Chapter – IX

SUMMARY AND CONCLUSIONS

In the developing nations like India, industrialisation is a *sine-qua-non* of rapid economic development as it is not only a generator of economic growth but also serves as a transformer of socio economic and institutional set-up of the economy. It is generally believed that industrialisation would create extensive employment opportunities by absorbing the excess labour released by the rural sector and raise production and productivity along with the standard of living. However, for a labour surplus, primary sector based dualistic economy like India, it is not feasible to directly shift the structure of the economy from the primary sector to the ultra modern large scale sector using the advance labour-esque technology. It is therefore, recommended that these countries should go in for the development of small scale industry which can effectively use the inputs produced by the primary sector and thereby strengthen the agriculture industry linkages.

The small scale industries occupy a very important place in the Indian economy as they provide immediate large scale employment and have comparatively higher labour capital ratio; need shorter gestation periods and relatively smaller markets to be economic; need low investments; offer a method of ensuring a more equitable distribution of national income and facilitate effective mobilisation of capital and skill; stimulate the growth of industrial entrepreneurship and promote a more diffused pattern of ownership and location. This sector is considered the harbinger of economic progress and has stemmed out from India’s own skill, resource, enterprise and culture and thus, is considered as elixir for the ills of a developing economy like India.
The Government of India fully realised the socio economic significance of this sector and thus, initiated several policy measures for its development. Although, the policies emphasised technological upgradation of small scale industries as crucial for improving their competitive strength, yet they created a paradoxical situation by protecting these units indiscriminately. As a result, even after the policy support for more than four decades, they remained too small and technologically backward to be competitive. The major problems faced by this sector relate to low factor productivity, increased capital intensity, inadequate credibility, incompetent marketing, low capacity utilisation and cheaper imports from other countries. Rapidly changing business environment due to globalisation and liberalisation has increased the role of technology and scale in enhancing the competitive strength. There has been a shift from ‘policy regulation’ to ‘market orientation’ all over the world through liberalisation of the state controls on economic transactions. Globalisation is taking place in the sense that all the economies are becoming highly integrated and these two phenomena are together posing significant challenges to the individual enterprises. In this context, a study of economic efficiency and productivity of small scale industrial sector in liberalised regime assumes significance.

The present study is an endeavour in this direction and effectively utilises the measures of economic efficiency, technical efficiency, and Total Factor Productivity (TFP) growth to evaluate the performance and growth potential of small scale industrial sector in India. The main aim of the present study is to examine whether the process of liberalisation has significantly affected output, employment and productivity growth of Indian small scale industrial sector along with its impact on economic and technical efficiencies of this sector.
More specifically, the objectives of the study were:

1) To study the level and growth pattern of Indian small scale industrial sector before and after liberalisation;

2) To study the growth and magnitude of sickness in small scale industrial sector before and after liberalisation;

3) To examine the impact of liberalisation on economic and technical efficiencies of small scale industrial sector of India;

4) To evaluate the impact of liberalisation on total factor productivity growth of Indian small scale industrial sector;

5) To study the impact of globalisation on Indian small scale industrial sector under the WTO regime; and

6) To draw policy implications from the empirical results and suggest suitable measures.

To pursue the aforementioned objectives, the study has been divided into nine chapters. The first chapter is introductory in nature and discusses the role that Indian manufacturing sector in general and small scale industrial sector in particular, plays in accelerating the tempo of economic development in a developing country like India. The chapter also focuses on the various policies and five year plans designed since independence to upgrade and safeguard the small scale industrial sector along with the rationale to evaluate its performance. A thorough discussion regarding the development of this industry during the plan periods depicts an urgency to restructure and reformulate the programmes and policies dealing with small scale sector to meet the emerging challenges of liberalisation and globalisation.
The second chapter provides a detailed review of literature on measuring economic efficiency, technical efficiency, and total factor productivity growth in Indian manufacturing in general and small scale industry in particular. The survey of empirical literature reveals that there exists scant literature to evaluate the growth performance of Indian small scale industry using the indicators of economic efficiency, technical efficiency and total factor productivity growth. The present study is, therefore, an attempt in this direction and incorporates the major considerations relating to the measurement of economic and technical efficiencies and productivity performance in Indian small scale industrial sector.

