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Trade liberalization and

manufacturing employment:

The case of India

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Foreword

This is one of the case studies prepared within the framework of the research project on "global economic integration and employment policy" carried out by the Employment Policy Department. The case studies are designed to provide detailed empirical assessment of the effects of growth of manufactured trade, induced by trade liberalization, on manufacturing employment and wages in a carefully selected set of countries. While there is widespread concern about these effects, they remain inadequately understood. There exists a large literature on the experience of industrialized countries, but controversies abound. On developing countries, the literature is extremely limited. Given this backdrop, the case studies are expected to make a substantial contribution to our understanding of the changes being engendered by globalization, a subject of much current interest to international organizations, national policy makers, the academic community and civil society organizations.

The trade liberalization process in India can be said to have begun in the 1980s when efforts were made to remove or relax the quantitative controls on exports and imports that had been built over a long period. But the radical shift in trade policy came in 1991, when a programme for progressively reducing tariffs and non-tariff barriers was put in place, incentive schemes for export promotion were introduced, reform of the exchange rate regime was initiated and measures to attract foreign direct investment were adopted. These changes effectively ended India's decades-old import substitution industrialization strategy and substantially strengthened the role of trade in the growth process.

India's economy has since made substantial, though not very rapid, progress towards integration into the global economy. Between the mid-1980s and the late-1990s, the trade-GDP ratio doubled, the share of manufactured exports in total exports increased from just over 50 per cent to nearly 80 per cent and inflow of foreign direct investment increased from negligible amounts in the 1980s to 2-3 billion US dollars per annum in the second half of the 1990s.

The paper provides a detailed analysis of the effects of these changes on employment and wages in manufacturing. The main findings can be summarised as follows. After a period of stagnation in the 1980s, employment in manufacturing industries showed a healthy growth in the 1990s and the growth of export-oriented industries played a major role in this. Remarkably, employment growth accelerated in non-trading industries as well while it decelerated only slightly in the import-competing industries. These developments indicate that employment growth was faster for low-skilled labour. They also suggest that export growth has helped not just because it has stimulated growth of export-oriented industries but also because it has helped ease the foreign exchange constraint. With regard to the wage trends, there are some surprises. The real wage in export-oriented industries actually declined; the explanation seems to lie in a process of restructuring in which some older large-scale enterprises (particularly in jute and cotton textile industries) were out-competed by newer smaller-scale enterprises so that there was a change in the composition of the work force (the share of low-skilled labour is likely to have risen). Real wage growth in import-competing industries, dominated by large-scale capital-intensive enterprises, remained unaffected though there was accelerated growth in labour productivity. Wage inequality increased as a result of these processes.

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Acknowledgement

Abbreviations

ADB	Asian Development Bank
ASI	Annual Survey of Industries
BOP	Balance of payment
CCS	Cash Compensatory Support (scheme) (India)
EXIM	Export-import (policy)
FCCB	Foreign currency convertible bond
FDI	Foreign direct investment
FERA	Foreign Exchange Regulation Act
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GDR	Global Depository Receipt
IMF	International Monetary Fund
LTFP	Long Term Fiscal Policy
MIGA	Multilateral Investment Guarantee Agency
MRTP	Monopolies and Restrictive Trade Practices Act
NIC	National Industrial Classification
NIE	Newly industrializing economy
NRI	Non-resident Indian
NTB	Non-tariff barrier
OCB	Overseas corporate body
OECD	Organisation for Economic Co-operation and Development
OGL	Open General Licence (India)
OPEC	Organization of Petroleum Exporting Countries
QR	Quantitative restrictions
REP	Import Replenishment (licence) (India)
SAARC	South Asian Association for Regional Cooperation
SCD	Special customs duty
SEBI	Securities and Exchange Board of India
SIL	Special Import Licence
SSI	Small scale industries
UNCTAD	United Nations Conference on Trade and Development
UPS	Uninterruptible power supply
UR	Uruguay Round
WTO	World Trade Organization

Contents

1. Introduction

From the standard trade theory, based on the Heckscher-Ohlin model, one would expect a favourable effect of trade liberalization on manufacturing employment in developing countries. One would also expect trade liberalization to lead to a lowering of wage inequality in the manufacturing sector of developing countries, as the gap between the wage rates of skilled and unskilled labour gets narrowed. This is because freer trade should induce developing countries to move towards specialization in labour-intensive manufactured products, in which they have a comparative advantage, and shift away from the production of capital- and skill-intensive, manufactured products. Inasmuch as the former type of industrial production uses more unskilled labour than the latter, the changes in the industrial structure brought about by trade liberalization will lead to greater demand for unskilled labour and a fall (or relative fall) in the demand for skilled labour. In consequence, the wage rate ratio of unskilled to skilled labour will rise and lead to a reduction in wage inequality.

These predictions of the standard trade theory are based on a number of greatly simplified assumptions, the validity of which can be questioned. Once it is recognized that, in practice, these assumptions may not hold and that the pattern of trade in all commodities is not governed by comparative advantage arising from factor endowments, the trade liberalization may not necessarily lead to higher employment and lower wage inequality in developing countries.

Examining these issues at a theoretical level, Ghose (2000) concludes that given the existence of substantial surplus labour and dualistic labour markets in developing countries, growth in trade may neither increase wages of unskilled labour in such countries, nor reduce wage inequality in manufacturing. He further asserts that the effect of trade liberalization on aggregate manufacturing employment in a developing country cannot be predicted *a priori*; the only theoretical conjecture that can be made with some confidence is that employment elasticity in manufacturing will rise. Nevertheless, he suggests that there is a good probability that employment in the manufacturing sector in developing countries will grow under freer trade because growth in exports will increase employment elasticity, ease foreign exchange constraints and induce greater foreign capital inflows (the last two will facilitate faster industrial growth, and hence, industrial employment).

These conclusions are confirmed by Ghose's empirical study (2000) of the effects of freer international trade in nine economies (Argentina, China, India, Indonesia, Republic of Korea, Malaysia, Mexico, the Philippines, Taiwan (China), Thailand, Japan, and the United States). The results of the empirical analysis indicate that trade liberalization generally increases employment elasticity in the manufacturing sector of developing countries, which is in line with the conclusion drawn from theoretical analysis. On the other hand, certain other predications of the standard trade theory (e.g. those relating to changes in demand for skilled and unskilled labour) are not borne out by the country experiences following trade liberalization. Ghose finds evidence to suggest that the growth of export-oriented industries in a developing country stimulates growth in all other industries, including the import-competing industries, with the result that the

growth of manufactured exports to industrialized nations increases demand for both skilled and unskilled workers in manufacturing. This obviously has implications for growth in wages of unskilled and skilled workers.

On the issue of wage inequality, the overall conclusion reached in the study by Ghose is that the effect of trade growth on wage inequality in developing countries will depend on the initial conditions prevailing in the labour markets. Considering the conditions commonly prevailing in the labour markets of developing countries, it may be inferred from this that, in general, growth of trade has a tendency to increase wage inequality in the short-term; but if growth is sustained over a long period, wage inequality declines not only in manufacturing, but also in the economy as a whole.

An important conclusion of Ghose's study is that the employment and labour market effects of North-South trade are, on balance, significantly positive. Job losses in industrialized countries caused by such trade are quite small, while job gains for developing countries are substantial. Growth of such trade, moreover, does not necessarily increase wage dispersion in the manufacturing sector of industrialized countries and has the potential of reducing wage dispersion in developing countries.

This paper is a follow-up to the study by Ghose (2000) and complements that research, focussing on India as a case study. It should be mentioned here that there have been major and far-reaching economic policy reforms in India since July 1991. a key element of which has been large-scale trade liberalization, since July 1991 (discussed in Section 2 below). The main objective of this paper is to study the effects of India's trade liberalization since 1991 on employment and wages in its manufacturing sector. The basic methodology is similar to that used by Ghose (2000). However, this study is more detailed in terms of the level of aggregation of industries. Also, the time period covered extends to a more recent year. The coverage of a longer time span in the post-liberalization period helps for a better assessment of the effects of trade liberalization.

A number of questions are addressed in the paper, the foremost being how trade liberalization has affected employment and wages in Indian manufacturing. To assess these effects, the trends in employment and wages are analysed for the aggregate manufacturing sector and major industrial groups, covering the period 1973-74 to 1997-98.[1] For the purposes of this analysis, the manufacturing sector is divided into five groups: (1) food, beverages and tobacco products; (2) petroleum refineries and petroleum products: (3) export-oriented industries: (4) import-competing industries; and (5) non-trading. This follows the industrial division used by Ghose (2000).[2]

As mentioned above, there has been substantial trade liberalization in India since July 1991. Therefore, the trends in employment and wages in the manufacturing sector and the five major industrial groups in the 1990s, as contrasted to the trends in the 1970s and 1980s, are of interest. Some recent studies have reported a marked acceleration in employment growth in the manufacturing sector in the 1990s (Goldar, 2000; Negaraj, 2000; and Tendulkar, 2000) and slower growth in real product wages. It would be

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[1] The choice of terminal year is dictated by data availability.

[2] For some analyses, the export-oriented and import-competing industry groups are further subdivided into two subgroups each, according to the share of developing countries in exports/imports.

useful to look for the causes of the observed trends, and to find out if the acceleration in employment growth is attributable to trade liberalization.

Some related aspects that need to be studied in this context concern changes in the direction of trade and flow of foreign capital and their effects on employment (and wages) in manufacturing.

The rest of the paper is organized as follows. Section 2 discusses the evolution of trade policy in India, with a focus on the policy changes introduced since 1991. Section 3 analyses trends in India's foreign trade during the period 1970-71 to 1999-2000 with a view to identifying any major break in trends. Besides the growth of trade at the aggregate level and by broad product division, changes in the direction of trade and trends in foreign capital inflows are also analysed. Section 4 is concerned with the effect of trade liberalization on employment and wages in Indian manufacturing. It is divided into four subsections: 4.1 describes the data sources and methodology used for the study; 4.2 presents a cross-section analysis for 1995-96, comparing composition of employment; capital and skill intensity, labour productivity and wages across the five industry divisions; 4.3 analyses trends in employment, and inter-temporal changes in employment elasticity covering the period 1973-74 to 1997-98; and 4.4 presents the results of the analysis of trends in wages in manufacturing, with a focus on wage inequality. Finally, Section 5 provides a summary and conclusions.

