the case of another recent issue). This solution is only feasible if the company is willing to accept a substantial dilution of its equity, and a possible erosion of control.

Security of fixed assets is now required for all debenture issues other than convertible debentures. A constraint that may restrict the issue of secured debentures by some companies is the paucity of unencumbered assets, specially in view of the financial institutions' insistence on a 50% margin. While financial institutions may be justified in insisting on security, secured debentures have little advantage over unsecured debentures for the individual investor, who cannot realistically contemplate legal action against a defaulting company. For the individual the reputation of the company is probably a more secure safeguard than a mortgage.

The heavy involvement of the financial institutions in rights debentures bodes ill for the development of a secondary market. Individual investors who may want to sell face a very thin market and, consequently, heavy discounting may be necessary. The situation might be better if UTI set out to activate the secondary market by announcing buy/sell prices for debentures so that small investors may be assured liquidity.

5. Public Deposits

These are unsecured and involve a non-negligible risk of default even by large companies. Acceptance of deposits by non-financial companies is regulated by the Department of Company Affairs. Certain categories of deposits are completely excluded from the purview of regulations (The exempted categories include deposits from shareholders of private limited companies, directors of public limited companies, Governments and specified financing institutions etc.). Inter-company deposits are currently exempted but the exemption ceases from April 1981 with some exceptions discussed below.

Excluding the exempted categories, the regulations prescribe ceilings for the quantum of deposits that can be accepted by companies in relation to their paid up share capital and free reserves (net worth). The ceilings currently applicable for public limited companies are :-

- (i) Deposits from shareholders, guaranteed by directors or against unsecured debentures cannot exceed 10 per cent of net worth ;
- (ii) all other deposits cannot exceed 25 per cent of net worth.

With effect from April 1981, the distinction between these two categories of deposits is to be removed. All deposits would then be subject to an overall ceiling of 25 per cent of net worth. The rules specify minimum and maximum maturities for deposits. The maximum maturity is 3 years. The minimum maturity is 6 months except that a lower period of 3 months is permitted for deposits from shareholders, guaranteed by directors or against unsecured debentures. The quantum of deposits in this latter category cannot exceed 10 per cent of net worth. As the distinction between the two categories of deposits is to be abolished with effect from April 1, 1981, deposits from any source amounting to 10 per cent of net worth can then have a maturity of as low as 3 months, the balance having a minimum maturity of 6 months. The rules require that companies maintain liquid assets amounting to at least 10 per cent of deposits maturing in the year. Companies wishing to raise deposits have to do so by public advertisements providing information on a number of points specified by the rules.

In a significant departure from previous practice, 10 selected public sector enterprises have recently been allowed to raise deposits upto 25 per cent of their net worth. It is envisaged that these enterprises would raise about Rs. 100 crores in this form during 1980-81.

The rules do not place any restrictions on the interest rates payable on deposits. In practice, the range of interest rates currently prevailing are broadly as follows :

Maturity period	Interest range (%)	
	Private Sector	Public Sector
1 year	10-13	11
2 years	11-14	12
3 years	14-16	13½

Generally, interest rates offered by companies on public deposits are higher than on long term bank deposits but lower than bank advances, thereby offering benefits to both the depositor and the borrower. The effective cost of deposits to the company is around 3 per cent more than the nominal rate of interest on two counts. Unlike other borrowings, interest on public deposits is deductible for tax purposes only to the extent of 85 per cent; and the company bears the expense of administering and servicing a large number of depositors or brokerage fees if these services are rendered by an agent of the company. Even without taking account of the additional cost the nominal interest rate on deposits is much higher than the ceiling on debentures, indicating the willingness of even blue-chip corporate borrowers to pay more for medium term funds than is permitted by CCI on long term funds. For the less well established companies, the effective cost of raising deposits (inclusive of interest, advertisement and brokerage) may turn out to be more than the cost of bank borrowing, which may account for the fact that deposits are not more widely solicited.

The number of companies accepting deposits and the amounts held in deposits have probably grown rapidly. The number of non-financial companies submitting returns rose from 2,959 in 1975 to 3,333 in 1978; their deposits from Rs. 393 crores to Rs. 633 crores; and their exempted borrowings from Rs. 361 crores to Rs. 925 crores.* Part of this growth represents the effect of wider reporting by companies accepting deposits. This drawback can be eliminated by comparing deposits held by a common set of companies. There were 254 non-financial companies having deposits of over Rs. 25 lakhs each which reported both in 1975 and 1976. Their deposits increased from Rs. 201 crores to Rs. 235 crores and their exempted borrowings from Rs. 160 crores to Rs. 180 crores.

The objectives of regulating the acceptance of deposits by non-financial companies are two-fold :

- (i) The interests of the depositors must be protected.
- (ii) Companies must be discouraged from seeking deposits as a means of circumventing the credit discipline imposed by the banking system.

* Provisional data for March 1979 based on returns received from 3102 companies showed that deposits amounted to Rs. 689 crores and exempted borrowings to Rs. 803 crores.

In discussing these objectives, it was accepted by the Study Group on Non-Banking Companies (The Raj Committee) that while "it would be no doubt be ideal to have a system under which banks and other financial institutions fully satisfy the saver and borrower's preference and operate in consonance with social objectives . . . the current situation calls for a regulation but not prohibition of the acceptance of deposits by non-banking companies".* Thus the reduction in the deposit ceilings applicable to non-financial companies ought to be related to the development of alternative sources of finance and, in particular, to the ability of banks and other financial institutions to meet the legitimate credit needs of medium and large industry.

Protecting the interests of depositors is clearly an important objective of regulating the acceptance of deposits by non-financial companies. But it is not clear how exactly this objective is to be realised. Obviously, it is not possible for company deposits to be covered by a guarantee on the same basis as bank deposits. There has been little empirical study of the relationship between defaults in the payment of deposits and the percentage of deposits to net worth in non-financial companies. Thus, no well substantiated answer to the question is possible. A priori, default would be related to the company's capacity and willingness to repay. The capacity to repay will depend on the trend of profit in relation to the company's debt servicing obligations. An indicator of this capacity is the ratio of *all* borrowings to net worth, not only that of deposits to net worth. Even if a company has the capacity to repay its depositors, it may still default because the costs of default are so low. The depositor has no means of recovering his money except through legal proceedings which are costly and time consuming. At the same time, the defaulting company suffers no disability, not even adverse publicity, and can continue its operations, even accepting more deposits. Thus, effective action to protect depositors requires not a reduction in the ratio of deposits to net worth but administrative measures to simplify recovery procedures and to impose a stronger penalty on defaulting companies. This would require greater ingenuity in framing regulations, a more thorough scrutiny of annual returns filed with the Department of Company Affairs and willingness on the part of the regulatory agencies to take a more active part in the disputes between depositors and companies. In addition to prohibiting the acceptance of further deposits, it may be necessary to provide for penal damages to be paid to the depositors and for other administrative measures that would disrupt a company's operations if it is found to be in default of its obligations to the depositors.

From the view point of both credit discipline and depositors' protection it would appear that a rapid decline in the deposits ceiling may not be advisable. A better strategy would be to encourage the growth of alternative debt instruments (such as debentures) that would prove more attractive both to companies and to depositors. This would automatically lead to a gradual shrinkage of the volume of public deposits with non-financial companies, without causing transitional disruptions which would result if the deposit ceilings are arbitrarily reduced.

* Report of the Study Group on Non-Banking Companies, RBI, Bombay 1975 (para. 2.17).

With effect from 1st April 1981 the exemption for inter-company deposits will apply only to those deposits accepted by companies which have not yet gone into commercial production and have not yet accepted any deposits from the public. Other inter-company deposits will be subject to overall ceilings. This proposed change in rules follows the recommendations of the Raj Committee. The Committee recommended that the general exemption for inter-company deposits be withdrawn "since a company, whose financial position permits acceptance of deposits, might accept deposits and then divert them to another company which may be in need of funds and whose financial position does not permit acceptance of deposits either due to the ceiling limits already having been reached or due to losses having been incurred in its working, thus putting the interests of the depositors of the former company in jeopardy", (paragraph 4.28).

This rule was originally scheduled to come into effect in 1978 but, following representations from industry, it was decided to postpone its effectiveness to April 1, 1981. In the meantime, the Department of Non-Banking Companies, RBI undertook a study of inter-company deposits reported by a sample of 418 companies as of 31st March 1978. According to the tentative finding of the study the major part of inter-company deposits had the following characteristics :

- (i) They were mostly short term: 54% of the deposits had a maturity of less than one year;
- (ii) they were at commercial interest rates: 75% of the deposits carried interest at more than 12% p.a.;
- (iii) the amounts were not small: in aggregate, they were 5.7% of the net worth of the recipient companies in the sample.

It should be noted that inter-company deposits do not constitute mobilisation of deposits from the public and are not, therefore, deserving of any special concession. Indeed, there are good grounds for restricting inter-company deposits because they make it easier for companies to circumvent regulations governing the extension of bank credit. The special study by RBI referred to above shows that inter-company deposits are a means by which significant amounts of *short term* funds are transferred from companies holding excess liquidity to companies that need liquidity. Although it is clearly desirable that companies rely less on banks and more on other sources of finances, it is essential for credit discipline that the non-bank sources supply medium and long term funds and not short term funds which are directly substitutive of bank finance. On the one hand, various attempts are made by RBI and the banks to regulate the growth of short term credit and to ensure that the limited credit available is channelled to meet genuine needs. However, the very companies that may have been denied credit by banks can raise short term funds from other companies who have surplus funds. The latter companies may even find it advantageous to place their surplus funds as deposits in other companies rather than repay their borrowings from the banks. For this reason, there is a case for bringing short term

inter-company deposits within the rubric of regulations governing the acceptance of deposits by non-financing companies.

The amended rule incorporates the exemption in the case of new companies as recommended by the Raj Committee. This is justified in view of the difficulties that promoters of new companies have in raising funds from sources other than term lending institutions. The exemption will enable the promoter to draw on deposits without limit from other companies. A further implication of the rule as amended with effect from 1st April, 1981 is that the amount of deposits that shareholders of a public limited company can contribute would be limited only by the overall limit applied to all deposits (Deposits from directors are exempted in any case). This means that shareholders will have an opportunity to make a larger contribution of finance to the new company even if they wish to restrict their risk in the form of subscription to shares.

The inclusion of inter-company deposits would considerably increase the severity of the restrictions of the maximum amount of deposits permissible in relation to company's net worth. On average, inter-company deposits amounted to 5.7 per cent of net worth of the 418 companies in R.B.I.'s special study. Obviously, some companies would have a much higher ratio. For public limited companies in the special study, the ratios of inter-company deposits to net worth averaged as much as 14 per cent in cotton textiles, 11 per cent in sugar, 9 per cent in paper and 9 per cent in the plantation industry. If the exemption for inter-company deposits is removed, the overall deposit ceilings would have to be maintained at some-what liberal levels.

The maximum maturity of public deposits has been set at 3 years with a view to prevent this source being used to finance acquisition of fixed assets. In practice, it is said that only 15 to 20 per cent of depositors encash their deposits on maturity. Provided the aggregate volume of deposits is expected to be stable, the company may well use them to finance fixed investment. Despite this caveat, it is prudent to maintain such a ceiling on maturities in order to ensure that the depositor has at least the option of withdrawing his deposit if the financial position of a company has begun to deteriorate.

There is a danger in allowing non-financial companies to accept short term deposits both from the point of view of protecting the depositors and from the point of view of credit discipline. Servicing short term deposits requires the maintenance of high liquidity in the asset portfolio which is quite abnormal for non-financial companies. The lack of adequate liquidity can lead to default even if a company's financial position is otherwise strong. The acceptance of short term deposits generally implies that the company wishes to supplement the credit obtained from the banking system i.e. to circumvent credit discipline. This situation must be sharply distinguished from the one where the non-financial companies use long term funds from outside the banking system to finance working capital. In the latter case, the banks can clearly take account of these alternative sources in estimating the need for bank finance. However, if the alternative sources provide short term funds it will be possible for the company to use this and repay them without the commercial

bank being aware. The scope for evading the credit guidelines is particularly great because commercial banks are generally unable to maintain sufficiently close contacts with their borrowers and review their credit limits with the necessary frequency. Under the present regulations deposits of less than 6 months maturity can only be those provided by shareholders, guaranteed by directors and against unsecured debentures. Since these amounts are likely to be relatively small, the dangers cited above are not of much significance. However, with the change in regulations coming into effect from April 1981, these problems will assume larger magnitude.

One must recognise that the present procedures for the approval of bank credit may be too cumbersome to effectively help companies that run into unforeseen problems requiring short-term financial accommodation. Therefore, before moving strongly to restrict the acceptance of short term deposits by non-financial companies, it will be necessary to streamline procedures in the banking system.

There are at present no regulations affecting the rate of interest payable by companies on public deposits. The merit of this system is that it ensures that the rate of interest offered by each company reflects both the urgency of its demand for funds and the evaluation of the depositors of the attractiveness of this form of investment in relation to other alternatives. There is now a healthy situation wherein the well established companies can raise deposits at interest rates slightly above the rates on fixed deposits with banks, while companies which are perceived as more risky have to pay higher rates of interest. The general level of interest rates on deposits is also a good indicator of how much companies are willing to pay for medium term funds. The imposition of ceilings on deposits interest rates would remove these benefits, reduce the return to depositors and restrict access by companies that are willing to pay more for deposits than the administered ceiling. It is not clear who would benefit by the imposition of an interest ceiling. In any case it would be administratively difficult to enforce ceilings on interest rates on deposits as they could easily be circumvented by collusion between the depositor and the company.

6. Non-bank, All-India Financial Institutions

This category covers the term lending institutions (IDBI, IFCI, ICICI, IRCI, SFCs and SIDCs) as well as UTI and LIC which are major buyers of industrial securities. Loans from the term-lending institutions can be used only by companies which are newly established or undertaking significant fixed investment for expansion, modernisation or replacement and is not available for companies seeking to shift the maturity pattern of working capital finance. Term lending institutions are the only source of foreign exchange loans for the private sector except for direct borrowing abroad if permitted by RBI.

The supply of loans from term lending institutions has increased greatly over the years. (see table 9).

TABLE 9 : ASSISTANCE BY FINANCING INSTITUTIONS

(Loans disbursed to industry, underwriting and direct subscription to industrial securities in Rs. crores)

Year (April-March)	IDBI ¹	IFCI	ICICI	IRCI	SFC	SIDC	UTI	LIC	Total
1964-65—1968-69.. (average)	35	24	19	—	17	2	7	15	118
1969-70—1973-74.. (average) ²	91	26	36	6	47	18	7	22	249
1974-75 ..	167	37	45	8	80	27	8	54	425
1975-76 ..	175	35	61	5	100	27	5	28	436
1976-77 ..	279	55	67	11	105	35	6	39	597
1977-78 ..	335	58	92	9	107	44	7	43	695
1978-79 ..	489	74	111	12	135	58 ³	20	32	931
1979-80* ..	559	109	137	12	187	42	66	68	1180

Source : IDBI, "Operational Statistics" 1964-65 to 1975-76, 1976-77, 1977-78, RBI, Statistics Department for 1978-79.

* Provisional.

1. Excludes refinance to SFC, SIDC, SIIC to avoid double counting.

2. IRCI started disbursing funds in 1971-72.

3. Relate to 13 SIDCS.

All the institutions have expanded significantly, with IDBI emerging as the biggest by far. For assisted projects, the share of total project cost financed by the term lending institutions can rise to as high as 85%. The rate of interest (normally 11%, with concessions for backward areas, modernisation, machinery bills and export) is lower than on bank loans and close to that on debentures. To qualify for assistance, investments have to pass a social benefit/cost appraisal by the lending institutions.

Assistance from term lending institutions can be in the form of loans or equity participation or both. All assistance is subject to a lengthy appraisal, requires extensive documentation and is governed by Government guidelines listing the sectors that should receive priority. In addition, borrowers must comply with various requirements. Among them are guidelines on debt/equity ratios in relation to project cost and a requirement that the promoter contribute a minimum of 20% of the project cost. Stock Exchange Regulations require that not more than 40% of the equity of a company going for public issue of capital be subscribed initially by any one party. To comply with both these provisions without a very large equity base, the promoter may be permitted to make his contribution in the form of underwriting the equity issue or as a subordinated loan not repayable without the approval of the institutions as long as their loans are outstanding. The debt/equity ceiling of around two is interpreted rather flexibly, with higher ratios allowed for sickness, backward areas, small scale units, capital intensity and inability to

raise equity through new issues. Equity is defined to include Government subsidies and unsecured developmental loans such as sales tax loans.

The most important impediment facing the private sector in borrowing from term lending institutions is the mandatory convertibility clause. Since 1971 the financial institutions (IDBI, IFCI, ICICI, LIC and UTI) have required under the guidelines issued by Government to introduce a convertibility option on to all loans made to companies which have drawn more than Rs. 50 lakhs of financial assistance from them. This limit has recently been raised to Rs. 1 crore. In a recent modification of the guidelines, financial institutions were directed not to acquire more than 40% of the share capital through conversion, except in special circumstances such as persistent default or mismanagement, where they can go up to 51 per cent with the approval of the Government. In 1977, the Soft Loan Scheme was exempted from the convertibility clause. In 1980, this exemption has been extended to assistance for modernization, additional balancing equipment within the existing capacity, rehabilitation of sick units and for financing small overruns in respect of projects already financed by institutions.

The terms of the loan conversion are specified at the time of loan sanction. For the most part, the convertibility clause is specified only on loans to public limited companies in the private sector and private limited companies associated with large houses. For existing companies the price at which the conversion takes place is decided on the basis of a fair "value" arrived at after taking into account the break up value, market quotations and earnings rate of the existing shares. Loans to new units are invariably converted at par.

As suggested by the Industrial Licensing Policy Inquiry Committee, the objectives of introducing a convertibility clause were two fold : To share in the prosperity of assisted companies and to facilitate stronger participation in the management of assisted companies where required to meet social objectives. Upto the end of 1979, 158 cases came up before the term lending institutions for decision on whether or not the convertibility option should be exercised. As shown in the following table (Table 10) the option was exercised in 63 cases. An analysis of the reasons underlying the decision in specific cases has shown that the convertibility decision is overwhelmingly influenced by financial considerations.

TABLE 10 ; CONVERTIBILITY CLAUSE

	Exercised	Waived	Total
Number of cases upto December 1979 ..	63	95	158
Amount of term loan (Rs. Cr.)	83	107	190
Amount subject to conversion (Rs. Cr.)	16	21	37
% ..	19	19	19

The convertibility clause has evoked strong resentment from private companies as being a form of backdoor nationalisation. The depth of this sentiment may be judged from the fact that disbursements under the soft loan scheme of the term lending institutions picked up only when this scheme was exempted from the purview of the mandatory convertibility clause. It is difficult to say whether private companies have actually abandoned viable projects rather than approach term lending institutions for finance with a convertibility clause. There is anecdotal evidence that companies have preferred to finance fixed investments from their own resources while turning to commercial banks to finance a larger proportion of their working capital requirements. This is possibly one of the reasons why the current ratio of public limited companies has declined. The convertibility clause attracts the ire of the private sector not only because it threatens the control exercised by dominant shareholders but also because it dilutes the return earned by all existing shareholders. The latter is the result of the low price at which conversion takes place. It may be noted that in almost all cases, conversion is specified at par.

It is evident from the way in which the convertibility clause has been operated that it has not formed the basis for an increase in the financial institutions' control over the private sector. Indeed, the financial institutions have such a dominant role in the supply of both equity and loan finance, that it is doubtful whether the convertibility clause as such really adds to their ability to exert influence on individual company managements. Therefore, the irritant quality of the mandatory convertibility clause may be diminished if the scheme is operated on a more commercial basis. For instance, the financial institutions may offer to waive the convertibility clause provided the borrower is willing to pay a substantially higher rate of interest on his loan from the term lending institutions.

The non-availability of unencumbered assets does not pose a problem for those seeking loans from term lending institutions. To float a debenture or accept a secured loan from financial institutions, the company must have available ready assets that can serve as security. Loans from term lending institutions, however, are disbursed concurrently with the acquisition of fixed assets against which they are secured.

Procedures of other financing institutions are more flexible than those of the term lending institutions and they can be tapped by companies for short and medium term finance in the form of deposits and debentures. Deposits made by these institutions are exempted from the ceiling on deposits acceptable by non-financial companies.

With the exception of IRCI, all the financing institutions are engaged in the underwriting of new issues of industrial securities. Their support plays a vital role in the marketing of public issues of capital, both by new and existing companies. Together, the financial institutions hold a significant proportion of the paid-up capital of a number of companies.

7. Term Loans from Banks

Term loans have formed a growing proportion of assistance by commercial banks. In the case of industrial lending this may be partly because of current disbursements of project assistance sanctioned some years earlier. In the last couple of years, industrial term lending by banks has been discouraged and it is likely that a major part of term assistance to industrial units will be in form of discounting of machinery bills which can be rediscounted with IDBI.

Outstanding term loans amounted to Rs. 2,765 crores in December 1978 (based on provisional data from the Basic Statistical Returns, which pertain to accounts with a credit limit over Rs. 10,000). Of these loans, less than Rs. 600 crores went to industrial units with credit limits over Rs. 1 crore. Term loans to individuals were higher, at around Rs. 850 crores. This includes loans to bank employees. All industry, including small units, received Rs. 1,078 crores in December 1978. During the period December 1977 to March 1979, the outstanding amount of term loans which went through the RBI's Credit Authorisation Scheme rose from Rs. 490 crores to Rs. 739 crores.

Compared with loans from term lending institutions, term loans from banks involve less delay but a higher interest rate (14%, with a concessional rate of 12.5% for capital investment in priority areas). However, the interest rate is still much lower than the interest rate on short term finance from banks. RBI specifies the interest rates banks should charge on term loans and sets minimum and maximum interest rates for short term credit. Term loans from banks are smaller and tend to have shorter maturities than those from term lending institutions. The appraisal process is easier, with fewer guidelines on sector of operation or debt/equity ratios. Unlike loans from term lending institutions, loans from banks do not have a convertibility clause. Where term loans from banks are in conjunction with loans from term lending institutions, (still very small in aggregate) they involve the bank in long term commitments for the future which the banks might be inclined to avoid. For industrial companies, this source may be used for long term working capital finance, for small investments in fixed assets and as bridging finance while completing documentation for loans from term lending institutions.

Term loans are subjected to somewhat closer scrutiny under RBI's Credit Authorisation Scheme (CAS). Under CAS, RBI must specifically authorise all credit limits in excess of Rs. 2 crores for units in the private sector and Rs. 3 crores for units in the public sector. In addition, RBI authorisation is needed for all bank term loans exceeding Rs. 25 lakhs having a maturity of over 3 years. If the aggregate term loan component of a project exceeds Rs. 1 crore, IDBI must clear the financing pattern before banks can advance a term loan. RBI has advised banks to concentrate their term loans on projects of less than Rs. 1.5 crores.

8. Net Trade Credit

This can be either a source or a use of funds for an individual firm. In aggregate, it is a source of funds for the medium and large companies. As

Government is also a net user of trade credit, it follows that the medium and large companies are net borrowers from the other non-Government companies i.e. small enterprises. There is no explicit interest cost but there may be some hidden cost of trade credit (e.g. higher price, less timely availability etc.).

Data on the net utilisation of trade credit by various categories of companies are shown in Table 11 for 1974-75. This shows that all the groups are net users of trade credit, with the government companies and medium and large companies using it to a greater extent. Some analysis further shows that the ratios in the 1970's are generally higher than the ratios in the 1960's for each group of companies.*

TABLE 11 ; NET TRADE CREDIT RATIOS IN 1974-75

					Ratio of sundry creditors to sundry debtors ¹	
					1974-75	1975-76
Public Limited Companies						
Large	..	..	..	..	1.36	1.22
Medium and large	..	..	..	..	1.37	1.26
Small	..	..	..	..	1.18	1.22
Private Limited Companies						
Medium and Large	..	..	..	..	1.20	1.14
Small	..	..	..	..	1.13	1.20
Government companies	..	..	..	..	1.50	1.51

1. This definition differs from the definition used in Table 2 where loans and advances are included in credit and other current liabilities are included in debt. Both definitions appear to be satisfactory.

Source ; Based on RBI Company Finance Data.

The extent to which trade credit is available to a firm depends essentially on the relative bargaining powers of the supplier and purchaser. Large enterprises may evade restraints on credit from institutional sources by squeezing more credit out of their small suppliers, who tend not to suffer as much from credit curbs and sometimes pay lower interest than larger enterprises for institutional credit.

9. Indigenous Bankers

Borrowings from shroffs and other similar market sources is the most expensive source of funds. Only short term funds are available. For the

* Shetty, S. L.: Incidence of Interest Cost on Manufacturing Industries in India (unpublished).

best customers, interest rates are around 6% above the rate for commercial bank advances. But funds are available at very short notice, in amounts upto a couple of crores of rupees and with little documentation, ideally suited for use in unforeseen contingencies.

IV. Conclusions :

The system of industrial finance that has evolved over the past two decades has begun to run into some constraints. With the present institutional and regulatory framework it is likely that medium and large sized industrial corporations will face difficulty in obtaining increased funds from traditional sources for meeting fixed and working capital requirements. Over the years, industrial units have relied heavily for finance on the public financial institutions and banks, and have raised relatively little capital from the market. The resource base of term lending institutions has not been increasing in line with the rapid escalation in project cost and the pace of expansion of the term lending institutions' operations is bound to slow down. With the reordering of priorities over the last decade, an increasing proportion of resources of the commercial banks are channelled to other uses such as for meeting increased reserve requirements and credit to priority sectors. Increased provision of institutional credit to agriculture and other sectors which have earlier been neglected by commercial banks is both necessary and desirable. Hence, the proper response to the emerging scarcity of funds for traditional industrial lending is not so much to slow down the pace of sectoral re-orientation of lending by financial institutions but to develop alternative sources of financing industrial units, especially those which are already well established.

Industrial units have responded to the scarcity of institutional funds by more actively seeking deposits from the public. Public deposits with non-financial companies have grown rapidly in recent years but continued expansion will be constrained by the regulatory ceilings on the volume of such deposits that a company can accept. One should also note that these deposits are unsecured. Companies accepting such deposits, unlike banks, are not covered by deposit guarantee schemes. The stability of public deposits depends very much on public confidence. Chance events that shake this confidence could conceivably trigger sudden withdrawals of such deposits by the public leading to liquidity problems in the industrial system. Thus, it is desirable that more stable forms of medium and long term finance are used by industrial units.

The bulk of industrial financing requirements has been met by internal generation of funds. This situation will undoubtedly continue. But rapid industrial expansion cannot take place solely on the basis of internal financing. The scope for stepping up internal generation of funds to finance expansion is limited by the relatively high rates of corporation tax and official regulation of price policies.

