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SIZE AND PROFITABILITY IN THE CORPORATE SECTOR

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Introduction

This is a study of the relation between size and profitability in the Indian Corporate Sector. The existence of a positive relation between these variables was hypothesised by W. J. Baumol.[1/] He argued that while all the options open to a small firm are also open to the large firm, the contrary is not true. The larger firms have a wide range of options, due partly to their larger resources and superior access to resources. Consequently one would expect that, the larger the firm the higher will be the profitability.

Several studies have tested this hypothesis of the rate of return increasing with the size of the firm. A major study was done by Crum in 1939 for all United States Industry and it formed the basis for much of the later work done in this field.[2/]

One major work done in the Indian context is that of M.M. Mehta.[3/] He tested this hypothesis in the case of seven industries for a period of twenty years (1938-57) and came to the conclusion

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that there is a positive relationship between size and the rate of return. Subramaniam and Papola tested it for the Chemical Industry for the period 1960-69 and found that there was no relationship between size and profitability.[4/]

Since the early 1950's the Reserve Bank of India has been publishing on a continuing basis financial statements for the corporate sector and since 1959 provides for different categories of companies, the combined accounts by size of paid-up capital. In 1959, the Reserve Bank of India also did a study of the size-profit relation for non-financial, non-government public limited companies as a whole, as well as by industries.[5/] They found that when all industries are taken together the size-profit relationship held good. (But this relationship stood only when certain types of profit ratios were used.) In the case of industry groups and individual industries the pattern was quite mixed: some industries showing a positive relation between size and profitability, others suggesting a negative relation and yet others with no statistically significant association. These findings however were based only on two years' data (1955 and 1956). Since then there have been very few attempts to explore the question further even though a considerable volume of information has been published by the Reserve Bank of India. It seems worthwhile, therefore, to use this information to re-examine whether some definite statements on the existence of a systematic relation between size and profitability could be made. The present paper is an attempt in this direction. However, since the Reserve Bank of India has not published industry-wise size-wise data, we are forced to confine the analysis to the aggregate level. It is intended to extend the study to specific industries if the relevant data could be obtained.

The paper is divided into 4 sections. The scope of the analysis, and the sources and limitations of data are discussed in section 1. Section 2 reviews the main features of the variations in the rate of profit as between different size-classes of companies at various points of time and over time. The relative contributions of different elements to variations in profit rates are discussed in section 3. The conclusions are summarized in section 4.

I

This is a study of the relationship between size and profitability in the corporate sector covering a period of fifteen years, viz., 1960-75. It tests the hypothesis that the rate of return increases with the size of the firm. Forthis purpose the following relationships are examined: (1) The trends in average profitability. (2) Inter-class variation in profitability. (3) Intra-class variability of profit rates. Since profitability is the net result of the action of a complex of factors affecting the performance of firms (eg. the profit margin, capital turnover etc), the latter half of the analysis is devoted to the decomposition of variations in profitability into its major component elements. Their behaviour and the implications of it are then analysed.

Definitions used.

Corporate sector refers to medium and large public limited companies alone. In 1973-74 they constituted about 57.4% of net value added in the non-financial (including government companies) corporate sector.6/ Size is defined in terms of paid-up capital. Though this is not a satisfactory index of size, it is used because the available data for most years are classified only on this criterion.7/ Moreover it has been seen that there is a close correlation between net assets and paid-up capital8/ (See Appendix, Table 1). Therefore the results may not be vitiated due to the use of paid-up capital as a measure of size. Seven size groups are used in this study.9/ In this study the term firm and company are used as synonyms. Small firm refers to those with paid-up capital between Rs.5 lakhs and Rs.10 lakhs; and big firms to those with paid-up capital above Rs.1 crore.10/ The firms falling in the size groups in between these two classes may be classified as medium firms. This distinction is drawn because there is a difference in the magnitude and behaviour of the various indices used in this study in each of these classes.

The entire analysis is done with respect to two indices of profitability, viz. the rate of return on capital employed (total net assets) and the return on net worth. The former is a measure of the return to total resources and the latter is a measure of the return to own resources. The former is defined as

$$\frac{\text{Profits before tax and interest, after depreciation}}{\text{Total capital employed}}$$, the latter as

Profits after tax, interest and depreciation
Net Worth.

Data sources and the limitations of this study.

