CHAPTER SIX

PERFORMANCE OF MANUFACTURING INDUSTRIES IN INDIA: THE BACKGROUND OF THE PRESENT ANALYSIS

6.1 Introduction

In this Chapter, we propose to analyse the performance of the Indian industries in terms of a set of financial indicators. The findings of this Chapter would be utilised for developing a signal for sickness at the micro (i.e., company) level. The discussion will be based on the data collected from the Annual Survey of Industries.

The industries in the manufacturing sector in India are grouped according to a standard classification code known as the National Industrial Classification (NIC), which largely follows the international classification code. The codes aim at clubbing various industrial units in certain categories; the categories are formed according to the homogeneity of the units in the production line. The broad categories are described at two digit level. Within a category, further categorization is done at three digit or even four and five digit level on the basis of finer division in the production line. NIC 98 is the latest categorization. The previous one had been in late 1980s, 1987 to be precise. In this dissertation, the time series data on Indian industries had been for the period 1981-1998. These had been collected from official sources (the Annual Survey of Industries, various years, as published by the CSO). These data followed NIC 87 classification code. The major purpose of collecting such data was to classify the two digit industry level data of the ASI in two groups, namely, ‘good performer’ and ‘bad performer’. The performance

57 National Industrial Classification of 1970 (NIC 70) was introduced by the Central Statistical Organisation (CSO) subsequent to the publication of the International Standard Industrial Classification (ISIC) in 1968 by the United Nations Statistical Office.

58 For example, according to NIC 87, manufacture of cotton textiles is categorized in Industry Code 23 (two digit level). It is further categorized into seven, three digit categories, namely, cotton ginning, cleaning and bailing; cotton spinning other than in mills (Charka) etc. In NIC 98, manufacture of textiles is brought under broad category 17 (two digit level) which is divided into three broad groups at three digit level, seven broad classes at four digit level and forty eight subclasses at five digit level.
Chapter Six

had been captured in terms of certain financial indicators as derived from the ASI data\textsuperscript{59}, over the reference period of our study (1981 to 1998). The homogeneity or otherwise in the various industry groups in terms of performance had then been studied. The relevance of such an exercise in the context of studying the industrial sickness in India is that the macro scenario should be considered first so that we understand how the various industries are performing in terms of a few indicators of sickness. The logical follow-up is to analyse the micro scenario, i.e., the scenario in terms of performance at the company level.

At the two digit level there are twenty seven groups of industries identified by twenty seven two digit level industry codes\textsuperscript{60}. National Industrial classification (NIC) 1987 codes and description at two digit level is shown in Appendix Table 6.1.

The ASI data for eighteen successive years from 1981 indicates that there are fifteen major groups of industries at two digit level that account for 92.27 per cent of value of total output, 90.28 per cent of number of workers and 91.91 per cent of invested capital. As we argue in this chapter, the importance of a particular group of industries in the present context can best be captured in terms of these three parameters. Accordingly, the performance of the Indian industries would broadly be captured by the data related to the subset of fifteen such industries. The loss of information, in case we exclude twelve such industries which account for only 7.73 per cent of value of total output, 9.72 per cent of number of workers and 8.09 per cent of invested capital would not be as high as to warrant the inclusion of these industries in an analysis on the performance of Indian industries. We, therefore, found it prudent to concentrate on a select set of fifteen industries for getting an overview of how Indian industries are doing in terms of the set of financial indicators.

\textsuperscript{59} With respect to invested capital, fixed capital, working capital, interest, outstanding loan, depreciation and profit.

