Use of Financial Ratios in Cluster Analysis of Indian Manufacturing Industries

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Abstract

This paper aims to measure performance of Indian manufacturing industries in terms of certain financial ratios. We derive these ratios from the ASI data and utilise them in our empirical analyses to have a proper judgment about profitability, liquidity, leverage, debt-servicing capacity and working capital management efficiency of major industries in India. Finally we group them into four homogeneous groups on the basis of similar characteristics.

1. Introduction

1.1 The widely used measure of efficiency of industrial units is productivity, which is measured in terms of capital, labour or, what goes in the name of total factor productivity**.** It is true that productivity is a basic measure. A unit that performs well in terms of productivity growth should maintain a good financial health. There are, however, certain finer issues concerning inner strength of an unit's financial health. These are mainly leverage, debt and interest servicing capacity, return on investment, working capital management efficiency and liquidity of an industrial unit. These issues are rarely addressed in an economic analysis. Accounting ratios used by financial analysts to assess financial health of a company may help develop a finer understanding about financial performance of an industry group. Financial analysts derive these ratios from balance sheet and profit and loss account of an individual company. Prowess Data base complied by The Centre for Monitoring Indian Economy (CMIE) provides data for deriving these financial ratios for individual companies at micro level. These ratios can, however, not be derived from ASI data base which provides industry level data at macro level. This is because the way ASI present the data does not strictly follow the language of a financial analyst. In this paper, we develop these financial ratios at macro level, seeking a correspondence between the accounting numbers and basic industry attributes. We keep in mind the definition given by financial analyst for the financial ratios and choose the synonymous data from the Annual Survey of Industries (ASI) in such a manner that would take care of the mismatch between these two sets of data and maintain definitional parity as well. In the context of Indian manufacturing industries, there are several studies on the performance of productivity growth (Ahluwalia 1985, 1991; Golder 1986; Siddharthan and Lal 2003; Balakrishnan 2003). Gupta and Huefner (1972) using a form of cluster analysis grouped 20 industries

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according to their characteristics as reflected in four select financial ratios. Falk and Heintz (1975) used certain financial ratios to develop a ranking of industry according to degree of risk based on particular industry characteristics. No empirical study appears to have been made to assess performance of Indian manufacturing industries in terms of financial ratios and develop groupings based on a simultaneous comparison of the ratios and thus, the industry characteristics as a whole. The modest goal of this paper is to take up such an exercise with respect to the Indian manufacturing sector. We develop our exercise based on the ASI data (2-digit level NIC-87 classifications) on the factory sector. The paper is planned as follows. In Section-1, we briefly explain why the reference period is kept from 1980-81 to 1997-98. In Section-2, we describe the financial ratios considered for assessing the performance of an industry group. How the accounting items can be discerned from the ASI data and compatibility of these accounting items with what is available in ASI data are discussed in Section-3. In this section, methodology for selecting 15 major industry groups amongst 27 categories of industries appearing in the ASI during our reference period is also described. Performance of the major industry groups on the basis of selected financial ratios are documented and analysed in Section-4. In this section, we show that these ratios can capture the heterogeneity or homogeneity in performance of the manufacturing industry groups and broadly classify them in four groups. Implications and conclusion of the study and directions for future research are presented in Section-5.

