

**TRADE LIBERALISATION AND EMPLOYMENT:
THE EXPERIENCE OF INDIA'S MANUFACTURING INDUSTRIES**

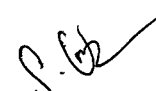
*Dissertation submitted in partial fulfillment of the requirements for the degree of
Master of Philosophy in Applied Economics of the Jawaharlal Nehru University*

Uma, S
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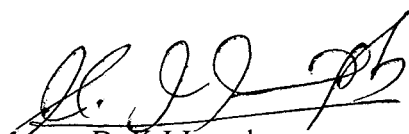
CENTRE FOR DEVELOPMENT STUDIES
June, 2009

I hereby affirm that the work for the dissertation, **Trade Liberalisation and Employment: The Experience of India's Manufacturing Industries**, being submitted as part of the requirements for the degree of master of Philosophy in Applied Economics of the Jawaharlal Nehru University, was carried out entirely by myself and has not formed part of any other programme and not submitted to any other institution/university for the award of any Degree or Programme of Study.

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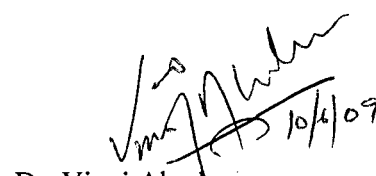

Uma, S

Certified that this study is the bona fide work of Uma, S, carried out under my supervision at the Centre for Development Studies.


Dr.K.J.Joseph

Professor

Centre for Development Studies


Dr. Vinoj Abraham

Lecturer

Centre for Development Studies


Dr. K.N.Nair

Director

Centre for Development Studies

*Dedicated
To My
Beloved Parents*

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ABSTRACT OF THE DISSERTATION

**TRADE LIBERALISATION AND EMPLOYMENT:
THE EXPERIENCE OF INDIA'S MANUFACTURING INDUSTRIES**

Uma, S

M.Phil Programme in Applied Economics, Jawaharlal Nehru University, 2007-09
Centre for Development Studies

The Indian economy has entered a phase of high growth in the recent years, after a long period of low growth, the concern of policy makers seems to have shifted towards making the growth inclusive – a process wherein employment is at its core. The available evidence, however, tends to indicate that the high growth has been accompanied by low employment growth in the organised manufacturing sector. Various reasons have been put forward in the literature to explain the observed jobless growth. This included, but not limited to, labour market rigidity, growth of mandays worked, growth in wage rate and others. But the observed jobless growth has been coincided with an unprecedented increase in the rate of integration of Indian economy with the world market through trade liberation. Yet, it is surprising to note that the impact of trade liberalisation has not received the attention of scholars that it deserves in explaining the observed jobless growth. Hence, the present study explores the underlying factors behind the poor performance of the organized sector in terms of employment generation in the context of trade liberalization. With this background, the specific objectives of the study are to analyse the changes in the trends and patterns of employment in manufacturing industries in the context of trade liberalisation and to examine the impact of trade reforms and its outcome on employment.

For fulfilling these objectives, the study used ASI and UNCTAD data. In tune with the results of earlier studies, the present study finds that the process of jobless growth accentuated in the recent past. Employment growth in all the industries (at two-digit) has declined and in more than half of the industries employment growth showed negative growth rates during 1997 to 2005. At the same time, India's trade with rest of the world has increased and import tariff has reduced continuously. In addition, most of the industries capital intensity has also increased. To confirm the hypothesis of trade induced employment changes, the study divided industries into export-oriented and import competing following Ghose (2000) and supplements the analysis with use-based sectors. The analysis showed that employment generation in import-competing industries was lesser than export-oriented industries. Consumer durables and capital goods industries showed highest reduction of employment among use-based sectors. The Econometric analysis (at 3-digit) using a panel data with other control variables showed that import penetration ratio has significant negative effect on employment. Unexpectedly, export intensity also showed significant negative effect on employment possibly due to the increased exports of capital-intensive goods. The study did not find significant effect of import weighted tariff on employment.

Key Words: Trade liberalisation, Employment, Tariff, Exports, Imports.

CONTENTS

	Title	Page No.
	List of Tables	ix
	List of Figures	xi
Chapter I	Introduction	1
	1.1. Trade and Employment	2
	1.2. An Overview of Previous Studies	4
	1.3. Studies on Trade Liberalisation and Employment	7
	1.4. Issues and Objectives	10
	1.4.1. Limitations of the Study	11
	1.5. A Note on Database	11
	1.6. Organisation of the Study	12
Chapter II	Employment and Trade: Trends and Patterns	14
	2.1. Introduction	14
	2.2. India's Trade Liberalisation: Overview	15
	2.2.1. Removal of Non-Tariff Barriers (NTBs)	16
	2.2.2. Tariff Reforms	17
	2.2.3. Exchange Rate Reforms	19
	2.3. Performance of the Industries in terms of Employment	19
	2.3.1. Trends in Employment	19
	2.3.2. Output and Employment Growth	28
	2.3.3. Trade Performance	30
	2.4. Trends and Patterns of Trade and Employment	32
	2.4.1. Tariff and Employment	32
	2.4.2. Import and Employment	34
	2.4.3. Export and Employment	37
	2.5. Export-Oriented Vs Import-Competing Industries	42
	2.6. Use-Based Sectors	43

	2.7. Summary and Findings	45
	Appendix 2.1. A Note on Use Based Sectors	47
Chapter III	The Effect of Trade Liberalization on Employment	52
	3.1. Analytical Framework	52
	3.2. Econometric Analysis	54
	3.2.1. Hypotheses and Variable Construction	54
	3.3. Data and the Method	60
	3.3.1. Econometric Model	61
	3.4. Results of the Estimated Model	63
	3.5. Summary and Findings	70
Chapter IV	Conclusions	73
	Bibliography	79

LIST OF TABLES

Table No.	Title	Page No.
2.1	Quantitative Restrictions in India	17
2.2	Tariff Structure of the Indian Economy across Broad Sectors	18
2.3	Rate of Growth of Employment in Organized (Public and Private) Sector	21
2.4	Percentage Share of Non-Production and Production Workers in the Total Employment	23
2.5	Percentage Share of Direct and Contract Workers to Production Workers	24
2.6	Industry-wise Annual Rates of Growth in Employment and Employment Elasticity in Manufacturing Industries (1990-91 to 2004-05)	26
2.7	Employment and Output Growth (1990-91 to 1996-97)	28
2.8	Employment and Output Growth (1997-98 to 2004-05)	30
2.9	Indicators of India's Manufacturing Export and Import Performance	31
2.10	Import and Employment Growth (1990-91 to 1996-97)	35
2.11	Import and Employment Growth (1997-98 to 2004-05)	37
2.12	Export and Employment Growth (1990-91 to 1996-97 and 1997-98 to 2004-05)	38
2.13	Protection Rate, Capital Intensity, Labour Intensity, Export Intensity and Import Intensity by Industry (1990-91 to 2004-05)	41
2.14	Performance of Export-oriented and Import-competing Industries	42
2.15	Performance of Use-Based Sectors	44
A.2.1	Non-metallic mineral products	48
A.2.2	Spinning, weaving and finishing of textiles	48
A.2.3	Other chemical products	48
A.2.4	Other fabricated metal products	49

A.2.5	Manufacturing n.e.c.	49
A.2.6	Transport equipment	49
A.2.7	Office accounting and computing machinery	49
A.2.8	Industry-wise Annual Rates of Growth in Real Exports and Imports in Manufacturing Industries (1990-91 to 2004-05)	50
A.2.9	List of Industries Covered by the Study	51
3.1	Summary Statistics of Variables	62
3.2	Correlation Matrix of Employment with other Variables	63
3.3	The Effect of Trade Liberalization on Employment in the Manufacturing Sector	65
3.4	The Effect of Trade Liberalization on Employment in the Manufacturing Sector with Industry Group Dummies	67
3.5	The Effect of Trade Liberalization on Employment in the Export-Oriented and Import-Competing Sectors	69
A.3.1	The Effect of Trade Liberalization on Employment in the Manufacturing Sector	72

LIST OF FIGURES

Figure No.	Title	Page No.
2.1	Employment Trend in the Indian Organized Manufacturing Industries	20
2.2	Import-weighted Tariff Rate (Average) and Employment Growth (1990-91 to 1996-97)	33
2.3	Import-weighted Tariff Rate (Average) and Employment Growth (1997-98 to 2004-05)	34

Chapter I

Introduction

The Indian economy has entered a phase of high growth in the recent years,¹ after a long period of low growth, with the service sector revolution (Banga, 2006 and Rakshit, 2007). However, the period of this growth phase had been its exclusionary nature, with the benefits of the growth being concentrated to a few hands² (Pal and Ghosh, 2007). No wonder, the policy focus appears to have shifted towards making the growth inclusive as evident from the Eleventh Five Year Plan (2007-12) of the Government of India. For achieving this goal, the scholars have called for, among others, an industrial revolution that complements the services revolution to respond to the challenge of providing gainful employment to its growing workforce (Kumar and Joseph et al., 2006). Particularly, reduction of under-employment in the informal sector requires employment generation in the formal sector grow faster than the labour force in the economy (Ghose, 2008).

India's overall employment growth has considerably increased from one per cent per annum to nearly 3 per cent and industrial employment growth increased from 2.9 per cent to 4.2 per cent, between 1993-94 to 1999-2000 and 1999-2000 to 2004-05 (Unni and Raveendran, 2006 and 2007). However, the worrying fact is that the rise in employment has been mostly within the unorganised and unregulated informal sector particularly the period after 1996 (Rani and Unni, 2004). In case of organised sector, annual employment growth has decreased from 3.44 per cent per annum during 1990-91 to 1996-97 to -0.63 per cent in 1997-98 to 2004-05³. During the same period, output growth has also decreased from 10 per cent to 6 per cent; however, employment growth has decreased faster than output growth. Kannan and Raveendran (2009) found that registered manufacturing industries performed quite well in terms

¹ GDP has grown by over 8 per cent a year during 2005-07.

² "The rapid growth achieved in the past several years demonstrates that we have learnt how to bring about growth, but we have yet to achieve comparable success in inclusiveness" (Singh, 2008 : Forward note to Eleventh Five Year Plan – 2007-12)

³ The Planning Commission's special group on employment generating growth has noted that "even if the organised sector grew at 20 per cent per annum and the private organised sector at 30 per cent per annum, their contribution to total employment would increase hardly by 1.5 to 2.0 per cent of the total over the Tenth Plan" (Planning Commission, 2002).

of output during post-reform period even though it was not reflected in employment growth. This can be called as 'jobless growth'. The important point to note is that, this jobless growth has occurred when India's integration with the rest of the world, with regard to trade, has increased⁴. One important criterion of success for the trade reforms would be the creation of jobs in the formal manufacturing sector, apart from the productivity and price effects of the reforms (Sen, 2009). However, studies (Goldar, 2000, 2002, Nagaraj 2000, 2004 and Kannan and Raveendran, 2009), examined the issue of 'jobless growth' in the closed economy framework and this issue is not taken in the context of globalisation. With this backdrop, the present study aims to examine the impact of trade liberalisation on India's organised manufacturing sector employment during post-reform period. Before putting forward the issues and objectives, an overview of the existing studies is presented in the following section.

1.1. Trade and Employment

There are different channels through trade can affect employment. These could be broadly divided into direct and indirect channels. In case of direct channels, trade liberalisation facilitates the import of larger varieties of inputs and therefore increases the elasticity of substitution of labour with respect to all other inputs. Put it another way, new imported material and capital inputs could substitute the services of domestic workers called "substitution effect" (Hasan, Mitra and Ramaswamy, 2003 and 2007). On the other hand, expanded market size and increased exports could have a positive effect on the level of output and employment (Sen, 2008). This is the second direct channel through which trade effects employment called "scale effect".

In addition, trade can affect employment through various other indirect channels, such as investment, output, productivity, factor prices etc. Investment is an important channel through trade affects employment. Trade policy can positively affect on economic growth either by increasing the rate of investment or by increasing the efficiency of investment. Liberalisation measures, which specifically reduce the protection of capital and intermediate goods may bring about a fall in the relative price of those goods. This may lead to an increase in the rate of investment in machinery and equipment (Sen, 2009) but reduces labour demand in industries. On

⁴ India's manufacturing average exports share in world has increased from 0.78 to 0.82 and imports share has increased from 0.64 to 0.69 during 1990-91 to 1996-97 and 1997-98 to 2004-05.

the other hand, if investment increased in the labour-intensive industries with the increased export demand of labour-intensive goods may lead to raise the labour demand. Apart from this domestic investment, trade can enhance foreign direct investment (FDI) and employment. Bhat and Raj (2007) argued that when the economy opens its' trade regime, competition induces innovativeness and managerial efficiency that made export-oriented domestic firms more attractive to foreign investors. In this perspective, Helpman and Krugman (1985) argued that the capital-abundant country would produce capital-intensive goods at home and exchange them for the labor-intensive good from a labor abundant country, if differences in factor endowments are not substantial. Besides, if there are substantial differences in factor endowments⁵, the capital abundant country tends to establish their subsidiary firm in the labor abundant country for production activities and locate headquarter activities in the parent country. These moves would increase the demand for labour in the labour abundant country. In short, FDI provides complementary trade flows from the labor-intensive country to parent country and increase employment in the labour abundant country.

Another important way in which trade could affect employment is that, increased trade openness makes the demand for labour more elastic, which in turn leads to reduced wages and larger employment (Hasan, Mitra and Ramaswamy, 2003 and 2007). Trade in manufacturing sector can generate employment through forward and backward linkages, for instance, increased exports of manufacturing goods can call for demand of other industries output such as intermediate inputs, raw materials, various sectors services, agricultural services etc. Therefore, through this forward and backward linkages trade can create demand for other industries' output and then employment. In addition to the effects of trade on labour market suggested above, trade may also have another indirect effect on employment via induced productivity growth. Generally, it is believed that industries with concentrated market structure in the domestic market uses their resources in a relatively inefficient manner due to lack of competitive pressure. In such industries, trade openness increases the scope of competition and forces firms to become relatively efficient in their use of labour resources (Hine and Wright, 1997). Moreover, greater access to greater variety of

⁵ Which makes capital would be cheaper in the capital abundant country and labour would be cheaper in the labour abundant country

specialized inputs raises total factor productivity growth (Sen, 2009) which may lead to reduced the labour demand. Though there are various ways in which trade can affect employment, in this study we are concentrating only on the direct effect of trade on employment.

1.2. An Overview of Previous Studies

Here we examine the studies that are set in the background of the restricted regime as well as in the liberalized regime. Particularly, it is important to look at the studies, which explain the employment growth in the organised manufacturing sector during first half of the 1990s in order to situate our research problem in a broader empirical context. First, those studies are reviewed, which provide different hypotheses for the decreased employment or jobless growth during 1980s. Then we can understand the researchers' approach to employment situation in the organized sector during the restricted and the open regime.

One of the popular reasons given in the literature, regarding the jobless growth during 1980s, is the introduction of job security regulations in the late 1970s and strengthening of this in the early 1980s. These regulations increase the labour adjustment costs because enterprises fear that it may not be possible for them to reduce the workforce when needs for competition and efficiency forces them to reduce workers (Fallon and Lucas, 1991). However, the following scholars have contested this view. Papola (1994) argued that job security measures are not necessarily major factor for the restricting growth of employment in the industrial sector; slow growth of employment was rather due to rising technological characteristics of the industrial growth or capital-intensive industries. Moreover, Nagaraj (1994) argued that, if the extension of job security was the reason for the decrease in employment, it might be expected to observe threshold effects at 100 workers⁶. Instead, he found that employment growth was positive in factories with less than 1000 workers and negative in larger ones in 1980s. Ghose (1994) and Goldar (2000) also empirically examined this hypothesis and did not find any support from their analysis. In addition, Papola, Pais and Sahu (2008) mentioned that there is

⁶ Industrial Dispute Act, 1947, which is one of the most debate natures of labour regulations in India, applies to a large number of enterprises in the country, provisions contained in specific chapters or sections are applicable only to certain large enterprises with 100 or more workers (Papola, Pais and Sahu, 2008).

increased flexibility since the mid-1980s despite no significant change in labour regulations. Thus, labour regulation laws cannot be the major reason for the decreased employment during post-reform period.

Another well-known reason given in the literatures, for the stagnation in factory employment during 1980s, is increase in product wages because of pressure from unions. Ahluwalia (1991) noted that consumer non-durable goods industries accounted for the bulk of the decline in employment during first half of the 1980s. While analysing the cause and effect, she found that it is in this group of industries, among other use-based sectors, which experienced the highest increase in capital intensity as well as the maximum increase in the real wage rate in that period. A similar view by Ghose (1994) concluded that the slow-down in employment growth resulted from a strategy of capital deepening induced labour productivity and one explanation for the increase in capital intensity is due to rising relative price of labour. However, Papola (1994) has not found favour for the above view. He pointed out that the increase in labour productivity was much faster than the growth of real wages during 1980s. Nagaraj (1994) found that real earnings per worker increased at 3.2 per cent per annum during 1979-80 to 1988-89. However, he mentioned that the growth rate of real earnings per manday, which is an appropriate measure for the wage rate, was only 1.6 per cent per annum. Hence, he concluded that there had been no sharp hikes in the real wage rate.

Papola (1994), Nagaraj (1994), Bhalotra (1998) have offered alternative explanations for the stagnation in employment in organized manufacturing in the 1980s such as (i) changes in the industrial composition (ii) increase in actual hours worked per worker (or increased manday per worker) indicating a more intensive use of the workforce for longer hours. In an another study, Sen and Dasgupta (2006) found that capital intensity has increased in manufacturing industries during 1980s which led to increase in labour productivity and failed to raise employment.

