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CHAPTER I
INTRODUCTION

1.1 Introduction

India began liberalizing its economy and in particular, its manufacturing sector over a decade ago. One of the objectives of liberalization has been to make Indian industries more efficient and globally competitive. Towards this end, the government of India has pursued three sets of reforms; one, disbanding complex network of industrial controls, industrial licensing, and permits system. Two, liberalizing foreign trade and currency transactions and three, instituting several measures to facilitate foreign direct investment [FDI] inflows. These measures were launched in the year 1991 and the liberalization process is still in the process. It was argued that the removal of entry and licensing barriers would expose Indian industries to international competition and compel them to improve their efficiency and productivity and introduce new process and products. Trade reforms aimed at exposing Indian industries to global markets which compelled them to produce better quality goods. Removal of import restrictions and currency transactions would enable them to import better quality materials, components and technology. FDI inflows might have technology and productivity spillover effects and would improve the productivity of Indian industries.

The extent of impact of economic reforms may vary across different industries. In fact, different forms of industries could demonstrate different reactions to environmental changes. Hence, the impact of economic liberalization could vary across industries. Therefore, whether all industries benefited or suffered equally from the new economic environment is the issue to be investigated. Over a decade of experience, we now have enough data to test the impact of the globalization and
liberalization policies on the performance of Indian manufacturing sector pertaining to three important indicators of industrial performance, namely, productivity, employment generation and export performance. In this context, the following questions assume importance: do we have any appreciable productivity increase in Indian industries?, Is it possible to analyse the impact of trade policy reforms on the productivity of Indian industries?, and is there a difference in productivity performance of industries?, and what happened to the level of employment and exports of industries during reform period and are influences identical across industries. This study is seeks to examine these questions empirically for Indian manufacturing industries.

Improvement in economic efficiency and productivity are the most important sources for economic growth and will play a major role in the process of industrial restructuring in India. In western economies productivity gains are the most important source for economic growth and for improvement in the standard of living. Using the resources at the hand more efficiently has historically been far more important – quantitatively – than capital formation. Equally in transition economies, efficiency gains and productivity improvements in industrial production are among the most important factor for economic success.

At the industry and firm level, productivity improvement relatively to its competitors augments an industry’s or firm’s competitive situation allowing it to increase profit margins or sell products cheaper. Lower product prices comparative to its competitors would allow it to expand production and gain market share. For industries producing products in highly competitive market conditions, productivity gains are often critical to continue to exist. Industries are all striving to obtain a competitive edge and those industries do not pursue productivity gains are unlikely to
survive in the long run. Another potential benefit of increasing productivity is expanding economic activity and employment growth. If a company or industry has higher rates of productivity growth relative to other competitors, it is likely that the industry has developed a competitive advantage over time. Such a competitive advantage would likely attract new investment as industries expand output to exploit the advantage.

Expansion and creation of employment opportunities has been the unstated objectives of economic reforms being followed since the early 1990s in India. As industrial controls and trade restrictions are lifted, it is argued that this would result in higher output growth leading to creation of new employment opportunities and a visible fall in poverty and inequality. But the emerging evidence in India in the 1990s on the employment front has been rather dismal. The concern arising out of sharp deceleration in employment has been well documented. The constitution of several committees on employment by the Indian Government (Planning Commission) is itself a proof of the concern arising out of declining employment growth in the post-reform period and what we have experienced is a classic example of jobless growth.

Productivity increase in the manufacturing sector of the Indian economy has been rapid over the past decade, and has been by a substantial reduction in employment. Some hold the view that technological progress leads to layoffs because of mismatch between newly desired labour quality and the skills of existing workers, or because of rigidities in wages and prices. Others hold the alternative view that productivity growth happens as a result of downsizing, or re-engineering, with its concomitant layoffs. Large scale employment reductions is regularly reported in the media as part of this downsizing trend and applauded by market analysts for

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1 For further information see Johnson (1994)
improving productivity and making the company "lean and mean." In addition the expansion of international trade is often seen as a source of the competitive pressure that has again lead to downsizing.

Increased globalization of trade has led a growing number of firms to explore outside their traditional domestic markets and focus on high-growth export markets not only to expand but also to ensure their survival. Besides, exporting requires minimal financial, human, and other resource commitments in comparison to other entry modes. It tend be most common form of entering the global arena, as it provides the firm with high levels of flexibility and cost-effective way of penetrating new foreign markets quickly (Leonidou 1995). However, as foreign markets tend to be more diverse than domestic ones and in many instances more hostile, a clear understanding of the export performance becomes particularly important. It is of vital interest because, it allows for the accumulation of foreign exchange reserves, increased employment levels, improved productivity, and enhanced prosperity (Czinkota 1994).

The correlation between exports and productivity growth is a much debated topic and, in recent years, there has been a considerable volume of research on this issue. Although it is widely believed that export-oriented firms or industries exhibit higher levels of productivity than non-exporting firms or industries, evidence suggesting the direction of causality between exports and productivity is mixed. Some argue that there is a process of 'learning-by-exporting'.² Exports serve as a conduit for technology transfer from abroad and generate technological spillovers into the rest of the economy. Others, however, argue that the relatively high productivity of exporters reflects no more than the fact that it is the relatively efficient producers who enter and

survive in highly competitive export industries. In other words, there is a self-selection mechanism at work in the export industries. Nevertheless, recent research suggests that the opening up of export trade leads to a rationalization of plants within an industry, so that exports result in productivity gains at the level of the industry.

1.2 A Profile of Indian Manufacturing Sector

This section of the study deals with the stylized characteristics of Indian manufacturing pertaining to its relative share to GDP and compare its share with other fast growing developing economies in terms of composition, growth and growth of components of manufacturing sector, and change in manufacturing output. In addition, the study has examined the growth in manufacturing employment, employment in organized manufacturing sector. Further, the study has also analysed the share of manufacturing exports in total merchandise exports and compares with other countries, and as well, the change in composition of exports and value added and per capita value added of Indian manufacturing sector.

Figure 1.1 shows the contribution of different sectors to Gross Domestic Product (GDP). In India the share of manufacturing sector in GDP has remained constant since the mid 1960s. It has hovered around 16 to 17 percent and never crossed 20 percent. As a result, the share of Industry (of which manufacturing constitutes a major part) has been below 30 percent.

