

# MPRA

Munich Personal RePEc Archive

## **The Impact of Trade Liberalisation on Employment: Evidence from India's Manufacturing Sector**

Kakarlappudi, Kiran Kumar

Centre for Development Studies, Prasantha Nagar, Ulloor,  
Thiruvananthapuram, Kerala

18. April 2010

Online at <http://mpra.ub.uni-muenchen.de/35872/>  
MPRA Paper No. 35872, posted 11. January 2012 / 09:32

# **The Impact of Trade Liberalisation on Employment: Evidence from India's Manufacturing Sector \***

**Kiran Kumar Kakarlapudi**

PhD Scholar

Centre for Development Studies

Prasanth Nagar, Ullor,

Trivandrum, Kerala

India-695011

Email: [kiran20uohyd@gmail.com](mailto:kiran20uohyd@gmail.com)

## ***Abstract***

*The Opening up of the economy brought in phenomenal changes in various dimensions of the economy. The growth performance of the Indian economy, though not spectacular, has been decent by the standards of developing countries after initiation of economic reforms. There has been a great debate in academia that the growth was not accompanied by an increase in employment growth. Stagnant growth in employment with impressive economic performance during last two decades is termed as "jobless growth". Since the manufacturing employment has been subject to sweeping changes in the post reform period, this paper attempts to examine the possible impact of trade liberalisation on the growth of organised manufacturing employment at two digit levels by dividing industries into export oriented and import competing industries. Both the overall and manufacturing employment trends shows that there is a reduction in employment growth in the post- liberalisation period compare to the pre-liberalisation period. It is further found that deceleration of employment growth in the import competing industries is higher than export competing industries and that; trade liberalisation did not create any growth in employment through scale effect.*

**Key words: India, Trade liberalisation, Manufacturing sector and Employment**

**JEL Classification: F16**

---

\* This paper is an outcome of authors' second term paper, which is being carried out at the Centre for Development Studies, as a part of MPhil course work. Thanks are due to insightful comments during presentation by the faculties and fellow students. However, usual disclaimers apply

## 1 Introduction

Soon after the Independence, in the initial years of planning, the thrust was to develop strong manufacturing base by setting up heavy industries and promote capital goods industry (Balasubramaniam and Vidya, 2001). Nonetheless, the stagnation in the industrial sector since mid 1960s to 1980s has become a serious concern and prompted policy makers to change the policy structure from a Nehruvian growth model. The change in policy framework saw a clear departure from the restrictive autarkic strategy to partial liberalization of the economy. The change in the growth strategy has brought a clear change in the growth of the economy in general and manufacturing in particular. In 1991 India introduced economic reforms. The key elements of India's economic liberalization programme initiated in 1991 were the abolition of the industrial licensing system, substantial liberalization of foreign trade and Foreign Direct Investment (FDI) regimes, removal of ceilings on interest rates and associated reforms in the financial sector. India's economic performance in the post-reform period has many positive features. The average growth rate in the ten-year period from 1992-1993 to 2001-2002 was around 6.0 percent, which puts India among the fastest growing developing countries in the 1990s. This growth record is only slightly better than the annual average of 5.7 percent in the 1980s, but it can be argued that the 1980s growth was unsustainable, fuelled by a buildup of external debt that culminated in the crisis of 1991 (Ahluwalia, 2002).

India followed a strategy of export pessimism and import substitution policies with high tariffs and restrictions, which resulted in high cost inefficient manufacturing sector. All these were finally reflected in India's poor export performance: its share in world exports, which was over 2 percent in 1950, came down to 0.4 percent in 1980 and was about 0.5 percent in 1990 (Srinivasan, 1994, p. 178 cited in Goldar, 2002). Quantitative controls on imports of intermediate and capital goods were increasingly relaxed and some new measures for export promotion introduced. The aim of the new trade policy package was to liberalize the system of administrative controls and licences, provide more incentives to exports, check growth in imports by making them more costly, and link the level of imports to export earnings. The most important measures taken in July 1991 were: (a) devaluation of the rupee by 21 percent, (b)

abolition of supplementary licences for all importers except small-scale industries, (c) abolition of the Cash Compensatory Support (CCS) scheme for all exporters, and (d) enhancement of Import Replenishment (REP) license entitlements to 30 percent. At the same time investment liberalization also took place, which permitted foreign share holders to hold shares in Indian industries up to fifty percent of equities and allowing private investors to invest in public enterprises (Goldar, 2002). These trade liberalization measures have often been accompanied by the liberalization of policies towards FDI as well as wider liberalization measures, such as the removal of controls over domestic investment, deregulation of domestic product and labour markets, privatization and both internal and external financial liberalization (Banga, 2005).

Scholars like Sen and Raj (2008) argued that the liberalization policies would increase the size of market by integrating with global market, which leads to increase in competition and therefore efficiency through better allocation of resources. In this context, there has been a great deal of debate as to how the liberalization policies have affected the employment growth and patterns in the manufacturing sector.<sup>1</sup> Some scholars have argued that structural changes would lead to greater labour and product market flexibility, a shift towards labour intensive techniques and commodities, and hence a rise in employment potential and job availability (Singh, 1993; Papola, 1994). However, most of the researchers have been pessimistic, arguing that increased competition in a globalised world would force firms to trim their workforce and shift towards more capital intensive 'advanced' technology, thereby restricting employment expansion along with a marked trends towards casualisation of workforce (Mundle, 1992, 1993; Deshpande, 1992; Bhattacharya and Mitra, 1993; Agarwal and Goldar, 1995; Kundu 1997, and Deshpande et al. 2004).

In the light of this background, the present paper is an attempt to examine the changes in employment growth and patterns during the liberalisation period. This paper therefore tries to evaluate the effect of trade liberalization on employment growth in India in the realm of standard trade theoretic framework. In doing so, we confine our analysis to organized manufacturing.<sup>2</sup> This is because the policies were directly targeted to increase growth in

---

<sup>1</sup> Many studies have focused on manufacturing employment because the liberalization policies have mainly focused on the growth of manufacturing sector.

<sup>2</sup> Capturing trade effect in the unorganised sector has certain data limitations. So, we focus on organised sector.

organized sector and the sector has been consistent in its productivity standards, has substantial forward and backward linkages with other sectors, inducts the majority of technical personnel of the country, and is expected to be instrumental in absorbing the surplus labour released by the primary sector over the years.

The paper is organized in to six sections. Theoretical linkages and channels follow this introduction. Section 3 provides an extensive review of literature covering a detail analysis of trade effect on employment at a cross-country level, country specific and in Indian context. Section 4 explains the data source and methodology that we have used. Section 5 deals with the empirical findings. Section 6 sums up our discussion.

## **2 Theoretical Framework**

There are many theoretical arguments regarding openness of an economy and its impact on growth in the developing countries. The theories of international trade also explain how free trade affects employment in both developed and developing countries.

Under the Heckscher-Ohlin (H-O) framework, trade leads to redistribution of employment from the importing sector towards the exporting sector in the developing countries, which export mainly labour intensive products. Although in the long-run trade opportunities can have a major impact in creating more productive and higher paying jobs, this strand of literature tends to take employment as given. A common finding is that much of the short-run impacts of trade reforms involve reallocation of labor or wage impact within sectors. This reflects a pattern of expansion of more productive firms especially export-oriented or suppliers to exporters, and contraction/adjustment of less productive firms in sectors that become subject to greater import competition.<sup>3</sup>

The Stolper-Samuelson theory argues in the same line, but in a slightly different way. After trade, developing countries start producing labour intensive goods due to cost differences which leads to employment growth in export-oriented industries since they are basically labour intensive industries. On the other hand, import-competing industries, which are capital

---

<sup>3</sup> Helpman and Krugman (1985) have supported the argument of H-O theory; and further, extended the argument of intra-industry trade. They have said that despite the intra-industry trade the argument of H-O theory holds true for inter-industry trade.

intensive by nature try to compete with imports and employs more and more capital. As producers bid for capital, the relative price of capital goes up, and hence, they start substituting labour for capital. Therefore, trade leads to increase in demand for labour demand in the developing countries. On the contrary, Posner (1961) argued the effect of free trade against the arguments of H-O-S theoretical framework. Although in the neoclassical theory of international trade differences in factor endowments are not the only explanations of trade, the link between patterns of trade and labour intensities is completely broken down in the so-called 'technological-gap' theories. According to this theory, the key element of explaining international flows of goods and investment is not that the country is able to do something more efficiently, but it can do something that other countries can't. He argues that the impact of trade on employment instead, will occur through demand for final goods. By producing innovative commodities, industrialized countries will attract demand away from traditional goods produced in developing economies.<sup>4</sup> As a result, both production and employment in developing countries will decline.