Industrial expansion, therefore, must rely on raising more capital from the market. This point has been well recognised and the emphasis has usually

been placed on the raising of risk capital through the Stock Exchanges. The experience, however, has been disappointing and the amount of equity raised from the public by non-financial companies each year has remained small. The equity market has become increasingly reliant on support from public financial institutions. Barring a few scrips, trading on the Stock Exchange remains thin and the returns on equity (taking account of both dividends and capital gains) are highly uncertain and subject to very wide fluctuation. Most important, unless the ordinary investor gains greater confidence in equity investment, and the administrative procedures are simplified to facilitate participation by investors outside metropolitan centres, the market will continue to remain very narrow and the amount of equity resources raised will remain too small in relation to need.

While expanding the equity market is of vital importance, the immediate potential is more favourable for long term debt instruments which can form the basis for the development of the capital market. Contrary to popular impression, the debt equity ratios in the corporate sector are generally quite low i.e. even the existing amount of equity can be geared to support much more long term borrowing than is currently the practice. This is partly because of the severity of official regulations governing marketable debt instruments. The most restrictive of these regulations is the ceiling on interest rates payable on debentures. In the present structure of interest rates, industrial debentures have little attraction outside the public financial institutions. The ceiling on interest rates does not affect what the investor may earn on convertible debentures. But very few companies have as yet issued convertible debentures, probably because they are suitable only for companies which have good growth prospects and are willing to dilute their equity.

The close inter-relationship between the various categories of industrial finance requires that regulations are designed on the basis of an integrated view of all its aspects i.e. the finance of fixed and working capital, the supply of long term and short term funds, and the raising of capital through internal, institutional and market sources. On the basis of an analysis of the existing regulatory framework, it would appear that a more flexible approach is necessary towards established companies attempting to raise additional long term debt from the capital market. In particular, companies could be allowed to pay higher interest on marketable long term debt instruments in order to attract more capital from the public. The use of debentures for the finance of both fixed investment and working capital can be encouraged. While attempts are being made to develop the debenture market, it is necessary that regulations governing acceptance of public deposits are not unduly restrictive. As alternative debt instruments become available, the attraction of public deposits is bound to diminish. By these means, industrial units can be made less reliant on public financial institutions for their financing and encouraged to meet their financing requirements from a wide range of investors through marketable securities that can assist in the development of the capital market.

EMPLOYMENT AND PRODUCTION IN SMALL SCALE INDUSTRIES—SOME FINDINGS OF THE RESERVE BANK SURVEY

Ravi Varma*

In the context of growing involvement of commercial banks in financing the small scale industrial units, the Reserve Bank of India, in collaboration with commercial banks, organised in 1977-78 a country-wide sample survey of the small scale industrial units assisted by banks. This survey was the first attempt to collect data on various aspects of small scale units assisted by commercial banks on a uniform basis. The survey was designed to yield reliable estimates of important economic characteristics relating to institutional credit, investment in fixed assets, value of gross output, employment and other related aggregates for major industry groups at the all-India level, as well as for important states and population groups.

The questionnaires designed to elicit information on the various aspects of small scale industrial units were canvassed through the banks. The banks themselves were required to give their assessment of the performance of the selected units in a separate questionnaire.

The total of small scale industrial units assisted by commercial banks and coming under the purview of the Credit Guarantee Scheme provided the universe for the selection of the sample. For the purpose of the Reserve Bank survey, the official definition (then obtaining) of small scale industry was adopted, viz., an industrial unit with initial investment not exceeding Rs. 10 lakhs in plant and machinery, or an ancillary unit with an investment not exceeding Rs. 15 lakhs in plant and machinery.

A two-stage stratified random sampling procedure was adopted for the selection of small scale industrial units, the first stage being the financing bank offices and the second stage being the small scale industrial units coming under the purview of the Credit Guarantee Scheme. For the purpose of selection, the commercial bank branches having credit outstanding against small scale industrial units, as available from the Basic Statistical Returns of June 1975 were grouped according to three bank groups (State Bank and subsidiaries, nationalized banks and others), four population groups (rural, semi-urban, urban and metropolitan) and two district types (backward districts and others). The ultimate small scale units were selected in the second stage from the list of small scale units financed by the selected branches and also covered by the Credit Guarantee Scheme. The reference period for the survey was the accounting year ending during the period April 1976 to March 1977. The total number of assisted small scale industrial units thus selected were 16,636 out of which 12,356 were found to be functioning units. The balance consisted of non-existent, closed and wrongly classified units.

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Since the survey was confined to small scale industrial units assisted by the commercial banks, the coverage was naturally restricted to one segment of the population and the units not using bank finance have not been covered by the survey. This limitation has to be borne in mind in interpreting the survey estimates.

Limitation of the survey

In this study, some of the data provided by the survey have been analysed to highlight inter-industry differences in employment, investment and production. Since the effective sample size of the units (12,356) for which data were collected is sufficiently large, the aggregates built up on the basis of the survey data are useful for analysing the broad features of the small scale industrial sector as a whole.

Purpose of the study

It may be pointed out at the very outset that there is no reliable estimate available as to the total number of small scale industrial units functioning in the country. In order to assess the size of the small scale industrial sector, a census was conducted in 1972 by the Development Commissioner for Small Scale Industries.* This was confined to units registered with the State Directorates of Industry. Even though registration was not compulsory, the number of units registered with the State Directorates of Industry was 2.58 lakhs in 1972, of which only 62 per cent were functioning units. In other words, nearly 38 per cent of the units registered with the State Directorates of Industry in 1972 were non-traceable and/or closed units.

Size of the Small Scale Sector

It was only in 1975 that a uniform procedure for registration of units was adopted by the State Directorates of Industry. After the adoption of the procedure, there were over 2.69 lakhs small units as on June 1977. Since this number is inclusive of non-traceable and closed units, the units actually functioning would be considerably smaller than 2.69 lakhs.

The Working Group on Small Scale Industries for the Five Year Plan 1978-83 estimated the total number of small scale units in the country, registered as well as unregistered and inclusive of non-traceable and closed units at 4 lakhs to 5 lakhs in 1977.

According to the Reserve Bank survey, at the end of March 1977 there were 2.33 lakhs functioning small scale units assisted by the commercial banks (termed here as the assisted sector). The number of non-traceable and closed units (in which category non-responsive units were also included) constituted 34.5 per cent of the assisted sector. This would suggest that there were over 3.14 lakhs assisted units in March 1977.†

Assisted sector

* The official definition of small scale industrial units has changed twice since 1972. At the time of the 1972 Census, all units having an investment upto Rs. 7.5 lakhs (original cost) in plant and machinery or Rs. 10 lakhs in the case of ancillary units were treated as small scale units. Subsequently, the ceiling was raised to Rs. 10 lakhs and Rs. 15 lakhs. In July 1980, this was again raised to Rs. 20 lakhs and Rs. 25 lakhs, respectively.

† According to the Economic Survey of 1978-79, the total number of small units assisted by the Public Sector banks was 2.88 lakhs in June 1976 and 4.30 lakhs in June 1977, showing an increase of 1.42 lakhs in one year. The variation between the Reserve Bank survey estimate and the aggregate published in the Economic Survey of 1978-79 could be attributed to the differences in coverage and reference dates (March 1977 and June 1977).

The total value of gross output of the entire assisted small scale sector in the reference period of the survey (1976-77), is estimated at Rs. 10,155 crores, for which an amount of Rs. 7,067 crores was spent on raw materials alone. Overall investment (original cost) in fixed assets amounted to Rs. 2,094 crores, of which Rs. 1,138 crores was in plant and machinery. It is also estimated that the aggregate credit outstanding against the entire assisted sector was Rs. 2,106 crores of which the share of institutional credit was 70 per cent (Rs. 1,498 crores). The total number of paid employees engaged in the production activities within the sector was 29.8 lakhs, while over 68,000 units (29.3 per cent) had not engaged any outside labour.

Over 83 per cent of the assisted small units were not covered by the Factories Act, which applies to all factory units employing 20 or more workers with or without power and if using power, employing 10 to 20 workers. In other words, only 17 per cent of the small scale units assisted by banks belonged to the organized factory sector. According to type of organization, 68.2 per cent of the assisted units were proprietary concerns, and 27.7 per cent were partnerships while private limited companies and others together accounted for the balance of 4.1 per cent. Nearly 30 per cent of the units were artisan or family enterprises in the sense that they did not employ any paid labour. Out of the total number of units, 45.3 per cent were not found to be using any type of power—diesel, electric or steam—for production purposes. This is indicative of the fact that a significant proportion of the assisted units were very small in size. About 46.7 per cent of total units were located in the officially declared “Backward areas”. According to the classification of units by population size of the locality, 25 per cent of the units were located in rural centres (with population less than 10,000) 35 per cent in semi-urban centres (population between 10,000 and one lakh) while 14 per cent were in metropolitan centres (with more than 10 lakhs population). About 86 per cent of all units were engaged in manufacturing activities and 10 per cent were engaged in job work and the remaining 4 per cent in miscellaneous activities. According to the overall rating of the financing banks, the performance of only 1.3 per cent of the units was classified as “Excellent” as against which more than 30 per cent of the units were grouped under “Poor”.

Because of significant differences in the size, production and management practices, product mix, technological competence etc. within the small scale industrial sector, sectoral averages of different characteristics have certain inherent deficiencies. However, the main features of a small scale unit based on the survey data are presented in Table 1 below in terms of averages for the purpose of broad dimensional comparisons.

It may be pointed out here that over three fourths of the units had lower averages than the corresponding averages at the sectoral level in respect of investment, employment and output indicating the skewed nature of the distribution of units in these characteristics. This would mean that but for the inclusion of a few very large units, the sectoral averages of important characteristics would have been much smaller than those presented in Table 1.

Table 1: Average Pattern of a Small Unit

Fixed asset (original cost)	..	..	..	..	Rs.	89,787
Plant and machinery (,,)	..	..	..	..	Rs.	48,783
Gross output	..	..	..	..	Rs.	433,725
Raw materials consumed	..	..	..	..	Rs.	303,041
Gross value added	..	..	..	..	Rs.	65,795
Total credit outstanding	..	..	..	..	Rs.	90,315
Of which from institutions	..	..	..	..		70.87%
Number of persons employed	..	..	..	..		12.79
Gross value added per person	..	..	..	..	Rs.	5,140
Fixed assets per person	..	..	..	..	Rs.	7,020
Plant and machinery per person	..	..	..	..	Rs.	3,814
Wages and salaries per person	..	..	..	..	Rs.	2,525
Gross value added to total asset	..	..	..	..		0.73
Wage component of gross value added	..	..	..	..		49.1%
Raw materials consumed to gross output	..	..	..	..		70%

As seen in the earlier section, aggregative sectoral averages do not reveal the significant inter-industry differences in various characteristics. Therefore, the subsequent sections are devoted to the analysis of individual industries.

Distribution of units
and share of
employment by
broad industry
group

The industry-wise distribution of the total number of units shows that nearly 19.1 per cent belonged to cotton textile industry groups (see Table 2). Within this group, the traditional handloom sector predominated accounting for about 66 per cent of the units, while 20 per cent were powerloom units. The second largest industry having a share of 11.2 per cent of the total of assisted units, was wood-based industry group, of which wooden furniture units accounted for 33 per cent and wooden and cane box making units another 25 per cent.

Other important industrial groups were metal products (8.8 per cent of total units), machinery and tools (6.0%), textile products (5.7%) and chemical products (5.0%). Within the metal products industry group, over 33 per cent of units were engaged in metal fabrication and 16 per cent in metal utensil manufacturing. Similarly, machine tool manufacturing units dominated the machinery and tools industry group, while garment units predominated textile products industry and cosmetic units the chemical products industry.

The extent of employment is another important characteristic of industries. In this case, it has to be borne in mind that the survey data is confined to paid labour only. Over 11.1 per cent of the total employment of paid labour was accounted for, by the beverage and tobacco group, which ranked lowest in terms of the number of units. Next in importance was non-metallic minerals (10.2%), followed by chemical products (9.7%) and metal products (8.8%). Repair service and scientific and specialised

items industries accounted for the lowest share of employment at 1.2 per cent and 1.6 per cent, respectively (Table 2).

Table 2 : Industrial groups—percentage to total number of units and total employment in the assisted sector

	Per cent to total	
	Units	Employees
1. Cotton textile	19.1	6.3
2. Wood and wood products	11.2	4.2
3. Metal products	8.8	8.1
4. Machinery and tools	6.0	6.7
5. Textile products	5.7	4.3
6. Chemical products	5.1	9.7
7. Food products	4.6	7.2
8. Repair service	4.5	1.2
9. Leather products	4.4	0.8
10. Non-metallic minerals	4.4	10.2
11. Paper products and printing	4.2	2.9
12. Rubber and plastic products	3.7	4.8
13. Edible oil, tea and coffee	3.4	5.8
14. Wood and synthetic textile	3.0	2.5
15. Electric machinery and appliances	2.6	3.7
16. Basic metals	2.5	4.8
17. Transport equipment	2.3	2.5
18. Scientific and specialized items	2.1	1.6
19. Beverage and tobacco	1.4	11.1
All Industries	100.0	100.0

An attempt is now made to analyse the important factors affecting employment and production at the industry level. For this purpose, some of the important per unit averages based on the survey data are analysed for major industries. The per unit gross value added by manufacture or the income generated by the unit is taken as the important indicator of industry-wise performance. In Statement 1 appended, the industries are arranged in descending order of the gross value added.

The industries ranking lowest on the basis of unit level performance in terms of gross value added or income generated were leather footwear (Rs. 8,900), handloom cotton textile (Rs. 10,500), wooden and cane box making (Rs. 16,600) and wooden furniture making industry (Rs. 18,100). The leading industries in this regard were beverages and tobacco, paints and varnishes, industrial machinery, foundry castings, drugs and medicine, radio and television and printing and dyeing of cotton textiles.

Even though over 29.8 lakh persons were employed in the assisted sector of small scale industrial units as a whole, the per unit average of paid employees was only 12.8. As already mentioned, an important qualification to be taken into account here is that these figures do not include self-employment and family labour; and almost one-third of the total assisted units did not employ any paid labour. As a result, the figures of total gainful employment as per the survey data are under estimates. This feature was more significant in traditional industries like wooden and cane box making, handloom cotton textiles and leather footwear industries, where the family units (viz., those employing no paid labour) accounted for 74 per cent, 73 per cent and 69 per cent of the total units, respectively. In consequence, the average paid employment was as low as 1.6 persons per unit in the leather footwear industry, 2.4 in the wooden and cane box making industry and 2.7 in the handloom cotton textile industry (column 2 of Statement 1).

The position of the beverages and tobacco industry group in respect of employment presents something of a paradox. Of the total number of units in this group, as many as 65 per cent were family units, while at the same time, the number of paid employees per unit was as high as 99—which was the highest average among all industries. This is probably the result of the combination of two separate industries, 'beverages' and 'tobacco', with widely different employment patterns. The industry with the second highest average employment was 'structural clay' with 55 persons. This follows from the fact that about 60 per cent of the units in this industry employed more than 20 persons each.

One of the most important factors influencing the activities of manufacturing units is the level and type of capital investment. The average value of total fixed assets per unit in each industrial group has been presented in column 3 of Statement 1. Although the average investment in fixed assets was Rs. 89,800 per unit for the sector as a whole, the investment in the case of over 81 per cent of the units was much below this average. These smaller units constituting 81 per cent of the small scale sector, accounted for only 37 per cent of the total investment in the sector. In other words, but for the high investment in a small number of units forming only 19 per cent of the total, the average investment per unit would have been considerably lower.

Average investment in fixed asset was as low as Rs. 6,000 for handloom cotton textile units, Rs. 8,000 for leather footwear units, Rs. 14,100 for wooden furniture units and Rs. 19,600 for wooden and cane box making units. The percentage of units having an investment upto Rs. 1,000 in total fixed assets was significantly high in wooden and cane box making (70%), leather footwear (64%), handloom cotton textile (45%), beverage and tobacco (41%), wooden furniture (37%) and structural clay units (28%). Similarly, the industries where capital investment per unit was significantly high were acids, alkalis and salts (Rs. 3,91,000), hardware (Rs. 3,21,000), drugs and medicine (Rs. 2,67,000), industrial machinery — others (Rs. 2,48,000), foundry casting (Rs. 2,65,500), motor vehicle parts (Rs. 2,31,000) and electrical appliances (Rs. 2,38,000).

These data are indicative of the fact that units in industries such as wooden and cane box making, leather footwear and handloom cotton textile industries consisted predominantly of family units with little outside employment and having low investment. On the other hand, foundry casting, industrial machinery and electric appliances industries had comparatively higher employment per unit, coupled with higher levels of capital investment and output.

In the case of industrial units where investment in fixed assets is low and the plant and machinery used for production purposes consist mainly of simple traditional tools, productivity measures may have only limited validity. These measures can nonetheless be used to broadly indicate the relative position of different industries within the sector. Labour productivity is measured for the purpose of the present analysis, as gross value added per person employed. Similarly, the productivity of capital has been defined and worked out as gross value added or income generated per rupee of fixed assets for different industries (columns 4 and 5 of Statement 1).

It may be seen that labour-productivity was significantly high in units engaged in the manufacture of paints and varnishes (Rs. 12,000 per person), drugs and medicine (Rs. 10,000), synthetic textile (Rs. 9,800), industrial machinery (Rs. 9,400), containers and paper boxes (Rs. 9,100) and knitting mill products (Rs. 9,000), in that order. In all these units, the proportion of family units was low (ranging from nil to 5 per cent) while the per unit investment was, in most cases, significantly higher than the sectoral average. This would suggest that the units in these industries were the more modern, more sophisticated and better organised in the sector.

On the other hand, productivity was below the sectoral average for structural clay products (Rs. 1,690 per person), beverage and tobacco (Rs. 2,380), grain milling (Rs. 3,100), handloom cotton textile (Rs. 3,890), wood sawing and planning (Rs. 4,250), wooden furniture (Rs. 4,510) and powerloom cotton textile industries (Rs. 4,690). Among these, only beverages and tobacco and handloom cotton textile industries had a high proportion of family units. This would mean that units in these industries were the least 'organized' of the industries within the sector.

For the purpose of the present analysis, labour-intensity of a unit is measured in terms of the number of persons employed for an investment of Rs. 1 lakh in fixed assets. Statement 2 appended presents this measure for each of the industries arranged in descending order. The values presented are based on averages.

It may be seen from the Statement 2 that the highly labour-intensive industries within the sector were beverage and tobacco (employing 229 persons for an investment of Rs. 1 lakh in fixed assets), structural clay products (71 persons), handloom cotton textile (45 persons), wooden furniture (29 persons), textile garment (23 persons) and leather footwear (20 persons).

The capital-output ratios have also been worked out for these industries (column 2 of Statement 2). The ratio was below unity for all the labour-intensive industries listed above. In the case of highly capital-intensive industries, generating employment for less than 10 persons for an investment of Rs. 1 lakh the capital-output ratio varied from 1.1 to 3.1.

It may be of interest to compare the results of the Reserve Bank survey with the data from the Annual Survey of Industries (A.S.I.) available for the latest year 1975-76. Since the A.S.I. covers all factory units registered under the Factories Act, the data collected through the A.S.I. units may be taken as relating to the organized factory sector. Units employing less than 10 workers are totally outside the A.S.I. coverage. According to the data of the A.S.I. of 1975-76, units having capital investment upto Rs. 10 lakhs constituted nearly 76 per cent of the number of units in the organized factory sector (see Table 3 below). The Reserve Bank survey covered only small scale units assisted by banks and having original investment in plant and machinery less than Rs. 10 lakhs per unit. However, only 17 per cent of these small scale units were reported to have been registered under the Factories Act and this may be taken as the extent of the overlap in the A.S.I. coverage. On the basis of employment criterion, 78 per cent of the total units in the Reserve Bank survey reported employment of less than 10 persons per unit (including the units not employing any paid labour) and 88 per cent of the total units employed less than 20 persons. Although it is not possible to consider employment along with the use of power, it is clear that Reserve Bank survey coverage consisted predominantly of small units falling outside the scope of the A.S.I.

However, a comparison restricted to the extent of the overlap can be attempted. The broadly comparable averages for the small scale sector included in the A.S.I. for 1975-76 are given along with those of the Reserve Bank survey in Table 3 below.

Table 3 : Broadly comparable averages of A.S.I. and R.B.I. Survey units

	A.S.I. of 1975-76		R.B.I. Survey	
	Entire Factory Sector	Small Scale Sector	Small Scale Sector	Tiny Sector (Investment in fixed assets less than Rs. 1 lakh)
Coverage	100%	76%	100%	89%
Fixed assets per unit ..	Rs. 19.01 lakhs	Rs. 1.68 lakhs	Rs. 89,787	Rs. 31,340
Gross output per unit ..	Rs. 41.47 lakhs	Rs. 12.5 lakhs	Rs. 4.34 lakhs	Rs. 2.15 lakhs
Gross value added	Rs. 8.89 lakhs	Rs. 1.9 lakhs	Rs. 65,795	Rs. 36,000
Employees	89	36	12.8	8.8
Fixed Assets per employee ..	Rs. 21,410	Rs. 4,466	Rs. 7,020	Rs. 3,540
Gross output per employee ..	Rs. 46,721	Rs. 33,200	Rs. 33,911	Rs. 24,300
Gross value added	Rs. 10,013	Rs. 5,001	Rs. 5,140	Rs. 4,080
Fixed assets to Gross value added	2.14	0.88	1.36	0.87

Note : There are some definitional & coverage differences between the two sets of data. Fixed assets in Reserve Bank survey is taken as broadly comparable to 'fixed capital' of A.S.I. while, 'gross output' in the former is 'output' and 'gross value added' is 'value added'.

A substantial difference can be seen between the two sets of data in regard to per unit averages of employees, fixed assets, gross output and gross value added with the figures from the Reserve Bank survey being considerably lower than those of the A.S.I. This obviously follows from the fact that in the coverage of the Reserve Bank survey, small units outside the factory sector predominated. However, a few per employee averages are broadly comparable in both surveys, except that of fixed assets per employee, which is considerably higher as per the Reserve Bank survey data.

Since very small or 'tiny' units covered an important segment of the Reserve Bank survey, the broad features of the 'tiny' sector may be seen separately. (See column 4, Table 3). As per the official definition, a tiny industrial unit is one having an investment upto rupees one lakh in plant and machinery and located in a geographical area with population upto 50,000. Since the classification of units is not separately available according to the population criterion, for the purpose of the following analysis, only the investment criterion has been adopted.

In the Reserve Bank survey, about 89 per cent of the units reported an average investment upto rupees one lakh in plant and machinery. From the point of location of the tiny units, 25 per cent of the units were located in rural areas and 35 per cent in semi-urban centres. The above two criteria taken together show that the size of the tiny sector (defined in terms of investment as well as location) was anywhere between 25 per cent and 60 per cent.

Some of the important averages for the tiny sector (units with investment upto rupees one lakh in plant and machinery) are presented in the last column of Table 3. The data show that as is only to be expected per unit investment and employment are much lower in the tiny sector than in the sector as a whole.

From the foregoing analysis of the broad features of the small scale industrial units covered by the Reserve Bank survey, it is clear that the small scale industrial sector was markedly non-homogeneous. Some of these industries were dominated by very small units, which were more in the nature of artisan units than 'industrial' units. The non-homogeneous nature of the industries at the sectoral level is characterised by the inclusion of the traditional industries dominated by artisan units using no power and a few technologically advanced industries such as sawing and planing, electrical motors and scientific equipment industries where all units employed paid labour and used power in their production processes. At the same time, some of these industries with a low level of technology also includes units with high investment and employment, which further emphasises the non-homogeneous nature of the sector as a whole. The following Table illustrates this:

Table 4 : Industries dominated by small units

Industries	Percentage of Units					
	Paid employ- ment		Fixed assets		Using no power	Using power
	Nil	More than 20	Less than Rs. 1,000	Rs. 1 lakh and above		
Wooden & canebox making ..	74.4	2.2	70.4	3.9	76.0	24.0
Handloom cotton textile	73.2	2.3	45.4	0.8	98.3	1.7
Leather foot-wear	68.8	1.3	64.2	0.9	97.4	2.6
Beverage and tobacco	65.1	7.9	41.3	4.8	82.9	17.1
All industries	29.3	11.8	21.9	18.9	45.2	54.8

It may be seen that while a substantial proportion of the units in the industries were artisan units and did not use power, there were at the same time some large units employing more than 20 paid employees and with high investment of over Rs. 1 lakh. Thus, even the industry level averages are affected by the extreme values. Therefore, it will be useful to conduct in-depth studies especially of those industries which are dominated by small and technologically backward units. Since the units assisted by commercial banks are likely to be relatively larger and better organised than those small units outside the scope of bank assistance, the characteristic of non-homogeneity is likely to be more pronounced in the small-scale industrial sector as a whole than that found in the assisted sector. Even within the assisted sector, a recent study has shown that about 11 per cent of the units accounted for 69 per cent of the total institutional credit received.* This is further evidence of the highly skewed nature of the distribution of assisted units. Therefore it is important to analyse unit-wise data on different characteristics. Since most of the small units were artisan units not using power, improvement of performance would require change in production processes. Further flow of bank credit to small scale industry should therefore be oriented towards the acquisition and adoption of improved production techniques.

Functioning small scale industrial units assisted by commercial banks, estimated at over 2.33 lakhs, provided employment to 29.8 lakh persons as wage-earners during 1976-77, the reference period of the Reserve Bank survey. An average investment in fixed assets in the assisted sector was Rs. 89,787 per unit, fifty per cent being in plant and machinery. The gross value added by manufacture per unit was around Rs. 66,000.

* V. M. Sunder Raj: "Financing of Small Scale Industries—A Profile", Reserve Bank of India Bulletin, April 1980.

While over 19 per cent of the assisted units belonged to cotton textile industry, over 11 per cent of the total paid employment was accounted for, by beverage and tobacco industry followed by non-metallic minerals industry (10 per cent).

Labour productivity was relatively high in paints and varnishes (Rs. 12,420 per person) and drugs and medicine (Rs. 10,310 per person) industries while it was relatively low in structural clay products (Rs. 1,690) beverage and tobacco (Rs. 2,380), and handloom (Rs. 3,890) powerloom cotton textile (Rs. 4,690) and wooden furniture (Rs. 4,510) industries.

On the basis of the number of persons employed for an investment of rupee one lakh in fixed assets, the leading industry was beverage and tobacco industry (229 persons) followed by structural clay products (71 persons) and handloom cotton textile (45 persons) industries.

Within the assisted small scale sector, about 89 per cent of the units were in the 'tiny' sector, with an investment of less than rupees one lakh in plant and machinery (original cost). The average credit outstanding per tiny unit was only Rs. 33,000 as against Rs. 90,000 for the sector as a whole. More than sixty per cent of the tiny units belonging to wooden and cane box making, handloom cotton textile and leather footwear industries had very low capital investment and depended entirely on family labour which are indicative of the low level of technology used. Average output per unit was also very low in all the industries mentioned above.

This study has tried to identify the weak industries on the basis of low output, low capital base, heavy dependence on family labour and use of power in the production process. To throw more light on the causes of low production in some of these industries, further analysis of the unit-wise data relating to them would be useful especially in the case of industries such as wooden and cane box making, handloom cotton textile, leather footwear and beverage and tobacco industries. The highly labour-intensive small units are traditional industries where labour-productivity is also low. In most of these cases, output at the unit level is less than the sectoral average.