The analysis is based on the "Finances of Medium & Large Public Limited Companies" published by the Reserve Bank of India. These data are in the form of a quinquennial series covering the periods 1960-65; 1965-70; and 1970-75. There are, however, some difficulties in using this data especially over time. Firstly, though within each quinquennium the sample units are fixed, and their classification by size is supposed to be fixed for this period; however if any of the sample companies do not report information in any particular year, there seems to be some procedure for replacement. The criterion for this replacement and the extent to which they may affect the size distribution is not clear. All we know is that the number of sample companies in each size group does vary even within the same quinquennium. Secondly, the sample size has been progressively increased every quinquennium. This fact itself does not seem to affect the conclusions: We have compared the profitability rates for the old and the new samples for the transitional years and found that while this makes some difference to absolute profit rates, it does not affect the conclusions regarding size-profit relation. Thirdly, given the fact that fresh samples are drawn every five years; the sample units falling in any particular size group will not be the same over the whole period. It is possible, in fact highly likely, that companies which were relatively small in the earlier years may be either dropped out (due to liquidation) or may have graduated to the higher size classes. The effects of this phenomenon cannot be satisfactorily taken care of with the published R.B.I. data. It can be done only by tracing the history of a fixed panel of companies over time which would call for access to data on individual companies in the sample.

Yet another problem is that the whole analysis is based on current price data. But the denominators of the profit ratios used here are the book value of assets and of net worth. Therefore, there are a number of problems inherent in both these measures during an inflationary period. Differences in the methods of valuing assets by different firms also affects inter-firm comparisons. These limitations will need to be borne in mind while interpreting the significance of the pattern revealed by this analysis.

II

Trends in Average Profitability

Table I gives the rate of return on capital employed over the period 1960-75. From this it will be seen that for all size groups profitability declines from 1960-69 and increases from 1969-70 to 1974-75.

Table 1

Rate of Return on Total Capital Employed - (Ratio of Gross Profits to Total Capital Employed)

(Per cent)

Year / Size*	Rs. 5 lakhs-Rs.10 lakhs	Rs.10 lakhs-Rs.25 lakhs	Rs.25 lakhs-Rs.50 lakhs	Rs.50 lakhs-Rs. 1 crore	Rs.1 crore+	Rs.1 crore-Rs.2 crores	Rs.2 crores-Rs.5 crores.	Rs.5 crores+	Coefficient of variation across size groups
No. of Companies 1333									
1960	11.5	10.1	11.1	10.3	9.9				.0224
1961	9.7	9.8	9.8	9.7	10.2				.0211
1961-62	9.9	9.9	9.5	9.8	10.8				.0234
1962-63	9.3	8.6	9.5	10.5	10.3				.0921
1963-64	9.1	9.3	10.0	10.6	11.1				.0845
1964-65	8.6	8.8	9.0	9.7	11.2				.1116
1965-66	7.7	7.6	7.9	8.9	11.1				.1720
No. of Companies 1501									
1965-66	5.4	7.2	7.8	9.2		9.4	11.4	11.4	.2497
1966-67	6.5	7.6	8.3	8.6		9.3	11.4	10.3	.1842
1967-68	5.3	6.0	6.6	7.4		8.5	9.8	9.6	.2139
1968-69	3.8	5.0	6.6	7.7		7.6	9.3	9.4	.2866
1969-70	4.9	6.4	8.3	8.6		9.4	10.3	10.5	.2475
1970-71	6.2	6.7	8.3	8.8		10.2	11.0	12.3	.2497

(Contd.)

Table 1 (contd)

Year \ Size*	Rs.5 lakhs - Rs.10 lakhs	Rs.10 lakhs - Rs.25 lakhs	Rs.25 lakhs - Rs.50 lakhs	Rs.50 lakhs - Rs.1 crore	Rs.1 crore + ** ~~Rs.2 crores~~	Rs.1 crore - Rs.2 crores	Rs.2 crores - Rs.5 crores	Rs.5 crores +	Co-efficient of variation across size groups.
No. of Companies: 1650									
1970-71	6.2	7.0	7.8	8.5		10.0	10.5	12.3	.2410
1971-72	6.2	7.5	8.2	9.2		9.7	10.5	12.1	.2166
1972-73	9.4	8.3	9.5	9.8		10.3	10.6	10.9	.0890
1973-74	10.0	10.2	11.4	10.0		10.9	12.4	11.3	.0820
1974-75	11.8	11.2	10.6	10.9		12.2	14.[illegible]	13.[illegible]	.1198

* Size in Paid-up Capital

** Till 1965-66 there is no disaggregated data for the companies with paid-up capital of more than Rs.1 crore. After that the group is split into 3; that is those with paid-up capital of Rs.1 crore-Rs.2 crores; Rs.2 crores-Rs.5 crores and Rs.5 crores and above.

Source: Various issues of the Reserve Bank of India Bulletin.

The period 1960-69 (Period I) is thus a period of generally declining profits and 1969-75 (Period II) a period of generally rising profits. The early part of Period I (1960-65) and the latter half of Period II (1972-75) were characterized by high profits, the intervening years were marked by relatively low profits. There is thus a cyclical behaviour in the profit rates.