\textsuperscript{60} Originally there were twenty nine groups of industries at two digit level. Subsequently, when two digit level industry groups were further divided into three digit categories, industries under IC 20 and IC 21 being of similar nature were clubbed into one Industry Code, namely, IC 20-21. Similar was the case for industry groups under IC 35 and IC 36 which were clubbed under IC 35-36. Hence, there are effectively twenty seven groups of industries at two digit level industry code. See Appendix Table 6.1 for details.
Chapter Six

While performing the empirical exercise, we had to take care of the fact that the time series data in monetary units should be deflated properly so that one gets an inflation adjusted time series data. The data on invested capital, fixed capital, working capital, outstanding loan, total output, total input, depreciation, rent, interest and income in the ASI were deflated by Wholesale Price Index (WPI) with 1982 as the base year; the data on employees cost has been adjusted with general Consumer Price Index (CPI) to get the deflated figure of profit. We are aware of the fact that further precision could have been achieved by considering some sectoral deflators. Since such deflators were not available for each of these items, we decided to use a set of widely used general deflators that would take care of inflation to a large extent.

The performance of Indian industries in the context of a study on sickness would be analysed in terms of a few financial ratios. As we discuss in this chapter, the major financial ratios that might measure the performance in terms of certain quantitative indicators are six in number. These are: Return on Invested Capital (ROIC); Operating Cash Flow to Invested Capital (OCF/IC); Interest Coverage Ratio (ICR); Leverage Ratio (LR); Debt Service Coverage Ratio (DSCR) and Working Capital Management Efficiency Ratio (WCMER). We have also considered the Composite Ratio (CR) which is the simple arithmetic mean of the above six ratios. In this exercise we have selected these indicators as tools for our analyses. The rationale for such a selection is described elaborately in this Chapter (pp 93 to 95).

For empirical analyses, we have considered the time period from 1981 to 1998. The rationale for selecting this time period is that we wanted to empirically analyse the macro level data for a decade immediately preceding the announcement of the New Industrial Policy (1991) and about a decade after the introduction of this policy.

Various statistical techniques including 'cluster analysis' have been used for classifying the Indian industries into two groups, namely, 'bad performing' group and 'good performing' group. Whether the industries have the tendency to diverge from one another over time in terms of the chosen financial indicators has also been studied by applying the concepts of $\sigma$ (dispersion) convergence and $\beta$ (slope) convergence.
In the pages that follow, we elaborate the methodology. The findings of this empirical exercise that would be utilised for constructing a signal for sickness at the firm level have also been discussed elaborately in Chapter Seven.

**6.2 The Major Industries in the Manufacturing Sector in India: The Basis of Selection**

The size of an industry or industry group is always considered to be an indicator of importance of that entity. The size is basically reflected in the contribution of that entity to total value added. The value added described as value of output (net) is, therefore, accepted universally as a measure of the size of an industry or an industry group. Contribution to value added is, of course, the most important indicator. But then, the size is also reflected in terms of the importance of the entity with respect to capital deployed in it and the manpower required or utilised by the entity. The importance of an industry should, therefore, be described in terms of ‘capital’ and ‘labour’, as well.

While selecting the representative industries at two digit NIC level, we considered these factors and decided to select a set of industries that could claim to be representative in nature in terms of all of these three parameters, namely, value of output, capital deployed and manpower utilised. Since the exercise had been performed on the ASI data, we had to examine carefully the coverage of the ASI categories of information so as to find out the nearest mapping of our concepts of value of output, invested or deployed capital and the manpower utilised by various groups of industries. As we observed, the output in the sense of value added could be captured by either of value of products and by-products, total output, net value added and income as given in the ASI furnished set of information. After examining the definitions, we found it prudent to measure the importance of an industry group in terms of its contribution to value added by the ASI given information on ‘value of output’ that contains the contribution of that entity in net value added as well as the value generated in processing a product that might be used for some other industries. Net value added could have been a more relevant measure. But then, net value added which is measured by subtracting input cost from gross value added could be contaminated by variation in valuation of input; valuation of input largely depends on
accounting policies, procedure and practice which has wide variation even within a given industry group. Similarly, value of products and by-products is not dependable for our purpose because such a value does not represent the actual turnover that includes, as the accountants point out, other receipts besides value of sales. Income which is derived from net value added by subtracting interest liability is also not reliable as because the interest commitment depends on the composition of capital which has nothing to do with business turnover – the turnover which depends on the volume of output, the true indicator of the size in terms of its outcome of productive operation. We thus found it necessary to proceed on the basis of the ASI given information on value of output which, according to the ASI definition, is ‘total ex-factory value of products and by-products manufactured as well as other receipts such as receipts from non-industrial services rendered to others, work done for others on material supplied by them, value of electricity produced and sold, sale value of goods sold in the same condition as purchased, addition in stock of semi-finished goods and own construction’.