The third chapter offers discussion over the construction of input and output variables and methods to measure and decompose economic efficiency and total factor productivity growth with the help of Data Envelopment Analysis (DEA) technique. The DEA based technique of efficiency measurement is best suited for the small sample datasets and has been used in the present study. The economic and technical efficiencies for the small scale industry at 2-digit level of aggregation has been estimated using the Annual Survey of Industries (ASI) dataset over the period 1980-81 to 2003-04. Following the existing literature, small enterprises have been defined as those employing between 10 and 99 employees (firms with less than 10 employees are not covered in the ASI).

In the present study mostly tabular analysis and growth rates have been used to explain the various characteristics of Indian small scale industrial sector. The average annual growth rates of the variables under consideration have been estimated using the linear-spline function also known as piecewise semi-log trend. The application of linear-spline function helps to obtain the growth rates of more than one period in single regression estimation. The use of such a regression model becomes relevant when a significant structural break exists in the time series under evaluation. Although, the periods of estimated growth rates differ
according to the availability of the data, the structural break is common in the year 1990-91. Thus, any data for the pre-liberalisation period belongs to the period up to 1990-91, whereas figures included in the post-liberalisation period include information after 1990-91. For example, the growth of working capital gap has been estimated for the period 1973-74 to 2004-05, using the linear-spline function, whereas the growth rates of the Indian manufacturing sector have been obtained for the period 1980-81 to 2003-04. Further, the Granger causality test has been applied for analysing the cause and effect relationship between working capital gap and sickness in the small scale industrial sector.

The technique of Data Envelopment Analysis (DEA) has been used to bifurcate economic efficiency of the Indian small scale industrial sector into two mutually exclusive and non-additive components namely, Overall Technical Efficiency (OTE) and Allocative Efficiency (AE). The OTE has been further decomposed into Managerial Efficiency [Pure Technical Efficiency (PTE)] and Scale Efficiency (SE) for the period 1980-81 to 2003-04. To assess the impact of factors, namely, capital intensity, SKILL and RETURN, on efficiency performance of small scale industrial sector, Tobit regression analysis has been applied. The use of Tobit regression has been preferred over the ordinary least square regression because the efficiency scores obtained using DEA method are censored between the range 0 and 1 and also in case of censored models, the Ordinary Least Square (OLS) estimates do not remain unbiased and become less efficient.

The total factor productivity growth in Indian small scale Industrial sector has been worked out with the help of Malmquist Productivity Index (MPI) which decomposed the productivity growth into two mutually exclusive and non-additive components, namely technical change (TCH) and efficiency change (ECH). The technical change reflects improvement in technological transfer that yields
innovations and better technological adoptions among the firms, whereas, technical efficiency change is a proxy of catching up, which indicates the movement of a decision making unit towards best-practice production technology. In addition, the convergence analysis has been performed to test the validity of learning-by-doing hypothesis in the Indian small scale industrial sector. Two types of convergence have been evaluated namely $\sigma$- and $\beta$-convergence. The $\sigma$-convergence hypothesis has been evaluated to test whether the growth inequalities between the industrial groups are declining over the study period or not. The variance between the efficiency growth rates of different industrial groups has been utilised as the proxy of growth inequalities. However, $\beta$-convergence methodology has been used to check cross-over hypothesis. The validity of cross-over hypothesis indicates whether the initially lagged industrial groups are growing at a faster rate in comparison to the initially best-practice industrial groups or not. Moreover, the opportunities and challenges being confronted by Indian small scale industrial sector in the era of globalisation have been examined through a SWOT analysis.

The fourth chapter provides an assessment of the growth performance of Indian manufacturing industry in general and small scale industrial sector in particular. An attempt has been made to examine the impact of economic liberalisation on the growth performance of both these sectors. The trends of major indicators relating to output, employment, exports and number of units operating under small scale industrial sector of India have been discussed in detail.

The examination of growth performance of both the sectors showed that although India provided fillip to the liberalisation process to make Indian manufacturing industries more competitive yet the results portray a gloomy picture. The growth rate of value added in the manufacturing sector decelerated during the post-liberalisation in comparison to the pre-liberalisation period.
Besides, the declining trend in the manufacturing sector, there was acceleration during the post-liberalisation period in the growth rates of employment and fixed capital relative to the pre-liberalisation period in the manufacturing sector. Therefore, use of appropriate technology and optimum allocation of resources becomes a pre-requisite to achieve greater economies of scale in Indian manufacturing sector.