The share of manufacturing sector across selected fast growing developing countries is shown in Figure -1.2. Compared to a number of other Developing countries it can be seen that in India the share of manufacturing sector in GDP has been relatively low. Most of the major South East Asian countries and major Latin
American countries have a significantly higher share. In China the manufacturing sector's contribution is more than twice that of India.

Figure -1.1
Contribution of Different Sectors to GDP

The Figure - 1.3 exhibits growth of Indian industry. Traditionally the manufacturing sector has grown slower than the power sector but this trend has changed since mid 1990s. Both mining and power sectors, which are primarily under the public domain, have faced declining growth rates since the mid 80s. Out of all the components of the Industry sector, in recent years the manufacturing sector has witnessed the highest growth.
A decomposition of the manufacturing sector into registered and unregistered components (Figure -1.4) shows that the registered manufacturing sector has been growing at a significantly higher rate than unregistered manufacturing sector.

**Figure -1.3**

*Growth of Indian Industry*

- Source: CSO India
The change in the composition of manufacturing output for the Registered Manufacturing Sector is presented in Figure -1.5. The composition of the Indian manufacturing sector has altered in the last 25 years. Food Beverages and Tobacco constitute the largest part at 16%, Chemicals come in a close to second and even its share has been constant around 14 percent. Coke Petroleum and Nuclear Fuel have increased its share from less than 8 percent to 14 percent and Textiles witnessed the biggest decrease in share. Its share fell from 15% in 1980-81 to 8 percent in 2003-04. Share of Motor Vehicles have gone up from 4 to 6 percent and Basic and Fabricated Metals have maintained a relatively constant share around 15 Percent. Although in the early 90s they witnessed an increase in the share.
Figure -1.5
Change in Composition of the Manufacturing Output

Source: Annual Survey of Industries, India.
The growth of employment in both organized and unorganized manufacturing sectors are reported in Table -1.1. The unorganized sector has recorded much more impressive growth rates than the organized sector. The highest growth rates have been in Machinery and Equipment, Basic Metals, Textiles and Leather and Metal Products.

### Table -1.1

**Employment Growth Rate in Manufacturing Sector**

<table>
<thead>
<tr>
<th>Major Industrial Groups</th>
<th>Unorganized*</th>
<th>Organized **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Beverages and Tobacco</td>
<td>0.9</td>
<td>0.96</td>
</tr>
<tr>
<td>Textiles and Leather</td>
<td>3.05</td>
<td>1.21</td>
</tr>
<tr>
<td>Paper and Products</td>
<td>1.69</td>
<td>0.1</td>
</tr>
<tr>
<td>Chemicals and Products</td>
<td>0.87</td>
<td>2.02</td>
</tr>
<tr>
<td>Non-Metallic Mineral Products</td>
<td>0.65</td>
<td>0.82</td>
</tr>
<tr>
<td>Basic Metals</td>
<td>3.9</td>
<td>-0.91</td>
</tr>
<tr>
<td>Metal Products</td>
<td>2.89</td>
<td>2.05</td>
</tr>
<tr>
<td>Machinery and Equipment</td>
<td>4.1</td>
<td>0.82</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>1.44</td>
<td>0.02</td>
</tr>
<tr>
<td>Other Manufacturing (Including Wood)</td>
<td>1.29</td>
<td>3.88</td>
</tr>
</tbody>
</table>

Note: * Period covered for Unorganized Manufacturing is 1989-90 to 2000-01  
** Period covered for Organized Manufacturing is 1990-91 to 2003-04  
Source: Annual Survey of Industries and NSS reports, various years

Figure-1.6 shows the employment in organized manufacturing sector of India. The organized sector has failed to provide employment to the masses. The numbers of people who are employed in this sector in 2003-04 are roughly the same as they were in 1988-89. There has been a sharp drop in employment in the organized sector from the mid 90s.
Figure – 1.6
Employment in Organized Manufacturing Sector

Source: Annual Survey of Industries, India.
The size of the labour force devoted to manufacturing sector is represented in Figure – 1.7. It is found that the size of labour force is much higher in China than India. In China number of people employed in Manufacturing is roughly three times that of India.

Figure-1.8 exhibits the share of manufacturing exports to India’s total merchandise exports. Manufacturing sector’s products form the biggest share of overall exports. It reached a peak of 80 percent in 1999 and then dropped a little bit thereafter. Currently, manufacturing exports form around 70 percent of merchandise exports.
The study has also compared the share of manufacturing exports with leading developing economies (Figure-1.9) and their level of exports in Figure -1.10. Comparing with other developing countries, India has a higher share of manufactured exports than the Latin American countries but less than some of the South East Asian countries. Both Korea and China enjoy a far greater share of manufactured exports in their merchandise trade. Looking at the level of manufactured exports (Figure -1.10), it is found that China is far ahead than other developing countries with an annual export of $542 billion in 2004. South East Asian countries like Korea and Malaysia also have significantly higher level of exports than India. Countries like Argentina and Indonesia have lower level of exports.
Figure – 1.9
Manufacturing Exports: Cross Country Comparison

Figure – 1.10
Levels of Manufactured Exports Across Countries

![Bar chart showing levels of manufactured exports across countries]


Figure – 1.11 compared the change in the composition of Indian manufacturing exports between 1992 with 2005. It is evident from figure that there has been a significant change in the composition of Indian exports. India has moved away from traditional exports like Apparel and Textiles to newer products like Chemicals and Engineering Goods.
Figure – 1.11

Change in Composition of Indian Manufactured Exports

Source: India Trade Database
Figure - 12
Value Added by the Manufacturing Sector in Some Major Developing Countries (2004)


Figure – 12 displays that the total value added by the manufacturing sector in 2004 across leading developing countries. Evidence shows that the sheer size of China dwarfs all other developing countries. Value added by the manufacturing sector in India is less than 15 percent of that of China. Even smaller countries (in terms of GDP and population) like Korea and Brazil have a larger Manufacturing sector than India.
Per capita value added by the manufacturing sector in some major developing countries is represented by Figure – 1.13. In terms of Per Capita Value Added, India accounts for a dismal $103.08 per person. Almost all major developing countries have a higher value added per capita higher than India. While per capita Value added in China is more than 5 times that of India, in Malaysia it is 14 times higher.