The growth of employment, which picked up considerably during first half of the 1990s, in the organised manufacturing sector has also been analysed by a number of scholars. Among them, Goldar (2000) has shown that employment in the organised sector registered an impressive growth of 4.03 per cent per annum during 1990-91 to

1995-96. He has also shown that there was a marked change in the size structure of the industries. During first half of 1990s the size classes 50 to 500 employment gained and the size classes above 2000 lost their employment growth. By using econometric analysis, he found that growth in output, real wages have a significant effect on employment growth, and growth in mandays does not have significant effect - even for the 1980s. Therefore, he concluded that changes in the size structure of the industries in favour of small and medium-size factories and slow-down in the growth of real wages are the major reasons for the acceleration in employment growth during the first half of 1990s. He attributed these changes to the reform of economic policies particularly to the liberalisation of trade and industrial policies. Further Goldar (2002) shows at the sectoral level, this increased employment has been largely due to the increase in labour intensive export-oriented industries. Thus, the study concluded that trade liberalisation has increased demand for low-skilled labour.

However, Nagaraj (2000) contested the findings of Goldar (2000). He mentioned that the changes in the size structure of factories have been taking place during last five decades. In addition, he highlighted that due to correlation between mandays and wages Goldar could not find an independent effect of mandays on employment. Therefore, due to the incorrect specification Goldar's econometric results have little economic meaning. Further, Nagaraj (2000) has given the alternative hypothesis that increased employment growth during first half of the 1990s, was caused by investment boom that was witnessed in response to the industrial deregulation and trade policy reform. When this investment boom disappeared, the net job creation turned negative, between 1995-96 and 2001-02, 1.3 million employees lost their job due to retrenchments and lay-offs (Nagaraj, 2004).

In the recent paper, Kannan and Raveendran (2009) analysing the employment trends in organised manufacturing found that higher growth in organised manufacturing both during the pre- and post-reform periods from 6.97 per cent per annum in 1981-82 to 1991-92 to 7.39 per cent in 1992-93 to 2004-05. However, during the same period employment growth has increased marginally from 0.40 per cent to 0.63 per cent. They found the cause for the slow growth of employment during the two periods as increased capital intensity and labour productivity.

Literature, which are presented above analyzed the decline in employment growth during 1980s and increased employment growth during first half of 1990s, when India liberalized her economy, in a closed economy framework. Globalisation, particularly measured in terms of trade liberalisation, is considered as an effective tool for economic development, poverty and income inequalities reduction (Nanda and Kaur, 2008). Despite the economic gains from trade liberalisation, concerns have been raised over the effects of trade liberalisation on the labour market in terms of employment and wages. This is because the process of adjustments is likely to make some the losers and others the gainers. Moreover, India's openness ratio, the sum of exports and imports as a percentage of the GDP, has increased from 14.6 per cent in 1990-91 to 22.6 per cent in 2005-06 (Nanda and Kaur, 2008). In addition, India's manufactured exports grew by 23.02 per cent between 2005-06 and 2007-08 and had a share of around 70 percent in its total merchandise exports (IIFT, 2008). Thus, the observed jobless growth has been coincided with an unprecedented increase in the rate of integration of Indian economy with the world market through trade liberation. Yet, it is surprising to note that the impact of trade liberalisation on employment has not received the attention of scholars that it deserves in explaining the observed jobless growth. Hence, the present study aims to examine the effect of trade liberalisation on employment in India's organised manufacturing industries. In the following section, we shall review those studies dealt exclusively with trade liberalisation and employment.

1.3. Studies on Trade Liberalisation and Employment

Before going to present the studies, which are relating employment and trade liberalisation in India, we shall discuss the evidence from other countries.

The experience of trade liberalisation in different countries provides different understanding of its employment effect. For instance, Onaran (2008) found that in Austrian manufacturing industries, during 1990-2005, employment declined by 1.8 per cent due to increased import penetration. Even in a developed country like US, employment has decreased when it opened up the economy, particularly the trade regime. Studies by Revenga (1992) and Feenstra and Hansan (1996) concluded that increase in import competition or outsourcing has the significant effect in terms of decrease in employment in US. In spite of this, Davis and Mishra (2007) argued that

the effect depends on whether imports are substitutes or complementary to production. If imports are not the substitutes of domestically produced goods but complementary input that are being produced domestically thus the negative effect will not be observed, and even a positive effect is possible (Onaran 2008). A study by Revenga (1997) has explored this complementary relationship between import of inputs and employment in Mexico during 1980s. However, a set of studies by Christer, Kupets and Lehmann (2005) and Abdi and Edwards (2002) discovered that trade reform is not a major factor in the determination of employment in Ukraine and South-Africa respectively.

Another way to assess the impact of trade reform on labour market is to look at the effect of changes in policies, such as reduction in tariff and other trade barriers, on the changes in employment and wages. In this respect, Gaston and Trefler (1994, 1997) and Beaulieu (2000) found that free trade was directly responsible for a significant job loss in Canadian manufacturing industries that were protected initially by import tariffs. On the contrary, another set of studies found that the impact of trade reform or reduction of tariff barriers does not have significant effect on employment in Mexico and Morroco (Revenga, 1997, Harrison and Hanson, 1999 and Feliciano, 2001). Although the literature on the subject of impact of trade reform on employment is rich with empirical studies of different developing countries, there seems to be no clear consensus on the relationship between trade liberalisation and employment. It can be argued that impact of trade liberalisation on employment is a country specific issue. Therefore, as one of the emerging trade regime, India is an interesting case to study the effect of trade reform on employment.

In India, scholars did not give much attention to this issue. There are limited attempt to address employment issue with trade reforms. In this context, using Annual Survey of Industries and Prowess data for the period 1991-92 to 1997-98 Banga (2005) found that export-orientation of industries have significant positive effect on employment and imports do not have significant effect on employment. However, addressing employment issue in organised sector with firm level, though aggregated through concordance procedure, is questionable. Since the coverage of firms in these two data sources are different. Ghose (2000), in his developing countries studies, including India, found that trade increases employment elasticity in manufacturing industries for

the period 1981-94. However, he mentioned that, the share of export-oriented industries employment has actually been declining in India, thus, the observed rise in employment elasticity cannot be attributed to export growth and trade did not adversely affect employment growth in import-competing industries, though he did not prove econometrically.

Another study by Hasan, Mitra and Ramaswamy (2003, 2007), using state level ASI data for the period 1980-1997, found that labour demand elasticities, with respect to wages, increased after the trade reforms particularly in states which are having flexible labour markets. These results are similar to Goldar (2000). The study used an interaction term for trade reform dummy and tariff with wages and provided the above results and it merely hypothesis own price elasticity of trade-labour linkages. Chandrasekhar and Ghosh (2007) showed that when employment declined after 1997 even falling real wages have not been sufficient to ensure growth in employment. In addition, not all states are benefited out of trade reform, it depends upon their contribution to trade but state level trade data is not available. Therefore, instead of industry level data disaggregated by states we need to look at trade reform effect on disaggregated industries. In this respect, Sen (2008, 2009) investigated the effect of international trade on India's manufacturing industries for the period 1975-1999. Using Generalized Method of Moments, he did not find any significant effect of export orientation and import penetration on employment. Thus, he concluded that international trade may have much less positive impact on manufacturing employment and may not be the major source of job creation for India's major group of the surplus unskilled labour. Although, the important point to note is that contrary to theoretical expectation, coefficient of exports has a negative and imports have a positive sign. This study presents the results for India's manufacturing sector as a whole. This may be the reason why the study could not find significant trade effect on employment. Therefore, we suspect that sectoral analysis can provide better insight regarding the trade effect on employment. This sectoral analysis is particularly important with organised sector because the sector, which can provide secured job, is facing jobless growth when international integration is occurring through trade. Therefore, the present study tries to connect the trade liberalisation with employment in organised manufacturing sector.

Thus, a review of the major studies on India reveals that the empirical evidence available so far did not have the clear-cut conclusion regarding the impact of foreign trade on employment. Moreover, the studies, which are mentioned above, cannot explain the jobless growth experienced by the organised manufacturing sector after 1997-98. Hence, a careful empirical investigation is needed for India's manufacturing industries.

1.4. Issues and Objectives

While surveying the literatures, which analysed the impact of trade reform on employment, we find the following issues, which calls for further research in India. Trade reform is an important factor for the determination of aggregate employment. At the same time, trade liberalisation would lead to increase the demand of skilled labourer and reduce the unskilled workers through skill-biased technological change (Berman et al. 1994, 1997 and 2005). Moreover, trade openness not only reducing the demand for unskilled workers but also raising wage inequality between skilled and unskilled workers in the manufacturing sector (Hanson and Harrison, 1995 and Banga, 2005). However, in this study we are going to look at the effect on trade liberalisation on aggregate employment. Because before going to analyse the impact of trade reforms on skilled and unskilled workers employment and their wages, it is important to understand trade reform effect on overall employment first. This will give the clear picture of whether trade has any effect on employment in the respective country or not.

In particular, trade liberalisation effect on aggregate employment in India's manufacturing industries needs to understand empirically. Since the last two decades, India's organised manufacturing sector had been performing well in terms of output. However, their contribution to employment generation is not coincided with their output generation except during first half of 1990s. Literature named this output-employment gap as 'jobless growth'. Many scholars analyzed this issue and the reasons advanced by them are varied. Through surveying the literature, we can identify the following issues which are addressing the jobless growth such as job security regulations, increased wages, labour productivity, capital intensity etc. It is important to note here that, India liberalised her economy during 1990s, trade and investment reforms are core policies. Thus, the observed jobless growth during

second half of 1990s has coincided with increased integration of Indian economy with the world market through trade liberalisation. However, the impact of trade liberalisation on employment has not received the attention of scholars that it deserves in explaining the observed jobless growth. Therefore, our present study aims at examining the effect of trade reforms on employment in India's organised manufacturing industries.

The objectives of the study are

1. to analyse the changes in the trends and patterns of employment in manufacturing industries in the context of trade liberalisation
2. to examine the impact of trade reforms and its outcome on employment

1.4.1. Limitations of the Study

The present study has the following limitations, which are necessary to keep in mind while drawing inferences from the analysis. Firstly, the study has confined to organised manufacturing sector, which is employing about 8 per cent of the workforce. The remaining 92 per cent of the workforce engaged in unorganised sector. However, the study did not look at the effect of trade liberalisation on employment in unorganised sector. Secondly, the period of the study starts from 1990-91 onwards. Instead, if we compare the effect of trade liberalisation on employment during pre-1990s, the period of partial liberalisation and post-1990s, the initiation of further liberalised policies, might give deep insight about the issue at hand. Despite the trade data at ISIC Rev.3 is available only from 1989 onwards. Moreover, trade protection can be divided into tariff and non-tariff barriers, though, the present study restricted to only on tariff barriers due to the difficulties involved in the quantification of non-tariff barriers.

1.5. A Note on Database

The published data from the Annual Survey of Industries (ASI) by the Central Statistical Organisation (CSO) for the period 1990-91 to 2004-05 were used for the present study; selection of the study period is based on the availability of trade data. Since the industrial classification used for the surveys changed from NIC-70, NIC-87 to NIC-98, the concordance procedure was used to convert the data sets into, 2 and 3-digit level of industrial classification, NIC-98. The total employees, including direct

workers, contract workers, supervisory and managerial staff has been taken as the measure of employment in this study.

This database merges trade and tariff data available from different sources into common classification: the International Standard Industrial Classification (ISIC), rev.3. which is consistent with NIC-98. In this revision, data available is from 1989-90 to 2005-06. Therefore, the study restrict its' analysis from 1990-91 to 2004-05. The source of trade data in this database is the United Nations Statistical Department, which collects data from individual countries and reports them in the Commodity Trade Statistics (COMTRADE). The trade data, reported in Standard International Trade Classification (SITC), have been harmonised into ISIC rev.3 using a concordance developed by Organisation for Economic Cooperation and Development (OECD)⁷. Both import and export data are available in 2 and 3 digit of ISIC rev 3. The World Bank's World Integrated Trade Solution (WITS) software was used to extract this data. This data reported in US\$ terms and exchange rates used to convert the trade figures into Indian rupee. The other important definitions and data related issues are discussed in the respective chapters.

1.6. Organisation of the Study

The study is organised in four chapters including this introductory chapter. Chapter two analyses the effect of trade on the employment of manufacturing industry. This chapter begins with a detailed discussion of the trade reform policies in India. Further, it provides a broad mapping on the different aspects of employment in Indian organized manufacturing sector as a whole as well as for individual industries. In addition, in this chapter, we have made an effort to situate the observed changes in employment in the context of trade reforms. In order to understand the theoretical proposition, in this chapter, the study divides industries into export-oriented and import competing and according to use-based classification. It ends with the summary of the chapter.

Chapter three examines the effect of trade reforms on employment with the help of econometric tools. It begins with the analytical framework of this study. The rest of

⁷ For further information about this database see Parameswaran (2009)

the chapter contains the details of the data and construction of variables, discussion of the results and summary of the chapter.

The final chapter presents the summary, findings and the theoretical and policy implications of the study. It also highlights some of the important issues that call for further research.

Chapter II

Employment and Trade: Trends and Patterns

2.1. Introduction

Generally, it is believed that, in the market-oriented economy, policies do not have impact on macro economic variables like investment, output, employment, etc. However, this proposition may not be true. In order to understand the policy induced changes in economic variables, a careful empirical investigation is needed. Together, single study cannot address all the issues. Hence, the present study focusing the effect of changes in trade policies on employment. Since trade reforms, though expected to increase the welfare in the aggregate through improving the allocation of resources and consequently increasing productivity, efficiency and economic growth, it has been criticized on the following grounds such as rising unemployment of unskilled workers, widening the gap of wage inequality and exploitation of workers etc. The available evidence from various studies, particularly from other countries experience of trade induced employment changes, indicates that the effect of trade reforms on employment is a country specific issue. In this regard, a developing country like India provides interesting ground to study the impact of trade liberalisation on labour market outcome. Since the 1990s, after decades of import-substitution industrialization strategy, India initiated a radical liberalization of its external sector. The period under consideration starts with the trade reforms, which helps us to understand the effect of policies on employment. The period of analysis from 1990-91 to 2004-05, is considered sufficient to explore the labour market outcomes due to trade reforms.

With this brief introduction in the first section, the remaining chapter is organised in seven sections. Section two provides the different aspects of trade reform policies. Section three described the changes in employment in India's organized manufacturing industries based on secondary data at the industry level to situate our research problem in the broader empirical context. Since trade induced employment changes are the central theme of this dissertation, in section four the study attempted to analyse the employment changes with trade policies and trade performance in India's organized manufacturing industries. Sections four and five analyses the effect

of trade reforms on employment in export oriented, import competing industries and in use-based sectors respectively. The last section concludes the chapter.

2.2. India's Trade Liberalisation: Overview

There is a tendency to assume that India's liberalisation dates from 1991 and this is a bit of simplification. There has been continuity to India's economic reform experience and it can be traced back to the second half of the 1970s, although the pre-1991 reforms were slow, unplanned, and certainly not as comprehensive as the post-1991 ones (Joseph, 1997 and Debroy, 2007). Early 1980s, which can be considered as the first phase of liberalisation, reduced the earlier regime of bureaucratic controls and replaced it with market forces (Joseph, 1997) despite all imports were subject to licensing or were prohibited (Joshi and Little, 1997). However, by the close of the decade the Indian economy confronted with an unprecedented crisis, which made inevitable the radical reforms relating to the macro and micro economy (Joseph, 1997, Joshi and Little, 1997 and Parameswaran, 2000). It can be called as a second phase of liberalisation. Further, in 1995, World Trade Organisation (WTO) came into existence as a consequence of the Uruguay Round (1986-94) of negotiations, can be considered as a third phase of liberalisation. Because the time frame for implementation of the Uruguay Round agreements meshed in with India's 1991 liberalisation exercise. In fact, these agreements dictated liberalisation were movements in the same direction, India was far more comfortable than the country had ever been with any other round of multilateral trade negotiations. The gap between with the Uruguay Round required India to do and what India would have wanted to do of her own preference was reduced (Debroy, 2007).

The above-mentioned three phases of liberalisation mainly concentrated on external reforms, in particular trade. In the post-1991 scenario, the external sector reforms involved six different strands – tariffs, Quantitative Restrictions (QRs), export subsidies, the exchange rate mechanism, Foreign Direct Investments (FDIs), and foreign portfolio investments (Debroy, 2007). The focus of this study is on trade induced employment changes in India's manufacturing sector. Hence, the following section provides the detailed account of trade liberalisation in India.

2.2.1. Removal of Non-Tariff Barriers (NTBs)

The trade reform announced in 1991 can be broadly divided into removal of tariff and non-tariff barriers. In case non-tariff barriers, the major change in import policy has been the introduction of a negative list. All other goods may be imported freely, except those reserved for import by the government's canalizing agencies. The negative list consists some of the health, consumer and capital goods and producer's goods, though it require licences. Canalized imports as of March 1995 had been reduced to seven items including crude oil and most petroleum products (excluding kerosene), nitrogenous fertilizers, oil seeds and most edible oils, and cereals (Joshi and Little, 1997).

The barriers on the import of consumer goods have been a major policy defect. However, under the EXIM Policy of 1995/96, a few consumer goods removed from the negative list, and put under Open General Licence (OGL). This list of items, which can import under the Special Import Licence (SIL) scheme, was widened and hence, consumer durables are now freely importable. This is expected to help the manufacturers to improve the quality of consumer durable goods for enter into export markets (Joshi and Little, 1997).

In 1991, recognizing the important role of capital goods for increasing the productive capacity, it was announced that new units and units undergoing substantial expansion would automatically be granted licences for import of capital goods without any clearance. A new scheme called Export Promotion Capital Goods (EPCG) under which capital goods imported at concessional duty rates (including zero duty) against an export obligation was introduced in 1992 (Joseph and Veeramani, 2001 and Joshi and Little, 1997). In Foreign Trade Policy (FTP), 2004-09 this scheme explores an additional flexibility for fulfillment of export obligation to reduce difficulties of exporters of goods and services. Apart from that, there is a duty exemption scheme for exporters, which provides the access of duty-free import of materials and components: advance licences for such imports are available (Joshi and Little, 1997). In FTP 2004-09, in order to improve technological base in the country, technological upgradation under EPCG scheme has facilitated. Import of second-hand capital goods has permitted without any age restrictions. The aim of this policy is to make India as a global trading-hub (Business Line, 2004).