However, the structuralist school of thought rejects the long run "full employment" assumption (Ocampo and Taylor, 1998). It postulates that trade and trade policy shocks can affect employment permanently by creating or destroying jobs with little or no adjustment in the sectors of the economy that are not directly affected by shocks. It is argued that the restrictive assumptions of the H-O-S model are not sufficient to provide a viable interpretation of the complexity of the real world. It ignores the effects of complete specialization and intra-industry trade (which in many cases bypass the poorest countries). Further, if one recognizes the possibility of different degrees of mobility of some or all factors over time, the income consequences of trade liberalization get further complicated. Both theorists and empiricists have explored connection between trade/trade policy and employment and have arrived at varied results, which are country-specific (Banga, 2008).

At the centre of this approach, the idea is that exports contribute to aggregate output in two fundamental ways: first, the exports sector generates positive externalities on non-exports sectors through more efficient management styles and improved production techniques. Second, there is productivity differential in favour of export sector. Thus, an expansion of

---

<sup>4</sup> This theory implicitly assumes that industrialized countries have more innovative capacity, while developing countries have less innovative capacity, and hence, they produce traditional commodities.

exports at the cost of other sectors will have a positive net effect on aggregate output and employment. In the recent past, there has been enormous debate on the impact of trade liberalisation on employment which gave rise to plethora of studies, which are discussed in the following section.

### **3 Literature Review**

In the last quarter century, many developing countries in the world particularly Asian countries have liberalised their economies. It is increasingly become a great deal of concern for academia to understand the effects of trade and investment liberalization on growth and development of these economies. As we have already seen, the trade theories suggest that free trade enhances growth and employment opportunities. In this context, a series studies have been undertaken to study the impact of trade and investment liberalization on employment growth in the developing economies.

#### **3.1 Impact of Trade Liberalization on Employment**

In recent years, World Bank and International Labour Organisation (ILO) have conducted many cross-country and country-specific studies to evaluate the impact of trade liberalization on employment growth. These series of studies shows a considerable dispersion of the net impact on employment. The importance of the labor-market impact of trade was first emphasized by Rodrik (1997). He argued that trade makes the demand for labor more elastic, which in turn leads to larger employment and wage shocks as a result of given vertical shifts in the labor demand curve (arising from shocks to productivity or to output demand).

##### *Cross-country Evidence*

Ghose's (2000) study on the effects of free international trade in nine economies (Argentina, China, India, Indonesia, Republic of Korea, Malaysia, Mexico, the Philippines, Taiwan China, Thailand, Japan, and the United States) found that trade liberalization generally increases employment elasticity in the manufacturing sector of developing countries, which is in line with the conclusion drawn from theoretical analysis. On the other hand, certain other predications of the standard trade theory (e.g. those relating to changes in demand for skilled and unskilled labour) are not borne out by the country experiences following trade

liberalization. Further, the study found evidence to suggest that the growth of export-oriented industries in developing country stimulates growth in all other industries, including the import-competing industries, with the result that the growth of manufactured exports to industrialized nations increases demand for both skilled and unskilled workers in manufacturing. This obviously has implications for growth in wages of unskilled and skilled workers.

Another study by Spiezia (2008) argued in the similar fashion with Ghose (2000) and found (from a sample of 25 countries) that trade openness leads to employment opportunities of unskilled labour in the developing countries.

### *Country-specific Evidence*

A series of ILO studies on China, India, Malaysia, Mexico and Brazil focused on the effects of the growth of trade on employment and wages in manufacturing industries.<sup>5</sup> The view in favour of country-specific studies is supported by the divergent results that have been revealed by recent country studies that examine the relationship between trade liberalization and employment. A study on Mexico (Ravenga, 1994) found that between 1984 and 1990 a 10 percent reduction in tariff levels was associated with a 2 to 3 percent reduction in employment. The wage differential between skilled and unskilled workers also widened. The study also argued that the absence of large aggregate employment effects was due to wage flexibility; wages had declined significantly throughout the adjustment period. A study on Brazil (Mesquita and Najberg, 2000) found that trade liberalization at the beginning of the 1990s had a slight negative short-term impact on employment. The study found that between 1990 and 1997 there was 32.4 percent drop in employment in capital-intensive industries and 13.3 percent decline in the labour-intensive industries. This decline in employment could not be attributed solely to trade liberalization since the trade reforms were carried out in a macroeconomic environment that was marked by high inflation and recessionary conditions. Among the explanations that the authors offer for the decline in employment are a sharp increase in productivity in the capital-intensive industries and poor export performance in the labour-intensive industries. In Chile (Levinsohn, 1999), the trade liberalization of the 1970s coincided

---

<sup>5</sup> The chosen countries are the ones, which experienced rapid growth after the liberalization policies in the last two decades (ILO).



with severe macroeconomic shocks. The effects of these shocks on employment far outweighed those associated with the trade liberalization. The combined effect of these two factors resulted in an 8 percent decline in net manufacturing employment between 1979 and 1986. An interesting feature of this study was that in addition to looking at net changes in employment levels, it also attempted to estimate job creation and destruction using firm-level data. The findings suggested that about a quarter of workers in manufacturing changed jobs during this period, indicating that there was a far greater extent of labour market adjustment than what was suggested by looking only at industry-level figures on the net change in employment. In Zimbabwe (Rattso and Torvik, 1998), the drastic trade liberalization implemented in the early 1990s resulted in a contraction in output and employment that was accompanied by a sharp increase in imports and a rising trade deficit. In contrast, a study on Mauritius (Milner and Wright, 1998) found far more favourable outcomes from trade liberalization. The reduction in protection for local firms that had been implemented during the period 1985-1987 led to the expected rise in employment in export industries, but no contraction in employment in the industries producing importable.

It is important to note that most of these studies focused on employment in the manufacturing or the organized sector of the economy. Little is said about employment in the rural or urban informal sectors. Yet, this is where the major part of employment occurs in low-income countries and where the majority of the poor earn their livelihoods. The impact of trade liberalization on employment in the rural and urban informal sectors is thus important from the standpoint of overall welfare and poverty reduction.

### **3.2 Studies in the Indian Context**

There is a bunch of literature on employment growth trends and patterns, started mainly after 1980s particularly in the manufacturing sector as the sector is subject to drastic changes in the patterns of employment since the mid 1980s. This prompted many scholars to study employment growth of organized manufacturing sector in the pre- and post-reform periods. Another group of scholars (Goldar, 2002; Banga 2005, 2008) have focused on the effect of trade liberalization on employment.

#### ***Employment Growth and Patterns in Organized Manufacturing***

As far as employment growth is concerned, there has been a great deal of debate on the jobless growth in Indian manufacturing since 1980s, whereas output growth of the sector has significantly increased due to change in policy regime (Unni, 2003). There is unanimity amongst scholars that the organized manufacturing sector registered “jobless growth” during 1980-81 to 1990-91. The reasons put forward by scholars for the near stagnation of employment are, however varied. One of the views is that job security regulations introduced in the late 1970s and strengthened in the early 1980s is the reason for employment stagnation – a view shared by most official economists and policymakers. Fallon and Lucas (1993) have provided some empirical evidence in support of this view. According to a study undertaken by the World Bank (1989), the stagnation in factory employment in the 1980s is due to acceleration in ‘*product wages*’<sup>6</sup> as a result of a union push. However, this view has been negated by Papola (1994), Kannan (1994) and Nagaraj (1994). It has been pointed out by Papola (1994) that the increase in labour productivity during the 1980s was much faster than the growth in real wages, and therefore, the latter cannot be a reason for stagnation in employment. He further argued that the decline in employment in cotton textiles and food products industries, which accounted for a sizeable part of factory employment, was caused by closure of mills due to sickness and rationalization due to obsolescence. Kannan (1994) demonstrated that the increase in product wage in organized manufacturing was lower than labour productivity during 1973 to 1988, although the difference narrowed since the early 1980s. There was no convincing evidence to show that the presence of unions was incompatible with dynamic efficiency, i.e. a higher growth in labour productivity as compared to product wage. Nagaraj (1994) argued that there was a decline in the bargaining power of the organized sector workers during the 1980s and the structure of employment within the organized sector moved towards smaller sized establishments. It was, therefore, unlikely that unionized labour secured a disproportionate increase in the wage. The alternative explanations given by Papola (1994), Nagaraj (1994) and Bhalotra (1998) for the stagnation of employment in the organized manufacturing sector in the 1980s are - (i) changes in industrial composition and (ii) increase in actual hours worked per worker, which indicates a more intensive use of the workforce. In a recent study, Kannan and

---

<sup>6</sup> Product wage is defined as wages explained in terms of the value of output. In other words, it explains what proportion of value of output is used to pay as wages (for details see Kannan and Raveendran, 2009).