The above table also shows that there is no consistent relation between size and profitability in all years. While there is a strong direct relationship between the two variables in the years of relatively low profits; there is no clear-cut relationship in the years of high profits.[11] The picture is the same whether one considers return on capital employed or return to net worth (Table 2 in the Appendix gives the rate of return on Net worth).

Inter-class variation in profitability

A closer perusal of Table I (and Table 2 in the Appendix) also suggests that inter-class variation in profitability (as reflected in the co-efficient of variation of the profit rate) is high in a period of low profits and low in a period of high profits. In other words, there is a tendency for profitability differentials to widen in bad years and to narrow in good years.

Intra-class variation in Profitability

In order to see why profits equalize and disperse in a period of high and low profits respectively, the variations in profitability within each size group is examined. For this purpose simple growth rates in profitability have been calculated for each size group. Since the period under review 1960-75 consists of two distinct phases - one of steadily falling profits followed by a phase of progressive increase, the rates of change in profit rates have been calculated separately for Period I and Period II. as seen in Table II & III.[12]

[redacted]

Table II : Size-wise Simple Growth Rates in Profitability Based on the Ratio of Gross Profits to Total Capital Employed

Size* / Period		Rs.5 lakhs-Rs.10 lakhs	Rs.10 lakhs-Rs.25 lakhs	Rs.25 lakhs-Rs.50 lakhs	Rs.50 lakhs-Rs.1 crore	Rs.1 crore +	Rs.1 crore-Rs.2 crores	Rs.2 crores-Rs.5 crores	Rs.5 crores +
Period I (1960-69)	β	-.72	-.49	-.40	-.31	-.05			
	R^2	.884	.889	.810	.648	.061			
Period II (1969-75)	β	1.41	1.01	.66	.45		.44	.75	.27
	R^2	.945	.947	.753	.958		.761	.681	.246

Table III : Size-wise Simple Growth Rates in Profitability Based on the Ratio of Profits after Tax to Net Worth.

Period									
Period I (1960-69)	β	-1.31	-1.21	- .94	- .69	- .16			
	R^2	.911	.924	.887	.858	.406			
Period II (1969-75)	β	1.91	1.94	1.71	1.07		.85	.65	.[illegible]4
	R^2	.385	.889	.598	.927		.691	.484	.109

* Size in Paid-up Capital.
Source: Table computed from the data published in the various issues of the Reserve Bank of India Bulletin.

They show that in Period I, the phase of declining profit, profitability by either measure declines much more for the smaller firms than the big ones (decline in growth rates is decreasing with size). In Period II (rising profits) profitability increases much faster for the small firms than the big firms. That profit rates rise and fall much more for the small than the big firm implies that the rate of return is much more unstable for the small firms than the big firms.[13]

III

In an attempt to understand the reasons behind differential behaviour of profit rates we have estimated the relative contribution of variations in profit margin and capital turnover, which together determine the profit rate. The relationship between them may be expressed as follows:

$$\frac{\text{Profits}}{\text{Total capital employed}} = \frac{\text{Net sales}}{\text{Total capital employed}} \times \frac{\text{Profits}}{\text{Net sales}}$$

In order to find out the underlying factor explaining stability, or instability, firstly the share of each of the component elements of profitability in the total change in profitability is computed. For this, an exercise in decomposition is done.[14] The compound rate of growth for each of these variables is computed for the two periods separately using the terminal years.

Table - IV

Decomposition of the change in Profitability into that due to the change in Capital turnover and that due to the change in the Profit Margin.

Period I - 1961-'68

Compound Rate of growth Size	Net Sales/ Total capital employed (1)	Gross Profits/Net sales (2)	Gross Profits/Total capital employed (3)	(1) as a % of (3)	(2) as a % of (3)
Rs.5 lakhs - Rs.10 lakhs	-.0214	-.0702	-.0916	-23.39	-76.61
Rs.10 lakhs- Rs.25 lakhs	.0191	-.0784	-.0593	32.25	-132.25
Rs.25 lakhs- Rs.50 lakhs	.0119	-.0564	-.0444	26.88	-126.88
Rs.50 lakhs- Rs.1 crore	.0021	-.0353	-.0332	6.22	-106.22
Rs.1 crore +	.0155	-.0224	-.0069	226.53	-326.53

Period II - 1970-'74

Compound Rate of Growth Size	Net Sales/ Total capital employed (1)	Gross Profits/Net sales (2)	Gross Profits/Total capital employed (3)	(1) as a % of (3)	(2) as a % of (3)
Rs.5 lakhs- Rs.10 lakhs	.0637	.1330	.1967	32.39	67.61
Rs.10-lakhs- Rs.25 lakhs	.0087	.1112	.1199	7.28	92.72
Rs.25 lakhs- Rs.50 lakhs	.0255	.0557	.0812	31.45	68.55
Rs.50 lakhs- Rs.1 crore	.0164	.0314	.0478	34.28	65.72
Rs.1 crore- Rs.2 crores	.0244	.0176	.0420	58.1	41.9
Rs.2 crores- Rs.5 crores	.0322	.0228	.0550	58.5	41.5
Rs.5 crores+	.0183	-.0159	.0024	762.5	-662.5

Source: Computed from the various issues of the RBI Bulletin.