Table 2.1: Quantitative Restrictions in India

Year	No. of Items	Inter-Category Movement
	96	'Restricted' to 'Limited Permissible'
July – August 1991 (Import controls)	37	'OGL' to 'Limited Permissible' (reverse movement)
	6	'canalised' to 'de-canalised'
	16	'canalised' to 'limited permissible'
July-August 1991 (Export Controls)	116	From various categories to 'OGL'
April 1, 1992 (Import Controls)	All items except 71	From restricted, canalized, limited permissible to OGL
Among which	3	Banned
	7	Canalized
April 1, 1993 (Export Controls)	146	Removed from negative 'restricted list' of exports'
	5	De-canalised
April 1995 (Import Controls) Category	78	From various categories to 'freely' (Consumer Goods) 'Importable'
1996-97 (Import Controls)	100	From various categories to 'freely importable' category
April 1, 2001 (Import Controls of balance of 715 items)	715	From various categories to 'freely', 'freely importable' category.

Source: Mahajan (2007)

Table 2.1 shows how India made significant efforts at removing non-tariff barriers to trade since July 1991. Particularly, it can observe that, from 1995 onwards, the period when WTO came into existence, there was a larger reduction of quantitative restrictions in India. In April 2001, India removed Quantitative Restrictions (QRs) on 715 items.

2.2.2. Tariff Reforms

India has been a country of high tariff barriers since independence. Tariff acts as a barrier to overseas companies entering the Indian market by making their goods and services more expensive than those produced domestically. Thus, tariff served as a means of protecting domestic industries from import competition. However, as part of the economic liberalisation, tariff rates have reduced substantially. The main thrusts of tariff reform, as stated in Tax Reforms Committee Report (1992) are,

- Reduction of the general level of tariff
- Reduction of the spread or dispersion of tariff
- Simplification of the tariff system
- Rationalization of tariff rates along with the abolition of numerous exemptions and concessions
- Abolition of the practice of making changes in the effective rates through notifications.

However, the reductions in the rates have not been uniform. There was a tendency to reduce the very high rates, and secondly reducing the rates on capital equipment for certain sectors. In 1991-92, the general rate for capital equipment was 85 per cent and this has come down to 25 per cent in 1994-95 for a number of sectors including coal, petroleum, electronics (Joshi and Little, 1997).

Table 2.2 gives trends in the tariff rates across broad sectors. The table shows that all the sectors protection has reduced through the reduction in import duty. In 1990-91 to 1999-2000, manufacturing sector import duty has reduced from 126 to 40 per cent. All sectors tariff has reduced drastically from 1995-96 onwards, the period when WTO agreements start implemented effectively. In addition, import weighted tariff has reduced from 87 per cent in 1990-91 to 30 per cent 1999-2000.

Table 2.2: Tariff Structure of the Indian Economy across Broad Sectors

Average Unweighted	1990-91	1993-94	1995-96	1996-97	1997-98	1998-99	1999-2000
Agriculture	113	43	27	26	26	30	29
Mining	100	70	30	26	25	29	27
Manufacturing	126	73	42	40	36	41	40
Whole economy	125	71	41	39	35	40	40
Std. deviation of tariff	41	30	19	19	15	15	14
Maximum tariff rate	355	85	50	52	45	40	38.5
Import weighted tariff ^a	87	47	25	22	20	30	30

Source: Rajan and Sen (2001)

2.2.3. Exchange Rate Reforms

Exchange rate reforms have taken place through either devaluation or revaluation of the domestic currency. There have been two major downward adjustments in the exchange value of rupee in 1991. The RBI effected downward adjustment in the value of rupee by 8.7 per cent to 9.7 per cent in relation to four major currencies (pound sterling, US dollar, deutsche mark, and Japanese yen) on July 1, 1991. Further by 10 to 11 per cent in relation to five major currencies (including French Franc), resulting in an overall appreciation of these currencies in relation to rupee by about 21 to 23 per cent (Joseph and Veeramani, 2001 and Parameswaran, 2000).

In the background of exchange rate reforms, an important development has been the introduction of current account convertibility. In 1992, government introduced the system of partial account convertibility and created a dual exchange rate for the rupee, which allowed exporters to sell 60 per cent of their foreign exchange earnings in the free market and 40 per cent to the RBI at the lower official price. At the end, in August 1994, the government introduced full account convertibility, which unified the official and market exchange rates (Veeramani, 2007 and Parameswaran, 2000).

2.3. Performance of the Industries in terms of Employment

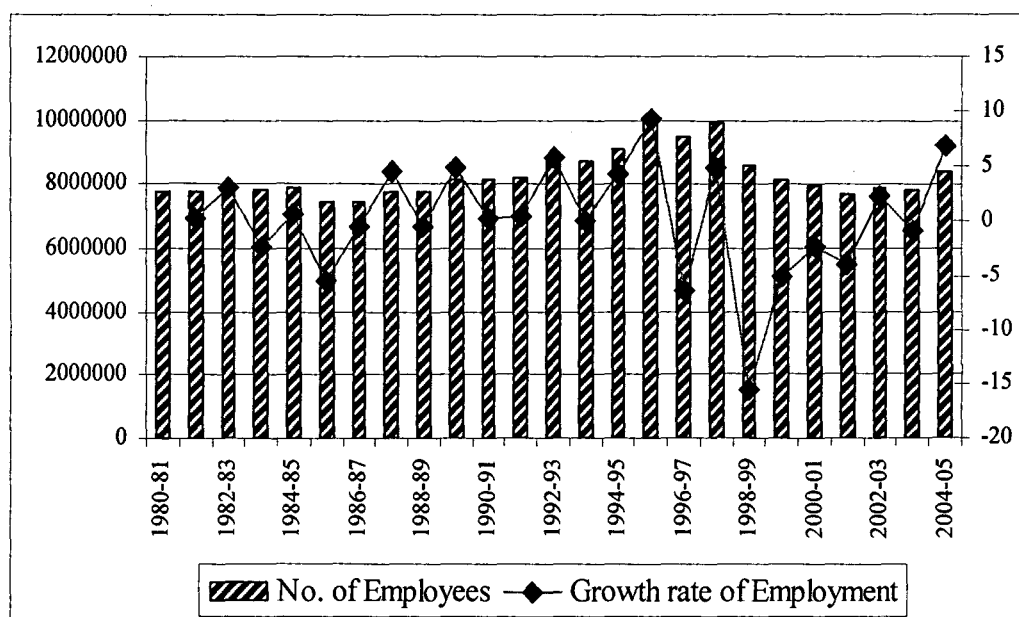
2.3.1. Trends in Employment

In this section, we start with some of the empirical findings related to the organizational aspects of employment in India's manufacturing sector. In India, the Annual Survey of Industries (ASI) brought out by the Central Statistical Organisation (CSO) of Government of India provides information about the industry level total employment, nature of employment (permanent or non-permanent workers), wages and emoluments, fixed capital, gross and net value added etc. in the factory sector. It covers factories and establishments, which are registered under the Factories Act, 1948 employing ten or more workers using power and twenty or more workers without power.

The focus of this dissertation is on organised manufacturing industries at disaggregated level. The study used published results of the ASI from 1990-91 to 2004-05. The National Industrial Classification (NIC) used for the surveys up to ASI

1997-98 was NIC-87 and thereafter NIC-98. Hence, industries were arranged as per the latest available industry classification (NIC-98) through concordance procedure. Thus, data on fifty-three 3-digit-level industries were generated for each variable. The estimates at the twenty two 2-digit level of industry classification were obtained through aggregating the relevant 3-digit industries. Using this data, we examined the changes in employment and its composition in organized manufacturing sectors. ASI provides data on the number of workers and on the number employees. Workers include all persons engaged in the production and maintenance work. Employees include both workers and all those who are engaged in supervisory, management and administrative work as well as sales, purchase, store-keeping etc. In the rest of the analysis, total employees, including permanent and contract workers, supervisory and managerial staff, has been taken as the measure of employment. The workforce in ASI is not collected as a direct headcount of the persons in industries but the average is calculated by dividing the number of mandays worked with the number of working days (Kannan and Raveendran, 2009).

Figure 2.1: Employment Trend in the Indian Organized Manufacturing Industries



Source: Annual Survey of Industries, Various Issues

Note: Number of Employees includes both workers and employees other than workers.

From Figure 2.1, one could observe the pre- and post-reform period employment situation in India's organized manufacturing sector. In the pre-reform period, before

1990s, named as jobless growth (Bhalotra, 1998 and Ghose,1994), there was a decrease of employment growth by -0.39 percent per annum during 1980-81 to 1989-90, however, output (real net value added) has increased at 8.09 per cent. The resultant employment elasticity was -0.05. In the post-reform period, employment has increased at 0.70 per cent per annum, output has increased at 6.06 per cent, and the employment elasticity was 0.12. Simply says, followed by jobless growth employment has increased during the post-reform period. However, instead of dividing the period of analysis into pre- and post-reform when the study looks into the three different phases, it shows a different picture in case of employment. In the first phase, during 1980-81 to 1989-90 i.e., pre-liberalisation, as noted earlier the period of jobless growth. The first phase, 1990-91 to 1996-97 shows steady increase of employment by 3.44 per cent per annum, the period when liberalization policies were introduced effectively. Later phase of liberalisation, that is, the period from 1997-98 to 2004-05 employment growth has decreased by -0.63¹ per cent per annum and in the subsequent periods it is more or less stagnant, with a marginal rise in 2004-05. However, due to diverging tendencies of industries we cannot predict whether this is sustained employment growth or not. In addition, it is important to look at the second period (1997-98 to 2004-05), when employment reduced, coincides with acceleration in trade liberalisation led by WTO implied policies. Therefore, we can hypothesis that there is a policy induced change in employment. For confirming this hypothesis, latter section provides the relationship between trade and employment empirically.

Table 2.3: Rate of Growth of Employment in Organized (Public and Private)

Sector		
Sector	1983-1994	1994-2005
Public	1.53	-0.70
Private	0.44	0.58
Total	1.20	-0.31

Source: Economic Survey (2007-08)

TH-17899

¹ The job losses are widespread across industries and states. 11 out of 15 major industry groups witnessed a fall in employment during 1996-2001, and employment declined in 13 out of 17 major states, constituting close to 90% of the workforce, with only exceptions being Kerala and Himachal Pradesh (Aparna Vyas, Views Paper, 2008)

A classification of the employment growth into public and private organised sectors shows that the decline in employment during 1994-2005 was mainly due to a decrease in employment in public sector^{2, 3} (see Table 2.3). Public sector grew negatively at -0.70 percent per annum during 1994-2005, whereas the private sector had shown acceleration in the pace of growth in employment from 0.44 per cent in 1983-94 to 0.58 in 1994-2005 per cent per annum. McKinsey Global Institute's (MGI, 2001) study mentioned that India's privatization programme has so far been a slow-starter, only two relatively small Public Sector Units (PSUs) have been transferred to private management. Consequently, the study explains that disinvestment in public sector was not the major reason for decrease in public sector employment. Additionally, Chandrasekhar and Ghosh (2007) quoted that, however private organized employment grew between 1993 and 1997, but thereafter it has fallen. Therefore, there are reasons to believe that the pattern of manufacturing growth under an open economic regime tends to be responsive to employment growth.

² One example is, contrary to the claims of Government on employment generation, the number of jobs in the public sector in Andhra Pradesh in the last one decade have in fact declined significantly. While there were 14.75-lakh employees in the public sector by the end of March 2003, the number fell to 14.43 lakh a year later. It further declined to 13.95 lakh in 2005 and 13.74 lakh in 2006 (Business Line, 2007).

³ Economic Survey (2002-03) says that disinvestment did not have an adverse impact on employment. Further, it highlighted that PSUs on their own saw a net reduction in employment of 20 per cent between 1991-92 and 2000-01. PSUs still account for 69 per cent of jobs in organized sector. As on March 31, 2001, organized sector employment was 27.8 million, out of which 19.1 million jobs were in the public sector and 8.7 million in private sector.

Table 2.4: Percentage Share of Non-Production and Production Workers in the Total Employment

Years	Production Workers in Total Employment	Non-Production Workers in Total Employment
1990-91	78.31	21.69
1991-92	78.13	21.87
1992-93	77.81	22.19
1993-94	77.35	22.65
1994-95	77.61	22.39
1995-96	77.17	22.83
1996-97	77.42	22.58
1997-98	77.68	22.32
1998-99	74.19	25.81
1999-2000	76.84	23.16
2000-01	77.51	22.49
2001-02	77.59	22.41
2002-03	78.34	21.66
2003-04	78.10	21.90
2004-05	78.81	21.19

Source: Annual Survey of Industries, Various Issues

In order to understand the nature of employment in organised sector we present the production and non-production⁴ workers as a percentage share of total employment in Table 2.4. Over the period of 1990-91 to 2004-05, production workers'⁵ share to total industrial employment remained higher than non-production workers'⁶ share. However, we can observe that production workers' share has decreased from 78.13

⁴ The study refers non-production workers as skilled and production workers as unskilled, following the standard practice in the literature. Generally it is believed that non-production workers have higher wages and work require higher education. For further discussion see Berman and Somanathan (2005).

⁵ Annual Survey of Industries defined production workers are the workers who employed directly or through any agency whether for wages and engaged in any manufacturing process or in cleaning any part of the machinery used for manufacturing process, and the labour engaged in the repair and maintenance of fixed assets.

⁶ Annual Survey of Industries defined non-production workers are the employees engaged in administrative office, store keeping section and welfare section, sales department and purchase department.

percent in 1991-92 to 74.19 percent in 1998-99 and non-production workers' share has increased from 21.87 per cent to 25.81 percent respectively. On the contrary, from 1999-2000 onwards production workers share has increased from 76.84 percent to 78.81 percent in 2004-05; this is the period of total employment has reduced. Thus, the observed reduction of total employment is due to the reduced share of non-production workers in the total employment. It is confirming that, in Indian manufacturing industries skilled employment did not increase after 1999-2000 instead unskilled employment has increased. This is opposite to developed countries experiences.

Table 2.5: Percentage Share of Direct and Contract Workers to Production

Workers		
Year	Direct Workers to Production Workers	Contract Workers to Production Workers
1993-94	85.50	14.50
1994-95	85.15	14.85
1995-96	86.63	13.34
1996-97	83.54	16.22
1997-98	83.53	16.47
1998-99	84.45	15.55
1999-00	80.36	19.64
2000-01	79.72	20.28
2001-02	78.36	21.64
2002-03	77.10	22.90
2003-04	75.49	24.51
2004-05	73.61	26.39

Source: Same as Table 2.4.

A division of production workers into directly employed or permanent workers⁷ and employed through contractors or non-permanent workers⁸ (Table 2.5) shows that the

⁷ These workers are directly employed by firms; many laws protect and promote the interests of these workers employed in manufacturing sector – like their health and safety, job security, minimum wages and their timely payment, maternity leave for women, bonus, provident fund, and gratuity and so on.

share of direct workers in the total production workers has reduced from 85.5 per cent in 1993-94 to 73.61 per cent in 2004-05. During the same period contract workers share has increased from 14.5 per cent to 26.39 per cent. This reflects that contract workers do not need much supervision and managerial staff to monitor them⁹. Moreover, one can also see the cost cut approach adopted by the industries¹⁰; if industries are employing more and more contract workers they do not need to give more wages and additional incentives like bonus, provident fund etc. Therefore, we recognize the increased share of production workers mainly due to increased share of non-permanent workers, which means that informality has increased through employing contract workers within organised manufacturing sector (Sen and Dasgupta 2006).

An examination of the changes in employment growth of two-digit industries shows that, it has been widely varying across industries. For this analysis, the study period 1990-91 to 2004-05¹¹ has been divided into two sub-periods: 1990-91 to 1996-97 and 1997-98 to 2004-05. We adopted this periodisation, since these two periods follow different employment trend, whereas the first period reveals positive employment growth and the latter shows negative employment growth. In addition, these two periods are consistent with the policy changes, such as 1991 structural reform and 1995 WTO agreements that further accelerate the trade liberalisation. Thus, the choice of period permits to analyse the effect changes in trade policy on employment.

⁸ These workers are employed through contractors; the laws which are protecting the interests of the directly employed workers are not applicable to those workers employed through contract. These workers are mainly doing the peripheral work in the production process.

⁹ Lucas (1988) when argued about the rigidities in the organised labour market highlighted that by removing the threat of dismissal, effort on the job is either diminished or requires costly supervision to monitor and work is often put out to small workshops or on piece rate at home or through encouraging the use of temporary workers.

¹⁰ One example for this cost-cut approach is that, a permanent worker of the Hero Honda Company draws a salary between Rs.30,000 and 40,000 where as a contract labour, performing the same job, gets something between Rs. 4,000 and 6,700. Around 500 to 600 contract workers with the Spare Parts Department (SPD) are paid a meager salary (Labour File, 2006).

¹¹ The choice of this study period is mainly depend on the availability of trade data. This issue has been discussing further, when we are introducing trade data.