1.3 Review of Literature

In this section an attempt is made to review the important literature pertaining to manufacturing sector. The next three sections cover studies pertaining to productivity performance, employment performance and export performance. In each
section, there exist several important studies, but we confine our review to a few major, recent and relevant studies as indicated below.

1.3.1 Literature related to productivity performance

C Veeramani, and Bishwanath Goldar (2005) examined the influence of the investment climate on total productivity in the registered manufacturing sector across the major Indian states. The study found that a market friendly investment climate was important for achieving higher levels of productivity. This conclusion was robust, unaffected by the choice of the investment climate indicator. A market friendly investment climate, however, does not mean that the regulatory function of the government should be done away with. Government regulation is crucial to address market failure and to protect social interests, but the policies and the practices of the government should be transparent and designed without distorting the incentives of the firms to invest and grow.

Sadhan Kumar Chattopadhyay (2004) examined the overall industrial scenario of West Bengal for the past three decades. The paper studied the productivity of capital and labour for the two-digit industry groups and the total factor productivity (TFP) of the manufacturing sector of West Bengal as a whole vis-à-vis all-India and also for some selected groups of industries for West Bengal. The study found that West Bengal has lost its earlier status of one of the highly industrialised States of the country. Its share to all-India net value added, share of employment and factories has come down drastically. Profitability of total manufacturing sector has gone down. Productivity of capital of the manufacturing sector has declined, while labour productivity has increased. However, the latter has increased mainly due to a few industry groups, which are highly capital intensive and have contributed around 85 per cent of the profit of the total manufacturing sector. TFP of the West Bengal
manufacturing sector as a whole has been declining, while it has been increasing in case of India. TFP of six industry groups which played a dominant role during the early 1960s has gone down except Jute industry, which itself is a dying industry. That means no new industry groups have come up to take up the position of these industries, which have been performing badly. Therefore, while the State of West Bengal has showed an impressive improvement in case of rural sector, industrial slowdown has not been arrested as yet in the State.

Das (2003) explores the trend and magnitude of total factor productivity growth (TFPG) under different trade regimes. The paper identified four distinct phases of India’s trade liberalization and analysed the productivity behaviour under each phase. While analyzing the productivity growth, the paper employed the growth accounting methodology using data set at three-digit level of 75 industries and also used based sectors. The study showed that the TFP growth in the 1990’s was lower than in the 1980’s. In addition, for all three use-based sectors, TFP growth in the second half of the 1990s (1996-2000) was lower than the first half of the 1990s (1991 – 95). Consequently, as per the results this study in the reform period total factor productivity did not contribute much to growth. This result is also in conformity with the result of some of the earlier studies. Nevertheless, this result could be due to the main limitation of the inter- industry studies.

Eva Paus, Nola Reinhardt and Michael Robinson (2003) examined the relationship between trade liberalization and manufacturing labour productivity growth for industries in seven Latin American countries from 1970 to 1998. They used export and import growth and a commercial reform index, which capture the various channels through which productivity and trade liberalization may be related as trade variables. Using the Arellano–Bond GMM estimator, the study found a
significant positive correlation between all three variables and productivity growth. US productivity growth and distance behind best-practice technology are also significantly correlated with productivity growth. These results have to be understood in the context of sweeping economic reforms and continuing economic difficulties in the countries under investigation.

**Unni. J, Lalitha, N. and Uma Rani** (2001) estimated the trends in growth and efficiency in the utilization of resources in the Indian manufacturing industry before and after the introduction of economic reforms. They used a comparative analysis of all-India figures with Gujarat, one of the most industrially developed states in the country. The study showed that both the organized and unorganized sectors in Gujarat seemed to be doing better than the all-India average in terms of growth of value added growth in the manufacturing sector in Gujarat was also more efficient than average all-India growth after the reforms were introduced.

**Golder** (2000) using the Nishimizu and Robinson (1984) approach, explained TFPG rates by changes in output and the level of import substitution, and finds a positive correlation with former (TFPG) and negative correlation with the latter. A problem with this approach is that measurement errors in output growth would be correlated with the TFPG indices, and any observed correlation between TFPG and domestic demand expansion (+), and between TFPG and import substitution (-), could well be spurious.

**S P Singh** (2000) analysed the trends in organized public and private sector employment, fixed capital, net value added, and real wages in India industries; relative efficiency sources; and performance assessment of different industry-groups. The study found that the increase in net value added increases the fixed capital base of a firm and reduces employment. Study also revealed that the industrial sector has
shown inefficiency in utilizing its resources during more than half of the study period. According the paper the main reason identified for this inefficiency is under-utilization of labour, fuel and working capital.

Timmer, M.P. and Adam Szirmai (2000) in their paper have examined the role of structural change in explaining aggregate productivity growth in the manufacturing sector of four Asian countries over the period 1963-1993. The conventional shift-share analysis is used to measure the impact of shifts in both labour and capital inputs. The results do not supported the structural-bonus hypothesis, which states that during industrial development, factor inputs shift to more productive branches. This finding is robust even when the conventional shift-share analysis was modified to take into account increasing returns to scale as described in Verdoorn’s law. The paper argued that improvements in productivity levels were widespread and depended negatively on the distance from the global technology frontier.

One study that avoids many of these methodological pitfalls is the one on East European privatization by Frydman Gray, Hessel and Rapaczynski (1999). In their study they evaluated the impact of privatization on firm performance, using a standard panel data treatment evaluation procedure with privatization viewed as the treatment variable. They compare the performance of the group subjected to the treatment (privatization) with that of the non-treatment group (state firms), while controlling for potential pre-privatisation differences between the two groups. Annual rates of growth of performance measures (revenue, employment etc) are used to evaluate the impact of privatization.

The authors found that privatization works on the average in that it results in increased revenue and employment. But the authors more important contribution is their finding that privatization involving insiders – whether employees or managers –
does not have much of an impact on performance while privatization involving outsiders makes a significant difference. This yields a crucial result, namely that the design of privatization—how exactly privatization is effected—has a crucial bearing on the results that follow.