Table IV gives the results of this exercise.

It is seen from Table IV that for all the size groups except the big, variations in profit margin account for more than 65% of the change in profit rate. Also the rate of change in the profit margin decreases with the increase in size in both the periods. That is profit margins of small firms are more unstable, i.e., they rise and fall more than for the larger firms. The high degree of instability of the profit margin of the small firm seems to be the major factor responsible for the greater instability in their rate of return. It is also noteworthy that the profit margin of the large firms is not only remarkably stable over time, but it is almost always higher than for the small firm. Table 3 in the Appendix brings this out.

Yet another conclusion from Table IV is that while profit margin accounts for a major part of the change in profitability for the small firm, in the case ofthe larger firm variations in the turnover of capital seem to be more important especially in Period II. In order to see why there is a difference in the relative significance of the contributions of the components of profitability as between big and small firms; we examine the behaviour of the component elements of total capital turnover, viz., turnover of net fixed assets which is an approximate measure of the use of fixed capital assets, and the proportion of net fixed assets to total capital employed (which is an index of the relative importance of fixed capital to total capital employed) i.e.,

$$\frac{\text{Net sales}}{\text{Total capital employed}} = \frac{\text{Net sales}}{\text{Net fixed assets}} \times \frac{\text{Net fixed assets}}{\text{Total capital employed.}}$$

The ratio, Net sales/Net fixed assets is the result of the differential changes in sales, prices (because net sales = volume of sales and prices) and net fixed assets. Table V gives the compound growth rates in sales and net fixed assets of different size groups. It shows that in Period I(a) sales have declined for the small firm and to a larger extent than in the largest category.

Table V

Compound Growth Rates in Net Sales and Net Fixed Assets.

Period I (1961-68)

Size *	Rs.5 lakhs- Rs.10 lakhs	Rs.10 lakhs -Rs.25 lakhs	Rs.25 lakhs -Rs.50 lakhs	Rs.50 lakhs -Rs.1 crore	Rs.1 crore+
Net sales	-.1203	.0225	.0265	.0662	-.0099
Net fixed Assets	-.0764	.0125	.0231	.0640	-.0328

Period II (1970-74)

Size *	Rs.5 lakhs- Rs.10 lakhs	Rs.10 lakhs- Rs.25 lakhs	Rs.25 lakhs- Rs.50 lakhs	Rs.50 lakhs- Rs.1 crore.	Rs.1 crore- Rs.2 crores	Rs.2 crores- Rs.5 crores.	Rs.5 crores +
Net sales	.1427	.0629	.1144	.0971	.2001	.1189	.1722
Net fixed Assets	.0241	-.0218	.0580	.0560	.0746	.0657	.1294

* Size in Paid-up capital.
Source: Various issues of the R.B.I.Bulletin

In all others they have increased though marginally. (b) Net fixed assets also have declined much more for the smallest group than for the largest category. For the others it has increased slightly. (c) The rate of change in net fixed assets has been always much slower than the changes in Net sales (except for the last category). So the observed differentials in the ratio of

$$\frac{\text{Net Sales}}{\text{Net Fixed Assets}}$$

as between different size groups has to be largely explained by the movements in sales and prices in the different size groups. It is also known that prices have increased during this period. So when prices rise and Net Fixed Assets grow at a slower pace than sales (given that sales are in current prices and net fixed assets in historical cost) the ratio

$$\frac{\text{Net Sales}}{\text{Net Fixed Assets}}$$

should rise. Table VI shows that this ratio has behaved differently for different size groups.

Table - VI

Simple Growth Rates by Size Groups of Net Fixed Assets/Total Capital Employed, Net Sales/Net Fixed Assets.

Period I (1960-69)

Growth Rate of / Size*		Rs.5 lakhs- Rs.10 lakhs.		Rs.10 lakhs Rs.25 lakhs.		Rs.25 lakhs Rs.50 lakhs		Rs.50 lakhs Rs. 1 crore		Rs.1 crore +
Net Fixed Assets/Total Capital Employed	β	1.11	β	.33	β	.28	β	.02	β	-.37
	R^2	.427	R^2	.526	R^2	.455	R^2	.019	R^2	.560
Net Sales/Net Fixed Assets.	β	-11.14	β	3.44	β	.75	β	.52	β	4.25
	R^2	.633	R^2	.584	R^2	.082	R^2	.060	R^2	.859

(Contd.)