2.   Evolution of trade policy

After gaining independence in 1947, India embarked on a path of self-reliant economic development, the two main planks of which were planning and import substitution. This choice of development strategy was, to a large extent, influenced by the country's colonial experience. But, it was dictated also by the prevailing economic conditions in the country marked by a dominant agricultural sector, a small and narrow industrial base, widespread poverty and a low rate of savings.[3] Further, the theories of economic development of less developed countries, which enjoyed wide acceptance at that time, provided an intellectual basis for pursuing a path of self-reliant, planned economic development.

"Export pessimism" conditioned the thinking of Indian planners in the initial years of planning and later. It was based on a shared common belief, that, following the collapse of the post-Korean war boom, the prospects for the developing countries of attaining a rapid growth in exports and becoming major players in the global field was very bleak.[4] The prophecy, however, proved wrong. World trade grew rapidly in the period, 1953 to 1973,

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[3] For a discussion on the evolution of the industrial and trade control system in India, see Mohan and Aggarwal (1990) and Mohan (1992).

[4] This belief implied that, for rapid industrialization, India required an industrialization strategy based on import substitution and protection. It also implied that international trade could not be relied upon to convert increases in savings into investment goods. Rather, it was necessary for the country to produce such goods domestically. This obviously required significant involvement of the State in the establishment of manufacturing industries for investment goods.

including developing countries' participation in world trade. As it became more and more clear that the premise of export pessimism was proving to be unfounded, many developing countries changed their strategies towards outward-orientation in the early to mid-1960s. India, along with some Latin American countries, however, continued to follow an inward-oriented industrialization strategy (Ahluwalia, 1992).

The policy of import substitution necessitated the creation of a protective wall of high taroff rates (among the highest in the world by the end of the 1980s) coupled with quantitative restrictions of various kinds, including import licensing and canalization. To compensate exporters for the disadvantages created by the import control regime, a system of incentives for export activity was established. At the same time, an elaborate administrative system was established to implement the import control and export incentive policies and to prevent under- and over-invoicing of imports and exports. However, it created many problems for importers and exporters, particularly due to the procedural delays and cumbersome transactions involved.

It is widely recognized that the highly protective trade regime seriously affected the efficiency of Indian industries and contributed to high costs of production[5], as well as to their lack of technological dynamism. It also created a significant bias against exports, which could not be neutralized by the export incentives (Aksoy, 1991).[6] All these were finally reflected in India's poor export performance: its share in world exports, which was over 2 per cent in 1950, fell to 0.4 per cent in 1980 and was about 0.5 per cent in 1990 (Srinivasan, 1994, p. 178), in 1998, India's share in world exports was 0.6 per cent (Economic Survey, Government of India, 2000-2001, table 7.5).

Several official committees took serious note of the adverse effects of trade policies on industrial performance, especially on efficiency, competitiveness and export performance, and made recommendations for changes in that policy. As a result, a process of liberalization of trade policy was introduced in the late 1970s.[7] Quantitative controls on imports of intermediate and capital goods were increasingly relaxed and some new measures for export promotion introduced. Though some efforts were made to lower the tariff rates, these were, in many cases, subsequently reversed. Pressured by growing public expenditures, the Government had no option but to raise tariffs in order to increase government revenue from customs duties. The import-weighted average rate of tariffs increased from 38 per cent in 1980-81 to 87 per cent in 1989-90.[8] Also during this period, the Indian rupee was floated, as a result of which the real effective exchange rate depreciated significantly (by 29 per cent between 1980-81 and 1989-90).

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[5] For a detailed discussion on the adverse effects of the trade regime on Indian industry, see among others Bhagawati and Srinivasan (1975).

[6] That protectionist policies created an anti-export bias has been noted in a number of studies including World Bank (1989).

[7] See World Bank (1989) and Wadhva (1994).

[8] However, it was import controls, rather than tariffs, that limited imports (Joshi and Little, 1996, p.64).

The 1991crisis and the subsequent policy reforms

The trade deficit widened considerably in the 1980s, forcing the Government to significantly increase its foreign borrowings. After1984, increasing recourse to short-term financing, particularly trade credit, pushed up its debt-servicing obligations. The balance-of-payments situation worsened in 1990, when, due to the Gulf war, the price of oil rose sharply and the remittances from Indian workers from the Middle East declined. All these events led to a major foreign exchange crisis in the second quarter of 1991.

In response, a major reform of trade policy was undertaken in July 1991, as part of a wider economic reform package supported by the International Monetary Fund (IMF) and the World Bank.[9] The aim of the new trade policy package was to liberalize the system of administrative controls and licences, provide more incentives to exports, check growth in imports by making these more costly, and to link the level of imports to export earnings. The most important measures taken in July 1991 were: (a) devaluation of the rupee by 21 per cent; (b) abolition of supplementary licences for all importers except small-scale industries; (c) abolition of the Cash Compensatory Support (CCS) scheme for all exporters; and (d) enhancement of Import Replenishment (REP) licence entitlements to 30 per cent across-the-board for all merchandise exporters (raised later to 40 per cent for some sectors). The name of the REP licence was changed to EXIM scrip. The implication of the last two measures was that one major component of the export incentives was removed from administrative control and become more uniform among various sectors, which was a major benefit to exporters of agricultural and agriculture-based products.

Between August and December 1991, a number of other changes in the import-export policy sought to make the trade regime more liberal: actual user conditions on OGL (Open General Licence) imports was discontinued, items were shifted from Restricted to Limited Permissible lists and from Limited Permissible to OGL lists, and for industrial units subject to a phased manufacturing programme, the obligation of importing OGL items via EXIM scrip was abolished.

The process of liberalization of trade policy continued in 1992 and in subsequent years, resulting in a radical change in the trade regime. The export-import policy announced for 1992-97 and again for 1997-2002, and other changes to the policy, have considerably reduced the role of the import and export control system.[10], [11] Along with this, there has been a major reform in tariff rates, the general level of which has been substantially

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[9] For a discussion on the foreign exchange crisis and the trade policy initiatives taken in 1991, see Sen (1992) and Wadhva (1994). The Indian Government negotiated a standby arrangement with the IMF in October 1991for $2.3 billion over a 20-month period, a structural adjustment loan with the World Bank of $500 million and a hydrocarbon sector loan with the Asian Development Bank (ADB) for $250 million. Parallel with effort to draw on multinational sources, the Government also launched the India Development Bonds aimed at mobilizing funds from non-resident Indians.

[10] The major change in import policy in 1992 was the introduction of a negative list (a significant departure from the import policy of the past). Thus, except the goods in the negative list, all other goods could be freely imported (subject to tariffs).

[11] Industrial policy reforms have also contributed to import liberalization. Of particular significance, in this context, is the abolition of Phased Manufacturing Programmes (PMPs) which the Government had imposed on industrial firms; it required the firms increasingly to source parts and components from domestic producers rather than using imported parts and components.

lowered.   Another important step in trade reform has been the reform of the exchange rate system, which has become largely market determined. These are discussed further below.

2.1   Tariff policy and reform

Customs duties in India have played an important role not only as a fiscal instrument for mobilizing revenue, but also as an economic policy instrument for providing a level of protection to domestic industry against competition from imports. Prior to the changes made in the 1990s, the Union Government used to levy three types of customs duty on goods imported into India: basic customs duty, auxiliary duty of customs, and additional duty or countervailing duty (the rate of duty being equal to the excise duty on like articles if produced or manufactured in India).   The basic and auxiliary duty have now been combined.

Prior to the tariff reforms of the 1990s, the Indian tariff system was complex due to the existence of a large number of exemption notifications applicable to all three types of duties: basic, auxiliary and additional duty. Due to exemptions, the effective rate of duty could vary widely between very similar products. Even for the same product, the rate of customs duty applicable could vary according to user, end-use of the product and the country from which it was imported. Exemption notifications made the effective rates of duty lower than the schedule rates.   Thus, for 1986-87, the effective duty rate with quantifiable exemptions was 79.4 per cent (basic plus auxiliary) while the collection or realized rate of duty, which took into account all exemptions including end-use exemptions and exemptions to exporters, was only 39.9 per cent (excluding countervailing duty). [12]

How has the general level of tariff rates varied over the years? This can be seen from table 1, which gives the collection or realised rate of duty (including countervailing duty) at the aggregate level (all commodities) for the period 1956-57 to 1999-2000. The import-weighted average effective tariff rate is also shown in the table for the years for which estimates are available.   These are the effective tariff rates with quantifiable exemptions[13] and include basic and auxiliary duty (i.e. protective customs duty).[14]

The collection rate of customs duty at the aggregate (all commodities) level was about 15 per cent (on average) in the late 1950s (table 1). The level of tariff rates was higher in the 1960s than in the late 1950s. The average collection rate of customs duty was about 25 per cent in the first half of 1960s and remained at nearly the same level in the second half. There was a further increase in the level of tariff rates in the 1970s. The average collection rate of customs duty was about 35 per cent during the 1970s. Between the triennium ending 1962-63 and that ending 1979-80, the average collection rate of customs duty increased from about 18 per cent to about 33 per cent (i.e. an increase of about one percentage point per year).

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[12]   Goldar, Narayana and Saleem (1992) have studied the Indian tariff structure during the 1980s.

[13]   These tariff rates are worked out taking into account the general exemptions, but not the exemptions that apply to a specific use of the commodity of a specific source country. Such exemptions, including duty free imports by exporters, get included in the collection or realized rates of duty.

[14]   Note that countervailing or additional duty is not protective since it is equal to the rate of excise duty paid by domestic manufacturers for their products.

There was a marked upward trend in the general level of tariff rates in the 1980s. The import-weighted average effective tariff rate increased from 38.1 per cent in 1980-81 to 86.0 per cent in 1989-90. Between these two years, the collection rate of duty increased from 27.1 per cent to 51.8 per cent. (table 1). These hikes in the customs duties largely reflected the Government's compulsion to raise revenue to meet its ever-increasing expenditure. In 1980-81, customs duties contributed 25.5 per cent of the total tax revenue of the central Government. In 1989-90, this share was about 35 per cent.