2. Reference Period

2.1 We have considered reference period from 1980-81 to 1997-98 (18 years). One may say that this study should have been made based on more recent data. We submit that this would have been possible but for the frequent changes in National Industrial Classification (NIC) of the ASI data. NIC-1970 classification was followed from 1980-81 to 1986-87. During the next ten years (1987-88 to 1997-98) NIC-1987 was followed. In NIC-87, industry codes 30 and 31 interchanged their position and industry codes 35 and 36 were clubbed together as code 35-36. In NIC-98, various changes were made. For example, beverages which was under industry code 22 (NIC-87) were separated from tobacco products and grouped as 'food products' under industry code 15. Paper, paper products and printing, publishing and allied activities (Code 28 under NIC 1987) was put under two industry codes, namely, code 21 (Paper and paper products) and code 22 (Publishing, printing and reproduction of recorded media) under NIC-1998. Besides, some new industry code such as 30 (Office accounting and computing machinery), 37 (Recycling of metal and non-metal wastes and scrap), 39 (Other manufacturing industries), 43 (Non-conventional energy) were introduced under NIC-1998. In NIC-04, a new industry code 34 (Motor vehicles, trailers and semi-trailers) was introduced. In NIC-08, many changes were made. For example, beverages industries were again separated from food products (code 15 under NIC-04) and included under separate code 11; publishing was separated from publishing, printing and reproduction of recorded media (code 22 of NIC-04) and put under industry code 58 (Information and communication). With such changes, concordance between various NIC classifications would have needed a few approximations which we decided to avoid in order to have continuity in the time series data. This paper seeks to explore the usefulness of ratios in measuring the inner strength of financial health of industries. Empirical results on the basis of 18 years time series data from 1981 to 1998 would be adequate to meet our objectives.

3. The Financial Indicators

3.1 The financial ratios are selected with a view to having a proper judgment about profitability, liquidity, leverage, debt-servicing capacity and working capital management efficiency of an industrial sector. We choose seven ratios, namely, Return on Invested Capital (ROIC), Operating Cash Flow to Invested Capital (OCF/IC), Interest Coverage Ratio (ICR), Debt Service Coverage Ratio (DSCR), Leverage Ratio (LR), Working Capital Management Efficiency Ratio (WCMER) and the Composite Ratio (CR). CR is the average of first six ratios. These ratios are normally used by financial analysts to assess financial performance of a company. ROIC is conceptualised as the return on invested capital, return being measured in terms of profit after tax and bank interest paid by an industrial unit added back. OCF / IC is conceptualised as the ratio of whatever operating cash is generated by the unit with invested capital – a concept that is hardly taken care of in an economic analysis. The ratio is constructed with profit, interest and depreciation in the numerator. ICR determines interest servicing capacity of an unit and is visualized as interest as a proportion to the total return, namely, the sum total of interest and profit. Debt servicing capacity of an unit is assessed by DSCR. It is conceptualised as operating cash flow expressed as a percentage of interest paid and 20% of outstanding loan. Desirable payback period being five years, a fifth of the loan is considered. ROIC gives an overall indication of the profitability of a company. OCF/IC indicates whether cash generated from operations is adequate to meet various obligations of an unit. DSCR and ICR are vital for examining debt servicing and interest servicing capacity of a company. WCMER indicates the level of efficiency in working capital management as it measures liquid assets in relation to the firm's size. This is derived from dividing working capital by invested capital; a higher ratio would indicate a better condition prevailing in a unit, a low ratio might lead to the problem of availability of working capital at the adequate level, even when the firm is better placed with respect to availability of fixed assets. The concept of LR is that a favourable LR would indicate less dependence on outside loans compared to its shareholders fund. It is basically equity-debt ratio. While it is true that productivity would serve as a good measure in examining the overall situation, a deeper analysis of the scenario would need some additional instruments that would help a researcher develop a finer understanding about financial health of an industry group. These ratios are proposed with this end in view.

4. Deriving the Ratios from ASI Data

4.1 In order to maintain conformity and parity, we utilise ASI data for deriving these seven ratios on the basis of ASI-given items, namely, profit, fixed capital, invested capital, physical working capital, working capital, outstanding loan, interest, employees cost, etc. In order to do so, we have kept in mind the definition given by financial analysts for these ratios and chosen synonymous data from ASI in such a manner that would maintain definitional parity in analyzing economic behaviour of an entity. For example, there is no term as 'invested capital' in the company level balance sheet. Synonymous term in the balance sheet of a company is 'total assets'. We thus conceptualise 'Return on Invested Capital' (ROIC) as 'Return on Investment' (ROI) as defined in the language of financial analysts and define ROIC as (profit + interest)/invested capital in order to keep parity with the definition of ROI as (net profit + interest)/total assets as given by financial analysts.