Raveendran (2009) examined the employment growth of organized manufacturing during 1980-81 to 1990-91, and found that there has been jobless growth since 1980s, but it is not uniform across industries. Some industries have created employment growth in post-liberalization period while some others have experienced the jobless growth.

Employment situation in India after economic reforms have been widely discussed and speculated by researchers and policy makers. Some have argued that structural changes would lead to greater labour and product market flexibility, a shift towards labour-intensive techniques and commodities, and hence, a rise in employment potential and job availability (Singh, 1993).

Goldar (2000) has shown that employment in the organized manufacturing sector (including electricity) registered an impressive annual growth rate of about 2.83 percent during 1990-96. The growth was mainly contributed by private and joint sector companies. The growth rate registered by the public sector was only 0.39 percent as against 3.72 percent by the other firms. Further, he showed that there was a marked change in the size structure of industries, particularly in the 1990s, in favour of smaller size firms. While firms in the size classes of 50 to 500 employees gained significantly, the size classes of 2000 and above lost their share of employment substantially. Nagaraj (2000), however, contested the findings of Goldar (2000) and attributed the employment growth during the 1990s to the investment boom that was witnessed in response to the industrial deregulation and trade policy reform. Further, Nagaraj (2004) noted that jobless growth during the 1980s was followed by an employment boom for four years during 1992-96 and retrenchment thereafter. Between 1995-96 and 2001-02, 1.3 million employees lost their job. These losses have been widespread across major states and industry groups. Rani and Unni (2004) found that the initial economic reform policies have adversely affected employment in organized and unorganized manufacturing sectors, which got improved in the subsequent years. The reform measures also have differential impact on various industry groups, in particular, growth in automobiles and infrastructure enabled growth in the unorganized segment. Mujundar (2006) argued that competition would breed efficiency, provide incentives to expand output, and the resultant high GDP growth would naturally use our abundant factor labour more intensively leading to substantial job growth. The new liberal economic policy regime marked by increased competition on the one hand, and greatly

improved access to foreign technology and imported capital goods on the other, should create a drive towards the adoption of advanced technology among the firms, which is likely to lead increasing capital intensity of production (Ghose, 1994).

### *Impact of Trade Liberalization on Employment and Wages*

Trade liberalization is one of the major parts of economic reforms. It is expected to have a positive impact on employment, nonetheless literature we examined thus far showed mixed results. Goldar (2002) found that employment elasticity for organised manufacturing sector increased from 0.26 in the pre-reform period (1973-74 to 1989-90) to 0.33 in the post-reform period (1990-91 to 1997-98). The significant increase in employment elasticity is observed only in the export-oriented industries, whereas the import-competing industries revealed a fall in employment elasticity from 0.425 to 0.264 during the same period. The study also found that the growth in real wages has slowed down appreciably in the post-reform period. At the aggregate level, the annual growth rate of real wages per worker declined from 3.29 percent in the pre-reform period to 1.16 percent in the post reform period. Banga (2005) examined the impact of exports on employment and wages in the organized manufacturing sector for the period 1991-92 to 1997-98 using data for 78 industries. The results indicated that higher exports in an industry have significant positive impact on employment levels, though the impact on the wage rate is insignificant. In a recent study, Banga and Bathla (2008) examined the impact of trade on unorganized manufacturing sector for the period 2000-01 to 2005-06. They found that export intensity has significant positive impact on employment, which implies enterprises belonging to industries with higher export intensity have experienced a rise in employment. Import-competition is found to have no job displacement effect in NDMEs sector within the unorganized sector.

Sen and Raj (2008), examining both the organized and unorganized manufacturing sectors, found that employment in the organized manufacturing sector increased at an annual rate of 1.5 percent over the last two decades, while the unorganized sector increased at a much faster annual average rate of 3.82 percent during the same period. Ramaswamy et al. (2003), Sarma (2003) and Deshpande et al. (2004) studied the demand elasticities of labour market in the liberalised regime. They found that trade liberalization has positive impact on demand elasticities and there have been higher wage inequalities in the post-reform period.

#### 4 Data Source and Methodology

In our study we use data from the National Sample Survey Organisation (NSSO), a survey conducted by the Central Statistical Organisation (CSO), on the Employment and Unemployment Situation in India from the 48<sup>th</sup> round to 61<sup>st</sup> round to provide the overall employment trends at the aggregate as well as sectoral level during pre- and post-reform periods. However, the main focus of our analysis is the organized manufacturing sector. The principle source of industrial statistics in India is the Annual Survey of Industries (ASI) conducted every year (since 1959) by the NSSO and processed by the CSO. The ASI relates to the organized or the registered sector of manufacturing.<sup>7</sup>

In the ASI frame all the industries are classified in their appropriate National Industrial Classification (NIC) groups on the basis of the principle product manufactured, which follows the structure of Standard Industrial Trade Classification (SITC) of United Nations (UN). Until 1997-98 the ASI data was organized according to the NIC 1987 classification and then the NIC 1998 classification has followed until 2003-04 and since then the NIC 2004 classification has been followed. For the period 1980-81 to 2003-04 we have used the ASI data published in “Annual Survey of Industries: A Database on the Industrial Sector in India”, Economic and Political Weekly Research Foundation (EPWRF), 2003-04 (Vol. II) at the two digit NIC 1998. The EPWRF has made a concordance table at NIC 1998 and compiled the 1987 classification with 1998. Data for the year 2004-05 is extracted from ASI according to NIC 1998 classification. By doing this, we may lose some information. But we assume that this lose of information is minimal and will not affect our analysis.

We have taken total number of employees as a measure of employment for the period 1980-81 to 2004-05.<sup>8</sup> In order to track the reasons for change in employment we have taken data of gross value added and value of capital stock. Since the values report monetary values at current prices, appropriate price deflators are needed to convert the nominal values into real

---

<sup>7</sup> ASI data covers industrial units registered under the sections 2m (i) and 2m (ii) of the Factories Act, 1948 and Bidi and Cigar establishment registered under the Bidi and Cigar Workers (Conditions of Employment) Act, 1966. ASI collects data using two methods: a 'census' sector survey with 100 percent coverage of units employing 50 or more persons with the aid of power and employing 100 or more persons without the use of power; and a 'sample' sector survey of the smaller units employing 10 or more persons with the aid of power and 20 or more persons without the aid of power.

<sup>8</sup> ASI defines the employees as number of workers plus supervisory and staff category.

ones. All the monetary values given here have been adjusted for 1993-94 prices by using the wholesale price index (WPI)<sup>9</sup> relevant to the specific industry groups at the 2-digit level. The data on WPI is taken from Handbook of Statistics on Indian Economy, published by the Reserve bank of India (RBI). The choice of 1993-94 prices was also a matter of convenience as it is one of the middle years on which the earlier series of national accounts were based.

To find out the effect on trade liberalization on employment we need data on exports and imports at two-digit level manufacturing which should be comparable with NIC classification. The trade data that is available according to Indian trade classification is based on Harmonized Commodity Description and Coding system (HS). UNCTAD is the most comprehensive database, which gives data on all the trade flows covering across the world, and data is available in two versions: online database (UN COMTRADE) and UN commodity yearbook. The data on exports and imports is extracted through WITZ from UN COMTRADE for the period 1990-91 to 2004-05 on the basis of International Standard Industrial Classification (ISIC) Revision 3. The NIC 1998 classification is according to ISIC revision 3, and hence, we can easily compare two datasets.<sup>10</sup> Since the monetary values of exports and imports are expressed in terms of dollars, we used exchange rate data from RBI in order to convert figures in Indian rupees.

### *Methodology*

The empirical analysis that follows is concerned with labour market effects of trade liberalization in manufacturing industry in India. Going with the conventional theoretic argument of free trade, there will be an increase the employment of the labour-intensive industries as they have comparative advantage in producing labour intensive commodities. In order to identify the labour intensive industries, we follow Ghose (2000) methodology of dividing industries into export-oriented and import-competing industries. We have taken net exports of each industry for the post-reform period and divided by output. The industries with positive net exports are considered as export-oriented and industries with negative net exports

---

<sup>9</sup> Since our analysis covers the period from 1990-91, the values of WPI prior to 1994-94 are converted using the splicing method.