While considering capital as an indicator of size of an industry, we could take either productive capital (which is equal to fixed capital added to working capital) or invested capital (which is equal to fixed capital added to physical working capital). For our study, we take invested capital and not productive capital as an indicator of importance of an industry group mainly for three reasons. First, the amount owners invest either from equity or loan is deployed for creation of assets, which meet the accounting norm of

61 The Institute of Chartered Accountants of India, New Delhi, had issued Accounting Standard 2 in June 1981 (AS 2) on ‘Valuation of Inventories’ dealing with the principles of valuation of inventories for financial statements. This standard always remained recommendatory in nature until it was replaced or superseded by revision. Accounting Standard 2 (Revised AS 2) comes into effect in respect of accounting periods commencing on or after 1st April, 1999 and is mandatory in nature.

According to revised Accounting Standard 2 on ‘Valuation of Inventories’, effective from 1st April, 1999, inventories should be valued at the lower of cost and net realisable value. The cost of inventories should comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition. The cost of inventories of items that are not ordinarily interchangeable and goods or services produced and segregated for specific projects should be assigned by specific identification of their individual costs. The cost of other inventories should be assigned by using the first-in, first-out (FIFO), or weighted average cost formula. The formula used should reflect the fairest possible approximation to the cost incurred in bringing the items of inventory to their present location and condition.

62 In terms of the ASI, productive capital is the total of fixed capital and working capital. Definition of the latter two terms has already been given in the previous chapter.
'asset'. As we know, under accounting norm, sum of liabilities and owners' equity is equal to total assets. Since invested capital represents fixed capital and physical working capital, sum total of these two items is almost equal to total assets barring receivables, book debts, loans and advances, cash and bank balances and others. Second, if we take productive capital, it would not represent the full assets, since net amount of receivables over payable is included. It may so happen that in a particular year, amount of payable being more than the amount of receivable, excess amount would be deducted from total assets and this may give rise to a biased estimate. Lastly, cash and bank balance, being not an amount invested in the production cycle, may give an incorrect picture about the total amount invested for productive purpose. We, therefore, find it wise to measure capital by the ASI category of 'physical working capital' and not 'working capital' and, inter alia, 'invested capital' and not 'productive capital'. An industry may score high in terms of working capital and not in terms of physical working capital and converse is also true. Finally, we conclude that 'invested capital' and not 'productive capital' represents actual investment made by the industry in any year.

Regarding manpower, as an indicator of importance, we may choose either number of workers or mandays both of which are well documented in the ASI. The standard practice is to measure the size in terms of number of workers deployed in a unit\textsuperscript{63}. We decided not to deviate from the standard practice.

We adopt the following methodology for identifying the group of major industries in India in terms of three parameters, namely, total output, number of workers and invested capital. For each of the twenty seven groups of industries, the percentage share in total

\textsuperscript{63} In accordance with the Factories Act, 1948, a 'factory' is defined as

'Any premises including the precincts thereof:-

(i) wherein ten or more workers are working or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on with the aid of power or is ordinarily so carried on,