Table 1: Average tariff rates in India: 1956-57 to 1999-2000

Year (s)	Rates of duty (%)	
	Collection rate	Effective tariff rate
1956-57 to 1959-60	15*	
1960-61 to 1964-65	25*	
1965-66 to 1969-70	24*	
1970-71 to 1974-75	35*	
1975-76 to 1979-80	35*	
1980-81	27	38
1981-82	32	44
1982-83	36	53
1983-84	36	61
1984-85	42	61
1985-86	48	64
1986-87	57	79
1987-88	62	79
1988-89	57	88
1989-90	52	86
1990-91	47	
1991-92	44	
1992-93	37	56
1993-94	30	
1994-95	29	40
1995-96	29	45**
1996-97	31	33**
1997-98	29	31**
1998-99	23	30**
1999-2000	24	30**

Period average; ** not exactly comparable to the estimates for earlier years.

Source: Collection rates: The rates for 1980-81 to 1988-89 are taken from Goldar, Narayana and Saleem (1992). The rates for subsequent years are taken from Government of India *Economic Survey,* various years. The collection rates for years prior to 1980-81 have been computed from data on customs revenue collected from imports and the value of imports reported in the *Statistical Abstract*, Government of India, various issues. Effective tariff rates are taken from Goldar, Narayana and Saleem (1992), Mehta (1999), Goldar and Mehta (2001) and Nouroz (2001). These are import weighted averages of effective rates for different products/items.

A few comments on the tariff structure prevailing before the reform of the 1990s would be in order here. The tariff structure in India in the late 1980s was marked by a very high average tariff rate and a wide variation in the tariff rates applied to different commodities, ranging from zero to over 250 per cent. The effective rate of protection accorded to manufacturing industries by the tariff system was high on average (121 per cent in 1989-90), and it varied significantly across industries, thereby distorting resource allocation (Goldar and Saleem, 1992)[15] Tariffs on imports of basic and capital goods were high, which pushed up the costs of production in the rest of the economy. Although the effective tariff rates were high, there was considerable tariff redundancy. As a result, the implicit tariff rate (based on domestic and international price comparisons) was much lower than the effective rate.   While, on average, the effective tariff rate for manufacturing industries (taking into account quantifiable exemptions) was over 100 per cent in the mid-1980s, the implicit tariff rate was about 50 per cent.   In other words, the effective rates exaggerated the protection accorded to the domestic industries by the tariff system.[16] Compared to the levels of tariff generally prevailing in developing countries, the tariff rates in India during the second half of the 1980s were quite high (World Bank, 1989). Thus in 1985-85, the collection rate of duty in India was about 50 per cent compared with 17 per cent in Sri Lanka, 15 per cent in Bangladesh, 14 per cent in Argentina, 13 per cent in Thailand, 11 per cent in the Philippines and Yugoslavia, 7 per cent in Turkey and Indonesia and 3 per cent in Brazil. Again, in terms of the average effective tariff rate for manufactured goods, there was a large difference between the rate in India and the rates prevailing in many developing countries. While for India, the average rate in the mid-1980s was about 122 per cent, for a number of developing countries, it ranged between 20 and 40 per cent.

Changes in tariff structure in the 1990s

The need for reforming tariff rates in India was emphasized in the Report of the Alexander Committee (1978) and the Long Term Fiscal Policy (LTFP) document of the Government (1985). They noted that the high prevailing tariff rates needed to be reduced and that the tariff system was very complex and needed to be simplified. However, very little progress in tariff reform could be made.   In pursuit of the revenue-seeking objective, the rates of customs duty were raised in the 1980s contrary to what was envisaged in the LTFP document.   Thus, the Tax Reforms Committee, constituted in 1991 under the chairmanship of Prof. R.J. Chelliah, noted in its report that the tariff system prevailing at the end of 1980s continued to remain highly dispersed and complex. The rates of customs duty ranged from 0 to 400 per cent. More than 10 per cent of the imports were subject to duty rates of 120 per cent or higher, while nearly 40 per cent of imports were subject to duty or negligible rates of duty.   The most glaring aspect of the tariff system, according to the Committee, was the imposition of high duty on metals, chemicals and machinery. The Committee also noted that the notifications altering duty rates or granting exemptions were issued so frequently that it was very difficult to keep track of them.   Accordingly, it recommended a programme of major tariff reforms, the main elements of which: (a)

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[15] See also Aksoy (1991) and Aksoy and Ettori (1992).

[16] See World Bank (1989) and Goldar and Saleem (1992), for a discussion on this point.

reduction in the general level of tariffs; (b) reduction of the spread or dispersion of tariff rates; (c) simplification of the tariff system; (d) rationalization of tariff rates, along with the abolition of numerous exemptions and concessions; and (e) abolition of the practice of making changes in effective rates through notifications.[17]

Following these recommendations, a major tariff reform was undertaken in the 1990s. The peak duty rate was lowered in stages from 150 per cent to 50 per cent in 1995-96 and 40 per cent in 1997-1998.[18] The duty rate on capital goods was lowered from 85 to 20 per cent. A number of other changes were made to simplify the system (in terms of fewer rates), reduce inter-product variation in tariff rates and rationalize the tariff structure. In addition, many end-use exemptions were removed.[19]

As a result of the tariff reforms, substantial changes have taken place in the tariff structure. The collection rate of duty at the aggregate level fell from 47 per cent in 1990-91 to 29 per cent in 1994-95, and to 23 per cent in 1998-99 (table 1). The import-weighted average effective rate of tariff was reduced from 86 per cent in 1989-90 to 40 per cent in 1994-95 and to 30 per cent in 1999-2000. With the lowering of the peak rate of duty, inter-product dispersion in tariffs has also been drastically reduced. In 1997-98, about 92 per cent of items, accounting for about 90 per cent of total imports were subject to duties ranging from 15 to 40 per cent.

The discussion so far has been on the general level and inter-product dispersion of tariff rates. It may be useful to examine how tariff rates for specific industry groups have changed during the 1990s. Table 2 presents, for major industry groups, a comparison of import-weighted average effective tariff rates between 1987-88, 1994-95 and 1997-98. The average tariff rate for manufactured products fell from 90.5 per cent in 1987-88 to 38.2 per cent in 1994-95 and 30.1 per cent in 1997-98. For most industry groups, there was a substantial reduction in the average tariff rate between 1987-88 and 1994-95, and a further reduction between 1994-95 and 1997-98. The reduction in average tariff rates between 1987-88 and 1997-98 was relatively more marked for the following industry groups: textiles, clothing, tobacco products, footwear, industrial chemicals, other chemical products, rubber products, non-metallic mineral products, basic metals and electrical machinery. By contrast, there was a relatively smaller reduction in tariff rates for the following industry groups: wood, cork and products, paper and paper products and transport equipment.

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[17] See Interim Report of the Tax Reform Committee, December 1991, p.97.

[18] The peak duty rate was reduced to 35 per cent in 1999-2000. It may be mentioned here that a special customs duty (SCD) at the rate of 2 per cent was imposed in 1996-97. The rate of SCD was raised to 5 per cent in 1997-98. In 1998-99, along with SCD of 5 per cent, a special additional customs duty at the rate of 4 per cent was introduced to offset the incidence of domestic trade taxes other than the Union excise duty. These special duties had the effect of raising the general level of tariff. During 1999-2000, there was a surcharge on basic customs duty at the rate of 10 per cent. This surcharge has been removed in the Budget of 2001-02, and the peak duty rate has been reduced to 35 per cent. However, on a number of agricultural products, tariffs have been imposed at a much higher rate than the "peak" duty rate.

[19] For a critique of the tariff related recommendations of the Tax Reforms Committee and discussion on tariff reforms in the first half of the 1990s, see Joshi and Little (1996, Chapter 3).

Table 2: Average (import-weighted) tariff rates: 1987-88, 1994-95 and 1997-98 (%)

Industry	1987-88	1994-95	1997-98
Food manufacturing	97.0	33.4	28.7
Beverages	249.4	61.9	149.2
Tobacco products	140.0	65.0	42.0
Textiles	138.1	57.8	38.7
Clothing	140.0	65.0	42.0
Leather products (except footwear)	82.1	5.8	22.2
Footwear	140.0	20.4	42.0
Paper and paper products	69.7	48.5	16.8
Wood, cork & products	55.0	61.1	32.0
Industrial chemicals	119.9	53.7	26.4
Other chemical products	117.8	63.1	32.0
Rubber products	130.2	60.1	41.7
Non-metallic mineral products	119.5	62.0	39.4
Iron and steel	120.8	44.6	29.2
Non-ferrous metals	107.5	51.6	38.2
Metal products	95.0	47.6	31.1
Non-electrical machinery	80.9	27.5	24.0
Electrical machinery	102.3	54.9	29.0
Transport equipment	62.7	55.7	26.6
All manufacturing	90.5	38.2	30.1
Agriculture	45.7	24.1	11.2
Mining	36.9	32.7	23.2
All commodities	79.3	40.3	28.7

Source: Nouroz (2001).

Another comparison of tariff rates for major commodity groups (from the Harmonized System commodity classification) is presented in table 3. A comparison is made between tariff rates in 1994-95 and those in 1998-99. The figures for 1998-99 include special customs duty as well as special additional customs duty (which was applicable that year). It is seen that, in most cases, the average tariff rate dropped significantly. There was also a sharp reduction in average tariff rates between 1994-95 and 1998-99 in the following commodity classification: wood and products, raw hides and leather, products of chemicals, machinery and vehicles. On the other hand, there has been a very small reduction in the average tariff rates for textiles, and food products and beverages. It should be pointed out that the average tariff rates of commodity groups shown in table 3 are not exactly comparable with the average tariff rates shown in table 2.

Table 3:   Average tariff rates for major categories of products, 1994-95 and 1998-99

Product category	Tariff rate (%)		Product category	Tariff rate (%)	
	1994-95	1998-99		1994-95	1998-99
Chemical products	65	35	Footwear, umbrellas	65	51
Plastics and articles	65	43	Basic metals and products	47	39
Raw hides, leather	57	19	Machinery	65	32
Wood and products	65	4	Foodstuffs beverages	67	64
Textiles and textile articles	53	41	Vehicles, etc.	64	33
Wood pulp and other fibres	62	27	Articles of stone, plaster	65	49

Source: Mehta (1999).

