CHAPTER - III :

PROFIT RATES :
TRENDS AND STRUCTURE

I. INTRODUCTION

We intend to examine in this chapter the trends in the rates of profits of each of the 21 Indian Manufacturing Industries over the 25 years period (1950-51 to 1974-75) as well as the inter-industry variations in rates of profit for the same industries over the same period. In short, we attempt to examine the trends in and structure of profit rates of Indian manufacturing industries over 25 years period. However, as this study deals with two concepts of profit rates, a separate examination of each is undertaken.

Table 3.1 and 3.2 give industry-wise gross and net profit rates respectively for the period 1950-51 to 1974-75. Additionally, Table 3.1 and 3.2 give the sector-wise (group of industries) rates of profit also. The sector-wise classification of the industries is based on the classification adopted by Reserve Bank of India in its publication on "Report on Currency and Finance". Though there involves some degree of overlapping of industries in the sector-wise

classification, it represents the sectors broadly and helps us to examine the variations in profit rates in different sectors. All the 21 industries are divided into 4 sectors, and, of an additional 5th one, as Whole Manufacturing Sector. The industries covered by each sector are given below :

II. CLASSIFICATION OF INDUSTRIES BY SECTORS :

1. Consumers Goods Sector :

This sector comprises of 10 industries for the period 1950-51 to 1969-70 and 9 industries over the period, 1970-71 to 1974-75.[1] The industries included in this sector are Grains and Pulses, Edible Vegetable and Hydrogenated Oils, Sugar, Tobacco, Cotton Textiles, Silk-Rayon & Woollen Textiles, Medicines and Pharmaceutical Preparations, Matches, Pottery, China Earthernware and Structural Clay Products, and Paper & Paper Products.

2. Basic Goods Sector :

This sector comprises of 4 industries as most basic industries. They are Iron & Steel, Aluminium, Basic Industrial Chemicals and Cement.

3. Capital Goods Sector :

Industries producing capital goods are classified

1 Due to nonavailability of data on Match Industry for the period 1970-71 to 1974-75.

as capital goods industries and cover Transport Equipment, Electrical Machinery, Apparatus and Appliances, Machinery Other than Transport Equipment etc. and Ferrous/Non-Ferrous Metal Products.

4. Intermediary Goods Sector :

The industries covered by this sector are 3: Jute Textiles, Other Chemical Products, and Rubber & Rubber Products.

Whole Manufacturing Sector :

The Whole Manufacturing Sector comprises of all the 4 sectors i.e. comprises of all the 21 industries till 1969-70 and 20 industries (Except Match Industry) for the period 1970-71 to 1974-75.

III. TRENDS IN GROSS PROFIT RATES :

Table 3.1 gives the industry-wise and sector-wise gross profit rates for the period 1950-51 to 1974-75. The last column of Table 3.1 reveals the percentage point variation in gross profit rates of each of the industries as well as sectors in 1974-75 over 1950-51. In other words, last column of Table 3.1 represents the earnings variations in each industry and sector at the beginning and at the end of the period under study. Following results are drawn from Table 3.1.

TABLE 3.1 : Gross Profits as Percentage of Total Assets Employed for Medium and Large Public Ltd. Companies : 1950-51 to 1974-75.

(Figures relate to year April-March or July-June as the case may be)

Industry	1950-1951	1951-1952	1952-1953
CONSUMERS GOODS SECTOR			
1. Grains & Pulses	9.7	8.5	5.3
2. Edible Vegetable & Hydrogenated Oils	2.2	0.6	1.0
3. Sugar	6.9	9.3	7.6
4. Tobacco	8.2	12.0	10.9
5. Cotton Textiles	6.7	10.0	3.7
6. Silk-Rayon & Woollen Textiles	4.6	2.2	1.7
7. Medicines & Pharmaceutical Preparation	6.0	5.2	5.2
8. Matches	14.8	14.0	13.9
9. Pottery, China Earthenware & Structural Clay Products	7.9	7.0	8.0
10. Paper & Paper Products	10.0	12.6	11.6
Total	6.9	9.5	5.1
BASIC GOODS SECTOR			
11. Iron & Steel	9.7	14.0	13.7
12. Aluminium	5.7	7.1	4.1
13. Basic Industrial Chemicals	4.2	5.3	3.2
14. Cement	10.3	12.8	12.5
Total	9.0	12.3	11.6
CAPITAL GOODS SECTOR			
15. Transport Equipment	1.8	3.6	3.3
16. Electrical Machinery, Apparatus & Appliances	7.8	8.7	8.5
17. Machinery Other than Transport	6.3	5.9	5.8
18. Ferrous/Nonferrous Metal products	5.4	5.2	-3.2
Total	5.7	5.9	5.6
INTERMEDIARY GOODS SECTOR			
19. Jute Textiles	9.1	11.3	6.0
20. Other Chemical Products	2.3	2.9	-6.2
21. Rubber & Rubber Products	13.7	15.0	13.3
Total	9.3	11.3	6.4
WHOLE MANUFACTURING SECTOR	7.6	9.8	6.6

TABLE 3.1 : (contd.)

Industry	1953-1954	1954-1955	1955-1956	1956-1957	1957-1958	1958-1959
CONSUMERS GOODS SECTOR						
1.	13.8	16.9	18.6	19.2	17.8	17.4
2.	3.7	-1.8	7.2	4.8	2.3	6.7
3.	9.6	8.1	7.5	8.3	8.7	8.6
4.	7.9	11.0	12.6	11.2	10.9	10.8
5.	5.1	5.2	9.7	8.6	2.9	4.2
6.	2.8	5.1	7.7	7.7	6.1	8.9
7.	4.7	5.8	6.6	6.7	8.8	10.2
8.	11.8	11.2	10.2	9.3	8.0	11.2
9.	6.8	7.9	8.3	12.0	12.1	11.5
10.	11.2	9.0	10.8	9.3	8.7	11.2
Total	6.3	6.1	9.4	8.8	5.4	6.6
BASIC GOODS SECTOR						
11.	13.2	14.6	15.7	11.3	6.5	5.9
12.	1.6	4.0	6.8	7.4	7.5	10.1
13.	2.5	3.8	6.3	6.1	5.8	5.8
14.	11.0	13.0	12.1	9.0	7.0	6.8
Total	10.8	12.5	13.5	10.2	6.7	6.2
CAPITAL GOODS SECTOR						
15.	1.4	4.5	6.9	6.4	5.4	7.2
16.	6.1	10.0	13.7	14.7	12.5	11.6
17.	5.7	6.0	9.7	10.3	10.4	9.5
18.	0.5	5.0	4.2	2.4	2.8	16.8
Total	4.8	6.3	9.2	9.2	8.5	9.0
INTERMEDIARY GOODS SECTOR						
19.	6.2	6.1	2.4	-0.6	4.2	7.1
20.	2.2	-0.3	6.3	6.9	8.5	8.5
21.	13.0	12.2	10.5	10.2	13.5	12.0
Total	6.8	6.6	3.7	1.5	5.9	8.0
WHOLE MANUFACTURING SECTOR	7.1	7.6	9.6	8.4	6.3	7.0

TABLE 3.1 : (contd.)

Industry	1959-1960	1960-1961	1961-1962	1962-1963	1963-1964	1964-1965	1965-1966	1966-1967	1967-1968
CONSUMERS GOODS SECTOR									
1.	19.8	19.6	12.5	10.1	12.7	21.7	14.6	16.6	8.3
2.	9.7	8.6	7.1	7.1	6.5	10.0	11.3	14.0	7.0
3.	9.6	8.5	7.0	7.1	10.6	10.4	10.2	8.2	6.8
4.	11.3	14.1	12.3	15.5	12.0	16.4	18.4	13.7	15.3
5.	7.6	11.7	12.8	7.8	8.8	8.7	5.4	7.8	6.3
6.	17.8	14.6	12.8	10.6	11.6	12.6	15.5	18.4	16.6
7.	9.8	15.1	14.1	14.2	16.3	17.9	23.3	23.3	20.6
8.	16.8	16.1	16.6	19.6	16.9	13.4	15.2	16.5	14.6
9.	10.1	7.2	11.9	12.2	10.2	6.9	8.7	8.2	6.9
10.	11.0	9.3	8.2	8.2	7.8	6.6	6.0	7.0	5.8
Total	9.4	11.3	11.3	8.7	9.7	9.8	9.2	10.5	9.9
BASIC GOODS SECTOR									
11.	7.8	7.2	8.1	9.9	12.4	11.8	10.9	6.6	4.8
12.	11.2	15.2	11.1	11.0	15.6	16.9	12.1	10.4	10.7
13.	7.9	13.5	12.3	10.5	10.3	11.7	10.9	11.8	9.2
14.	7.3	7.9	8.7	11.3	10.0	10.0	11.0	14.1	11.8
Total	7.9	8.7	9.2	10.4	11.5	11.7	11.1	10.2	8.4
CAPITAL GOODS SECTOR									
15.	8.9	9.7	10.1	10.7	10.0	11.3	11.4	9.8	8.4
16.	12.9	12.3	11.7	14.1	15.9	15.4	14.0	12.4	10.6
17.	10.1	11.5	10.5	10.9	12.2	11.7	9.3	7.9	6.4
18.	13.6	11.0	10.9	10.9	12.7	14.6	13.9	11.0	8.3
Total	10.1	10.9	10.7	11.5	12.2	12.8	11.9	10.2	8.4
INTERMEDIARY GOODS SECTOR									
19.	10.2	7.6	3.4	16.5	11.0	5.4	5.8	2.3	1.3
20.	14.4	12.4	11.7	14.1	13.1	10.9	14.9	14.4	13.0
21.	13.3	11.0	12.5	10.0	10.1	12.3	11.3	12.0	15.6
Total	11.2	8.9	6.5	14.8	11.1	7.7	9.7	8.4	8.7
WHOLE MANUFACTURING SECTOR	9.2	10.4	10.3	10.2	10.8	10.8	10.4	10.1	9.0

TABLE 3.1 : (contd.)