Period II (1969-75)

Growth Rate of \ Size*		Rs.5 lakhs-Rs.10 lakhs.	Rs.10 lakhs-Rs.25 lakhs.	Rs.25 lakhs-Rs.50 lakhs.	Rs.50 lakhs-Rs. 1 crore.	Rs. 1 crore-Rs. 2 crores.	Rs.2 crores-Rs.5 crores.	Rs.5 crores +
Net Fixed Assets/Total Capital Employed	β	-2.01	-1.37	-.93	-.81	-.75	-.67	-1.48
	R^2	.973	.937	.757	.857	.644	.331	.871
Net Sales/Net Fixed Assets	β	34.31	29.69	22.75	14.61	13.88	12.12	10.67
	R^2	.952	.917	.860	.877	.987	.554	.778

* Size in Paid-up Capital.

Source: Computed from the various issues of the Reserve Bank of India Bulletin.

While it rose for all the size groups it declined for the smallest group. This could be due to the factthat (1) Sales have declined much faster for the small group than the big. (2) It could also be because of differential increases in price for big and small firms; increasing much less for the small than the big firm.[15] (It also appears that the rise in prices of the large firm was high enough to offset not only a decline in sales but also the greater increase in net fixed assets relative to that of net sales).

In Period II (Table V) sales have increased for all size groups though much faster for the large group. Net fixed assets have increased but generally more for the bigger firms. But here again the rates of increase in net fixed assets have been lower than that of net sales for all size groups. Here also the behaviour of the ratio of $\frac{\text{Net Sales}}{\text{Net Fixed Assets}}$ has to be explained in terms of the volume of sales and prices. Prices have increased during this period and net fixed assets have grown more slowly than net sales. So the ratio $\frac{\text{Net Sales}}{\text{Net Fixed Assets}}$ should increase. Table VI shows that in Period II this ratio has increased the fastest for the small firm. This could be due to the increase in sales and prices. But sales have not increased as fast for the small firm as for the big. So the faster growth $\frac{\text{Net Sales}}{\text{Net Fixed Assets}}$ ratio for the smaller firm relative to that of the big must be because its prices were rising much faster than that of the big firm.

Taking the other component, viz: the proportion of Net Fixed Assets/Total Capital Employed, (This is also given in Table VI) simple growth rates show that in the first period, they rose much more for the small than the big firm. (For the big, it actually declined.) A rise in this ratio implies a decline in its counterpart, viz: Inventories/Total Capital Employed, (because Fixed Assets + Inventories + Others = Total Capital Employed.) That is inventories and other working capital as a proportion of capital employed fell for the smallest group in Period I but rose for the big firm. (This can be verified from Table 4 in the Appendix). That is, in a period of declining profits, the smaller the firm, the greater the difficulty in increasing inventory holdings which suggests a lesser access to credit. Table VII giving the simple growth rates in the proportion of $\frac{\text{Borrowed Funds}}{\text{Total Capital Employed}}$ and the proportion of Interest/Total Borrowed Funds shows, that the ratio of $\frac{\text{Borrowed Funds}}{\text{Total Capital Employed}}$ grew more slowly for the small firm than the big firm in Period I. At the same time cost of borrowed funds rose much more for the small firm than the big firm.

Table VII

Size-wise Simple Growth Rates of Borrowed Funds/Total Capital Employed and Interest/Total Borrowed Funds.

Period I (1960-69)

Size *	Rs.5 lakhs-Rs.10 lakhs.	Rs.10 lakhs-Rs.25 lakhs.	Rs.25 lakhs-Rs.50 lakhs.	Rs.50 lakhs-Rs.1 crore.	Rs.1 crore +
Borrowed Funds/Total Capital Employed.	β .30 R^2 .690	β .82 R^2 .930	β 1.26 R^2 .7[illegible]3	β 1.30 R^2 .942	β 1.55 R^2 .864
Interest/Total Borrowed Funds.	β .48 R^2 .914	β .39 R^2 .577	β .47 R^2 .969	β .42 R^2 .948	β .32 R^2 .921

Period : (1969-75)

Size *	Rs.5 lakhs-Rs.10 lakhs.	Rs.10 lakhs-Rs.25 lakhs.	Rs.25 lakhs-Rs.50 lakhs.	Rs.50 lakhs-Rs. 1 crore.	Rs. 1 crore-Rs. 2 crores	Rs.2 crores-Rs.5 crores.	Rs. 5 crores +
Borrowed Funds/Total Capital Employed.	β .02 R^2 .002	β -1.13 R^2 .626	β - .59 R^2 .680	β - .[illegible]8 R^2 .741	β - .019 R^2 .002	β - .839 R^2 .386	β -1.22 R^2 .939
Interest/Total Borrowed Funds.	β .59 R^2 .940	β .72 R^2 .824	β .63 R^2 .861	β .67 R^2 .873	β .43 R^2 .814	β .67 R^2 .925	β .42 R^2 .73[illegible]

* Size in Paid-up Capital.