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An inter-temporal comparison of the collection rate of tariffs for specific groups of industrial products is presented in Table 4. The table shows clearly that there was a marked reduction in the collection rates of duty between 1990-91 and 1995-96 (see also Table 1), but, thereafter, the downward stopped for some of the product groups. The collection rate of duty on chemicals declined from 92 per cent in 1990-91 to 44 per cent in 1995-96 and to 34 per cent in 1998-99, and that on metals from 95 per cent in 1990-91 to 52 per cent in 1995-

96 and further to 44 per cent in 1997-98. On capital goods it declined from 60 per cent in 1990-91 to 33 per cent in 1995-96, but increased to 42 per cent in 1998-99. Similarly, on man-made fibres it declined from 83 per cent in 1990-91 to 36 per cent in 1995-96, but increased to 65 per cent in 1999-2000.

Table 4:   Collection rates of customs duty: selected product groups

	Duty rate (%)				
	1990-91	1995-96	1997-98	1998-99	1999-2000
Food products	47	23	16	15	17
Petroleum	34	30	29	29	27
Chemicals	92	44	37	34	37
Man-made fibres	83	36	36	49	65
Paper and newsprint	24	8	13	11	9
Metals	95	52	44	51	53
Capital goods	60	33	41	42	40
All commodities	47	29	27	23	24

Source: Government of India, *Economic Survey*, 2000-2001, p.45.

From the above discussion it is clear that there has been a substantial reduction in the general level of tariff rates in India in the 1990s. In the first half of the 1990s, both effective tariff rates and collection rates of duty were reduced substantially. In the second half of the 1990s, the reduction in the effective tariff rates continued, albeit at a slower pace, but there was a relatively smaller reduction in the collection rates of duty, and for some product groups it even increased.

The lowering of tariff rates in the 1990s caused a marked fall in the effective rates of protection for manufacturing. Table 5, which presents estimates of nominal and effective rates of tariff protection for manufacturing industries in India for select years shows that there was an upward trend during the 1980s, and a reversal of that trend in the 1990s. The effective rate of protection for the manufacturing sector (weighted average of estimated protection rates for 66 industries) fell from about 128 per cent in 1989-90 to about 101 per cent in 1992-93, about 58 per cent in 1994-95, and still further to about 41 per cent in

1997-98.[20] It can also be noted from Table 5 that the fall in the effective rates of protection has been across the board, though for certain industry groups the reduction is less marked than for others.

It needs to be pointed out that even after the reductions made in tariffs during the 1990s, the prevailing general level of tariffs in India is high compared with many other developing countries. An analysis of tariff rates in developing countries undertaken by Pursell (1996) shows that in terms of post-Uruguay Round (UR) bound rates for manufactured products, India ranks high among 26 developing countries considered for the comparison. For many manufactured product groups, India's rank is third to fifth. However, in terms of applied rates in the mid-1990s, India ranks first or second. Taking all merchandise trade, the UR-bound rate for India is 42.2 per cent while the average for 26 countries is 28.5 per cent. In terms of the applied rate in the mid-1990s, India's tariff rate was 51.6 per cent while the average tariff rate for 26 developing countries was 19.2 per cent. Similarly, Mehta (1999) reports that, while the average rate of tariffs (collection rate) in India was about 27 per cent in 1997-98, it was 11.5 per cent in the Philippines, 6.9 per cent in Thailand, 6 per cent in China, 3.8 per cent in Mexico and 3.1 per cent in Malaysia. A recent international comparison of tariffs made by the World Bank for large countries (with a population over 20 million) shows that India has the second highest average tariff rate after Argentina and it is higher than that of the large Asian and Latin American countries (World Bank, 2000).

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[20] Alternative estimates of effective rates of protection to Indian manufacturing industries, which covers the period 1988-89 to 1998-99, have been made by Mihir Pandey for a report of the National Council of Applied Economic Research, Delhi. According to these estimates, the effective rate of protection to Indian manufacturing accorded by tariffs (weighted average of industry-level estimates) increased from about 151 per cent in 1988-89 to about 165 per cent in 1991-92, and then decreased steadily to about 52 per cent in 1995-96. The rate of effective protection was about 43 per cent in 1997-98 and about 48 per cent in 1998-99.

Table 5: Nominal and effective rates of protection for Indian manufacturing (1980-81 to 1997-98)

(per cent)

	1980-81	1983-84	1989-90	1992-93	1994-95	1997-98
Nominal protection rates						
Manufacturing sector	90.8	114.4	122.0	92.7	54.1	35.0
Effective rates of protection						
Manufacturing sector	99.5	121.8	128.0	100.5	58.4	41.0
Industry Groups						
Code Description						
20-21 Food products	129.86	172.06	176.92	63.60	72.11	58.81
22 Beverage & tobacco	113.70	149.55	188.74	78.09	68.84	78.96
23 Cotton textiles	135.25	154.06	141.70	111.58	47.44	49.01
24 Wool, silk and man-made fibre textiles	121.04	139.88	145.81	113.08	70.29	41.02
25 Jute textiles	159.35	177.63	154.95	148.70	112.70	59.80
26 Textile products	117.89	139.16	148.50	111.86	68.86	43.21
27 Wood, wood products, furniture	92.10	123.00	150.68	184.01	88.24	49.19
28 Paper, paper products, printing and publishing	71.20	81.28	88.73	101.28	34.45	21.55
29 Leather, leather products	124.69	139.36	156.57	101.42	55.37	44.74
30 Chemicals, chemical products	73.08	94.85	111.84	113.66	65.73	31.85
31 Rubber, plastic, petroleum and coal products	169.61	212.77	155.94	114.36	79.80	55.06
32 Non-metallic mineral products	70.42	90.51	135.91	92.60	67.59	44.38
33 Basic metals and alloys	73.62	133.77	136.63	111.93	44.14	27.65
34 Metal products	108.96	111.63	122.19	58.33	52.53	27.38
35+36+39 Machinery	67.38	71.65	81.78	72.27	29.06	26.56
37 Transport equipment	89.33	94.69	71.83	91.36	63.22	45.11
38 Other manufacturing	65.51	85.06	115.13	118.59	64.29	32.16

Source: Estimates for 1980-81, 1983-84 and 1989-90 are taken from Goldar and Saleem (1992) and those for 1992-93, 1994-95 and 1997-98 are taken from Nouroz (2001). These sources provided estimates of nominal and effective protection accorded by tariffs to 66 manufacturing industries (sectors of input-output table), and aggregated using value added weights.

Before concluding the discussion on tariff reforms, a few comments may be added about India's Uruguay Round commitments to tariff reduction. In the Uruguay Round, India agreed to make adjustments in tariff rates for 3,373 commodities at the 6-digit HS level or a subgroup of 6-digit HS level (Mehta 1999). The "bound rates" were substantially lower than the rates prevailing in the "base period" as well as the applied most favoured nation (MFN) rates during 1994-95, the year in which the agreement was signed. The reductions in tariff rates made in the 1990s have brought the applied rates to a level lower than the bound rates for most commodities. In 1998-99, there were only 40 commodities out of 3,373 for which the applied rate exceeded the bound rate. Table 6 presents a comparison between India's applied rate in 1998-99 and the Uruguay-Round-bound rates. The applied rate is significantly lower than the bound rate in most cases; for some products, it is less than half the bound rate. The bound rate for most groups of manufactured products is in the range of 35 to 40 per cent.

Table 6: India's applied rate and Uruguay Round bound rate – 1998-99

Range	No. of lines
Below UR-bound rate by over 75 %	467
Below UR-bound rate by 50 to 75 %	114
Below UR-bound rate by 25 to 50 %	450
Below UR-bound rate by 10 to 25 %	1 445
Below UR-bound rate by 10% or less	857
Above UR-bound rate	40
Total	3 373

Source: Mehta (1999).

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2.2   EXIM policy: quantitative restrictions on imports and exports

The quantitative restrictions (QR) regime for imports was introduced in 1957 following a severe balance of payments crisis. The QRs were selective rather than across the board, and therefore, besides curtailing the demand for foreign exchange they served the objective of promoting the development of particular industries through import substitution. Over time, the import policy became more and more restrictive and complex and it was only from the mid-1970s that there was some relaxation in the QR regime for imports. However,

even by the end of the 1980s, there was a great deal of quantitative control on imports and exports.

The pre-1991 import control system divided imports into three broad categories: consumer goods, capital goods and intermediate goods, which included raw materials, components, spare parts and supplies. Import of consumer goods, other than those canalized and imported by State agencies (such as food grains, edible oils, sugar, and certain drugs and medicine) was not permitted. Imports of capital goods and intermediate goods were subject to varying degrees of restriction. These were divided into various licensing status categories: banned, restricted, limited permissible, canalized and open general license (OGL).

The allocation of permissible imports was carried out by an elaborate administrative machinery, both restrictive and complex. The main objectives of the import control system were to provide protection to Indian industry, conserve foreign exchange and ensure adequate inputs to industry.

Although OGL was a relatively less restrictive licensing category, its effect was circumscribed by the "actual user" policy which allowed only the actual users to import the commodity, and disallowed imports for resale by excluding intermediaries from importing. This policy greatly restricted imports of capital goods and intermediate goods by small and medium-scale units, and even by large firms when the quantities required were small, owing to the high transactions costs of importing small amounts.

Beginning from 1976, there was a steady increase in capital goods items on the OGL list (from 79 in 1976 to over 1,100 items in 1988). Most of these changes were made to allow particular domestic industries (including a number of export industries) to modernize, and the shift to OGL status was accompanied by a reduction in tariff rates. However, most of the machinery put on OGL was not produced in India and hence it did not result in imports competing with domestic industry.

In the case of intermediate goods too, there was an increase in the number of items on the OGL list and a reduction in the number of items on banned and restricted lists. This led to some relaxation of control on imports of intermediate goods. But the main thrust of the policy changes was to ease the supply situation of important non-competitive inputs used by domestic industry. As a result, the liberalization of import licensing policies for intermediate goods did not result in much direct import competition to domestic producers.