Similarly, OCF/IC has been taken as same as 'Operating Cash Flow to Total Assets' and same has been derived as (profit + interest + depreciation)/invested capital. We derive DSCR from ASI data as (profit + interest + depreciation)/(interest paid + 20% of outstanding loan). ICR is derived from ASI data as (profit + interest)/interest. LR is defined by financial analysts as a ratio between net worth and outstanding loan of a company. While net worth is defined in the Companies Act[2], it does neither feature in ASI nor is it used by an economist as a tool for measuring performance of an industry sector at the macro level. In order to maintain conceptual parity, we consider 'net worth' as almost equivalent to (fixed capital + working capital – outstanding loan) in respect of industry level data[3]. We thus conceptualise the LR as (fixed capital + working capital – outstanding loan)/outstanding loan. It is basically the equity-debt ratio[4]. 'Working capital' as defined in the ASI is almost equivalent to 'net working capital' or 'net current assets' (current assets – current liabilities) of a company. In the language of financial analysts, WCMER indicates efficiency of a firm in regard to management of assets and liabilities. For macro level analyses, we thus derive WCMER as a ratio between working capital and invested capital. In this way, we make an attempt to remove definitional mismatch to the extent it is required for the purpose of our empirical study. All the variables taken from ASI data are deflated by WPI with 1982 as the base year and used CPI only to deflate employees cost. There are, however, certain limitations while directly using WPI as deflator. While ASI classifications is based on activities, WPI is based on nature of commodities. We submit that identifying the nature of commodity grouped under the ASI activity based classification is difficult, if not impossible. At best, one can approximate commodities based on the nature of economic activities which prompt us to use WPI only (except for employees' compensation).

5. Major Industries

5.1 We select major industry groups for our empirical analysis with respect to three parameters, namely, value of output, number of workers and invested capital of respective industry groups. After initial screening, we find that out of 27 industry groups, there are

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[2] In terms of Section 2(29A) of the Companies Act, 'net worth' means the sum total of the paid-up capital and free reserves after deducting the provisions or expenses as may be prescribed.
Explanation:- For the purposes of the clause, 'free reserves' means all reserves created out of the profits and share premium account but does not include reserves created out of revaluation of assets, write back of depreciation provisions and amalgamation.

[3] In the language of a financial analyst, total assets of a company comprise of net block (gross fixed assets minus accumulated depreciation), investments and current assets. Liabilities of a company comprise of net worth or share holders fund, term loan and current liabilities. Again, according to the accounting equation, assets are equal to liabilities. Thus, net worth of a company is equal to total assets minus total of term loan and current liabilities. Keeping this interpretation of the financial analysts and definition given in the ASI for various items, we find that the sum total of fixed capital and working capital of an industry sector is equivalent to total assets minus current liabilities. If we deduct outstanding loan from this figure, what we get is essentially net worth of an industry sector or an individual industry.

[4] Shareholders' Fund = Fixed Capital + Working Capital – Outstanding Loan;
Equity = Shareholders' Fund;
So, (Equity / Debt) = (Fixed Capital + Working Capital – Outstanding Loan) / Outstanding Loan
i.e. Equity / Debt = (Fixed Capital + Working Capital)/ Outstanding Loan – 1
i.e. Equity / Debt is < 0 , if, Outstanding Loan > (Fixed Capital + Working Capital)

15 industry groups that account for 92.27%of value of output, 90.28% of number of workers and 91.91% of invested capital. Thus, exclusion of balance 12 industry groups which account for only 7.73% of value of total output, 9.72% of number of workers and 8.09% of invested capital, would not affect the result of our analyses on the performance of Indian industries. We thus finally select 15 such major industry groups for performing our analyses[5].