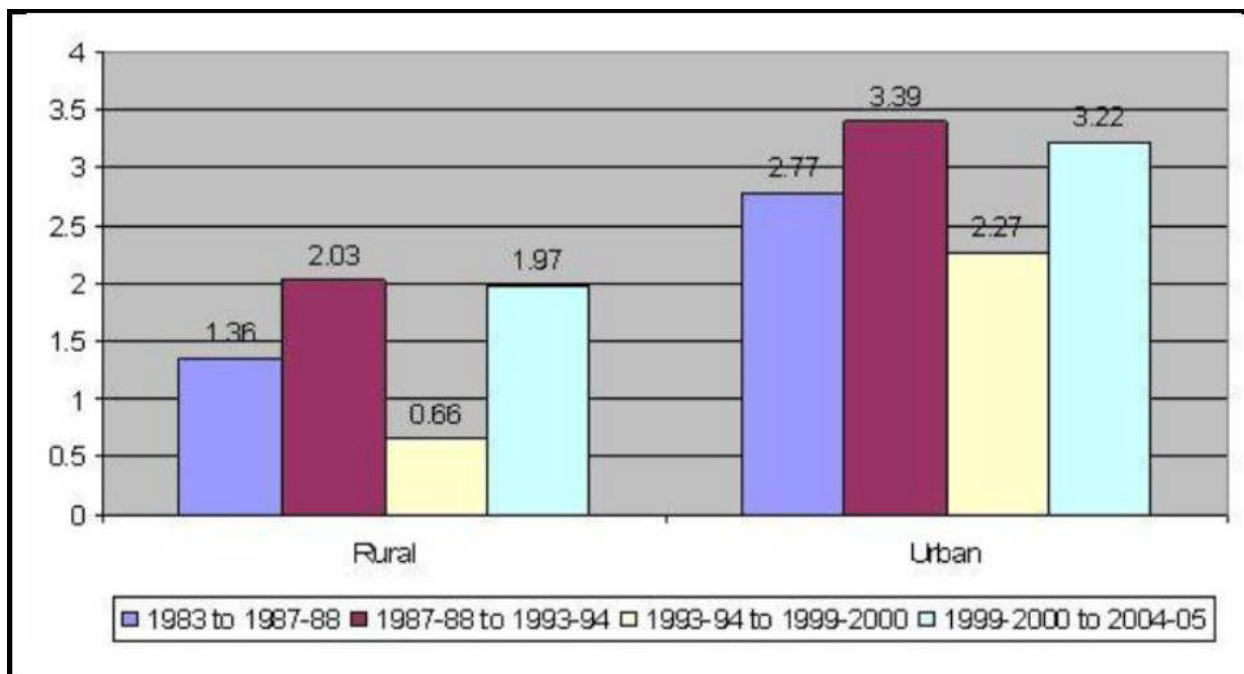
<sup>10</sup> We could not consider the effect of trade on employment in the pre-liberalization period because prior to 1998 data was given on the basis of ISIC revision 2, which is different from the NIC 1998.

are considered as import-competing industry. To show the trends in the growth rates of employment, output, exports and imports we have computed the compound annual growth rate. To find out the relationship between capital intensity and employment, we have taken the stock of value of capital and divided by employment.

## **5 Empirical Findings**

In this section, we first provide employment trends in the pre- and post-liberalization period for both rural and urban as well as at sectoral level. This is followed by analysis of growth and patterns of employment in the organized manufacturing sector in the light of trade liberalization.

The 61<sup>th</sup> round of NSS survey (2004-05) revealed that there have been notable changes in the employment patterns and conditions of work in India over the first half of this decade. The first important change from the previous period relates to aggregate employment growth itself. The late 1990s was a period of quite dramatic deceleration of aggregate employment generation. However, the most recent period indicates a recovery, as shown in Figure 1. While aggregate employment growth (calculated at compound annual rates) in the first post-reform sub-period (1993-94 to 1999-00) was lower in both the rural and urban India compared to the rates recorded during 1987-88 to 1993-94, it clearly recovered in the second post-reform sub-period (1999-00 to 2004-05). The recovery was most marked in rural areas, where the earlier slowdown had been sharper. From the figure it is clearly visible that the trend in employment growth is same in both rural and urban areas, and employment growth is lower in rural area than urban areas.



**Figure 1: Annual Rates of Employment Growth for Usual Status Workers (in percent)**

Source: NSSO, Employment and Unemployment Situation, various rounds

In order to understand the employment trends at more disaggregated level, annual growth rates of employment at sectoral level is provided in Table 1. From the table it is clear that employment growth in the pre-liberalization period (1983-84 to 1993-94) is lower than that of in the post-liberalization period (1993-94 to 2004-05), 1.85 and 2.04 respectively. Similar trend is found for both the agriculture and tertiary sectors. Agriculture is the worst sufferer, where employment growth decreased from 1.41 percent in the pre-liberalization period to 0.71 percent in the post-liberalization period, though there has been marginal increase in the second half of the liberalization period. Contrarily, employment trends in the secondary sector showed the reverse trend. Employment growth in secondary sector is significantly higher in the post-liberalization period (4.18 percent) compared to the pre-reform period (2.60 percent), and manufacturing sector also shown an increase in employment growth to 3.09 percent in the post-reform liberalization from 2.04 percent in the pre-liberalization period. Another important point is that there is a rise in employment at both aggregate and sectoral level during 1999-00 to 2004-05. This growth is highest in the secondary sector, registered at 5.81 percent. Liberalization policies are expected to have a positive impact on employment opportunities, which was also



supported by studies of Ghose (2003) and Goldar (2002). However, looking at the trends in employment at sectoral level, it can be inferred that liberalization policies did not really create employment opportunities in the Indian economy.

**Table 1: Annual Growth Rates of UPSS Workers, 1983-84 to 2004-05**

Sector	1983-84 to 1993-94	1993-94 to 1999-2000	1999-2000 to 2004-05	1993-94 to 2004-05
Agriculture, etc.	1.41	0.06	1.49	0.71
Mining	4.01	-3.27	3.04	-0.45
Manufacturing	2.04	1.56	4.96	3.09
Electricity	5.56	6.61	8.21	7.33
Construction	4.92	-5.25	4.65	-0.87
Secondary	2.60	2.84	5.81	4.18
Trade	3.88	6.20	3.95	5.17
Transport	3.48	5.28	4.75	5.04
Services	3.84	-0.67	3.55	1.23
Tertiary	3.81	2.89	3.92	3.35
All workers	2.04	1.05	2.82	1.85
Non-Agricultural workers	3.29	2.69	4.72	3.60
Non-Manufacturing workers	2.04	0.99	2.54	1.69
Labour force	2.29	1.04	2.88	1.88

Source: NSSO, Employment and Unemployment Situation in India, various rounds

In the post-liberalization period, there have been significant changes in the patterns and trends in the employment of manufacturing sector. As liberalization policies particularly targeted the manufacturing sector, it was expected that the opening up of the economy would not only lead to a higher output growth due to better allocation of resources, but increase in trade will restructure production towards more labour-intensive avenues, and thereby, generating substantial increases in employment (Singh, 1993; Papola, 1994; Ghose, 2000). By looking at the employment trends of total manufacturing sector, it is clearly visible that employment growth in the post-liberalisation, which is 0.5 percent, is negligible (see Table 2.2). Employment growth in the organized manufacturing sector has decelerated to 1.4 percent in the post-liberalization period (1994-00) from 2.4 percent during 1989-94, whereas employment growth in the unorganized manufacturing sector has actually increased in the post-liberalization period to 1.9 percent, compare to negative growth during 1989-94. The general trend of manufacturing employment growth shows that the employment growth is higher in

the organized manufacturing than in the unorganized manufacturing in the post-liberalization period.

**Table 2: Employment in Manufacturing Sector - All India**

Enterprise Type	Employment (in millions)			Growth Rates (% per annum)		
	1989	1994	2000	1989-94	1994-00	1989-00
OAME	24.5	22.7	25.1	-1.5	1.7	0.2
NDME	5.1	4.9	5.6	-0.8	2.3	0.9
DME	6.4	5.7	6.5	-2.3	2.2	0.1
Unorganized Sector	36	33.2	37.1	-1.6	1.9	0.3
Factory Sector	7.3	8.2	8.9	2.4	1.4	1.8
All Manufacturing	43.3	41.4	45.9	-0.9	1.7	0.5

Source: Mujundar (2006)

Now we move to the employment growth and its trends in the organized manufacturing at two-digit level. Table 3 provides the employment trends for both pre and post-liberalization period. The pre-liberalization period is further divided into two periods as India started liberalization from the mid 1980s. Table 3 shows that employment growth in the first half of pre-reform period (1980-81 to 1984-85) was near zero which includes negative growth of some industries and high growth in radio & television and non-metallic mineral products. On the other hand, growth in the second half of pre-reform period (1985-86 to 1989-90), the so called partial liberalization period, was quite higher than the earlier period. Many industries during this period have undergone a considerable increase in employment growth, particularly leather and tobacco industries. However, the employment growth during the decade of 1980s (1980-81 to 1989-90) has shown a negative growth of -0.07 percent for overall organised manufacturing sector and at 2-digit industry level except radio and television every other industry has shown very dismal performance in its employment growth. During the first phase of post-reform period (1990-91 to 1996-97), there is significant rise in the employment growth in almost all 2-digit industries, leather and furniture being the industries with significantly high growth of 17.9 percent and 10.8 percent respectively. The total manufacturing has registered a decent employment growth of 3.51 percent during this period, against 2.20 percent and -0.07 percent during the second half and the decade of 1980s. But the trend could not continue in the later years of liberalization period. There is a massive decline in the employment growth of

organized manufacturing in the second half of liberalization period (1997-97 to 2004-05), which registered 0.26 percent (almost no growth in employment) and the same trend of decline is evident across all industries (many industries have experienced a negative growth rate) except tobacco products and non-metallic mineral products, for which employment growth has increased compare to previous period. The overall growth in the employment in the post-liberalization period has recorded a negative growth rate of -0.99 percent. Thus, it can be concluded that the post-liberalization period has witnessed deceleration in the employment growth compared to the pre-liberalization period. This indicates that liberalization policies did not have any positive impact on employment in the organized manufacturing.