Industry	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	%age point change in 1974-75 over 1950-51
CONSUMERS GOODS SECTOR								
1.	7.9	6.7	11.0	11.4	4.0	4.1	7.9	-1.8
2.	16.0	14.4	8.5	3.4	8.3	16.2	13.6	11.4
3.	13.0	8.4	4.9	9.1	15.7	10.0	9.5	2.6
4.	16.6	16.9	16.4	16.2	10.7	14.0	11.4	3.2
5.	5.3	7.9	8.5	7.2	9.8	15.1	10.7	4.0
6.	15.9	16.8	19.2	17.0	16.5	18.7	21.5	16.9
7.	22.0	25.2	21.3	20.5	20.0	18.9	17.3	11.3
8.	14.2	23.1	NA	NA	NA	NA	NA	8.3*
9.	6.5	7.0	10.4	13.2	16.5	12.9	12.0	4.1
10.	6.9	10.1	12.6	13.1	10.4	11.1	22.4	12.4
Total	9.6	11.1	11.2	10.9	12.4	14.7	14.0	7.1
BASIC GOODS SECTOR								
11.	6.3	6.0	7.4	5.6	1.9	5.4	9.3	-0.3
12.	9.0	11.6	14.2	11.3	9.8	5.2	2.4	-3.3
13.	8.3	11.4	11.7	13.1	13.7	13.9	18.4	14.2
14.	7.6	8.7	9.7	9.5	6.3	2.8	3.2	-7.1
Total	7.6	9.2	10.6	10.6	9.3	9.1	12.4	3.4
CAPITAL GOODS SECTOR								
15.	7.5	6.6	9.1	9.9	9.3	9.8	9.8	8.0
16.	7.7	10.2	11.8	14.1	12.6	12.0	13.9	6.1
17.	7.2	7.9	7.8	8.0	9.2	10.3	11.1	4.8
18.	7.6	9.5	14.0	14.5	12.3	13.4	15.0	9.6
Total	7.5	8.3	10.1	11.1	10.7	11.1	12.1	6.4
INTERMEDIARY GOODS SECTOR								
19.	3.6	3.0	5.7	10.6	4.6	0.8	9.7	0.6
20.	12.5	13.6	13.1	14.9	13.7	14.9	17.9	15.6
21.	17.2	16.4	13.1	12.0	11.7	10.4	13.1	-0.6
Total	10.1	10.0	10.2	12.5	10.0	8.4	13.7	4.4
WHOLE MANUFACTURING SECTOR	8.6	9.8	10.6	11.0	10.9	11.5	14.2	6.6

NOTES TO TABLE 3.1

Source : Financial Statistics of Joint Stock Companies in India, Covering the periods 1950-51 to 1961-62, 1960-61 to 1970-71 and 1970-71 to 1974-75, in Three Volumes, 1967, 1975, 1977, R.B.I.

1. The Profitability ratios for the years 1955-56, 1960-61, 1965-66, and 1970-71 relate to the revised series published every 5 years with increased (or decreased) number of companies.

2. The data on Match Industry are available upto 1969-70 (old series of 1970-71).

3. Gross Profits= Profits Gross of Interest charges and Taxes but Net of Depreciation charges and Managerial Salaries.

4. For making the data comparable over the whole period, gross profits are estimated on the above given definition, This involved adjustments in published data for the period 1950-51 to 1959-60 because gross profits are inclusive of managerial remuneration therefore the latter is deducted from gross profits. Moreover, gross profits are exclusive of surplus/deficit from non-operating income for the whole period. (The data for non-operating income surplus/deficit. are published from 1970-71 onwards only).

5. Total Net Assets = Total Net Fixed Assets + Current Assets + Outside Investment and are equal to Total Liabilities.

6. Total Net Assets are inclusive of intangible assets and miscellaneous non-current assets which form a very negligible percentage of total assets and do not affect the profitability ratio much.

7. * denotes percentage point change in 1969-70 over 1950-51 (for Match Industry) gross profit rate as the data are available upto 1969-70 only.

8. NA = Not Available.

1. Out of 21 industries, 16 industries enjoyed percentage point rise in gross profit rate over the period. Among the industries suffering from percentage point fall in 1974-75 over 1950-51 are, Grains & Pulses, Iron & Steel, Aluminium, Cement and Rubber & Rubber Products. Majority of the Basic Goods Industries suffered a decline while all of the Capital Goods Industries and Majority of Consumers Goods and Intermediary Goods Industries (except one) enjoyed a rise in the gross profit rates.

2. Silk-Rayon & Woollen Textiles Industry with 16.9% point rise in gross profit rates (with gross profit rate varying from 4.6% to 21.5% over 25 years period) topped the industries enjoying a rise in this period, while Jute Textiles enjoyed the lowest rise, 0.6% point (with gross profit rate varying from 9.1% to 9.7% over 25 years period).

3. Cement (-7.1 percentage point) suffered highest decline among the industries suffering decline in 1974-75, while Iron & Steel had lowest decline (-0.3 percentage point).

4. The Whole Manufacturing Sector enjoyed a rise of 6.6 percentage point. Consumers' Goods Sector (7.1 percentage point) is observed to be the only sector enjoying rise higher than for the Whole Manufacturing Sector. Even though all the industries in Capital Goods Sector enjoyed a rise in gross

profit rate, small rise in Machinery other than Transport industry kept the Sectoral rise (6.4 per cent point) below the rise in Whole Manufacturing Sector.

5. Out of 16 industries enjoying the rise, 8 had a rise above the Whole Manufacturing level and the remaining had below it.

IV. TRENDS IN NET PROFIT RATES :

Table 3.2 reveals the similar type of information as Table 3.1, with the only difference that the figures relate to Net Profit Rates. Following results are derived from it.

1. Out of 21 industries, 14 enjoyed a percentage point rise in Net Profit rate over the period. Among the industries suffering from a percentage point fall are, Grains & Pulses, Sugar, Tobacco, Iron & Steel, Aluminium, Cement and Rubber & Rubber Products. In short, in addition to these 5 industries (viz., Grains & Pulses, Iron & Steel, Aluminium, Cement and Rubber & Rubber Industries) suffering a decline in gross profit rate, Sugar and Tobacco also suffered a decline in net profit rate in 1974-75 over 1950-51. Moreover, similar to results of Table 3.1, all the industries in Capital Goods Sector, majority of Consumers Goods Industries (two less than for gross profit rate) and Intermediate Goods Industries

TABLE 3.2 : Profits After Tax as Percentage of Net worrth: 1950-51 to 1974-75 - Medium and Large Public Limited Companies.

(Figures relate to year April-March or July-June as the case may be)

Industry	1950-1951	1951-1952	1952-1953
CONSUMERS GOODS SECTOR			
1. Grains & Pulses	11.0	8.9	5.1
2. Edible Vegetable & Hydrogenated Oils	1.6	-3.9	-2.9
3. Sugar	7.5	11.8	8.3
4. Tobacco	8.5	13.1	9.9
5. Cotton Textiles	6.5	9.6	2.1
6. Silk-Rayon & Woollen Textiles	3.5	1.6	0.5
7. Medicines & Pharmaceutical Preparation	4.9	3.9	4.2
8. Matches	13.3	12.3	13.0
9. Pottery, China Earthenware & Structural Clay Products	5.0	5.4	6.9
10. Paper & Paper Products	9.9	13.3	11.6
Total	6.8	9.5	3.9
BASIC GOODS SECTOR			
11. Iron & Steel	10.3	15.2	15.3
12. Aluminium	10.8	8.9	3.7
13. Basic Industrial Chemicals	4.0	4.3	1.7
14. Cement	10.0	11.5	11.7
Total	9.4	12.3	11.9
CAPITAL GOODS SECTOR			
15. Transport Equipment	1.0	2.1	2.0
16. Electrical Machinery, Apparatus & Appliances	6.2	6.2	6.8
17. Machinery Other than Transport	5.8	5.9	5.5
18. Ferrous/Non-ferrous Metal Products	8.0	2.2	-16.5
Total	4.7	5.0	4.5
INTERMEDIARY GOODS SECTOR			
19. Jute Textiles	9.2	12.9	2.5
20. Other chemical Products	2.0	0.0	-18.8
21. Rubber & Rubber Products	12.8	16.3	16.1
Total	9.2	12.7	3.1
WHOLE MANUFACTURING SECTOR	7.4	10.0	5.4

TABLE 3.2 : (contd.)

Industry	1953-1954	1954-1955	1955-1956	1956-1957	1957-1958	1958-1959	1959-1960	1960-1961	1961-1962
CONSUMERS GOODS SECTOR									
1.	13.0	17.4	18.9	18.6	16.3	14.1	15.9	16.5	8.1
2.	3.8	-11.2	10.0	4.6	-3.5	6.7	16.1	10.3	6.2
3.	10.1	9.4	7.9	9.9	9.4	8.5	11.9	11.3	7.3
4.	7.0	8.7	7.7	5.6	5.2	4.9	6.3	8.7	6.9
5.	3.8	3.8	9.8	8.3	-1.2	0.4	7.1	13.8	13.4
6.	0.3	3.0	9.3	9.7	7.5	8.7	22.6	8.7	8.0
7.	3.6	5.2	5.5	5.2	6.8	8.8	9.3	17.2	16.6
8.	10.3	10.2	9.1	8.1	3.5	9.6	14.8	12.5	11.7
9.	6.7	7.5	5.6	9.4	12.0	12.6	11.9	5.3	13.4
10.	10.1	8.3	10.1	6.3	7.5	10.8	12.4	9.9	8.0
Total	5.3	5.1	9.3	8.2	2.6	4.1	9.5	12.7	11.6
BASIC GOODS SECTOR									
11.	14.4	18.6	21.9	14.6	11.2	11.9	14.1	11.2	10.4
12.	-1.3	2.5	8.6	8.6	4.4	7.1	14.4	13.4	13.7
13.	0.6	3.6	6.6	6.5	3.9	5.7	10.0	14.2	13.1
14.	10.0	10.9	11.3	10.4	7.3	5.3	8.1	7.8	8.0
Total	10.7	13.8	16.2	12.0	9.1	9.2	12.1	11.2	10.6
CAPITAL GOODS SECTOR									
15.	-0.6	4.8	9.8	9.0	5.7	8.6	9.7	12.3	11.2
16.	5.2	10.0	14.6	13.5	11.5	11.3	14.3	13.7	13.3
17.	5.7	5.3	10.3	9.6	12.3	9.3	12.2	14.9	13.1
18.	-6.6	7.3	4.3	-1.1	-2.2	19.7	17.4	10.9	9.8
Total	4.0	6.0	10.8	9.9	9.7	9.5	11.6	12.8	11.8
INTERMEDIARY GOODS SECTOR									
19.	5.5	5.1	0.9	-4.1	3.1	7.5	12.3	7.6	0.2
20.	-0.8	-7.5	7.3	6.5	6.9	7.6	14.9	12.9	10.7
21.	12.9	12.9	8.7	9.0	9.5	9.3	12.7	10.1	12.5
Total	6.0	5.5	2.1	-1.5	4.5	7.8	12.7	8.7	4.7
WHOLE MANUFACTURING SECTOR									
	6.3	7.1	10.2	8.0	5.4	6.6	10.9	12.0	10.8

TABLE 3.2 : (contd.)