\textbf{or}

(ii) wherein twenty or more workers are working or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on without the aid of power or is ordinarily so carried on, but does not include a mine subject to the operation of the Mines Act, 1952, or a mobile unit belonging to the armed forces of the Union, or a railway running shed, or a hotel, restaurant or eating place.'
output for each of the industry groups was calculated for eighteen successive years. The percentage shares were then averaged out. We then arranged the industry groups in descending order in terms of the average percentage share in total output. A similar exercise was performed in terms of the other two parameters, namely, number of workers and invested capital. The industries for which the cumulative percentage share had been around 90 per cent for each of the parameters were then identified. We find that fifteen industry groups have 90.52 per cent share in terms of number of workers; fourteen industry groups have 91.52 per cent share in terms of total output and twelve industry groups have 91.42 per cent share in terms of invested capital. Amongst these industry groups, eleven industry groups are common. However, these eleven industry groups account for 86 per cent of value of total output, 75 per cent of number of workers and 88 per cent of invested capital. We wanted to include as many industries as possible with a cut-off at around 90 per cent for each of the variables. We introduced trial and error process with eleven common industries and number of workers as the starting variable because the number of industries having 90.52 per cent share with respect to number of workers is fifteen which is the maximum number of industries that can be included. We then start a process of inclusion and exclusion to find out the fifteen common industry groups that account for at least 90 per cent share with respect to all the three parameters. After a few trials, we found that the replacement of industry group IC 39 by industry group IC 26 forms a set of fifteen industry groups that account for 92.27 per cent of value of total output, 90.28 per cent of number of workers and 91.91 per cent of invested capital. We, therefore, decided to take these fifteen industry groups as major industries in the Indian manufacturing sector. List of these fifteen Industry groups is given in Appendix Table 6.2. The loss of information as a result of exclusion of twelve industry groups had been quite low. The residual twelve industries could improve the percentage share not by more than 10 per cent with respect to any of the parameters. Hence, the simulation was discontinued at this stage. Industrywise percentage share in number of workers, invested capital and value of output is shown in Appendix Table 6.3.

64 The industry groups which were not included in this study were 'manufacture of wood and wood products; furniture and fixtures' (IC 27); 'manufacture of leather and products of leather fur and substitutes of leather' (IC 29); 'other manufacturing industries' (IC 38); 'repair of capital goods' (IC 39); 'gas and steam generation and distribution through pipes' (IC 41); 'water works and supply' (IC 42); 'non-conventional energy generation and distribution' (IC 43); 'storage and warehousing services' (IC 74); 'sanitation and similar services such as garbage and sewage disposal' (IC 91); 'motion picture and video film production' (IC 95); 'laundry, cleaning and dyeing services' (IC 96) and 'repair services' (IC 97).
6.3 Financial Ratios for Measuring Performance: The Rationale

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. While it is true that productivity is a powerful indicator of efficiency, the inner strength of an organisation is often found to be better revealed in terms of financial parameters, which try to focus on the performance of an economic unit in terms of utilisation of available resources together with management of liabilities. This is so because such measures help one understand whether the unit is maintaining a reasonably good financial health so as to maintain its sustainability after amortising debts with payment of interest dues. Economic analysis in terms of productivity growth does not go into this inside story of business; as a result, it fails to reveal how the unit is doing in terms of its repaying capacity, return on invested capital, cash generation from operation and management efficiency in controlling current assets and current liabilities so much so that the unit might not go bankrupt or the unit might maintain sustainable growth.

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 which an economic analysis rarely addresses. For example, an improved productivity which is reflected in a reduced cost of production might not necessarily mean a high return on invested capital because the rate of return depends on the rate of profit which is not necessarily accelerated with a reduction in the cost of production.

What we submit is not a theoretical conjecture. In case of the Indian manufacturing industries, it is observed that productivity of capital (physical) in industry group IC 26 (manufacture of textile products including wearing apparel) is rather low. Return on

---

65 It has been observed that the productive efficiency of an economic unit is not fully captured either in terms of capital or labour. Even the Neo Classical Product Exhaustion Theorem with two factors of production, capital (K) and labour (L) fails to explain total production as observed in the context of the US economy.