The survey has shown that while smaller units predominated in the sector as a whole, there were also some very large units in virtually all the individual industries. This characteristic renders the sector markedly non-homogenous and results in a skewed distribution of all the characteristics.

APPENDIX

Statement 1 : Gross Value added, Investment & Employment in individual industry

Industry	Per unit average			Gross value added per	
	Gross value added (Rs. 000)	Persons employed†	Fixed assets (Rs. 000)	Person employed (Rs. 000)	Rupee of fixed Assets
	1	2	3	4	5
Beverage & tobacco	235.8	99.03	43.3	2.38	5.44
Paints and Varnishes	233.5	18.80	330.3	12.42	0.71
Industrial machinery-food	192.7	20.45	218.9	9.42	0.88
Foundry casting	186.1	23.70	265.1	7.87	0.70
Drugs and medicines	180.1	17.46	267.0	10.31	0.67
Industrial machinery-others	175.4	23.03	248.3	7.61	0.71
Radio and television	158.1	17.54	157.0	9.01	1.01
Printing & dyeing of cotton textiles	155.3	19.33	124.8	8.03	1.24
Electrical motors	141.2	18.73	214.6	7.54	0.66
Electrical appliances	137.4	22.60	238.4	6.06	0.58
Synthetic textile	136.4	13.92	185.0	9.80	0.74
Surgical equipments	131.6	16.62	217.8	7.91	0.60
Motor vehicle parts	131.3	18.20	231.1	7.21	0.57
Hardware manufacture	127.9	20.65	321.1	6.19	0.40
Acids and alkalies	126.8	18.13	391.2	6.99	0.32
Containers & paper boxes	122.8	13.44	162.3	9.14	0.76
Knitting mills	115.3	12.75	121.7	9.04	0.95
Edible oil	112.6	14.20	212.9	7.94	0.53
Bicycles, etc.	107.2	14.53	156.9	7.38	0.68
Structural clay products	93.1	55.09	78.0	1.69	1.19
Plastic products	91.2	11.92	172.6	7.65	0.52
Machine tools	90.0	12.81	181.0	7.03	0.50
Metal products	81.9	12.52	99.1	7.54	0.83
Metal fabrication	70.4	8.69	82.6	8.10	0.85
Cosmetics	58.9	7.13	65.9	8.26	0.89
Metal utensils	56.8	10.61	84.1	5.35	0.67
Textile garment	63.7	9.29	39.6	5.78	1.36
Agricultural machinery	50.7	8.23	75.8	6.16	0.67
Stationery & Printing	50.6	7.48	79.1	6.76	0.64
Book printing	47.7	8.05	94.8	5.93	0.50
Grain milling	32.9	10.59	90.9	3.10	0.36
Wood sawing & Planning	32.3	7.62	46.8	4.25	0.69
Motor vehicle repair	26.6	5.01	44.8	5.31	0.59
Power loom cotton textile	26.4	5.63	26.2	4.69	1.01
Wooden furniture	18.1	4.02	14.1	4.51	1.29
Wooden & cane box-making	16.5	2.41	19.6	6.85	0.84
Handloom cotton textile	10.5	2.71	6.0	3.89	1.75
Leather footwear	8.9	1.60	8.0	5.61	1.12
All Industries	85.8	12.79	89.8	5.14	0.73

† Family & unpaid labour have not been taken into account.

STATEMENT 2

Measure of labour intensity and capital-output ratio

Industry	Labour intensity				Capital-output ratio	
	Persons employed for rupees one lakh in fixed assets				Fixed assets	Gross value added
Beverages and tobacco				228.7	0.184	
Structural clay				70.6	0.838	
Handloom cotton textiles				45.2	0.571	
Wooden furniture				28.6	0.779	
Textile garments				23.4	0.622	
Powerloom cotton textiles				21.5	0.992	
Leather footwear				20.0	0.899	
Wooden sawing and Planning				16.3	1.449	
Printing & dyeing of cotton textiles				15.5	0.804	
Metal utensils				12.6	1.481	
Metal products				12.6	1.210	
Wooden box making				12.6	1.188	
Grain milling				11.6	2.763	
Radio & television				11.2	0.993	
Motor vehicle repair				11.2	1.684	
Agricultural machinery				10.8	1.495	
Cosmetics				10.8	1.119	
Metal fabrications				10.5	1.173	
Knitting-mills				10.5	1.056	
Electrical appliances				9.5	1.735	
Stationery printing				9.5	1.563	
Industrial machinery-food				9.3	1.136	
Industrial machinery-others				9.3	1.416	
Bicycles				9.3	1.464	
Foundry casting				8.9	1.425	
Electrical motors, etc.				8.7	1.520	
Book printing				8.5	1.987	
Containers and paper boxes				8.3	1.322	
Motor vehicle parts				7.9	1.760	
Surgical equipments				7.6	1.655	
Synthetic textiles				7.5	1.358	
Machine tool				7.1	2.011	
Plastic products				6.9	1.893	
Edible oils				6.7	1.891	
Drugs and medicines				6.5	1.483	
Hardware manufacture				6.4	2.511	
Paints and varnishes				5.6	1.141	
Acids, alkalis and salts				4.6	3.085	
All Industries				14.2	1.365	

A STUDY OF THE CEMENT INDUSTRY IN INDIA

B. S. Nagaraja Rao and Kamlesh Chander*

The purpose of this study is to make an assessment of the operational and financial performance of some cement companies in the light of additional information that has become available in companies' accounts, subsequent to the Amendments in 1973 to Schedule VI of the Companies Act, 1956. These details concern installed capacity, production, sales realisation, input prices, etc. The material for this paper is mainly drawn from the regular studies on company finances published by the Reserve Bank. The 18 selected companies included in the regular studies account for about 70 per cent of the entire industry in terms of installed capacity as well as production. This study is divided into four sections :

- (1) General—A profile of the cement industry along with related developmental and regulatory measures.
- (2) Operational and financial performance based on the analysis of accounts relating to 18 selected companies.
- (3) Analysis based on details of quantitative aspects pertaining to capacity, sales realisation and constructional and operational costs, and
- (4) Outlook for the future.

Mention may be made of a few limitations of a general nature. The companies selected for the analysis have cement production as their sole activity or main activity i.e., each of these companies derives more than half of its value of net sales or main income from cement production activity. The operational and financial data used in the analysis of accounts of companies covered pertain to the total production activity of the companies, as activity-wise breakups of such data are not available in the published accounts. Similarly, the term installed capacity in the analysis under Section 3 denotes the aggregate of installed capacities of various plants in a company, since plant-wise break-up of installed capacities is not uniformly available.

Section I: General—A profile of the Cement Industry

Cement is a major basic industry with an investment of over Rs. 400 crores in 56 units spread all over the country, providing employment to over one lakh persons. India ranks eighth among the major cement producing countries in the world. However, the per capita consumption of cement in India is very low at 30 kgs. as against 715 kgs. in Japan and 606 kgs. in Austria.

The cement industry has shown marked progress since 1961 as may be seen from Table 1 and Diagram 1.

Growth of
the industry

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TABLE 1: INSTALLED CAPACITY AND PRODUCTION OF CEMENT INDUSTRY

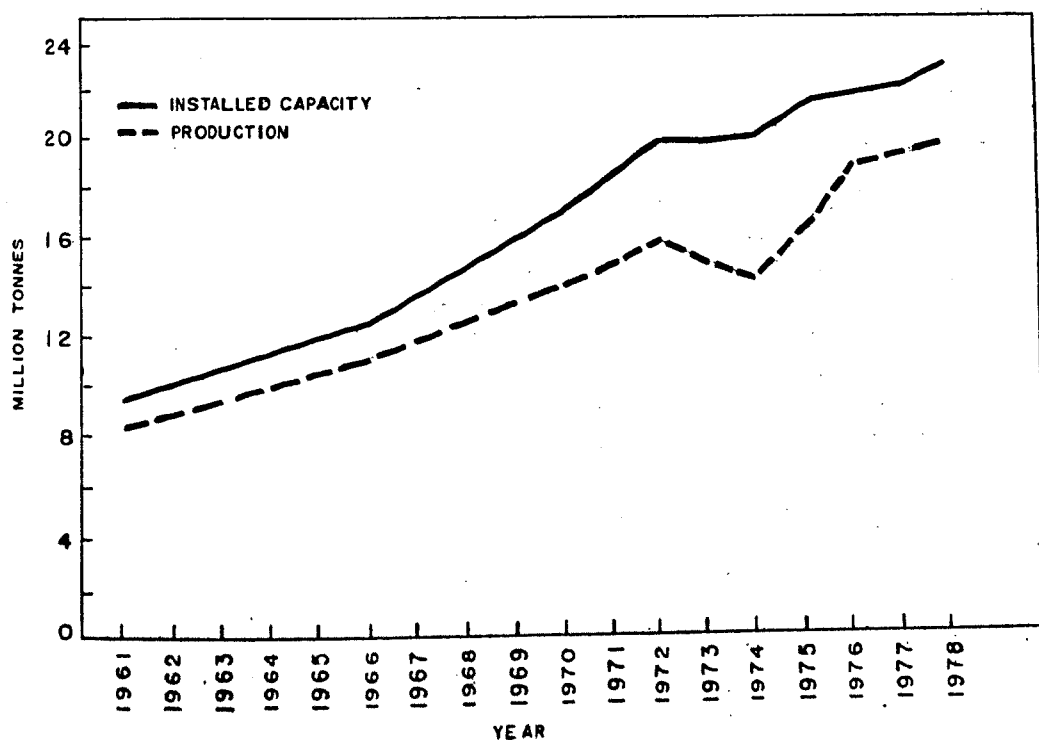
(Million tonnes)

Year				Installed capacity	Pro-duction	Capacity uti- lisation (%)
1961	..	..	..	9.5	8.3	87.4
1966	..	..	..	12.6	11.1	88.1
1970	..	..	..	17.0	14.0	82.4
1971	..	..	..	18.5	14.9	80.5
1972	..	..	..	19.8	15.8	79.8
1973	..	..	..	19.8	15.0	75.8
1974	..	..	..	19.9	14.3	71.9
1975	..	..	..	21.2	16.2	76.4
1976	..	..	..	21.5	18.7	87.0
1977	..	..	..	21.9	19.2	87.7
1978	..	..	..	23.0	19.6	85.2

Source: Capacity Utilisation and Production in 215 Industries, 1970 to 1977 by CMIE.

DIAGRAM 1

INSTALLED CAPACITY AND PRODUCTION OF CEMENT INDUSTRY



The installed capacity of cement industry increased from 9.5 million tonnes in 1961 to 23.0 million tonnes in 1978; the bulk of the additions to capacity was effected in the decade 1961-71. The production, however, rose more or less steadily from 8.3 million tonnes in 1961 to 19.6 million tonnes in 1978. On the other hand, capacity utilisation showed a steady decline till 1974; there was a marked improvement since then, and it stood at 87.7 per cent in 1977; the fall in 1978 could be attributed to additions to installed capacity still under gestation.

Cement being a resource-tied industry, the production units are concentrated in close proximity to the sources of raw materials, mostly in the southern and western regions of the country. On the other hand, demand for cement is more than production in the northern and eastern regions, resulting in a regional imbalance in production and consumption. The share of each region in terms of installed capacity, production and consumption is shown in Table 2 below.

TABLE 2: REGION-WISE BREAK-UP OF INSTALLED CAPACITY, PRODUCTION AND CONSUMPTION OF CEMENT IN 1975

(Million tonnes)

Region	No. of Units	Installed Capacity	Production	Consumption	Capacity Utilisation (%)
1. Eastern	12	3.7 (17.4)	2.7 (16.6)	3.0 (20.3)	73.0
2. Western	14	6.3 (29.8)	5.1 (31.3)	3.8 (25.7)	81.0
3. Northern	9	3.7 (17.4)	2.5 (15.3)	4.3 (29.0)	67.6
4. Southern	20	7.5 (35.4)	6.0 (36.8)	3.7 (25.0)	80.0
Total	55	21.2 (100.0)	16.2 (100.0)	14.8 (100.0)	76.4

Such regional imbalances are expected to be corrected by taking care of the "demand factor" while issuing additional licences, subject to the availability of necessary raw materials. The Union Government has already started issuing fresh licences and letters of intent for setting up cement plants in those parts of the northern and eastern regions where adequate deposits of limestone are located. Some of the proposed new plants in these regions would use blast furnace slag available in large quantities from steel plants.

There are two methods of making cement, namely the wet process and the dry process. In the wet process, crushed limestone, clay and water are fed into grinding mills where the mixture is converted into a thick creamy substance known as slurry. The slurry is then stored in silos where it is 'corrected' to the right composition. The corrected slurry is then fed into the upper end of the kiln, while pulverised coal and oil are fired under high pressure into the lower end. While the slurry is in the kiln, it is first dried, then calcined and finally subjected to a temperature which is maintained at about 2700°F. The slurry emerging from the discharge end of the kiln as dark hard pellets is called 'clinker'.

In the dry process, limestone and clay are fed into a grinding mill where these are heated, dried and reduced to a fine powder called 'raw meal'. In the modern dry process plants, the raw meal is mixed with water to form nodules. These nodules are then fed into a moving grate, through which hot gases from the rotary kiln are passed; here they are dried and partially calcined. The calcined nodules then pass into a short rotary kiln where they are burnt to form clinker.

The clinker obtained by either process is allowed to cool and then fed into grinding mills, where along with a small quantity of gypsum it is reduced to very fine powder. Gypsum is added in order to control the setting time of cement during the placing of concrete and water.

The determinant in the choice of process is the water content of the primary raw material. If the water content is high, the wet process will be chosen. This is the case with marl, granulated blast furnace slag and some clays. The following major points enter in the final decision: (1) wet process consumes 20 to 25 per cent more fuel per tonne than dry process and availability of very cheap fuel may favour the adoption of wet process; (2) consumption of power is less in the wet process by 4 to 8 per cent; (3) initial fixed investment costs about 10 per cent more in the dry process than in the wet process; (4) less dust is generally released in the wet process than in the dry process.

The major raw materials used in the production of cement are limestone, clay, laterite and gypsum. Coal, gas and oil are used as fuel inputs. The raw materials are available indigenously.

There are several geological regions in India which contain limestone deposits, though all are not suitable for making cement. The reserves of cement grade limestone are estimated at over 50,000 million tonnes. In addition, limestone is available all along the coastline of the country in the form of corals, sea-shells, etc. Other raw materials such as kankar and calcareous sand are found in abundance in various parts of the country.

Cement is included under item 35 of the Schedule of Industries (Development and Regulation) Act, 1951 and is subject to licensing. Under the new licensing policy outlined in February 1970, cement was made open for investment by large industrial houses. Although cement is not categorised as one of the core industries, it is included in the heavy investment sector.

The private corporate sector plays a dominating role in the Indian cement industry in as much as it accounts for 89 per cent of the total installed capacity as well as production. Within the private sector, one giant company, viz., Associated Cement Companies (ACC) accounts for as much as one third of installed capacity as well as production of cement.

The Cement Corporation of India (CCI) was incorporated in the public sector in 1965 for setting up cement plants and also for surveying and prospecting cement grade limestone deposits in the country. The Corporation was also entrusted with the task of co-ordinating all ancillary activities connected with the growth of the industry. The first public sector plant set up by the CCI with a capacity of 2 lakh tonnes per annum was commissioned in July 1970 at Mandhar in Madhya Pradesh. A number of cement plants have since been set up by various State Industrial Development Corporations.

Presently, both the distribution and the price of cement are controlled by the Government through the Cement Controller. The uniform retention price for unpacked cement payable to producers and the uniform destination price of packed cement are fixed and notified by the Cement Controller from time to time. Retail prices in each State are fixed by the State Government by adding the Central Sales-tax, incidental charges, the State sales-tax and Octroi duty, wherever applicable, to the destination prices.

**Statutory
Control
on Prices and
Distribution**

According to the Tariff Commission's recommendations in 1973, accepted by the Government in April 1975, the retention price was supposed to yield a pre-tax return of 14 per cent on the capital employed, subject to a ceiling on capital cost of installed capacity of Rs. 650 per tonne. The Government also accepted the principle of escalation in respect of four major cost inputs, viz., wages and dearness allowance, price of coal, power tariffs and freight on coal, but rejected the Commission's recommendation to cover freight on limestone. On representations from the industry, the Government decided that the ex-works price, in the case of new cement units and expansion of existing ones, would be so fixed as to allow a net post-tax return of 12 per cent on net worth comprising paid-up share capital and reserves and surplus, the net worth being limited to Rs. 230 per tonne of installed capacity. The revised price formula became effective from October 1977. The three-tier price formula, based on the cost criterion, announced by the Government in May 1979 also provides for a minimum post-tax return of 12 per cent on net worth and the Government will review annually the impact of manufacturing costs on the retention prices. The new policy also gives benefit of the higher retention price to new and expanding units.

Basis of pricing

In the past, only an insignificant quantity of cement was being exported because production generally lagged behind the domestic demand. In early seventies, exports of cement increased due to a) a larger domestic surplus as a result of higher production and lower internal demand, b) growing demand from the oil-rich countries, and c) better price realisation. The ban on new construction activity by the Government in 1975 had a dampening effect on the domestic demand and as a result, a sizeable quantity, 14.27 lakh tonnes, was rendered surplus. In 1975-76, Iran alone imported cement worth Rs. 822 lakhs followed by the U.A.E., Oman and Iraq accounting for Rs. 214 lakhs, Rs. 175 lakhs and Rs. 152 lakhs, respectively. Cement was being exported mainly from Dwarka, Sikka and Ranovov in Gujarat because of their geographical proximity to the gulf countries. In order to meet the growing internal demand

Exports

following the revival of construction activity, export of cement was banned in July 1977, except for irrevocable contractual obligations.

TABLE 3: PRODUCTION AND EXPORTS OF CEMENT

					(Lakh tonnes)		
Year					Production	Exports	Exports as percentage of production
1968-69	..	..	..	..	122.40	2.32	1.9
1969-70	..	..	..	..	138.00	1.15	0.8
1970-71	..	..	..	..	145.50	1.84	1.3
1971-72	..	..	..	..	150.70	1.99	1.3
1972-73	..	..	..	..	155.50	1.98	1.3
1973-74	..	..	..	..	146.60	1.24	0.8
1974-75	..	..	..	..	148.00	3.10	2.1
1975-76	..	..	..	..	172.00	4.01	2.3
1976-77	..	..	..	..	188.40	8.20	4.4
1977-78	..	..	..	..	193.18	8.10	4.2

Source : Monthly Statistics of Foreign Trade of India by DGCI&S.

Under a scheme of soft loans for modernisation of five industries, cement being one of them, announced by the Government in November 1976, concessional finance on a fairly adequate scale to these industries is made available through public financial institutions to prevent incipient sickness. In the cement industry alone, as many as 28 out of the total of 56 plants are reported to be more than twenty years old. Initially, IDBI planned to advance Rs. 200 crores per annum at a concessional rate of 7½ per cent, repayable between 12 and 15 years to the five industries. The broad eligibility criteria for assistance adopted by the IDBI in the case of cement industry were expansion of existing capacity to one of an economic or viable size, investment connected with conversion from wet to dry process, beneficiation of limestone, installation or better use of modern mining and transport equipment, pre-calcination techniques, use of industrial wastes and installation of dust collection facilities.

Section II: Operational and Financial Performance

The sales of the selected 18 companies nearly doubled over the period 1970-71 to 1977-78 from Rs. 178.20 crores to Rs. 348.74 crores. The increase was marked in 1975-76 when the sales stood at Rs. 294.92 crores as against Rs. 220.94 crores in 1974-75 showing an increase of 33.5%. This improvement in sales was the result of mainly an increase in the retention price (from Rs. 142.15 to Rs. 160.75 per tonne effective from 1st October 1975) and higher production which was in turn brought by better availability of

raw materials, coal, power and railway wagons. In 1976-77, the sales recorded an increase of 6.2 per cent to Rs. 313.24 crores. In 1977-78, however, there was an improvement by Rs. 35.50 crores (11.3%) when the sales stood at Rs. 348.74 crores (Statement 1).

The gross profits, after an initial increase of Rs. 0.55 crore from Rs. 22.91 crores in 1970-71 to Rs. 23.46 crores in 1971-72, showed a continuous decline thereafter upto 1974-75. In 1975-76, however, these spurted to Rs. 25.43 crores from Rs. 8.46 crores for the previous year showing a two fold increase. In the year following, these dropped to Rs. 18.11 crores before improving to Rs. 31.39 crores in 1977-78 (73.3 per cent). A similar fluctuating pattern was broadly observed in the case of profits before tax and profits after tax. The former, after a continuous downward trend from Rs. 16.35 crores in 1970-71 to Rs. 0.52 crore in 1974-75, rose to Rs. 20.73 crores in 1975-76 but fell by Rs. 12.89 crores to Rs. 7.84 crores in the next year. In 1977-78, pre-tax profits showed an increase of 187% and stood at Rs. 22.54 crores. The after-tax profits also depicted a parallel movement. In 1977-78, even with higher provision towards corporate taxation, i.e., Rs. 14.42 crores as against Rs. 6.68 crores in 1976-77, after-tax profits showed an impressive rise by about Rs. 7 crores as compared with the previous year. The companies were able to plough back profits around Rs. 6 crores in 1970-71, 1971-72 and 1975-76. In 1972-73 to 1974-75 and 1976-77, there was withdrawal from the past savings. In 1977-78, the retained profits were negligible at Rs. 0.26 crore.

The declining trend in the three profitability ratios, viz., the profit margin on sales (measured by gross profits as percentage of sales), the return on total net assets (measured by gross profits as percentage of total net assets) and the return on shareholders' equity (measured by profits after tax as percentage of net worth) from 1970-71 to 1974-75 was reversed in 1975-76 (Table 4). The profitability declined in 1976-77, before showing an improvement in the next year.

TABLE 4: PROFITABILITY RATIOS IN CEMENT INDUSTRY

(18 Companies)

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
1. Gross profits as percentage of Sales†	12.9	12.3	8.0	3.7	3.8	8.6	5.8	9.0
2. Gross profits as percentage of total net assets	9.7	9.5	6.3	2.8	3.2	8.7	6.2	10.4
3. Profits after tax as percentage of net worth	11.8	9.4	4.7	*	*	12.4	1.2	8.1

* Numerator is negative.

† Net of rebate and discount and excise duty and cess.

The profitability of the selected companies declined consistently during the period 1970-71 to 1974-75 when due to mounting inflationary pressures in the country, the manufacturing costs of cement increased considerably, but the retention price allowed to the manufacturers was pegged at Rs. 100 per tonne from April 1969 to August 1974. It was only in August 1974, based on the recommendations of the Tariff Commission, that the retention price was raised to Rs. 142.15 per tonne. The other contributory factor was a continuous fall in capacity utilisation due to drastic power cuts, shortage of coal, oil, and railway wagons. The profitability improved markedly in 1975-76, following appreciable increase in sales, noted earlier.

The liquidity position of the 18 selected cement companies as measured by the ratio of current assets to current liabilities, which stood at 1.46 during 1972-73 showed a continuous declining trend and was at 1.11 in 1977-78, largely as a result of the expansion in trade dues and other current liabilities outstripping that in debtor balances. Debt as percentage of equity declined from 55.7 in 1970-71 to 51.9 in 1972-73 but moved up to 58.0 in 1974-75 and 60.2 in 1976-77. The ratio thereafter declined to 57.1 per cent in 1977-78.

TABLE 5: RATIOS OF LIQUIDITY AND DEBT EQUITY IN CEMENT INDUSTRY

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
1. Ratio of current assets to current liabilities	1.46	1.47	1.46	1.34	1.26	1.22	1.10	1.11
2. Debt as percentage of equity ..	55.7	53.0	51.9	52.8	58.0	53.5	60.2	57.1

Note: For concepts and definitions of various items, reference may be made to the article 'Finances of Large Public Limited Companies, 1976-77 and 1977-78, Reserve Bank of India Bulletin, June 1979.

Total net assets/liabilities of the selected cement companies amounted to Rs. 303.17 crores in 1977-78 as against Rs. 257.98 crores in the year 1973-74 (Statement 2). Net fixed assets constituted a lower proportion of 44.0 per cent of total net assets in 1977-78 as against 47.3 per cent in 1973-74 while inventories formed 25.6 per cent and 28.6 per cent in the two years respectively. Borrowings constituted 26.0 per cent of the total capital employed as against 32.9 per cent in 1973-74. Dependence of the selected companies on bank borrowings in relation to total capital employed declined substantially from 12.3 per cent in 1973-74 to 6.8 per cent in 1977-78.

The gross assets formation of the 18 selected companies dropped to Rs. 9.14 crores in 1976-77 from its record level of Rs. 31.69 crores in 1975-76 but rose to Rs. 20.40 crores in 1977-78. Gross fixed assets formation constituted 56.6 per cent of gross assets formation in 1977-78 as against 126.9 per cent in the previous year. The rates of fixed assets formation, gross and net, increased from 2.4 per cent and —1.0 per cent respectively in 1973-74 to 6.1 and 4.2 per cent respectively in 1974-75 but subsequently declined to 4.1 and 1.8 per cent in 1977-78. The rate of inventory accumu-

Assets
Formation
and
financing

lation exhibited a rising trend from 8.3 to 10.1 per cent, pushing up the rates of capital formation, gross and net, from 3.7 and 2.3 per cent in 1973-74 to 5.2 and 4.8 per cent, respectively, in 1975-76. However, owing to the marked fall in inventories, capital formation rates, gross and net, declined to 0.9 and —2.9 per cent in 1976-77 and 2.3 and —0.3 per cent in 1977-78 (Table 6). The reliance of the 18 selected companies on external sources for financing their gross assets formation declined substantially from 69.3 per cent in 1976-77 to 22.0 per cent in 1977-78 due to substantial increase in internal sources, which resulted in repayment of bank borrowings to the tune of Rs. 20.09 crores in 1977-78 as against the resort to fresh bank borrowings of Rs. 11.98 crores in the previous year.

TABLE 6: CAPITAL FORMATION RATES AND IMPORTANT RATIOS OF SOURCES AND USES OF FUNDS

	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Capital formation rates							
1) Gross fixed assets formation	3.9	3.5	2.4	6.1	3.7	4.3	4.1
2) Net fixed assets formation	— 1.6	— 1.3	— 1.0	4.2	1.5	1.6	1.8
3) Inventory accumulation	9.7	9.0	8.3	9.9	10.1	— 9.4	— 3.9
4) Gross capital formation	5.1	4.6	3.7	7.0	5.2	0.9	2.3
5) Net capital formation ..	1.9	2.1	2.3	6.3	4.8	— 2.9	— 0.3
Ratios							
1) Gross fixed assets formation as percentage of total uses of funds ..	44.2	71.2	35.8	71.2	30.3	126.9	56.6
2) Gross capital formation as percentage of total uses of funds ..	71.9	120.5	71.0	105.3	56.0	35.8	41.1
3) External sources of funds as percentage of total sources of funds ..	16.1	21.2	104.0	80.8	34.4	69.3	22.0
4) Increase in bank borrowings as percentage of total external sources of funds	10.6	*	27.6	*	7.7	189.3	*

* Numerator is negative.