**Table 3: Annual Growth Rates of Employment at 2-digit Level Manufacturing**

Industry	Pre-liberalization period			Post-liberalization period		
	1980-81 to 1984-85	1985-86 to 1989-90	1980-81 to 1989-90	1990-91 to 1996-97	1997-98 to 2004-05	1990-91 to 2004-05
Food Products	-6.78	2.50	-2.57	2.85	-0.01	0.60
Tobacco Products	-2.85	10.07	0.58	2.37	5.10	4.49
Textiles	0.72	-0.38	-0.99	2.01	-1.79	-0.90
Wearing and apparel	3.97	15.23	6.91	17.9	6.20	7.83
Leather and Footwear	2.34	8.54	4.47	3.4	3.36	1.61
Plating Materials	-0.91	0.24	-1.00	3.32	-2.4	-3.36
Paper Products	1.30	1.49	-0.03	4.22	0.51	1.08
Printing	1.80	-1.95	-0.95	2.60	3.97	-3.36
Petroleum Products	0.47	2.68	0.92	4.30	3.73	0.96
Chemicals	0.93	3.21	1.79	5.87	-1.19	0.04
Rubber & Plastic	2.89	7.09	3.07	6.97	1.78	2.25
Non-Metallic Mineral Products	5.08	0.66	1.83	1.03	4.39	1.96
Basic Metals	3.45	-0.13	0.31	1.96	-2.51	-1.81
Fabricated Metal Products	1.11	5.23	1.22	4.62	3.1	1.51
Machinery	1.98	-0.09	0.19	2.74	-3.48	-3.49
Computing Machinery	4.37	-4.78	0.50	-3.14	-0.01	-5.37
Electrical Machinery	1.22	5.12	1.15	1.40	-2.26	-2.8
Radio, Television	7.58	6.47	6.19	4.45	-5.5	-4.20
Watches & Clocks	0.60	5.89	2.84	5.07	-2.26	-1.92
Motor Vehicles	0.60	2.10	1.00	5.17	2.93	1.60
Transport Equipment	2.02	1.50	-0.56	4.50	-8.4	-7.44
Furniture	-2.1	2.60	0.33	10.8	4.69	6.68
Total	0.01	2.20	-0.07	3.51	-1.03	-0.99

Source: Calculation based on ASI data.

In order to find out the effect of trade liberalization on manufacturing employment, as mentioned earlier, we have divided the industries into export-oriented and import-competing industries. By doing this we can test whether the trade theoretic argument that trade openness generates employment in the labour-intensive industries (which are export-oriented) in developing countries holds good, against the modern theoretic argument that trade sometimes lead to job distortion.

Table 4 provides the aggregate employment growth in both export-oriented and import-competing industries during the post-liberalization period. From the table it is clear that employment growth in export-oriented industries is higher than the import-competing industries in both the post-reform sub-periods. There is not much difference in the employment growth of both industry groups in the first period (1990-91 to 1995-96), with growth rate recorded at 3.23 and 3.00 percent respectively for export-oriented and import-competing industries. However, employment growth has decelerated in the both the industry groups during the second sub-period; even the import-competing industries experienced negative growth of -2.10 percent, while growth rate of export-oriented industries declined to 0.76 percent. The result was a negative growth rate of employment for the overall industries during this period. The overall post-liberalization period also shows a negative employment growth (-0.99 percent); employment growth of export-oriented industry (1.54 percent) is higher than the import-competing industries (-1.26 percent). It is thus visible that there is employment loss in the import-competing industries, which resulted in negative growth rates of overall manufacturing employment in the post-reform period, since the employment growth in these industries is lower than the growth in total manufacturing employment. Although the employment growth rate in export-oriented industries has declined in the second post-reform sub-period, it still remained higher than the total manufacturing employment growth for the entire post-reform period. The employment growth of export-oriented industries is higher than the total manufacturing in the post-liberalization period. A look at more disaggregated level of export-oriented industries will give a clear picture about the industries that are benefited in the post-liberalization period, i.e. where trade openness enhanced the employment opportunities more and where it created fall in employment growth.

**Table 4: Annual Employment Growth in Industries**

<b>Industry type</b>	<b>1990-91 to 1995-96</b>	<b>1996-97 to 2004-05</b>	<b>1990-91 to 2004-05</b>
Export-oriented	3.23	0.76	1.54
Import-competing	3.00	-2.10	-1.26
Total	3.51	-1.03	-0.99

Source: Same as Table 2.3.

Table 5 provides employment growth trends in the export-oriented industries. Among the all export-oriented industries, tobacco products, wearing apparel and furniture have shown a significant growth in employment in the post-liberalization period. In the first post-reform sub-period (1990-91 to 1995-96), wearing apparel and furniture industries have registered high growth of employment at 17.9 and 10.8 percent repetitively. It should be noted that the furniture industry has experienced 2.6 percent employment growth during 1985-86 to 1989-90 (Table 3) and it increased to 10.8 percent during the first post-reform sub-period. This implies that liberalization has positively affected the employment growth of the industry. The employment growth in the second post-reform sub-period has seen drastic deceleration in almost all industries except tobacco products (which registered a rise in employment growth) and footwear (for which growth remained constant). We will discuss the reasons behind growth as we go along. Comparing the employment growth of these industries in the post-liberalization period with that of the pre-liberalization period (Table 3), it is found that employment growth has increased for most of the industries in the post-liberalization period, except decreased for plating materials, paper & paper products and rubber and plastic products industries.

**Table 5: Annual Employment Growth in Export-oriented Industries**

<b>Industry</b>	<b>1990-91 to 1995-96</b>	<b>1996-97 to 2004-05</b>	<b>1990-91 to 2004-05</b>
Food Products	2.85	-0.01	0.60
Tobacco Products	2.37	5.10	4.49
Textiles	2.01	-1.79	-0.90
Wearing and Apparel	17.9	6.20	7.83
Leather and Footwear	3.4	3.36	1.61
Rubber & Plastic	6.97	1.78	2.25
Metal Products	4.62	3.1	1.51
Furniture	10.8	4.69	6.68
<b>Total</b>	<b>3.82</b>	<b>0.76</b>	<b>1.54</b>

Source: Same as Table 2.3.

Annual employment growth in the all import-competing industries in the post-liberalization period is provided in Table 6. From the table it is evident that employment growth in the first phase of post-liberalization period was quiet decent for almost all industries and it has increased compared to the pre-liberalization period. But employment growth has drastically comedown in the second post-liberalization sub-period in all industries but printing and chemicals industries and many industries have registered negative employment growth except paper, printing, chemicals, petroleum products and motor vehicles industries. In the post-liberalization period as a whole nearly in all industries have registered negative employment growth and growth has drastically fall down particularly in transport equipment (-7.44 percent) and computing machinery (-5.37 percent). It is also observed that the growth of employment in the post-liberalisation period is lower than the pre-liberalization period for almost all industries and the employment growth in the import-competing industries (-1.26 percent) is lower than that of the total manufacturing employment growth (-0.99 percent) in post-liberalization period and pre-liberalization period (-0.07 percent) as well. Finally, it is inferred that trade liberalization has actually declined employment in the import-competing industries.

**Table 6: Annual Employment Growth in Import-competing Industries**

<b>Industry</b>	<b>1990-91 to 1995-96</b>	<b>1996-97 to 2004-05</b>	<b>1990-91 to 2004-05</b>
Plating Materials	3.32	-2.4	-3.36
Paper Products	4.22	0.51	1.08
Printing	2.60	3.97	-3.36
Petroleum Products	4.30	3.73	0.96
Chemicals	1.03	4.39	1.96
Mineral Products	1.96	-2.51	-1.81
Basic Metals	2.77	-2.97	-1.81
Machinery	2.74	-3.48	-3.49
Computing Machinery	-3.14	-0.01	-5.37
Electrical Machinery	1.40	-2.26	-2.8
Radio, Television	4.45	-5.5	-4.20
Watches & Clocks	5.07	-2.26	-1.92
Motor Vehicles	5.17	2.93	1.60
Transport Equipment	4.50	-8.4	-7.44
<b>Total</b>	<b>3.62</b>	<b>-2.11</b>	<b>-1.26</b>

Source: Same as Table 2.3.