6. Industry Level Performance in Terms of Financial Ratios

6.1 Given the values of the seven ratios for each of the 15 major industry groups, we plan to check in this section whether the select ratios would help identify groups of industries having similar values of a particular ratio. Idea is to obtain an independent grouping of the industries according to the select ratios. From the results, we would be able to assess whether these ratios can capture the heterogeneity or homogeneity in performance of industry groups and identify the industries which are performing well and which are not performing well. But then, there is a problem. This is related to non-availability of a composite concept called 'industry characteristics'. However, some of the characteristics could be developed on the basis of best available quantifiable firm level standard. For example, return on investment of a company should be more than weighted average cost of borrowings; annual cash generation from the business should be at least one third of outstanding loan making DSCR of minimum 1.33; total outstanding loan should not be more than two times of shareholders fund making LR of 2:1; profit should be at least 33% of interest obligation making ICR of 1.33; net working capital should be at least 25% of total assets making WCMER of 0.25 etc. These firm level standards are accepted by financial analysts for assessing financial health of a company at micro level. As a number of firms constitute an industry group, one can compare the results with these firm level standards and have an idea about overall characteristics of the major industry groups. With this objective, we first calculate mean value and CV of seven ratios derived in respect of major industry groups over the 18 years period (Table 1). For each of the seven ratios, quartiles[6] are found out. These are given in Table 2. For each of the ratios, the industries having value of ratios below Q_1 (lower quartile) are the 'below average' performer. The industries with value of ratios lying between Q_1 and Q_2 (Median[7]) are 'average performer. The industries with value of ratios lying between Q_2 and the upper quartile (Q_3) are 'good'

[5] Selected 15 major industry groups are: IC 20-21(Manufacture of food products), IC 22(Manufacture of beverages, tobacco and related products), IC 23(Manufacture of cotton textiles), IC 24(Manufacture of wool, silk and man-made fibre textiles), IC 25(Manufacture of jute and other vegetable fibre textiles (except cotton), IC 26(Manufacture of textile products (including wearing apparel), IC 28(Manufacture of paper and paper products and printing, publishing and allied industries), IC 30(Manufacture of basic chemicals and chemical products (except products of petroleum and coal), IC 31(Manufacture of rubber, plastic, petroleum and coal products; processing of nuclear fuels), IC 32(Manufacture of non-metallic mineral products), IC 33(Basic metal and alloys industries), IC 34(Manufacture of metal products and parts, except machinery and equipment), IC 35-36(Manufacture of machinery and equipment other than transport equipment), IC 37(Manufacture of transport equipment and parts) and IC 40(Electricity).

[6] Quartiles are such values which divide the total number of observations into four equal parts. Three quartiles - first quartile (Lower quartile), second quartile (Middle quartile) and third quartile (Uppar quartile) divided the observations into four groups arranging the series in ascending order.

[7] Since the series is arranged in order of magnitude Q_2 corresponds to the median value of the series.

performer and the industries with value of ratios above Q_3 are 'excellent' performer with respect to a particular ratio. Table 3 presents the groupings of 15 major industries according to their seven financial parameters. In order to identify firm groupings of industries having similar values of a particular ratio, we perform cluster analysis. Clusters analysis classifies items into groups (clusters), such that the items within a group are sufficiently homogeneous and items in different groups are less homogeneous. There exists a variety of computation methods and homogeneity criteria (Jensen, 1971 and Johnson, 1967). In our analysis, we employ one of the non-hierarchical clustering techniques, namely, K-Means Method[8] using SPSS package. Results of cluster analysis (Table 4) show the four clusters[9] thus developed.

7. Consistency in Performance

7.1 With a view to assess the consistency in performance, we construct a scatter diagram with respect to the 15 major industries with average rank score with respect to a chosen ratio into on the horizontal axis and rank in items of the measure of volatility (i.e., CV) on the vertical axis. The idea is to analyse performance of any industry group simultaneously in terms of a score on individual value of a ratio and associated dispersion of the concerned ratio. The findings of this exercise is placed in Table 5.

8. Discussion of Results

8.1 The groupings of industries obtained from cluster analysis are almost similar to the groupings based on value of quartiles. Select financial ratios have thus displayed their representative power in segregating Indian manufacturing industries into three/four groups. We also gather a general idea about characteristics of each group of industries with respect to its profitability, operating management efficiency, liquidity, debt and interest servicing capacity, capital structure and working capital management efficiency. Table 6 gives a summary of characteristics of each group.