The analysis of growth of small scale industrial sector reveals a substantial horizontal growth of this sector in terms of number of units during the entire study period. However, during the post-liberalisation period a decelerating trend has been observed in the growth of number of units. The production of small scale industrial sector grew at the rate of 10.21 percent per annum during the entire period. However, a decline in the growth rate of production has been observed after the introduction of deregulatory policies in the year 1991. The same trend has been observed in case of variables like employment and exports of Indian small scale industrial sector. This sector needs many corrective steps to succeed in the twenty first century and more so with the slowing down of economies of the US and European Union on one hand ever-increasing competition from the Chinese economy on the other.

The fifth chapter analyses the phenomenon of sickness and its major causes in the Indian small scale industrial sector. The financial infrastructure and various support measures undertaken by the government for the development of this sector have also been discussed in detail in the chapter. The analysis reveals that the sluggishness in the growth performance of Indian small scale industrial sector stems from the increasing number of sick units. The magnitude of sickness in small scale industrial sickness is quite enormous as 1,14,132 units were sick in the small scale sector, while 2982 and 1010 units were sick and weak, respectively in the non-SSI sector during the year 2007. Moreover, on analysing the growth rates
of amount outstanding for these sectors for the period 1987 to 2007, it was found that for the sick small scale industrial units the growth rate of amount outstanding was 5.42 percent while for the sick non-SSI’s and weak non-SSI’s these were 11.44 percent and 6.34 percent, respectively. Further, 96.62 percent of total sick and weak units in the overall industrial sector of India were found to be the affiliates of small scale sector while the remaining 3.38 percent of sickness in Indian industrial sector has been observed due to sick and weak units in the non-SSI sector. On examining the percentage share of amount outstanding it has been observed that large and medium sick and weak units (sick and weak non-SSI’s) locked up more than 80 percent of the outstanding bank credit. This shows that from the point of view of non-performing assets (NPAs), non-SSI’s have been affected badly as compared to their smaller counterparts for which this figure has been less than 20 percent. The high percentage of sick units in small scale sector reiterates the necessity to reformulate the very policies dealing with the small scale industrial sector in the liberalised regime.

The study reveals that the rising working capital gap is one of the major factors causing sickness in the Indian small scale industrial sector. A shortfall of working capital to the tune of Rs. 1,761,040 crore has been seen for the year 2004-05. Further, on examining the growth rate of working capital gap (WCG) over the period 1973-74 to 2004-05, it has been observed that the same is rising at a growth rate of 7.99 percent. The growth rate of working capital gap increased from 5.6 percent during the pre-liberalisation period to 9.62 percent in the post-liberalisation period. Hence, this reflects a considerable shortfall in the availability of credit to small scale industrial sector from banks especially during the liberalised era. Furthermore, for analysing the cause and affect relationship between working capital gap and sickness in small scale industrial sector of India, Granger causality test has been applied. The test proved that there exists unidirectional causality from working capital gap to sickness, thereby showing
that the gap in working capital is a significant driver of sickness in the Indian small scale industrial sector.

The Government of India framed an elaborate financial infrastructure comprising of various financial institutions and corporations, namely, Small Industries Development Bank of India (SIDBI), Commercial Banks, Small Industries Development Corporations (SIDCs), State Finance Corporations (SFCs), National Bank for Agriculture and Rural Development (NABARD), Regional Rural Banks to meet the credit needs of small industry. But over the years, the organisational framework failed to render any significant dent on the efficiency of small scale enterprises because of an overlapping in functioning of several government organisations and virtual absence of inter-institutional coordination in the working of these agencies.