Source: Various issues of the R.B.I.Bulletin.

The large firm in this period on the other hand held more inventories, depended more and more on borrowings and paid much less for it than the small firm. (Table 5 in the Appendix will show that the cost of borrowing was almost always less for the big firm than the small firm.)

In Period II, Net Fixed Assets/Total Capital Employed (Table VI) declined for all groups and declined the fastest for the small group. This means that inventories and others rose much more for the small than the big group. As for borrowings, Table VII shows that the small firms' dependence on it increased; while that of large and medium firms declined; declining the most for the largest firm. In other words the dependence on own resources of the small firm still continued to be small, while it increased for the big firms in a period of high profits. As for the cost of borrowing to the small firm in Period II, thrugh no clear picture emerge., from Table VII it is clear that cost increased more slowly for the big than the small firm.

The inherent instability of the small firm with respect to the crucial variables associated with capital turnover as brought out by the above analysis, probably explains the insignificant contribution of capital turnover of the small firm to changes in profit rate.

IV

Conclusions.

The size-profitability relationship is not consistent over all phases of the cycle and there is a tendency for profits to equalize as between different size groups in a period of high profits and vice versa. Profit rates are unstable for the small firm, and the fluctuations in the profit margin of the small firm is largely responsible for this. While both profit margin and capital turnover contribute almost equally to the change in profitability of the big firm, for the small firm capital turnover is an almost insignificant component of profitability. The analysis of the components of capital turnover, viz., Net Sales/Net Fixed Assets suggests that in Period I, sales fell much more for the small than the big firm and in Period II, prices rose for the small firm much more than for the big firm. The meagre influence that the small firm has over borrowings, their cost and the holding of inventories as against that of the big firm is probably responsible for the insignificance of capital turnover as a component explaining profitability of the small firm.

Directions for future work.

Aggregates may conceal systematic industry concentration in each size group and to the extent different industries were affected systematically differently by recession, boom, etc., the conclusions of the study are very tentative. An industry-wise study therefore becomes essential.

In order to overcome the problem of companies shifting from one size to another, it is necessary to study the same cohort of companies over time. For this, one could make use of the data in the Bombay Stock Exchange Directory; but this data is biased in favour of big companies. The ideal thing would be to study the firms covered by the RBI study itself if such data are available.

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7. Bates J. discussed the alternative measures of the size of firms and the high degree of correlation between them and concludes that the choice of a measure can be based on convenience, availability and ease of calculation in 'Alternative Measures of the Size of Firms', in Hart, P. E., Studies in Profit, Business Saving and Investment in the United Kingdom, 1920-1962: Vol: I, Allen and Unwin, London 1968; Part II, Chapter 8, p.149.

8. The close correlation between paid-up Capital and Net Assets has been brought out by the 'Census of Public Limited Companies, 1971-72', Reserve Bank of India Bulletin, June 1978; p.408

9. Till 1965 data are available only for five size groups and after that the data are given in seven size groups. So in the first period, for the years 1965-69 alone the weighted averages of the last three size groups are used so as to make comparison with the earlier years possible. For computing the weighted averages of the ratios used in this study of the three size classes, Rs.1 crore-Rs.2 crores; Rs.2 crores-Rs.5 crores; and Rs.5 crores + ; the denominators of these ratios are used as the weights and this weighted average is used to represent the size-class Rs.1 crore+ for the years 1965-69. After 1969, the analysis is in terms of seven size groups.

10. Data relating to companies with paid-up capital below Rs.5 lakhs and which are termed by the Reserve Bank of India as small companies; is not very reliable. Therefore, their use has been avoided in this study. However, the movements in the finances of Small Public Limited Companies has been similar to

that of companies with paid-up capital of Rs.5 lakhs-Rs.10 lakhs. Therefore, Companies with paid-up capital of Rs.5 lakhs-Rs.10 lakhs are referred to as small companies in this study.

11. According to Alexander the positive correlation between size and profits is a characteristic of a period of low profits when small firms sustain heavy losses.- Alexander, S. S., 'The Effect of Size of Manufacturing Corporations on the Distribution of the Rate of Return', Review of Economics and Statistics, 1949, p.231.

12. The entire analysis in this study is also done with reference to these two periods.

13. Analysing the same data for the same period Ashok Mitra puts forth the hypothesis that big companies by virtue of their commanding position in both product and factor markets were able to hold on to their own despite unfavourable trends developing with respect to cost of inputs; this was not the case with the small and middle sized firms; they failed to pass on the rise of their unit material and wage costs to the price of the products. Ashok Mitra, 'Industrial Growth and Income Distribution', Social Scientist, January-February, 1977, pp.14-16..