Table 2.6: Industry-wise Annual Rates of Growth in Employment and Employment Elasticity in Manufacturing Industries (1990-91 to 2004-05)

Industries	1990-91 to 2004-05	1990-91 to 1996-97	1997-98 to 2004-05
Food & Beverages	0.99 (0.30)	2.65 (0.27)	-0.66 (*)
Tobacco	0.28 (0.04)	1.95 (1.28)	-0.60 (-0.08)
Textiles	-0.31 (-0.18)	1.65 (0.60)	-1.71 (-8.55)
Wearing Apparel	8.74 (1.29)	17.12 (0.93)	6.20 (2.01)
Leather	3.17 (0.42)	7.37 (0.40)	3.14 (10.13)
Wood	-2.24 (0.95)	3.43 (3.06)	-2.27 (-0.29)
Paper	1.33 (0.28)	4.07 (0.31)	-0.06 (-0.01)
Publishing, printing	0.82 (0.11)	9.38 (0.49)	4.94 (0.43)
Coke, refined petroleum	1.21 (0.10)	4.24 (0.29)	1.59 (0.05)
Chemicals	1.74 (0.24)	5.60 (0.29)	-0.88 (-0.67)
Rubber and plastics	4.34 (0.44)	6.79 (0.42)	0.91 (0.19)
Other non-metallic mineral products	0.86 (0.19)	0.83 (0.11)	2.55 (0.43)
Basic metals	-1.26 (-0.16)	1.46 (0.10)	-2.72 (-0.37)
Fabricated metal products	0.01 (0.00)	3.96 (0.31)	-0.04 (-0.02)
Machinery & equipment	-0.87 (-0.15)	3.65 (0.32)	-5.48 (-2.37)
Office, accounting & computing machinery	-2.73 (-0.94)	-3.70 (-1.15)	2.11 (0.16)
Electrical machinery	0.89 (0.24)	4.64 (0.38)	-2.12 (*)
Radio, television	-1.44 (-0.35)	3.58 (0.45)	-4.58 (*)
Medical, precision & optical instruments	1.62 (0.17)	5.00 (0.31)	-1.07 (-0.10)
Motor vehicles, trailers & semi-trailers	3.58 (0.44)	4.88 (0.47)	2.70 (0.26)
Other transport equipment	-5.27 (-1.02)	4.35 (0.30)	-7.10 (-0.77)
Furniture; manufacturing n.e.c.	5.93 (0.51)	6.97 (0.35)	5.54 (1.42)
All Industries	0.70	3.44	-0.63

Source: Same as Table 2.4.

Note: Unless otherwise stated, growth rates (g), reported in this study, have been derived from yearly estimates of employment (y) using the equation $\log y = a + gt$.

Figures in parenthesis are employment elasticity express the percentage change in employment growth for a percentage change in growth of output.

* These industries output and employment growth showed negative. Thus, employment elasticity is not the appropriate measure.

From Table 2.6 we can infer that in all the industries employment growth has reduced during 1997-98 to 2004-05. Out of twenty-two industries, thirteen shows negative employment growth, which together accounted for 77 per cent of the employment share during 1997-98 to 2004-05. However, the remaining nine industries shows positive employment growth within that except two industries, namely Other non-metallic mineral products (29) and Office, accounting & computing machinery (30), others' employment growth has fallen. Therefore, the 'jobless growth' is not a generalized phenomenon in all industries. Rather the industries with major share are canceling out the job creating growth performance of other industries. This result is consistent with Kannan and Raveendran (2009). The Indian textile industry (17)¹², which has 17 per cent employment share among manufacturing industries, is one of the oldest and most significant industry for generating employment. It showed negative employment growth of -1.71 per cent per annum during 1997-98 to 2004-05¹³ and this sector employment elasticity have reduced drastically from 0.60 to -8.55 between 1990-91 to 1996-97 and 1997-98 to 2004-05. In the case of negative employment growth, we can observe that Machinery and Equipment¹⁴ (29) is the sector that shows the second largest reduction of employment by -5.48 per cent per annum during 1997-98 to 2004-05 from 3.65 per cent per annum during 1990-91 to 1996-97. In addition, during the same period this industry employment elasticity has reduced from 0.32 to -2.37. Leather industry, which showed positive employment growth of 3.14 per cent per annum during 1997-98 to 2004-05 and increased elasticity from 0.40 to 10.13 between 1990-91 to 1996-97 and 1997-98 to 2004-05. However,

¹² This is evident from the fact that the textile industry accounts for around 4 per cent of the gross domestic product (GDP), 14 per cent of industrial production and 16 per cent of the country's total exports earnings. In fact, it is the largest foreign exchange earning sector in the country. Moreover, it provides employment to over 35 million people (India Brand Equity Foundation, 2008).

¹³ For instance, the textile industry in Coimbatore, which accounts for a predominant part of the industry in southern India, is in crisis. A substantial part of the capacity of the spinning mills in and around the city, which manufacture yarn, remains idle. Thousands of mill workers have not received their wages for months. They face the even more serious prospect of losing their jobs, as the danger of several units closing down in the immediate future appears to be real. Trade union sources in Coimbatore said that mills had been laying off workers for some years now. About 20 mills had closed in the last two years and at least 10,000 workers had lost their jobs. In one of the National Textile Corporation (NTC) units, the workforce has dwindled from 1,500 one and a half years ago to about 550 now. The spindlage in this unit has been reduced from 78,000 to 36,000 (Sridhar, 1999).

¹⁴ Manufacturers of textile machinery, whose business was hit hard by a flood of cheap imports since 1991, have further devastated by the collapse of the spinning industry in Coimbatore. As the crisis deepens, several companies have retrenched workers. About 1,000 workers at LMW have been retrenched (Sridhar, 1999).

this industry's employment share has been very less, which is 1.75 per cent. This again proved that the jobless growth is not a general trend in all industries.

2.3.2. Output and Employment Growth

The main objective of this study is to analyze the impact of trade reform on employment. Revenga (1997) argued that trade policy changes affect employment directly through shifting output. Imports reduce the domestic output and therefore employment (Wood, 1991) and exports increase the domestic output and employment. Therefore, before going into analyze the employment in terms of trade, it is important to look at the changes in output and employment growth in organised manufacturing sector.

Table 2.7: Employment and Output Growth (1990-91 to 1996-97)

Employment Growth	Real Net Value Added			
	0 to 5	5 to 10	10 to 15	15 to 20
-5 to 0	30			
			21	
			23	
	16	15	27	
0 to 5	17	26	28	
	20	32	29	
			31	
			34	
			35	
				19
				22
5 to 10			33	24
				25
				36
Above 10				18

Source: Same as Table 2.4

Note: Industries code with their names provided in Appendix A.2.9

In tables, 2.7 and 2.8 column provides employment growth and row provides output growth. Figures inside tables are industries code at 2-digit level. From these tables we can observe that during the whole period (1990-91 to 2004-05), the real output of manufacturing sector has increased at 6.02 per cent per annum. When we divide the period into 1990-91 to 1996-97 and 1997-98 to 2004-05 it indicates a different picture. During 1990-91 to 1996-97, except office, accounting and computing machinery (30), all the industries enjoyed positive output and employment growth. When industries' employment growth was 0 to 5 per cent per annum, one third of the industries' output growth was around 10 to 15 per cent per annum. Similarly, when employment grew at the rate of 5 to 10 per cent output grew at 15 to 20 per cent per annum. However, the expansion of output has not been accompanied by employment growth, both were performed relatively well. On the other hand, during 1997-98 to 2004-05 except coke, refined petroleum (23), office, accounting and computing machinery (30), wood products (20), tobacco products (16) and motor vehicles (34) industries, the output growth of other seventeen industries has reduced. However, all the industries' employment growth has reduced during 1997-98 to 2004-05 even where the industries output growth has increased. Again this excludes office, accounting and computing machinery (30) where output growth has increased from 3.23 per cent during 1990-91 to 1996-97 to 13.11 per cent per annum during 1997-98 to 2004-05, correspondingly this industry employment growth has increased from -3.70 per cent to 2.11 per cent per annum. On the other hand, though during the same period other non-metallic mineral (26) output growth has reduced from 7.38 per cent to 5.99 per cent per annum employment growth has increased from 0.83 per cent to 2.55 per cent per annum. From these tables we can observe that the domestic industries production has reduced during 1997-98 to 2004-05. Nevertheless, their employment growth has reduced faster than output growth. The decline in employment growth is possibly due to substitute the services of domestic labourers through imported goods. For confirming this hypothesis, in the following section we present the trade performance of Indian manufacturing industries and its' employment.

Table 2.8: Employment and Output Growth (1997-98 to 2004-05)

Real Net Value Added	Employment Growth				
	-3 to 0	0 to 5	5 to 10	10 to 15	Above 20
-10 to -5		29	35		
-5 to 0			16		
	15	17	20		
	31	24	21	33	
	32	28	27		
0 to 5				22	
		19	26	30	23
		25		34	
5 to 10		18			
		36			

Source: Same as Table 2.4

Note: Industries code with their names provided in Appendix A.2.9

2.3.3. Trade Performance

Trade is one of the important indicators of a country's integration with the rest of the world. In this context, India performed well in terms of trade, both exports and imports, with the rest of the world. During 1990-91 to 2004-05 India's average manufacturing exports growth has been 11.37 per cent per annum, which is higher than a world's average exports (See Table 2.9). Correspondingly, India's import growth (12.24 per cent per annum) has also been higher than world's average imports.

Table 2.9: Indicators of India's Manufacturing Export and Import Performance

Period	Average Annual Growth Rates				India's share in World Exports	India's share in World Imports
	Exports		Imports			
	India	World	India	World	Average	
1990-91 to 2004-05	11.37	10.50	12.24	10.86	0.80	0.67
1990-91 to 1996-97	13.04	20.78	17.30	21.36	0.78	0.64
1997-98 to 2004-05	15.78	8.41	16.19	8.57	0.82	0.69

Source: COMTRADE, UNCTAD

The period when trade liberalisation introduced effectively i.e., 1990-91 to 1996-97 India's manufacturing exports and imports growth was lower than world's average growth. However, during the second period, when WTO induced liberalisation started, 1997-98 to 2004-05 India's exports growth was increase to 15.78 per cent and imports growth showed marginal decrease to 16.19 per cent per annum though higher than world's average. Moreover, India's share in world's exports has increased from 0.78 per cent in 1990-91 to 1996-97 to 0.82 per cent in 1996-97 to 2004-05. Similarly, during the same period imports share has also increased from 0.64 per cent to 0.69 per cent.

This sharp upward trend in exports and imports can be attributed to several factors, national and international. Particularly, by 1991 India went for the structural reform policies, of which trade liberalization was the core policy measure, and further acceleration of trade liberalisation led by WTO. The underlying objective of the policy reforms, especially the trade and industrial reforms, has been to increase the productivity, employment, efficiency, competitiveness and growth. To quote the Industrial Policy Statement of 1991, "The major objectives of the new industrial policy package will be to build on the gains already made, correct the distortions or weaknesses that may have crept in, maintain a sustained growth in productivity and gainful employment and attain international competitiveness" (GOI, P-17).

Considerable changes in the industrial policy regime have led to increase in the role of private sector. Moreover significant changes in the trade policy involved abolishing import licences as well as reduction in the import duties led to freer access to foreign

technology, inputs etc. The external sector reforms overall marked a major departure from the protected inward oriented trade regime to an external oriented trade regime.

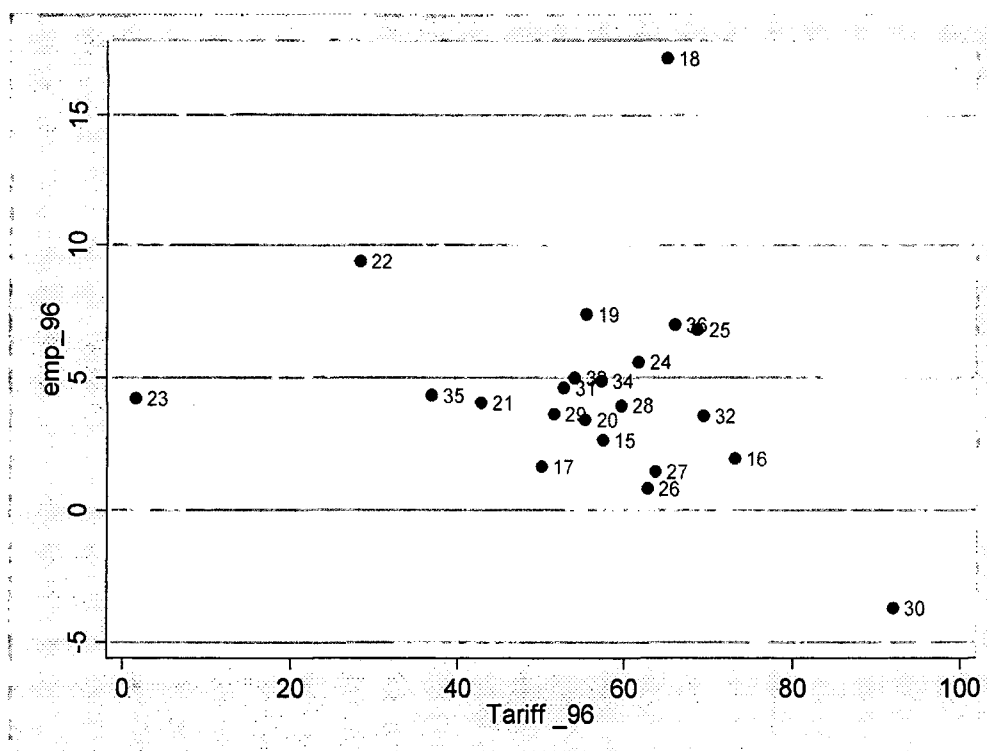
2.4. Trends and Patterns of Trade and Employment

2.4.1. Tariff and Employment

When India liberalized its' trade regime, tariff barriers got reduced drastically. It explains that India has moved from the protective import competition policy to competitive policy. The standard reason for protection is that it may improve the terms of trade by influencing world prices (Joshi and Little, 1997). Hence, it is important to understand, when tariff barriers or protection reduced, the industries reaction in terms employment. Thus, we provide an overview of the relationship between the growth of employment and tariff rate.

We utilize Commodity Trade (COMTRADE) provided by United Nations Conference on Trade and Development (UNCTAD) for trade related data. COMTRADE has given data at the industry level according to International Standard Industrial Classification Rev. 3 (ISIC Rev.3) which is consistent with NIC-98 classification. Though COMTRADE provides classification consistent to NIC-98, it also suffers from a set of problems. COMTRADE has given Indian manufacturing industries exports and imports at the 2 and 3-digit level. Nevertheless, we do not have information about whether this exports and imports done by organised or unorganised sector. This is one of the limitations of this study. However, we assumed that whatever exports and imports have done by the organized sector have their own effect on employment, our econometric analysis can capture this effect. In addition, the study uses the industry level tariff related data from Trade Analysis Information System (TRAINS) published by UNCTAD and Integrated Data Base (IDB) given by World Trade Organization (WTO). This is also available at ISIC Rev. 3. For tariff, we used import-weighted tariff of effectively applied rates of protection. These data sources extracted through the software called World Integrated Trade Solution (WITS).

Figure 2.2: Import-weighted Tariff Rate (Average) and Employment Growth (1990-91 to 1996-97)

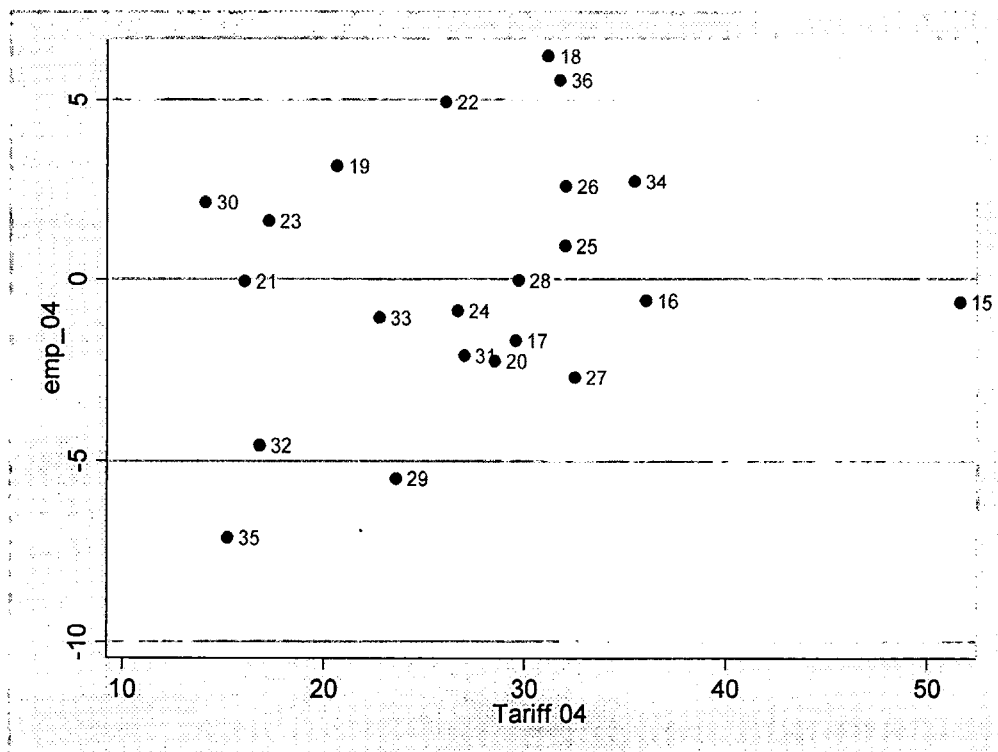


Source: Annual Survey of Industries, Various Issues & TRAINS-UNCTAD, IDB-WTO
 Note: Industries code with their names provided in Appendix A.2.9

Figures 2.2 and 2.3 provides changes in average import weighted tariff with employment growth to compare industries response to tariff reduction in terms employment during two time periods viz. 1990-91 to 1996-97 and 1997-98 to 2004-05. The figures inside the chart are the industries code at two-digit level. From these Figures (2.2 and 2.3), it can be observe that though the initial years of 1990s considered as a liberalisation period, tariff rates for most of the industries were around 40 to 80 per cent. This shows the protective nature of these industries. Moreover, almost all the industries except Office, accounting and computing machinery (30) fall under positive employment growth. On the other hand, during 1997-98 to 2004-05, which we call it as a, WTO induced, second phase of liberalisation; import tariff rate for almost all the industries has reduced and is around 20 to 40 per cent (see Figure 2.3). In addition to that, now it clearly shows that employment growth has reduced for all the industries and it has even experienced negative growth rate for more than half of the industries. This infers that when protection (through tariff barriers) from import competition has reduced employment generation in industries has also reduced. Dutta

(2004) found that the impact of protection on the inter-industry wage premia is substantially positive. Workers employed in industries with high tariffs receive higher wages than apparently identical workers in low tariff industries. Narayanan (2005) found that, in textile industry, customs structure has a negative and significant effect on employment. This shows positive effect of trade liberalisation on employment in terms of customs duties. In our analysis, textile industry, tariff rate has reduced from 50.13 per cent to 29.55 per cent between 1990-91 to 1996-97 and 1997-98 to 2004-05. Correspondingly, employment growth has reduced from 1.65 per cent to -1.71 per cent per annum.