The sixth chapter attempts to measure and decompose the economic efficiency of small scale industrial sector of India into technical and allocative efficiencies. Using the ASI 2-digit data, the study observed an average efficiency score of 0.7072 i.e. there exists 29.28 percent of economic inefficiency in the Indian small scale industry. Further, it can be inferred that small scale industry can reduce its production cost by 29.28 percent by reallocating its inputs. To determine the impact of economic liberalisation, the entire study period has been bifurcated into two sub-periods: pre-liberalisation period (1980-81 to 1990-91) and post liberalisation period (1991-92 to 2003-04). It has been found that except food product industry and transport equipment industry, all other industries have experienced a decline in economic efficiency during the post-liberalisation period. The scan for the causes of economic inefficiency reflects that 24.94 percent point of 29.28 percent economic inefficiency is reflected by the technical inefficiency. Therefore, technical inefficiency is a dominant factor responsible for economic inefficiency in the Indian small scale sector.
Further, while decomposing overall technical efficiency into managerial efficiency (pure technical efficiency) and scale efficiency, it has been observed that 15.18 percent points of 24.94 percent overall technical inefficiency (OTIE) is due to improper management practices and the remaining percentage of overall technical inefficiency is due to scale effect. Hence, managerial inefficiency dominates the scale inefficiency to determine overall technical inefficiency. Therefore, proper management in small scale sector of India can help to augment value-added in this sector. The search for another component of economic inefficiency, namely, allocative inefficiency reflects that 6.33 percent points of 29.28 percent economic inefficiency is due to improper allocation of factor inputs. Comparing the allocative efficiency for the two sub periods, a different trend has been observed. An improvement in allocative efficiency during the post-liberalisation period has been noticed. The overall conclusion that emerges from the decomposition of economic efficiency into technical efficiency and allocative efficiency is that the overall technical inefficiency (OTIE) is more responsible for economic inefficiency and allocative inefficiency is a weak source of it. Further, improper management of the resources is more responsible for causing overall technical inefficiency rather than scale inefficiency. Thus, we can say that managerial inefficiency is a dominant source of economic inefficiency whereas scale inefficiency and allocative inefficiency are relatively feeble sources of economic inefficiency.

The search for factors affecting economic efficiency ends up with the following conclusions:

i) All the three factors, capital intensity (K/L), SKILL and RETURN are negatively and significantly affecting the measure of economic inefficiency;
ii) improvement in overall technical efficiency (OTE) requires an improvement in capital intensity and skill because these two variables are affecting technical inefficiency negatively and significantly; and

iii) an improvement in capital intensity and skilled man-power is required to violate the economic inefficiency in the small scale sector of India.

In the seventh chapter, growth dynamics of the Indian small scale industrial sector have been evaluated by using both partial and Total Factor Productivity (TFP) indices. The analysis reveals that the labour productivity of small scale industrial sector has grown at an average annual growth rate of 1.383 percent during the entire study period. The labour productivity was found to be 0.912 percent during the pre-liberalisation period which accelerated by 1.216 percentage points and was observed to be 2.128 percent per annum during the post-liberalisation period. Thus, the growth of labour productivity increased during the post-liberalisation period relative to the pre-liberalisation period. Another partial productivity measure, namely, capital productivity, has grown at an average annual growth rate of 1.255 percent per annum during the entire study period. The comparative analysis of capital productivity for the two periods reveals an acceleration in capital productivity during the post-liberalisation period by 0.738 percentage points (i.e., from 0.928 percent to 1.666 percent).

The Total Factor Productivity Growth (TFPG) has been observed to be negative to the tune of -0.57 percent per annum during the period 1980-81 to 2003-04. However, a comparison of the two sub-periods reveals that the TFP growth has turned out to be positive (reflected by TFP above unity) during the post-liberalisation period in comparison to the negative TFP growth during the pre-liberalisation period. Thus, it can be inferred that the TFP growth has become positive during the post-liberalisation period, which is an indicator of sustainable growth in the small scale sector of India in the forthcoming years. The
decomposition of TFP growth into two components viz. technical efficiency change and technical progress reveals an efficiency regress during the entire study period at the rate of 0.48 percent per annum. In addition, it has been observed that 0.48 percentage points of 0.57 percent negative TFP growth comes from efficiency change. Thus, negative efficiency growth is the dominant source and technical progress is a feeble source of deceleration in TFP growth in Indian small scale industrial sector.