So far we have observed the trends in employment growth for manufacturing industries in the post-liberalization period for both export-oriented and import-competing industries. It is found that overall manufacturing employment has come down in the post-liberalization period, but compared to the total manufacturing employment growth export-oriented industries employment growth is found to be higher. This implies that trade liberalization seems to have positive impact on employment growth in the export-oriented industries. Whereas the import-competing industries have registered a negative employment growth during the same period, implying that trade liberalization has created employment distortion in these industries. Goldar (2002) also arrived at same results.

The next part of our analysis looks at the reasons for the slowdown in employment growth by relating it with growth of exports, imports and output, and finally, tries to provide an explanation on the bearing of trade liberalization on employment growth.

In an attempt to find employment growth dynamics in the export-oriented industries in the post-liberalization period, we look at how growth in output, export and import is related to employment growth (Table 7). It is found the argument that higher employment took place where output growth is high is true in the case of leather and furniture industries. In case of leather industries employment and output growth recorded at 17.9 and 18.56 percent respectively, whereas for furniture employment and output grew at 10.8 and 24.61 percent respectively. Interestingly the import growth in the leather industries is highest (47.7 percent) among all other export-oriented industries. Coming to second part of liberalization period, as it is already motioned employment growth of many industries has come down, which is mainly due to reduction in output growth and hence exports. Growth of output has decreased to 1.01 percent during the 1996-97 to 2004-05 from 8.65 percent during 1990-91 to 1995-96, which resulted in decline in export growth to 7.73 percent in the second period from 13.95 percent in the first period, and finally, resulted in decline in the employment growth to 0.76 percent from 3.82 percent in the first period. The rise in imports<sup>11</sup> from 13.95 percent during the first period to 15.49 percent during the second period could also be the reason for deceleration of employment growth. It is to be noted that the tobacco products industry, which registered employment

---

<sup>11</sup> Rise in imports means, there is more demand for the foreign commodities, which reduces domestic demand of that commodity and reduces output, and finally, reduces employment.

growth of 5.1 percent in the second period compared to its previous period growth of 2.37 percent, has also registered growth in the output (12.4 percent), exports (9.66 percent),<sup>12</sup> and imports (43.48 percent)<sup>13</sup> in the second period compared to the previous period. By observing the total employment growth in the post-liberalization period it can be inferred that employment growth is directly related to the growth of output and exports. The industries which experienced high employment growth are also the ones that have high output and export growth (for example, employment growth of wearing apparel (7.83 percent) with output growth of nearly 8 percent and furniture (6.68 percent) with an output growth of 14.11 percent). From the above analysis, we can conclude that employment growth is determined by the output and export growth, whereas import does not have a greater impact on employment growth.

**Table 7: Annual Growth Rates of Employment, Export, Import and Output in Export-oriented Industries**

Industry codes	1990-91 to 1995-96				1996-97 to 2004-05				1990-91 to 2004-05			
	EMP	EXP	IMP	OUTP	EMP	EXP	IMP	OUTP	EMP	EXP	IMP	OUTP
15	2.85	20.47	28.02	10.08	-0.01	2.02	9.75	0.05	0.6	7.25	18.89	6.29
16	2.37	-10.85	37.99	4.92	5.1	9.66	43.48	12.41	4.49	6.22	17.7	7.9
17	2.01	13.88	14.22	5.76	-1.79	5.66	16.88	-0.6	-0.9	8.81	12.41	2.74
18	17.9	10.41	47.7	18.65	6.2	5.2	22.88	2.12	7.83	6.56	25.99	7.57
19	3.4	4.61	5.44	0.8	3.36	6.49	12.3	-0.3	1.61	4.35	8.76	2.22
25	6.97	33.24	17.94	8.33	1.78	10.6	14.8	2.43	2.25	11.47	13.43	7.9
28	4.62	11.37	13.54	10.3	3.1	15.4	12.75	2.22	1.51	13.1	11.85	5.44
36	10.8	14.56	40.07	24.61	4.69	12.9	33.78	2.33	6.68	10.99	31.39	14.11
<b>Total</b>	<b>3.82</b>	<b>13.95</b>	<b>21.17</b>	<b>8.65</b>	<b>0.76</b>	<b>7.73</b>	<b>15.49</b>	<b>1.01</b>	<b>1.54</b>	<b>8.72</b>	<b>17</b>	<b>5.55</b>

Source: Calculation based on ASI and UN COMTRADE data.

Note: EMP- employment, Exp- export, IMP- import, OUTP- output.

Industry Codes: Food Products (15), Tobacco Products (16), Textiles (17), Wearing and Apparel (18), Leather and Footwear (19) Rubber & Plastic (25), Metal Products (28) and Furniture (36)

Table 8 provides the growth in employment, export, import and output in the post-liberalization period. In the first period (1990-91 to 1995-96) the lowest employment growth is registered in the computing machinery industry at -3.14 percent, which is due to lowest output growth of 3.56 percent compared to all other industries and total output growth (but export growth is not low in this industry). Industries like motor vehicles and transport equipment,

<sup>12</sup> Export growth of tobacco product industry was negative (-10.85 percent) during the first period.

<sup>13</sup> Rise in imports may be due to the imports of raw materials and technology.



which have recorded high employment growth during this period (5.17 and 5.07 percent respectively), have registered high output growth at 15.49 and 12.08 percent respectively. In the import-competing industries the direct relationship between employment, output and exports seems to be not that significant as some industries like paper & paper products with high export growth of 43.91 percent experienced low employment growth (4.22 percent). This may be because of very low growth rate of output. But for some industries, though output and export growth is high employment growth is low, which may be because of high capital intensity in those industries. For example, printing industry, for which employment growth is only 2.6 percent, output and export growth are 11.96 and 37.03 percent respectively. Similarly, for chemicals industry, employment growth is 1.03 percent, whereas output growth is 14.22 percent.

**Table 8: Annual Growth Rates of Employment, Export, Import and Output in Import-competing Industries**

Industry codes	1990-91 to 1995-96				1996-97 to 2004-05				1990-91 to 2004-05			
	EMP	EXP	IMP	OUTP	EMP	EXP	IMP	OUTP	EMP	EXP	IMP	OUTP
20	3.32	11.10	24.11	8.55	-2.40	9.57	14.80	4.19	-3.36	13.21	7.90	1.51
21	4.22	9.56	43.91	5.44	0.51	3.86	23.24	8.55	1.08	7.00	22.14	4.81
22	2.60	24.86	37.03	11.96	3.97	24.86	5.97	4.71	-3.36	25.33	19.01	5.55
23	4.30	8.55	-0.40	14.11	3.73	-5.51	81.30	33.11	0.96	-0.09	16.88	11.52
24	1.03	11.94	14.22	14.22	4.39	6.05	16.18	1.51	1.96	7.30	14.34	8.11
26	1.96	7.94	28.92	4.08	-2.51	15.10	15.72	3.98	-1.81	10.98	15.84	5.35
27	2.77	16.46	20.32	9.97	-2.97	12.30	25.48	0.80	-1.81	17.01	15.72	6.18
29	2.74	16.73	8.22	9.31	-3.48	4.91	17.59	0.30	-3.49	7.41	12.75	4.29
30	-3.14	15.02	23.74	3.56	-0.01	22.97	16.77	17.12	-5.37	23.12	11.29	3.56
31	1.40	17.94	13.43	6.18	-2.26	14.84	16.07	-2.47	-2.8	12.41	15.37	2.43
32	4.45	13.31	20.80	7.14	-5.5	29.08	18.29	1.11	-4.20	19.02	12.30	5.41
33	5.07	5.92	14.00	12.08	-2.26	14.18	24.23	7.90	-1.92	10.58	19.84	8.87
34	5.17	13.03	15.95	15.49	2.93	5.73	17.94	5.87	1.60	8.21	10.41	8.11
35	4.50	16.81	11.85	9.20	-8.40	22.54	15.14	6.18	-7.44	12.87	9.64	3.98
<b>Total</b>	<b>3.62</b>	<b>12.79</b>	<b>14.45</b>	<b>10.63</b>	<b>-2.11</b>	<b>9.04</b>	<b>21.90</b>	<b>4.60</b>	<b>-1.26</b>	<b>10.31</b>	<b>14.68</b>	<b>6.72</b>

Source: Same as Table 2.7.