9. Implications and Conclusion

9.1 Results of empirical analyses demonstrate that financial ratios can depict underlying industry characteristics on the basis of which major Indian industries can be grouped in an

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[8] MacQueen (1967) suggests the term K
– means for describing his algorithm that assigns each item to the cluster having the nearest centroid (mean). In its simplest version, the process is composed of three steps as follows:

a. Partition the items into K initial clusters.
b. Proceed through the list of items, assigning an item to the cluster whose centroid (mean) is nearest (distance is usually computed using Euclidean distance with either standardised or unstandardised observations). Recalculate the centroid for the cluster receiving the new item and for the cluster losing the item.
c. Repeat Step 2 until no more reassignments take place.

[9] Three clusters would have been adequate. However, we wanted to get four clusters to compare with the groupings based on value of Quartiles (Table 3). Besides, value of each of the ratios of IC 25 is so low that would have affected centroid of other clusters.

ordinal manner. The industry groupings match satisfactorily with classifications with qualitatively expressed economic characteristics of the industries, namely, profit earned by these industries over the reference period. For example, IC 25 earned profit only once in 1981 during the 18 years period. On the other hand, IC 22, IC 26 and IC 30 earned profit in all the years. Classifications of industries emanated from our results would help the entrepreneurs decide the type of industries in which they can invest. Financial ratios corresponding to a set of industry characteristics may serve as a bench mark for these sets of characteristics at the firm level. In this context, the results could find wide application in several aspects of planning at the firm, industry, or total economy level. Group averages might not only serve as the firm's target but also enable the management of a firm to evaluate its operating efficiency against several industries having similar characteristics. At macro level, group ratios might be used with reasonable confidence in their correspondence to economic factors. For example, our results indicate that industries that are performing well represent 73.07% of value of output, 57.42% of invested capital and 62.26% of number of workers. The industries that are not performing well represent 19.20% of value of output, 34.49% of invested capital and 28.02% of number of workers. The policy maker may thus get an idea about the group of industries that harbor more bad performing industrial units and decide on capital or any other type of subsidy support needed by an industry group. In recent time, there has been growing use of statistical grouping as a methodology in accounting research. In this context, our paper would find an indirect use as well. We have made an initial effort to examine the reasonableness of certain industry-wide accounting data in finding out industry characteristics. Using such groupings and corresponding accounting ratios, empirical models may be developed to predict future status of financial health of a firm at micro level.

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Table 1: Mean and CVs of Selected Financial Ratios of Representative Industries and All Industries in India

Industry Group	Composite Ratio		ROIC		OCF/IC		ICR		LR		DSCR		WCMER	
	Mean	CV	Mean	CV	Mean	CV	Mean	CV	Mean	CV	Mean	CV	Mean	CV
IC 20-21	0.72	30.78	0.17	31.76	0.22	25.97	2.01	35.65	0.48	99.90	1.18	30.05	0.30	28.31
IC 22	1.71	27.38	0.37	26.53	0.42	24.00	5.06	28.08	1.22	50.42	2.80	36.48	0.40	28.08
IC 23	0.27	51.36	0.08	63.04	0.15	33.45	0.72	63.85	-0.03	-649.83	0.57	36.47	0.15	65.60
IC 24	0.37	119.57	0.02	727.69	0.09	142.85	0.2	669.30	1.07	188.74	0.40	151.11	0.44	168.83
IC 25	-0.17	-201.36	-0.04	-190.48	0.004	2066.36	-0.40	-293.73	-0.46	-103.32	0.09	480.77	-0.19	-105.55
IC 26	1.36	51.03	0.36	39.15	0.41	34.89	3.77	49.76	0.98	108.30	2.15	54.74	0.47	22.34
IC 28	0.70	32.74	0.13	37.00	0.21	25.20	1.74	38.69	0.79	56.16	1.09	31.72	0.23	16.62
IC 30	1.48	31.60	0.24	41.71	0.30	36.60	4.17	40.27	1.63	56.49	2.08	38.47	0.49	51.14
IC 31	0.84	21.04	0.18	24.41	0.25	15.92	2.20	27.12	0.78	32.92	1.28	19.86	0.32	26.18
IC 32	0.79	21.87	0.16	32.06	0.14	24.19	2.07	32.27	0.81	18.93	1.25	22.18	0.21	13.63
IC 33	0.73	28.63	0.09	47.40	0.24	24.19	1.64	42.35	1.28	46.88	1.00	33.44	0.20	23.07
IC 34	0.67	16.77	0.30	29.59	0.35	25.00	1.52	23.85	0.44	84.82	1.06	17.70	0.35	18.61
IC 35-36	0.94	19.47	0.23	20.32	0.28	18.08	2.49	17.05	1.79	108.57	1.48	22.35	0.40	9.93
IC 37	0.88	27.53	0.15	42.73	0.21	31.33	2.28	36.25	0.98	35.85	1.35	29.96	0.32	27.70
IC 40	0.39	30.36	0.08	32.91	0.11	33.32	1.17	33.84	0.36	55.38	0.50	38.60	0.12	32.31
All	0.68	21.48	0.14	23.06	0.19	18.14	1.86	19.62	0.64	40.12	0.99	23.23	0.25	14.14