Industry	1962-1963	1963-1964	1964-1965	1965-1966	1966-1967	1967-1968	1968-1969	1969-1970	1970-1971
CONSUMERS GOODS SECTOR									
1.	5.5	7.3	14.2	8.5	9.4	5.8	3.9	2.5	6.1
2.	6.9	4.0	9.3	10.3	12.8	1.0	15.7	16.7	6.5
3.	2.1	7.8	8.7	10.7	6.0	1.7	13.2	7.5	0.4
4.	8.0	4.3	6.7	9.2	7.7	9.7	11.4	10.5	10.2
5.	5.9	7.2	7.7	1.3	5.3	2.4	-0.2	6.4	6.7
6.	7.5	7.2	8.1	12.5	15.2	13.6	15.6	16.6	15.1
7.	11.9	12.7	16.3	18.1	17.1	14.8	16.9	19.3	15.4
8.	13.7	10.0	7.9	8.5	9.3	8.8	8.6	13.7	NA
9.	14.1	8.5	3.1	4.2	4.1	1.6	1.3	2.8	7.5
10.	7.1	8.8	6.0	4.6	6.7	3.7	6.6	14.3	15.9
Total	6.6	7.8	8.3	6.3	8.2	4.4	7.2	10.8	9.9
BASIC GOODS SECTOR									
11.	13.0	14.2	10.7	8.5	5.8	4.0	5.5	4.8	6.4
12.	15.2	13.1	13.9	16.9	15.6	12.9	10.5	17.1	21.2
13.	11.4	10.4	11.9	9.1	12.4	9.4	5.9	12.2	14.8
14.	9.4	9.2	8.7	11.2	14.9	12.3	8.4	10.5	11.6
Total	12.0	12.2	11.8	10.1	10.6	8.3	6.9	10.0	13.2
CAPITAL GOODS SECTOR									
15.	9.6	11.0	14.0	13.0	12.2	9.6	6.2	5.3	9.0
16.	11.1	15.5	13.9	14.0	15.1	9.3	3.4	8.5	13.3
17.	10.6	12.7	12.5	9.2	6.7	3.1	4.0	9.0	8.9
18.	9.2	9.3	12.0	12.5	9.9	6.2	5.3	8.4	12.5
Total	12.4	11.9	13.2	12.2	11.1	7.3	4.8	7.6	10.8
INTERMEDIARY GOODS SECTOR									
19.	16.7	9.9	2.8	4.4	-3.9	-9.1	-2.0	-4.9	1.8
20.	12.3	9.9	8.6	12.5	11.7	10.2	9.8	11.4	11.8
21.	3.3	7.5	10.5	11.2	13.6	15.7	16.5	17.6	12.5
Total	13.0	9.4	5.5	8.8	6.3	5.2	7.9	8.6	10.4
WHOLE MANUFACTURING SECTOR									
	9.7	10.0	10.1	9.0	9.4	6.3	6.5	9.6	11.1

TABLE 3.2 : (contd.)

Indu-sttry	1971-1972	1972-1973	1973-1974	1974-1975	Percentage point change in 1974-75 over 1950-51
CONSUMERS GOODS SECTOR					
1.	5.7	-3.5	-0.5	1.6	9.4
2.	-6.6	-7.0	21.4	16.4	14.8
3.	8.1	16.2	9.7	7.0	-0.5
4.	11.0	3.2	9.8	7.8	-0.7
5.	3.0	10.2	21.0	9.3	2.8
6.	14.5	13.4	14.8	12.7	9.2
7.	15.2	14.7	12.4	11.8	6.9
8.	NA	NA	NA	NA	0.4
9.	5.8	11.9	13.1	11.0	6.0
10.	16.1	12.0	11.7	21.8	11.9
Total	9.7	12.1	16.9	14.1	7.3
BASIC GOODS SECTOR					
11.	3.8	-0.4	4.4	10.0	-0.3
12.	14.2	9.3	2.7	-0.8	-10.0
13.	16.4	17.7	15.3	21.9	17.9
14.	9.4	4.1	-1.7	-2.3	-12.3
Total	12.0	10.4	8.8	13.7	4.3
CAPITAL GOODS SECTOR					
15.	9.1	6.1	7.8	7.3	6.3
16.	14.9	10.9	9.1	10.1	3.9
17.	6.1	7.3	11.2	12.2	6.4
18.	12.1	9.0	10.9	11.2	3.2
Total	11.0	9.7	10.5	11.2	6.5
INTERMEDIARY GOODS SECTOR					
19.	15.3	0.5	-16.7	10.7	1.5
20.	13.0	9.6	10.4	13.2	11.2
21.	12.4	10.6	9.0	11.9	-0.9
Total	13.7	8.4	5.6	13.6	4.4
WHOLE MANUFACTURING SECTOR	11.1	10.7	11.9	13.2	5.8

Source: Same as for TABLE 3.1.

Notes: 1. Net profit rate=Profits After Tax (Net of Depreciation Managerial Remuneration Interest charges and Taxes) as %age of Net Worth (Net worth=Paid-up Capital+Reserves+Surplus)

2. NA = Not Available.

enjoyed some percentage point rise in net profit rate in 1974-75 over 1950-51.

2. Basic Industrial Chemicals, with 17.9 percentage point rise, topped the list of industries enjoying rise, while, Jute Textiles had the lowest rise (1.5 percentage point) in net profit rate.

3. Cement suffered highest percentage point decline (12.3 percentage point) while Iron and Steel had the lowest decline, -0.3 percentage point, in net profit rate in 1974-75 over 1950-51.

4. The Whole Manufacturing Sector enjoyed rise of 5.8 percentage point. Consumers Goods Sector (7.3 percentage point rise) and Capital Goods Sector (6.5 percentage point rise) were the only two Sectors enjoying a rise in net profit rate higher than the Whole Manufacturing Sector.

5. Out of 13 industries enjoying a percentage point rise in 1974-75, 9 had a rise above the Whole Manufacturing Sector (i.e. above 5.8 percentage point) while the remaining had below it.

A closer study of these two tables (Tables 3.1 and 3.2) lead us to following conclusions :

1. There were 5 industries which suffered a percentage point decline in both gross as well as net profit rates in 1974-75 over 1950-51. These were Grains & Pulses, Iron &

Steel, Aluminium, Cement and Rubber & Rubber Products. This indicates that, majority of the basic goods industries suffered from a set back in their earning power.

2. Cement industry suffered the highest set back in earning power, gross as well as net earnings.

3. Among the industries enjoying a rise, Jute Textiles had the lowest rise in gross as well as net earnings.

Thus, while summing-up the results of these two Tables we can say that majority of the industries indicate a better earning position in 1974-75 compared to 1950-51. However, these two tables give us the idea about gross and net profit rates only at two different time periods and do not reveal anything about the trends over the whole period. Hence, to observe the industry and sector-wise trends in gross and net profit rates, Time Trend Regression Analysis has been undertaken.

However, we feel that at this stage, a short discussion about the profit trend hypothesis of classical economists would not be a misfit. In fact, these theories inspired us to empirically observe the time trend analysis of profit rates for each of the industries.

V. THE CLASSICAL HYPOTHESIS ABOUT FALLING TENDENCY OF RATES OF PROFIT IN THE LONG RUN :

Most of the classical economists have assumed that, as society progresses, the competition among businessmen and their craze for capital accumulation results into rate of profit to fall to a very low level in the long run. Hence, Adam Smith argues, as the society advances, the production expands, resulting into increase in demand for labourers. Consequently, the wages rise, stimulating the population growth and expanding the markets. This results into division of labour and large scale production thereby setting in the cumulative growth process. Since production process requires longer time, there arises the need of capitalist class to stock capital and provide it to productive labourers who add to the output. Thus capital accumulation sets into the process. The economy works under the conditions of perfect competition along with the mechanism of invisible hand i.e. price-profit mechanism. Competition among businessmen for investing into higher profitable industries results into rates of profits to level down. Growth of population, too, results into lowering down the wages. The process of growth through perfect competition, thus continues till profit rates are brought down at minimum and, wages at subsistence level. Thus, according to Adam Smith, as the society grows, capital

accumulation sets in and the rates of profit tend to fall overtime.

David Ricardo, another famous classical economist also has assumed a falling tendency of rates of profit for each industry over a long period of time. He argues that as the society progresses, population expands fast as the wages are above the subsistence level while food products increases slowly because of the application of the law of diminishing returns. Capitalists accumulate capital for supporting or giving advances to the labourers during the production process and earn a sufficient rate of profit on their capital. The society works under the conditions of perfect competition. In the beginning, high profits attract more capital resulting in more capital accumulation. This, in turn, results in increased demand for labourers, and thus wages are pushed up above the subsistence level. This results in further expansion of population, increase in demand for food, resort to lower and inferior quality land (with the law of diminishing returns in operation) and, pushing the rents on land very high. The whole produce is divided between wages and profits after rents are paid. As the rents rise, the amount left for profits and wages is reduced. Secondly, due to capital accumulation (expressed through increased demand for labour), population expands so much that wages are pushed

down at subsistence level. Rents are so high and profits so low that they leave no incentive for further capital accumulation. The society reaches the stationery state with very high rents, subsistence wages and very low or zero rates of profit. Hence, the rate of profit for the industry falls over a long period of time.

Karl Marx, the most famous critic of the classical writers, also assumed a falling tendency of rates of profit over time. He explained the growth process through the "class struggle". According to Marx, labour is the only source of value and is paid in wages its own value, socially necessary for rearing, training and maintaining its life. Capitalists who employ labourers exploit them (by lengthening number of hours of work etc.) by securing surplus value in the form of profits. Capitalist's main aim is to extract as much surplus value from labourers as possible (labour being the only source of value).This is attained through accumulation of capital in two basic forms, variable capital (The Labour) and constant capital (Raw Materials tools, machines,etc.) Consequently, on one hand, production increases greatly through employment of machinery, but, on the other hand, technological unemployment in the form of industrial reserve army, is created. Thirdly, the constant capital produces just equal to its own value while labour, the only

source of surplus value, is replaced by constant capital. Thus constant capital acts as a two edged sword for the capitalist. On one side it causes unemployment resulting into low wages and continuous exploitation of labour and on the other side, fails to fulfill the ultimate purpose of the capitalist i.e. creation of surplus value. Marx further argues that there is a long run tendency under capitalism to employ constant capital in relatively increased amounts than variable capital. Capitalists' passion for profit through capital accumulation leads to continuous increase in the organic composition of capital.[2] As organic composition of capital increases, the amount of surplus value created goes on falling. This results in rate of profit[3] to fall over time. Hence, capitalists' passion for capital accumulation, for extracting more and more surplus value, itself, results into fall in the rate of profit.

Alfred Marshall, while discussing the long-run analysis, argues, that, the principle of factor substitution through the competitive forces, compels the rates of return to move towards a central value. In other words, competition and substitution among the factors of production (assuming high

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2 Organic Composition of Capital = $\frac{C}{C+V}$ where C=Constant Capital, V=Variable Capital.

3 Rate of profit as defined by Marx is = $\frac{S}{C+V}$ where, S= surplus value, C=Constant Capital, V=Variable capital.

elasticity of supply of undertakers i.e. entrepreneurs), results in wiping out of abnormal profits and levelling of rates of profit among different industries towards the central value.