In its review of privatization programmes, the World Bank (1992) noted, “Most privatization success stories come from high- or middle-income countries. It is harder to privatize in low-income settings, where the process more difficult to launch”, although the study was quick to add, “but even low-income countries the results of some privatization experiments have been highly positive”.

The findings of LaPorta and Lopez-De-Silanes (1998) are diametrically opposite to the above. Their study covered 218 firms in 26 different sectors, privatised between 1983 and 1991. The authors examined seven broad indicators of performance: profitability; operational efficiency; employment and wages; capital investment; total output; prices and taxes. They found that profitability, measured by the ratio of operating income to sales, increased by 24 percentage points. Operational efficiency improved significantly. The employment levels nearly halved which points to transfers from workers to shareholders. Investment rose moderately. Real sales recorded a spectacular rise (the authors suggest some of this might reflect redistribution away from customers who obtained firm’s output at low prices on account of incompetence or corruption; for example, theft was rampant at utilities). The tax to sales ratio also rose significantly.

The authors decomposed the gains into three components: increase in prices, reduction workers, and productivity gains. They found that price increase accounted for a mere 5 per cent of the increase in profitability while transfers from laid-off workers contributed 31 per cent of the increase; the remainder was on account of
productivity increases. Unlike many other studies, the authors tested for business cycle effects by adjusting the ratios for overall industrial or sectoral growth. The conclusions remained unaffected.

Using total factor productivity, Foreman-Peck and Manning (1998) has compared the performance of British Telecom (after it was privatised) with that of five telecommunications enterprises elsewhere in Europe and came up with ambiguous results. They found that British Telecom was apparently less efficient than its counterpart in both Norway (where the company was state owned) and Denmark (where ownership was mixed) but more efficient than those in Spain and Italy (where ownership is mixed).

In a more recent survey, Nellis (1997) observes that “the further east one travels, the less likely is one to see rapid or dramatic return to privatization.” He cites research on countries such as the Republic of Georgia, Mongolia, Kazakhstan, Ukraine, Moldova, and the Czech Republic and of course, Russia, which casts doubts on the efficacy of privatization. Nellis (1997) also draws attention to the fact, underlined by others such as Stiglitz, that China, which has adopted a cautious approach to privatization, has, nevertheless, been among the fastest-growing economies in the world in recent years. Stiglitz (1998) suggest that the Chinese experience shows that “…an economy might achieve more effective growth by focusing first on competition, leaving privatization until later”.

There are, of course, good reasons why privatization may not yield quite the same impact in LCDs as in the developed world. It is now well recognized that, broadly, two conditions need to be satisfied for successful outcome to result from privatization. One, a high degree of competition and Two, institutional and regulatory capacity. In many LDCs, neither of these conditions – and, particularly, the second –
may be adequately met. While several LDCs have moved towards opening up their economies, these economies continue to be characterized by weak law enforcement, thin capital market, and the absence of mechanisms that spur private sector performance such as takeovers and monitoring by institutional shareholders (many of which apply in the Indian context).

Under these circumstances, private ownership cannot be expected to produce high standards of performance, and indeed many of the studies on privatization in LDCs point to one or other of these factors to explain why privatization has not quite produced the expected results.

Galal et al (1994) had made an attempt to why studies on privatization come to contradictory conclusions. One reason is that some of the studies compare competitive enterprises in the private sector with monopoly enterprises in the public sector, and not surprisingly, find superior performance in the former category. Secondly, some find private sector performance legitimately superior because they are comparing reasonably competitive enterprises, and small public enterprises in a competitive situation cannot be expected to do better than private enterprises. Thirdly, some of the studies compare public and private monopolies, and this is an area where, as the authors put it, ‘the results are all over the map’.

Among the most detailed and oft-cited studies to date is by Megginson et al (1994). He has compared the pre- and post-privatisation financial and operating performance of 61 companies from 18 countries and 32 industries during the period 1961 to 1990. The comparison was done between performance three years before privatization and three years after for each company with the mean of each parameter being compared. They found increases in profitability, efficiency, capital spending, employment (which they admit is a surprising result) and real sales after divestiture.
This celebrated study suffers from the familiar shortcoming, noted earlier, namely, the failure to control for changes in the economic environment, which in itself could contribute to improved performance in the post-divestiture period. Secondly, the problem of selection bias in public sector firms that underwent privatization also remains unaddressed. If only the better firms are selected for privatization and the inferior ones are left out, we would not know much about the impact of privatization has on the average. A third problem with studies of this sort is that they do not disentangle the effects of privatization from those of deregulation. A fourth problem with pre- and post-privatization comparisons is that managers and workers would have no incentive to perform once the privatization decision is announced and preparations are made to privatize a firm.

Ahluwalia (1991) in her study using aggregate industry level data identifies positive changes in productivity trends during the early eighties, which she tentatively concludes, are explained, at least partially, by changes in the policy environment.

1.3.2 Review Related to Employment Performance

Datta R.C. (2007) pointed out that, the level of vocational training and skill achievement is extremely low in India compared to new industrialized countries. This has important implications for human capital formation and employability of younger work force in India. General educational level and literacy is growing in India. However, employers are increasingly finding appropriate skill shortage. On the job training for the new entrants, and upgradation of skills for existing workers becomes essential component of employability in this context along with the creation of appropriate human capital with skill training. Achieving such multiple tasks could be
possible through action strategies emerging from the synergy of collaboration between the state and business enterprises.

Pandit, B.L. and N. S. Siddharthan (2006) used panel data on 33 Indian manufacturing industries for nine years (1992-2001) and results based on generalised least squares estimates showed that technology imports through joint ventures and MNE participation positively influence employment. Labour productivity, as expected, affects employment negatively. Nevertheless, the growth of value addition does compensate for this negative relationship and promotes employment. Positive growth in employment is observed in industries where skill intensity is high and where firms produce differentiated products. These results taken together have implications for the current debate on employment and liberalisation and suggest that employment, production of differentiated products, skill intensity of the workforce and technological up-gradation measures go hand in hand.

Sukti Dasgupta and Ajit Singh (2006) applied a Kaldorian framework to examine the evidence of deindustrialization in developing countries at low levels of income, the jobless growth in these economies and the fast expansion of the informal sector. The questions are specifically examined for the Indian economy, using state level data but the analysis has a wider application for economic policy in developing countries. The study found that the employment of manufacturing sector in India less compared to developed countries.