Figure 2.3: Import-weighted Tariff Rate (Average) and Employment Growth (1997-98 to 2004-05)



Source: Same as Figure 2.2

Note: Industries code with their names provided in Appendix A.2.9

2.4.2. Import and Employment

After liberalizing trade policies, it is expected that increased access to import of capital goods, spares and other raw materials would make the production more competitive. However, all these cheaper imports will substitute the services of domestic labour (Hasan, Mitra and Ramaswamy, 2003, 2007). Policy makers also felt

that trade liberalisation might encourage growth of capital intensity through increasing the imports of technology in the manufacturing sector and thereby reducing its' capacity to generate employment (Ghose – 2000). In addition, Wood (1991) argued that imports reduce the domestic output and therefore employment. Trade not only shifts the demand schedules, but also creates international competitive pressures, which may lead to trade induced labour saving technological change (Onaran, 2008) by enabling them to produce with fewer workers. Capital augmenting reduces labour demand because less labour is required to per unit of capital (Bhalotra, 1998). Apart from the above arguments, Harrison and Hanson (1999) discussed that though the appropriate indicators of trade policy changes are quotas and tariffs, changes in import volumes provide insights into the actual impact of those policy changes on employment. Thus, we presented employment growth in relation with import in order to explain the nexus between these two in India's organised manufacturing industries.

Table 2.10: Import and Employment Growth (1990-91 to 1996-97)

Employment Growth	Import Growth			
	0-15	15-30	30-45	Above 45
-5 to 0		30		
		20		
		21		
		23		
0 to 5	17	27	15	
	26	28	16	
	33	29		
		31		
		32		
		34		
		35		
5 to 10			19	
	24	25	22	
			36	
Above 10				18

Source: Annual Survey of Industries, Various Issues & COMTRADE, UNCTAD

Note: Industries code with their names provided in Appendix A.2.9

Tables 2.10 and 2.11 infers that except eight industries, import growth is surprisingly higher in the initial period of liberalisation (i.e. 1990-91 to 1996-97) compared to later period of, WTO induced, liberalisation (i.e. 1997-98 to 2004-05). However, some industries like Other transport equipment (35) showed rapid increase of imports from 17.75 per cent to 41.51 per cent per annum between 1990-91 to 1996-97 and 1997-98 to 2004-05 (see Appendix Table A.2.8). During the same period, this industry's employment growth has recorded highest reduction from 4.35 per cent to -7.10 per cent per annum. Another industry (Radio, television and communication equipment (32), showed third highest reduction of employment, imports has increased from 16.55 per cent to 34.68 per cent per annum between 1990-91 to 1996-97 and 1997-98 to 2004-05 (see Appendix Table A.2.8). In addition, this industry's capital intensity has also increased from 1.42 in 1990-91 to 2.59 in 2004-05 (see Table 2.13). Therefore, we can hypothesis that the increased imports of capital goods lead to reduced employment in these industries. However, we do not have information about the nature of import.

Hence, the study supplements the analysis with the use-based classification of industries to understand the nature of imports and its effect on employment where the industry belongs. Anant et.al. (2006) mentioned that an urban informal sector engaged in the production of a variety of consumer and producer goods and services. That means organized sector does not have much competition from unorganized sector in production of some goods like consumer non-durables and capital goods, which are capital-intensive nature. Therefore, when industries are divided into use-based classification it can provide clear picture about the impact of trade reform on employment where the industry belongs. Following Ahluwalia (1991) and EPWRF (1998) the study classifies industries into intermediate, consumer, non-consumer and capital goods; the methodology has discussed detail in the following section.

Table 2.11: Import and Employment Growth (1997-98 to 2004-05)

Employment Growth	Import Growth		
	0-15	15-30	30-45
-10 to -5		29	35
-5 to 0	15	17	
	21	20	16
	24	28	32
	27	31	
	33		
0 to 5		19	
	23	22	
	34	25	
		26	
		30	
5 to 10		18	36

Source: Same as Table 2.10

Note: Industries code with their names provided in Appendix A.2.9

2.4.3. Export and Employment

Trade reform policies have affected the export performance of the different industries differently. International trade theory explained that when developing countries liberalizes its trade regime, industries in those countries, which are having comparative advantage in labour intensive products, can perform well in terms of export and employment growth. Thus, when trade regime opened, it was expected that, one of the developing countries India would export labour-intensive goods, where it have comparative advantage, which leads to create employment opportunities in the manufacturing sector. This can be called as a scale effect. Therefore, in order to understand the association between export and employment in Indian manufacturing sector the study provides employment growth in relation with export growth.

**Table 2.12: Export and Employment Growth
(1990-91 to 1996-97 and 1997-98 to 2004-05)**

Employment Growth	Export Growth				
	-2 to 0	0-15	15-30	30-45	Above 45
-10 to -5			(29) (35)		
-5 to 0		(15) (16) (17)	(20) 30 (21) (24) (28) (31) (32) (33)	(27)	
0 to 5	16 23	17 20 28 (19) 29 (22) 34 35	15 26 (25) 27 (26) 31 (30) 32 (34) 33	21	(23)
5 to 10		(18) 36 (36)	19 24 25	22	
Above 10		18			

Source: Same as Table 2.10

Note: Figures inside the parenthesis are the industries code for the period 1997-98 to 2004-05.
Industries code with their names provided in Appendix A.2.9

Table 2.12 show that, in half of the industries export growth has increased as we move from the first period (1990-91 to 1996-97) to the second period (1997-98 to 2004-05). However, in some of the industries employment growth did not change and for some other industries it has even reduced. For example, Coke, Refined Petroleum

Products and Nuclear Fuel¹⁵ (23) industry's export growth has increased from -0.45 per cent to 88.88 per cent per annum between 1990-91 to 1996-97 and 1997-98 to 2004-05 (see Appendix Table A.2.8). Correspondingly, employment growth in this industry, though positive, has reduced from 4.23 per cent to 1.59 per cent per annum. This industry output fall under high technology or low labour intensive industry (see Table 2.13). Therefore, capital-intensive nature of production of this industry led to reduce employment even when output growth has increased during 1997-98 to 2004-05 (see tables 2.7 and 2.8).

Moreover, export growth for industries like Wood Products (20) has increased from 12.25 per cent to 26.10 per cent per annum between 1990-91 to 1996-97 and 1997-98 to 2004-05 (see Appendix Table A.2.8). However, during the same period this industry's employment growth has decreased from 3.43 per cent to -2.27 per cent per annum. In addition, capital intensity of this industry has increased from 1.12 in 1990-91 to 2.52 in 2004-05 (See Table 2.13). Textile industry (17), which is one of the important employment generating industries, export growth has decreased from 10.92 percent to 8.21 per cent per annum and import growth has increased from 11.53 per cent to 21.08 per cent per annum during 1990-91 to 1996-97 and 1997-98 to 2004-05 (see Appendix Table A.2.8). This industry labour intensity has decreased from 1.03 in 1990-91 to 0.34 in 2004-05 and capital intensity has increased from 1.33 to 3.20 respectively. Therefore, we can hypothesis that in the context of heightened global competition, Indian industries are moving from labour intensive exports to capital-intensive exports, which reduces the labour demand. Subrahmanian and Joseph (1994) highlighted that in Indian context the choice of production technique with higher capital/labour ratio renders some competitive advantage of real cost-efficiency to the exporting firms.

Further, in order to understand the characteristics of the manufacturing sector in connection with tariff i.e. protection and trade we present the details of industries tariff rate, labour and capital intensity, export and import intensity in Table 2.13. The

¹⁵ Veeramani (2007) mentioned that Mineral fuels export growth has increased from -4.1 per cent in 1993-97 to 403.0 per cent in 1999-2001. The main reason for this sudden increase is, during 1999 Reliance Petroleum Ltd. (RPL) started its refinery at Jamnagar in Gujarat. The RPL refinery is amongst the most technically complex refineries in the world. RPL's exports shot up by 87 per cent which is Rs.685 crores (US\$ 161 million) in the financial year 1998-99 (Press Release, Reliance, 1999)

table ranks two-digit industries by descending order of labour intensity, and it presents some basic statistics of the industry. The table shows that in all the industries protection has reduced. Moreover, we can observe that industries with high labour intensities are having relatively higher protection during the initial period¹⁶. Sectors such as manufacturer of tobacco products (16), wearing apparel (18) and furniture (36), for example, were among the most protected, which are higher labour intensive industries during 1990-91. While industries like coke, refined petroleum products (23), chemical products (24) and basic metals (27) were relatively more open which are capital-intensive. Second, import intensity was significantly lower in highly protected labour-intensive industries than, more open, capital-intensive sectors.

Though tariff barriers has reduced significantly from 100 per cent in 1990-91 to 29%, 18% in respective industries of tobacco products (16) and wearing apparel (18) in 2004-05, still these industries have high rank in terms of labour intensity. However, these industries labour intensity has decreased from 10.69 and 2.82 in 1990-91 to 3.47 and 1.19 in 2004-05 respectively. Furthermore, their capital intensity increased from 0.29 to 0.34 in tobacco and 0.43 to 1.05 in apparel sector during 1990-91 to 2004-05; import intensity did not show any significant changes during this period, however export intensity has increased marginally in tobacco industry 0.01 to 0.03 but it has decreased in apparel industry from 1.73 to 1.37. Moreover, some of the industries like Publishing, printing and reproduction recorded media (22), Food and Beverages (15) export intensity has increased and at the same time these industries capital and import intensity increased. This again proves that Indian manufacturing industries changes its' technique of production from labour-intensive to capital-intensive, through increased imports, in order to meet the global competition.

¹⁶ This is consistent with Revenga (1997) findings that workers in highly protected industries had lower wages and were more labour intensive in Mexico.

Table 2.13: Protection Rate, Capital Intensity, Labour Intensity, Export Intensity and Import Intensity by Industry (1990-91 to 2004-05)

1990-91	Tariff	L intensity	Export Intensity	Import Intensity	K Intensity	1996-97	Tariff	L intensity	Export Intensity	Import Intensity	K Intensity	2004-05	Tariff	L intensity	Export Intensity	Import Intensity	K Intensity
16	100.00	10.69	0.01	0.00	0.29	16	52.00	6.44	0.03	0.00	0.50	16	28.75	3.47	0.03	0.00	0.34
18	100.00	2.82	1.73	0.00	0.43	18	46.07	1.51	1.47	0.00	0.75	18	14.80	1.19	1.37	0.01	1.05
36	123.45	2.02	4.64	0.06	0.86	36	44.61	1.08	3.02	0.15	0.85	19	14.38	0.84	0.83	0.13	1.63
20	60.12	1.80	0.03	0.02	1.12	19	21.93	0.84	0.63	0.06	1.74	36	14.66	0.65	2.18	0.46	0.88
22	59.06	1.24	0.04	0.07	1.07	20	32.27	0.74	0.06	0.06	2.13	20	14.53	0.62	0.10	0.12	2.52
15	87.14	1.12	0.08	0.01	1.43	22	29.36	0.73	0.11	0.13	1.08	28	14.77	0.53	0.31	0.13	1.23
17	100.05	1.03	0.17	0.01	1.33	35	35.70	0.70	0.05	0.11	0.84	15	42.22	0.40	0.13	0.07	2.29
35	49.84	0.93	0.05	0.08	1.17	15	57.57	0.67	0.14	0.04	1.70	31	14.44	0.35	0.16	0.31	1.07
28	73.23	0.92	0.08	0.03	1.22	29	30.09	0.59	0.08	0.37	0.99	29	14.85	0.34	0.21	0.56	1.17
29	70.93	0.88	0.06	0.20	1.03	28	35.99	0.57	0.12	0.05	1.15	17	15.24	0.34	0.37	0.07	3.20
19	73.03	0.70	0.49	0.04	1.59	31	41.27	0.46	0.06	0.11	0.92	33	13.47	0.30	0.34	1.21	1.04
31	75.85	0.67	0.03	0.06	0.89	17	49.61	0.44	0.29	0.03	2.37	35	20.22	0.29	0.14	0.71	1.01
33	61.09	0.62	0.09	0.64	1.64	33	35.73	0.42	0.12	0.64	1.19	22	11.40	0.21	0.11	0.32	2.73
32	92.43	0.54	0.05	0.16	1.42	30	36.43	0.39	0.24	0.54	1.07	25	14.68	0.19	0.15	0.08	2.88
30	146.94	0.53	0.11	0.25	1.10	32	34.96	0.29	0.07	0.25	1.93	26	14.78	0.17	0.11	0.06	3.13
34	73.15	0.50	0.07	0.05	1.12	26	50.05	0.23	0.06	0.02	2.38	34	24.71	0.17	0.09	0.04	1.46
25	90.38	0.48	0.05	0.03	1.69	34	47.68	0.21	0.09	0.07	2.51	21	14.01	0.17	0.07	0.22	3.84
26	80.98	0.47	0.02	0.02	2.46	21	29.79	0.19	0.02	0.19	4.27	32	6.31	0.13	0.09	1.01	2.59
21	85.30	0.34	0.01	0.11	2.50	25	45.92	0.17	0.08	0.03	2.56	24	15.37	0.12	0.24	0.29	1.93
24	82.36	0.22	0.08	0.18	2.61	24	39.48	0.15	0.11	0.21	2.01	30	2.77	0.10	0.31	2.31	2.85
27	79.59	0.17	0.03	0.07	3.87	27	30.94	0.12	0.07	0.24	3.10	27	17.07	0.07	0.13	0.32	1.96
23	37.50	0.11	0.04	0.20	1.46	23	8.97	0.07	0.03	0.36	1.62	23	11.63	0.02	0.20	0.13	1.83

Source: Annual Survey of Industries, Different Issues, Commodity Trade (COMTRADE) and Trade Analysis Information System (TRAINS), United Nations Conference on Trade and Development (UNCTAD) and Integrated Data Base (IDB), World Trade Organization

Note: Here Tariff defined as the Import-weighted average of effectively applied rates, Labour intensity defined as number of employees per unit of fixed capital (in real terms), Capital intensity defined as Fixed Capital (in real terms) per unit of Net Value Added, Export or Import intensity defined as Exports / Import (in real terms) per unit of Value of Output

Industries Code and their name given in the Appendix Table A.2.9

2.5. Export-Oriented Vs Import-Competing Industries

The descriptive analysis undertaken thus far have had certain interesting conclusions and pointed towards emerging trends. We observed that, employment has reduced in the second phase of trade liberalisation with the labour intensive industries. On the other hand, in theoretical grounds, particularly followed by Heckscher-Ohlin model, India, as one of the developing countries, trade liberalisation expected to lead to a shift in her industrial structure towards labour intensive and export-oriented industries, and increase in demand for labour in these industries. For the purpose of analyse this theoretical proposition the study divided three-digit industries into import-competing and export-oriented categories followed by Ghose (2000) methodology.¹⁷

Table 2.14: Performance of Export-oriented and Import-competing Industries

Growth Rate	Employment	Real Net Value Added	Real exports	Real imports
Export-Oriented Industries				
1990-91 to 2004-05	1.11	10.72	9.95	14.98
1990-91 to 1996-97	3.26	18.62	13.61	19.83
1997-98 to 2004-05	0.03	4.31	9.95	13.16
Import-Competing Industries				
1990-91 to 2004-05	-0.95	6.36	18.65	12.37
1990-91 to 1996-97	3.79	15.25	17.39	18.80
1997-98 to 2004-05	-3.61	5.21	27.55	14.60

Source: same as Table 2.10

From Table 2.14 we can infer that the employment has reduced in both export-oriented and import-competing industries during 1997-98 to 2004-05. However, import-competing industries experienced higher decline in the growth of employment, from 3.79 to -3.61 per cent per annum between 1990-91 to 1996-97 and 1997-98 to 2004-05, as compared to the export-oriented industries (3.26 to 0.03 per cent). In both these categories real net value added (NVA) has reduced. One reason may be due to

¹⁷ To categorize industries at 3-digit level of disaggregation as export-oriented and import-competing, the index used for the purpose was "net exports (Exports-Imports) as a percentage of output". A significant positive value for the index was taken to indicate export-oriented and a significant negative value was taken to indicate import-competing industries.

increase of import; we can see export-oriented industries export and import has reduced simultaneously; still import growth was higher than export growth. Moreover, import-competing industries real export growth has increased from 17.39 to 27.55 per cent per annum during 1990-91 to 1996-97 and 1997-98 to 2004-05 and import has reduced from 18.8 to 14.6 per cent correspondingly. Half of the import-competing industries fall under high technology category,¹⁸ in other words these industries capital intensity has increased significantly (see Table 2.13). This suggests that an increased export of capital-intensive import-competing industries reduces employment. Simply says import-competing industries are generating lesser employment than export-oriented industries, however, these industries exports has increased. For confirming this hypothesis further, we divided industries into intermediate, consumer durable, consumer non-durable, capital goods, called use-based classification.

2.6. Use-Based Sectors

It is important to supplement our analysis of employment trends at the detailed level of disaggregation of the use-based sectors. The manufacturing sector has been divided into four use-based sectors, such as capital, consumer durables, consumer non-durables and intermediate goods. This classification of industrial sector is somewhat different from the traditional use-based classification, which has an additional use-based sector called basic goods. Since a separate classification of the basic goods sector includes mining and electricity, however our interest is in the manufacturing sector only, we have merged the non-mining, non-electricity part of basic goods, for example, iron and steel, non-ferrous metals etc., with 'intermediate goods',¹⁹ in the use-based classification of manufacturing industries (See Appendix 2.1 for the methodology of this classification).

¹⁸ For confirming this assertion we divided industries according to technology oriented, though we did not present this classification here for lack of space, followed by the OCED (2007) classification.

¹⁹ Followed by Ahluwalia (1991) we included basic goods into intermediate goods.