14. This is similar to the decomposition exercise done by Minhas, B.S., and Vaidyanathan, A., to find out the contribution of the different component elements to the growth of crop output in 'Growth of Crop Output in India 1951-4 to 1958-'61' in Readings in Agricultural Development, Pramit Chaudhuri, (Ed.) George Allen and Unwin, 1972, pp.52-54.

15. As it is not possible to separate the volume of sales and prices we cannot say anything definitely about the movement in prices. The conclusion on prices may therefore be taken as tentative and as mere probabilities.

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Table 1..

Distribution of Operating Medium and Large Public Limited Companies according to the size of Total Net Assets and size of Paid-up Capital, 1971-72.

Size of Total Net Assets / Size of Paid up Capital	Less than Rs. 25 lakhs	Rs.25 lakhs - Rs.50 lakhs.	Rs.50 lakhs -Rs.1 crore	Rs.1 crore -Rs.3 crore	Rs.3 crores -Rs.5 crores	Rs.5 crores -Rs.10 crores	Rs.10 crores - Rs.20 crores	Rs.20 crores and above	Total
Rs. 5 lakhs- Rs.10 lakhs	240	145	65	17	1	-	-	-	474
Rs.10 lakhs- Rs.25 lakhs	87	193	242	148	12	3	2	-	687
Rs.25 lakhs- Rs.50 lakhs	7	33	129	267	36	6	1	-	479
Rs.50 lakhs- Rs.1 crore.	2	1	17	147	113	55	77	-	342
Rs.1 crore- Rs.2 crores	-	-	-	14	45	23	20	3	170
Rs.2 crores- Rs.5 crores	-	-	-	-	3	44	65	26	138
Rs.5 crores & above	-	-	-	-	-	-	6	42	48
Total	342	372	453	593	210	196	1[illegible]1	71	2338

The close correlation between paid-up capital and total net assets of medium and large public limited companies is evident from the 2-way classification given above. The degree of linear relationship between paid-up capital and total net assets as measured by the correlation coefficient worked out to +0.85 which is significant at 1% level.

Source: 'Census of Public Limited Companies, 1971-72', Reserve Bank of India Bulletin, June, 1978.

Table 2

Rate of Return on Net Worth (Ratio of Profits after Tax to Net Worth)

(Per Cent)

Size* / Year (1)	Rs.5 lakhs – Rs.10 lakhs (2)	Rs.10 lakhs – Rs.25 lakhs (3)	Rs.25 lakhs – Rs.50 lakhs (4)	Rs.50 lakhs – Rs.1 crore (5)	Rs.1 crore + (6)	Rs.1 crore – Rs.2 crores (7)	Rs.2 crores – Rs.5 crores. (8)	Rs.5 crores + (9)	Coefficient of variations across size groups. (10)
No. of companies: 1333									
1960	10.5	11.6	11.0	11.2	10.6				.0409
1961	8.3	9.9	9.6	9.4	10.3				.0791
1961-62	8.2	10.1	9.1	9.7	10.3				.0896
1962-63	6.0	5.8	7.8	9.4	9.2				.2186
1963-64	6.6	6.7	7.9	9.3	10.2				.1951
1964-65	6.2	6.7	7.4	8.8	10.3				.2119
1965-66	3.5	3.2	5.3	8.0	10.3				.5022
No. of companies: 1501									
1965-66	0.8	4.0	5.6	7.9		8.4	10.2	10.5	.6026
1966-67	2.5	4.4	6.5	6.8		8.8	10.6	10.7	.4287
1967-68	0.2	1.0	1.8	4.1		7.0	8.4	10.1	.6110
1968-69	-2.3	0.1	2.1	4.8		5.9	8.9	9.1	1.0609
1969-70	-0.4	2.8	5.9	7.5		[illegible].9	11.2	11.1	.6416
1970-71	1.9	3.3	5.1	7.8		9.2	10.8	12.8	.5511
No. of companies: 1650									
1970-71	2.9	4.5	5.5	7.2		9.6	11.5	13.6	.4927
1971-72	1.1	3.8	4.4	8.0		8.0	10.2	12.2	.5710
1972-73	4.6	7.7	9.7	10.1		9.7	10.4	11.0	.2443
1973-74	8.7	11.3	15.1	11.1		12.4	12.2	10.7	.1674
1974-75	8.2	10.8	10.8	12.6		12.6	14.9	14.3	.1912

* Size in Paid-up Capital.

Till 1965-66 there is no disaggregated data for the companies with Paid-up Capital of more than Rs.1 crore. After that this group is split into 3; that is those with Paid-up Capital of Rs.1 crore-Rs.2 crores; Rs.2 crores-Rs.5 crores; and Rs.5 crores and above.

Source: Various issues of the Reserve Bank of India Bulletin.