66 Profit being the difference between revenue and cost, a decrease in cost would be reflected in higher profit if revenue remains the same or alternately, if the rate of growth of revenue is more than the rate of declining of cost.
investment, on the other hand, is found to be quite high in this sector\textsuperscript{67}. This describes the background as also the motivation of selecting financial ratios for examining the financial health of the Indian industries. We submit that the performance analysis of industry by the measures of productivity growth cannot address the core issues of the problem. Productivity \textit{per se} does not tell us anything about the inner strength or weakness of a unit or a set of units constituting the industry. The issue is addressed better in terms of a select set of financial parameters. In the context of the Indian manufacturing industries, there are several studies on the performance of productivity growth\textsuperscript{68}. Interindustry group variation in terms of labour productivity, incremental capital output ratio (ICOR), investment ratio, rate of profit, etc., has also been discussed on the basis of the ASI data by some of the researchers, namely, Balakrishnan and Suresh Babu (2003)\textsuperscript{69}, but no empirical exercise has yet been attempted to study the performance of the Indian manufacturing sector in terms of financial parameters. The modest goal of our study is to take up such an exercise with respect to the Indian manufacturing sector. Since the received wisdom on the subject is based mostly on the ASI data on the factory sector, we develop our exercise with respect to the same reference frame. In order to maintain conformity, we have utilised the ASI data for deriving certain financial indicators on the basis of the ASI given categories, such as, profit, fixed capital, physical working capital, working capital, invested capital, outstanding loan, etc. The ASI data that we have utilised for empirical analyses are available at two digit level National Industrial Classification (NIC). The coverage under the present study is roughly for about two decades—1980s and 1990s. The rationale for selecting these two decades is that we wanted to perform this exercise for a decade immediately preceding the announcement of the New Industrial Policy (1991) and about a decade after the introduction of this policy\textsuperscript{70}.

\textsuperscript{67} Material productivity is 1.74 and it ranked 7\textsuperscript{th}. ROIC is 0.36 and it ranked 2\textsuperscript{nd} amongst the fifteen selected industries.


\textsuperscript{69} Balakrishnan, Pulapre and M Suresh Babu (2003). pp 3997-4001.

\textsuperscript{70} The data covers the period 1981 to 1998. We did not consider the last two years of the 90’s because we did not want to extend our discussion covering industries under NIC 98.
Chapter Six

We propose to consider six financial ratios for examining the financial health of the Indian industries. The ratios have been selected with a view to having a proper judgement about profitability, liquidity, leverage, debt-servicing capacity and efficiency in regard to management of assets and liabilities of an industrial sector. The proposed ratios are 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) and Working Capital Management Efficiency Ratio (WCMER). We submit that these six ratios mostly cover the aspects of financial health of an industry; the morbidity or sickness would definitely be revealed somewhere if a diagnostic check is done in terms of these ratios. The reason for such a submission is that the financial health of a unit is conceived mostly in terms of these parameters. Elaborating the concepts behind these ratios is necessary in order to explain this point.

6.4 Proposed Financial Ratios: The Definitions and Concepts

ROIC has been 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 is another important indicator of the existing health of a company because this actually determines the power to operate in business—a concept that is hardly taken care of in economic analysis. OCF / IC is conceptualised as the ratio of whatever operating cash has been generated by a company with invested capital. The ratio would, therefore, have profit, interest and depreciation entering in the numerator of the ratio. ICR is the other indicator of the financial health of a company. This can be visualised as interest as a proportion to the total return, namely, the sum total of interest and profit. DSCR is the next ratio in the series being conceptualised as operating cash flow expressed as a fraction of interest paid and 20 per cent of outstanding loan. Since any firm would desire a payback period of five years, one-fifth of the loan has been considered.