As with imports, exports were subject to a licensing regime that was intended to serve a variety of purposes. Export restrictions of varying intensity on a number of primary and some manufactured products were aimed at keeping domestic prices below world prices in the interest of domestic consumers, some domestic industries and some export activities based on such goods. The export controls were also used to canalize some exports, to regulate exports of products subject to quotas in importing countries, to enforce a minimum export price, to help control under-invoicing, to reinforce health and quality inspection of exports, and more generally, to support a variety of domestic regulatory controls. In 1988, there were 172 products subject to export restrictions, of which 67 were not allowed to be exported. It should be emphasized, however, that main aim of the export policy was export promotion, and for this reason it did not, in general, act as a serious deterrent to exports, especially manufactured exports.

Reforms of the EXIM policy

Along with changes in exchange rate policy (discussed later) and tariff policy, a major overhaul of the export-import policy (EXIM policy) was undertaken in the 1990s as part of the economic reforms programme with a view to liberalizing the trade regime. A new five-year EXIM policy was announced in March 1992, which substantially eliminated licensing and discretionary controls on trade and provided an impetus to exports.

In the new EXIM policy, covering a five-year period, from 1992 to 1997 (so as to provide a measure of stability), import controls through licensing were by and large abolished except for a short negative list. Apart from consumer goods, almost all capital goods, raw materials and intermediate goods could be freely imported subject only to payment of customs duty. The negative list consisted of items that were prohibited, restricted or canalized on account of social, environmental or health considerations. As announced in March 1992, the negative list of imports contained 3 prohibited items, 68 restricted items and 8 canalized items. Over the next few years, there were some deletions from the lists of restricted and canalised items. At the end of 1992-97 EXIM policy, the government issued notifications to amend it.

As regards consumer goods, the 1992-97 EXIM policy and its subsequent amendments, did allow imports of some consumer goods. As of April 1995, about 70 consumer goods items, could be freely imported. These included tyres of buses, trucks and earthmoving machinery, photocopiers, facsimile machines, cameras (all types except fixed focus 35 mm/110 mm cameras), personal computers (with a CIF value above 150,000 rupees), sports goods and uninterruptible power supply (UPS) systems.

A major step taken to liberalize imports of consumer goods was to allow their imports under Special Import Licence (SIL) issued to certain categories of exporters, including deemed exporters, trading/export houses, and manufacturers who had acquired ISO 9000 or BIS 14000 certification of quality. The special import licences were freely transferable. Many consumer durables such as split air-conditioners, colour television sets, CD players, fully automatic washing machines, sewing machines with electronic controls and subscriber-end telecommunication equipment (e.g. cellular telephones) were included in the list. In 1996, 300 items could be imported under Special Import Licence.

Table 7 shows the percentage of items, and their import value that could be imported under various licensing categories. A comparison is presented between 1987-88, 1994-95 and 1997-98. The frequency distribution for 1987-88 has a large unidentified category, as the licensing status could not be ascertained in respect of about 29 per cent of the items. There is no such ambiguity in the frequency distribution for 1994-95, which shows that the policy had become more clearly specified. The main point that emerges from Table 7 is that a high proportion of items (in terms of their number and the value of imports) were freed from the restrictions of import licensing under the EXIM policy for 1992-97. The process of import liberalization continued in subsequent years: freely importable items accounted for 55 per cent of imports in 1994-95, and this increased to 64 per cent in 1997-98.

Table 7:   Comparison of import licensing structure

1987-88	Banned	Limited permissible	Open General Licence	Canalized	Not-identified	Total
% of items	33	18	13	9	29	100
% of imports	16	23	16	9	17	100
1994-95	**Banned**	**Restricted**	**Free**	**Canalized**	**Not-specified**	**Total**
% of items	0	43	55	2	0	100
% of imports	0	20	55	25	0	100
1997-98	**Banned**	**Restricted**	**Free**	**Canalized**	**Not-specified**	**Total**
% of items	0	41	57	2	0	100
% of imports	0	15	64	21	0	100

Source: Nouroz (2001). The distribution for 1987-88 is taken from a study undertaken by Aksoy (1991).

Table 8, taken from a study by Pursell (1996) shows the non-tariff barrier (NTB) coverage of India's imports in various major sectors of the economy in the years 1990 and 1995. The table clearly shows that, as a result of liberalization of the import policy, the NTB coverage declined: in agriculture from 94 to 84 per cent, in mining from 100 to 40 per cent and in manufacturing from 90 to 36 per cent. Within manufacturing, the NTB coverage for machinery and intermediate goods declined considerably: in 1995, the NTB coverage for these two groups of manufactured products was only 10 and 12 per cent respectively. For manufactured consumer goods, there was a relatively smaller reduction in NTB coverage. According to Pursell's estimates, in 1995 the NTB coverage of manufactured consumer goods was about 79 per cent.

Table 8:   NTB coverage of India's imports 1990 and 1995

Sector	Estimated share of GDP in internationally tradeable goods protected by NTB	
	End 1990	May 1995
Agriculture	94	84
Mining	100	40
Manufacturing	90	36
Machinery		10
Intermediate		12
Consumer goods		79

Source: Pursell (1996).

Turning to exports, the EXIM policy (1992-97) reduced the number of items subject to export control from 439 to 296. In 1993, the negative list was reduced to 215, with further reductions over the next few years.

The negative list of exports, as announced in 1992, had five categories: (1) prohibited items, (2) exports permitted subject to licensing, (3) exports permitted subject to quantitative ceiling, (4) exports permitted through a canalizing agency and (5) exports permitted with minimum regulation. Subsequently, two categories, namely exports permitted subject to quantitative ceiling and export permitted with minimum regulation, were deleted.

Removal of non-tariff barriers in recent years

The process of liberalization of imports has been continued in the EXIM policy for 1997-2002 announced in 1997, and in the subsequent amendments. This has led to further reductions in the NTB coverage of imports, as seen in Table 9. In non-metallic mineral products, the NTB coverage has declined from 76 per cent in 1995-96 to 19 per cent in 1999-2000. For example, in wood, cork and their products group, the decline has been from 42 per cent to about 3 per cent. In 1999-2000, it is only the food, beverages and tobacco group and the textiles and leather group which had an NTB coverage ratio of about 40 per cent or higher.

Table 9:   **Coverage ratio for non-tariff barriers on India's imports**

	Industry Based Classification	1995-96	1997-98	1998-99	1999-00
1	Food, beverages and tobacco	74.47	65.67	63.06	46.58
2	Textiles and leather	47.06	48.33	47.44	39.30
3	Wood, cork and products	41.99	24.03	20.00	2.87
4	Paper and printing	39.01	25.82	22.03	17.76
5	Chemicals, petrol and coal	32.29	22.52	20.77	12.57
6	Non-metallic minerals	76.48	46.32	40.41	19.05
7	Basic metal industries	13.21	14.46	11.87	9.03
8	Metal products and machinery	37.93	29.73	27.93	21.17
9	Other manufacturing	46.44	30.56	27.39	17.19
10	Agriculture	67.10	80.07	76.93	59.00
11	Mining	27.71	27.09	27.09	26.97

Source: Computations done by Mihir Pandey for a report of the National Council of Applied Economic Research, New Delhi.
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Table 10, taken from a study by Mehta (1999), describes the nature of non-tariff barriers imposed on India's imports in 1998-99. Out of a total of 10,281 tariff lines, 7,213 lines were free. These constituted about 70 per cent of total lines and about 68 per cent of imports. The remainder (i.e. about 30 per cent of the lines) were subject to non-tariff barriers. Most of these came under the category of "restricted". The restricted items constituted about 27 per cent of tariff lines and accounted for about 15 per cent of total imports, 177 items were canalized, constituting 1.7 per cent of tariff lines, but accounting for about 17 per cent of imports. Within the restricted category, 676 items (constituting about 3 per cent of imports) could be imported against SIL (special import licence).

Table 10: **Non-tariff barriers imposed on India's imports, 1998-99**

Type of NTB	No. of lines	Per cent of tariff lines	Per cent of imports
Free	7 213	70.2	68
NTBs	3 520	29.8	
Prohibited	59	0.6	0.01
Restricted	2 831	27.5	14.64
- consumer goods	1 379	13.4	0.17
- actual user	56	0.54	
- SIL	676	6.57	3.09
Canalized	177	1.7	17.29
- SIL	47	0.4	0.088
TOTAL	10 281	100	

Source: Mehta (1999).

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Under the General Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO), India has agreed to phase out its quantitative restrictions (QRs) on all commodities, except for some 600 commodities/lines for such reasons as security and religion. However, until recently, India had been maintaining QRs on imports of about 1,400 items under provisions of Article XVIII:B of the GATT/WTO (Mehta 1999, 2000). This article recognizes that Member countries whose economies can only support lower standards of living, and are in early stages of development may "apply quantitative restrictions for Balance of Payment (BoP) position". Under this article, a Member country has to announce publicly a time-schedule for the elimination of QRs. India had

reached mutual agreement with all the Member countries of WTO, except the United States to phase out its QRs over a time period of six years (i.e. 1997-2003). The United States filed a case against India, alleging that the continued maintenance of the QRs on India's imports was inconsistent with its WTO obligations. The dispute panel and appellate body of WTO constituted to examine the allegation in favour of the United States. It therefore became necessary for India to reach a mutual agreement with the United States (December 1999) whereby India agreed to advance by two years (to March 31, 2001) the date by which QRs would be lifted on all items. Under the Import-Export Policy for 2000-2001 announced in 2000, QRs on imports of 714 commodities (which were previously under quantitative restrictions) were lifted. Under the Import-Export policy for 2001-02, the remaining 715 became freely importable from April 1, 2001, thus making almost all commodities freely importable (subject to payment of tariffs) including consumer goods.

As regards restrictions on exports, over the years the list of restricted or banned exports has been considerably pruned in addition to the abolition of taxes on some mineral and agricultural exports. However, certain restrictions on agricultural exports persisted until very recently, such as quotas and stipulation of a minimum export price.