Table 2.15: Performance of Use-Based Sectors

Growth Rate	Employment	Real net value added	Real exports	Real imports
Intermediate				
1990-91 to 2004-05	0.84	7.92	16.45	10.34
1990-91 to 1996-97	3.55	15.92	16.39	16.97
1997-98 to 2004-05	-0.45	6.62	24.06	10.73
Consumer Durables				
1990-91 to 2004-05	-0.10	7.31	11.51	12.28
1990-91 to 1996-97	4.09	11.56	1.32	4.87
1997-98 to 2004-05	-3.71	8.47	20.16	15.73
Consumer Non-durables				
1990-91 to 2004-05	1.22	4.13	9.55	16.94
1990-91 to 1996-97	3.18	8.26	13.66	24.28
1997-98 to 2004-05	0.10	1.63	8.79	13.52
Capital				
1990-91 to 2004-05	-1.70	4.37	15.49	15.03
1990-91 to 1996-97	3.18	9.91	16.81	21.01
1997-98 to 2004-05	-3.82	2.97	21.88	22.28

Source: same as Table 2.10.

The study presented the performance of Use Based Sectors, in terms of employment, output, exports and imports, in Table 2.15. This table clearly shows that all sectors employment growth has reduced during 1997-98 to 2004-05. However, consumer durables and capital goods industries are the main cause for the reduction of employment in this period, which shows higher decline in employment growth of -3.71 and -3.82 percent per annum respectively. In addition to that, though all sectors output growth has reduced consumer durables and capital goods sectors employment growth has reduced more than their reduced output growth. In these two groups, most of the industries fall under high technology industries. In addition, import growth of consumer durables and capital goods has increased from 4.87 per cent to 15.73 per cent and 21.01 per cent to 22.28 per cent during 1990-91 to 1996-97 and 1997-98 to 2004-05. At the same time, these industries export growth also increased from 1.32

per cent per annum to 20.16 per cent and 16.81 per cent to 21.88 per cent respectively. This simultaneous increase of imports and exports growth possibly due to the imports of semi-finished and unassembled products, to be finished and assembled in the home country, will reduce the overall sales of the industry and employment (Hasan, Mitra and Ramaswamy, 2003, 2007 and Joseph 1995, 1997). UNCTAD did not provide information regarding the nature of imports and exports. Thus, we cannot prove this hypothesis empirically. However, a recent study by Goldberg et al. (2008) proved that the growth in imports was dominated by a surge in intermediate products imports, including goods classified as basic, intermediate and capital, and importantly two-third of the intermediate import growth occurred in products that had not been imported prior to the reforms.

Intermediate goods sector employment showed negative growth of -0.45 per cent during 1997-98 to 2004-05 relatively lesser than their reduced growth of output. This sector export growth has increased from 16.39 to 24.06 per cent per annum and import has reduced from 16.97 per cent to 10.73 per cent during 1990-91 to 1996-97 and 1997-98 to 2004-05. This result is opposite to Goldberg et al (2008) possibly due to different definitions; he included capital goods in intermediate goods imports. We may also note in this content that highest level of export growth in this group is mostly due to the presence of petroleum refineries, which is capital-intensive industry. In case of consumer non-durable goods, we can observe that all indicators such as output, export and import growth has reduced during the second half of the period of liberalization. However, this sector showed marginal positive employment growth, 0.1 per cent per annum during 1997-98 to 2004-05. One reason may be the labour-intensive nature of the most of the industries in this sector led to maintain the employees continuously. The analysis of use-based sectors again proved that Indian manufacturing industries labour-intensive, which can generate employment opportunities, exports has reduced and capital-intensive exports has increased.

2.7. Summary and Findings

This chapter presented the trends and patterns of employment and trade in order to understand the relationship between the two. The initial period of liberalisation during 1990-91 to 1996-97 employment growth has increased particularly in public organized sector and latter period i.e.1997-98 to 2004-05 employment growth has

decreased in public sector but private sector shows marginal increase. Moreover, in organized manufacturing industries unskilled labours employment has increased during the second half of the liberalisation period but it has taken place in contract workers or non-permanent workers.

At the industry-wise analysis, the study finds that all the industries employment growth has decreased during 1997-98 to 2004-05, the period when WTO came into existence. However, some industries showed positive employment growth. Therefore, jobless growth is not a generalized phenomenon in all industries. Rather the industries with major share are canceling out the job creating growth performance of other industries. One of the main objectives of the trade liberalisation is to integrate with the rest of the world. In this phenomenon, India performed well in terms of both exports and imports. During 1997-98 to 2004-05 India's both exports and imports growth has increased more than world's average. When we compared the average import weighted tariff with employment growth, it showed that employment growth has decreased where the industries are protected initially from the import competition. When the study analyses the export, import and employment, it showed that, in order to meet the global competition industries were moved from labour-intensive technique of production to capital-intensive which led to reduce employment. When the industries are divided into export-oriented and import competing depict that import-competing industries are generating lesser employment than export-oriented industries. Moreover, the study divides the industries according use-based classification; it shows that capital and intermediate goods industries are the main cause for the decreased employment growth. In addition, among these industries export growth has increased in case of capital-intensive goods and decreased in case of labour intensive goods, which possibly led to reduce the labour demand, during the second half of the period liberalisation.

Appendix 2.1.

A Note on Use Based Sectors

We have derived the use-based classification by using Ahluwalia (1991) and Economic and Political Weekly Research Foundation (EPWRF (1998)). Both these classifications are available in NIC-70 classification and so we used concordance table for finding the industries in NIC-98. We used 53 (According to NIC-98) industry groups at the three digit level disaggregation. Since for most of the industry classification we followed Ahluwalia (1991) methodology and some industries not covered in this classification. For those industries, we used EPWRF classification, which are available at the product level. Despite this, some industries did not cover under both Ahluwalia and EPWRF classification, and therefore we classified those industries according to our own judgment.

It is important to note here that, some industries that falls under 2 or 3 categories simultaneously²⁰, for example Spinning, weaving and finishing of textiles (171) fall under both consumer non-durables and intermediate classification. Similarly, Manufacture of motor vehicles, bodies, parts and accessories for motor vehicles and their engines (341+342+343) fall under both consumer durables and capital goods etc. Therefore, for these industries we took average net value added of those particular categories and we locate that industry which is having high share of net value added. For example, 341+342+343 (NIC98) include 373 (Manufacture of Heavy Motor Vehicles) and 374 (Manufacture of Motor Cars & Other Motor Vehicles Principally Designed for the Transport of Less Than 10 Persons) of NIC-87. However, both these categories come under 374 in NIC-70. According to Ahluwalia (1991), 18 per cent of the output falls in consumer durable goods and 82 per cent falls in capital goods. Therefore, we classified 341+342+343 industry group as the capital goods. Following the similar methodology, we divided other manufacturing industries into different use-based sectors provided in the following appendix tables from A.2.1 to A.2.7.

²⁰ In NIC-98 most of the disaggregated industries (wherein NIC-87) grouped into aggregate even at the three digit level.

Table A.2.1: Non-metallic mineral products

269-Non-metallic mineral products	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Intermediate* (320+324+325+326+327+329)	0.96	0.95	0.95
Consumer Non-durables* (322+323)	0.04	0.05	0.05

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.2: Spinning, weaving and finishing of textiles

171- Spinning, weaving and finishing of textiles	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Intermediate* [(0.32 of 231+233+234+235+236)+254+(0.38 of 241+242)]	0.27	0.24	0.25
Consumer Non-durables* [(247+278+(0.68 of 231+233+234+235+236)+(0.61 of 241+242))+240+250+259]	0.73	0.76	0.75

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.3: Other chemical products

242-Other chemical products	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Intermediate* (303+308+309+208)	0.65	0.73	0.69
Consumer Non-durables* (304+305+307)	0.35	0.27	0.31

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.4: Other fabricated metal products

289-Other fabricated metal products	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Intermediate* (0.54 of 343 + 0.86 of 349)	0.32	0.32	0.32
Consumer Non-durables* (0.14 of 349 + 344)	0.49	0.54	0.52
Capital Goods* (0.46 of 343)	0.18	0.13	0.16

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.5: Manufacturing n.e.c.

369- Manufacturing n.e.c.	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Consumer Durables* (383+384)	0.30	0.61	0.46
Consumer Non-durables* (385+386+387+389)	0.70	0.39	0.54

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.6: Transport equipment

359- Transport equipment	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Consumer Durables* (375+376)	0.91	0.90	0.91
Capital Goods* (378+379)	0.08	0.10	0.09

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.7: Office accounting and computing machinery

300-Office accounting and computing machinery	1990-91	1997-98	Average Share of NVA between 1990-91 and 1997-98
Capital Goods* 367	0.86	0.80	0.83
Consumer Durables* 358	0.14	0.20	0.17

Source: Same as Table 2.4.

*Industries according to NIC-87

Table A.2.8: Industry-wise Annual Rates of Growth in Real Exports and Imports in Manufacturing Industries (1990-91 to 2004-05)

Industries Code	1990-91 to 2004-05	1990-91 to 1996-97	1997-98 to 2004-05	1990-91 to 2004-05	1990-91 to 1996-97	1997-98 to 2004-05
	Real Exports			Real Imports		
15	5.38	19.13	3.78	16.77	32.72	4.17
16	5.83	-1.11	5.12	18.21	33.94	41.75
17	9.83	10.92	8.21	15.01	11.53	21.08
18	7.55	9.67	5.30	30.05	55.86	20.02
19	12.19	23.93	9.01	19.59	35.31	15.95
20	6.02	12.26	26.10	12.90	16.12	18.30
21	22.56	41.55	21.16	9.56	22.51	7.42
22	20.51	40.68	11.73	28.77	31.92	27.91
23	24.32	-0.45	88.88	2.29	15.47	6.80
24	15.62	18.11	17.70	8.63	14.45	9.34
25	14.33	24.57	18.14	17.62	22.78	19.32
26	15.21	20.48	16.03	13.01	7.41	18.45
27	17.51	19.23	30.86	19.06	26.91	13.40
28	14.60	12.46	16.20	14.02	16.32	15.77
29	15.16	13.07	21.53	3.96	21.25	15.02
30	12.91	29.62	20.27	25.54	25.74	19.92
31	17.66	18.89	18.50	14.90	19.37	20.29
32	13.27	19.84	19.83	22.41	16.55	34.68
33	21.89	18.85	22.87	13.01	9.65	14.86
34	12.63	14.79	25.20	10.28	20.61	14.41
35	12.10	10.65	20.17	17.63	17.75	41.51
36	4.48	12.13	12.92	33.35	38.60	35.44

Source: COMTRADE, UNCTAD

Note: Industries code with their names provided in Appendix A.2.9

Table A.2.9: List of Industries Covered by the Study

NIC-98 CODE	Industries Name
15	Food Products and Beverages
16	Tobacco products
17	Textiles
18	Wearing Apparel
19	Tanning and dressing of leather
20	Wood products
21	Paper and paper products
22	Publishing, printing and reproduction recorded media
23	Coke, refined petrol
24	Chemicals and chemical products
25	Rubber and plastics
26	Other non-metallic mineral products
27	Basic metals
28	Fabricated metal products
29	Machinery and equipment
30	Office, accounting and computing machinery
31	Electrical machinery
32	Radio, television and communication equipment
33	Medical, precision & optical instruments
34	Motor vehicles, trailers & semi-trailers
35	Other transport equipment
36	Furniture; manufacturing n.e.c.

Source: National Industrial Classification-98 (NIC-98), Central Statistical Organisation

Chapter III

The Effect of Trade Liberalization on Employment

In the previous chapter, the study presented various trends and patterns of employment with respect to output, trade and tariff. In this chapter, an attempt is made to analyse the impact of trade liberalisation on employment generation with the help of econometric tools after controlling the industry-specific variables in India's organized manufacturing industries. To analyze the differentiated impact of trade liberalization on employment, the industries are grouped into use-based classification and export-oriented and import-competing industries. Given this background, the study employs panel regression tools to examine the trade factors that influence employment generation in industries.

The remainder of this chapter is organized as follows. First, it presents the analytical framework and hypotheses. Then it explains the variables constructed for examining the impact of trade liberalisation on employment (section 2). Data set and empirical methodology has been discussed in the third section. Fourth section of this chapter presents the empirical estimation of the panel regression followed by the last section wherein the summary of the chapter and concluding observations are presented.

3.1. Analytical Framework

The basic frame of analysis for the nexus between factor use and trade comes from the Hecksher-Ohlin trade theory. The relatively higher endowments of labour in developing countries than that of industrialized countries provides these economies comparative advantage in the production of labour-intensive goods. Thus, the labour-intensive production expands and capital-intensive production contracts in developing countries; the opposite scenario will occur in industrialized countries. Consequently, in developing countries, the demand for labour rises and that of capital falls. Therefore, theoretically one can say that developing countries are the main beneficiaries under the liberalised trade regime, in terms of employment (Ghose, 2000, Abdi and Edwards, 2002).

In contrast to the H-O view, in reality changing trade patterns may cause large adjustment problems. Workers find it hard to move from contracting to expanding industries. Moreover, new theories of international trade have emphasized the role of product differentiation and economies of scale in trade. These considerations are important in the case of inter- and intra-industry trade effects on employment. Increased inter-industry trade may require workers to move from one industry to another, which may necessitate retraining. Intra-industry trade may require only changes from one process to another within the same industry (Hine and Wright, 1997). However, in the present study we are going to look at only inter-industry effect on employment.

Trade policy is an important factor, which determines the integration of the country with the rest of the world. The possible impact of free trade, i.e. reduction of trade barriers, on employment is often a subject of intense debate. The effect of trade reform on labour market can occur through changes in policies, such as changes in tariff and other trade barriers or trade protection (Revenga 1997). Brander (1981) and LaRochelle (2007) explain a route by which changes in tariff affect employment. Their study was based on the basic premise that foreign tariffs and domestic tariffs would have their differential impact on employment. A reduction in domestic tariffs would increase sales of foreign firms in the domestic markets and that of foreign tariffs would increase sales by domestic firms in foreign markets. Employment levels are closely related to sales of the firms. Consequently, changes in domestic tariffs are positively associated with employment changes in firms, through decreasing the sales falling domestic tariffs would eliminate jobs that were protected earlier. Conversely, changes in foreign tariffs are negatively correlated with employment changes in firms, because opportunities provided by falling tariffs would play an important role in creating new jobs.

3.2. Econometric Analysis

3.2.1. Hypotheses and Variable Construction

The following section has discussed the variables, which affect employment through trade openness.

Trade and Employment

Literature shows that there are two direct channels through which trade can affect employment. Hasan, Mitra and Ramaswamy (2003, 2007), Rodrik (1997), Feenstra and Hasan (1996) gave the potential way in which imports, especially import of intermediate inputs or outsourcing, affect employment. Trade liberalisation facilitates the import of larger varieties of inputs and therefore increases the elasticity of substitution of labour with respect to all other inputs. In other words, new imported material and capital inputs can substitute the services of domestic workers called “substitution effect”. In addition, under globalization that gave rise to global production network the production process of any product is split into different stages through trade liberalisation, which necessitates the imports of semi-finished and unassembled products to be finished and assembled in the home country. This in turn will reduce the share of labor in the overall sales of the industry (Hasan, Mitra and Ramaswamy, 2003, 2007 and Joseph 1995, 1997).

When any country liberalizes its trade regime, it has to face international competitive pressure, which may lead to the use of labour saving technologies and reduce employment (Onaran, 2008 and Goldar, 2000). Import is one of the important channels through which trade generates competition in the domestic markets. Therefore, it is important to measure the effect of import competition on employment in manufacturing sector. Sen (2008) pointed that import penetration ratio is a measure which helps to evaluate the import competition as well as separate the effects of import competition from export orientation on the efficiency in use of labour. Hence, the present study used import penetration ratio for measuring the effect of import competition on employment in manufacturing sector. Import penetration ratio for a

particular industry, as defined by Sen (2008), is measured as its imports as a ratio of domestic demand (i.e., $\text{imports}/(\text{imports}+\text{output}-\text{exports})$)¹.

However, Wood (1991) argued that the import penetration ratio is a one-sided measure. It neglects the gains in employment generated by increased exports to other countries. Hence, it is important to include export intensity in the model in order to observe the effect of export-orientation on employment. Increased exports have a positive effect on the level of output, tending to increase employment (Sen, 2008). This is the second channel through which trade affects employment called "Scale Effect". Overall, the scale effect expresses the positive effect of export-orientation on employment. However, Spiezia (2004) claimed that H-O model and technology-gap theories of trade lead to opposing predictions regarding the impact of trade openness on employment in developing countries. If differences in productivity gap between developing and industrialized countries were larger for labour than for capital then developing countries would end up with exporting capital-intensive goods and creating less employment. Further, she emphasized that due to openness of trade, developing countries could fill the productivity gap in capital by importing more efficient machinery from the industrialized countries, which would reduce employment in developing countries. Overall, she found that India's labour intensity with respect to exports is -0.108, imports is -0.526 and with non-trade goods is 0.465. This suggests that the effect of export on employment, whether positive or negative, depends upon the nature of export. Nevertheless, UNCTAD did not provide information regarding the nature of export and import. Therefore, we supplement the analysis of trade effect on employment in use-based, export-oriented, and import-competing industries.

UNCTAD provides both exports and imports in US dollar terms according to calendar year. Nevertheless, ASI data is available in rupee terms according to financial year. Therefore, for making the data consistent, first we converted dollar into rupee terms used with exchange rate. Second, the study converting calendar year into financial year by the following way: we have taken the average of twelve months of exports and imports, and then multiplied by three for taking care of financial ending months

¹ Here output denotes the value of total output.

and deduct this amount from current year and add it to the previous year. The basic assumption followed in this procedure is that exports and imports are constant in all months. However, this assumption is not appropriate for obtaining consistent results with financial year, it will not affect the results and their interpretation. Exports intensity or export-orientation is defined as the ratio of exports to value of output².