Institutional borrowings were repaid to a large extent (Rs. 16.79 crores) in 1976-77 following a year of high profitability. No attempt was made to raise fresh capital during 1971-72 to 1977-78 except in 1974-75 when the capital raised amounted to Rs. 1.18 crores.

The share of raw materials and components, etc. consumed in value of production declined gradually from 20.9 per cent in 1973-74 to 19.1 per cent by 1976-77, but it rose to 21.0 per cent in 1977-78. The share of power and fuel input cost, on the other hand, rose steadily from 19.6 per cent in 1971-72 to 26.1 per cent in 1976-77; there was, however, a decline to 24.4 per cent in 1977-78. The share of interest charges which was around 3.9 per cent upto 1974-75 declined somewhat in the later years.

TABLE 7: EXPENDITURE COMPONENTS AND PROFITS AS PERCENTAGE OF VALUE OF PRODUCTION

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
i) Raw materials, components, etc. consumed £.. ..	17.5	16.4	17.6	20.9	19.7	19.1	19.1	21.0
ii) Power and fuel	19.9	19.6	19.9	20.8	23.1	24.3	26.1	24.4
iii) Other manufacturing expenses	19.3	21.0	21.5	20.5	19.9	21.1	21.4	19.1
iv) Salaries, wages and bonus ..	10.3	10.3	10.8	12.0	13.0	11.6	11.4	10.8
v) Employees welfare expenses (including provident fund) ..	1.5	1.5	1.9	2.0	2.0	1.6	1.7	1.8
vi) Depreciation	6.4	5.9	5.6	5.1	4.9	3.7	3.4	3.4
vii) Interest charges.. ..	3.8	3.7	3.8	3.9	3.9	3.2	3.6	3.4
viii) Other expenses	13.8	14.4	16.2	16.5	14.8	11.6	13.3	13.0
ix) Profits*	7.5	7.2	2.7	+	+	3.8	0.1	3.3

* Operating profits less other income.

+ Indicates that numerator is negative.

£ Includes value of stores and spares consumed.

Section III: Quantitative aspects pertaining to capacity, sales realisation and constructional and operational costs

The cement industry witnessed a gradual improvement in capacity utilisation in recent years from 72 per cent in 1974 to 88 per cent in 1977. As a result, production of cement also rose steadily from 14.3 million tonnes in 1974 to 19.2 million tonnes in 1977.

The distribution of the 18 selected cement companies according to their installed capacity is shown in Table 8 appended. These companies account for about 70 per cent of the total installed capacity in cement industry.

Nearly three-fourths of the total production of cement by these units was accounted for by the 5 large units having capacity of over 8 lakh tonnes per annum with an average capacity utilisation of 83.0 per cent. The remaining 13 small cement units contributed 27 per cent of the production with nearly the same average capacity utilisation as that of the large units.

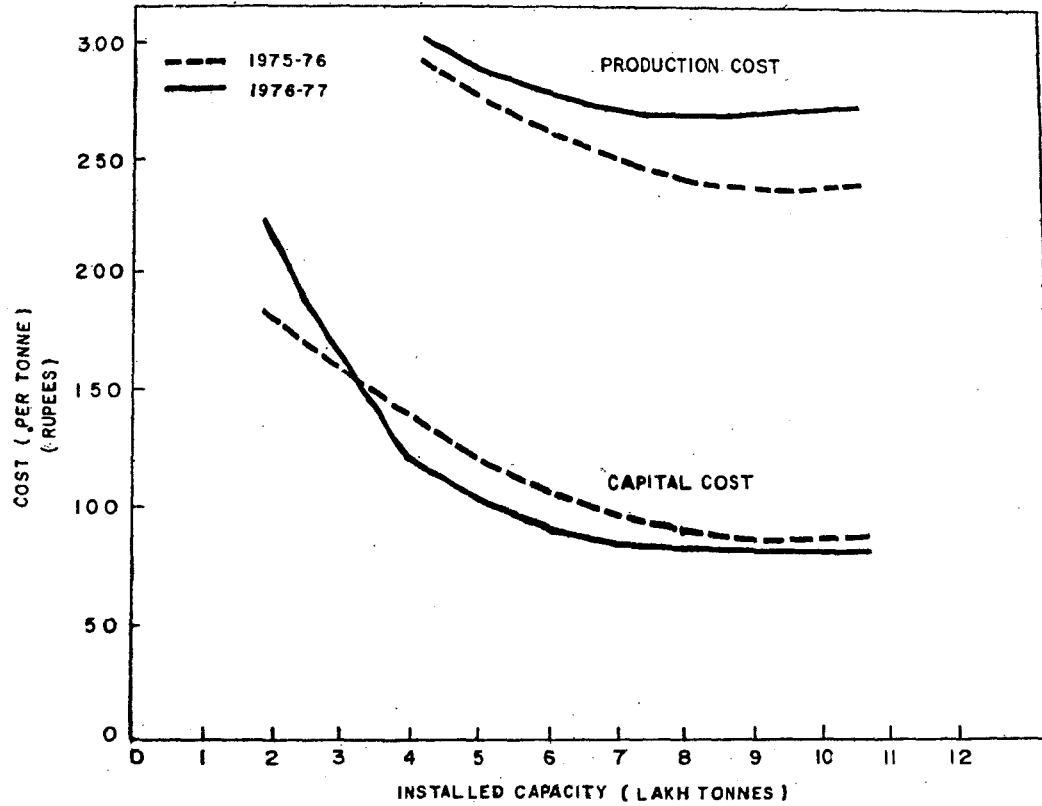
The relationship between plant size (installed capacity) and capital costs (value of net fixed assets per tonne of cement produced) and between plant size and production costs (cost of production per tonne), based on the data for the years 1975-76 and 1976-77 of the selected companies is shown in the Diagram appended. All these companies are fairly old. Seventeen of them were incorporated in 1958 or earlier and the remaining company in 1962. The

TABLE 8 : DISTRIBUTION OF 18 SELECTED COMPANIES ACCORDING TO INSTALLED CAPACITY, 1975-76

Installed capacity (Lakh tonnes per annum)	Number of companies	Total installed capacity (Lakh tonnes)	Total production (Lakh tonnes)	Capacity utilisation (Per cent)	Net fixed assets per tonne of cement produced (Rs.)	Cost of production per tonne of cement (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Upto 3		11.35 (7.6)	9.48 (7.6)	83.5	184.20 (222.90)	246.33 (302.30)
3 to 8		28.92 (19.4)	24.61 (19.8)	85.1	139.86 (119.62)	292.05 (302.14)
8 to 16		40.68 (27.4)	31.72 (25.5)	78.0	86.25 (84.28)	241.93 (277.08)
16 and above		67.90 (45.6)	58.43 (47.1)	86.1	85.31 (80.15)	194.19 (200.59)
TOTAL		148.85 (100.0)	124.24 (100.0)	83.5	103.90	229.74

Figures within brackets under columns 6 and 7 relate to 1976-77.

DIAGRAM 2
RELATIONSHIP BETWEEN PLANT SIZE AND CAPITAL AND PRODUCTION COSTS



largest unit, ACC, was set up in 1936. The selected companies are divided into 4 groups on the basis of their installed capacity, viz., upto 3 lakh tonnes, 3 to 8 lakh tonnes, 8 to 16 lakh tonnes, and 16 lakh tonnes and above. It would be observed that as the capacity increases, both the capital costs and production costs per tonne have a tendency to diminish.* Such a relationship indicates that substantial economies in both the constructional and the operational costs can be secured by enlarging the capacity of a company. This type of analysis seems to suggest that setting up of only large cement plants in future might prove economical. However, it is almost evident that many crucial factors are to be taken into consideration while making investment decisions concerning setting up of large units involving a huge outlay. These relate to a steady flow of raw materials at competitive costs, capital resources, borrowing capacity of the entrepreneur and marketability of the product. Feasibility studies try to balance these factors to ensure maximum economy. The setting up of cement units connotes a special function which can be put to no alternative use in case the project proves uneconomical. Therefore, all the variables which affect the success of a unit must be investigated thoroughly.

The trends in installed capacity, production and capacity utilisation of the 18 selected companies, their sales realisation behaviour and input prices behaviour based on the data available in the published annual accounts are collated to the extent possible with the trends revealed by the production and prices data for the cement industry (Table 9). The steady increase in utilisation of installed capacity which was in turn reflected in improvement in production of the selected companies, (which accounted for 70 per cent of the total installed capacity of the cement industry) was in consonance with the rising trend of the Index of Production of cement industry which stood at 137.1 per cent in 1977-78 (1970=100). Similarly, the increases in sales realisation per tonne and the average prices paid for major inputs like limestone, gypsum and clay by the selected companies were more or less parallel with the increasing trends in the Index of Wholesale Prices of cement and Indices of Wholesale Prices of limestone, gypsum and clay compiled by the Office of the Economic Adviser to the Government of India.

Trends in
Production
vis-a-vis
Index Numbers
of Production

* For an econometric analysis of production and cost functions, please see appendix.

TABLE 9 : INSTALLED CAPACITY, PRODUCTION, SALES-REALISATION AND INPUT—PRICES PAID BY 18 SELECTED COMPANIES V/S. PRODUCTION AND PRICES IN CEMENT INDUSTRY

Year	Installed Capacity, Production and Capacity Utilisation of 18 selected companies			Price of Cement	Input—prices paid by the 18 selected companies and indices of wholesale prices								
	Installed Capacity (Lakh tonnes)	Production (Lakh tonnes)	Capacity Utilisation (%)		Pro-duction over 1973-74 (%)	Index of Produc-tion of Cement Indus-try	Index of Sales rea-lisation-Average price per tonne (Rs.)	Whole-sale prices of cement	Limestone		Gypsum		Clay
									Average price per tonne (Rs.)	Index of whole-sale prices	Average price per tonne (Rs.)	Index of whole-sale prices	
1973-74 ..	142.36	105.68	74.2	100.0	107.6	182.83	112.3	N.A.	183.4	N.A.	112.5	N.A.	129.2
1974-75 ..	148.36	111.97	75.5	105.9	102.6	175.44@	147.9	15.51	184.4	85.59	124.0	8.86	129.2
1975-76 ..	148.85	124.24	83.5	117.6	116.6	221.84	170.5	18.00	187.2	101.21	151.3	6.36	146.7
1976-77 ..	148.85	127.17	85.6	120.3	133.9	225.06	173.6	20.29	187.2	105.38	151.3	8.55	159.2
1977-78 ..	153.27	134.64	87.8	127.4	137.3	233.68	176.8	20.70	187.2	104.68	151.3	9.74	160.1

@ Declined due to the change in product-mix of some companies.

Sources :

1. Index Numbers of Wholesale Prices (Base: 1970-71=100), Office of the Economic Adviser to the Government of India, Ministry of Industry.
2. Index Numbers of Industrial Production (Base 1970=100), CSO, Government of India.

N.A. = Not available.

Section IV : Outlook for the future

It was noted in Section 1 that the installed capacity of cement industry increased gradually from 18.5 million tonnes in 1971 to 21.2 million tonnes in 1975, while the production fluctuated between 14.3 and 16.2 million tonnes during the same period. With internal consumption lagging behind production, about 4 to 5 lakh tonnes of cement annually was rendered surplus in the early seventies. The restrictions on the new construction activity imposed by the Government in 1975 suppressed the domestic demand. As a result, 14 lakh tonnes of cement became available for exports, though the impact was largely felt in the following year. With the change in the policy of the new Government in 1977 laying emphasis on construction activity, the pent up demand for cement pushed up the domestic consumption, reversing the situation to one of deficit. The installed capacity did not show any appreciable change till 1977. A part of the new installed capacity during 1978 was still under gestation. Although large industrial houses were free to go in for cement since 1970, they started diversifying their activities into this line only recently. Thus large quantities of cement have now to be imported by the Government to meet the domestic demand.

Cement production during 1979 was lower at 18.3 million tonnes as compared to 19.6 million tonnes in 1978, while the domestic demand was estimated at 24 million tonnes in 1979. Power cuts in most of the States, inadequate supplies of railway wagons and a vital input, i.e., coal (the supplies on an average being 3.7 lakh tonnes as against a monthly requirement of 4.7 lakh tonnes) accompanied by all-round increase in the prices of inputs such as raw materials, stores and spares and furnace oil were the contributory factors leading to shortfall in production. Despite imports of 2 million tonnes of cement last year, the domestic supply is not in a position to meet the growing demand. Considering the industry's installed capacity of 24.3 million tonnes in April 1980, the cement production for the current year, subject to adequate availability of power, is estimated at 23 million tonnes against the expected demand of 28 million tonnes. The Government has decided to import 2 million tonnes of cement during the current year to ease the shortage.

The Government has taken the following measures to bridge the anticipated gap between demand and supply of cement. 1. **Incentives** : The cash incentive scheme to boost production, grant of assistance to the cement industry for the use of furnace oil during period of coal shortage and import of pre-calculator technology. 2. **Split-location** : The regional imbalance in the distribution of cement caused by the location of plants near limestone deposits is sought to be minimised by split-location of new plants i.e., clinkerisation at one place and grinding units near major consuming centres.

3. **Ban on exports** : In order to increase the overall availability of cement, the export of cement, except to Nepal and Bhutan, has been banned.

4. **Periodic increase in the retention price :** The Government has been revising from time to time the retention price payable to cement producers. Under the escalation clause in the Government's Resolution of 1st August 1974, an increase in the price of cement, on account of rises in the cost of coal, power tariff, wages and dearness allowance and freight on coal, was granted on 1st October, 1975; the retention price was raised to Rs. 160.75 per tonne. In May 1979, the Government announced a three-tier system of retention prices at Rs. 185, Rs. 202, and Rs. 220 per tonne for low cost, medium cost and high cost units, respectively.

5. **Mini-cement plants :** The Government seem to favour setting up of mini-cement plants as these are expected to help in exploiting small deposits of lime-stone, encourage cement production in deficit areas, reduce the strain on transport and require low capital investment and shorter gestation period. In order to attract entrepreneurs to promote mini-plants, it has offered a number of incentives in the form of a rebate in payment of excise duty upto 50 per cent for the first five years, etc. The Cement Research Institute of India, under the Council of Scientific and Industrial Research (CSIR), has achieved a break-through in restructuring the mini-cement plant technology and has recommended establishment of 200 mini-plants in the country, each with a capital cost of around Rs. 2 crores as against the current capital cost of about Rs. 25 crores for setting up a 4 lakh tonnes plant. The Government's policy, however, is not in favour of allowing large industrial houses and foreign majority companies to set up mini-plants.

6. **Augmenting capacity :** The recent decision of the Union Government to allow large houses to establish fresh capacity of 4.6 million tonnes in cement industry might augment the supply position of cement to some extent.

As per the Draft Sixth Five Year Plan, 1978-83 (Revised), the demand for cement is estimated at 31-32 million tonnes in 1982-83 due to greater construction activity, while indigenous production is expected to rise to 28-29 million tonnes. It is thus anticipated that the shortfall in cement production will be around 3.5 million tonnes in 1982-83.

Demand
Projections

STATEMENT 1 : COMBINED INCOME, VALUE OF PRODUCTION, EXPENDITURE AND APPROPRIATION ACCOUNTS OF
18 CEMENT MANUFACTURING COMPANIES, 1970-71 TO 1977-78

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
INCOME AND VALUE OF PRODUCTION								
1. Sales	178,20	191,06	194,82	194,03	220,94	294,92	313,24	348,74
2. Increase (+) or decrease (-) in value of stock of finished goods and work-in-progress	28	2,10	58	2,04	-70	2,79	-54	-1,96
3. Value of production (1 + 2)	178,48	193,16	195,40	196,07	220,23	297,71	312,70	346,77
4. Other income	2,80	2,25	2,73	2,83	2,98	4,60	6,59	8,40
5. Non-operating surplus(+) / deficit(-)	24	3	58	-62	58	4,90	1,04	2,81
6. TOTAL INCOME/EXPENDITURE	181,52	195,44	198,71	198,28	223,80	307,20	320,33	357,98
EXPENDITURE AND APPROPRIATIONS								
7. Raw materials, components, etc. consumed	31,20	31,70	34,48	41,06	43,35	56,80	59,71	72,65
8. Stores and spares consumed	30,42	35,01	37,44	37,66	41,03	57,70	60,79	60,94
9. Power and fuel	35,50	37,80	38,85	40,84	50,92	72,26	81,55	84,50
10. Other manufacturing expenses	4,01	5,67	4,49	2,38	2,85	5,15	6,10	5,39
11. Salaries, wages and bonus	18,27	19,87	21,12	23,49	28,76	34,45	35,54	37,39
12. Provident fund and employees' welfare expenses	2,71	2,94	3,61	3,97	4,35	4,81	5,36	6,12
13. Other expenses	24,88	27,55	31,49	32,39	32,68	34,78	41,49	44,98
14. Depreciation provision	11,39	11,43	11,04	9,99	10,80	10,93	1,064	11,82
15. Gross profits	22,91	23,46	15,59	7,12	8,46	25,43	18,11	31,39
16. Less Interest	6,80	7,20	7,52	7,62	8,52	9,60	11,31	11,66
17. Operating profits	16,11	16,25	8,07	-50	-6	15,83	6,80	19,73
18. Non-operating surplus(+) / deficit(-)	24	3	58	-62	58	4,90	1,04	2,81
19. Profits before tax	16,35	16,28	8,65	-1,12	52	20,73	7,84	22,54
20. Less Tax provision	3,58	5,82	3,48	1,26	2,87	7,63	6,68	14,42
21. Profits after tax	12,77	10,46	5,17	-2,37	-2,35	13,10	1,16	8,12
(a) Dividends	6,32	6,30	6,24	4,13	1,08	6,81	6,56	7,86
(i) Ordinary	5,94	5,97	5,90	3,87	87	6,46	6,27	7,56
(ii) Preference	38	33	34	26	21	35	29	29
(b) Profits retained	6,45	4,16	-1,07	-6,50	-3,43	6,30	-5,40	26

Note (1) For concepts and definitions of various items, reference may be made to the article 'Finances of Large Public Limited Companies, 1976-77 to 1977-78', Reserve Bank of India Bulletin, June 1979.

(2) To ensure comparability over the period 1970-71 to 1977-78, certain companies which are not common to both the quinquennial series 1970-71 to 1975-76 and 1975-76 to 1980-81, are excluded from the present study.

STATEMENT 2 : COMBINED BALANCE SHEET OF 18 CEMENT MANUFACTURING COMPANIES, 1970-71 TO 1977-78

		(Lakhs of rupees)							
		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
CAPITAL AND LIABILITIES									
A. Share capital	..	63.25	63.82	63.78	64.09	65.28	65.38	65.40	67.41
Paid-up capital	..	63.24	63.81	63.77	64.08	65.26	65.37	65.39	67.39
(a) Ordinary	..	57.22	57.83	57.83	58.08	59.02	59.13	59.15	61.15
(b) Preference	..	6.02	5.98	5.94	6.00	6.24	6.24	6.24	6.24
B. Reserves and surplus	..	44.68	47.40	46.93	40.60	33.91	40.20	34.88	32.99
Development rebate reserve*	..	21.45	22.39	23.04	23.62	23.03	21.74	21.46	20.76
C. Provisions	..	7.32	9.82	9.53	9.17	8.96	15.80	14.36	21.04
Taxation (net of advance of income-tax)	..	52	1.81	59	—	8	5.20	3.94	9.35
D. Borrowings	..	85.38	84.76	82.41	84.97	85.28	85.68	94.43	78.93
Banks	..	27.37	27.71	27.08	31.71	27.87	28.70	40.68	20.59
Institutional agencies	..	31.15	29.12	26.82	23.63	26.24	27.91	11.12	10.22
Government and semi-Government	..	23	24	31	65	80	1.04	1.26	1.74
E. Trade dues and other current liabilities	..	36.60	40.44	45.24	59.13	74.82	85.18	82.73	102.71
F. Miscellaneous non-current liabilities	..	1	1	1	1	7	9	10	10
TOTAL LIABILITIES / ASSETS	..	237.25	246.24	247.90	257.98	268.32	292.34	291.89	303.17
ASSETS									
G. Gross fixed assets	..	225.09	233.86	241.97	247.74	262.94	272.55	284.15	295.69
Of which, plant and machinery	..	150.24	157.41	160.47	165.17	177.99	187.40	196.05	205.21
H. Less Depreciation provision	..	98.15	109.00	118.74	125.73	135.79	143.46	153.03	162.16
I. Net fixed assets	..	126.94	124.86	123.23	122.01	127.15	129.09	131.12	133.53
J. Inventories	..	56.87	62.37	67.99	73.66	80.95	89.08	80.75	77.64
Raw materials, components, etc.	..	9.36	9.37	11.47	12.32	14.50	14.48	12.82	13.05
Finished goods	..	4.60	5.66	5.91	5.14	5.89	8.96	9.14	7.73
K. Loans and advances and other debtor balances	..	38.21	42.46	40.58	43.22	44.61	55.98	57.48	60.04
L. Investments	..	10.05	10.54	10.48	9.94	8.54	8.60	11.49	11.43
M. Advance of Income-tax (net of tax provision)	..	—	—	95	95	—	—	—	—
N. Other assets	..	2.31	2.19	2.18	1.11	1.15	1.35	1.32	2.00
O. Cash and bank balances	..	2.87	3.82	3.45	7.08	5.92	8.24	9.73	18.51

*Investment allowance reserve from 1976-77 onwards.

Note: The break-ups of only selected items are presented; the sub-items do not add up to the main item.

STATEMENT 3 : SOURCES AND USES OF FUNDS, 1971-72 TO 1977-78

(Lakhs of rupees)								
SOURCES OF FUNDS								
INTERNAL SOURCES								
A. Paid-up capital	..	16,66	8,98	- 64	4,10	20,80	2,81	15,92
B. Reserves and surplus	..	60	-	-	-	-	-	2,00
Development rebate reserve*	..	2,71	-47	-6,33	-6,70	6,29	-5,32	-1,89
C. Provisions	..	95	64	58	-59	-1,29	-28	-71
Depreciation	..	13,34	9,45	5,69	10,80	14,51	8,13	15,81
Taxation (net of advance of income-tax)	..	10,85	9,74	6,99	10,06	7,67	9,57	9,13
	..	1,30	-1,22	-1,54	1,03	5,13	-1,26	5,41
EXTERNAL SOURCES								
D. Paid-up capital**	..	3,18	2,42	16,75	17,25	10,89	6,33	4,48
E. Borrowings	..	- 3	- 4	31	1,18	11	2	-
Banks	..	-62	-2,35	2,56	31	41	8,75	-15,50
Institutional agencies	..	34	-63	4,62	-3,84	84	11,98	-20,09
Government and semi-Government	..	-2,03	-2,31	-3,18	2,60	1,67	-16,79	-90
Trade dues and other current liabilities	..	1	6	34	15	24	22	48
F. Miscellaneous non-current liabilities	..	3,84	4,80	13,88	15,70	10,36	-2,45	19,98
G. TOTAL SOURCES/USES OF FUNDS	..	19,84	11,40	16,11	21,35	31,69	1	-
USES OF FUNDS								
H. Gross fixed assets	..	8,77	8,11	5,77	15,19	9,61	11,60	11,55
(of which, plant and machinery)	..	7,16	3,07	4,70	12,82	9,40	8,65	9,16
I. Inventories	..	5,51	5,61	5,67	7,29	8,14	-8,33	-3,11
Raw materials, components, etc.	..	-	2,10	85	2,18	- 2	-1,66	23
Finished goods	..	1,06	25	22	-24	3,07	18	-1,41
J. Loans and advances and other debtor balances	..	4,24	-1,88	2,65	1,39	11,37	1,50	2,56
K. Investments	..	49	- 6	-54	-1,40	6	2,90	- 6
L. Other assets	..	-12	- 1	-1,07	4	19	- 3	68
M. Cash and bank balances	..	95	-38	3,63	-1,16	2,33	1,50	8,78

* Investment allowance reserve from 1976-77 onwards.

** Mainly comprising net issues.

Note : The break-ups of only selected items are presented ; the sub-items do not add up to the main item.

APPENDIX

PRODUCTION AND COST FUNCTIONS

Mathematical forms of production and cost functions are frequently empirically worked out to know the precise relations between output and inputs of factor services, the cost of output and the corresponding costs of inputs, etc.

The production function of a firm enables us to know the maximum flow of output per unit of time achievable for any given rate of input services employed by it for that unit of time. Important assumptions however underlie particular forms of production function viz., (1) there is always a single value of the output which is the maximum attainable for a given combination of inputs, (2) it is possible to vary some of the inputs, singly or in combination, which otherwise implies the possibility of continuous substitution of one input service for the other, (3) the nature of variation of output with different inputs is given by the mathematical form of the function postulated.

Given the nature of production function, it is possible to derive a cost-output relation which in turn depends on certain assumptions about the markets for product and factor services. For the short period, it is not possible to vary all the input services. In this situation, the cost behaviour is analysed with particular emphasis on obtaining the best results within the frame work of inputs that can be changed during this period. In the long period, i.e. without any time constraint, when all the input services could be varied, the cost behaviour is studied with a view to obtaining an optimal combination of all input services.

There are different versions about the way costs vary with changing output levels. One version states that since marginal product diminishes according to law of diminishing returns and average product may increase upto a level and decline thereafter, and since for given set of factor and product prices, the average variable cost and marginal cost have an inverse relationship with the average and marginal product respectively, the relation between the output and cost takes the traditional 'U'—shaped curve for marginal and average costs. This analysis can be extended to the multi-product and multi-factor firms with some more assumptions such as substitutability among factors of production, factor-product convertability, etc. Another version states that "in general, average direct costs per unit of product will be expected to remain constant over large ranges of output, so long as the business continues to employ the same methods of production and the total of such costs will vary proportionately with total output." In this situation average cost (direct and indirect) curve can be described as 'L' shaped curve. This hypothesis is gaining support from the accumulating empirical evidence.

That average costs per unit of output are rather probably lower in majority of industries, the greater the scale of production of the plant or the firm, is

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1. P. W. S. Andrews, *Manufacturing Business*, (The Macmillan Company, New York, 1949), p. 102.

based on the assumption of economy of scale of operations and efficiency in the use of input levels. Economy and efficiency in the case of large-scale production undertaken by business organisations is supposed to arise from their capacity to undertake bulk transactions, ability to hold sufficient reserves of monetary and labour resources and finally their capacity to employ specialised machines and men. A large firm with a single product and single plant, besides the above economies, can also reduce administrative costs per unit of output. In the case of large firms with a substructure of plants and products, economies result from reduction in bad debts, use of patents and trade marks, acquisition of the best talent, and finally through effective delegation of control and proper management methods. Whatever be the substructure of the firm and product, cost reduction in the case of a large plant arises from factors such as reduction in the costs of inter-process movements of output, centralised repairs and maintenance services and finally from effective communication, co-ordination and supervision of plans and orders.