Source : Annual Survey of Industries - Various Years

Table 2: Quartiles and Medians in Respect of Seven Ratios

	ROIC	OCF/IC	ICR	DSCR	LR	WCMER	CR
Q_3	0.24	0.3	2.49	1.48	1.22	0.4	0.94
Q_2 = Median	0.16	0.22	2.01	1.18	0.81	0.32	0.73
Q_1	0.08	0.14	1.17	0.57	0.44	0.2	0.39

Table 3: Groupings of 15 Major Industries Based on Value of Quartiles

	ROIC	OCF/IC	ICR	LR	DSCR	WCMER	CR
Group-1 (Excellent performer)	IC 30, IC 34, IC 26, IC 22	IC 30, IC 34, IC 26, IC 22	IC 35-36, IC 26, IC 30, IC 22	IC 22, IC 33, IC 30, IC 35-36	IC 35-36, IC 30, IC 26, IC 22	IC 35-36, IC 24, IC 26, IC 30	IC 35-36, IC 26, IC 30, IC 22
Group-2 (Good performer)	IC 32, IC 20-21, IC 31, IC 35-36	IC 20-21, IC 33, IC 31, IC 35-36	IC 20-21, IC 32, IC 31, IC 37	IC 32, IC 26, IC 37, IC 24	IC 20-21, IC 32, IC 31, IC 37	IC 31, IC 37, IC 34, IC 22	IC 33, IC 32, IC 31, IC 37
Group-3 (Average performer)	IC 40, IC 33, IC 28, IC 37	IC 32, IC 23, IC 28, IC 37	IC 40, IC 34, IC 33, IC 28	IC 34, IC 20-21, IC 31, IC 28	IC 23, IC 33, IC 34, IC 28	IC 33, IC 32, IC 28, IC 20-21	IC 40, IC 34, IC 28, IC 20-21
Group-4 (Below average performer)	IC 25, IC 24, IC 23	IC 25, IC 24, IC 40	IC 25, IC 24, IC 23	IC 25, IC 23, IC 40	IC 25, IC 24, IC 40	IC 25, IC 40, IC 23	IC 25, IC 23, IC 24

Table 4: Clusters of Homogeneous Industries

Clusters	Industry Groups ROIC	Mean of	Mean of OCF/IC	Mean of ICR	Mean of LR	Mean of DSCR	Mean of WCMER
Cluster 1 (Excellent performer)	IC 22, IC 26, IC 30	0.32	0.38	4.33	1.28	2.34	0.45
Cluster 2 (Good performer)	IC 20-21, IC 28, IC 31, IC 32, IC 33, IC 34, IC 35-36, IC 37	0.18	0.24	1.99	0.92	2.21	0.29
Cluster 3 (Average performer)	IC 23, IC 24, IC 40	0.06	0.12	0.70	0.47	0.49	0.24
Cluster 4 (Below average performer)	IC 25	-0.04	-0.004	-0.04	-0.46	0.09	-0.19