In short, the Classicals, Karl Marx, Prof. Marshall, all have assumed that rates of profit (for individual industry) have a tendency to fall in the long run. However, the intention of our study is not to test the validity of the classical hypothesis, but to take a hint for explaining profitability trends in the Indian Manufacturing Industries. This is so because the concept of profit rate given by classical writers is entirely different from the one with which we are dealing. The classical economists talked in real terms whereas our study pertains to financial ratios (Price variations are not eliminated).

Secondly, they had in their mind the industries having almost similar age structure, whereas we have industries with great variations in their inception periods and therefore in their age structure.

Thirdly, long run is not known to anyone. Moreover, as far as Indian Industries are concerned, majority of them are of recent origin. Industrialisation in India is a recent phenomenon and therefore we do not see strong reasons for rates of profits for the industries to fall over the 25

years period. On the contrary, the classicals (mainly A. Smith) argued that during the initial stages of industrial growth, profits would be high and hence would be the rates of profit.

Lastly, the business entities as well as the surrounding economic conditions of 200 years ago (at the time of classicals) were entirely different from what they are to-day. Hence, we feel that the results based on the empirical data of entirely different type than is discussed by classicals should not be used either to refute or to accept these hypothesis. However, we can, given our data, see the behaviour of earnings rate over this time and discuss the factors responsible for their behaviour from the prevailing conditions.

VI. ESTIMATES OF TREND COEFFICIENTS :

In this section we have estimated the trend coefficients of gross and net profit rates (industry-wise and sector-wise) by fitting a linear regression model, the results for which are briefed in Table 3.3.

The Linear Model fitted is as follows :

$$P = \alpha + \beta t + e$$

where P is gross profit rate or net profit rate, α and β are the parameters (intercept and trend coefficients respectively), t is the time and e is the error term.

TABLE 3.3 : Results of Regression of Gross and Net Profit Rates on Time : 1950-51 to 1974-75

Ind. Sr. No.	Industry	Gross Profit Rate			Net Profit Rate		
		α	β	R^2	α	β	R^2
1	2	3	4	5	6	7	8
1.	Grains & Pulses	16.253** (2.102)	-.281 (.141)	(-).146	1.595 (3.181)	-.585** (.214)	(-).481**
2.	Edible Vegetable & Hydro-genated oils	1.117 (1.410)	.491** (.095)	.538**	-1.023 (2.871)	.571** (.193)	.275**
3.	Sugar	7.678** (1.152)	.094 (.079)	.058	9.280** (1.449)	-.060 (.098)	(-).016
4.	Tobacco	10.123** (.940)	.229** (.061)	.384**	7.840** (.986)	.020 (.067)	.004
5.	Cotton Textiles	5.976** (1.152)	.148 (.076)	.143	4.667 (1.921)	.141 (.129)	.049
6.	Silk-Rayon & Woollen Textiles	2.454* (1.051)	.742** (.070)	.828**	2.998 (1.472)	.554** (.099)	.577**
7.	Medicines and Pharmaceutical Preparations	3.584** (1.244)	.832** (.085)	.807**	4.220** (1.387)	.560** (.093)	.609**
8.	Matches	11.000** (1.417)	.325** (.116)	.305**	11.310** (1.318)	-.070 (1.099)	(-).022
9.	Pottery, China, Earthernware & Structural Clay Products	7.815** (1.051)	.145* (.069)	.163*	7.483** (1.669)	.009 (.112)	.0003
10.	Paper & Paper Products	9.051** (1.410)	.073 (.094)	.025	8.007** (1.669)	.161 (.112)	.082
...	CONSUMERS GOODS SECTOR	6.029** (.665)	.267** (.045)	.625**	5.003** (1.217)	.259** (.082)	.302**
11.	Iron & Steel	13.238** (1.152)	-.326** (.078)	(-).435**	17.615** (1.501)	-.555** (.101)	(-).568**

cont...

TABLE 3.3 : (contd.)

1	2	3	4	5	6	7	8
12.	Aluminium	3.931** (1.520)	.413** (.076)	.564**	7.375** (2.374)	.225 (.160)	.082
13.	Basic Industrial Chemicals	3.086** (.814)	.478** (.054)	.772**	1.627 (1.226)	.621** (.082)	.713**
14.	Cement	6.800** (1.015)	-.200** (.068)	(-).274**	11.807** (1.494)	-.239* (.100)	(-).198*
1.	BASIC GOODS SECTOR	10.377** (.814)	-.029 (.055)	(-).012	11.802** (.879)	-.054 (.059)	(-).036
15.	Transport & Equipment	3.917** (.814)	.291** (.057)	.529**	4.810** (1.472)	.230* (.099)	.191*
16.	Electrical Machinery, Apparatus & Appliances	7.998** (1.628)	.254* (.109)	.190*	9.635** (1.441)	.105 (.097)	.048
17.	Machinery (Other than Transportation)	7.717** (.814)	.091 (.053)	.112	8.172** (1.371)	.056 (.092)	.015
18.	Ferrous/Nonferrous Metal Products	2.891** (.049)	.493** (.107)	.481**	.735 (2.777)	.505* (.187)	.240*
	CAPITAL GOODS SECTOR	6.596** (.665)	.208** (.045)	.481**	7.034** (1.072)	.182* (.072)	.215*
19.	Jute Textiles	7.101** (1.628)	-.077 (.111)	(-).020	7.738* (3.125)	-.326 (.210)	(-).095
20.	Other Chemical Products	1.381 (1.410)	.663** (.094)	.686**	-1.245 (2.435)	.665** (.163)	.419**
21.	Rubber & Rubber Products	12.470** (.814)	.010 (.056)	.001	11.865** (1.379)	-.005 (.093)	(-).0001
	INTERMEDIARY GOODS SECTOR	6.443** (1.051)	.189* (.071)	.234*	5.477** (1.501)	.171 (.101)	.111
	WHOLE MANUFACTURING SECTOR	7.060** (.814)	.180** (.055)	.515**	7.085** (.854)	.155* (.057)	.241*

NOTE TO TABLE 3.3

1. Source: Tables 3.1 and 3.2.
2. Figures in brackets indicate standard errors.
3. * Indicates significance at 5% level.
   ** Indicates significance at 1% level.
4. F test is applied to R^2, having following critical values :
   i) .255 at 1% and .157 at 5% level of significance respectively with 23 degrees of freedom
   ii) .301 and .187 at 1% and 5% levels of significance respectively at 19 degrees of freedom
   iii) .315 and .197 at 1% and 5% levels of significance respectively at 18 degrees of freedom
5. t-test is applied to α and β.

1. Table 3.3 reveals that the Linear Model of "Time Trend of Profitability" has proved to be a "good fit" in 14 and 10 fitted relations with respect to gross and net profit rates respectively. This is obvious from the values of R^2 (the coefficient of determination).

2. Twelve out of 14 and Seven out of 10 of these industries (for gross and net profit rates respectively), reveal a strong tendency of profitability to rise over time. The industries having strong positive tendency for gross and net profit rate to rise overtime (which is indicated by statistically significant positive values of β, the time trend coefficient) are, Edible Vegetable and Hydrogenated Oils, Silk-Rayon and Woollen Textiles, Medicines and Pharmaceutical Preparations, Basic Industrial Chemicals, Transport Equipment, Ferrous/Non-Ferrous Metal Products and Other Chemical Products. In addition to these industries, Tobacco, Pottery--China-Earthernware and Structural Clay Products, Aluminium, Electrical Machinery, Apparatus & Appliances, industries also reveal a rising trend in gross profit rate only, over time.

3. Iron and Steel and Cement, both these industries experienced a declining trend in gross as well as net profit rate, while Grains & Pulses suffered a decline in net profit rate only overtime. β, the trend, coefficient for these

industries assumes negative value which is statistically significant.

4. The coefficient of determination i.e. R^2 for industries having strong tendency for profit rates to rise, varied in value from .163 (For Pottery etc. Industry) to .828 (For Silk-Rayon & Woollen Textiles) with respect to gross profit rate. It varied from .191 (Transport Equipment) to .609 (Medicines & Pharmaceutical Preparations) for net profit rate. This denotes that time explains variations in profit rates in different degrees for different industries over the specified time.

5. The coefficient of determination i.e.R^2, for the industries indicating strong negative relation with time (as R^2 and β are statistically observed to be significant when tested) i.e. rates of profit (gross as well as net rates) falling over time, also varied in value from -.274 (Cement) to -.435 (Iron & Steel) for gross profits and -.198 (Cement) to -.568 (Iron & Steel) for net profit rate indicating a fall in profit rate over time.

6. β, the time trend coefficient denotes the trend coefficient . If β has a positive sign and if value of β is statistically significant it indicates that profit rate increases over the period and has strong positive relation with time. Table 3.3 further indicates that value of β,

also differs for different industries ranging in value from .145 (Pottery etc.) to .832 (Medicines & Pharmaceutical Preparations) for gross profit rate and from .230 (Transport Equipment) to .665 (Other Chemical Products) for net profit rate. This reveals that as time passes, profit rates of different industries increase at different rates.

Further, if β, the time trend coefficient has a negative sign, and if its value is statistically significant, it denotes that profit rate of industry has fallen over time. The values of β with negative signs (Statistically significant ones) also vary from -.200 (Cement) to -.326 (Iron & Steel) for gross profit rate and from -.239 (Cement) to -.585 (Grains & Pulses) for net profit rate. The negative values of β (for statistically significant cases only) are indicative of falling tendency of rates of profit in these industries over the period under study.

7. Table 3.3 reveals the Sector-wise trends in gross as well as net profit rates also. The following results are drawn.

(i) Sectoral rates of profit indicate a strong positive relationship with time. Except the Basic Goods Industries Sector, for both the gross and net profit rates, and Intermediary Goods Sector for net profit rate, all other Sectors have strong positive correlation with time. R^2, the coefficient of determination, is statistically significant in case

of these Sectors. However, the value of R^2 varies Sector-wise from .234 (Intermediary Goods Sector) to .625 (Consumers Goods Sector) for gross profit rate: and from .215 (Capital Goods Sector) to .302 (Consumers Goods Sector) for net profit rate. Moreover, Whole Manufacturing sector also has a strong positive correlation between gross profit rate and time and net profit rates and time with the values of R^2 as .515 and .241 respectively.

(ii) β, the time trend coefficient also assumes varying values from .189 (Intermediary Sector) to .267 (Consumer Goods Sector) for gross profit rates and .182 (Capital Goods Sector) to .259 (Consumers Goods Sector) for net profit rates.

While summing up we can say that profitability trends over time are better explained in case of gross profit rate (Industry-wise as well as Sector-wise). This is denoted by not only the larger number of industries (14) explained by this concept but also by the higher values of R^2 (Except for Grains and Pulses), the coefficient of determination. Moreover, since 2 out of 4 industries covered in Basic Goods Sector have a strong negative correlation with time while others have (2 for gross profit rate and one for net profit rate) strong positive correlation with time, we observe that results of Basic Goods Sector turn out to be statistically non-significant because they (positive negative tendencies) cancel out

and hence we get negative negligible value for coefficient of correlation r.