2.3   Exchange rate policy

From 1931 to 1975, the Indian rupee remained pegged to the British pound sterling.[21] Only two adjustments were made: one in June 1966 when the rupee was devalued against all currencies, and the second in November 1967 when the pound was devalued. In June 1972, the pound was floated and the rupee kept parity with it until 1975. In September 1975, pegging of the rupee to the pound sterling was replaced by pegging it to a basket system, a policy which remained in force till the early 1990s when major changes were made to the exchange rate system.

The basket system retained some of the vestiges of the past link: sterling continued to play a significant role, serving as the currency of intervention (i.e. the currency which the central bank normally buys and sells). The pound sterling had been the only currency which the Reserve Bank used to sell, and that too, only on a spot basis until February 1987, when a decision was made to sell United States dollars also on a spot basis. One key feature of the basket system was that most of the details of the system were kept confidential. The composition of the basket and the operations of the margins were not made public for fear that this would encourage speculation in foreign exchange markets.

In the basket peg system, the value of the rupee was initially maintained within a margin of 2.25 per cent on either side of the basket-determined parity, but this was broadened in 1979 to 5 per cent on either side. The wider margin and the way it was operated provided a large degree of flexibility and the authorities had considerable discretion in its operation. It is not known whether some principles governed the operations of the margins, as this too was kept confidential.

Much has been written about the objectives of the linking of the Indian rupee to a basket of currencies. According to some studies, the targeting of the rupee-dollar rate of

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[21]   For a discussion of the Indian exchange rate system in a historical perspective, see Joseph (1992) and Joshi (1984).

exchange was an important objective. Another objective could have been the maintenance of a stable real effective exchange rate; however, there was a clear downward trend in that rates between 1985 and 1991 as can be seen from table 11. This has led some authors to infer that, probably, one of the objectives of the management of the system was to effect a gradual real depreciation of the rupee.

Exchange rate developments since 1991

In July 1991, a sizeable devaluation of the rupee was undertaken in two stages. On July 1, 1991 the rupee was adjusted downwards by 7.9 per cent, against five major currencies (the US dollar, the Deutsche mark, the Japanese yen, the pound sterling and the French franc), and on July 3, 1991 the rupee was further devalued by 11 per cent against these currencies. This represented a departure from the past when only small gradual adjustments in the value of the rupee had been undertaken within the margin of the basket peg.

Table 11:   **Nominal and real effective exchange rate**
(Base 1995 = 100; 10-country index)

	Nominal effective exchange rate	Real effective exchange rate
1985	380.5	188.1
1986	316.5	169.7
1987	279.2	158.9
1988	251.2	151.4
1989	225.2	138.7
1990	196.9	128.1
1991	151.8	110.2
1991-92	142.4	105.6
1992-93	117.4	95.5
1993-94	111.4	96.8
1994-95	106.8	101.7
1995-96	97.4	97.8
1996-97	95.4	100.8
1997-98	96.5	106.4
1998-99	85.3	101.9
1999-2000	83.9	101.9

Source: Government of India, *Economic Survey*, 2000-2001, p. S-80.

The rupee was partially freed in February 1992, when 40 per cent of the foreign exchange earnings were to be surrendered at the official exchange rate and the remaining 60 per cent could be converted at the market determined exchange rate. A major step towards current account convertibility was taken by India in March 1993 when the foreign exchange budget was abolished, the exchange rate was unified and transactions on trade account were freed from exchange control. The market was allowed to play a major role in the determination of the exchange rate. In 1994, there were progressive relaxations of payment restrictions on a number of invisibles transactions. The final step towards current account convertibility was taken in August 1994 by further liberalization of invisibles payments and acceptance of obligations under Article VIII of the International Monetary Fund (IMF).

Since the unification of the exchange rate in March 1993 until August 1995, a stable exchange rate between the rupee and the US dollar was maintained despite the higher rate of inflation in India vis-à-vis that of the industrialized countries. In fact there was an upward pressure on the exchange rate due to large financial capital inflows. However, between August and October 1995, the rupee-dollar exchange rate depreciated from 31.6 rupees per dollar to 35.5 per dollar. This was regarded as a correction in the exchange rate made by the market due to differences in the rates of inflation between India and the industrialized countries, though there was possibly a speculative element. Following an announcement by the Reserve Bank of India in October 1995 of a set of measures aimed at strengthening the rupee, the currency gained strength. It was made clear at that time that while the market would be allowed to determine the exchange rate, the Reserve Bank would intervene if speculative activities tended to push the value of the rupee down.

The rupee came under downward pressure again in August 1997: between August 1997 and August 1998 the rupee-dollar exchange rate depreciated from 35.92 rupees to the dollar to 42.76 per dollar (i.e. a depreciation of about 19 per cent). This was largely due to the East Asian financial crisis and uncertainties related to domestic developments (Government of India, *Economic Survey*, 1998-99). By the end of 1999, the exchange rate was 43.5 rupees per dollar. During the year 2000, the rupee came under downward pressure yet again, depreciating by 6.7 per cent between end-April and end-October 2000. Since November 2000, the foreign exchange market has been relatively stable. At the time of preparing the initial version of this paper (March 2001), the rupee-dollar exchange rate was about 46.5 per rupees per dollar, and by December 2001, it was bout 47.8 rupees per dollar.

Although the nominal exchange rate depreciated significantly during the 1990s, there was no such clear downward trend in the real effective exchange rate; table 11 shows that between 1991-92 and 1999-2000 there was very little depreciation in the real effective exchange rate.

2.4   Export promotion policies

In the 1970s and 1980s, protection of the domestic markets by quantitative restrictions backed by high tariffs created a significant anti-export bias (World Bank, 1989; Aksoy, 1991; Pursell, 1996). Due to protectionist policies, the profitability and security of domestic sales increased relative to export sales. By restricting imports, protection supported the exchange rate (i.e. helped maintain an overvalued exchange rate)

and reduced the rupee equivalent of export prices. It also increased the costs, and adversely affected the availability and quality, of inputs and equipment needed by exporters. As a result, special schemes for exporters were introduced to enable them to bypass or offset, partially or fully, the adverse effects of the import-substitution policies. By 1990, there were several export incentive schemes and an administrative set- up for their implementation, including Cash Compensatory Support (CCS), Replenishment (REP) import licence, duty drawback, duty free ("advance") licences, and income tax exemption on profits of exports. Other incentives/supports available to exporters included export processing zones, a scheme to subsidize selected domestic raw materials (e.g. steel) supplied to exporters, support and subsidies for export marketing, and a scheme to exempt capital goods used by exporters from import licensing and to reduce import duties on such imports of equipment.

While the incentives were helpful, they did not adequately compensate for the anti-export bias created by the protective trade regime, which meant that the profitability of export sales was lower than that of domestic sales (Aksoy, 1991). In the 11 years from 1980-81 to 1990-91, the trade-policy-induced rupee overvaluation was about 30 per cent whereas the average value of principal export incentives relative to the value of manufactured exports was about 8 per cent (Pursell, 1996). Moreover, the export incentive schemes involved considerable transaction costs, delays and corruption, which, needless to say, had an adverse effect on export performance.

The 1991/92 reforms considerably simplified and changed the emphasis of the export incentive system. In July 1991, the Cash Compensatory Support scheme was abolished. At the same time, the REP import licences were replaced by a tradable certificate called EXIM scrip, which applied to all exports and allowed imports of a much wider range of intermediate inputs than the REP licences. The EXIM scrip scheme was abolished in turn in February 1992 and replaced by a dual exchange rate system for exporters. Under this system, exporters had to surrender 40 per cent of their export proceeds at the official exchange rate and the remainder could be sold in the free market. This system continued till February 1993 when the exchange rate was unified.

The 1991/92 reforms considerably increased the role of duty-free import licences for exporters. Also, a special scheme known as the Export Promotion Capital Goods Scheme, was introduced, whereby capital goods could be imported at a concessional import duty subject to export obligation.

Since 1992, there have been no major reforms of the export incentive system. But, efforts have been made to broaden the scope of the schemes and improve their operation. By the end of the 1990s, two important incentives available to exporters were (a) income tax exemption on export profits and (b) special import licences.[22] In addition, there were a number of schemes which provided exporters access to duty free imports of raw materials and intermediate goods.[23]

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[22] SIL was abolished in 2000, and the profit tax incentive is in the process of being removed.

[23] For discussion on export incentives, see Ahuja (2001) and Saran and Mukherji (2001).

2.5   Foreign investment policy

Prior to liberal economic reforms introduced in July 1991, India was not an attractive host for foreign direct investment (FDI). It is not that FDI was prohibited, but the policy regime associated with the import-substitution strategy of industrialization was too restrictive to attract FDI. Innumerable restrictions on lines of production, size and share of foreign investment, volume of production, pricing and sales between domestic and foreign markets, foreign exchange and imports served as disincentives to FDI. It is arguable that the system of regulation and control affected the domestic firms as well as foreign firms and provided protection from foreign competition and a sheltered domestic market to both groups of firms. But, in some respects the policy regime did discriminate against foreign firms. For example, the Foreign Exchange Regulation Act (FERA) of 1973 fixed an upper limit of 40 per cent on foreign equity holdings depriving the foreign investor of management and control of a firm. Similarly, the Monopolies and Restrictive Trade Practices Act (MRTP) of 1969 applied to all foreign firms, irrespective of their share of foreign equity holdings below the upper limit of 40 per cent.

The radical economic reforms introduced since July 1991 have considerably liberalized the policy regime for FDI. Foreign companies have been permitted to invest in almost all industries, the only remaining restrictions being on investment in industries reserved for the public sector and industries reserved for the small-scale sector. The industries reserved for the public sector are arms, ammunition and defence equipment, atomic energy, mineral oils, minerals used in atomic energy, railway transport, and coal and lignite. In the reserve list of products for manufacture in the Small Scale Industries (SSI) sector (799 items in the list as of July 2001), foreign equity participation to the extent of 24 per cent of total share holding is permitted.