Özlem Onaran (2005) estimated a labour demand equation based on the panel data of manufacturing industry in the Central and Eastern European Countries (the Czech Republic, Hungary, Poland, Slovakia, Slovenia, Lithuania, Bulgaria, and Romania) in order to test the effect of domestic factors (wages and output) and international factors (exports, imports, and FDI) on employment during the era of
post-transition recovery. The findings indicate that employment does not respond to wages in more than half of the cases. The output elasticity of labour demand is mostly positive, but low, with a number of cases where employment is completely de-linked from output. An impressive speed of integration to the European economic sphere through FDI and international trade has not prevented job losses in the manufacturing industry. While there are very few cases of positive effects, insignificant effects of trade and FDI dominate the findings with some evidence of negative effects as well.

Rashmi Banga (2005) examined the impact of foreign direct investment (FDI), trade and technology on wages and employment in Indian organised manufacturing industries in the post reforms period. To capture labour market rigidities that exist in India, i.e., lack of flexibility in wage setting and rigid hire and fire policies, the study estimated dynamic panel data (DPD) model using generalised method of moments (GMM). The analysis was undertaken for 78 three-digit level industries. The impact of technology is captured through three components, which are research and development intensity, import intensity of capital goods and import intensity of soft technology. An index for technology acquisition was also constructed using principal component analysis to estimate the impact of technological progress. The results showed that FDI, trade and technological progress have differential impact on wages and employment. While higher extent of FDI in an industry leads to higher wage rate in the industry, it has no impact on its employment. On the other hand, higher export intensity of an industry increases employment in the industry but has no effect on its wage rate. Technological progress is found to be labour saving but does not influence the wage rate. Further, the results showed that domestic innovation in terms of research and development intensity has been labour utilising in nature but import of technology has unfavourably affected employment.
William Nordhaus (2005) used data on industrial output and employment to examine the sources of Productivity rebound and decline in manufacturing employment trends. It found that the productivity rebound since 1995 has been widespread, with approximately two-fifths of the productivity rebound occurring in New Economy industries. Moreover, after suffering a slowdown in the 1970s, productivity growth since 1995 has been at the rapid pace of the earlier 1948-73 period. Finally, the study investigated the relationship between employment and productivity growth. It found that the relevant elasticities indicate that more rapid productivity growth leads to increased rather than decreased employment in manufacturing. The results here suggest that productivity is not to be feared at least not in manufacturing, where the largest recent employment declines have occurred. This shows up most sharply for the most recent period, since 1998. Overall, higher productivity has led to lower prices, expanding demand, and to higher employment, but the partial effects of rapid domestic productivity growth have been more than offset by more rapid productivity growth and price declines from foreign competitors.

The study by B.B. Bhattacharya & S. Sakthivel (2003) presented alternative estimates of employment and employment elasticity at aggregate and sectoral levels for the overall economy as well as for state major Indian states. They try to reconcile the controversy surrounding the contradictions in employment growth rate and the resultant employment elasticity based on alternative concepts of employment in different studies. For comparative analysis of employment elasticity with respect to output they have derived a consistent time-series on State Domestic Product through appropriate adjustments in Gross State Domestic Product series 1980-81 corresponding to the same in 1993-94 series.
Results from this study suggested that aggregate employment elasticity at all India level for the period between 1983 (38th round) and 1993-94 (50th round) was around 0.51. It collapsed to 0.15, more than three-fold decline during the post-reform period [between 1993-94 (50th round) and 1999-00 (55th round)]. Similar decline was witnessed across states and across all broad sectors, particularly primary sector. Although output growth (GDP growth) had accelerated to some extent between the 1980s and 1990s, employment growth has virtually collapsed, leading to low employment elasticity in the post-reform years. This is evident in all measures of employment from the NSS data namely, Usual Principal and Subsidiary Status, Current Daily Status and Current Weekly Status. Clearly there is a delinking of growth and employment in the post-reform period. In the light of these results, it casts a serious doubt on the employment targets envisaged in the plan.

Suresh D. Tendulkar (2003) showed that organised workforce- has shrunk in relative magnitude. Organised-unorganised duality in Indian workforce has increased over the years due to the restrictive trade and investment policies with added emphasis on expansion of the public sector which has failed to design economic organisation and system of incentives and punishments to induce dynamic and technological adaptations and to promote necessary control on cost and quality. It also found that improved living standards of organised workers cannot, however, be attributed to unionised bargaining as trade unions remain fragmented and weak. Their success has been derived from the activist labour legislation and the willingness of multiple unions to form alliances to take advantage of their strategic location in public sector dominated critical organised services. Thus, public sector bank employees successfully stalled computerisation till recently and managed to strike favourable
wage settlements despite fiscal pressures. It is only with the entry of private banks that situation has started changing slowly.

Bhalotra. S. (2002) evaluated the impact of economic liberalization on employment and wages in India. The paper established that both growth and productivity have accelerated in the economy as a whole and also in organized manufacturing, capital stocks have been upgraded and investment in manufacturing has increased. Real earnings in this sector have been rising at a fairly rapid pace. The study revealed that organized sector employment suffered a severe collapse in the early years of the adjustment process but has since recovered to a pace similar to that in the pre-reform era. The share of the public sector in organized manufacturing employment has been shrinking at a fairly remarkable rate. In the economy as a whole, the worker-population ratio fell in the mid-90s after having increased for the previous two decades. The shift in workforce composition from self-employment to casual wage employment that has been in progress since the 1970s continued through the 1990s. The unemployment rate increased at this time but it is unclear whether this signifies a lengthening of unemployment spells and a worsening of job opportunities or whether it simply denotes a greater degree of transitional or frictional unemployment as labour is reallocated towards the more productive sectors. And it also found average daily earnings per person per annum in the economy increased at a significant pace in rural and urban areas and for men and women. Poverty incidence declined.