Table 3.3 thus indicates that in case of majority of the Industries (having statistically significant results) and Sectors, there exists a strong positive tendency for gross as well as net profit rates to rise over time.

However, it is not enough to study only the industry-wise and sector-wise trends in profit rates overtime. We are further interested in testing the variations in these rates of profits over time too. This is done with the help of absolute and relative measures of dispersion and the results are briefed in Table 3.4.

VII. INDUSTRY-WISE DISPERSIONS IN GROSS AND NET PROFIT RATES :

Table 3.4 gives the mean, the standard deviation and the coefficient of variation for gross and net profit rates of each of the 21 Indian Manufacturing industries and for each of the Sectors.

The mean rates of profit are derived by summing up the gross or net profit rates (industry or sector-wise) over 25 years and then dividing by 25 years.

The mean rate of profit indicates what was the average profitability of the industry over 25 years. It can be observed from Table 3.4 that on an average, Medicines &

TABLE 3.4 : Industry-wise Variations in Gross and Net Profit Rates Mean, Standard Deviation, and Coefficient of Variation : 1950-51 to 1974-75

Ind. Sl. No.	Name of Industry	Gross Profit Rate			Net Profit Rate		
		Mean	SD	CV	Mean	SD	CV
1	2	3	4	5	6	7	8
CONSUMERS GOODS SECTOR							
1.	Grains and Pulses	12.6	5.5	0.437	9.2	6.2	0.674
2.	Edible vegetable & Hydrogenated Oils	7.5	5.0	0.667	6.4	8.0	1.250
3.	Sugar	8.9	2.3	0.258	8.5	3.5	0.412
4.	Tobacco	13.1	2.6	0.198	8.1	2.3	0.284
5.	Cotton Textiles	7.9	2.9	0.367	6.5	4.7	0.723
6.	Silk Rayon & Woollen Textiles	12.1	6.0	0.496	10.2	5.2	0.510
7.	Medicines & Pharmaceutical Preparations	14.4	6.8	0.472	11.5	5.3	0.461
8.	Matches	14.4*	3.4*	0.236*	10.4*	2.9*	0.279*
9.	Pottery, China Earthernware and Structural Clay products	9.7	2.6	0.268	7.6	4.0	0.526
10.	Paper and Paper Products	10.0	3.4	0.340	10.1	4.2	0.416
	Total	9.5	2.5	0.263	8.4	3.5	0.417
BASIC GOODS SECTOR							
11.	Iron & Steel	9.0	3.7	0.411	10.4	5.4	0.519
12.	Aluminium	9.3	4.0	0.430	10.3	5.8	0.563
13.	Basic Industrial Chemicals	9.3	4.0	0.430	9.7	5.4	0.557
14.	Cement	9.4	2.8	0.298	8.7	4.0	0.460
	Total	10.0	2.0	0.200	11.1	2.2	0.198
CAPITAL GOODS SECTOR							
15.	Transport Equipment	7.7	3.0	0.390	7.8	3.9	0.500
16.	Electrical Machinery Apparatus & Appliances	11.3	4.3	0.381	11.0	3.6	0.327

TABLE 3.4 : (contd.)

1	2	3	4	5	6	7	8
17.	Machinery(either than Transport etc.)	8.9	1.9	0.213	8.9	3.3	0.371
18.	Ferrous/non-ferrous Metal Products	9.3	5.2	0.559	7.3	7.6	1.041
	Total	9.4	2.1	0.223	9.4	2.8	0.298
INTERMEDIARY GOODS SECTOR							
19.	Jute Textiles	6.1	4.0	0.656	3.5	7.8	2.229
20.	Other Chemical Products	10.0	5.9	0.590	7.4	7.6	1.027
21.	Rubber & Rubber Products	12.6	2.0	0.159	11.8	3.3	0.280
	Total	8.9	2.8	0.315	7.7	3.7	0.481
WHOLE MANUFACTURING SECTOR		9.5	1.9	0.200	9.1	2.4	0.264

Source: Tables 3.1 and 3.2

Notes : SD= Standard Deviation; CV = Coefficient of Variation

*Relates to 20 years only and for other industries and all sectors the number of years is 25.

Pharmaceutical Preparations earned highest gross profit rate (14.4%) while Rubber & Rubber Products earned highest net profit rate (11.8%).

2. Jute Textiles, on an average, had the lowest gross (6.1%) as well as net (3.5%) average profit rate over 25 years.

3. The rate of profit earned in the Whole Manufacturing Sector averaged to 9.5% (gross profit rate) and 9.1% (net profit rate).

4. Basic Goods Sector, on an average, enjoyed higher profitability than the Whole Manufacturing Sector with respect to gross as well as net profit rates (10.0% and 11.1% respectively).

5. Consumers Goods Sector, on an average, coincided with gross earning power of the Whole Manufacturing Sector (9.5%) while Capital & Intermediary Goods Sectors remained below it over the period.

6. In case of net earnings, Capital Goods Sector, on an average, enjoyed earnings higher than Whole Manufacturing Sector, while, Consumers and Intermediary Goods Sector had lower net earnings.

7. Out of Twenty industries (Except Matches), Nine industries, (viz., Grains and Pulses, Tobacco, Silk-Rayon & Woollen Textiles, Medicines and Pharmaceutical Preparations, Pottery, China Earthernware and Structural Clay Products, Paper & Paper Products, Electrical Machinery, Apparatus & Appliances, Other Chemical Products and Rubber & Rubber Products, on an average, earned both gross and net profit rates above the level of whole Manufacturing Sector, i.e. 9.5% and 9.1% respectively. Match industry, enjoyed, on an average considerably high gross and net profit rates (14.4% and 10.4% respectively) over 20 years' period.

8. One interesting point worth observing from Table 3.4 is that average rates of gross profit for Industries covered by Consumers, Capital and Intermediaty Goods Sectors differ widely whereas in case of Basic Goods Sector the differences are negligible. More or less same is the case with average net profit rates.

In sum, the average rates (gross or net profit) over 25 years for each Industry and Sector indicate that, majority of the industries (55%) suffered from earnings below the average for Whole Manufacturing Sector while 45% industries enjoyed earnings above the level of whole Manufacturing Sector.

Having examined the average gross and net earnings position of different Industries and Sectors, it is necessary to examine the year to year variations in these rates over this period. In other words, we intend to examine the deviations in earnings rates of those Industries and Sectors from average earnings rates of the respective Industries and Sectors. This can be done by measuring the absolute and relative dispersions in rates of profits over the 25 years period.

Standard deviation[4] and coefficient of variation[5] measure the absolute and the relative dispersions respectively

4 Standard Deviation $= \sqrt{\frac{(X_i - \bar{X})^2}{n-1}} = \sigma$

5 Coefficient of Variation $= \frac{\text{Standard Deviation}}{\text{Mean}} = \frac{\sigma}{\bar{X}}$

among the given series, the latter being more useful for comparison purposes. These measures indicate by how much amount the actual values deviate from the mean value of the series. The higher values of coefficient of variation indicate larger dispersion among the series and vice-versa. Table 3.4 presents the worked out values of these two, which can be interpreted as follows :

1. Rubber & Rubber Products Industry, had the lowest variations in gross as well as net profit rate, the Coefficient of Variation being .159 and .280 respectively. Moreover, this industry enjoyed, on an average, the highest net profit rate (11.8%) also over this period. Match Industry also experienced very low variations in both gross as well as net profit rate over the twenty years period, coefficient of variation being .236 and .279 respectively.

2. Edible Vegetable and Hydrogenate Oils Industry, had the largest dispersion in gross profit rates while Jute Textiles, with lowest average net profit rate, had the largest dispersion.

3. The value of coefficient of variation for Whole Manufacturing Sector is .200 and .264 for gross and net profit rates respectively.

4. Basic Goods Industries Sector had equal level of dispersion for gross profit rate (.200 coefficient of variation) and

and little less (.198) than the Whole Manufacturing Sector for net profit rate while other Sectors had relatively larger dispersions.

5. If we arbitrarily divide all the 20 industries (Except Match) as Relatively Stable (C.V.[6] upto .250), Moderately Fluctuating (C.V. between .251 to .500), Highly Fluctuating (C.V. between .501 to .750), and, Erratically Fluctuating (C.V. above .751), then we observe (Table 3.4) that 3 industries (viz., Tobacco, Machinery (Other than Transport etc.) and Rubber & Rubber Products industries) experienced Relatively stable dispersion in gross profit rate. The majority of the industries, Thirteen in total, (viz., Grains & Pulses, Sugar, Cotton Textiles, Silk-Rayon & Woollen Textiles, Medicines and Pharmaceutical Preparations, Pottery-China etc. Paper and Paper Products, Iron & Steel, Aluminium, Basic Industrial Chemicals, Cement, Transport Equipment, Electrical Machinery, Apparatus & Appliances), had moderately fluctuating dispersion in gross profit rate while remaining four, (viz., Edible Vegetable & Hydrogenated Oils, Ferrous/Non-ferrous Metal Products, Other Chemical Products and Jute Textiles experienced significantly Fluctuating dispersion in gross profit rate over 25 years period.

As far as variations in net profit rate are concerned, Nine industries, (viz., Sugar, Tobacco, Medicines and

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6 Coefficient of Variation

Pharmaceutical Preparations, Paper & Paper Products, Cement, Transport Equipment, Electrical Machinery, Apparatus and Appliances, Machinery (Other than Transport etc.), and Rubber & Rubber Products) experienced Moderately Fluctuating dispersion, Seven industries (viz., Grains & Pulses, Cotton Textiles, Silk-Rayon and Woollen Textiles, Pottery-China etc., Iron & Steel, Aluminium, Basic Industrial Chemicals) had significantly fluctuating dispersion while remaining four industries (viz., Edible Vegetable and Hydrogenated Oils, Ferrous/Non-Ferrous Metal Products, Jute Textiles and Other Chemical Products industries) had erratically fluctuating dispersion. Match Industry, with quite high gross and net rates of profit (on an average), experienced Relatively and Moderately fluctuating dispersions respectively in these two series.

In short, Table 3.4 reveals (i) the average gross and net earnings capacity of each industry and Sector, (ii) year to year deviations in these over the period of 25 years. However, the factors responsible for the trends and variations in gross and net profit rates would be discussed in Chapter VI and VII on "Determinants of Profit Rates." Hence, we proceed with the examination of structure of profit rates at inter-industry levels for each of the 25 years under study.

VIII. STRUCTURE OF PROFIT RATES : INTER-INDUSTRY ANALYSIS OF VARIATIONS IN GROSS AND NET PROFIT RATES :

The trend analysis of profit rates enabled us to understand the Industry-wise and Sector-wise variations in gross and net profit rates over the period of 25 years. Hence, this portion of the study intends to examine the inter-industry variations in rates of profit in each of the 25 years and hence examines the structure of profit rates of Indian Manufacturing Industries. A number of statistical measures are applied to examine the inter-industry variations in profit rates.