71 Bank interest has to be paid by a company out of the return from invested capital; this, however, is not captured by 'profit' as given in the annual report.
These ratios might be interrelated to each other\(^\text{72}\). This is so because ROIC is the basic ratio and other ratios originate in variation to this basic ratio. We would, however, submit that these ratios have independent roles in revealing the financial health of a unit. For example, while ROIC gives an overall indication of the profitability of a company, it does not necessarily imply that cash generated from operation is adequate to meet the various obligations of the firm—a limitation which is met by OCF/IC. Similarly, ICR is often considered as vital while examining the financial health of a firm. Even if ROIC is good, debt-servicing or interest-servicing capacity of a company may not be good because much depends on the decision makers of the company as regards how to make allocations in the profit and loss account or balance sheet of a company.

We have taken two other ratios, namely, WCMER and LR. WCMER measures liquid assets in relation to the firm’s size. This has been derived from dividing working capital by invested capital. We submit that this is an indicator of the performance of a firm; 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 the availability of fixed assets. Finally, we take up the LR. The concept is that a favourable LR for a particular industry would indicate less dependence on outside loans compared to its shareholders’ fund (the concept is essentially the equity-debt ratio).

LR and WCMER are two crucial concepts to the financial analysts. WCMER indicates the level of efficiency in working capital management while LR indicates the extent of inner strength of a company (i.e., how much does a firm depend on outside borrowings). It is expected that the correlation between these two ratios and ROIC or OCF/IC would be rather low. The return on investment does not necessarily get associated with WCMER or LR particularly in the context of the Indian industries, where the general quality of working capital management is poor and so also the management of the leverage ratio.

\(^{72}\) As we have calculated these ratios with respect to the Indian industries for a period of eighteen years, a strong correlation has been found to exist in the pairwise consideration of these variables. For example, correlation between ROIC and OCF/IC is 0.993, ROIC and ICR is 0.87, ROIC and DSCR is 0.894. For all other values see Appendix Table 6.4.
ROIC, the first ratio of our study is an indicator of operating efficiency of the firm. The second ratio indicates cash generation capacity from the operation. A high interest coverage ratio is indicative of good interest payment capacity of the firm. A favourable leverage ratio for a particular industry indicates less dependency on outside loans compared to its shareholders' fund. It is basically the equity-debt ratio. A high DSCR indicates higher debt-servicing capacity and hence, points to a favourable financial strength of a firm. A high WCMER indicates how efficiently the working capital (current assets less current liabilities) is managed by that industry.

To start with, we presume that all the ratios are equally important in predicting financial health of industries and hence, while considering the mean of these ratios, we give equal weightage to all the six derived ratios. Since our study is based on eighteen years' data, fluctuation in weightage would get set off over the long period. Besides, these ratios throwing up equal useful signals about overall managerial effectiveness deserve equal footings. Out of the selected six ratios, there are three basic ratios, namely, ROIC, LR and WCMER. Others are derived from ROIC. These derived ratios should also be considered in order to get a better insight into the problem of industrial sickness.

6.5 Deriving the Ratios from the ASI Data

The financial ratios that we have proposed to use with respect to the Indian industries can be accounted for by considering the company level data as given in the balance sheet or profit and loss account of a company. There is a statutory obligation under the Companies Act that the companies would provide such information and these information would be made available to the public. An analysis on the basis of the balance sheet data would help one understand the micro level reality. Such data can also

---

73 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)
be grouped according to the purpose of the researcher so that one can get an idea about the macro scenario of the manufacturing industries in India. We, however, refrain from utilising the firm level data for analysing the financial situation in the Indian industries. A comprehensive scenario with respect to the Indian industries can only be drawn by considering the relevant data with respect to all the units in an industrial group. As one knows, this can only be done by collecting the relevant information from the ASI. The ASI data is collected and collated on the basis of both census and sample survey of production units. The ASI thus provides a reasonably comprehensive set of data on the industrial sector in India. In this dissertation, the proposed financial ratios for macro level analysis have been calculated at the two digit level NIC 87 on the basis of the factory sector data of the ASI.