Trade Policy and Employment

Those who focus on the long-run efficiency gains of trade liberalization argued that free trade acts as a positive force towards specialization, trade creation, and productivity gains. On the other hand, those who focus on the short-run costs of free trade argued that trade liberalization leads to jobs loss in the manufacturing sector, which has been heavily protected by tariffs (LaRochelle, 2007). The following empirical evidence has supported this view. Gaston and Trefler (1994, 1997) and Beaulieu (2000) found that free trade was directly responsible for a significant job loss in Canadian manufacturing industries that were protected initially by import tariffs. The general observation is that all the job losses cannot be attributed to free trade but part of it can be explained through the reduction of local import tariffs. On the other hand, another set of empirical studies by Hanson and Harrison (1999) and Revenga (1997) found modest impact of reduction of tariff and non-tariff barriers on employment in Mexican manufacturing industries. The lack of employment response is largely attributed by the author to imperfect competition. Investigating the impact of liberalisation on employment Banga (2005) discovers that, in India, trade liberalisation (measured through the Effective Rate of Protection) does not have significant impact on manufacturing industries' employment for the period 1991-92 to 1997-98. It is evident from the different countries' experience that the link between openness of trade and labour market responses is largely country-specific issue and tends to vary from one country to the other. Achy and Sekkat (2004) and Revenga (1997) mentioned that tariff reductions or tariff reforms is implemented at the industry level. Therefore, present study uses the industries' import weighted tariff, which is appropriate for analyzing the effect of tariff reform on industry's total employment. Data of import weighted tariff, has been taken from United Nations Conference on

² Same as footnote 1

Trade and Development (UNCTAD) and World Trade Organization, referred as effectively applied tariff rates in percentage terms.

Employment can be affected by many factors other than trade liberalisation such as technological change, labour market rigidities and macroeconomic changes etc. Therefore, the multi-dimensionality of the openness of trade requires a careful control for non-trade factors to isolate the impact of trade on employment (Wood, 1991; Achy and Sekkat, 2004). By surveying the existing studies, the following variables are identified in order to control the non-trade factors. Rest of the present section is organized as follows. It starts with highlighting the hypotheses of control or industry-specific variables subject to empirical testing followed by the description of the data and the method and regression results.

Output:

The demand for labour, like that of all other factors of production, is a derived demand which depends on the volume of final output being demanded from a firm and therefore being supplied by it (Kambhampati and Howell, 1998). Therefore, output growth is an important factor, which influences the demand for labour. In general, it is expected that, more workers are absorbed at the time of higher output growth and are reduced at the time of lesser output growth (Sen and Dasgupta, 2006). However, it is observed that during 1980s Indian manufacturing sector faced 'jobless growth' i.e. increased output without generating employment over the years. It is important to control the value of output of the industries in the labour demand equation. Moreover, Revenga (1997) highlighted that trade policy changes affect employment directly by shifting output. Wood (1991) emphasized that imports reduce the domestic output and therefore employment. However, Onaran (2008) argued that importing intermediate inputs might decrease the demand for labour for a given level of value added, after it would increase through the scale effect. The overall effect depends on the negative substitution against positive scale effects. Therefore, he mentioned that in order to capture the scale effect of offshoring in the labour demand estimation value added is the appropriate measure rather than output. If total value of output is used, then the positive effects would have been absorbed by the output coefficient, and the coefficient of intermediate imports would only reflect the negative substitution effects. Based on Onaran (2008) proposition, the present study uses real

net value added (NVA) instead of value of output in the analysis. Real net value added is measured at 1999-2000 prices using industry price indices obtained from Office of the Economic Advisor, Ministry of Commerce and Industry.

Emoluments per worker

Real wages or earnings of the employee are one of the most significant determinants of demand for labour. In addition rise in wages in the India's organised sector, either due to bargaining power of unions in the organised sector or minimum wage regulations, had a negative impact on employment growth because when the price or cost of labour increased employers try to decrease the number of employees. Goldar (2000) found that slow-down in the growth in real wages and changes in the size structure of the factories are the reasons for increased employment growth (4.03 per cent) during 1990-91 to 1997-98 followed by the 'Jobless Growth' in organised manufacturing industries. However, Chandrasekar and Ghosh (2007) argued that falling real wages or cheap labour have not been sufficient to ensure employment growth after 2000 because the negative effects of openness on employment generation have been strong enough to offset the benefits of the cheap labour for employers. Apart from these arguments, as already noted, labour market inflexibility increased the labour cost to the employer, which led to decrease employment opportunities. Given the period chosen for this study, it is not possible to analyse the impact of labour regulations introduced in 1970s and extended in 1980s on employment. However, this will not affect our results due to increased flexibility in the labour market in the post reform period. Thus, the traditional labour demand argument suggests that increasing the wage rate will push the employers to cut employment. For analysing this hypothesis this study uses real emoluments³ per worker as the indicator of labour cost. Emoluments include wages of workers, salaries of other employees, allowances (e.g. paid holidays, sickness benefits, lay-off payments, etc.) and bonuses payable to all employees and imputed value of benefits in kind (e.g. subsidized housing) (Ghose, 1994). Emoluments per employee is defined as the ratio of real emoluments to the total employment. Real emoluments is measured at 1999-2000 prices using consumer price indices for industrial workers from Labour Bureau, Ministry of Labour and Employment, Government of India and Central Statistical

³ In this study, number of employees included both workers and other employees. Accordingly, for measuring the labour cost we used emoluments instead of wages.

Organisation, Ministry of Statistics and Programme Implementation, Government of India.

Capital-Labour Ratio

Goldar (2000) argued that in the new economic policy regime, due to increased competition industrial firms may try to save cost and become more competitive by cutting down employment. Improved access to foreign technology and imported capital goods would drive the industrial firms towards the adoption of advanced technology, which is likely to lead to increased capital intensity of production. This leads to the reduction of employment opportunity in the industrial sector. Sen and Dasgupta (2006) found that capital-labour ratio has negatively affected employment growth in India's organised manufacturing sector during 1980-2003. Analyzing the causes for the deceleration in employment growth in the organised manufacturing sector during 1980s, Ghose (1994) concluded that the slow-down in employment growth has resulted from the capital deepening strategy or substitution of capital for labour with technology up gradation and the reason for the increase in capital intensity was placed in the real cost of labour. Moreover, Subrahmanian and Joseph, (1994) highlighted that in Indian context, the choice of production technique with higher capital/labour ratio renders some competitive advantage of real cost-efficiency to the exporting firms. This suggests that increase the capital-labour ratio of the industry have negative impact on employment. In the previous chapter we have observed that in almost half of the two-digit industries capital intensity has increased during 1997-98 to 2004-05. Therefore, in the present analysis, we control the impact of capital intensity on employment in industries. We examined the impact of the capital intensity by taking into consideration the ratio of real fixed capital to labour. Capital stock is measured at 1999-2000 prices; the deflator used being the wholesale price index of machinery and machine tools. ASI reports the fixed capital of the industry and labour includes both workers and other employees who are earning salaries.

Mandays lost due to industrial disputes per employee

A popular hypothesis, particularly in Indian organised sector, is the increase in wage rate that assumed to have taken place at the evidence of growing rigidities in the labour market or growing strength of trade unions (Nagarj, 1994) which increases the

cost of labour. In his study, Revenga (1997) finds that, workers are keen to trade off wages to preserve jobs. Alternatively, they may prefer to maintain high level of wages for those who remain employed, at the expense of those who lost their jobs. Hence, strength of the trade unions is important in employment decisions. Lucas (1988) advocates that in wage settlement, power of unions is reflected in increased number of mandays lost due to industrial disputes. Therefore, the study uses mandays lost due to industrial disputes⁴ as a proxy for the strength of trade unions, which is an institutional variable, on employment decision of employer. The industrial disputes and mandays lost data have been taken from various issues of Indian Labour Statistics brought out by Labour Bureau at the three-digit level. This variable has been computed by dividing mandays lost due to industrial disputes by the total number of employees.

3.3. Data and the Method

Present analysis is based on 3-digit at NIC-98 classification. The study utilises Annual Survey of Industries (ASI) published by the Central Statistical Organisation (CSO), Commodity Trade (COMTRADE) provided by United Nations Conference on Trade and Development (UNCTAD), Trade Analysis Information System (TRAINS) from the UNCTAD, Integrated Data Base (IDB) from the World Trade Organization (WTO) and Indian Labour Statistics published by the Ministry of Labour. In order to capture the effects of trade reforms on employment the period of study is taken from 1990-91 to 2004-05, the last year upto which the ASI data is available. Taking the study period from 1990 will be a long period as well as sufficient to study the effect trade reform on the reduction of employment after 1997 in manufacturing sector. Thus, the estimations are made for a panel for the period of 1990-91 to 2004-05. The data comprises of 53 three-digit manufacturing industries consisting of 795 observations. The study uses STATA 10.0 statistical package for the analysis and estimation.

⁴ Industrial disputes include temporary stoppage of work by a group or all employees of an establishment (strike) to press a demand. In addition, temporary withholding of work from a group of employees by an employer (lockout) in a unit, in connection with matters relating to employment or unemployment or terms and conditions of employment is taken as an industrial dispute. (Indian Labour Statistics, Labour Bureau, GOI, Ministry of Labour)

3.3.1. Econometric Model

Drawing from the discussion so far made we have specified the following model to explore the bearing of various trade related and other factors on employment in India's manufacturing sector.

$$\text{LNEMP} = \alpha + \beta_1 \text{LNEI}_{it} + \beta_2 \text{LNIPR}_{it} + \beta_3 \text{LNIWT}_{it} + \beta_4 \text{LNK/L}_{it} + \beta_5 \text{LNNVA}_{it} + \beta_6 \text{LNEMO_EMP}_{it} + \beta_7 \text{ML_PE}_{it} + \mu_i + u_{it} - (1)$$

where, EMP = Employment

EI = Export Intensity

IPR = Import Penetration Ratio

IWT = Import Weighted Tariff

K/L = Capital-Labour ratio

NVA = Real Net Value Added

EMO_EMP = Real Emoluments per employee

ML_PE = Mandays Lost per employee

μ_i represents industries dummy

u_{it} = residuals

for all $i = 1, 2, \dots, n$ and $t = 1, 2, \dots, n$ where i and t represents industry and time respectively.

All variables are in log (LN) form except import weighted tariff since it is percentage term.

Model 1 is estimated with and without industry dummy term. The results are reported in Table 3.3. Similarly, model 1 is also estimated with and without mandays lost per employee

Theoretically, it was expected that, as one of the developing countries, in India, opening up of the trade would increase the labour demand. In the previous chapter, we found that in most of the industries capital intensity has increased after liberalisation. However, we do not have information regarding the nature of exports and imports. Therefore, the study supplements the analysis with the use-based classification of industries to understand the nature of exports and imports and their effect on employment in the following model.

$$LNEMP = \alpha + \beta_1 LNEI_{it} + \beta_2 LNIPR_{it} + \beta_3 LNIWT_{it} + \beta_4 LNK/L_{it} + \beta_5 LNNVA_{it} + \beta_6 LNEMO_EMP_{it} + \beta_7 d_ubc1_{it} + \beta_8 d_ubc2_{it} + \beta_9 d_ubc3_{it} + \beta_{10} d_ubc4_{it} + u_{it} \quad (2)$$

where, d_ubc1_{it} = Dummy for intermediate goods

d_ubc2_{it} = Dummy for consumer non-durables

d_ubc3_{it} = Dummy for consumer durables

d_ubc4_{it} = Dummy for capital goods

Others are same in model 1

However, analysing the effect of trade reforms on employment with use-based classification may not be an appropriate strategy for estimating the effect of trade liberalisation on these industries. Hence, in the following model, we divided industries into export-oriented and import-competing industries and analyze the differentiated impact of trade liberalisation on employment in these industries.

$$LNEMP = \alpha + \beta_1 LNEI_{it} + \beta_2 LNIPR_{it} + \beta_3 LNIWT_{it} + \beta_4 LNK/L_{it} + \beta_5 LNNVA_{it} + \beta_6 LNEMO_EMP_{it} + \beta_7 D_EXPIMP1_{it} + \beta_8 D_EXPIMP2_{it} + u_{it} \quad (3)$$

$D_EXPIMP1_{it}$ = Dummy for export-oriented industries

$D_EXPIMP2_{it}$ = Dummy for import-competing industries

Others are same in model 1

Before presenting the estimations and results, the study presented the following summary of the variables.

Table 3.1: Summary Statistics of Variables

Variables	Obs	Mean	Min	Max
EMP	791	144375.600	1.000	1338271.000
IPR	795	0.175	-2.783	1.864
EI	789	0.281	0.000	5.891
K/L	790	4358.639	81.090	96031.810
Real NVA	795	2170.000*	-5400.000*	23700.000*
EMO_EMP	790	4.889	3.503	6.659
IWT	795	48.472	0.110	329.490
ML_PE	720	14.157	-0.955	8613.000

Note: * - Rs. in lakh

Table 3.2: Correlation Matrix of Employment with other Variables

Variables	EMP	EI	IPR	IWT	K/L	Real NVA	EMO_EMP
EMP	1.0000						
EI	0.0612	1.0000					
IPR	-0.3367*	0.5140*	1.0000				
IWT	0.1058*	-0.0819	-0.2557*	1.0000			
K/L	-0.0421	0.0455	0.2196*	-0.1332*	1.0000		
Real NVA	0.8883*	0.0958*	-0.2096*	0.0583	0.3528*	1.0000	
EMO_EMP	-0.1641*	-0.0675	0.2377*	0.0231	0.5168*	0.1032*	1.000
ML_PE	-0.1835*	0.2080*	0.1833*	0.0707	0.0915	-0.1047*	0.086

Note: * significant at 1%

For checking multicollinearity between the explanatory variables, we have estimated correlation coefficients. The correlation matrix presented in Table 3.2 expressed that there is not much correlation between explanatory variables. All the correlation coefficients are below 0.3 except export intensity and import penetration ratio, 0.51 and emoluments per employee and capital-labour ratio, 0.51. There is no multicollinearity, therefore the regression results will not be affected.

3.4. Results of the Estimated Model

The present study started panel analysis with pooled ordinary least squares (OLS) regression. The estimated results indicate that export-intensity and import weighted tariff does not have significant effect on employment and import penetration ratio affects negatively. However, pooled regression biases the estimated results upwards if significant cross-section or time fixed-effect are present (Bhalotra, 1998). Therefore, to sort out this problem we have estimated the Breusch and Pagan lagrangian multiplier test which helps to identify whether pooled regression is consistent or not. The estimated result of this test produces $\chi^2= 1174.49$ which is statistically significant, implying that pooled regression is not an appropriate methodology for our data set. However, this test does not show that whether fixed effect or random effect model is significant. Hence, we have estimated Hausman Specification test, which informs whether fixed-effects or random-effects model is reliable. The test yields statistically significant result ($\chi^2=350.79$) which indicates that fixed effects model is consistent. Therefore, hereafter we are interpreting the fixed effects model results.

Though co-efficient values differ from fixed effects model, random effects model variables signs, except import-weighted tariff, are not different. The value of R^2 in all the estimates assures the goodness of fit of the model. F and Wald chi2 values are significant at 1 per cent level. Overall, the regression model employed is adequate to examine the causal relationship between free trade and employment. Apart from the above arguments, in fixed effects model, F-test that hypothesises all $u_i=0$ yields value $F(34.27)$ which is statistically significant indicates that the industry dummies are jointly significant. It also means that the OLS estimates, which omit these industry dummies, suffer from the problem of omitted variables and lead to biased and inconsistent results (Baltagi, 2008). This again confirms that fixed effects model is relevant for the present study.

Table 3.3: The Effect of Trade Liberalization on Employment in the Manufacturing Sector

Dependent Variable : Number of employees				
Model	Pooled OLS	Fixed Effects	Random Effects	Fixed Effects
Regressors	Co-efficient (t-value)	Co-efficient (t-value)	Co-efficient (z-value)	Co-efficient (t-value)
<i>Constant</i>	-0.860* (-4.350)	3.574* (10.010)	1.765* (5.280)	4.184* (11.740)
<i>LN EI</i>	0.007 (0.620)	-0.096* (-7.090)	-0.045* (-3.290)	-0.113* (-8.190)
<i>LN IMPORT PENETRATION RATIO</i>	-0.036* (-3.020)	-0.039* (-2.950)	-0.044* (-3.180)	-0.028** (-2.300)
<i>IWT</i>	0.000 (-0.740)	-0.001* (-2.730)	0.000 (-0.980)	0.000 (-1.310)
<i>LN K/L</i>	-0.405* (-23.650)	-0.153* (-6.720)	-0.241* (-10.780)	-0.114* (-5.190)
<i>LN NVA</i>	0.883* (83.140)	0.469* (24.50)	0.623* (35.360)	0.418* (21.430)
<i>LN EMO_EMP</i>	-0.222* (-7.350)	-0.024 (-0.880)	-0.077* (-2.650)	-0.016 (-0.600)
<i>LN ML_PE</i>	-	-	-	-0.043* (-6.570)
R ²	0.919			
Within		0.549	0.533	0.561
Between		0.887	0.945	0.829
Overall		0.843	0.903	0.762
F-Statistic	1485.50*	148.22*	-	119.85
Wald	-	-	$\chi^2(6)=1470.31$	-
F-test that all $u_i=0$		34.27*	-	41.87
Lagrangian multiplier test			$\chi^2=1174.49$ (p=0.000)	
Hausman Specification Test	-		$\chi^2=350.79$ (p = 0.000)	
Number of Observations		787		714

* - significant at 1%, ** - significant at 5% and *** - significant 10%

Results arrived based on fixed effect panel regression confirms the following observations (Table 3.3)⁵. All the co-efficient signs, except export-intensity and import weighted tariff, are as expected. Thus, the estimated fixed effects model

⁵ We also tried Generalized Method of Moments (GMM). However, results did not differ from fixed effect model (see Appendix Table A.3.1).

indicates that import penetration ratio has a significant negative effect; one per cent increase in import penetration leads to -0.039 per cent reduction in industry's total employment. This tends to suggest that import competition has strong negative association with employment and it confirms the theoretical argument of substitution effect. The negative sign of the export-intensity co-efficient implies a negative relationship between export-orientation and employment contrary to the one expected in the theory. Yet, unpredicted result of export intensity shows that it has significant negative effects on employment; one per cent increase in exports intensity reduces employment by -0.096 per cent. One explanation for the negative effect of export-intensity on employment is the increased capital-intensive or high technology nature of exports of manufactured products. IIFT (2008) finds that low-technology industries exports, which can generate more employment, have decreased from 52 per cent in 2002-03 to 38 per cent in 2006-07. At the same time medium and high technology exports has increased from 21 to 34 per cent and 6 to 10 per cent over the period of 2002-03 to 2006-07 respectively. In the previous chapter, it observed that the consumer durables and capital goods, which are capital-intensive or high technology sector, exports has increased (see Table 2.15) and consumer non-durables exports, which are labour intensive, has decreased. Import weighted tariff does not have significant effect on employment. Capital-labour ratio negatively affects employment with one percent increase of capital intensity leads to decrease in employment by -0.153 per cent. This highlights the substitutability of capital for labour, which results in reduction of employment. As expected earlier, value added is having a statistically significant positive impact on employment; one per cent in real net value added leads to increase in employment by 0.469 per cent. The insignificant co-efficient of emoluments per employee did not support the classical labour demand theory, when cost of labour increases employers will try to reduce the employment. The insignificant results possibly due to the argument given by Chandrasekar and Ghosh (2007) that falling real wages or cheap labour have not been sufficient to ensure employment growth after 2000 because the negative effects of openness on employment generation have been strong enough to offset the benefits of the cheap labour for employers.