It is however, argued by some that a "finite level of production is usually sufficient to exhaust any given source of economy, so that beyond the scale of output needed to reconcile these varying optima, costs will not decline any further. One school of writers holds that the power of the manager to coordinate and control is in effect an indivisible unit, or factor, which may be cultivated subject only to diminishing returns."² The Management school, on the other hand, opines that "no limit is set to the size of the organisation, if correct principles are adopted to enable a single leader to delegate control"³ and economy in the scale of operation is achievable at all levels of output.

Problems of empirical verification of cost-output behaviour of a firm

Empirical verification of the cost-output relation of the firm is beset with formidable problems in obtaining proper data. We require an ideal series of paired observations on cost and output which satisfy the following conditions enunciated by J. Johnston :

"(i) The basic time period for each pair of observations should be one in which the observed output was achieved by uniform rate of production within the period"

(ii) The observations of cost and output should be properly paired in the sense that the cost figure is directly associated with the output figure

(iii) We should also like a wide spread of output observations so that cost behaviour can be observed at widely differing rates of output. It would be necessary for the observations on any given rate of output to relate only to the periods when the firm was fully adjusted to producing at that rate and doing so with maximum of efficiency within the assumed capacity constraint.

(iv) It would also be necessary to keep the data uncontaminated by the influence of factors extraneous to the cost-output relationship itself."

2. J. Johnston Statistical Cost Analysis, (McGraw—Hill Book Company, Inc. New York, 1960), p. 23.

3. P. Sargant Florence, The logic of British and American Industry, Routledge & Kegan Paul Ltd., London, 1953., p. 142.

"To examine long run relationship essentially similar requirements apply. The basic unit of time to which individual observations relate should be short enough to avoid possible averaging effect, and the cost-output observations should again be properly paired. The requirement of wide spread of output observations is more stringent than before, for we must now have observations on firms with widely differing capacity limits, ideally ranging from very small to very large firms. . . . In either case the statistical observations should only relate to periods when the firm is fully adjusted to both size and rate of output. Moreover, it is still important that cost movements due to factor price variations should not appear in the data We require, ideally, that each firm, of whatever scale, should be producing within that scale in the economically most efficient manner, given the current state of technology and the current range of factor prices Published information, if it exists at all, may be for unit time periods which are undesirably long for the purposes of a short-run analysis This accounting time period may still be a bad approximation to the unit time period relevant to the underlying economic theory."⁴

If the number of observations is spread over a considerably long period, then limitations such as change in capacity size of the firm, technological changes, changes in the quality of materials etc. will creep in. Another important aspect is the change in the factor prices over a period of time, deflation by the price indices of which may introduce biases in the results.

Long run analysis of the cost-output relation can be carried out on the cross section data of a fairly good number of firms for the same period of time. Some of the advantages as also limitations, of such an analysis as enumerated by J. Johnston, are as follows :

"This automatically rules out the possibility of temporal variations in the factor prices distorting the cost-output relation, but it does admit the possibility of effects from spatial variations in the factor prices. If these are systematically connected with the size of the firm, then they may or may not require correction. . . . More substantial part of the spatial variations are probably due to the fact that cross-section data for the given year, say, will picture each firm at a different point on its evolutionary path The cross-section approach will obviously work best in an industry subject to slow technical change. If the technical changes were uniformly rapid for all size groups and if the age of equipment were randomly distributed with respect to size, various ages of plant and equipment in a cross-section survey would produce discrepancies about the true cost-scale line but would not necessarily distort it. However, if the larger plants were, on the average, much newer than the old and if technical progress had not been concentrated at the upper end of the size scale, then the cross section survey would overstate the economies of scale."⁵

The production and cost functions for the cement industry, based on the cross-section data of 18 public limited companies have been estimated for the individual years 1975-76, 1976-77 and 1977-78 as also for the combined period

4. J. Johnston, *ibid*, p. 27, 28 and 29.

5. J. Johnston, *Ibid*, p. 30.

1975-76 to 1977-78 (Tables 10 & 11). Traditional Cobb-Douglas type of production functions for the quantity as well as the value of production have been worked out with two main (input) variables viz., Capital stock (value of net fixed assets as at the end of the accounting year) and labour (salaries, wages, bonus, provident fund and staff welfare expenses incurred during the accounting year.) These equations with capacity utilisation (worked out as the ratio of quantity produced to installed capacity) as additional variable were also tried. An important assumption in estimating production functions with output (quantity/value) as the dependent variable and only capital and labour as the major inputs is that other inputs (services) have a unitary elasticity with output and all the companies have access to inputs at uniform prices. Cost functions, log linear as well as quadratic in the quantity produced have been worked out. All these cost functions with capacity utilisation as an additional variable have also been tried.

A result of significance from the relations is that after a reasonable level of capacity utilisation (75 per cent and above, or about 1 million tonnes of output), marginal cost of operations is less than the average cost and the firms, on an average, enjoy substantial economies of scale. For example, for a ten per cent rise in output, total costs rise by only 8.0 — 8.5 per cent. Another result is that, over the three years, the marginal cost of output is rising; the increase in marginal cost over the three year period being in the range Rs. 20-40 per tonne of output, according to various estimates.

The production relations also show that the share of labour in the net value added by manufacture is greater than that of capital, it being of the order of 55-60 per cent.

TABLE 10: PRODUCTION FUNCTIONS—DOUBLE LOG EQUATIONS

Sr. No.	Year	Dependent Variable	Constant	Coefficient of			$\bar{R}^2$	D.W.**	S.E.E.	Mean
				L	K	U				
1.	1975-76	..	..	Q t Statistics	0.563* 4.330	0.472* 4.565	0.826	2.967	0.198	0.53
2.	1976-77	..	..	Q t Statistics	0.489* 2.756	0.605* 4.462	0.800	2.532	0.276	0.53
3.	1977-78	..	..	Q t Statistics	0.677* 4.541	0.423* 3.630	0.801	2.695	0.235	0.53
4.	1975-76 to 1977-78 (combined)	..	..	Q t Statistics	0.578* 6.823	0.502* 7.593	0.816	2.527	0.228	0.53
5.	1975-76	..	..	QV t Statistics	1.390* 3.827	0.692* 6.553	0.866	2.256	0.160	4.95
6.	1976-77	..	..	QV t Statistics	1.297* 1.963	0.625* 3.075	0.719	2.376	0.316	4.95
7.	1977-78	..	..	QV t Statistics	1.041* 2.283	0.840* 6.375	0.823	2.199	0.207	4.98
8.	1975-76 to 1977-78 (combined)	..	..	QV t Statistics	1.230* 4.285	0.722* 8.488	0.793	2.324	0.229	4.96
9.	1975-76	..	..	Q t Statistics	0.560* 4.097	0.474* 4.409	0.814	2.052	0.204	0.53
10.	1976-77	..	..	Q t Statistics	0.560* 4.397	0.467* 4.561	0.899	1.933	0.196	0.53

TABLE 10—(Concd.)

Sr. No.	Year	Dependent Variable	Constant	Coefficient of			$\bar{R}^2$	D.W.**	S.E.E.	Mean
				L	K	U				
11.	1977-78	Q t Statistics	-4.107* 7.416	0.563* 4.133	0.445 4.421	0.653* 2.500	0.853	1.737	0.202	0.53
12.	1975-76 to 1977-78 (combined)	Q t Statistics	-4.090* 13.454	0.554* 7.980	0.467* 8.578	0.630* 5.135	0.877	1.940	0.187	0.53
13.	1975-76	QV t Statistics	0.107 0.130	0.662* 6.566	0.320 4.044	0.718 1.721	0.881	1.799	0.151	4.95
14.	1976-77	QV t Statistics	-0.290 0.687	0.723* 6.771	0.243* 2.823	0.904* 6.446	0.924	1.476	0.164	4.95
15.	1977-78	QV t Statistics	0.083 0.206	0.708* 7.126	0.241* 3.282	0.755* 3.968	0.911	1.688	0.147	4.98
16.	1975-76 to 1977-78 (combined)	QV t Statistics	-0.105 0.452	0.689* 12.867	0.272* 6.471	0.842* 8.894	0.918	1.594	0.144	4.96

* Significant at 5 per cent probability level.

Q = Quantity of cement produced during the period (Lakh tonnes)

QV = Value of cement production during the period (Rs. in thousands)

K = Capital stock (value of net fixed assets) as at the end of the accounting period — (Rs. in lakhs)

L = Labour charges during the period, comprising salaries, wages and bonus, provident fund and welfare expenses — (Rs. in thousands).

** — This statistics may not signify much in cross section analysis unless the firms are arranged in spatial ordering and there is some correlation in this sequence.

Form of function 'Q' = $AL^\alpha K^\beta U^\gamma$

TABLE 11: COST FUNCTIONS

Sr. No.	Year	Dependent Variable	Constant	Coefficient of			$\bar{R}^2$	D.W.**	S.E.E.	Mean
				Q	Q ²	U				
QUADRATIC EQUATIONS										
1.	1975-76	C t Statistics Elasticity	5028.544 0.277 0.032	255.894* 5.903 1.112	-0.011 1.501 -0.144		0.973	2.727	42194.340	158573.33
2.	1976-77	C t Statistics Elasticity	13837.570 0.741 0.080	260.798* 5.968 1.060	-0.010 1.476 -0.139		0.974	2.768	46454.920	173896.83
3.	1977-78	C t Statistics Elasticity	4170.819 0.193 0.023	292.356* 6.169 1.182	-0.015* 2.071 -0.204		0.968	2.825	52302.250	185033.22
4.	1975-76 to 1977-78 (combined)	C t Statistics Elasticity	9397.894 0.874 0.054	264.848* 10.806 1.097	-0.011* 2.888 -0.152		0.972	2.645	45584.200	172492.13
DOUBLE LOG EQUATIONS										
5.	1975-76	C t Statistics	2.762* 13.932	0.860* 11.175			0.879	2.225	0.150	4.94
6.	1976-77	C t Statistics	3.071* 15.495	0.764* 9.779			0.848	2.224	0.179	4.97
7.	1977-78	C t Statistics	2.980* 15.423	0.799 10.671			0.869	2.486	1.162	5.00
8.	1975-76 to 1977-78 (combined)	C t Statistics	2.956* 26.413	0.801* 18.351			0.864	2.234	0.162	4.97
QUADRATIC EQUATIONS										
9.	1975-76	C t Statistics Elasticity	-74617.862 1.504 -0.471	245.469* 5.949 1.067	-0.009 1.348 -0.123	1010.341 1.710 0.527	0.975	2.694	39723.78	158573.33

TABLE 11—(Concl.)

Sr. No.	Year	Dependent Variable	Constant	Coefficient of			$\bar{R}^2$	D.W.**	S.E.E.	Mean
				Q	Q ²	U				
10.	1976-77	.. C t Statistics Elasticity	3402.483 0.105 0.020	253.166* 5.181 1.029	-0.009 1.183 -0.124	158.350 0.400 0.075	0.972	2.761	47813.62	173869.83
11.	1977-78	.. C t Statistics Elasticity	-41265.256 1.116 -0.223	265.031* 5.394 1.071	-0.011 1.483 -0.151	667.972 1.488 0.302	0.970	2.953	50304.220	185033.22
12.	1975-76 to 1977-78 (combined)	.. C t Statistics Elasticity	-26709.790 1.320 -0.155	248.300 9.916 1.029	-0.009* 2.221 0.118	507.963* 2.082 0.245	0.974	2.691	44163.40	172492.13
DOUBLE LOG EQUATIONS										
13.	1975-76	.. C t Statistics	1.811* 2.327	0.852* 11.218		0.510 1.263	0.884	2.238	1.148	4.94
14.	1976-77	.. C t Statistics	3.350* 12.630	0.834 9.464		-0.243 1.510	0.859	2.300	0.172	4.97
15.	1977-78	.. C t Statistics	2.923* 7.585	0.792* 9.076		0.040 0.174	0.861	2.515	0.167	5.00
16.	1975-76 to 1977-78 (combined)	.. C t Statistics	3.153* 15.843	0.825* 17.233		-0.137 1.196	0.865	2.236	0.161	4.97

* = Significant at 5% probability level.

** = This statistic may not signify much in cross section analysis unless the firms are arranged in spatial ordering and there is some correlation in this sequence.

C = Cost of production comprising cost of raw materials and components, stores and spares, power and fuel, salaries, wages and bonus, provident fund and welfare expenses, depreciation and repairs, interest, other manufacturing, selling and general expenses during the period — (Rs. in thousands)

Q = Quantity of cement produced during the period (Thousand tonnes)

U = Capacity utilisation (Q/I in percentage, where I stands for Installed capacity)

HOUSES FOR THE RURAL POOR

G. A. Kelkar*

Shelter is one of three basic human needs and investment therein is a life time asset. A vast majority of India's population not only lives in villages, but many of them also live below the poverty line. Construction of shelter for these poor households, is, therefore, no less important than the construction of housing colonies in urban areas. Public sector investment in housing, particularly in rural areas, has been negligible in the Five Year Plans and the programme of providing house sites and houses to rural poor has received lukewarm attention only. Not only is the provision of houses to rural poor necessary from the view point of social justice but it has an economic justification also. Better houses would promote better living and a variety of economic activities in the village, thus enlarging the scope for rural employment.

The data thrown up by the All-India Debt and Investment Survey, 1971-72 suggest that the actual requirement of houses in rural areas would be considerably more than the provision of 14.8 million houses in March 1979 as estimated by the National Building Organisation on the basis of the 1971 census data. The Survey data revealed that the houses of at least 22.9 million households in the rural areas were in urgent need of replacement, apart from the requirements of new households. In the census, count was taken of occupied houses irrespective of whether or not they were solely for residential purposes. Besides, the definition of "house" for purposes of census enumeration was so wide that the number of houses recorded under the census would be an over estimation. Secondly, in some of the backward regions and tribal areas the existing shelters were so inadequate and in such poor condition that they could be termed a 'house' only in the sense that a family had some kind of roof over its head.

This article reviews the state of available houses of weaker section¹ in the rural areas on the basis of the data collected during the All-India Debt and Investment Survey, 1972-72 and published by the Reserve Bank of India.² Estimates of financial requirement for provision of better houses to this class and the sources of funds is also attempted. Section I deals with the average size and value of a rural house. In Section II, the problem of houseless households is discussed and an estimate is attempted of the number of housing units required by the end of 1981 on the basis of both the Survey and census data. The schemes launched by the Central and State Governments to build more houses in rural areas are also discussed in this Section. Section III deals with the financial aspects of the problem and Section IV presents conclusions.

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This is an abridged version of a study, "Housing Problem in the Rural Sector", prepared in June 1977 in the erstwhile AIDIS Cell of the Economic Department and circulated for internal use in the Bank.

1. The "Weaker section" is defined, for the purpose of this study, as the group of rural households owning assets of less than Rs. 5,000/-
2. All-India Debt and Investment Survey, 1971-72—Statistical Tables relating to Area and Value of Buildings & Structures owned by Rural Households as on 30th June 1971, published in May 1978

There are certain limitations to this study. In the first place, in the Survey, the value of residential houses was recorded by the investigators either on the basis of statements by the respondents or were based on an on-the-spot judgement of the investigators. As such, the recorded values of houses were broad approximations. Valuation was especially difficult as in villages many of the houses were old structures. Secondly, the tenant cultivators who had built their own houses on the landlord's land might not have included the value of this land in the value of residential houses since it was not owned by them. Thus, about 0.23 million households out of 71.9 millions did not report the area under the houses owned by them. To this extent the average area per reporting household and the average value of house per reporting household might be understated. Thirdly, some areas of the country were excluded in the coverage of the All-India Debt and Investment Survey. Further, the timing for canvassing of the Survey was different from that of the census of 1971 and hence the total number of estimated rural households according to the Survey was lower by 2.5 millions than that enumerated in the census. The Survey estimates were higher than the census data in five States, with the variation as high as 13.7 per cent in Gujarat. In the case of Jammu and Kashmir, Haryana, Kerala, Assam and Rajasthan, the Survey estimates were lower than the census figures by 11 to 15 per cent. The estimates of houseless households given in Section II should be considered with this limitation in mind. Finally, the State-wise analysis attempted here does not take account of the data collected in the Survey in respect of the States of Tripura, Meghalaya and Manipur and the Union Territories of Delhi, Goa and Pondicherry, as the number of rural households was small (less than 2 lakhs) in each of these areas.

Section I

Size and Value of a Rural House³

At an all-India level, the average size of a rural house measured 76 sq. metres. The cultivator's house was almost one and half times the size of a non-cultivator's house.

TABLE 1: AVERAGE AREA AND VALUE OF OWNED RESIDENTIAL HOUSES PER REPORTING HOUSEHOLD—ALL-INDIA

					(As on June 30, 1971)			
Category of household					Proportion of households reporting (per cent)	Area in sq. metres*	Value in rupees	Value per sq. metre (Rs.)
Cultivators	..	..	..	..	98.2	82	2,122	25.88
Non-cultivators	..	..	..	..	80.7	57	1,197	21.00
All Rural Households	..	..	..	..	93.4	76	1,900	25.00

* One sq. metre is equal to 10.764 sq. feet.
Source: AIDIS, 1971-72.

3. Relates to house for residential purposes only and does not include houses used for farm or non-farm business. The house area comprises area of rooms including closed verandahs and balconies. The value relates to that of entire premises including house sites.

Valued at Rs. 25.88 per sq. metre, the houses of cultivators appeared to be of better type than those of non-cultivators. However, as would be seen later, the average size as also the average value of cultivator's house was mainly influenced by the cultivators in the higher asset groups. These 'big' cultivator households generally had to provide space in their houses for storage of implements and inputs as also for harvested grains.

Statewise, the size of a rural house varied between 116 sq. metres in Punjab and 56 sq. metres in West Bengal and the value of the house varied between Rs. 5,738 in Himachal Pradesh and Rs. 1,068 in Orissa. Of the seven States where the average size exceeded the all-India average of 76 Sq. metres, the average value per house also exceeded the all-India average in Punjab, Rajasthan, Jammu & Kashmir and Uttar Pradesh. Large sizes of families, climatic conditions and agricultural prosperity were the principal reasons for the high value of houses in these States. A relatively large percentage of poor households in the rural population and the availability of forest material influenced the low values in Andhra Pradesh, Karnataka and Bihar. Of the ten States in which the average size of the house was lower than the all-India average,

TABLE 2: SIZE AND VALUE OF RURAL HOUSES (ALL HOUSEHOLDS)
(JUNE 30, 1971)

STATE	Proportion of households reporting	Area of house (in sq. metres)	Value of house per reporting household (Rs.)	Value per sq. metre (Rs.)	Persons per 100 households (Census data)	Percentage of households from the 'Weaker Section' to total rural households	Percentage of agricultural labour households
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Punjab	..	95.1	116	3684	31.76	607	25.8
2. Uttar Pradesh	..	96.8	91	2283	25.09	559	8.1
3. Andhra Pradesh	..	93.5	85	1264	14.87	489	23.1
4. Karnataka	..	86.8	82	1819	22.18	563	19.3
5. Rajasthan	..	96.2	80	2141	26.76	576	3.3
6. Bihar	..	98.1	79	1808	22.89	576	13.4
7. Jammu and Kashmir	..	98.8	78	3484	44.67	598	0.7
8. Madhya Pradesh	..	94.4	75	1533	20.44	543	10.3
9. Haryana	..	95.6	72	3246	45.08	654	14.7
10. Orissa	..	95.5	72	1068	14.83	528	12.1
11. Kerala	..	90.8	67	2973	44.37	596	3.8
12. Gujarat	..	89.4	67	2510	37.46	578	18.3
13. Assam	..	90.2	67	1426	21.28	602	6.2
14. Tamil Nadu	..	88.6	66	1254	19.00	470	26.6
15. Himachal Pradesh	..	96.0	63	5738	91.08	542	0.6
16. Maharashtra	..	91.1	61	1662	27.25	551	19.8
17. West Bengal	..	90.3	56	1699	30.34	565	17.4
All-India*	..	93.4	76	1900	25.00	552	14.6

* Data are inclusive of Manipur, Meghalaya, Tripura, Delhi, Goa and Pondicherry.
Source : AIDIS, 1971-72.

only in Haryana, Kerala, Gujarat and Himachal Pradesh was the value of the house relatively higher. Necessity for a pucca construction due to climatic conditions, paucity of building material and higher transport expenses and higher income from agriculture or from external remittances had a bearing on the more costly constructions in these States. In the remaining six States of Madhya Pradesh, Orissa, Assam, Tamil Nadu, Maharashtra and West Bengal both the size and value of house were lower than the all-India average reflecting the level of poverty of rural households.

An examination of the housing conditions of the weaker section (households in the four lowest asset groups⁴) is attempted through a comparison with the position of households in the asset group Rs. 5000—Rs. 10,000, which is taken to represent a norm for rural living conditions throughout the country. The comparison not only brings out the deplorable housing conditions of the weaker section but also serves to indicate the extent of investment effort needed to improve rural housing conditions. The analysis is done separately in respect of cultivators and non-cultivators.

As an all-India average, the house of the cultivator households in the asset group of Rs. 5000—Rs. 10,000 measured about 75 sq. metres and was little smaller than that of the non-cultivators. However, the value of the non-cultivator's house at Rs. 3098 was more than twice the value of the cultivator's house (Table 3). This wide difference in the values of houses may be attributable to the larger investments by non-cultivators in their principal fixed asset. 'House', formed only 18.8 per cent of the total assets of cultivator households but as much as 45.0 per cent in the case of non-cultivators. Further, non-cultivator artisans like weavers, carpenters, toy makers, dress makers, shoe makers, hair dressers, using their houses for business purposes would also require some additional investment to equip their homes for their business activities also.

Inter-State variations, both in size and value of the house, within a category of households and also between the two classes in a State were quite wide. For analytical purposes the States have been divided into 6 groups on the basis of topography, climatic conditions and contiguity.

Jammu and Kashmir, Himachal Pradesh, Haryana and Punjab form Group I. The value of the cultivator's house in these States was generally higher than that of cultivator households in most of other States. Apart from the main factors of severe winter and relatively large sized families, agricultural prosperity in this region seems to have influenced construction of better houses. The share of the houses in the total assets at about 26 per cent to 31 per cent of the cultivator households in this group, was also slightly larger than their counterparts in most other States. However, the value of the houses of non-cultivators in this group of States was not much different than that in other States. In fact, the value of the non-cultivator's house around Rs. 3500 to Rs. 4500 in Kerala, Tamil Nadu or Gujarat was much higher than that in this group.

4. These asset groups are: (1) upto Rs. 500, (2) Rs. 500 — Rs. 1000, (3) Rs. 1000 — Rs. 2500 and (4) Rs. 2500 — Rs. 5,000.

TABLE 3 : AREA AND VALUE OF 'HOUSE' PER REPORTING HOUSEHOLD AND ITS SHARE IN THE TOTAL ASSETS
(ASSET-GROUP RS. 5,000 — RS. 10,000)
(AS ON JUNE 30, 1971)

STATE	Area (in sq. metres)			Value (in Rs.)			Share of the house in total assets				
	Culti- vators 1	Non- culti- vators 2	All house- holds 3	Culti- vators 4	Non- culti- vators 5	All house- holds 6	Column 5 as per- centage to column 4 7	Culti- vators 8	Non- culti- vators 9	All house- holds 10	
GROUP I											
1. Himachal Pradesh	46.3	34.3	45.5	2359.2	2668.5	2367.7	113.1	31.3	44.4	31.8	
2. Punjab	97.5	96.8	97.0	1987.3	3438.3	3017.5	173.0	26.4	50.8	43.2	
3. Haryana	52.0	82.1	65.6	1981.4	3075.0	2455.5	155.2	26.8	45.3	34.5	
4. Jammu & Kashmir	70.8	42.2	69.6	1932.9	2823.5	1969.2	146.1	26.0	41.1	26.6	
GROUP II											
5. Uttar Pradesh	81.3	94.3	82.4	1500.3	3049.9	1632.1	203.3	20.6	45.2	22.6	
6. Bihar	78.2	76.2	78.1	1375.8	3150.2	1428.2	229.0	18.9	45.4	19.7	
7. Madhya Pradesh	70.6	67.8	70.6	1167.1	2322.6	1203.2	199.0	16.1	33.3	16.6	
8. Orissa	83.1	111.1	84.4	1126.7	2132.2	1177.0	189.2	16.0	30.1	16.7	
GROUP III											
9. Gujarat	68.8	59.5	67.4	1466.4	3805.5	1834.4	259.5	20.1	53.3	25.3	
10. Rajasthan	67.4	67.6	67.4	1385.6	3339.6	1482.4	241.0	19.0	48.3	20.4	
GROUP IV											
11. Maharashtra	86.4	77.0	85.8	1323.4	3238.9	1446.3	244.7	18.2	48.3	20.0	
12. Karnataka	69.4	91.1	71.7	1319.0	2231.7	1415.5	169.2	17.9	31.5	19.3	
13. Andhra Pradesh	91.1	124.5	94.1	1106.7	2850.4	1263.4	257.6	15.6	41.5	17.9	
GROUP V											
14. Kerala	65.0	92.3	65.5	2227.6	4607.4	2263.4	206.8	31.2	64.6	31.7	
15. Tamil Nadu	69.2	92.0	71.4	1015.7	3549.7	1261.5	349.5	14.1	51.1	17.6	
GROUP VI											
16. West Bengal	52.1	87.0	54.2	1361.8	2841.9	1449.3	208.7	19.0	40.1	20.3	
17. Assam	66.6	51.9	66.1	1108.9	2033.9	1144.2	183.4	15.2	30.3	15.7	
All-India@	74.5	88.1	75.6	1362.9	3098.0	1502.5	227.3	18.8	45.0	20.9	

@ Including data for Manipur, Meghalaya, Tripura, Delhi, Goa and Pondicherry.

Source : AIDIS 1971-72.

In Group II are included the States of Uttar Pradesh, Bihar, Madhya Pradesh and Orissa—all with considerable forest area. In these States, while the size of the houses of all categories of households was larger than the Group I States, the value of the houses was smaller. The share of the house of the cultivator households in the total assets was quite low in all the four States, varying between 16.0 per cent and 20.6 per cent. In this group also, the values of the houses of the non-cultivators were much higher than those of cultivator households. For instance, the value of the house of the non-cultivator in Bihar was more than two times that of the cultivator's house though the plinth area of the non-cultivator's house was little less. This higher value of the house may be attributed to steady income on account of longer period of employment in view of irrigational facilities or operation of coal mines.

Rajasthan and Gujarat, in which arid tracts are prominent, form Group III. The houses of both the categories of the households in these two States were smaller in size than those in the above two groups but were higher in value than those in the Group II.

Group IV consists of Maharashtra, Karnataka and Andhra Pradesh based on contiguity. In these States the area under the house was relatively larger than in the case of Groups I to III, perhaps due to inclusion of large open areas like courtyards or varandahs. In fact, the area under the average house of a non-cultivator in Andhra Pradesh was as spacious as 125 sq. metres.