Ajit K. Ghose (2000) examined the impact of trade liberalization on manufacturing employment by employing a cross country analysis. It found that in spite of the wide-spread adoption of trade liberalization policies, significant advances in transport and communication systems and rapid growth of cross-border capital
flows, world trade and GDP have recorded decelerating growth over the past two decades. The reason very probably lies in the fact that a large majority of the developing countries, given their inadequate physical and social infrastructure, have been unable to benefit from trade liberalization. Analysis of the changing pattern of world trade shows that the really significant recent development is the emergence of a handful of developing economies as important exporters of manufactures. The employment and labour market effects of trade liberalization, therefore, have basically been felt in industrialized economies and in a handful of developing economies. In the case of industrialized economies, growth of manufactured imports from developing countries has had a small adverse effect on manufacturing employment but virtually no effect on wages. Thus unemployment and growing wage inequalities cannot really be attributed to trade. On the other hand, in those developing economies which emerged as important exporters of manufactures to industrialized countries, growth of trade had a large positive effect on manufacturing employment and wages. In some of these economies, moreover, growth of trade was also associated with declining wage inequality. Thus, on balance, the global effects of trade liberalization on manufacturing employment and wages appear to have been significantly positive even though there have been job-losers in both industrialized and developing economies. This means that the popular apprehensions about the effects of trade liberalization, though not wholly unfounded, are grossly exaggerated. The challenges that must be confronted, the study suggested, are those of enabling many more developing economies to benefit from trade liberalization and providing social assistance to joblosers in both industrialised and developing countries.

Bhalotra, S. (1998) proposed an explanation of employment behaviour in terms of increases in total factor productivity, in actual hours worked, and in the product wage.
Using robust methods, the study showed that neglect of hours worked results in a substantial upward bias in estimates of the wage elasticity. Growth in productivity and hours appears to be associated with the reform process, with the increase in hours worked reflecting recovery of lost time. To the extent that hours must hit a ceiling, the drop in employment on this count is expected to be temporary. Other things being equal, employment prospects appear to depend considerably on the course of productivity growth.

Nicholas Oulton (1998) used the ARD, the new longitudinal database of the Census of Production, to analyse productivity at the establishment level in the two cycles of 1973-79 and 1979-89 in UK. Contrary to a commonly held view, closures did not play a major role in accounting for productivity growth in 1979-89. Establishments which exited had lower productivity than survivors but the exits were replaced by entrants which also had low productivity. Most of productivity growth was due to growth within survivors. The greatest gains occurred in the 36 establishments employing 7,500 or more in 1979; these accounted for a third of productivity growth amongst survivors. Most productivity growth occurred in establishments which downsized employment. But despite an overall fall of a quarter in employment, 16% of productivity growth occurred in establishments which expanded employment. The main difference between 1973-79 and 1979-89 was in the productivity growth rate amongst survivors. In 1973-79, it was negative overall and over half of employment was initially in establishments where productivity fell.

Martin Neil, Baily Eric I. Barteisman and John Haltiwange (1994) examined falling employment accompanying the rise in productivity in the U.S. manufacturing sector using the plant level data from the Longitudinal Research Database (LRD). In contrast to the conventional wisdom, the study indicated that
plants that increased employment as well as productivity contribute almost as much to overall productivity growth in the 1980s as the plants that increased productivity at the expense of employment. Further, there are striking differences by sector (defined by industry, size, region, wages, and ownership type) in the allocation of plants in terms of whether they upsize or downsize and whether they increase or decrease productivity. Nevertheless, in spite of the striking differences across sectors defined in a variety of ways, most of the variance of productivity and employment growth is accounted for by idiosyncratic factors.

1.3.3 Literature related to Export performance

Increased globalisation of trade has led a growing number of industries to search beyond their traditional domestic markets and focus on high-growth export markets not only to expand but also to ensure their very survival. As a result, the role of exporting in industry's activity has become increasingly important. Recognition of this is reflected in the fact that the area of export performance has been gaining increased attention among academics and managers. Research into export performance dates back to the innovating work of Tookey (1964); since then there have been numerous studies published over the last four decades that have been concerned with the export performance of the industry. This section review the recent literature related to export performance.

Marianne Matthee and Wim Naudé (2007) examined the location of exporters of manufactured goods within a country. Based on insights from new trade theory, the new economic geography (NEG) and gravity-equation modelling, an empirical model was specified with agglomeration and increasing returns (the home market effect) and transport costs (proxied by distance) as major determinants of the location decision of exporters. The study used the data from 354 magisterial districts
in South Africa with a variety of estimators (OLS, Tobit, RE-Tobit) and allowances for data shortcomings (bootstrapped standard errors and analytical weights) to identify the determinants of regional manufactured exports. The paper found that the home-market effect (measured by the size of local GDP) and distance (measured as the distance in km to the nearest port) are significant determinants of regional manufactured exports. This paper contributed to the literature by using developing country data, and by adding to the small literature on this topic. This paper complements recent work on the determinants of exports from European regions and found that the home market effect is relatively more important in the developing country context (South Africa), a finding consistent with theoretical NEG model.

A study by Gustavo Crespi, Chiara Criscuolo and Jonathan Haskel (2006) tested the relationship between productivity, export and Learning-by-Exporting for UK firms. This Case study evidence suggested that exporting firms learn from their clients. The paper used UK panel data set with firm-level information on exporting and productivity. Controlling for fixed effects the study has two main findings. First, they found firms who exported in the past are more likely to then report that they learnt from buyers (relative to learning from other sources). Second, firms who had learned from buyers (more than they learnt from other sources) in the past are more likely to then have productivity growth. The result of the study was in far with the learning-by-exporting hypothesis.

By making use of causal link between exporting and productivity Jože P. Damijan Črt Kostevc (2005) analysed the existence of learning-by-exporting and in addition to better performing, firms self-selecting into exports and multinational production further improves their performance compared with non-exporters using firm-level data. The study developed and tested a simple model of trade and
international production with heterogeneous firms that generates learning effects through competition in the export markets. The estimations performed on the sample of Slovenian manufacturing enterprises between 1994 and 2002 indicated that more productive firms tend to self-select into more competitive markets, while there is no conclusive evidence of learning-by-exporting. Although new exporters experienced a surge in productivity in the initial year of exports the effect dissipates as soon as the following year. Confronting the data on factor accumulation with TFP measures indicated that the perceived learning effects may in fact only be a consequence of increased capacity utilization brought forth by the opening of an additional market.