(A) Equalising Tendency Among Rates of Profits : Hypothesis :

Right from classical economists upto present day economists all have supported a proposition in economic theory that, under perfect competition, the rate of return on investment (i.e. rate of profit) tends towards equality in all industries. Enterpreneurs, under perfect competition, would seek to leave relatively unprofitable industries and enter relatively profitable ones. This mobility of capital is crucial to the efficiency and growth of the economy. The movement of capital under perfect competition is explained by factors such as the free entry and exit of firms in or out of the industry, price: profit mechanism, the principle of factor substitution etc. However, it is assumed that in the beginning, there do exist some differences in rates of profits earned by different

industries (assuming further that the supply of entrepreneurs is perfectly elastic).

Our primary objective in this section is to examine the above proposition in the light of empirical evidence.

Ideal conditions of perfect competition have never been realised in real practice. Hence, perfect competition has always remained, more or less, a theoretical ideal or norm. However, an attempt to translate this deductive reasoning (based on different premises) into an inductive evidence can be undertaken. Postulating inter-industry differences in profit rates in the beginning of the period of study, it can empirically be tested whether, over a period of time, these differences in earnings power are wiped out or not? If, the industries earning very high profit in the beginning are incapable of maintaining that level over time, while, industries with low profits in the beginning rise high in earning power over the same period, then a sort of equalising tendency can be detected.

A Number of studies in foreign[7] countries have been

7 (a) Esptein, P.C.: "Industrial Profits in the United States", National Bureau of Economic Research, New York, 1934.
(b) Singh, A. and Whittington, G.: "Growth Profitability & Valuation", A Study of United Kingdom, Quoted Companies", Cambridge University Press, Cambridge, 1968.
(c) Dr. Bowman, R.T.: "Statistical Study of Profits," Philadelphia, 1934.
(d) Hart, P.E.: "Studies in Profit, Business Saving and Investment in the United Kingdom, 1920-62, Vols.I-II, George Allen & Unwin, London, 1965 and 1968.

undertaken to test the validity of this proposition and a number of statistical tools are applied to the available empirical data. We have followed Prof. R.T. Bowman's[8] and Singh and Whittington's[9] and P.E. Hart's[10] methodology for this purpose. However, in the beginning, we have tried to explain the inter-industry variations in profit rates over the said period and then tried to detect the prevalence of competition in Indian Manufacturing.

(B) Findings : Inter-Industry Variations in Gross and Net Profit Rates : 1950-51 to 1974-75 :

Table 3.5 reveals the simple average of profit rates[11] for all industries in each year (from 1950-51 to 1974-75) as well as the absolute and relative dispersion in industry rates of profit for each year. Additionally it gives information on the rank correlation coefficient for each year (1951-52 onwards) also. Following interpretations can be derived from the results of Table 3.5.

1. The highest mean rates of gross and net profit rates were earned in the years 1964-65 (12.2%) and 1959-60(12.8%) respectively.

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8 Ibid.
9 Ibid.
10 Ibid.
11 Simple average rate is derived by first summing up the profit rates of 21 Manufacturing industries and then dividing the same by total number of industries, i.e. 21. Hence the average rate worked out here differs from the estimated rate for Whole Manufacturing Sector, the latter being the weighted average rate.

TABLE 3.5 : Inter-industry Variations in Gross and Net Profit Rates: Mean, Standard Deviation, Coefficient of Variation and Rank Correlation Coefficient between Rates of Profit of 1950-51 and Each of the Following years upto 1974-5.

Years	Gross Profit Rates				Net Profit Rates			
	Mean	SD	CV	RCC	Mean	SD	CV	RCC
1	2	3	4	5	6	7	8	9
1950-51	7.5	3.4	.466	-	7.2	3.7	.514	-
1951-52	8.2	4.3	.524	.910	7.7	5.5	.714	.822
1952-53	6.2	5.4	.871	.897	4.2	8.8	2.094	.695
1953-54	6.7	4.3	.642	.903	5.4	5.5	1.019	.630
1954-55	7.5	4.6	.613	.909	6.5	6.8	1.046	.700
1955-56	9.2	4.5	.489	.460	9.4	4.7	.500	.193
1956-57	8.6	4.2	.488	.620	8.0	4.8	.600	.199
1957-58	8.1	3.9	.481	.489	6.5	5.0	.769	.136
1958-59	9.6	3.4	.354	.368	9.0	3.8	.422	.241
1959-60	11.5	3.4	.296	.132	12.8	3.7	.289	.079
1960-61	11.6	3.4	.293	-.094	11.6	2.9	.250	-.095
1961-62	10.8	2.8	.259	.069	10.3	3.5	.340	-.064
1962-63	11.5	3.3	.287	.132	9.7	3.9	.402	.009
1963-64	11.7	2.1	.179	.048	9.6	2.8	.292	.018
1964-65	12.2	4.0	.328	-.012	9.9	3.6	.364	-.119
1965-66	12.1	4.2	.347	-.153	10.0	4.2	.420	-.348
1966-67	11.7	7.7	.658	-.094	9.9	5.0	.505	-.163
1967-68	9.9	4.7	.475	-.076	7.0	5.9	.843	.049
1968-69	10.4	4.9	.471	-.123	7.9	5.5	.696	-.077

...cont.

TABLE 3.5 (contd.)

1	2	3	4	5	6	7	8	9
1969-70	11.5	5.6	.497	-.077	10.0	6.0	.600	.181
1970-71*	11.5	4.3	.374	-.140	10.4	5.0	.481	-.055
1971-72*	11.7	4.1	.350	-.100	10.0	5.7	.570	-.012
1972-73*	10.9	4.4	.434	-.348	8.5	5.6	.659	-.356
1973-74*	11.0	5.1	.464	-.507	8.8	8.4	.955	-.607
1974-75*	12.5	5.3	.424	-.329	10.2	6.2	.608	-.462

Source : Tables 3.1 and 3.2.

Notes: 1. *Total Number of Industries is 20 while for each of the years from 1950-51 to 1969-70 total number of Industries is 21.

2. SD = Standard Deviation
3. CV = Coefficient of Variation
4. RCC = Rank Correlation Coefficient between Rates of Profit in the year 1950-51 and each of the years followed, i.e. Profit Rates of 1950-51 is correlated ~~conducted~~ with Profit Rates of 1951-52, 1952-53, 1953-54, ..., 1974-75, each separately.

2. The mean gross and net rates for all the industries are observed to be above their 1950-51 values (7.5% and 7.2% respectively), in all the years except 1952-53, 1953-54 and ~~1955-56 and~~ additionally for 1954-5 & 1957-58 and 1967-68 in case of net profit rate.

3. The mean rate of gross profit indicates a rise in 1974-75 to the tune of 5 percentage point over 1950-51 and net profit rate to the tune of 3 percentage point. This indicates that earning capacity in this sector has gone up over the 25 years period. In short, the gross mean rate of profit has increased more sharply than the net one.

4. If we closely examine the year to year mean rates of profit, we see that, though in every year the gross and net profit rates are not rising, there is a overall tendency in these rates to rise over this period (with the exception of some years with a fall in mean rates of profit, e.g. 1952-53, 1956-57, 1957-58, 1961-62, 1965-66, 1966-67, 1967-68 and 1972-73 for gross profit rate and 1952-53, 1956-57, 1957-58, 1960-61 to 1963-64, 1966-67, 1967-68, 1971-72 and 1972-73 for net profit rates).

In short, the average gross and net rates of profit for all industries thus indicate an improvement (on an average), in earning capacity of the manufacturing industries taken together. However, it is essential to observe whether this is

true for all the industries or is true for some of them. In other words, we intend to examine whether this rising trend is due to maintenance of high profitability earning industries for their position or it is due to rising up of earning capacity by industries initially earning low profits? For finding out this we have worked out the inter-industry dispersions in rates of profit as well as the rank correlation coefficients of earnings rates of these industries for each year.

Both the absolute (Standard Deviation) as well as relative (Coefficient of Variation) measures of dispersion are worked out. However, the relative measure being more useful for comparison purposes, is discussed below.

A fall in the value of coefficient of variation overtime indicates[12] that the inter-industry dispersion in profit rates has narrowed down, i.e. there is a levelling effect on earning powers of different industries indicating that rates of profits of all industries are moving towards a central value. On the other hand, a rising value of coefficient of variation indicates an increase in the dispersion among profit rates of different industries overtime. Thus following results are drawn from Table 3.5.

1. The value of coefficient of Variation is observed to be .466 and .424 in 1950-51 and 1974-75 respectively (for gross

12 Hart, P.E. : op.cit., pp.240-250.

profit rate). Such a small fall in value of C.V. implies that almost similar type of dispersion prevailed in both the years. However, in case of net profit rate there is a clear widening among industry rates of returns in 1974-75 (CV=.608) over 1950-51 (CV=.514) indicating that some industries are enjoying the fruits of earning supremacy while others are lying at the bottom of earning power.

2. The dispersion among gross profit rates widened during the years 1950-51 to 1952-53 (indicated by a rise in the value of coefficient of variation), and then narrowed down and continuously contracted till 1963-64 (Except in 1962-63), indicating some levelling effect over the period 1953-54 to 1963-64 i.e. (except 1962-63). However, the dispersion widened again in 1964-65 and continued to be increasing till 1966-67, narrowed down for 2 years (1967-68 to 1968-69), widened in 1969-70, narrowed down for 1971-72 to 1972-73, increased in 1973-74, and, narrowed down slightly in 1974-75. In other words, the dispersion in industry gross rates of profit is not only fluctuating but indicates a parabolic trend. Hence the equalising effect is clearly observed during the period 1952-53 (CV=.871) to 1963-64 (CV=.179) with the exception of 1962-63. However, the coefficient of variation after reaching the minimum value of.179 has risen in 1964-65(.328) and has been above .179 since then, indicating

that levelling effects were being removed after 1963-64. Moreover in 1974-75 the dispersion was almost equal to that of 1950-51 level.

3. If we observe the type of conditions faced by net profit earnings of industries, we can see that the dispersion has been fluctuating over the period. The dispersion in net profit rates seems to have widened during 1950-51 to 1952-53, narrowed down slightly in 1953-54, widened again in 1954-55, narrowed in 1955-56 followed by widening in 1955-56 and 1956-57. From 1958-59 to 1960-61 were the 3 years when dispersion narrowed to a minimum level followed by widening in 1961-62 and 1962-63 and narrowing in 1963-64. However, 1963-64 to 1967-68 there was continuous widening of dispersion of net profit rates followed by slight narrowing (though above 1963-64 minimum level) for 3 years and widening over the period 1970-71 to 1973-74 and relative narrowing in 1974-75.

Moreover the dispersion in 1974-75 in net profit rates was wider than 1950-51 level indicating larger variations in inter-industry net profit rates in 1974-75 compared to 1950-51.

The dispersion among net profit rates also reveals a prabolic trend implying thereby that Indian Manufacturing industries have not been permanently operating under competitive forces.