In order to construct such ratios, the sources of data would be from the ASI given items such as, profit, fixed capital, invested capital, physical working capital, working capital, outstanding loan, interest, employees cost, etc. These items are used to derive the six financial ratios, namely, ROIC, OCF/IC, ICR, DSCR, LR and WCMER. Conceptualisation of the six ratios in terms of the ASI categories has already been done in Chapter Five (pp 77 to 82). Briefly speaking, ROIC can be conceptualised as \( \frac{\text{profit} + \text{interest}}{\text{invested capital}} \); OCF/IC as \( \frac{\text{profit} + \text{interest} + \text{depreciation}}{\text{invested capital}} \); ICR as \( \frac{\text{profit} + \text{interest}}{\text{interest}} \); LR as \( \frac{\text{fixed capital} + \text{working capital} - \text{outstanding loan}}{\text{outstanding loan}} \); DSCR as \( \frac{\text{profit} + \text{interest} + \text{depreciation}}{\text{interest paid} + 20 \text{ per cent of outstanding loan}} \) and WCMER as \( \frac{\text{working capital}}{\text{invested capital}} \). The crucial input which is necessary for calculation of four out of the six derived ratios is 'profit'. We have derived 'profit' in our study in the following manner: total output (−) total input (materials consumed, fuels consumed and others) = gross value added. Gross value added (−) depreciation = net value added. Net value added (−) rent (−) interest = income. Income (−) employees cost (total emoluments inclusive of salaries and wages + provident fund and others) = profit. Some other terms used from the ASI are invested

74 CMIE organises these data with respect to ten thousand companies. There is a user-friendly package for utilising this data for further analyses.
capital, working capital, fixed capital, outstanding loan, etc. Definitions of all these items as per the Annual Survey of Industries are already given in Chapter Five (pp 77 to 82). All these terms have been defined as per the Annual Survey of Industries.

Having done this, we utilise the derived ratios with respect to twenty seven categories of industries appearing in the ASI during the period 1981 to 1998. After initial screening, we find that out of twenty nine industry groups, there are fifteen industry groups in the Indian manufacturing sector that account for 92.27 per cent of value of output, 90.28 per cent of number of workers and 91.91 per cent of invested capital. Thus, exclusion of balance twelve industry groups which account for only 7.73 per cent of value of total output, 9.72 per cent of number of workers and 8.09 per cent of invested capital, would not affect the result of our analyses on the performance of the Indian industries. We have, therefore, finally selected fifteen such major industry groups for performing our analyses.

These fifteen selected industry groups were then considered in terms of the proposed six ratios, the purpose of which was to consider interindustry variation in performance, so that the manufacturing industries in India could be grouped in terms of their performance. Given that the weak performers would have the tendency to become sick, when we consider the intertemporal behaviour for a considerably long period, such an analysis is expected to provide an idea about the propensity to become sick with respect to the Indian industries in the manufacturing sector. The strength of the Indian industries would also be revealed as we consider the better performing categories in this sector.

The period of study is from 1981 to 1998. Rationale for choosing these years for our study has been pointed out earlier in this Chapter.
6.6 Summary and Conclusion

To sum up the discussion in this Chapter, for a macro level discussion on industrial sickness, we have first considered the issue of selecting the major industry groups on which the empirical exercise would be performed. As we observe, not much information would be lost if we confine the discussion to a set of fifteen industry groups at NIC 87 at two digit level. The proposed financial ratios for analysing the performance of industries at the macro level have then been introduced. To find a proper mapping between the ASI categories of information and the information we need for deriving the proposed financial ratios for the selected set of industries, an extensive discussion on certain conceptual issues and the methods of translating them in the language of empirical tools was necessary. This has also been done in the previous pages of this Chapter.

We would now present the findings of this exercise on the ASI data for the period 1981 to 1998 in the next Chapter.
References