Helmut Fryges and Joachim (2005) applied the newly developed generalised propensity score (GPS) methodology that allows for continuous treatment, that is, different levels of the firms’ export activities to measure causal relationship between exports and productivity. Using the GPS method and a large panel data set for German manufacturing firms, the study estimated the relationship between a firm’s export-sales ratio and its labour productivity growth rate. They found that there was a causal effect of firms’ export activities on labour productivity growth. However, exporting improves labour productivity growth only within a sub-interval of the range of firms’ export-sales ratios.

Joachim Wagner (2005) investigated the role of exports in promoting growth in general, and productivity in particular empirically using aggregate data for countries and industries for a long time, only recently have comprehensive longitudinal data at the firm level been used to look at the extent and causes of productivity differentials between exporters and their counterparts which sell on the domestic market only. The result revealed that exporters are found to be more
productive than non-exporters, and the more productive firms self-select into export markets, while exporting does not necessarily improve productivity.

Xiaolan Fu (2004) analysed the impact of exports on total factor productivity (TFP) growth in a transition economy using a panel of Chinese manufacturing industries over the period 1990-1997. TFP growth was estimated by employing a non-parametric approach and is decomposed into technical progress and efficiency change. The study had not found evidence suggesting significant productivity gains at the industry level resulting from exports. Study suggested that, for exports to generate significant positive effect on TFP growth, a well-developed domestic market and a neutral, outward-oriented policy are necessary.

Jens Matthias Arnold and Katrin Hussinger (2004) examined the causal relationship between productivity and exporting in German manufacturing. They found a causal link from high productivity to presence in foreign markets, as postulated by a recent literature on international trade with heterogeneous firms. They applied a matching technique in order to analyse whether the presence in international markets enables firms to achieve further productivity improvements, and does not found significant evidence for this. The study concluded that high-productivity firms self-select themselves into export markets, while exporting itself does not play a significant role for the productivity of German firms.

John R. Baldwin and Wulong Gu (2003) the authors explored the linkages between export-market participation and productivity performance in Canadian manufacturing plants. They also examined differences in the effect of exporting on productivity between foreign-controlled and domestic-controlled plants, and between young and older plants. The study found that export participation improves productivity. The effect was much stronger for domestic-controlled plants than for
foreign-controlled plants. Study interpreted this as evidence that it is the international orientation or globalization of a firm rather than ownership per se that is important for productivity growth. They also found that exporting matters more for young businesses than for older businesses.

Stephen Roper and James H. Love (2001) using data on individual manufacturing plants throughout Ireland considered the determinants of export performance in the two areas. Larger, externally-owned plants with higher skill levels are found to have the highest export propensities in both areas. Other influences (plant age, R&D etc.) proved more strongly conditional on location, plant size, and ownership. Structural factors (e.g. ownership, industry) explain almost all of the difference in export propensity between larger plants in Northern Ireland and the Republic of Ireland but only around half of that between smaller plants. Significant differences are also evident between plants in terms of their sources of new technology. For indigenously-owned plants, in-house R&D is important. For externally-owned plants, R&D conducted elsewhere in the group - typically outside Ireland - proves more significant.

Aradhna Aggarwal (2001) analysed the inter-firm determinants of export performance in Indian manufacturing in the late 1990s. The objective was to test two hypotheses: first, in a liberalised regime, MNE affiliates perform distinctly better than local firms in the export markets and second, MNE affiliates have greater comparative advantages in high-tech than in low- and medium-tech industries. For the empirical analysis, export models with technology, cost and scale variables were estimated for a sample of firms drawn from Indian manufacturing. Tobit model estimations conducted on all the sample firms pooled together supported the first hypothesis. However, the evidence of the better performance of MNEs is not strong enough to
suggest that India is attracting efficiency-seeking outward-oriented FDI. Even firms with higher foreign equity stakes have not performed distinctly better than others. The results also showed that high-tech industries are not attracting efficiency seeking FDI as had been expected. In medium-high tech sectors their performance was somewhat better. However, even in this group the results are not robust. In low-tech industries, however, firms with high foreign stake are found to be performing better. Two important implications of the results study are: one, it appears that the economy is not fully integrated with the global economy and that the existing industrial and technological capabilities need reorientation to attract efficiency seeking FDI; two, India’s competitive advantages still lie in low-tech sectors. There have not been dynamic changes in the export structure even after liberalisation. The results also suggested that in technology based sectors own technological capabilities of firms are crucial determinants of export performance of firms. Finally, it was found that the export performance of firms was linked strongly with firm size and imports of raw materials and components in almost all technology groups.

The abovementioned review of literature indicates that they are not comprehensive in the measurement of industrial performance pertaining to productivity, employment and export performance. These studies have confined their attention either to all industries in manufacturing sector or selected industries and limited to only one of the indicators of industrial performance. Furthermore, none of these studies has compared and examined abovementioned indicators between capital intensive and labour intensive industries in Indian manufacturing.
1.4 Research Gap

The foregoing review indicate that as far as the industrial performance pertaining to productivity, employment and export performance studies are concerned they have confined their attention either to all industries in manufacturing sector or selected industries and limited to only one of the abovementioned indicators of industrial performance. Moreover, none of these studies has compared and analysed aforesaid indicators between capital intensive and labour intensive industries in Indian manufacturing. Furthermore, most of the studies on productivity analysis employed either production function approach or growth accounting approach to measure total factor productivity but the current study applied Data Envelop Analysis (DEA) -based Malmquist Productivity Index (MPI) to measure not only productivity growth but also its sources, namely, technical efficiency change and technological progress.

It is to plug this gap that the present study has made a modest attempt to explore the impact of globalization and liberalisation on industrial performance concerned to important indicators like productivity, employment and export performance in selected capital and labour intensive industries of Indian manufacturing sector during reform period.