However, conclusions drawn from examination of trends in coefficient of variation are not enough to arrive at any strong conclusion. Hence, it was felt necessary to test the hypothesis about equalising tendency with some other measures. What is more important is to know whether the industries having high earnings in 1950-51 could maintain the same earning position or not in the following period. This is denoted by rank correlation coefficient. If, the coefficient of variation is studied along with the rank correlation coefficient it would enable us to strengthen our views on the matter. In short, we intend to study whether the gap with respect to profit rates has widened or narrowed down. Industry earning abnormal profits may show a decline or wiping out of such profits in the long run when competition among firms and entry of new firms within the industry creates such situation.

The rank correlation coefficient[13] is another method of detecting the convergence or divergence of profit rates among the industries. The industries are arrayed in descending order of profit rates (gross and net profit rates separately) in each year from 1950-51 to 1974-75. Then, the industries are ranked in ascending order so that the industry earning highest profit rate is ranked first and the other getting lowest profit rates ranked 21st (or 20th depending upon the number of industries covered). The formula for rank correlation

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13 Rank Correlation Coefficient = $1 - \frac{6\sum_{i=1}^{n} di^2}{n(n^2-1)}$ where di = difference in the ranks of i^{th} industry in two periods; n = Number of observations.

coefficient (stated in footnote) is then applied by correlating the ranks of profit rates of industries in each of the years (1951-52 to 1974-75) to the ranks of 1950-51 and the values of rank correlation coefficient (Table 3.5) are worked out.

If the ranking remains same, i.e. if $\Sigma d_i^2=0$ (Summation of square of difference between ranks of i^{th} industry in two periods) then the rank correlation coefficient assumes value equal to one and, if ranking undergoes a change, the value of rank correlation coefficient changes. But if the ranking reverses completely, i.e. Industry ranking Ist as earning highest in one period is ranked last in other period and vise-versa, then rank correlation coefficient assumes value equal to minus one.

Thus, if ranking undergoes any change, the value of this coefficient changes and if the ranking gets reversed (not completely) then it assumes negative values.

1. A close examination of Table 3.5 reveals that not only has the rank correlation coefficient fallen considerably in value for both the concepts of profitability, but has assumed negative values from 1964-65 onwards, (with 1967-68 and 1969-70 as exceptions for net profit rate. However, the positive values of rank correlation coefficient for these two years are negligible).

2. Secondly, the values of rank correlation coefficient are quiet high only for first four years (1951-52 to 1954-55), indicating that majority of industries earning high rates of profit (both gross and net) could maintain their earning supremacy over this period only. A continuous low value from 1955-56 onwards and declining values from 1957-58 onwards, indicate that, these industries could not maintain the same earning position after 1955-56.

3. Moreover, from 1964-65 onwards the rank correlation coefficient has assumed negative values (though quite low in the beginning relatively high during 1973-74 and 1974-75 for the gross and net profit rates), indicating again that, not only the high earning industries of 1950-51 have lost their earning capacity, but, the low earning industries of 1950-51 have raised it very high. This is strengthened further by rising and higher value of coefficient of variation in this period, indicating that, not only have the low earning industries of 1950-51 acquired higher earning position, but, the earnings of these industries have increased considerably compared to those of high earning industries of 1950-51. Hence, the dispersion has widened and the rank correlation coefficient also has become negative (almost similar trend is observed for both the concepts of profit rate with one or two years' exceptions with very low positive values of rank corre-

lation coefficient and hence does not change the results much).

What do we conclude from this? As far as the coefficient of variation is concerned, it indicates parabolic trend, falling in value upto 1963-64 and then rising. The rank correlation coefficient is also declining till 1963-64 and becomes negative thereafter. This indicates that upto 1963-64 not only were the earning positions undergoing the change, but the dispersion in rates of profit also was narrowing down. This means that industries earning high profits in 1950-51 were not able to maintain the same position because they could not increase their earning capacity at a high rate. On the other hand, industries earning low profit rates in 1950-51 were capable of improving their positions at a faster rate and this resulted in narrowing down of dispersion, as well as changing the ranking position.

However, after 1963-64, not only has the coefficient of variation widened, but the ranking has also reversed. This indicates that low earning industries of 1950-51 raised their earning capacity so high that they ranked top after this period and high earning industries of 1950-51 earned very low earnings and continued to earn low. Hence, not only did the rank correlation coefficient become negative but the dispersion also widened. This means that there existed some levelling

effect in earnings rates in Indian manufacturing industries till 1963-64 and started vanishing afterwards, of course, with a change in the structure of earnings rates.

To further strengthen our above drawn conclusions we have undertaken another exercise based on Dr. R.T. Bowman's[14] methodology. The coefficient of rank correlation between rates of return (gross as well as net profit rates) and the change in these rates in succeeding year are worked out in following way.

The industries are first arrayed in descending order of rates of profit (gross and net separately) and ranked in ascending order, as explained above, in the year 1950-51. Then, the difference between the rates of profit in succeding year (i.e. 1951-52) and 1950-51 is estimated and ranked in ascending order. Thus the ranking of industries by rates of return in 1950-51 is correlated to the ranking of difference in the rates of return in succeeding year. The value of the coefficient of rank correlation derived in this way reveals the capability of high earning industries to maintain their earning superiority and vice-versa. If the value of this rank correlation coefficient is positive and equal to one, then industries earning high profit rates in 1950-51 can be, on an average, said to be increasing their earnings also at a faster

14 Dr. Bowman, R.T. : op.cit.

rate in 1951-52 compared to low earning industries of 1950-51. If the value of this coefficient declines gradually, it indicates that some of the industries earning high profit rates in 1950-51 are capable of increasing their earnings, on an average, at fast rates, while, some are not capable. On other hand, some of the low earning industries are improving their earning capacity while others still continue to be at the bottom of the earning ladder.

However, if this rank correlation coefficient assumes negative values it indicates that, on an average, industries enjoying high profit rates in 1950-51 were unable to increase their earnings at faster rate in 1951-52 compared to the industries having low earnings in 1950-51. If this rank correlation coefficient is minus one, then it reveals that, on an average, industries earning highest returns in 1950-51, raised their earnings at alowest rates and vice-versa.

Table 3.6 gives the values of rank correlation coefficient between rates of return and the changes in these rates in succedding years (for gross as well as net profit rates). Following results are drawn.

1. The rank correlation coefficient in Table 3.6 assumes negative values throughout in case of gross profit rate and except 1951-52, 1952-53 and 1967-68 in case of net profit rate. The negative or low positive values of this coefficient

TABLE 3.6 : Inter-Industry Variations in Gross and Net Profit Rates: Coefficient of Rank Correlation Between Rates of Return and the Changes in These Rates in Succeeding Years.

years	Coefficient of Rank Correlation	
	Gross Profit Rate	Net Profit Rate
1951-52	-.312	.291
1952-53	-.036	.088
1953-54	-.468	-.071
1954-55	-.252	-.245
1955-56	-.575	-.382
1956-57	-.016	-.216
1957-58	-.227	-.101
1958-59	-.782	-.751
1959-60	-.407	-.510
1960-61	-.456	-.673
1961-62	-.282	-.092
1962-63	-.364	-.332
1963-64	-.451	-.667
1964-65	-.082	-.135
1965-66	-.111	-.259
1966-67	-.038	-.095
1967-68	-.521	.149
1968-69	-.227	-.034
1969-70	-.018	-.109
1970-71*	-.545	-.556
1971-72*	-.316	-.002
1972-73*	-.311	-.223
1973-74*	-.205	-.183
1974-75*	-.288	-.360

Source: Tables 3.1 and 3.2.

Note : 1. * Years cover 20 industries (Except Match industry) while years from 1951-52 to 1969-70 cover 21 industries (including Match industry).

(in case of net profit rate) thus indicate that, on an average, industries earning high profit rates in one year, were unable to increase the earning power at a fast rate in the following year, while industries having low earnings in the same year, raised their earning capacity at a faster rate in the following year. Thus the conclusion drawn from this exercise also confirms to the conclusions drawn earlier, indicating that some levelling forces prevailed in Indian Manufacturing Industries over some period at least.

IX. PERSISTENCY OF PROFIT RATES :

This section of the chapter intends to test the hypothesis that the level of future profitability reflects its past profitability. This aspect of the study is important for the investment analysis. Profitability and expectations about future, play an important role in the growth of the economy. It therefore becomes necessary to examine the pattern of rates of profits of different industries over certain period.

Generally, good management, and monopoly powers of a firm are the factors assumed to be playing important role in resulting profitability of the firm. Moreover, it is assumed that, these two, continue to operate for some period at least, hence, it is expected that rates of profits do have some

persistency or pattern over some period of time.

G.J. Stigler[15], assuming some persistency in industry rates of return has worked out correlation of coefficient between rates of return over two consecutive years. He has observed that the values of correlation coefficients are above .7, with some exceptions of years after World War II. This indicates that for a short period of two years, there exists some pattern for industry rates of return in U.S.A.

Singh, A. and Whittington G.,[16] in their study, also have assumed that, an element of good or bad management, as well as monopoly powers of a firm, have a tendency to continue over some time and these can be taken as factors partly responsible for the profitability of the firm. If there is persisstency in the profitability of firms, we can logically explain the same trend for average profitability for the whole industry.Similarly, Eatwell[17] holds, "If profitability is in any way a causal phenomenon, derived from given combination of economic resources as organisation then it should show a tendency to persist over time".

Hence, we intend to test here whether profitability

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15 Stigler, G.J.: Capital and Rates of Return in Manufacturing, A study by the National Bureau of Economic Research, Princeton University Press, Princeton, New Jersey, 1963, pp.48-49.

16 Singh, A. and Whittington, G.: op.cit., p.133.

17 Eatwell, J.L.: "Growth, Profitability and Size: The Empirical Evidence," in "The Corporate Economy, Growth, Competition, and Innovative Potential", ed.by Marris, R. and Wood, A., Macmillan & Co.Ltd.,1971,Appendix A, p.398.

of an industry is just a chance phenomenon or whether the existence of 'good' or 'bad' management and monopoly powers affect profitability, thereby resulting into a definite pattern for rates of profit over some period. This implies that the industries having high rates of profit in one period should be able to have high rates in the following period and vice-versa. If this is the case, then profitability in one period should highly be correlated with profitability in its earlier period. The high correlation between rates of profit averaged over two periods should indicate that past profitability can be taken as a good indicator of future profitability. Following methodology is adopted for this purpose.

Rates of Profit (gross as well as net profit rates) are averaged over the plan periods for each industry (using simple average for the period) and a ~~simple~~ linear regression model is fitted. (Plan Periods are as follows : 1951-52 to 1955-56 - Ist Plan, 1956-57 to 1960-61 - IInd Plan; 1961-62 to 1965-66 - IIIrd Plan; 1966-67, 1967-68, 1968-69 - Annual Plans; 1969-70 to 1973-74 - IVth Plan.)