Note: EMP- employment, Exp- export, IMP- import, OUTP- output.

Industry Codes: Plating Materials (20), Paper Products (21), Printing ((22), Petroleum Products (23), Chemicals (24), Mineral Products (26), Basic Metals (27), Machinery (29), Computing Machinery (30), Electrical Machinery (31), Radio, Television (32), Watches & Clocks (33), Motor Vehicles (34) and Transport Equipment (35)

In the second half of post-liberalization period, as it is already mentioned, the employment growth of all import-competing industries has drastically reduced. It is partly because of the reduction in output on the one hand, and on the other hand, it could be due to increase in capital intensity. Interestingly though during this period exports growth have risen to 21.95 percent compared to its previous growth of 14.45 percent and import growth has decreased to 9.04 percent compared to its previous period growth of 12.79 percent, but these positive signs seem to have no positive impact on employment growth. Looking at more disaggregated level we can find that the only industry where employment growth is higher is printing industry (3.97 percent), but output growth for this industry decreased to 5.97 percent during this period from 11.96 percent during the previous period and import growth remained highest compared to other industries during this period. Similar is the case for chemicals and its products industry, where employment growth has increased to 4.39 percent during second period from 1.03 percent during the previous period, but output growth has significantly reduced to 1.51 percent from 14.21 during the same and exports growth has increased in the second period compared to the previous period. The transport equipment industry, which registered employment growth of 4.50 percent in the first period (which is one of the highest among all industries), recorded the lowest employment growth (-8.4 percent) during the second period, and though output growth of the industry fell down to 6.18 percent in the second period, it is still higher than the output growth of total import-competing industries (4.60 percent). If we look at the post-liberalization period as a whole the employment growth is negative (-1.26 percent). From the forgoing analysis it is understood that the industries, which registered a positive employment growth are the ones which registered a decent growth in output.

Another important finding is that output growth is comparatively higher in import-competing industries compared to export-oriented industries in both the first and second half of post-reform period as well as the overall reform period. The growth rates of output of import-competing industries are 10.63 percent during 1990-91 to 1995-96, 4.60 percent during 1996-97 to 2004-05 and 6.72 percent during 1990-91 to 2004-05, which are higher than export-oriented industries 8.65 percent during 1990-91 to 1995-96, 1.06 percent during 1996-97 to 2004-05 and 5.55 percent during 1990-91 to 2004-05. But the total employment growth in export competing

industries is higher than the employment growth in import-competing industries (Table 7 and 8). This implies that employment absorption capacity is higher in export-oriented industries compared to import-competing industries.<sup>14</sup>

Table 9 provides the relative share of employment in each industry to the total manufacturing employment and provides information regarding where exactly the employment is concentrated in the post-liberalization period by taking three different time periods in the liberalization period. It also gives the information about the industries, which registered increase/decrease in employment share. From the table it is found that 40 percent of the total employment share is concentrated in industries food products and textiles and the rest is skewed among others. But the employment share in the post-liberalization period has declined. In 1980-81 textiles industry accounted for 21.69 percent of total manufacturing employment, which reduced to 18.22 percent in 1990-91 and further reduced to 16.68 percent in 2000-01. Food products industry, which contributed for 19.93 percent in 1980-81 reduced to 16.14 percent in 1990-91 and then increased to 17.15 percent in 2000-01. Among others, while some industries have shown an increase in the share of employment in the post-liberalization period, some others have lost its share in employment. The industries, which have shown an increase in relative share in employment, are tobacco products, leather & footwear, paper & paper products, chemicals & products, and fabricated metal products. These are the industries which have registered an increasing trend in employment growth in the post-liberalization period compared to pre-liberalization period, and also experienced a decent output growth during the same period (see Table 3 for employment growth and Tables 7 and 8 for output growth) which implies that trade liberalization positively affected the growth of employment. All other industries have lost their share in employment in the post-reform period and recorded low employment growth rates.

**Table 9: Relative Share of Industries in total Employment Share**

<b>Industry</b>	<b>1980-81</b>	<b>1990-91</b>	<b>2000-01</b>
Food Products	19.93	16.14	17.15
Tobacco Products	5.39	6.20	10.36
Textiles	21.69	18.22	16.68
Wearing and Apparel	0.76	1.59	4.17

<sup>14</sup> This also implies that export-oriented industries are labour intensive and import-competing industries are capital intensive

Leather and Footwear	1.03	1.61	1.90
Plating Materials	1.05	0.85	0.57
Paper Products	1.89	2.04	2.38
Printing	2.23	2.05	1.09
Petroleum Products	0.65	0.84	0.78
Chemicals	7.45	8.26	9.11
Rubber & Plastic	1.77	8.26	2.96
Non-Metallic Mineral Products	5.23	6.20	6.45
Basic Metals	8.72	8.95	7.25
Fabricated Metal Products	2.94	3.40	3.90
Machinery	6.30	6.47	4.29
Computing Machinery	0.40	0.39	0.24
Electrical Machinery	2.86	3.50	2.50
Radio, Television	1.01	1.63	1.11
Watches & Clocks	0.61	0.72	0.62
Motor Vehicles	2.58	2.97	2.91
Transport Equipment	4.73	4.69	2.15
Furniture	0.77	0.78	1.42
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Same as Table 2.3.

Table 10 reports the relative employment share in both export-oriented and import-competing industries and try to relate how capital intensity affects the employment growth. From Table 10 it is found that among all export-oriented industries food products and textiles constitute more than 60 percent share of total employment in the total export-oriented industries. Except for these two industries all other industries have somewhat increased their share in total employment of export-oriented industries in the post-liberalization period. Food products industry which constituted 31.99 percent of total employment in 1990-91 decreased to 30.62 percent in 1996-97 and further reduced to 29.10 percent in 2003-04. For this industry capital intensity has increased from 0.007 percent to 0.02 and output growth drastically came down in the second half of liberalization period (see Table 7). For the textile industry employment share has decreased from 36.12 percent in 1990-91 to 32.05 percent in 1996-97 and further to 26.68 percent in 2003-04. Despite this deceleration in the share of employment in those two industries they continue to be the industries with high employment share. The rest of the industries have increased their share the employment to the total employment. It is also observed that the capital intensity has been increased in the liberalization period from 0.007 in 1990-91 to 0.01 in 1996-97 and further to 0.06 in 2003-04, which probably could be the reason for the deceleration in the employment growth in the post-liberalization period.

**Table 10: Relative Share of Export-oriented and Import-competing Industries in Employment and Capital Intensity**

	1990-91		1996-97		2003-04	
	Relative share	Capital intensity	Relative share	Capital intensity	Relative share	Capital intensity
<b>Export-oriented Industries</b>						
Food Products	31.99	0.0072	30.62	0.0121	29.10	0.2477
Tobacco Products	12.30	0.0008	12.17	0.0012	17.08	0.0119
Textiles	36.12	0.0078	32.05	0.0183	26.68	0.2763
Wearing and Apparel	3.16	0.0029	6.34	0.0057	8.25	0.0247
Leather and Footwear	3.19	0.0115	3.08	0.0083	3.22	0.0135
Rubber & Plastic	4.93	0.0168	6.16	0.0487	5.90	0.0398
Metal Products	6.75	0.0080	7.31	0.0135	6.65	0.0157
Furniture	1.55	0.0040	2.27	0.0074	3.13	0.0144
Total	100	0.0071	100	0.0145	100	0.0622
<b>Import-competing Industries</b>						
Plating Materials	5.35	0.0045	4.5	0.0111	5.7	0.0140
Paper Products	4.5	0.0235	3.78	0.0417	2.55	0.0468
Printing	2.06	0.0062	1.73	0.0108	2.45	0.0334
Petroleum Products	18.38	0.0711	19.96	0.1249	20.79	0.4743
Chemicals	8.58	0.0370	11.42	0.0534	13.88	0.0852
Mineral Products	15.88	0.0171	16.36	0.0342	16.97	0.0418
Basic Metals	10.38	0.0463	10.88	0.0649	10.19	0.1111
Machinery	0.75	0.0104	0.63	0.0159	0.5	0.0297
Computing Machinery	7.66	0.0152	6.44	0.0216	5.91	0.1281
Electrical Machinery	4.27	0.0119	3.59	0.0172	2.52	0.0315
Radio, Television	1.91	0.0148	1.6	0.0270	1.55	0.0923
Watches & Clocks	7.96	0.0135	6.7	0.0196	8.7	0.0301
Motor Vehicles	9.37	0.0154	10.4	0.0359	5.42	0.0486
Transport Equipment	2.95	0.0119	2.01	0.0146	2.87	0.0164
Total	100	0.2988	100	0.4928	100	1.1833

Source: Same as Table 2.3.