Tamil Nadu and Kerala in group V are the southern most States receiving rains from both monsoons, and the houses here, therefore, need to be sturdy. However, due to large number of tenant cultivators⁵ in Tamil Nadu, the value of the house of cultivator household at Rs. 1016 was less than half of that of his counterpart from Kerala and was the lowest among all the States. The low value and the larger size of the house of cultivator households in Tamil Nadu as compared to those in Kerala suggests that most houses in this State had mud walls and thatched roofs. In Kerala, the value of Rs. 2228 of the house of a cultivator household was next only to that of Himachal Pradesh. The share of the house at 14.1 per cent in the total assets of cultivator households in Tamil Nadu was the lowest in all the States. On the other hand, the share of the houses of non-cultivators in Kerala in the total assets at 64.6 per cent was the highest among all States.

The Group VI would consist of the eastern States of West Bengal and Assam. Assam is a hilly forested tract with little rural development and the people, other than plantation workers, could not afford even ordinary houses. West Bengal experiences a constant threat of floods and also cyclonic storms. The houses of the households in these two States were generally of a small size and of a relatively low value.

The features of foregoing analysis are summed up in the following :
(1) For all asset groups taken together the average size as also the value of the house of a cultivator household was larger than that of a non-cultivator. But this average was pulled up by big cultivator households

5. According to AIDIS, 10.3 per cent of the cultivator households in Tamil Nadu were tenant cultivators.

(with assets over Rs. 10,000). The house of cultivators in the asset group of Rs. 5,000—Rs. 10,000 was smaller and also the value was much less than the house of non-cultivators. (2) Geographical location and income rather than desire to have a decent house were apparently important factors for investment of the household in this asset, more so in the case of cultivators. (3) In the case of cultivator households in all the States, except Himachal Pradesh and Kerala the value of the house did not exceed Rs. 2,000/-. As against this, in the case of non-cultivators in as many as nine States, viz., Bihar, Gujarat, Haryana, Maharashtra, Tamil Nadu, Uttar Pradesh, Kerala, Rajasthan and Punjab, it exceeded Rs. 3,000/-. (4) In States like Gujarat, Tamil Nadu, Kerala and Punjab where the agricultural labourers had a steady income throughout the year in view of better irrigation facilities the value of non-cultivator's house was relatively higher than that of their counterparts in other States.

Against this background, the data on the housing conditions of the weaker section i.e., those in the four lower asset groups are analysed. The discussion is restricted to variations in the value of the house only, since the area under a house as also the share of the value of the house in the total assets showed wide variations both State-wise and category-wise.

Out of the 77 million rural households about 39.5 millions or 51.3 per cent were from these four asset groups. Of these 39.5 million households, 51.8 per cent were cultivator households, 27.6 per cent agricultural labourers, 4.2 per cent artisans and 16.4 per cent others. Households in these four asset groups in Bihar, Karnataka, Kerala, and Assam accounted for 50 per cent to 60 per cent of the total rural households in each of these States. Such percentage exceeded 60 in Andhra Pradesh, Tamil Nadu, West Bengal and Orissa. Predominance of these households in the total households would have an impact on the average housing conditions in these States. Of the total households in these four asset groups 34.9 million households (88.2 per cent) reported ownership of a house. However, judged from the value of the house reported by these households, particularly by those in the three lowest asset groups and cultivators in some of the States from the asset group of Rs. 2,500—Rs. 5,000 the house owned by them would presumably be only thatched huts built entirely with mud walls. The data on value of houses per reporting households are presented in the Table 4.

It may be seen from the table that in the case of the lowest asset group, the value of the house was less than Rs. 250 in all States, with the exception of Punjab and here too only in respect of non-cultivators. In the case of cultivator household in this asset group, the value ranged between Rs. 130 in Rajasthan and Rs. 244 in Haryana.

In the next asset group of Rs. 500—Rs. 1,000 the value of the house per reporting cultivator household varied between Rs. 236 in Karnataka and Rs. 466 in Punjab. Only in three States of Punjab, Jammu and Kashmir and Himachal Pradesh the value exceeded Rs. 400. As against this, in the case of non-cultivator households in this asset group, the value exceeded Rs. 400 in almost all the States and was higher than Rs. 500 in Himachal Pradesh, Gujarat and West Bengal.

TABLE 4: VALUE OF A 'HOUSE' PER REPORTING HOUSEHOLD IN THE FOUR LOWEST ASSET GROUPS

ASSET GROUP/STATE	(In Rupees)											
	0 — Rs. 500			Rs. 500 — Rs. 1,000			Rs. 1,000 — Rs. 2,500			Rs. 2,500 — Rs. 5,000		
	Culti-vators	Non-culti-vators	All house-holds	Culti-vators	Non-culti-vators	All house-holds	Culti-vators	Non-culti-vators	All house-holds	Culti-vators	Non-culti-vators	All house-holds
	1	2	3	4	5	6	7	8	9	10	11	12
GROUP I												
1. Himachal Pradesh	—	250	250	420	505	472	716	992	826	1654	2011	1694
2. Punjab	—	265	265	466	493	493	570	978	965	1038	1893	1808
3. Haryana	244	200	200	311	454	443	701	863	851	1017	1731	1641
4. Jammu & Kashmir	—	192	199	411	496	467	791	960	845	1132	1943	1243
GROUP II												
5. Uttar Pradesh	199	203	203	360	486	452	624	909	766	957	1868	1160
6. Bihar	203	224	219	362	495	437	605	965	707	920	1863	989
7. Madhya Pradesh	169	200	191	313	444	386	503	852	605	785	1481	842
8. Orissa	152	185	177	290	457	375	456	854	537	688	1225	732
GROUP III												
9. Gujarat	188	228	225	361	518	502	571	1083	917	823	1938	1178
10. Rajasthan	130	152	147	254	419	336	435	801	541	730	1567	823
GROUP IV												
11. Maharashtra	174	201	200	329	477	454	504	936	748	902	1710	1020
12. Karnataka	195	201	200	236	463	407	558	863	614	772	1374	861
13. Andhra Pradesh	140	175	171	264	410	368	403	866	589	658	1504	795
GROUP V												
14. Kerala	152	184	163	303	492	329	608	1054	625	1203	2481	1229
15. Tamil Nadu	165	174	173	260	419	375	391	879	585	636	1926	879
GROUP VI												
16. West Bengal	178	222	217	348	526	465	579	927	677	869	1512	930
17. Assam	136	182	171	256	396	342	437	624	478	672	971	696
All-India*	169	194	190	313	465	415	526	914	674	837	1744	991

* Including data for Manipur, Meghalaya, Tripura, Delhi, Goa and Pondicherry.
Source : AIDIS—1971-72.

In the asset group of Rs. 1,000—Rs. 2,500 also, the value of the house of the cultivator household was lower than the value of the house of non-cultivator varying between Rs. 791 in Jammu & Kashmir and Rs. 391 in Tamil Nadu. In as many as seven States, such value was less than the national average of Rs. 526. On the other hand, in the case of non-cultivators, the value exceeded Rs. 900 in nine States and in the remaining States, except Assam, it was in the range of Rs. 800—Rs. 900.

The houses of non-cultivator households in the asset group of Rs. 2,500—Rs. 5,000 were generally more valuable. But even here, the disparity between cultivators and non-cultivators was marked. As against the average house value per reporting non-cultivator household at Rs. 1,744 in many of the States, cultivators' houses in this asset group were worth less than Rs. 1,000. Only in Himachal Pradesh the value exceeded Rs. 1,500 and in four others States (Punjab, Haryana, Jammu and Kashmir and Kerala), it was around Rs. 1,000—Rs. 1,200. The cultivators' houses in Orissa, Andhra Pradesh, Tamil Nadu and Assam were of a poor quality and were worth less than Rs. 700.

In Table 5, a comparison is made between the value of houses of the two categories (cultivators and non-cultivators) in each of the four lowest asset groups with the value of the respective categories in the asset group of Rs. 5,000—Rs. 10,000 which, as indicated earlier is taken as representative of a norm for rural living conditions. In this table, the value of houses in the lowest asset groups is expressed as a percentage of the corresponding value in the asset group Rs. 5,000—Rs. 10,000. At the all-India level, this ratio ranged from 12.4 per cent in the lowest asset group to 61.4 per cent in the asset group of Rs. 2,500—Rs. 5,000 in the case of cultivator households and from 6.3 per cent to 56.3 per cent for non-cultivators. While the ratio was higher in the case of the cultivators in all groups, it increased at a relatively faster rate in the case of non-cultivators. This wider disparity in the ratio in the case of non-cultivators may be attributed to the additional investment in houses in the asset group of Rs. 5,000—Rs. 10,000 noted earlier. The condition of the houses of the households in the three lowest assets groups atleast, was obviously deplorable, as even in the asset group of Rs. 1,000—Rs. 2,500 this ratio was less than 40 per cent for cultivators and 29.5 per cent for non-cultivators.

State-wise, among the cultivators the disparity in the value of houses owned by the households in the four asset groups and those in the asset group of Rs. 5,000—Rs. 10,000 was especially marked in Punjab, Haryana, Rajasthan and Kerala, where the ratio was much less than the national average of 61.4 per cent even in the asset group of Rs. 2,500—Rs. 5,000. On the other hand, in Bihar, Madhya Pradesh, Maharashtra and Himachal Pradesh, the gap was relatively small. In the case of non-cultivators, the gap was quite wide in Rajasthan and Assam where the ratio of the value of houses in the asset groups of Rs. 2,500—Rs. 5,000 and Rs. 5,000—Rs. 10,000 was less than 50 per cent.

The analysis of the data on the houses of the households in the four lowest asset groups brings out the following features.

TABLE 5 : VALUE OF HOUSE IN THE FOUR LOWEST ASSET GROUPS EXPRESSED AS A RATIO OF THE VALUE IN THE ASSET GROUP OF Rs. 5000—Rs. 10000

STATE/ASSET GROUP	(Per cent)									
	Value of house in rupees per reporting household in the asset group Rs. 5,000—Rs. 10,000									
	0 — Rs. 500	Rs. 500 — Rs. 1,000	Rs. 1,000 — Rs. 2,500	Rs. 2,500 — Rs. 5,000	Rs. 5,000 — Rs. 10,000	Rs. 10,000 — Rs. 25,000	Rs. 25,000 — Rs. 50,000	Rs. 50,000 — Rs. 1,00,000	Rs. 1,00,000 — Rs. 2,00,000	Rs. 2,00,000 — Rs. 5,00,000
	Culti-vators	Non-culti-vators	Culti-vators	Non-culti-vators	Culti-vators	Non-culti-vators	Culti-vators	Non-culti-vators	Culti-vators	Non-culti-vators
	1	2	3	4	5	6	7	8	9	10
GROUP I										
1. Himachal Pradesh ..	—	9.4	17.8	18.9	30.3	37.2	70.1	75.4	2359.2	2668.5
2. Punjab ..	—	7.7	23.4	14.3	28.7	28.4	52.2	55.1	1987.3	3438.3
3. Haryana ..	12.3	6.5	15.7	14.8	35.4	28.1	51.3	56.3	1981.4	3075.0
4. Jammu & Kashmir ..	—	6.8	21.3	17.6	40.9	34.0	58.6	68.8	1932.9	2823.5
GROUP II										
5. Uttar Pradesh ..	13.3	6.7	24.0	15.9	41.6	29.8	63.8	61.2	1500.3	3049.9
6. Bihar ..	14.8	7.1	26.3	15.7	44.0	30.6	66.9	59.1	1375.8	3150.2
7. Madhya Pradesh ..	14.5	8.6	26.8	19.1	43.1	36.7	67.3	63.8	1167.1	2322.6
8. Orissa ..	13.5	8.7	25.7	21.4	40.5	40.1	61.1	57.5	1126.7	2132.2
GROUP III										
9. Gujarat ..	12.8	6.0	24.6	13.6	38.9	28.5	38.9	50.9	1466.4	3805.5
10. Rajasthan ..	9.4	4.6	18.3	12.5	31.4	24.0	52.7	46.9	1385.6	3339.6
GROUP IV										
11. Maharashtra ..	13.1	6.2	24.9	14.7	38.1	28.9	68.2	52.8	1323.4	3238.9
12. Karnataka ..	14.8	9.0	17.9	20.7	42.3	38.7	58.5	61.6	1319.0	2231.7
13. Andhra Pradesh ..	12.7	6.1	23.9	14.4	36.4	30.4	59.5	52.8	1106.7	2850.4
GROUP V										
14. Kerala ..	6.8	4.0	13.6	10.7	27.3	22.9	54.0	53.8	2227.6	4607.4
15. Tamil Nadu ..	16.2	4.9	25.6	11.8	38.5	24.8	62.6	54.3	1015.7	3549.7
GROUP VI										
16. West Bengal ..	13.1	7.8	25.6	18.5	42.5	34.2	65.8	53.2	1361.8	2841.9
17. Assam ..	12.3	8.9	23.1	19.5	39.4	30.7	60.6	47.7	1108.9	2033.9
All-India@ ..	12.4	6.3	23.0	15.0	38.6	29.5	61.4	56.3	1362.9	3098.0

@ Including data for Manipur, Meghalaya, Tripura, Delhi, Goa and Pondicherry.
Source : AIDIS, 1971-72.

1. Of the total 77 million rural households in the country the state of houses particularly those of households in the three lowest asset groups (covering about 22.9 million houses) was very poor. This is seen from the fact that in all the States and in all the categories the value of the house was less than one-half of the value of the house of the corresponding households in the asset group of Rs. 5,000-Rs. 10,000.

2. Houses of the cultivator households in the lowest four asset groups were particularly bad, since even in the asset group of Rs. 2,500-Rs. 5,000 the average value of the house in as many as nine States was in the range of Rs. 600-Rs. 900, as against the average value of about Rs. 1,400 in the asset group of Rs. 5,000-Rs. 10,000.

On the whole, the houses of the households in the three lowest asset groups atleast, would need to be rebuilt if a new life in the rural economy has to be infused. Though most of them would depend entirely on outside help, a few of them like artisans in the higher asset groups could be persuaded to invest a part of their earnings for improving their houses.

Section II

Estimates of houseless households and measures taken by the Government

According to the Survey data, about 5.1 million households did not own a house. Of these, 19.5 per cent were cultivator households. The main reasons for not possessing a house could be (a) lack of financial resources, (b) tenancy cultivation, (c) separated families, (d) labourers not settling for a fixed vocation, and (e) nomadic tribes. However, lack of finance seems to be the predominant factor since 82.5 per cent of the houseless households were from the three lowest asset groups. Cultivator households who accounted for 15.1 per cent of the houseless households in the weaker section were evenly spread in all the asset groups. Among these could be cultivators working on land on a tenancy basis, and those practising shifting cultivation as, for instance, in the North-East region. Some cultivators would also be sharing or renting houses. More than two-thirds of houseless non-cultivator households in the weaker section were from the lowest asset group of less than Rs. 500 (Table 6).

In the total houseless households, the percentage share of Tamil Nadu, West Bengal, Karnataka and Maharashtra was more than 10 per cent each and these four States together accounted for 47.4 per cent of the households without houses in the country (Table 7). The States of Uttar Pradesh, Andhra Pradesh, Gujarat, Madhya Pradesh and Kerala accounted for another 36.2 per cent of the total houseless households. On the other hand, in Punjab, Haryana, Himachal Pradesh and Jammu & Kashmir the percentage of houseless households was much less. In Tamil Nadu, Karnataka, Gujarat and West Bengal, increase in the rural households during the ten year period of 1961 and 1971 ranged between 18.4 per cent and 33.5 per cent. Poverty could be cited as the main reason for the relatively large number of houseless households in Tamil Nadu. In this State 38.1 per cent of the total rural households had assets of less than Rs. 1,000.

TABLE 6: ESTIMATED NUMBER OF HOUSELESS HOUSEHOLDS IN JUNE 1971

(In thousands)

Category	Asset Group of (Rs.)							
	0-500	500-1000	1000-2500	2500-5000	Total of columns 1 to 4	5000-10000	10000 and above	Total
	1	2	3	4	5	6	7	8
1. Cultivator households ..	211	108	206	178	703 (15.1)	152	138	993 (19.5)
2. Non-cultivator households	2682	457	539	263	3941 (84.9)	104	57	4102 (80.5)
3. Total rural households ..	2893	565	745	441	4644 (100.0)	256	195	5095 (100.0)
4. Number in each asset group as percentage to total rural households ..	56.8	11.1	14.6	8.7	91.2	5.0	3.8	100.0

Figures in brackets are percentages to total number of houseless rural households.
Source: AIDIS — 1971-72.

TABLE 7 : HOUSELESS HOUSEHOLDS

(As on June 30, 1971)

STATE	Cultivators		Non-cultivators		All Households
	No. (In thousands)	Percentage to total	No. (In thousands)	Percentage to total	No. (In thousands)
	1	2	3	4	5
1. Tamil Nadu ..	114 (11.5)	15.5	622 (15.1)	84.5	736 (14.5)
2. West Bengal ..	97 (9.7)	16.4	496 (12.1)	83.6	593 (11.6)
3. Karnataka ..	101 (10.2)	18.3	450 (11.0)	81.7	551 (10.8)
4. Maharashtra ..	80 (8.1)	14.9	457 (11.1)	85.1	537 (10.5)
5. Uttar Pradesh ..	98 (9.9)	22.4	339 (8.3)	77.6	437 (8.6)
6. Andhra Pradesh ..	54 (5.4)	12.4	380 (9.3)	87.6	434 (8.5)
7. Gujarat ..	28 (2.8)	7.0	373 (9.1)	93.0	401 (7.9)
8. Madhya Pradesh ..	88 (8.9)	26.7	241 (5.9)	73.3	329 (6.5)
9. Kerala ..	68 (6.8)	28.2	173 (4.2)	71.8	241 (4.7)
10. Assam ..	105 (10.6)	54.7	84 (2.0)	44.4	190 (3.7)
11. Orissa ..	50 (5.0)	29.9	117 (2.8)	70.1	167 (3.3)
12. Bihar ..	37 (3.7)	22.7	126 (3.1)	77.3	163 (3.2)
13. Rajasthan ..	37 (3.7)	31.1	82 (2.0)	68.9	119 (2.3)
14. Punjab ..	12 (1.2)	15.8	64 (1.6)	84.2	76 (1.5)
15. Haryana ..	7 (0.7)	14.9	40 (1.0)	85.1	47 (0.9)
16. Himachal Pradesh ..	5 (0.5)	26.3	14 (0.3)	73.7	19 (0.4)
17. Jammu & Kashmir ..	3 (0.3)	50.0	3 (0.1)	50.0	6 (0.1)
All-India@ ..	993 (100.0)	19.5	4102 (100.0)	80.5	5095 (100.0)

@ Including data for Manipur, Meghalaya, Tripura, Delhi, Goa and Pondicherry.

Figures in brackets are percentages to All-India.

Source: AIDIS 1971-72.

Category-wise, the number of houseless cultivator households was quite large in Tamil Nadu, West Bengal, Karnataka, Uttar Pradesh and Assam, and each of these States accounted for 9 per cent or above of the total number of houseless cultivator households. As stated earlier, the practice of tenancy cultivation or share cropping in West Bengal and Tamil Nadu might be the reason for such large number of houseless households in these two States. Among non-cultivators, houseless households were in large number in Tamil Nadu, West Bengal, Karnataka and Maharashtra. The proportion of agricultural labour households among the non-cultivators was quite large in these States, perhaps because of the seasonality of agricultural operations and the lack of employment opportunities.

Information in respect of occupied residential houses was also collected in the 1971 census. Such houses⁶ as were actually used either wholly as residence or in combination with other uses on the census day were treated as occupied residential houses. Thus, the census data did not include houses which were found vacant or where no person was residing at the time of visit of the enumerators. At the same time, the data would include workshops, factories, garages, shops, depots, etc., where one or more persons like watchman, peon, driver, attendant, etc., were living. These facts will have to be borne in mind while analysing the census data. In Table 8, the census data on the number of rural households are juxtaposed against the number of occupied houses. In col. 4, the difference between these two sets of figures is presented. Assuming that each house was occupied by a single rural household, the number of houseless rural households was 6.9 million at the time of enumeration (col. 4). This figure is higher than the estimate of 5.1 million houseless households made in the AIDIS. It may be due to different time of enumeration for census and AIDIS. The census was carried out in March-April of 1971, months in which there is some migration to urban centres in search of employment, with agricultural operations at an end. Another reason for the difference could be in the coverage of rural households. The Survey estimate of number of rural households at 77 millions was less by 25 lakhs than the number of rural households enumerated in the census due to exclusion of certain areas for the purposes of the Survey and difference in time of enumeration.

State-wise, according to the census data the number of houseless households was large in Uttar Pradesh and Bihar, on the assumption that each of the occupied houses had a single rural household. The Survey data however, (col. 5 of the Table 8) do not collaborate this with the proportion of households reporting owned houses being higher than the ratio of occupied houses to rural households according to the census data. On the other hand, in States like Tamil Nadu, Karnataka, West Bengal, Gujarat, Kerala and Assam the proportion of households reporting owned houses was much less than the ratio of occupied houses to rural households as given in the col. 3. This confirms our assumption that many of the tenant cultivators or labourers in these States were occupying the tenements owned by the landlords.

⁶. A census house is a building or a part of a building having a separate main entrance from the road or common courtyard or staircase, etc., used or recognised as a separate unit. However, all the structures within an enclosed compound, but with a separate entrance were treated as separate census houses.

TABLE 8 : HOUSELESS RURAL HOUSEHOLDS

(Census 1971)

STATE	No. of rural households (in lakhs)	No. of occupied houses (in lakhs)	Column 2 as percentage of column 1	Column 1—Column 2 (in lakhs)	Proportion of rural households reporting residential buildings (AIDIS Data)
	1	2	3	4	5
1. Uttar Pradesh ..	135.9	119.0	87.6	16.9 (24.6)	96.8
2. Bihar ..	88.0	74.4	84.5	13.6 (19.8)	98.1
3. Madhya Pradesh ..	64.2	57.6	89.7	6.6 (9.6)	94.4
4. Maharashtra ..	63.0	57.9	91.9	5.1 (7.4)	91.1
5. Andhra Pradesh ..	71.8	66.7	92.9	5.1 (7.4)	93.5
6. Tamil Nadu ..	61.1	56.6	92.6	4.5 (6.6)	88.6
7. Orissa ..	38.1	34.2	89.8	3.9 (5.7)	95.5
8. Karnataka ..	39.4	35.9	91.1	3.5 (5.1)	86.8
9. West Bengal ..	59.0	56.1	95.1	2.9 (4.2)	90.3
10. Rajasthan ..	36.9	35.5	96.2	1.4 (2.0)	96.2
11. Gujarat ..	33.2	32.1	96.7	1.1 (1.6)	89.4
12. Kerala ..	30.0	29.2	97.3	0.8 (1.2)	90.8
13. Punjab ..	17.0	16.2	95.3	0.8 (1.2)	95.1
14. Haryana ..	12.6	11.9	94.4	0.7 (1.0)	95.6
15. Jammu & Kashmir ..	6.3	5.6	88.9	0.7 (1.0)	98.8
16. Assam ..	22.6	22.6	100.0	0.0 (—)	90.2
17. Himachal Pradesh ..	5.9	5.7	96.6	0.2 (0.3)	96.0
All-India ..	796.0	727.3	91.4	68.7 (100.0)	93.4

(Figures in brackets are percentages to All-India)

The above analysis brings out that : (a) roughly the number of houseless rural households in 1971 was around 5 to 5.5 millions and this formed only about 6 to 8 per cent of the total rural households in the country, (b) the problem of houseless households was acute in the States of Tamil Nadu, West Bengal, Karnataka, Maharashtra and Gujarat.

With that idea of the extent of houselessness in rural areas on the basis of two sets of data, we may now try to estimate the increase in the rural households who would be in need of a house by the turn of this decade. While not all these new households would need help for building a shelter for themselves, the proportion of those who would have to be aided would be quite large, as most of the new rural households would perhaps be very small because of the breaking up of the existing joint families and therefore, with limited resources.

The basis for this exercise is the rural population estimated for the year 1981 by the Expert Committee on population projections. This estimated rural population was then divided by the average size of the rural family calculated on the basis of the 1971 census. Thus, we get an estimate of 94.9 million rural households by the year 1981, and this shows an increase of 15.3 millions over the rural households enumerated in the 1971 census (Table 9).

TABLE 9 : ESTIMATED INCREASE IN RURAL HOUSEHOLDS BY 1981

(No. in lakhs)					
STATE	Estimated rural population by 1981@	Average size of rural family (census 1971)	Estimated number of rural households by 1981 (col. 1 ÷ col. 2)	Number of rural households in 1971 census	Increase in the number of rural households between 1971 and 1981 (col. 3 - col. 4)
	1	2	3	4	5
1. Andhra Pradesh ..	403.7	4.89	82.6	71.8	10.8
2. Assam	182.2	6.02	30.3	22.6	7.7
3. Bihar	603.9	5.76	104.8	88.0	16.8
4. Gujarat	231.3	5.78	40.0	33.2	6.8
5. Haryana	100.9	6.54	15.4	12.6	2.8
6. Himachal Pradesh ..	38.9	5.42	7.2	5.9	1.3
7. Jammu & Kashmir ..	47.6	5.98	8.0	6.3	1.7
8. Karnataka	260.5	5.63	46.3	39.4	6.9
9. Kerala	212.7	5.96	35.7	30.0	5.7
10. Madhya Pradesh ..	432.4	5.43	79.6	64.3	15.3
11. Maharashtra	397.8	5.51	72.2	63.0	9.2
12. Orissa	243.3	5.28	46.1	38.1	8.0
13. Punjab	118.4	6.07	19.5	17.0	2.5
14. Rajasthan	272.8	5.76	47.4	36.9	10.5
15. Tamil Nadu	313.8	4.70	66.8	61.1	5.7
16. Uttar Pradesh ..	899.7	5.59	160.9	135.9	25.0
17. West Bengal	407.8	5.65	72.2	59.0	13.2
All India	5239.0*	5.52	949.1	796.0	153.1

@ Census of India 1971 India Series I Paper I of 1979. Report of the Expert Committee on Population Projections.

* United Nation's Population Division estimated Indian rural population at the end of 1980 at 5345.4 lakhs.

This is a rough estimate subject, for instance, to such changes as might occur through the impact of the family welfare programme and progressive advancement in the marriage age. Phenomenal success of agricultural advancement in some States may start inter-state population movement which may also change the number of households in those States.

Among the States, the increase in the number of rural households as estimated by us would be relatively large in Andhra Pradesh, Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal.

Although the problem of houseless households was not very serious in 1971 the state of houses owned by atleast 22.9 million rural households was so bad that reconstruction of such houses was necessary to satisfy minimum living standards. Apart from this, 4.6 million in the weaker section did not have shelter in 1971 and 15.3 million would be new households, most of whom would need financial aid for housing. Thus, by the turn of this decade there would be need to build at least 42.8 million housing units, as compared to 14.8 million units estimated by the National Building Organisation.