Thus far, we presented the panel regression results without mandays lost per employee due to fewer observations of mandays lost. However, the model with

mandays lost per employee did not change the results. Export intensity, import penetration ratio has a significant negative effect on employment. Import weighted tariff does not have significant effect on employment. Other control variables are showing expected signs. Mandays lost per employee has a significant negative effect on employment. This implies that institutions like trade unions are also important in the case of employment decision.

Table 3.4: The Effect of Trade Liberalization on Employment in the Manufacturing Sector with Industry Group Dummies

Dependent Variable : <i>Number of employees</i>		
Random Effects		
Regressors	Co-efficient (z-value)	Co-efficient (z-value)
<i>Constant</i>	1.576* (4.640)	2.054* (6.250)
<i>LN EI</i>	-0.056* (-4.090)	-
<i>LN IPR</i>	-0.039* (-2.860)	-
<i>IWT</i>	0.000 (-1.070)	0.000 (0.120)
<i>LN K/L</i>	-0.223* (-9.940)	-0.256* (-11.930)
<i>LN NVA</i>	0.610* (34.590)	0.632* (36.860)
<i>LN EMO_EMP</i>	-0.056** (-1.940)	-0.045*** (-1.540)
<i>d_abc2</i>	0.463* (4.270)	-
<i>d_abc3</i>	-0.018 (-0.120)	-
<i>d_abc4</i>	0.058 (0.510)	-
<i>D_EXPIMP2</i>	-	-0.592* (-7.340)
Wald test	$\chi^2(9)=1532.48$	$\chi^2(5)=1681.68$
R ²		
Within	0.538	0.501
Between	0.929	0.938
Overall	0.892	0.905
Number of Observations	787	

* - significant at 1%, ** - significant at 5% and *** - significant 10%

While estimating the impact of trade liberalisation on employment, as already stated, the study utilizes use based classification and export-oriented and import-competing industries dummies to highlight the impact of trade on employment in the industries they belong. The results in Table 3.4 (column 2) indicate that, in use based classification or group, except consumer non-durable industries dummy (d_{ubc2}), no other industries dummy have significant effect on employment. However, other variables co-efficient, particularly trade related variables, which are the focus of this study, did not change. In case of export-oriented and import-competing industry dummies, we have used the model without export-intensity and import penetration ratio. The result shows that the import-competing and export-oriented industries dummies have significant effect on employment. Other industry-specific variables are performing in the expected way. Therefore, the study run the separate panel regression for both export-oriented and import-competing industries; and the results are presented in the following table.

Table 3.5: The Effect of Trade Liberalization on Employment in the Export-Oriented and Import-Competing Sectors

Dependent Variable : <i>Number of employees</i>		
Random Effects Model		
Regressors	Export-oriented Industries	Import-competing Industries
	Co-efficient (z-value)	Co-efficient (z-value)
<i>Constant</i>	2.723* (5.460)	1.466* (3.410)
<i>LN EI</i>	-0.088* (-4.120)	-0.044** (-2.330)
<i>LN IPR</i>	0.003 (0.240)	-0.091* (-3.040)
<i>IWT</i>	0.000 (-0.600)	-0.001 (-1.510)
<i>LN K/L</i>	-0.118* (-4.000)	-0.259* (-8.030)
<i>LN NVA</i>	0.543* (20.950)	0.611* (25.030)
<i>LN EMO_EMP</i>	-0.085** (-2.190)	-0.016 (-0.410)
F-test that all $u_i=0$	-	-
Wald test	$\chi^2(6)=622.808$	$\chi^2(6)=857.03^*$
F statistic	-	-
R ²		
Within	0.527	0.583
Between	0.926	0.939
Overall	0.888	0.884
Number of Observations	389	398

* - significant at 1%, ** - significant at 5% and *** - significant 10%

Followed by Table 3.4 in Table 3.5 also we are interpreting random effects model. Even though, the value of co-efficient changes, the signs of the results did not change except in case of import-weighted tariff in export-oriented industries. From this table one can infer that in export-oriented industries import penetration ratio does not affect employment significantly. Yet export intensity has a significant negative effect on employment in export-oriented industries; one per cent increase in export leads to decrease -0.088 per cent total employment. The possible reason for increased exports

affects negatively employment perhaps due to increased capital-intensive goods exports (see Table 2.13). Particularly, during the second half of the liberalisation period (1997-98 to 2004-05) fast growing segment of the exports was Coke, Refined Petroleum Products and Nuclear Fuel (NIC 23) close to 88 per cent growth rate. However, employment growth in the range of 0 to 5 per cent and this industry capital intensity has increased from 1.46 per cent in 1990-91 to 1.83 per cent in 2004-05. Hence, we can infer that more production and export of capital-intensive goods has led to the reduction in employment. This result again proves that classical international trade theory does not hold true in case of India. In case of import-competing industries, it clearly shows that import penetration ratio has significant negative effects on employment with one per cent increase in import penetration ratio lead to decrease in employment by -0.091 per cent. The above results emphasizes that, import-competing industries generate lesser employment than export-oriented industries. In addition to that, export-intensity also affects employment negatively in import-competing industries, though the magnitude is relatively lesser than import penetration in these industries and in export-oriented industries. This is perhaps due to disaggregation of overall production function of a firm, by facilitating imports of semi-finished and unassembled products, through trade reforms, to be finished and assembled in the home country and exports will reduce the share of labor in the overall sales of the industry (Hasan, Mitra and Ramaswamy, 2003, 2007 and Joseph 1995, 1997). Goldberg et al. (2008) proved that the growth in imports was dominated by a surge in intermediate products imports and importantly two-third of the intermediate import growth occurred in products that had not been imported prior to the reforms. Import-weighted tariff did not affect employment in both export-oriented and import-competing industries. Other control or industry specific variables are performing in the expected way.

3.5. Summary and Findings

In this chapter, the study examined the impact of trade liberalisation on employment in India's organised manufacturing industries. For this purpose, the industries were grouped into use-based classification and export-oriented and import-competing industries. Analysis in the present chapter is based on ASI, COMTRADE, TRAINS and IDB data at 3-digit level for the period 1990-91 to 2004-05.

In order to examine the trade-induced employment changes hypothesis the study used panel data at the industry level. The analysis shows that fixed-effect model is consistent for our data set. The regression results indicated that at the margin both export-intensity and import penetration ratio negatively affect employment. The increased export-intensity affects employment possibly due to the increased exports of capital-intensive manufactured goods. Import weighted tariff does not have significant effect on employment. Further, when the industry group dummies are used, the model explained that export-oriented and import-competing industries have the significant effect on employment and use-based classification does not show significant effect except in case of consumer-non durable industries. Further, findings of panel regression for export-oriented and import-competing industries show that in export-oriented industries import penetration does not have a significant effect on employment. However, export-intensity affects negatively. Similarly, in import-competing industries, both export-intensity and import penetration ratio affect employment negatively. This is possibly due to the disaggregation of value added chain in the production process by facilitating imports of semi-finished and unassembled products, through trade reforms, to be finished and assembled in the home country and exports will reduce the share of labor in the overall sales of the industry.

Appendix 3.1

Table A.3.1: The Effect of Trade Liberalization on Employment in the Manufacturing Sector

Dependent Variable : <i>Number of employees</i>	
Regressors	Arellano-Bond Dynamic Panel Estimator (z-values)
<i>Constant</i>	6.686* (7.27)
<i>LN EMP(-1)</i>	-0.044** (-1.88)
<i>LN EMP(-2)</i>	-0.031 (-0.91)
<i>LN EI</i>	-0.091* (-3.46)
<i>LN IPR</i>	-0.029*** (-1.69)
<i>IWT</i>	-0.001 (-1.34)
<i>LN K/L</i>	-0.142* (-2.67)
<i>LN NVA</i>	0.338* (6.91)
<i>LN EMO_EMP</i>	-0.005 (-0.19)
Wald test	$\chi^2(8)=308.77^*$
First order serial correlation (p value in parenthesis)	-3.382 (0.001)
Second order serial correlation (p value in parenthesis)	-0.603 (0.546)
Number of Observations	627

Note: The diagnostic statistics reported in the table are satisfactory in all cases. The absence of first order serial correlation is rejected and the absence of second order serial correlation is not rejected.

Chapter IV

Conclusions

Employment generation, particularly in industries, is considered as one of the ways to achieving inclusive growth. However, organised manufacturing sector, which could provide well secured jobs are facing jobless growth in recent years. Various researchers have analyzed the phenomenon of jobless growth in a closed economy framework. It is important to note here that organised sector jobless growth, especially after 1996, coincided with India's unprecedented integration with rest of the world through trade. Yet it is surprising to note that the impact of trade liberalisation on employment has not received much attention of scholars. Therefore, the present study tried to examine the effect of trade liberalisation on employment during the post-reform period in India's organised manufacturing sector. In this context, the specific objectives of the study were to analyse the changes in the trends and patterns of employment in manufacturing industries in the context of trade liberalization and to examine the impact of trade reforms and its outcome on employment.

The study used published data from the Annual Survey of Industries (ASI) for employment related data and Commodity Trade (COMTRADE) provided by United Nations Conference on Trade and Development (UNCTAD) for trade related data. In addition, the study made use of the industry level tariff related data given by Trade Analysis Information System (TRAINS) published by UNCTAD and Integrated Data Base (IDB) published by World Trade Organization (WTO). The period of the study has been 1990-91 to 2004-05. For analysing the effect of trade liberalisation on employment the study utilized fixed effects panel model.

The basic frame of analysis for the nexus between factor use and trade comes from the Hecksher-Ohlin trade theory. Hence, the present study used this analytical framework for examining the trade induced employment changes in India's organised manufacturing industries. To analyse the changes in employment and trade in the manufacturing industries in the liberalised scenario we started with the trade liberalisation policies in India. Then the study provided the trends and patterns in

employment and trade in the liberalised policy regime. In the pre-reform period, before 1990s, named as jobless growth, which means there was a decrease of employment growth, though, the output growth has increased. This trend has changed in the post-reform period. However, the increase of employment growth showed only in the first half of the liberalisation period. The overall employment growth of the organised manufacturing sector had reduced from 3.44 per cent per annum to -0.63 per cent between 1990-91 to 1996-97 and 1997-98 to 2004-05, the period when liberalisation policies was introduced in an effective manner. In particular, the second period (1997-98 to 2004-05) was coincided with the WTO induced further liberalisation of trade policies. Therefore, the study divided the period of analysis into 1990-91 to 1996-97 and 1997-98 to 2004-05. While analysing the composition of employment we found that production workers share remains higher than non-production workers share over the period from 1990-91 to 2004-05. Despite that, the production workers share has decreased during the period (1990-91 to 1998-99) when employment in organised sector showed an increasing trend and after that, it has increased. In addition, the increased production workers share is mainly due to the increased share of contract workers and not of permanent employees.

The employment growth has declined in all the 22-two digit industries. Out of twenty-two industries, thirteen showed negative employment growth, which altogether accounted for 77 per cent of the employment of the total during 1997-98 to 2004-05. Though, the remaining nine industries showed positive employment growth within that except two industries (namely 'Other non-metallic mineral products' (29) and 'Office, accounting & computing machinery' (30)) others' employment growth has fallen. Therefore, the 'jobless growth' is not a generalized phenomenon. Rather, the industries with major employment share are canceling out the job creating growth performance of other industries.

Trade is one of the important determinants for the country's integration with the rest of the world. In this context, India performed well in terms of trade, both exports and imports. During 1990-91 to 2004-05, India's annual average manufacturing exports and imports growth have increased by 11.37 per cent and 12.24 per cent respectively. This sharp upward trend in exports and imports can be attributed to several factors, in particular, India's structural reform policies of 1991, of which trade liberalization was

the core policy measure, and the initiation of further trade liberalisation induced by WTO. The decreased employment had coincided with the unprecedented integration with the rest of the world through trade. Hence, employment decline seems to have relation with trade, further the study analysed the relationship between trade and employment.

We started with an analysis of the relationship between trade protection, i.e. industries average import weighted tariff rate, and employment. The analysis indicted that when trade protection from import competition has reduced, employment generation in industries has also reduced. Subsequently we analysed the changes in the trends in trade and employment. Except eight industries, import growth is surprisingly higher during the initial period of liberalisation (i.e. 1990-91 to 1996-97) compared to import growth in the later period of liberalisation (i.e. 1997-98 to 2004-05). In addition, almost all the industries' capital intensity also increased during this period. Therefore, it was hypothesized that the increased imports of capital goods lead to the reduction of employment in manufacturing industries. However, there was no information about the nature of import. Hence, the present study supplemented the analysis with the use-based classification of industries to understand the nature of trade and their effect on employment. Further, while analysing the changes in exports and employment, it was found that half of the industries export growth had increased between 1990-91 to 1996-97 and 1997-98 to 2004-05. Some industries employment growth did not change but in other industries, it had even reduced. In addition, the industries, which show increased exports, seem to be having high capital intensity. From the above result, it can be inferred that in the context of heightened global competition, Indian industries were moved from labour intensive exports to capital-intensive exports, which reduce the labour demand.

For analysing the theoretical proposition the study divided industries into export-oriented and import competing and examined the effect of trade liberalisation on employment in these industry groups. The results showed that the employment growth has reduced in both export-oriented and import-competing industries during 1997-98 to 2004-05. However, import-competing industries experienced higher decline in the growth of employment as compared to the export-oriented industries. This suggests

that import-competing industries are generating lesser employment than export-oriented industries, however, exports in these industries had increased.

When we analysed the performance of use-based sectors, in terms of employment, output, exports and imports, it was found that, in all sectors employment growth reduced during 1997-98 to 2004-05. However, consumer durables and capital goods industries are the main cause for the reduction of employment in this period, which shows higher decline in employment (-3.71 and -3.82 percent per annum respectively). In addition to that, these sectors output growth also decreased. In spite of this, their import and export growth has increased simultaneously. This is possibly due to the imports of semi-finished and unassembled products, to be finished and assembled in the home country, that reduced the overall sales of the industry, lead to reduction in the labour demand.

Further, in order to examine the effect of trade liberalisation on employment in organised manufacturing sector the study used econometric tools. The variables were constructed for trade and other industry specific factors, to isolate the impact of non-trade factors on employment. The study employed fixed effects panel model for examining the effect of trade liberalisation on employment.

Results arrived based on the fixed effect panel regression confirmed the following observations. First, econometric model showed that trade has significant effect on employment. The estimated results indicate that import penetration ratio has a significant negative effect on employment. This finding tends to suggest that import competition has strong negative association with employment and it confirms the theoretical argument of substitution effect. However, it provided the following unexpected result, which is the significant negative relationship between export-orientation and employment contrary to theory. This is possibly due to the increased exports of products that are capital-intensive nature instead of labour-intensive. Other industry specific variables show expected results. Capital-labour ratio negatively affects the employment, highlighting the substitutability of capital for labour, which results in reduction of employment. Value added is having a statistically significant positive impact on employment whereas emolument per employee does not have a significant effect on employment. Mandays lost per employee has a significant

negative effect on employment, which implies that labour market rigidity is also important in explaining the decline in employment.

Industries are divided according to use-based classification and export-oriented and import competing to analyse the impact of trade liberalisation on employment in order to confirm our above aggregate industry results. In econometric analysis, we used dummy variables for these classifications. The results indicated that, in use-based classification, except consumer non-durable industries dummy (d_ubc2), no other industries group had significant effect on employment. Therefore, we did not divide these industries for further analysis. However, export-oriented and import-competing industries dummies have a significant effect on employment.

Therefore, the study divided industries into export-oriented and import competing and analyzed in a panel model. The results showed that in export-oriented industries import penetration ratio does not have a significant effect on employment, but export intensity has a significant negative effect. This may be due to increased capital-intensive exports in export-oriented industries, which led to the reduction in employment. This result is not coinciding with classical trade theory. In case of import-competing industries, it clearly showed that both import penetration ratio and export-intensity has significant negative effects on employment. This is perhaps due to disaggregation of overall production function of a firm by facilitating imports of semi-finished and unassembled products to be finished and assembled in the home country and exports will reduce the share of labor in the overall sales of the industry.

Trade seems to be having negative effect on employment, which is contrary to H-O theory. This does not mean that increasing trade is not good for employment generation. The trade induced negative effect on employment is possibly due to, capital-intensive nature of the, composition of trade. Therefore, it is important to encourage the labour-intensive sectors exports, which can generate employment for unskilled workers.

The study shows two dimensions of trade, namely export and import, and tariff protection effect on aggregate employment. However, one important issue that has not been addressed in the present study is the question of effect of trade liberalisation on

production and non-production workers employment. Moreover, the scope of the present study confined to organised manufacturing sector only. One can do similar exercise in unorganised sector, which is the major sector in terms of employment generation. Thus, the present study may be viewed as a first step towards understanding the impact of trade reforms on employment. However, deeper roots and complex inter linkages of trade and employment calls for a much more detailed study.

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