In the import-competing industry, high employment share was contributed by chemicals & products and basic metals industry, but their share has decreased in the post-liberalization period. In an attempt to find the reason for job loss we compare with capital intensity. But interestingly it shows capital intensity in the import-competing industries is almost stagnant in the post-liberalization period. Another interesting result is that capital intensity is lower in import-competing industries compared to export-oriented industries, but employment growth is higher in export-oriented industries than in import-competing industries. This contradicting trend requires further investigation.

## 6 Conclusions

We have outlined the trends in employment in the Indian manufacturing sector in the backdrop of liberalization policies, which brought phenomenal changes in the economy. The policy shift has led to flexibility of labour market in the organized manufacturing. The opening up of the economy helped the organized manufacturing sector to grow for more than a decade, before slowing down. Initial reforms have increased output and employment growth significantly, but it could not sustain after 1996-97. In this chapter we have examined effect of international trade on employment of the organized manufacturing sector in India. The key questions investigated were: whether trade liberalization led to a faster growth in manufacturing employment; whether there was an increase in the share of export-oriented industries in manufacturing employment.

The findings suggest that international trade has not had a significant positive effect on manufacturing employment via scale and composition effects, and may have had a negative effect via the substitution effect. This suggests that international trade may not be the driver for job creation in the Indian manufacturing sector and may not be the major source of job creation for India's large pools of surplus unskilled labour. We find that the share of labour-intensive goods in India's export basket has increased in the export-oriented industries in the post-reform period. Import-competing industries employment growth is however much lower compared to export-oriented industries. The main reasons for the low employment growth are observed to be the output growth. In both the export-oriented and import-competing industries employment growth has come down after liberalisation compared to pre-liberalization period. It is also found that output growth in import-competing industries is higher than the export-oriented industries, but employment growth in import-competing industries is lower than the export-oriented industries, which implies that import-competing industries are more capital intensive.

## References

- Ahluwalia, M. S. (2002), "Economic Reforms in India since 1991: Has Gradualism Worked?", *Journal of Economic Perspectives*, 16(3): pp. 67-88.
- Agarwal, R. N. and B. Goldar (1995), "Economic Reforms and Employment in India: Projections for the Year 2001-02", *Indian Journal of Labour Economics*, 38(4): pp. 577-95.
- Balasubramaniam, V. N. and M. Vidya (2001), "India's Economic Reforms and Manufacturing Sector", Working Paper No. 2001/010, Lancaster University Management School.
- Banga, R. (2005), "Impact of Liberalization on Wages and Employment in Indian Manufacturing Industries", Working Paper No. 153, Indian Council for Research in International Economic Relations.
- Banga, R. and S. Bathla (2008), "Impact of Trade on Labour Markets in the Unorganised Sector in India: An Empirical Approach", paper prepared for UNCTAD, Centre for Development Studies, Trivandrum.
- Bhalotra, S. R. (1998), "The Puzzle of Jobless Growth in Indian Manufacturing", *Oxford Bulletin of Economics and Statistics*, 60(1): pp. 5-32.
- Deshpande, L. (1992), "Economic Liberalization and Labour in India", *Indian Journal of Labour Economics*, 35(4): pp.25-40
- Fallon, P. R. and R. E. B. Lucas (1993), "Job Security Regulations and the Dynamic Demand for Industrial Labour in India and Zimbabwe", *Journal of Development Economics*, 40(2), pp. 241-75.
- Ghose, A. K. (2000), "Trade liberalization and Manufacturing Employment", Employment Paper No. 2000/3, International Labour Office, Geneva
- Ghose, A. K. (1999), "Current Issues in Employment Policies in India", *Economic and Political Weekly*, 34(46): pp. 4-10.
- Ghose, A. K. (1994), "Employment in Organised Manufacturing in India", *Indian Journal of Labour Economics*, 37(2): pp.141-62.
- Goldar, B. (2002), "Trade Liberalization and Manufacturing Employment: The Case of India", Working Paper No. 34, International Labour Organization, Geneva.
- Goldar, B. and S. C. Aggarwal (2004), "Trade Liberalization and Price-Cost Margin in Indian Industries", Working Paper No. 130, Indian Council for Research on International Economic Relations, New Delhi.
- Goldar, B. (2000), "Employment Growth in Organised Manufacturing in India", *Economic and Political Weekly*, 35(14): pp. 1191-95
- Grossman, G. M and E. Helpman (1991), "Innovation and Growth in the Global Economy", MIT Press, Cambridge MA.

- Hasan, R and D. Mitra (2003), "The Impact of Trade on Labor: Issues, Perspectives and Experiences from Developing Asia", Elsevier Science, Amsterdam.
- Helpman, E. and P. R. Krugman (1985), "Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy", MIT Press, Cambridge MA.
- Kannan, K. P. (1994), "Levelling Up or Levelling Down? Labour Institutions and Economic Development in India", *Economic and Political Weekly*, 29(30): pp. 1938-45.
- Krugman, P. R. (2000), "Crises: the Price of Globalization?" Proceedings (Aug), Federal Reserve Bank of Kansas City, pp. 75-106.
- Kundu, A. (1997), "Trends and Structure of Employment in the 1990s: Implications for Urban Growth", *Economic and Political Weekly*, 32(24), pp. pp. 1399-1405.
- Levinsohn, J. (1999), "Employment Responses to International Liberalization in Chile", *Journal of International Economies*, 47(2), pp.321-344
- Mesquita, M. and S. Najberg (2000), "Trade Liberalization in Brazil: Creating or Exporting Jobs?" *Journal of Development Studies*, 30(3): pp. 78-100.
- Milner, C. and P. Wright (1998), "Modelling Labour Market Adjustment to Trade Liberalization in an Industrializing Economy", *Economic Journal*, 108(447): pp. 509-28.
- Majumder, R (2006), "Wages and Employment in the Liberalised Regime: A Study of Indian Manufacturing Sector" MPRA Paper No. 4851
- Nagaraj, R. (1994), "Employment and Wages in Manufacturing Industries: Trends, Hypotheses and Evidence", *Economic and Political Weekly*, 29(4): pp. 177-86.
- Nagaraj, R. (2000), "Organised Manufacturing Employment", *Economic and Political Weekly*, 35(38): pp. 3445-48.
- Nagaraj, R. (2002), "Trade and Labour Market Linkages in India: Evidence and Issues". Economic Series Working Paper No. 50, East West Center, Hawaii.
- Papola, T. S. (1994), "Structural Adjustment, Labour Market Flexibility and Employment", *Indian Journal of Labour Economics*, 37(1): pp.10-35.
- Pianta, M and M. Vivarelli (2000), "The Employment Impact of Innovation: Evidence and Policy", Routledge, London.
- Posner, M. (1961), "International Trade and Technological Change", *Oxford Economic Papers*, 13(3): pp. 323-41.
- Ravenga, A. (1994), "Employment and Wage Effects of Trade Liberalization: The case of Mexican Manufacturing", World Bank, Washington, DC.
- Rattso, J. and R. Torvik (1998). "Zimbabwean Trade Liberalization: Ex-post Evaluation", *Cambridge Journal of Economics*, 22(3), pp. 325-46.
- Ramaswamy, K.V, R. Hasan, D. Mitra (2003): "Trade Reforms, Labour Regulations, and Labour Demand Elasticities: Empirical Evidence from India, Working Paper No. 53, East West Working Paper Series.



- Rani, U. and J. Unni (2004), "Unorganised and Organized Manufacturing in India: Potential for Employment Generating Growth", *Economic and Political Weekly*, 34(41): pp. 4568-80.
- Sen, K. and R. Rajesh (2009), "Did International Trade Destroy or Create Jobs in Indian Manufacturing?", paper for BNUIF Conference, Centre for Development Studies, Trivandrum.
- Sundaram, K. and S. D. Tendulkar (2006), "Trends in Labour and Employment in India, 1983-2003: Some Fresh Results", paper presented at the Conference on India: Meeting the Employment Challenge, organised by Institute for Human Development and World Bank, July 27-29, New Delhi.
- Tendulkar, S. D. (2003), "Organised Labour Market in India: Pre and Post Reform", paper prepared for the Conference on Anti Poverty and Social Policy on January 2-4 at Alwar, India.
- Rodrik, D. (1997), "Has Globalization Gone Too Far?", Institute for International Economics, Washington DC.
- Unni, J. (2006), "Employment Trends and Earnings in the Informal Sector", paper presented at the Conference on India: Meeting the Employment Challenge, organised by Institute for Human Development and World Bank, July 27-29, New Delhi.
- World Bank (1989): "India: Poverty, Employment and Social Services: A World Bank Country Study" (Washington DC: World Bank)
- Young, A. (1991), "Learning by Doing and Dynamic Effect of International Trade", *Quarterly Journal of Economics*, 106(2), pp. 369-405.