Prior to the First Five Year Plan little or no attention seems to have been paid to the problem of rural housing. During the First Five Year Plan due to limited financial resources, it was left to State Governments to do something in this direction through the grant of long-term interest-free loans to villagers for building houses and disseminating information regarding construction of cheap houses. In the Second Five Year Plan, a provision of Rs. 10 crores was made and the Village Housing Projects Scheme was formulated by the Government of India in August 1957. This scheme sought to ensure a co-ordinated approach to the problem of housing and connected programmes of rural development and was based on the following principles :

1. Aided self-help; outside help, particularly financial, to be restricted to the barest minimum.
2. An all round economic development of the rural areas in which the programme is undertaken to enable villagers to maintain their houses and to repay their housing loans without undue hardship.
3. Improvement of housing conditions in a village or the physical reconstruction of the village to be treated as a long-term programme spread over a period of about 10 years, to keep in step with the improvement of economic conditions in the village.

About 5000 villages all over the country, in suitable and economically progressive blocks, were selected for undertaking housing projects. As of December 1978 out of 1,00,271 houses sanctioned under the scheme, 66,817 houses had been completed.

Yet another scheme was formulated in October 1971. Under this scheme, landless workers in rural areas, who did not already own house sites or built up houses or huts on land of their own, were to be provided with developed house site free of cost. On the house sites so provided, workers were expected to build houses with their own resources or with such assistance as could be provided by State Governments and other voluntary organisations. State Governments were required to utilise the land available with them and the Gaon Sabha land in the villages for the purpose. Priority was to be given to those blocks where there was a sizeable concentration of landless workers of scheduled castes and tribes.

The progress of this scheme was initially sluggish and only about 32 lakh house sites had been allotted till June 1975. More recently however, the States have been pursuing the scheme vigorously. According to the information available with the Ministry of Works and Housing, 18 States and 6 Union Territories were implementing the scheme and by August 1977, about 7.3 million out of 11.4 million eligible families had been allotted house sites. However, it is reported that very few of these sites were developed. Both these schemes were originally sponsored by the Central Government and were transferred to State Governments subsequently.

In addition to the above schemes, as part of ameliorative measures for the socially weaker sections of the community, Government of India undertook subsidised housing for scheduled castes, scheduled tribes and other backward classes and handloom weavers. Some State Governments also launched special schemes involving mass participation to construct houses for the rural poor. Kerala's "One lakh housing Scheme", the Andhra Pradesh Co-operative housing scheme for the scheduled castes and scheduled tribes, the Karnataka Government's "People's Housing" are some examples of assisting the beneficiaries in construction of their own houses on the plots allotted to them.

Hardly about 67 thousand houses were constructed in the whole country by 1978 as against 5.1 million households who had no house in 1971. The Village Housing Projects scheme covered only 5,000 villages out of over 5 lakh villages in the country. The other scheme, viz., provision of house sites to landless labourers also moved in a tardy manner. Though 64 percent of the eligible families were provided with the house sites, most of the sites were reported to be underdeveloped ones, thus compelling the poor allottees to spend money on developing these sites, before putting up a small house.

Section III

Financial Aspects of the Problem

As mentioned earlier, during the Second Plan, an amount of Rs. 10 crores was allocated for the village housing scheme. However, this formed about 8 per cent of the total plan provision for housing. Only a part of this amount, viz., Rs. 3.70 crores was actually spent. In the Third Plan, the amount allocated for rural housing was smaller in proportion to total outlay. Only in the last two years of the Fourth Plan, a 'Crash Programme' for providing house sites to the landless was launched at an approved cost of Rs. 19.8 crores, but this achieved little. In the Fifth Five Year Plan, though there was no separate provision for rural housing, the main thrust of the housing programmes was directed towards ameliorating the conditions of the backward sections of the society by augmenting the programmes for construction of housing colonies and by taking up on a large scale programme for provision of house sites for landless labourers in rural areas. The draft Sixth Five Year Plan (1980-85) envisaged an outlay of Rs. 500 crores for rural housing. In sum, very little was done in the past, during the entire plan era, towards the provision of housing for the rural households, thereby resulting in a huge backlog.

The 1971 census revealed that out of the total housing stock of 74.4 million units in rural areas, 43.6 per cent or 32.4 million units were kuchha houses either serviceable or unserviceable. Though the AIDIS did not collect such data separately, the value of the houses owned by 22.9 million rural households in the lowest three asset groups indicates that these houses could be categorised as unserviceable, kuchha houses. Apart from this, 4.6 million households of the weaker section did not own any shelter. In addition to these 27.5 million households in need of new houses, there would be an esti-

mated increase of 15.3 million households as was seen in the earlier Section during the decade 1971-81. Further, houses of many of the cultivator households in the asset group of Rs. 2500-Rs. 5000 were in urgent need of replacement. Thus, in all, about 43 million households will be in need of houses by 1981. The estimate of expenditure of construction of these units is based on the value of houses recorded as in June 1971 in the case of households in the asset group of Rs. 5000-Rs.10,000, at the average value of Rs. 1,503 per house with a plinth area of about 75 sq. metres, in consonance with the norm for a village family, mentioned earlier. This value of Rs. 1,503 per reporting household is inflated to Rs. 3,056, commensurate with the increase in the index number⁷ of cost of construction of rural buildings (Table 10). For comparative purposes, it may be noted here that twelve dwelling units for the economically weaker section have been built in 1977 in Sultanpur Resettlement Colony in Delhi for the Delhi Development Authority by the National Building Organisation. Each of these houses has a plinth area of 15.05 sq. metres with a living room, a multi-purpose room, an open bath and W.C. The cost of this house was about Rs. 3,800.⁸ Revised State-wise estimated values are shown in column 6 of Table 10. Taking these adjusted values for different States, it is estimated that the construction of 42.8 million units in all States would involve an expenditure of Rs. 13,090 crores as would be seen from column 7 of the Table 10.

It would be necessary here to mention some of the limitations to this estimate. As indicated at the outset the value recorded in the Survey was given by the respondent or judged by the investigator. In view of the difficulties of appraising the value of structures of different types and ages, the value per reporting household recorded in the column 5 has to be taken as a broad approximate. Secondly, though all new households have been taken into consideration while calculating the expenditure, it is likely that not all of these would require outside help for house construction. On the other hand however, the number of houses in the asset group of Rs. 2500-Rs. 5000 in need of repairs and reconstruction, has been ignored. Thirdly, in the absence of State-wise index number of cost of construction of rural buildings, the index number at an all-India level has been used for estimating the requirement of each State; this is a serious limitation since cost of construction differs widely from State to State as was seen earlier. Fourthly, the estimated number of households given in the column 1 of the table is an under-estimate, because of the exclusion of some areas from the Survey.

In many States, the estimated cost of construction of a house works out between Rs. 2000 and Rs. 3000. It exceeds Rs. 4000 in Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir and Kerala.

⁷. The index number for construction cost of rural buildings is compiled by the National Income Division of the Central Statistical Organisation. For the year 1974-75, the latest year for which this index number is available, it was 255.4 as against 168.3 in 1970-71. We have inflated it to 342.2 for the year 1979 on the basis of about 34.0 per cent increase in the prices of chief construction materials like tiles, cement, structural clay, asbestos cement, iron and steel, wood work, etc., during the period 1975 to 1979. We could not, however, get information regarding rise in the construction labour costs. This is a very broad calculation.

⁸. Annual Report 1977-78, Ministry of Works & Housing, Government of India, P. 26.

TABLE 10: ESTIMATES OF FINANCE REQUIRED FOR CONSTRUCTION OF HOUSES FOR RURAL WEAKER SECTION

STATE	Number of rural households in the three lowest asset groups (AIDIS data)	Number of houseless households in the asset group Rs. 2500-Rs. 5000 (AIDIS data)	Estimated increase in rural households 1971-1981 (Census)	Total number of households who would need a house by 1981 (Cols. 1+2+3)	Average value of house per reporting household in the asset group Rs. 5000-Rs. 10,000 (In Rs.)	Estimated cost of a house in 1979 (In Rs.)	Estimated finance required for construction of units (Col. 4 x Col. 6)
							(No. in lakhs)
	1	2	3	4	5	6	7
1. Andhra Pradesh	32.2	0.2	10.8	43.2	1263	2565	1109
2. Assam	6.4	0.3	7.7	14.4	1144	2327	335
3. Bihar	30.5	0.1	16.8	47.4	1428	2904	1376
4. Gujarat	11.9	0.3	6.8	19.0	1834	3729	709
5. Haryana	2.2	—	2.8	5.0	2455	4993	250
6. Himachal Pradesh	0.2	0.1	1.3	1.6	2368	4816	77
7. Jammu & Kashmir	0.4	—	1.7	2.1	1969	4004	84
8. Karnataka	15.5	0.4	6.9	22.8	1416	2880	657
9. Kerala	9.0	0.3	5.7	15.0	2263	4602	690
10. Madhya Pradesh	17.6	0.3	15.3	33.2	1203	2446	812
11. Maharashtra	21.3	0.5	9.2	31.0	1446	2941	912
12. Orissa	15.9	0.1	8.0	24.0	1177	2394	575
13. Punjab	3.6	0.1	2.5	6.2	3018	6137	380
14. Rajasthan	5.7	0.2	10.5	16.4	1482	3014	494
15. Tamil Nadu	34.8	0.6	5.7	41.1	1262	2566	1055
16. Uttar Pradesh	32.8	0.3	25.0	58.1	1632	3319	1928
17. West Bengal	28.5	0.6	13.2	42.3	1449	2946	1246
All-India@	270.8	4.4	153.1	428.3	1503	3056	13090

(—) Means nil or negligible.

@ Data for all-India in column 1 and 2 include those for Manipur, Meghalaya, Tripura, Delhi, Goa and Pondicherry and data in column 3 covers all states and union territories.

It may be of interest to know that the Study Group on Rural Housing appointed by the Government of India had also made an estimate of total investment in rural housing in its report submitted to Government in March 1975. The Study Group's estimate was Rs. 9352 crores for construction of 11.7 million units at an average rate of about Rs. 8000 per unit of 35.8 sq. metres. The higher cost per unit (as compared to our estimate of Rs. 3056 per unit) is probably due to provision for construction of houses of high and middle income groups.

The major chunk of the total estimated expenditure of Rs. 13,090 crores on house building would be in the States of Andhra Pradesh, Bihar, Tamil Nadu, Uttar Pradesh and West Bengal. Though the cost of construction per house is low in these States, the amount of expenditure is large because of substantial number of the households in the lowest asset groups who will have to be provided with new houses.

Of the total expenditure of Rs. 13,090 crores, the beneficiaries may be expected to contribute about 10 per cent⁹ which works out to Rs. 1310 crores or about Rs. 306 per household as could be seen from Table 11. It may not be possible for many of the rural households to spare even this little amount of Rs. 306 as their income level is too low to allow for any saving for this purpose. It is suggested that a scheme on the lines of "Kitty Bank

TABLE 11 : SOURCES OF FUNDS

	Total (Rs. Crores)	Per household or Unit (Rs.)
1. Total estimated expenditure	13090	3056
2. Of item 1 beneficiaries' cash contribution at 10 per cent	1310	306
3. Voluntary labour contribution estimated at 3.3 per cent of the total expenditure	430	101
4. Financial assistance required [Item 1—(Item 2 + Item 3)]	11350	2649
5. Annual financial requirement if the programme is spread over 10 years	1135	
6. Annual governmental assistance in the form of subsidy at the rate of 25 per cent of the financial requirement £	285	662*
7. Gap in annual requirement (item 5—item 6)	850	1987*

* Relates to total loan/subsidy per household.

£ The subsidy granted under most of the rural development schemes is around 25 per cent.

⁹. The Study group on Rural Housing appointed by the Government of India in 1974 assumed the value of self help and mutual help in the house construction cost around 10 to 15 per cent. The Expert Committee on Performance Approach to Cost Reduction in Building Construction appointed by the Government of Kerala in 1972 estimated the share of labour supplied from home at 3.08 per cent. On these basis we have taken 10 per cent as beneficiary's contribution and 3.3 per cent as voluntary labour.

Scheme" of various commercial banks may be started by the village co-operatives or rural banks inducing the households to put in the "Kitty Box" at least 25 to 50 paise every day. The amount so deposited may be collected by the Society/Bank once in a week and adjusted in the loan account maintained for each of the household. In the case of labourers working on large farms engaged in cultivation of cash crops like cotton, sugar, tobacco, oilseeds, etc., it should be possible for the societies/banks to arrange with the employer to collect this amount from their wages daily. It is realised that collection of funds under this scheme, though seemingly simple would present operational difficulties. Firstly villagers generally have very little faith in the sponsored schemes and are reluctant to participate in such schemes unless they are convinced of the benefits through demonstration. Secondly, though the commercial banking has spread considerably in the rural areas in recent years¹⁰ the banking habit is not widespread.

The job of providing housing loans and collecting savings from door to door would be further aggravated by lack of transport and communication facilities in some of the areas. Considerable propaganda and persuasion would, therefore, be necessary in this regard.

The expenditure on construction could be reduced with the aid of voluntary labour of the beneficiaries and other social organisations. In the case of villages near urban areas, it may be possible to draw a large voluntary force of youth from colleges or schools for this purpose. Assuming that about 3.3 per cent¹¹ of the total costs could be met by such voluntary labour the burden of the total expenditure can be reduced by another Rs. 430 crores.

The balance of Rs. 11,350 crores will have to be raised as loans from various credit agencies and grants/subsidies from the Central and State Governments.

Almost nothing has been done for provision of institutional finance for rural housing. The Life Insurance Corporation had advanced, upto March 1979, an amount of Rs. 276.37 crores to State Governments, for implementation of social housing schemes. The Housing and Urban Development Corporation had sanctioned, upto December 1978, loans totalling Rs. 383 crores for construction of units and development of plots. Scheduled commercial banks' housing finance amounted to Rs. 124 crores in June 1977. Thus, the total housing finance provided by major institutional credit agencies amounted between Rs. 750 to Rs. 800 crores by 1978. Almost all of this benefited urban centres. Virtually nothing has been done for rural areas. So far as the role of State Governments is concerned, the budgetary provision for 1979-80 financial year for housing both on revenue and capital account amounted to Rs. 122.0 crores. Against this, the sum of Rs. 11,350 crores required to be raised for construction of houses in rural areas appears as an enormous amount. Increased awareness towards the problems of houses for

¹⁰. As in June 1979, there were 13,333 branches of commercial banks in rural areas.

¹¹. Please see Foot-note 9.

weaker sections is, however, being noticed in recent times. For instance, on the recommendations of the Working Group on Bank Finance for Housing Schemes, the Reserve Bank of India instructed the scheduled banks to finance *inter alia* rural housing schemes.¹² Another encouraging development is the entry of the General Insurance Corporation (GIC) in the field. In 1978-79, the Ministry of Works and Housing of the Union Government allocated it Rs. 14 crores for granting loans to various State Governments, for the implementation of village housing projects and for the construction of houses for the economically weaker section of the society.

Because of the magnitude of the problem and the huge financial outlay involved, the obvious need is for a phased programme, spread over a period of seven to ten years. It should be possible to plough back the funds received in the form of repayment of loans if the programme is spread over years thus reducing the burden gradually every year. In view of the extreme poverty of the beneficiaries, it would be necessary that the burden of the repayment of the loans of about Rs. 1,987 per household may be spread over a long period, say 25 to 30 years so that the monthly instalment would be quite small and within the capacity of the borrowers.

The housing programme in rural areas will inevitably need a sizeable subsidy component since such a programme has to benefit poor households, who cannot bear the burden of a large loan. It would appear that at least 25 per cent, which is the subsidy component of most of the rural development schemes, out of the total financial requirement of Rs. 11,350 crores will have to be in the form of a subsidy from the government. This amount works out to Rs. 285 crores per annum. Pitted against the present expenditure of about 0.8 per cent on both urban and rural housing, the expenditure of Rs. 285 crores on rural housing alone will absorb little over one per cent of the combined budgetted expenditure of Central and State Governments. This leaves a gap of Rs. 850 crores in annual financial requirement of rural housing. The task of raising this amount every year is admittedly difficult. But the plough-back of the repaid instalments will ease the situation gradually. Further, as the programme gains momentum it would generate new employment opportunities in rural areas there by stimulating savings, which could be mopped up by the commercial banks' branches and co-operatives.

An important pre-requisite for the success of the scheme is that proper machinery should be set up for the execution of this programme. The formation of a Rural Housing Board at the national level, as suggested by the conference of State Ministers of Housing and Urban Development in October 1975, and of State Rural Housing Boards at the State level as suggested by the National Commission on Agriculture, could co-ordinate the work of finance and construction of houses through Zilla Parishads, Panchayat Samitis and village panchayats. The administrative machinery of the Small Farmers Development Agencies may also be of help in this regard. The establishment of rural co-operative housing societies may not be worthwhile, as it would not

¹² The banking system finance towards house construction activities — both urban and rural — is, however, restricted to around Rs. 75 crores per annum.

be possible for small farmers and agricultural labourers to bear the additional burden of contributing towards the share capital and the administrative expenditure of these institutions.

Section IV

Conclusions

The foregoing discussion reveals that the level of living of the households is reflected in the wide inter-state variations in the average value of the house. In four States, viz., Punjab, Haryana, Jammu & Kashmir and Himachal Pradesh, the average value of the house of a rural household exceeded Rs. 3,000. On the other hand, in Assam, Andhra Pradesh, Tamil Nadu and Orissa it was less than Rs. 1,500.

Among the various reasons for not having a house, lack of finance was the most important, as nearly 82.5 per cent or 4.2 million houseless households were from the three lowest asset groups. Among these 87.5 per cent were non-cultivators mostly agricultural labourers. The houseless households were relatively large in number in four States of Tamil Nadu, West Bengal, Karnataka and Maharashtra. Tenancy cultivation or bonded labour system in some of these States also could be one of the causes.

Though houselessness was not a serious problem, the condition of the houses reported by the 22.9 million households from the three lowest asset groups was deplorable in so far as the value of their house was not even half of the value of the house of the norm for village living. The houses of the poor cultivator households (in the three lowest asset groups) were even inferior to those of non-cultivators.

The reconstruction of houses of these people and also providing houses to new households which may come into existence by 1981 would involve an estimated expenditure of about Rs.13,090 crores on the basis of about Rs.3,056 per house. Even assuming that 10 per cent would be the beneficiary's contribution and another 3.3 per cent would represent voluntary labour for house construction, the balance of Rs. 11,350 crores would have to be raised. Assuming an annual governmental subsidy at the rate of 25 per cent of the financial requirements the gap in financial requirements would be of the order of about Rs. 850 crores per annum.

Better housing in rural areas would lead to more employment and income of families. It will also have a healthy impact on productivity of labour in rural areas. Thus, this programme will contribute to an increase in the total national income about half of which arises from the rural areas. The investment of Rs. 11,350 crores on rural housing over a period of ten years, would have its rewards.

NOTES AND COMMENTS

GENERATION OF RANDOM NUMBERS FROM A NORMAL DISTRIBUTION WITH ZERO MEAN AND UNIT VARIANCE

D. Ray and K. S. Namboodiri*

In many applied econometric studies involving estimation of economic relations, it becomes necessary to check the consistency and efficiency of the parameters obtained through various statistical procedures. While for this purpose sampling distributions of the parameters have been developed in econometric theory in many sophisticated estimation procedures, large sample theory forms the basis for the distributions so derived. In consequence, only the asymptotic properties of these parameters are known. In practice however, one has to work with finite samples and sometimes the available data do not exceed even 20 observations. The distribution provided by theory are therefore not adequate where small samples are used for estimation purposes.

One way of studying the small sample properties of estimators is to utilise the 'Monte Carlo' approach. This procedure consists of the following steps: (i) an assumption on the nature of probability distribution of random numbers to be associated with the specified economic relation; (ii) the drawing of a finite sample of these numbers from the assumed distribution and associating them with the relation; (iii) the estimation of the parameter set implied in the economic relation and (iv) comparing the same with the known parameter set which is fixed *a priori*. This process, known as 'experimentation', can be repeated with different finite samples of random numbers being associated with the relation. Thus, one could arrive at a set of parameter estimates with sample drawings of random numbers. The distribution of estimated parameters may, in turn, yield information on an empirical basis on their bias, efficiency, and related properties. A very commonly used hypothesis in econometric methodology is that the random errors associated with economic relations are distributed normally with a specified mean which is generally zero and constant variance. While tables of random numbers from "uniform" distribution are available, those from 'normal' distribution are rarely published. The purpose of this paper is to provide such random numbers which should be useful in applied statistical and econometric work.

The problem of generation of random numbers from a normal population with a specific mean and variance can be solved in a number of ways. In this paper we shall illustrate two of the several methods. These methods are simple as well as easy to adopt on a computer. The availability of a

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computer package for generating a set of random numbers from a *uniform* distribution in the interval (0, 1) is, of course, *assumed*. In other words, we have assumed that a sequence of random numbers $X_1, X_2, X_3, \dots$ can be generated from the distribution, (uniform density of function F)

$$dF=dX \quad 0 \leq X \leq 1 \dots\dots\dots (1)$$

The philosophy of the two methods is that a suitable transformation of the above sequence will generate a sequence of normal numbers.

Method 1

This technique is based on the Central Limit Theorem. It is known that if we have a sequence of random numbers $X_1, X_2, \dots, X_N$, from (1), then, for sufficiently large N, the statistic Y where

$$Y = \sqrt{12N} (\bar{X} - 0.5) \dots\dots\dots (2)$$

$$\text{and } \bar{X} = \frac{1}{N} (X_1 + X_2 + \dots\dots\dots X_N) \dots\dots (3)$$

will be approximately distributed as N (0, 1). In our present exercise, we have taken N=50. (Random numbers generated by this method are not however presented in this paper).

Method 2

While the above method generates only one random number of N (0, 1) from a set of N random numbers of a uniform distribution, the second method yields a pair of random numbers (Y_1, Y_2) which are N (0, 1) from a pair of random numbers (X_1, X_2) drawn from (1). The mathematical transformations between the two pairs which yields this results are:

$$\left. \begin{aligned} Y_1 &= (-2 \log_e X_1)^{\frac{1}{2}} \cos 2 \pi X_2 \dots\dots\dots \\ Y_2 &= (-2 \log_e X_1)^{\frac{1}{2}} \sin 2 \pi X_2 \dots\dots\dots \end{aligned} \right\} \dots\dots (4)$$

$$\text{This gives } Y_1^2 + Y_2^2 = -2 \log_e X_1$$

$$\text{Or } X_1 = e^{-\frac{1}{2} (Y_1^2 + Y_2^2)}$$

$$X_2 = \frac{1}{2\pi} \tan^{-1} \frac{Y_2}{Y_1} \dots\dots\dots ..2$$

The relationship between the frequency distributions of the pairs of random variables (X_1, X_2) and (Y_1, Y_2) may be shown in the following manner.

The joint probability distribution of X_1 and X_2 each following (1) can be written as

$$dF = dX_1 dX_2 \quad 0 \leq X_1, X_2 \leq 1 \dots\dots\dots (5)$$

If we made the transformation (4), the joint distribution of Y_1, Y_2 can be written as

$$dF = \frac{1}{|J|} dY_1 dY_2 \quad \dots(6)$$

where J is the Jacobian of the transformation given by

$$\begin{vmatrix} \frac{\partial Y_1}{\partial X_1} & \frac{\partial Y_1}{\partial X_2} \\ \frac{\partial Y_2}{\partial X_1} & \frac{\partial Y_2}{\partial X_2} \end{vmatrix}$$

Now the value of J may be evaluated as

$$J = \begin{vmatrix} \frac{-(2 \log_e X_1)^{-\frac{1}{2}}}{X_1} \cos 2\pi X_2 & -(-2 \log_e X_1)^{\frac{1}{2}} 2\pi \sin 2\pi X_2 \\ \frac{-(2 \log_e X_1)^{-\frac{1}{2}}}{X_1} \sin 2\pi X_2 & (-2 \log_e X_1)^{\frac{1}{2}} 2\pi \cos 2\pi X_2 \end{vmatrix} \dots(7)$$

$$= \frac{2\pi}{X_1}$$

Substituting the value of J in (6) we get

$$\begin{aligned} dF(Y_1, Y_2) &= \frac{1}{2\pi} X_1 dY_1 dY_2 \\ &= \frac{1}{2\pi} e^{-\frac{1}{2}(Y_1^2 + Y_2^2)} dy_1 dy_2 \quad \dots(8) \end{aligned}$$

This shows that Y_1 and Y_2 are independent and each of them follows $N(0, 1)$.

Test for normality and Randomness

Before testing the normality and randomness of the set of numbers generated by each of the methods, we try to assess the fastness of the methods at which the numbers are generated. For this purpose, two sets of 1000 numbers are generated by each of the methods and the time required to do so is noted. It is interesting to note that the second method is superior than the first one as the former (second method) is substantially faster than the latter. For testing the normality and randomness, a set of 1000 numbers are generated by the Method 2. The test of normality is carried out with the help of Pearsonian χ^2 , which compares the observed frequency with the expected one from $N(0, 1)$ defined on a set of class intervals. The observed and expected frequencies are given in the following table:

Table 1: Observed frequency as generated by Method 2 and expected frequency

Class Interval		Observed Frequency	Expected Frequency
	≤ -3.0	1	1
-3.0	— -2.5	4	5
-2.5	— -2.0	12	17
-2.0	— -1.5	39	44
-1.5	— -1.0	108	92
-1.0	— -0.5	162	150
-0.5	— 0.0	184	191
0.0	— 0.5	180	191
0.5	— 1.0	151	150
1.0	— 1.5	94	92
1.5	— 2.0	48	44
2.0	— 2.5	12	17
2.5	— 3.0	3	5
$\geq$	3.0	2	1
TOTAL		1000	1000

The calculated value of χ^2 is 8.89 which is less than $\chi^2_{0.05}$ with 11 d.f. supporting the hypothesis that the set of 1000 numbers have come from $N(0, 1)$.

For showing that the generated set is a set of random numbers from $N(0, 1)$, it is enough if we show that the numbers are uncorrelated among themselves. For this purpose, the autocorrelations' (r_k) of upto lag 24 have been calculated and are presented in Table 2.

Table 2: Autocorrelation upto lag 24

Lag	Autocorre- lation	Lag	Autocorre- lation	Lag	Autocorre- lation
1	0.00	9	0.06	17	0.00
2	-0.01	10	0.06	18	-0.01
3	-0.01	11	-0.01	19	-0.00
4	-0.04	12	-0.03	20	-0.02
5	-0.02	13	0.01	21	0.03
6	0.00	14	0.02	22	0.09
7	0.01	15	0.02	23	0.04
8	0.02	16	0.01	24	0.00

We know that the autocorrelation of lag K ($K=1, 2, \dots$) calculated from a set of uncorrelated n numbers follows asymptotically a normal distribution with mean zero and variance $1/n$. From the above table it may be seen that all sample autocorrelation upto lag 24 lie within the 3 times of the standard deviation, which is in favour of the hypothesis that all the autocorrelations upto lag 24 are uncorrelated. This together with normality shown earlier indicates that the set of 1000 numbers generated by the method 2 is independently and normally distributed with zero mean and unit variance.