In several respects, the policy regime for foreign investment in India has become quite liberal. The approval mechanism, discussed further below, has been considerably simplified. There is no requirement to employ Indian nationals, and the previous restrictions on employment of foreign technicians and managers have been eliminated. Furthermore, the current policy requires no local sourcing for a new or existing foreign investment, there are no restrictions on foreign remittance of dividend and royalty, and the condition of "dividend balancing"[24], which was removed in June 1992 for all industries other than 22 consumer goods industries, has now been completely removed. Total or partial repatriation of invested capital, is also permitted. In order to promote investors' confidence in the safety of their investments, India has signed the Multilateral Investment Guarantee Agency (MIGA) Convention, and become a member of MIGA along with many other developing countries. In addition, the Government of India has been negotiating and entering into bilateral agreements with countries which have been the source of FDI in the recent years.

There are two approving authorities for foreign collaboration: the Reserve Bank of India and the Foreign Investment Promotion Board (Department of Industrial Development, Ministry of Commerce and Industry). The Reserve Bank of India accords automatic approval within a period of two weeks to all proposals for foreign investment with a foreign equity ownership of up to 51 per cent in a wide range of high priority industries. For nine categories in metallurgical and infrastructure, automatic approval is available for foreign

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[24] This condition requires that foreign dividend payments by a company should be balanced by its export earnings.

equity ownership of up to 74 per cent. For the power sector, automatic approval is available for 100 per cent foreign equity. For cases that do not meet the conditions for automatic approval, the Foreign Investment Promotion Board (FIPB) is the authority for according approval to the proposed foreign investment. The FIPB is a high-powered committee chaired by the Secretary of Industry. Proposals for investment of up to six billion rupees recommended for approval by the FIPB are given final clearance by the Ministry of Commerce and Industry. Proposals for investment exceeding this amount are considered by the Cabinet Committee on Foreign Investment (headed by the Prime Minister). Normally, since the Ministry of Industry and Commerce, and the Cabinet Committee endorse the recommendations of the FIPB, it is the main decision-making body in the foreign investment approval process, except for those cases that go through the automatic approval route. The normal processing time for approval by the FIPB is 4 to 6 weeks. It adopts a liberal approach is liberal for all sectors and all types of proposals, and there are few rejections.

Non-resident Indians (NRIs) and the overseas corporate bodies (OCBs) in which they have over 60 per cent of equity shares, have been given more attractive terms for investing in India. For example, they are allowed 100 per cent equity investment in the notified list of "high priority industries" for which automatic approval is granted. In addition to high priority industries, the NRIs and OCBs are allowed 100 per cent equity investment in certain other specified areas. The NRIs are also permitted to set up manufacturing units in the reserved list of industries for the SSI sector with 100 per cent equity share.[25]

Besides the set of policy measures for easy entry of foreign investment and repatriation of profits, a number of other economic policy initiatives have contributed to making the policy regime more favourable to FDI in India. These include a sharp reduction in tariff rates, substantial liberalization of licensing and other discretionary controls on imports, convertibility of the rupee on current account, amendment of the Foreign Exchange Regulation Act, dismantling of the industrial licensing system, and reduction in the number of industries reserved for the public sector.

Although the system of approval of FDI at the level of the central Government has been considerably simplified, the actual setting up of an enterprise requires various types of clearance at the level of state government or local government. These include clearance for the building plan, land use, environmental clearance and power clearance. There has not been much liberalization of policies at the state or local level. Also lack of infrastructure facilities continues to be a hindrance to foreign investment. Moreover, corruption is an added irritant in the process of setting up foreign enterprises in India.

Foreign technical collaboration policy

Prior to the policy reforms introduced since July 1991, foreign technical collaboration and technology agreements by domestic companies with foreign firms were permitted under very restrictive conditions, including *inter alia* restrictions on their renewal. Also, exclusive use of Indian consultancy services, was a requirement wherever available. The post-1991 policy provides for automatic approval of foreign technical collaboration

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[25] For a discussion on policy changes relating to FDI, particularly investment by non-resident Indians, see Saran and Mukherji (2001).

agreements in the high priority industries up to a lump sum payment of 10 million rupees or 5 per cent royalty on domestic sales and 8 per cent on exports, subject to total payment of 8 per cent of sales over a 10-year period from the date of agreement, or over a 7-year period from the date of commencement of production. For higher amounts of lump-sum payments or higher rates of royalty, the Secretariat of Industrial Approvals (SIA) gives approval on a case-by-case basis. No permission is now required for hiring foreign technicians or consultants or for the testing of indigenously developed technology in a foreign country and there is no ban on the use of a foreign brand name.

Portfolio investment

As a part of the economic reforms initiated in 1991, policy changes have been made to facilitate access of domestic firms to global capital markets. Since 1992, there has been a scheme which allows the Indian corporate sector to access global capital markets by issuing foreign currency convertible bonds (FCCBs) and through equity issues under global depository receipts (GDRs) which are known as euro-issues. Under this scheme, companies with a consistent track record of good performance for a minimum of three years can have access to international capital markets. For projects in the infrastructure sector, this condition is waived. For projects in high priority industries with the foreign equity proportion remaining within 51 per cent, the euro issues are considered and cleared by the Department of Economic Affairs. For projects in other industries, and if the foreign equity holding after the euro issue is likely to exceed 51 per cent, approval for the euro issue is given by the FIPB (after approval, in principle, from the Department of Economic Affairs.).

The policy regarding euro issues was restrictive in the early years of economic reform. According to guidelines issued in May 1994, an Indian company could not float euro issues more than once a year. Over time, however, the policy became more liberal: in 1996, the restriction on the number of euro issues a company could make in a year was removed. The norms regarding the end-use of GDR proceeds were relaxed. In 1998, unlisted companies with a three-year track record of good performance were permitted to go for euro issues, thereby opening this source of finance to "greenfield" projects.

Similarly, the policy relating to investments made by foreign institutional investors (FIIs) has been liberalized over time.[26] Since 1992 a scheme for attracting portfolio investment by FIIs allows them to invest in all securities traded in primary and secondary markets. FIIs are required to be registered with the Securities and Exchange Board of India (SEBI), and there are no restrictions on the volume of investment they make. A single FII can invest up to 10 per cent while a group of FIIs can invest up to 30 per cent of the share capital of listed companies. There is no lock-in period, and the profits from portfolio investment can be repatriated freely, subject to India's foreign exchange regulations.

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[26] For discussion on policy changes relating to portfolio investment, see Saran and Mukherji (2001).

3. Trends in international trade and capital flows

3.1 Growth of trade

In this section, trends in India's foreign trade during the period 1970-71 to 1999-2000 are analysed. The aim is to find out if there was any significant break in trend, especially after 1991, following substantial liberalization in trade policy. Table 12 presents time-series data on India's merchandise (oil and non-oil) exports and service exports (expressed in US dollars) for the years 1970-71 to 1999-2000. Table 13 presents such data for India's merchandise and service imports. In both tables, estimated exponential trend growth rates are shown for the periods 1970-71 to 1979-80, 1980-81 to 1989-90 and 1990-91 to 1999-2000, and for the entire period 1970-71 to 1999-2000.

During the period under analysis, the trend growth rate of non-oil merchandise exports was 9.4 per cent per annum, while that of oil exports was higher, at 11.7 per cent per annum. Oil exports grew rapidly during the first half of the 1980s, but declined thereafter. Non-oil merchandise exports experienced rapid growth in the 1970s, but a deceleration in the 1980s. The growth rate declining from 16.3 per cent per annum during the period 1970 to 1980 to 7.1 per cent per annum in 1980-1990. However, their growth rate picked up again in 1990-2000 to 9.7 per cent per annum. Aggregate merchandise exports had a similar time pattern of growth in the three sub-periods (i.e. a marked deceleration in the 1980s and a recovery in the 1990s).

Service exports have grown faster than merchandise exports. During the period 1970-71 to 1999-2000, the trend growth rate of service exports was 12.0 per cent per annum, 2.6 percentage points higher than that of merchandise exports. Following a rapid growth in the 1970s, service exports showed a marked deceleration in the 1980s. As with non-oil merchandise exports, the growth rate of service exports recovered well in the 1990s, from 4.4 per cent per annum during 1980-81 to 1989-90 to 13.7 per cent per annum during 1990-91 to 1999-2000.

The trend growth rate of total exports in the period 1970-71 to 1999-2000 was about 9.9 per cent per annum. Growth of total exports had a time pattern similar to that of merchandise and service exports: rapid growth in the 1970s, deceleration in the 1980s and a sharp recovery in the 1990s.

During the period 1970-71 to 1999-2000, total merchandise imports grew at a trend rate of 9.5 per cent per annum, marginally higher than the growth rate of merchandise exports. The growth rate in merchandise imports was 18.2 per cent per annum during the 1970s, falling to only 3.2 per cent per annum during the 1980s, before rising again to 10.0 per cent per annum in the 1990s. Service imports and total imports showed a similar pattern.

Table 12: **India's exports 1970-71 to 1999-2000**

Year	Exports (US$ million)				
	Oil	Non-oil	Merchandise	Services	Total
1970-71	11	2 020	2 031	291	2 322
1971-72	14	2 138	2 152	315	2 467
1972-73	38	2 531	2 569	329	2 898
1973-74	16	3 222	3 238	397	3 635
1974-75	17	4 175	4 192	632	4 824
1975-76	22	4 627	4 649	874	5 523
1976-77	21	5 707	5 728	976	6 704
1977-78	18	6 281	6 299	1 217	7 516
1978-79	17	6 943	6 960	1 472	8 432
1979-80	23	7 903	7 926	1 941	9 867
1980-81	32	8 453	8 485	2 804	11 289
1981-82	246	8 458	8 704	2 760	11 464
1982-83	1 278	7 830	9 108	2 887	11 995
1983-84	1 536	7 913	9 449	3 280	12 729
1984-85	1 529	8 349	9 878	3 447	13 325
1985-86	527	8 378	8 905	3 316	12 221
1986-87	322	9 423	9 745	3 217	12 962
1987-88	501	11 588	12 089	3 572	15 661
1988-89	349	13 621	13 970	3 953	17 923
1989-90	418	16 195	16 613	4 246	20 859
1990-91	522	17 623	18 145	4 551	22 696
1991-92	415	17 450	17 865	5 022	22 887
1992-93	476	18 061	18 537	4 730	23 267
1993-94	398	21 840	22 238	5 264	27 502
1994-95	417	25 914	26 331	6 135	32 466
1995-96	453	31 342	31795	7 346	39 141
1996-97	482	32 988	33 470	7 474	40 944
1997-98	353	34 653	35 006	9 429	44 435
1998-99	89	33 129	33 219	13 186	46 405
1999-2000	30	37 569	37 599	15 721	53 320

Growth rates (per cent per annum)

1970-71 to 1979-80	3.2	16.3	16.2	22.7	17.2
1980-81 to 1989-90	9.2	7.1	6.5	4.4	6.0
1990-91 to 1999-00	-22.6	9.7	9.4	13.7	10.5
1970-71 to 1999-00	11.7	9.4	9.4	12.0	9.9

Note: Receipts for non-factor services reported under "invisibles" are taken as the value of exports of services.