Table 5: Findings from the Analysis of Scatter Diagram

Chosen ratios	Consistently good performer (high value of mean with low value of CV)	Inconsistently good performer (high value of mean with high value of CV)	Consistently bad performer (low value of mean and low value of CV)	Worst performer (low value of mean with high value of CV)
ROIC	IC 20-21, IC 22, IC 31, IC 32, IC 34, IC 35-36	IC 26, IC 30	IC 40	IC 23, IC 24, IC 25, IC 28, IC 33, IC 37
OCF/IC	IC 22, IC 31, IC 32, IC 34, IC 35-36	IC 20-21, IC 26, IC 30	IC 28, IC 33	IC 23, IC 24, IC 25, IC 37, IC 40
ICR	IC 20-21, IC 22, IC 31, IC 32, IC 35-36	IC 26, IC 30, IC 37	IC 34, IC 40	IC 23, IC 24, IC 25, IC 28, IC 33
DSCR	IC 20-21, IC 31, IC 32, IC 35-36, IC 37	IC 22, IC 26, IC 30	IC 28, IC 33, IC 34	IC 23, IC 24, IC 25, IC 40
LR	IC 22, IC 32, IC 33, IC 37	IC 24, IC 26, IC 30	IC 28, IC 31, IC 40	IC 20-21, IC 23, IC 25, IC 34, IC 35-36
WCMER	IC 26, IC 34, IC 35-36	IC 22, IC 24, IC 30, IC 37	IC 28, IC 31, IC 32, IC 33	IC 20-21, IC 23, IC 25, IC 40
CR	IC 22, IC 31, IC 35-36, IC 37	IC 26, IC 30	IC 32, IC 33, IC 34	IC 20-21, IC 23, IC 24, IC 25, IC 28, IC 40

Table 6: Characteristics of Industry Groups

Group	Industry	Characteristics
1 (Excellent performer)	IC 22 - Manufacture of beverages, tobacco and related products. IC 26 - Manufacture of textile products (including wearing apparel) IC 30 - Manufacture of basic chemicals and chemical products (except products of petroleum and coal)	• Efficient operating management, better liquidity position, higher capacity utilisation and assets turnover giving rise to satisfactory level of profit margin. • Cash generated from operation can meet the entire interest obligation and two times loan installment obligation. • Share holder's fund can cover more than 50% of total liabilities. • Net working capital can fund about 45% of total liabilities. • Performance is consistently good.

Table 6: Characteristics of Industry Groups (Contd.)

Group	Industry	Characteristics
2 (Good performer)	IC 20-21 - Manufacture of food products IC 28 - Manufacture of paper and paper products and printing, publishing and allied industries IC 31 - Manufacture of rubber, plastic, petroleum and coal products; processing of nuclear fuels IC 32 - Manufacture of non-metallic mineral products IC 33 - Basic metal and alloys industries IC 34 - Manufacture of metal products and parts, except machinery and equipment IC 35-36 - Manufacture of machinery and equipment other than transport equipment IC 37 - Manufacture of transport equipment and parts	• Satisfactory level of operating management, liquidity position, capacity utilisation and assets turnover giving rise to accepted level of profit margin. • Cash generated from operation can meet entire interest obligation and almost two times loan installment obligation indicating satisfactory level of interest and debt servicing capacity. • Share holder's fund can cover almost about 50% of total liabilities. • Net working capital can fund about 30% of total liabilities. • Performance is good but not consistent.
3 (Average performer)	IC 23 - Manufacture of cotton textiles IC 24 - Manufacture of wool, silk and man-made fibre textiles IC 40 - Electricity	• Inefficient operating management, sub-optimum level of capacity utilisation and assets turnover giving rise to moderate level of liquidity and profit margin. • Cash generated from operation is not adequate to meet interest and loan installment obligation indicating poor debt and interest servicing capacity. • Share holder's fund can hardly cover one third of total liabilities. • Net working capital can fund not more than one fourth of total liabilities. • Performance is consistently bad.
4 (Worst performer)	IC 25 - Manufacture of jute and other vegetable fibre textiles (except cotton)	• Worst operating management, capacity utilisation and assets turnover giving rise to incurring such a level of loss that causes liquidity crisis, non payment of interest and debt obligation. • Accumulated losses exceeds net worth. • Current liabilities are much less than current assets.