The second component of TFP growth viz. technical progress has been observed to be contributing -0.09 percentage points of -0.57 percent TFP regress in Indian small scale industrial sector. The empirical results support our earlier finding that efficiency regress is a dominant factor and technological regress is relatively a scant source of negative TFP growth in the small scale sector of India. A comparison of the rate of technical progress during the pre and post-liberalisation periods reflects a decline in the rate of technical progress during the post-liberalisation period as compared to the positive growth during the pre-liberalisation period. The search for the factors affecting TFP growth ends up with the conclusion that two variables viz. KLGROW and WGGROW are positively and significantly affecting TFP growth. Hence, it can safely be inferred that any policy based upon the modernisation and hike in emoluments can help the Indian small scale industrial sector to achieve a sustained growth. The improvement in economic efficiency can help to increase the profitability of the Indian small scale sector and some part of these gains can be transferred to the labour by increasing their wage rates and therefore, enhancing the TFP growth. It has been observed from the empirical analysis that the phenomenon of convergence has been missing in Indian small scale industrial sector in the post-liberalisation period. Therefore, growth inequalities between industrial group under evaluation failed to decline over the study period.
The eighth chapter discusses the future challenges likely to be faced by the Indian manufacturing sector in general and small scale industrial sector in particular in the era of globalisation. It has been observed that the liberalisation process failed to impart significant impact on the performance of Indian manufacturing sector as World Global Competitive Ranking Report showed that there are significant barriers which stand in the way of Indian manufacturing sector growing to its full potential. The liberalisation policy has posed certain challenges as well as opportunities to the small scale sector. The challenges are in the form of increased competition arising out of reduced protection due to removal of restrictions on imports and lowering of tariffs. Opportunities have come in the form of access to better technology, availability of a variety of raw materials and components, impetus to quality, efficiency and opportunity to restructure and to diversify.

The emergence of multilateral trade regime, WTO conditionalities have added urgency to the task of enhancing competitiveness. It is essential to remove the constraints which limit the competitive strength of Indian industry. It is not only the question of India coping with the WTO regime but far greater issue of how India can leverage the benefits of larger access to global market. The developing countries need to evolve new policies to suit the requirements of several changes in the field of industry, and trade, besides entrepreneurs adjusting to the new environment. Further, the provisions/agreements which are likely to affect the Indian small scale industrial sector under the WTO regime are Quantitative Restrictions (QRs), tariff reductions, anti-dumping practices, subsidies and countervailing measures, Technical Barriers to Trade (TBT), Trade Related Investment Measures (TRIMs) and Trade Related Intellectual Property Rights (TRIPs). With the removal of Quantitative Restrictions, all reserved items have become freely importable, therefore, the small scale industrial sector will have to be safeguarded by the government.
On the basis of empirical findings, the study has brought out the following policy implications to improve the performance of Indian small scale industrial sector in the liberalised regime:

- Firstly, though consistent efforts have been made by the government to safeguard the interest of small scale industrial sector, yet the growth of this sector decelerated in the post-liberalisation period. Therefore, technologically vibrant and internationally competitive small scale industrial sector needs to be encouraged to make a sustainable contribution to economic growth.

- Secondly, the foremost reason of sickness in Indian small scale industrial sector was observed to be the shortage of working capital. Therefore, in order to give new impetus to small scale sector, the flow of institutional finance for meeting term credit and working capital requirements of small enterprises needs to be improved.

- Thirdly, in order to enhance the level of economic efficiency in general and technical efficiency in particular, the learning-by-doing process needs to be speeded up. Hence, the government needs to encourage the setting up of management consultancy houses which can provide expert advice to small entrepreneurs to improvise their managerial efficiency.

- Fourthly, to improve the competitiveness of the Indian small scale industrial sector in WTO regime, there is need of growth promoting ingredients such as human capital endowments, better marketing and infrastructural facilities alongwith cost effectiveness in the era of liberalisation.

- Fifthly, the analysis revealed that technical regress is responsible for negative TFP growth in Indian small scale industrial sector, therefore, India
requires to develop indigenous technological capabilities which can match international standards to improve productivity levels in the liberalised regime.

- Sixthly, the impact of competition provided through the opening up of trade boundaries seems to be trickling down to the Indian small scale industrial sector. The present competitive environment would surely improve the productivity of this sector if the policy is implemented with some safety guards by the government.

Hence, the small scale industrial sector will play a more dynamic role in the years to come through effective implementation of process of modernisation and technology upgradation, improved flow of finance for term credit and working capital requirements, better marketing of products of small units through establishment of market intelligence cell and proper strengthening of linkages between large and small enterprises. Moreover, the learning-by-doing process needs to be hastened to enhance the efficiency levels and promote managerial expertise in the small scale industrial sector. Also, the competitiveness of Indian small scale industrial sector can be improved by increasing its productivity, efficiency and financial viability so that this sector acts as an engine of inclusive growth in the liberalised regime.