Table 3

Ratio of Profits* to Net Sales (Per cent)

Size** / Year.	Rs.5 lakhs -Rs.10 lakhs	Rs.10 lakhs -Rs.25 lakhs	Rs.25 lakhs -Rs.50 lakhs	Rs.50 lakhs -Rs.1 crore	Rs.1 crore +	Rs.1 crore- Rs.2 crores	Rs.2 crores -Rs.5 crores	Rs.5 crores +
No. of Companies 1333								
1960	8.9	9.3	9.7	10.0	12.9			
1961	8.3	8.9	9.2	9.4	13.1			
1961-62	8.2	8.8	8.6	9.5	13.2			
1962-63	8.2	7.8	8.5	10.5	13.2			
1963-64	7.7	7.8	8.8	10.0	13.7			
1964-65	7.6	7.5	8.2	9.4	13.3			
1965-66	6.2	6.1	6.7	8.1	11.4			
No. of Companies 1501								
1965-66	5.3	5.9	7.1	8.8		9.7	13.1	13.8
1966-67	6.5	6.2	7.3	8.4		9.9	12.9	13.0
1967-68	5.4	4.8	5.6	7.1		8.9	11.4	12.0
1968-69	3.6	4.5	5.7	7.1		8.1	10.8	11.6
1969-70	4.4	4.3	6.7	7.9		9.2	11.1	12.6
1970-71	5.5	4.8	6.5	[illegible]		9.4	11.3	13.4
No. of Companies 1650								
1970-71	5.2	5.3	6.7	[illegible]		9.8	12.0	13.5
1971-72	5.3	5.4	6.5	8.5		9.0	11.5	12.6
1972-73	6.8	5.5	7.3	8.3		9.0	10.7	11.3
1973-74	7.4	7.3	8.6	9.2		9.7	12.2	12.2
1974-75	8.7	7.4	7.6	9.3		10.3	13.5	13.4

* Profits - Profits before tax and interest after depreciation.

** Size in Paid-up Capital.

Source: Various issues of the RBI Bulletin.

Table 4

Size-wise simple Rates of Growth in the ratio of Inventories to Total Capital Employed.

Size* / Period	Rs.5 lakhs -Rs.10 lakhs	Rs.10 lakhs -Rs.25 lakhs	Rs.25 lakhs -Rs.50 lakhs	Rs.50 lakhs -Rs.1 crore	Rs.1 crore +	Rs.1 crore -Rs.2 crores	Rs.2 crores -Rs.5 crores	Rs.5 crores +
Period I (1960-69)	β -.71 R^2 .5[illegible]2	β -.12 R^2 .128	β .12 R^2 .013	β .56 R^2 .402	β .55 R^2 .856			
Period II (1969-75)	β 1.55 R^2 .867	β .46 R^2 .350	β .91 R^2 .678	β .93 R^2 .837		β .56 R^2 .680	β 1.45 R^2 .864	β 1.18 R^2 .821

* Size in Paid-up Capital.

Source: Various issues of the R.B.I. Bulletin.

Table 5

Ratio of Interest to Total Borrowings (Per cent)

Size* / Year.	Rs.5 lakhs -Rs.10 lakhs	Rs.10 lakhs -Rs.25 lakhs	Rs.25 lakhs -Rs.50 lakhs	Rs.50 lakhs Rs.1 crore	Rs.1 crore +	Rs.1 crore- Rs.2 crores	Rs.2 crore- -Rs.5 Crores	Rs.5 crores +
No. of Companies 1333								
1960	5.7	5.6	5.2	5.5	4.9			
1961	6.0	6.1	5.7	5.8	5.9			
1961-62	6.3	6.3	5.8	5.8	5.0			
1962-63	6.4	6.5	5.8	6.0	5.0			
1963-64	6.9	7.2	6.8	6.4	5.3			
1964-65	6.9	7.4	6.9	7.0	6.2			
1965-66	8.3	8.2	7.9	7.7	6.5			
No. of Companies 1501								
1965-66	8.5	7.8	7.8	7.5		7.3	6.6	6.2
1966-67	9.3	8.4	8.3	8.2		7.6	7.1	5.9
1967-68	9.6	9.0	9.0	8.9		8.1	7.5	6.4
1968-69	9.4	8.8	9.1	8.9		8.2	7.9	6.7
1969-70	9.1	8.6	8.9	8.6		8.4	7.4	6.7
1970-71	10.0	9.0	9.0	9.0		8.9	8.0	7.6
No. of Companies 1650								
1970-71	9.3	8.8	8.8	8.8		8.6	7.7	7.6
1971-72	10.1	10.1	10.1	[illegible]		9.3	8.4	8.5
1972-73	10.3	10.7	10.6	[illegible]		9.7	9.2	8.5
1973-74	11.1	10.2	10.4	10.5		9.4	9.4	8.0
1974-75	12.4	12.8	12.4	12.4		[illegible]	11.1	9.4

* Size - In Paid-up capital.

Source: Various Issues of the RBI Bulletin.