Further the extent of the impact of globalization and liberalization may vary across different industries. In fact, different types of industries could demonstrate different reactions to environmental changes. Hence, the impact of trade liberalization could vary across industries. Therefore, whether all selected industries benefited or suffered equally from the new economic environment is an important issue to be investigated.
1.5 Objectives of the Study

The main objective of the present study is to explore reasons for differences in productivity, export and employment performance across selected capital intensive and labour intensive industries. It has been argued that capital intensive industries have an edge over their counterpart in productivity and export performance. Capital intensive industries with high capital and modern technology, R&D intensity and larger market have an opportunity of higher productivity and export. It is in this context that this study is undertaken to compare the productivity, export and employment of capital intensive and labour intensive for selected industries in Indian manufacturing sector. In this endeavour, our objectives in the present study can be classified as follows:

- To analyse the trends in total factor productivity growth, technical efficiency change and technological growth in the proposed industries.
- To estimate employment generation and factors influencing in the proposed industries.
- To measure the export performance and its determinants of selected industries.

1.6 Hypotheses

The present study is guided by testing of the following hypothesis.

- Globalization has increased the productivity and export performance of capital intensive industries
- Globalization has negatively influenced on employment of both types industries.
Technology changes have widened the gap between the performance of selected capital and labour intensive industries.

1.7 Data and Methodology

The study estimated industrial performance of selected capital and labour intensive industries pertaining to important indicators like productivity, employment and export performance for the period 1993-94 to 2003-04. The basic data source for the study is the Reports of Center for Monitoring Indian Economy and prowess data base produced by CMIE, an information services firm. The data for price index are taken from Office of Economic Adviser, Ministry of Industry, Government of India and data for consumer price index are taken from Indian Labour Journal, World Development Indicator published by World Bank, Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce and Industry, Government of India, Annual Survey of Industries, CSO, Ministry of Statistics and Programme Implementation, Government of India and India Trade Database.

To measure productivity performance the study has been used Data Envelop Analysis (DEA) – based Malmquist Productivity Index (MPI). Which enable us to measure not only productivity growth but also source of growth that productivity improvement is due to the technical efficiency change or technological change or both?

DEA – based Malmquist Productivity Index has been specified as follows;

\[ m_o (y^t, x^t, y^t+1, x^t+1) = \left( \frac{d^{t+1}_o (y^t, x^t)}{d^{t}_o (y^t, x^t)} \right) \left( \frac{d^{t+1}_o (y^t+1, x^t+1)}{d^{t}_o (y^t+1, x^t+1)} \right) \]
when the value of $m_o$ exceeds one this indicates a positive total productivity growth from period $t$ to $t+1$ and a value of the index less than unity indicates a decline in TFP growth. If the value is equal to unity indicates no change in TFP.

The study has been applied panel data fixed effect model to estimate employment performance of selected industries. The empirical model has been specified as follows;

$$\ln L_{it} = \beta_i + \beta \ln RQ_{it} + \beta \ln WR_{it-1} + \beta LP_{it} + \beta \ln FDI_{it} + \beta \ln EX_{it} + \beta \ln IM_{it} + \varepsilon_{it}$$

where $\ln L$, $\ln RQ$, $\ln RW$, $LP$, $FDI$, $EX$, and $IM$ are the employment (in logarithm), real output (in logarithm), real wage (in logarithm), labour productivity, FDI/sales, exports/sales and imports/sales respectively. All the variables are industry specific variables; $i$ is the industry indicator. $\beta_i$ is a industry specific fixed effect. The time period, $t$, varies according to industry and the availability of the variables. $\varepsilon_{it}$ disturbance terms which has usual properties of estimation. In the above model in order to avoid endogeneity problems, the first lag of the real wage is used.

To analyse the determinants of export performance of selected industries Two Stage Least Square (TSLS) method is employed for panel data due the problem of probable endogeneity between export intensity and productivity of an industry.

$$\ln XS_{it} = \alpha_{it} + \beta_{it} \ln TFPG + \beta_{it} \ln RD + \beta_{it} \ln FDI + \beta_{it} \ln FS + \beta_{it} \ln LI + \mu$$

where $\ln$ is natural logarithm operator, $XS$ is export intensity, $TFPG$ is the total factor productivity growth, $RD$ is the expenditure on research and development, $FDI$ is foreign direct investment to sales, $FS$ is the firm size and $LI$ is labour intensity.

The detail explanation of estimation methodology for each performance indicator is dealt in concern chapter of the study.
1.8 Scope of the Study

This study is made an attempt to analyse the trends in productivity, export and employment performance for selected capital and labour intensive industries (five each) of Indian organized manufacturing sector. The study covers the period from 1993-94 to 2003-04. The period has been chosen for the reasons that impact of economic reforms may vary across industries in general and in particular, productivity, export and employment performance of capital intensive and labour intensive industries may differ in the reform period. The scope of the study is restricted to the data on productivity, export and employment nexus in selected industries.

1.8.1 Classification of Industries

Since the study examines industrial performance pertaining to productivity, employment and exports growth in selected capital intensive and labour intensive industries of India during reform period, it has been classified manufacturing industries as capital intensive and labour intensive by the following procedure. The study calculated capital-labour ratio (K/L) for whole manufacturing sector and K/L ratio for all manufacturing industries. Then industries are ranked on the basis of their K/L values. The study has chosen five industries above the median K/L of whole manufacturing sector and classified them as capital intensive, and five from below median value called labour intensive industries. Selecting five industries from each segment, in addition to K/L ratio, the study also considered the share of value added of selected industries to total manufacturing and their export intensity (export/sales), which shows competitiveness of these industries in international market. Since the competitiveness of an industry primarily depends on productivity in the long period.
1.8.2 Industries selected for analysis

On the basis of above criterion following industries have been selected for empirical analysis: A) Capital intensive industries – 1) Chemicals, 2) Drugs and pharmaceuticals, 3) Dyes and Pigments, 4) Metal and Metal Products, and 5) Passenger Car and Multi Utility Vehicles. B) Labour intensive industries – 1) Readymade Garments, 2) Gems and Jewellery, 3) Leather Products, 4) Coffee and Tea, and 5) Cotton Textiles.

1.9 Organisation of the Study

The entire study has been divided into five chapters. First chapter is introductory in nature. It explains the need of the study on comparative performance of capital and labour intensive industries and prepares the building block of the study. The productivity trends obtained by Data Envelop Approach (DEA)-based Malmquist Productivity Index (MPI) are discussed in chapter-2. Chapter-3 investigates trends in employment of proposed industries. The export performance of selected industries is presented in chapter-4. Summary of findings and concluding remarks are presented in Chapter-5.