The equation for the Model fitted is as follows :

$$P_t = \alpha + \beta P_{t-1} + e$$

where P_t denotes gross or net profit rates in period t ; P_{t-1} denotes gross or net profit rates in period t-1 where period t refers to plan-wise period e.g. Ist, IInd, IIIrd,

'Annual' and IVth plan (if t is IInd plan period t-1 is Ist Plan period and soon). α and β are the parameters and e the error term. The above mentioned Model assumes that profit rates of period t depend upon profit rates of period t-1 (i.e. the earlier period). The degree of dependence is measured by the regression coefficient, β. The dependence is assumed to be linear in the Model. In short, our null hypothesis would be of no relation between P_t and P_{t-1}, hence, β would be zero. If β values are positive, and also are found to be statistically significant, we may reject the null hypothesis and favour the hypothesis of positive association between P_t and P_{t-1}.

1. Table 3.7 reveals that the level of average of gross profit rates of IIIrd, Annual and IVth plan periods are explained by the level of average of gross profit rates of IInd, IIIrd and Annual Plan periods respectively (R^2 is significant at 1% level). However, in case of average of net profit rates, only Annual plans and IVth Plan period earnings are explained by IIIrd and Annual plan period of average of net profit rate respectively. In other words, industries having high level of average of gross profit rates during IInd, IIIrd and Annual Plans (IIIrd and Annual Plans for net profit rates) continued to have the same level of profits in the following plan periods i.e. IIIrd, Annual and IVth plan periods respectively and vice-versa (for gross

TABLE 3.7 : Results of Persistency of Profitability : Regression of Profit Rate in Sub-Period t On Subperiod t-1 and Rank Correlation Coefficient Between Two Succeeding Sub-periods.

Sub-Periods	Gross Profit Rate			Net Profit Rate			Rank Correlation Coefficient	
	α	β	R^2	α	β	R^2	GRP	NPR
II Plan	7.932** (1.318)	.259 (.154)	.130	8.572** (.754)	.149 (.096)	.094	.357	.316
III Plan	6.097** (1.720)	.566** (.166)	.379**	6.722** (1.779)	.331 (.196)	.111	.721	.338
Annual Plans	-3.410 (3.340)	1.206** (.277)	.499**	-.551 (3.345)	.894** (.358)	.216**	.702	.412
IV Plan	3.803* (1.564)	.714** (.138)	.598**	4.621** (1.080)	.595** (.126)	.493**	.642	.604
1963-64 to 1974-75	9.502** (2.912)	.202 (.315)	.022	10.477** (2.704)	.152 (.291)	.015	.132	-.135

Source: Tables 3.1 and 3.2.
Regression Model: $P_t = \alpha + \beta P_{t-1} + e$ where P = Gross Profit rate, or Net Profit Rate, subscript t stands for subperiod t i.e. IInd (1956-57 to 1960-61), IIIrd (1961-62 to 1965-66), Annual (1966-67, 1967-68 and 1968-69) and IVth Plan (1969-70 to 1973-74) periods and 1963-64 to 1974-75. Subscript t-1 indicate respective subperiods t-1 i.e. Ist (1951-52 to 1955-56), IInd, IIIrd Annual, IVth plan periods (mentioned above) and 1951-52 to 1962-63 respectively.
α & β are parameters and e the error term.
Notes: (1) Figures in brackets indicate standard error, (2) * and ** Indicate significance at 5% and 1% levels respectively, (3) F Test is applied to R^2, latter having following critical values. i) .301 and .187 at 1% and 5% levels of significance respectively at 19 degrees of freedom; ii) .315 and .197 at 1% and 5% levels of significance respectively at 18 degree of freedom. (4) t test is applied to α & β. (5) Ranks of Average of Profit Rates of one sub-period (e.g. Ist Plan period) are correlated with the ranks of Average of Profit Rates of Succeeding sub-period (e.g. IInd Plan). (6) GRP = Gross Rate of Profit, NRP = Net Rate of Profit.

profit rates and Annual and IVth plans for net profit rates).

2. Moreover, R^2, the coefficient of determination, is continuously increasing in value from .379 for IIIrd plan to .598 for IVth Plan for average of gross profit rate and from .216 for Annual Plans to .493 for IVth plan for average of net profit rate. In other words inter-industry variations in profit rates of IIIrd, Annual and IVth plan periods are explained to the extent of 38%, 50% and 60% respectively by the variations in gross profit rates averaged over the periods of IInd, IIIrd, and Annual Plan periods respectively. Similarly, the value of R^2 for average of net profit-rates for Annual and IVth Plan period is .216 and .493, which reveals that variations in inter-industry net profit rates averaged in Annual and IVth Plans are explained to the extent of 22% and 49% by variations in net profit rates averaged over IIIrd and Annual plan periods respectively. Hence, we can say that average of gross profit rates indicate higher degree of persistency than average of net profit rates.

'β' the regression coefficient for above periods (for gross and net profit rates) assumes significantly positive values varying from .566 for IIIrd plan period to 1.206 for Annual Plan period in case of gross profit rates and from .595 for IVth plan to .894 for Annual Plan period in case of net profit rates, indicating that one percentage point

increase in average of gross profit rates in each of the IInd plan, IIIrd Plan and Annual Plans period resulted in .566 percentage point, 1.206 percentage point and .714 percentage point increase in average of gross profit rates during IIIrd plan, Annual Plan and IV Plan periods respectively. Similarly, one percentage point rise in average of net profit rates of IIIrd and Annual Plan periods led to an increase of .894 percentage point and .595 percentage point in net profit rate averaged over Annual and IVth Plan periods.

Thus, the highly significant (at 1% level) positive values of 'β', the regression coefficient, indicate that industries enjoying high rates of profit or suffering from low profit rates during one period continued to enjoy high or low profit rates respectively in the following period. In other words, gross and net profit rates in Indian manufacturing industries reveal some degree of persistency and some pattern over this period. Hence, profitability over a period of 3 to 5 years (Annual Plans are for 3 years) is capable of indicating the level of profitability of different industries in the 3 to 5 years' period following it.

However, regression analysis is a crude tool of analysis for the present purpose due to two reasons:[18] Firstly, it is extremely sensitive to the effects of a few extreme

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18 Singh, A. and Whittington, G.: op.cit., p.108.

values of the variables, which may contribute a large proportion of the variance from the mean even though they represent a minute proportion of the total number of observations. Secondly, the regression equations fitted are all linear ones and therefore there is no reason why the relationship between past and future profitability should follow the simple pattern. A more powerful test of the persistency of profit rates, which overcomes these two limitations, is provided by rank correlation coefficient. Hence, the average of gross and net profit rates over the plan years are ranked and correlated with each other. (Similar method as followed earlier). The results are briefed in last two columns of Table 3.7.

Table 3.7 reveals that rank correlation coefficients are sufficiently high for the periods for which regression results also are highly significant (e.g. IIIrd, Annual and IVth plan periods for gross profit rates with .721, .702, and .642 as the values for rank correlation coefficients and for Annual and IVthe Plan periods with .412 and .604 as the values of rank correlation coefficients respectively in case of net profit rates). Moreover, the value of rank correlation coefficient has declined for gross profit rate over these periods and increased in case of net profit rate. However, the high value of rank correlation coefficient itself is indicative of the ~~rank correlation coefficient itself is indicative of the~~

fact that majority of the industries enjoying, on an average, high profitability in one period continued to enjoy similar earnings in the following period. Hence, we can say that over a small period of 5 years, profit rates do have tendency to persist. Does this mean that rates of profit continue to persist at their levels even if the time period is lenghened? Can the longer period averaging of profit rates successfully predict about profitability over similarly longer period? When the time period is extended it involves greater degrees of fluctuations and uncertainty. Hence, prediction about future expectations of profitability over longer period become rather difficult. Hence, an attempt is undertaken to examine if period in averaging the the profitability is extended, what happens to its degree of persistency? The gross and net profit rates of each industry are (separately) averaged over two periods, dividing the whole planning period (1951-52 to 1974-75) into two periods of 1951-52 to 1962-63 and 1963-64 to 1974-75. The ~~simple~~ linear model fitted for plan-wise period is fitted where t indicates the period 1963-64 to 1974-75 and t-1 the period 1951-52 to 1962-63. The results are briefed in the last row of Table 3.7. It can be observed from last row of Table 3.7 that both gross and net profit rates averaged over a longer period of 12 years fail to predict about the level of profi-

tability in succeeding period of 12 years (R^2 is very low and statistically non-significant). Moreover, the last two columns of the same row give the value of rank correlation coefficient for gross and net profit rate averaged over the same period. It is observed that the rank correlation coefficient is very low (.132) for gross profit rate and negative (-.135) for net profit rate. This also indicates that the industries, enjoying higher earnings in earlier 12 years' period could not maintain the same position over the next period and vice-versa. Hence longer the period the less capable indicator becomes profitability for future predictions.

X. CONCLUSIONS :

The broad conclusions derived from this chapter can be briefed as follows :

1. Majority of the Indian Manufacturing Industries enjoyed better earning position in 1974-75 compared to 1950-51. However, majority of industries belonging to Basic Goods Sector (e.g. Iron & Steel, Aluminium and Cement) and Grains & Pulses (with respect to gross Profit Rate), Sugar & Tobacco (with respect to net profit rate) and Rubber & Rubber Products (with respect to both rates) suffered a deterioration in their earnings position.

2. Majority of the Indian Manufacturing industries experienced rising trend in profitability over the 25 years under study. Here again, it is observed that two industries of Basic

Goods Sector viz., Iron & Steel and Cement industries, and, Grains & Pulses Industries experienced a declining trend in profitability over the same period.

3. As far as the sectoral trends in profitability are concerned, we have observed that except Basic Goods Sector, all other Sectors experienced a rising trend over time.

4. Majority of these industries experienced Moderately Fluctuating (C.V. between .251 to .500) variations in profitability over the study period.

5. Rubber & Rubber Products industry experienced lowest variations in profitability (both types) while Edible Veggetables and Hydrogenated Oils (in case of gross profit rate) and Jute Textiles (net profit rate) had largest variations over time.

6. As far as the structure of profit rates of these industries is concerned, we observe that Indian Manufacturing Industries operated under the competitive forces from 1953-54 till 1963-64 only.

7. Finally, Indian Manufacturing Industries reveal a definite pattern of profit rates over plan periods. There is observed to be strong tendency for profitability of these industries to persist over plan periods. However, this tendency disappears if the period is lengthened. This implies

that the profitability of these industries happens to be a good indicator of profitability in near future only and fails to predict the same over longer period.

8. The equalising tendency observed till 1963-64 is the combined effect of lowering of profitability of relatively old industries (e.g. Jute Textiles, Iron & Steel, Cement) and at the same time improving the same in case of modern industries (e.g. Medicines & Pharmaceutical Preparations, Silk-Rayon & Woollen Textiles, Chemical & Engineering industries etc.). This of course was the consequence of the policies adopted by the Indian Government.