The set of 1000 random normal numbers thus generated with zero mean and unit variance is given in the Appended Table.

Reference:

- 1) Box G.E.P. and M.E. Muller, 'A note on the generation of random normal deviates'—Annals of Mathematical Statistics—Vol. 29, 1958.

RANDOM NORMAL NUMBERS WITH ZERO MEAN AND UNIT VARIANCE

-0.2852	-0.1984	-0.7235	0.1923	0.2175	1.1009	-1.0687	-2.2296	0.8064	-0.3508
-1.3742	-0.1685	0.5943	0.1312	-2.3782	-0.4490	0.8920	0.0432	-1.2643	0.5646
-0.5114	-1.2188	0.9322	-0.4356	-0.5697	-0.0973	-1.2402	-1.7985	-0.3998	-1.2626
0.0332	-0.4322	1.5635	0.4806	-0.3695	0.6901	0.0385	-0.9562	-0.0890	0.1005
1.6622	-0.1830	0.0170	-0.8058	0.8308	0.4082	0.7179	-0.6352	-1.4851	0.6271
-0.7222	0.1017	-0.2642	1.6742	0.7167	1.2385	0.9606	-0.7198	0.4051	0.1621
-0.4475	-0.0127	-0.4833	1.0434	-0.1639	0.0062	1.3698	0.8782	0.2930	0.1464
-0.8781	0.7826	1.3729	-0.8258	-1.0992	0.2497	0.3317	0.1080	0.0935	-0.7322
0.4337	0.4357	-1.0857	-2.6661	-0.3650	-0.3864	-0.1204	-0.7733	0.0252	-0.0212
-0.5913	1.6007	-1.4420	-0.1205	0.5816	-0.8445	0.7241	-1.1175	-1.3963	0.8211
-1.0921	0.2232	0.6875	1.4221	-1.7424	-0.8422	0.6493	0.1368	-1.1193	0.0107
-0.0032	-0.3022	0.8399	-0.6883	0.5301	-0.8121	0.4442	1.8630	0.5595	0.5990
-0.3369	2.1634	-2.9262	1.7481	-0.6718	-2.6042	0.0227	0.3574	-0.7614	1.6852
-0.2827	-0.3999	-0.8140	-1.7684	-1.0507	0.8948	0.7070	0.9421	0.5831	-0.8514
0.9870	-0.2840	0.6469	0.8689	-0.1542	0.0995	-1.8144	-0.7838	-1.6557	0.1197
1.2024	-0.2999	0.6319	1.9347	-1.0395	-1.0968	-1.1818	-1.6538	0.3192	-0.9214
-1.6520	0.2464	0.3977	1.3148	2.1758	-1.5461	0.8193	1.0164	-0.2777	0.1755
1.5173	-1.3267	1.1445	1.8597	-1.5245	1.7217	1.0955	1.2443	-0.6178	0.1938
-1.3853	0.4281	0.5921	-0.2711	0.2005	0.9035	0.7389	-0.4760	1.0681	-1.2770
-1.2258	-0.0459	0.4160	-0.9205	-0.7273	0.1758	-0.2122	-0.2339	0.5801	-1.1439

RANDOM NORMAL NUMBERS WITH ZERO MEAN AND UNIT VARIANCE—(Contd.)

0.2553	0.8246	0.1543	0.0454	0.1388	0.5503	0.1098	0.1009	0.8269	1.0955
0.7492	0.7346	0.1626	0.12710	0.1134	0.5171	0.1798	0.6420	0.7675	0.0925
0.4859	0.0769	1.1378	0.4940	0.8198	0.0570	0.3722	0.8181	1.5546	0.8980
0.4135	0.3420	0.7077	0.8467	1.2603	0.0844	0.16521	0.5828	0.15120	0.1397
0.4667	0.1857	0.4297	0.1558	0.3399	1.3782	0.0239	0.0346	0.7151	0.6413
3.8540	0.0213	0.1018	0.7097	0.1318	0.7469	0.3694	0.7922	0.9195	0.5236
0.3937	0.7301	1.8917	1.0671	0.5037	0.5335	0.3988	1.7105	0.17166	1.4416
0.2963	0.1013	0.1653	1.3626	0.1820	0.8383	0.1501	0.6946	0.2634	1.8261
1.8065	0.1287	1.8072	0.1911	0.7125	0.15209	0.16009	1.1919	0.4475	0.9045
0.3362	0.5134	0.0070	0.1556	1.3693	1.0165	0.1541	0.3044	0.2363	0.8179
0.0157	0.8508	0.5990	0.6660	0.19555	0.13875	0.7212	1.5638	0.6251	0.5684
0.7264	0.1203	0.9250	0.5708	0.4337	0.14252	1.0390	1.6762	0.7678	0.9254
0.6024	0.2248	0.3134	0.7118	0.19679	0.3568	0.13005	0.8039	0.10403	0.4828
1.1272	1.1969	0.12912	0.4478	0.9283	0.7895	1.4079	0.7541	0.0348	1.4102
0.3988	0.7979	0.1546	0.1434	0.7610	0.2753	1.1580	0.4571	0.14601	0.3706
0.6071	0.9748	0.0637	0.8319	0.0966	0.1336	0.4974	0.7438	0.10959	0.1581
0.6093	0.0574	0.0020	0.12585	0.9566	0.5429	1.5974	0.3038	0.9314	0.13897
0.8219	0.2346	0.6295	0.0879	0.5109	0.18425	0.7663	0.3223	0.0112	0.10397
0.0437	0.1229	0.0387	0.15962	1.8782	0.0502	1.0385	0.5702	1.5636	0.10872
0.0146	0.6993	1.2867	0.0513	0.10289	0.1200	0.2377	0.6352	0.2925	1.3413

RANDOM NORMAL NUMBERS WITH ZERO MEAN AND UNIT VARIANCE—(Contd.)

—0.9645	—0.9873	—0.2309	—0.8835	—0.2104	1.0923	—0.4422	0.4597	—0.3204	0.8067
2.4296	1.8554	0.1849	—1.1269	1.6346	0.5917	1.2303	1.9460	—0.2341	0.7693
—2.4191	0.3396	—1.2413	—0.1567	0.7444	1.0288	0.7942	—1.3686	—0.7523	—0.4000
—0.4278	0.7648	2.3820	—0.1968	1.1061	0.0115	0.5478	0.1022	—1.3928	0.0907
—0.0728	—1.0476	—0.8566	—0.1987	1.8548	1.7976	0.0879	0.2151	—1.0902	—0.9506
0.7017	0.7100	1.0436	—0.3101	0.7546	—1.2211	—0.0129	—0.2280	—1.4772	0.7605
0.5155	—0.3850	0.1119	1.6745	—0.8145	0.2542	—0.8268	—1.4082	0.5211	2.0067
—1.9952	—0.6066	1.4329	2.8553	—0.9206	0.4198	—0.8559	—2.0633	0.7218	—1.1996
2.0161	—0.3408	2.3219	1.2832	—0.1446	—1.1784	—0.0004	0.3694	0.1713	—1.4198
—0.0055	—1.1775	—0.3712	—0.8108	0.7272	0.1691	0.3033	1.6859	—0.6161	—0.8780
—0.6797	—0.7106	0.1767	1.7187	0.4653	0.7974	—0.4130	0.6485	—1.2959	—2.0997
1.9364	—0.6405	—0.8725	—0.8302	0.4213	0.0477	—0.1796	—1.0055	1.1165	0.3917
—1.2692	—0.1537	0.6597	0.2872	1.2633	—0.1824	—0.5875	1.0838	—0.0537	—1.2698
0.8437	1.5666	1.3057	—0.5196	—0.0083	0.2674	1.6410	1.6174	0.6066	0.9569
0.9059	0.7043	—0.3982	0.4318	—0.6111	1.1589	—0.7278	—0.3811	0.0271	—0.5229
—0.1853	—0.5679	1.2619	—0.5438	—0.6484	0.7633	—1.6670	0.3095	0.0811	1.3482
—1.9653	1.0552	—0.3028	1.1867	0.4451	—2.0761	—0.6544	—0.1140	0.5874	—0.6778
—0.4018	—1.6315	—1.2099	1.0965	—2.1707	0.5608	0.4799	—1.6384	1.1919	0.0242
—0.8310	—1.3989	0.5056	1.2061	0.1816	0.2035	0.6373	—0.2247	—1.4774	—1.1609
—1.3489	1.9195	—1.5652	—0.0951	0.3127	—0.5338	—0.3827	0.7020	—0.4492	—0.4891

RANDOM NORMAL NUMBERS WITH ZERO MEAN AND UNIT VARIANCE—(Contd.)

2.4036	0.6401	0.2072	-1.9255	-2.3427	-0.2855	0.0706	0.3768	1.5102	0.9450
-0.2283	-0.8137	-0.0877	1.1833	-0.5955	0.5709	1.1955	1.7816	-1.2647	0.2454
0.5411	-0.0779	1.2440	0.2719	1.1149	0.2246	-0.6317	-0.4098	-0.2994	0.5480
-1.6644	-0.3888	-1.0671	0.7392	-0.1563	-0.0330	0.3830	-0.4208	0.9101	1.2263
-0.0444	-0.0533	1.1211	-0.5112	0.3436	-0.7885	-0.9937	-0.4892	1.8047	-0.6465
0.3513	0.5198	-1.4020	2.1022	1.7262	1.1977	1.1343	0.1608	0.6685	-0.8411
-0.5246	-1.0220	-0.2485	-0.7403	0.9804	2.5692	-0.5062	0.7361	1.4770	1.8017
0.0718	0.3990	-1.1927	-0.7156	1.8651	0.3115	0.0666	-0.8570	-0.7263	0.3835
0.9170	-0.4636	-0.3459	0.1616	0.5704	-1.0184	-0.3295	-0.2446	-0.7981	-0.0974
0.6303	1.0130	-0.1963	-0.0990	-1.5795	-0.3160	-0.4218	-0.7346	-2.0577	-0.6506
-0.4895	-0.8640	-1.0678	-0.5155	-0.9599	0.3709	-1.9435	-0.0278	0.7754	-0.1563
-2.4114	-0.3364	1.4718	0.3296	1.3108	1.0458	-1.3127	-0.4433	-0.7779	-0.6527
0.0505	-0.3624	-1.1511	0.0966	-0.3034	-0.8770	-1.3353	0.1106	-0.2981	-1.1747
-0.1866	1.1042	-0.1883	0.9838	-0.8235	-0.1597	0.0327	0.3555	-1.0874	-0.7640
0.6135	-0.3360	0.3787	-0.7896	0.1399	1.1225	1.5901	-1.1626	-0.9639	-1.3536
3.0057	-1.2798	1.0141	-1.2454	1.5272	-0.4705	0.8349	0.8137	-0.3894	-1.2650
1.0037	0.8066	0.5908	0.4285	-0.7162	1.0599	0.0746	-1.5563	-0.7152	1.2864
-2.1542	-1.0068	0.3537	1.1493	2.0550	-0.3341	-0.5387	0.0276	0.4786	-1.3317
1.0262	1.6077	1.4129	1.9256	-0.9014	0.8400	-0.4418	0.2282	-0.7737	-1.0833
1.4258	0.5660	0.5128	-0.3842	0.3333	-0.2383	0.3451	0.6352	1.0358	0.2071

RANDOM NORMAL NUMBERS WITH ZERO MEAN AND UNIT VARIANCE—(Contd.)

—0.6555	—0.0921	—0.0928	0.5378	—0.4520	—0.2745	0.5209	—1.2713	1.0541	—0.4183
—1.1548	—0.6335	0.5566	—0.5175	0.5460	1.3678	—0.1495	—0.7559	0.4552	0.2243
0.5998	—0.5700	1.2086	0.7655	—1.6558	0.9542	—0.9856	—1.9252	0.4138	—0.9895
0.0618	—0.5059	0.7583	—0.5767	—0.5074	0.0432	—1.4993	1.4532	—0.5298	—1.2809
1.8178	—0.9526	—1.9518	0.2760	0.0624	0.8277	1.3548	—0.2069	—0.4036	—0.8747
—0.2840	0.3329	0.1513	—0.5297	1.1649	0.5799	—1.1737	0.1193	1.2624	0.0027
—0.7067	—0.3173	0.9417	1.2330	1.8391	1.0159	—0.1980	0.1289	1.6482	—0.3885
0.1934	0.5717	0.6693	1.9080	—1.3075	—0.6732	—1.0998	—0.6567	—0.8751	0.9533
—1.1212	—0.8160	0.7722	1.0460	0.8943	—0.0259	—0.6944	0.4865	0.2418	—0.5179
—0.4788	0.4834	—3.0234	0.3862	—0.5730	—0.7532	0.2840	—0.8926	—0.8741	1.0886
—0.6939	1.1850	0.5247	0.6756	—0.7834	—1.3607	—0.2219	0.5153	—1.5758	—1.1793
2.8305	—1.5370	—1.3799	—0.1438	—0.1295	1.4542	0.7883	—1.3592	1.3539	—1.5283
—2.3736	0.6406	0.7790	1.1598	—0.3769	—0.6463	0.8313	—2.8696	—0.2586	1.0438
—0.5689	1.1969	—0.2220	—1.1311	0.0666	0.5826	—0.8660	0.8840	2.1886	1.0953
—1.6350	—0.7220	—0.5369	0.2841	—0.1580	0.5699	—1.1559	1.4423	—0.3125	—0.1967
—1.3741	0.3248	0.9067	—0.3300	1.2761	0.4189	—1.0485	—0.7215	0.5006	—0.5738
1.5963	1.2315	0.4516	—0.7817	—0.5659	—0.8745	0.1891	0.0226	0.1378	0.3802
—0.2535	—0.0370	—0.3015	—1.5696	0.5340	—0.8766	—0.3225	—0.5073	—0.4935	—0.6202
—1.4153	—0.3152	—0.4028	0.8101	—0.4952	0.1876	—0.0690	0.4080	0.2329	0.2113
0.6840	1.1341	—0.1376	0.2397	—1.1044	—0.2538	0.5732	—0.2702	0.0386	0.9060

BOOK REVIEWS

"Financial Ratios as Predictors of Borrower's Health—with reference to Small Scale Industries in India"—V. S. Kaveri—Sultan Chand & Sons, New Delhi—Rs. 70—232 pages

This book contains the author's work for his doctoral dissertation and as such, begins with a survey of earlier attempts by researchers towards enhancing the quality of ratio analysis. The author attempts to show how, by using the sophisticated statistical tool of a discriminant model, he has broken new ground. While the focus of earlier research, we are told, was on predicting failure of a firm/corporate body, bankruptcy/insolvency position/failure to repay loans, the present work identifies scope for predicting the events which precede the failure of a firm viz., irregularity and sickness. Further, the predictive ability of the selected ratios is stated to have been examined for the first time in respect of small scale industries in India.

The author sets before himself the following hypothesis, examines them and concludes that all of them hold good:

- (a) Financial ratios of good, irregular and sick units differ from one another.
- (b) Financial ratios differ from industry to industry and, from one combination of size, age and type of organisation to another.
- (c) Financial ratios are the predictors of a borrower's health.
- (d) Of the 22 ratios examined, only a few ratios are found significant in all statistical tests and useful to bankers.
- (e) A trend ratio is a better predictor of the health of the small units.

The author's effort at original research is to be appreciated. He seeks to evaluate the significance of financial ratios and their validity for predicting borrower's health, on the basis of a model based on a sample of 524 small-scale units, the requisite data being drawn from the lending bank. However, most of the units in the sample are proprietary and partnership concerns, with a maximum investment of only Rs. 3.75 lakhs (p. 39). It is an acknowledged fact that the accounting systems and audit requirements of such small units leave much to be desired in our country. The quality of the author's model would obviously depend on the quality of the basic data. A further assumption is that private limited companies and partnership firms manage funds better than sole proprietary concerns. Banking experience would show that this assumption, which might sound plausible, may not always hold good. Sole proprietary concerns, partnership firms and limited companies are various forms of business organisation, which have

a bearing more on the size of the unit rather than on the quality of financial management.

The author has said that banks define (p. 27) 'good', 'irregular' and 'sick' accounts in the following manner:

- (a) A 'good' account is one whose outstandings are within the drawing power or the limit sanctioned.
- (b) An 'irregular' account is one in which the outstandings are for a temporary period beyond the drawing power or the limit sanctioned.
- (c) A 'sick' account is one which maintains irregularity for longer period.

The above definitions, besides being somewhat crude, do not really reflect the prevailing banking practices, although the author has claimed that banks adopt the said definitions. Subsequently, however, he seems to have developed reservations regarding the use of the above definitions by banks as would appear from his statement, "The study considers these definitions as followed in the banks" (p. 27). It may be stated that banks classify units as irregular for violation of any of the terms and conditions of the sanction e.g. documents expired. Thus, the author's presumption that "irregularity" reflects a fall in the income flow of the unit does not necessarily hold good.

In fact, until 1976, banks were not classifying units as "sick". The practice was to classify advances as "irregular" and "bad and doubtful debts". Banks started classifying units as "sick" only after the Reserve Bank's circular on the subject issued in November 1976. This circular defined a sick unit as one which has incurred cash loss for one year and which, in the judgement of the bank, is likely to continue to incur cash losses for the current year as well as the following year and which has an imbalance in its financial structure, such as current ratio of less than 1:1 and a worsening total outside liabilities to net worth ratio. According to the definitions mentioned by the author, "irregular" accounts become "sick" if irregularity is maintained for a "longer period". The distinction sought to be made is rather vague and does not lend to operational guidance, since "longer" is not defined. Besides, the existence of irregularity for a "longer period" (however defined) is not by itself a definite indication of "sickness" of a unit. What is more relevant is the nature of the irregularity and ultimate viability of the unit.

Another assumption of the author is that banks use a large number of ratios, in the follow up of the advances. This assumption is made on the basis of 13 ratios used in the bank whose borrowers have been selected for inclusion in the author's sample. To these 13 ratios, the author has added another 9 for more meaningful interpretation (pages 52-53). Any one familiar with the small scale industrial advances departments of banks

would know that particularly in the case of this sector, ratio analysis is hardly used for follow up purposes and even where used, attention is confined to the current ratio, the total outside liabilities—equity ratio and one or two profitability ratios (or merely to the fact that the unit is working at reasonable profit). In the matter of analysis and interpretation of borrowers' annual financial statements, there exists a wide gap between what is prescribed in the book of instructions and the practices obtaining at the levels where advances to small scale units are sanctioned and followed up.

The research work of the author is based on data relating to the years 1965 to 1973, while the book has been published early in 1980. Since the time of the research done by the author, there have been several developments in the area and on a perusal of the book, one would wonder whether the efforts of the author which have gone into the building up of his model and the statistical analysis (chapter IV) have any practical value for bankers. Besides, there are some fundamental differences between what is advocated by the author on the basis of his research and what is now being followed in practice. Banks have now been advised to establish a "Information System" in respect of borrowal accounts which is expected to serve as a tool for detecting incipient sickness. Although adoption of the system has not been made obligatory in the case of units whose borrowings from the banking system are less than Rs. 1 crore, the Reserve Bank has advised banks to collect from such units select operational data on a monthly basis. The experience of the operation of this system is that it is useful and enables the banker to note incipient sickness of the units at an early stage. As against this, ratio analysis, which can be done only at annual intervals, cannot be considered as an effective tool for detecting incipient sickness. It can, at best, confirm the findings of the quarterly information system/monthly operational data. Moreover, as the author himself has observed, financial statements are not compiled by most of the small scale units in time; besides, there is no uniformity in the structure of the statements which is a prerequisite for realistic ratio analysis.

The author has identified five ratios as "statistically significant" (p. 99). But, as mentioned above, in the case of the small scale units and even the relatively bigger units, the banker's attention would be more particularly focussed on the current ratio, the total outside liabilities to equity ratio and a couple of profitability ratios in ordinary conditions. However, if one wishes to present a picture of analysis as it ought to be rather than as it is in practice, the author's five ratios would hardly be adequate, especially when there are symptoms of sickness. Even in normal situations, the financial analyst cannot ignore the ratio of creditors to purchases and the ratio of debtors to sales; a high ratio of creditors to purchases has both a good or bad story to tell, depending upon the state of the unit and it is a question of interpreting the ratio in relation to the other ratios. As regards the stock cost of goods sold ratio, which is one of the five ratios identified by the author as significant ratios, according to the present thinking, the banker will not be satisfied only with such an omnibus ratio, but is bound to relate the components of stock viz., raw materials, stock-in-process and finished

goods to the annual consumption of raw materials, cost of production and cost of sales, respectively.

There are a number of minor flaws which mar the quality of the analysis. The author has indicated the same ratio as good for equity-term debt and equity-total outside liabilities (pages 78, 80) which cannot be the case. To the financial analyst, the term 'diversification' (pages 69, 85) has a different connotation and does not mean the same thing as 'diversion' which the author obviously wanted to convey. The author has used 'working capital' and 'net working capital' as synonymous terms, but it is not so to the financial analyst (pages 55, 60 and 62). It is doubtful whether the ratio net working capital/net sales (p. 60) is significant, though the working capital/net sales ratio is relevant. According to the Reserve Bank guidelines, investments other than "trade investments", though quoted, should not be classified as current assets, as a banker would not like funds to be diverted for investments, unless there is a surplus of long term sources after meeting the working capital margin (p. 72); the borrower's current assets should be related to his line of business/ production activity which is not the case with investments, though marketable. In similar ratios, e. g. fixed assets-net sales and turnover/fixed assets, the fixed assets should be treated consistently as either the numerator or denominator (p. 71). "Deposits kept with suppliers" (p. 83) is an item of current assets; perhaps the author had in mind "deposits kept by the customers". The quotation No. 47. on page 79 is relevant to 'net worth/ total outside liabilities ratio' and not 'net worth/ debt ratio'. Again, to say that sick firms suffer from shortage of working capital and that there are chances of using long-term borrowing resources to finance working capital (p. 204) is not altogether correct, because generally sick units stretch their short-term liabilities and utilise them for non-current uses and to meet cash losses, etc.; sick units are equally short of long term resources and a banker expects even good units to finance part of the working capital requirements out of their long term resources. Finally, if the considerable repetition of ideas at various places had been avoided, the presentation would have made better reading.

In conclusion, while the effort put in by the author in undertaking the research is certainly to be commended, his suggestion that the model developed by him could be used by banks while evaluating fresh loan applications is not quite realistic and appears to have been made on the basis of inadequate information about banking practices. The book does not take the banker forward in the use of financial ratios for detection of incipient sickness. As a matter of fact, since the research work was completed, there has been considerable sophistication in the procedures of follow up of bank credit and identification of incipient sickness.

—M K Desai*

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"A Treatise on Tax Planning"—D. D. Shah—N. M. Tripathi Private Ltd., Bombay—Rs. 60—236 pages.

The importance of tax planning cannot be over-emphasised. Attempts to minimise tax liability are a matter of common experience. Whether the attempts always bring the desired results to the tax-payer is another story. Now perhaps success could be considered nearer with an addition to the armoury of the tax-payer—namely, the treatise under review.

The major handicap for a tax-payer, apart from the complexity of the legal provisions, is inadequate guidance in the matter of tax planning. The present book will go a long way in helping a tax-payer in reaping the maximum benefits of his labour. In this book, the author has not only enunciated various principles operating in the jungle of taxation, but he has also, with the aid of his experience, examined various legal provisions, brought out their implications, considered various models of tax planning with distinct advantages of all such modes. The distinctive features of the book are the suggestions as regards special care to be taken while adopting one or other of the modes. The critical form adopted by the author is in keeping with the nature of the subject of discussion. The emphasis on functional, rather than analytical, attitude of ways and means to reduce tax liability only enhances the utility of the book.

The presentation of the subject is logical. At the outset, the author has explained the significance of tax planning and the objectives behind it. The objective of tax planning is not merely to claim an expenditure or make an investment in tax-free assets. "The saving for the purpose of income tax is the main objective of saving tax in the hands of tax-payer, distribution of income among the relatives of tax-payer so that such relatives pay tax at a lower rate, getting more savings in the hands of the family as a whole and finally create more income out of such savings". Tax planning envisages legal avoidance of tax and it has been well-recognised that the tax-payer is entitled to so arrange his affairs as not to attract tax or bear only the least possible incidence of tax. But the difficulty is to find the ways of so arranging one's affairs. This book would be of some help in solving the difficulty of finding ways and means to this end.

The problems are varied; individual demands for solutions are varied. In this book, the author has taken pains to cater to the needs of various categories of tax payers. For example, in the chapter 'Tax Planning for Salaried Employees', modes for attracting less tax on salary income have been discussed. Receipt of conveyance allowance always dissipates the tax concessions, otherwise available. On the other hand, using one's own car may not be advantageous. An alternative is, however, available whereby the employee can pay a small fixed amount for the personal use of a car and also claim the maximum standard deduction. Reduction of tax liability is also possible through the distribution of the gratuity payable over more than one year. Certain other allowances which are advantageous to employees as also various methods of tax planning for businessmen and professionals have been separately considered in details.

Apart from the individual requirements, the author has also dealt with several ways and means which can be resorted to with the objective of reducing tax liability. These are planning through trust, through charities, planning through insurance and through wills. Various aspects of these modes have been discussed elaborately. The author has brought out the effectiveness of these methods as instruments of tax planning, provided sufficient precaution is taken while resorting to them.

Even with all the emphasis on the care and precautions to be taken while indulging in the exercise of tax planning, one cannot overcome the realisation that tax planning is "an exercise of highly intellectual disposition and a complete legal thinking". Being aware of this, the author has made no secret of the fact that the "treatise is primarily meant for Indian Tax Planners". He has also added a word of caution that one should not "indulge in tax planning all by himself but leave the problem to his adviser with confidence", who with his experience can successfully lead the estate owner through the "intricate and highly technical labyrinth of tax planning." The nature of the subject is too complex to ensure lucidity in exposition. This book also is no exception. It is, however, very much to the credit of the author to make the discussion as less complicated as possible. In a critical study like this, word-to-word reproduction of lengthy statutory provisions may appear a little out-of-place, as it tends to hamper the contiguous flow of exposition.

The printing is good and the getup superb. In fine, for saving more, spending Rs. 60/- is worthwhile.

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Money Supply in India : Concepts, Compilation and Analysis

Report of the Second Working Group

The Reserve Bank of India has reprinted the Report of the Second Working Group on Money Supply in India. The Group was constituted primarily for the purpose of reviewing the existing analytical framework of money supply and to make suitable changes in concepts as well as methodological aspects of compilation of monetary data, keeping in view the developments in monetary theory and experience of monetary management in India.

The Report of the Group, has, at length, dealt with conceptual issues involved in providing a meaningful definition of money, examined the analytical significance of what has come to be known as factors affecting money supply and identified four measures of money stock as of importance for monetary analysis and policy formulation. A revised series of money supply compiled in the light of discussion of various conceptual issues are also presented in the Report. The Report of the earlier Working Group constituted in 1961, appears as an annexure to the Report of the second Working Group.

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