Source: Data on merchandise exports are taken from the Reserve Bank of India (2000) *Handbook of Statistics on Indian Economy.*

Table 13:   India's imports, 1970-71 to 1999-2000

Year	Imports (US$ million)				
	Oil	Non-oil	Merchandise	Services	Total
1970-71	180	1 982	2 162	280	2 442
1971-72	260	2 182	2 442	282	2 724
1972-73	266	2 167	2 433	269	2 702
1973-74	719	3 074	3 793	311	4 104
1974-75	1 457	4 234	5 691	366	6 057
1975-76	1 412	4 652	6 064	515	6 579
1976-77	1 574	4 078	5 652	691	6 343
1977-78	1 806	5 206	7 012	693	7 705
1978-79	2 038	6 241	8 279	890	9 169
1979-80	4 035	7 256	11 291	1 262	12 553
1980-81	6 655	9 212	15 867	1 507	17 374
1981-82	5 786	9 387	15 173	1 696	16 869
1982-83	5 816	8 971	14 787	1 884	16 671
1983-84	4 673	10 638	15 311	2 192	17 503
1984-85	4 550	9 862	14 412	2 350	16 762
1985-86	4 078	11 989	16 067	2 124	18 191
1986-87	2 200	13 527	15 727	2 222	17 949
1987-88	3 118	14 038	17 156	3 027	20 183
1988-89	3 009	16 488	19 497	3 224	22 721
1989-90	3 767	17 452	21 219	3 523	24 742
1990-91	6 028	18 045	24 073	3 571	27 644
1991-92	5 325	14 086	19 411	3 815	23226
1992-93	6 100	15 782	21 882	3 601	25 483
1993-94	5 753	17 553	23 306	4 729	28 035
1994-95	5 928	22 726	28 654	5 533	34 187
1995-96	7 526	31 149	38 675	7 543	46 218
1996-97	10 036	29 096	39 132	6 748	45880
1997-98	8 164	33 321	41 485	8 110	49 595
1998-99	6 399	35 990	42 389	11 021	53410
1999-2000 (P)	10 482	36 730	47 212	11 865	59 077

Growth rates (per cent per annum)

		Oil	Non-oil	Merchandise	Services	Total
1970-71 to	1979-80	32.9	14.8	18.2	17.6	18.1
1980-81 to	1989-90	-9.2	7.8	3.2	8.8	3.9
1990-91 to	1999-00	5.8	11.2	10.0	14.3	10.8
1970-71 to	1999-00	10.1	9.5	9.5	12.8	9.9

Note: Payment for non-factor services reported under "invisibles" is taken as the value of imports of services

Source: Data on merchandise imports are taken from the Reserve Bank of India (2000). *Handbook of Statistics on Indian Economy.*

Table 14 shows the ratio of merchandise exports to gross domestic product (GDP) and of merchandise imports to GDP for various years during the period 1970-71 to 1999-2000. For computing these ratios, the value of exports and imports as well as GDP are taken at current prices. One problem with the ratios computed in this manner is that these may be influenced by changes in prices and exchange rates. Therefore, in table 15, quantity indices of exports and imports and real GDP are used to compute the export-GDP ratio and the import-GDP ratio.

At current prices, the ratio of exports to GDP grew at the rate of 2.7 per cent per annum during 1970-71 to 1999-2000. At constant price, their trend growth rate was 2.0 per cent per annum (1970-71 to 1998-99). Similarly, at current prices, the ratio of imports to GDP grew at the rate of 2.8 per cent per annum during 1970-71 to 1999-2000. At constant price, their trend growth rate was 3.0 per cent per annum (1970-71 to 1998-99). The estimated trend growth rates are statistically significant at one per cent level in all four cases. Evidently, both export-GDP and import-GDP ratios increased significantly during the period 1970-71 to 1999-2000.

The inter-temporal pattern in the growth rates of export-GDP ratio and import-GDP ratio are similar to that observed for the value of exports and imports. Both export-GDP ratio and import-GDP ratio increased significantly in the 1970s, decelerated sharply in the 1980s, and picked up again in the 1990s.

From the analysis of trends in exports and imports (both values in US dollar and quantity indices), and the ratios of exports and imports to GDP, it is evident that there has been a rapid growth in trade and a significant increase in export-GDP and import-GDP ratios in the 1990s. There is a major break in trend when a comparison is made with the 1980s. The relatively faster growth of imports and exports in the 1990s (compared to that in the 1980s) seems to be attributable mainly to the reduction in tariffs, removal/relaxation of quantitative controls on imports and exports, rationalization of the exchange rate, and in general, to the new liberalized economic policy regime. Accordingly, it may be concluded that the trade liberalization initiated in 1991 has had a significantly favourable effect on India's international trade.

It needs to be pointed out here that the inter-temporal pattern of growth of India's trade has been similar to that of world trade – rapid growth in the 1970s and 1990s, and slow growth in the 1980s. India's trade policy in the 1990s was far more liberal than it was in the 1970s, but the growth rates in the value of exports and imports (in US dollar) in the 1990s were lower than those in the 1970s. This, however, does not mean that trade liberalization did not have a special effect on trade performance. Rather, in some important respects, the trade performance was better in the 1990s in the following respects:

(a) The growth rates of export and import volume indices were higher in the 1990s than those in the 1970s. The trend growth rate in the export volume index was 10.6 per cent per annum in the 1990s as against 7.1 per cent per annum in the 1970s. Similarly, the trend growth rate in the import volume index was 13.9 per cent per annum in the 1990s as against 4.5 per cent per annum in the 1970s. The relatively faster growth in value (but not in volume) of exports and imports in the 1970s than in the 1990s, seems to be attributable to differences in the rates of inflation and rates of change in the exchange rates in the two periods.

(b) In the 1970s, India's exports grew slower than world exports, but in the 1990s they grew faster. The growth rate of world exports in current US dollars was about 18.7 cent per annum in the 1970s, while the growth rate of India's exports was 16.2 per cent per annum. By contrast, in the 1990s, the growth rate of India's exports in current US dollars was 9.4 per cent per annum, while that of world exports was lower, at 6.2 per cent per annum.

(c) India's exports were going to more competitive markets in the 1990s than in the 1970s. During the 1970s, the East European countries accounted for a sizeable proportion of India's exports, but their share declined drastically in the 1990s. Exports to these countries in the 1970s were governed by a rupee-rouble agreement and were therefore not in free foreign exchange. In the 1970s, India had an adverse balance of trade in respect of manufactures, but, in the 1990s, it country emerged as a net exporter of manufactured products.

(d) In the 1970s, India had an adverse balance of trade in respect of manufactured articles. But in the 1990s, India had emerged as a net exporter of manufactured products.

Inter-temporal changes in product composition of exports and imports

Having analysed the growth trends, it would be useful to look at the inter-temporal changes in the composition of exports and imports. Table 16 shows the structure of India's exports and imports by broad sector division (oil, non-oil merchandise and services). The shares of these broad sector divisions in total exports or imports are shown for a number of years between 1970-71 and 1999-2000. At the bottom of the table, the average shares are shown for the following five-year periods: 1970-71 to 1974-75, 1978-79 to 1982-83, 1986-87 to 1989-90 and 1995-96 to 1999-00. Tables 17, 18 and 19 provide more details on the changes in the commodity composition of India's international trade.[27]

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[27] It may be mentioned here that Srinivasan (2001) has carried out an analysis of trends in India's exports and imports in the post-reform period. Their analysis is undertaken at a disaggregated level. He considers exports and imports of various major commodity groups and compares the pre-reform triennium 1987-88 to 1989-90 with two post-reform triennia: 1993-94 to 1995-96 (the period of rapid growth in imports as well exports) and 1998-99 to 1999-2000 (the latest available data).

Table 14: **Ratio of merchandise exports and imports to gross domestic product at current prices: 1970-71 to 1999-2000**

Year	GDP at market price (Rs billion)	Exports (Rs bn)	Imports (Rs bn)	Exports/GDP (per cent)	Imports/GDP (per cent)
1970-71	456.8	15.4	16.3	3.56	3.79
1971-72	489.4	16.1	18.3	3.48	3.95
1972-73	539.5	19.7	18.7	3.86	3.66
1973-74	656.2	25.2	29.6	4.07	4.77
1974-75	774.9	33.3	45.2	4.55	6.17
1975-76	832.8	40.4	52.7	5.12	6.68
1976-77	897.5	51.4	50.7	6.06	5.98
1977-78	1 016.1	54.1	60.2	5.63	6.27
1978-79	1 101.5	57.3	68.1	5.50	6.54
1979-80	1 208.6	64.2	91.4	5.61	8.00
1980-81	1 437.8	67.1	125.5	4.93	9.23
1981-82	1 686.2	78.1	136.1	4.89	8.52
1982-83	1 882.9	88.0	142.9	4.94	8.02
1983-84	2 195.3	97.7	158.3	4.71	7.63
1984-85	2 455.5	117.4	171.3	5.08	7.41
1985-86	2 780.3	109.0	196.6	4.15	7.50
1986-87	3 112.7	124.5	201.0	4.25	6.86
1987-88	3 544.0	156.7	222.4	4.70	6.68
1988-89	4 216.4	202.3	282.4	5.11	7.13
1989-90	4 862.7	276.6	353.3	6.05	7.73
1990-91	5 688.1	325.5	432.0	6.08	8.07
1991-92	6 533.0	440.4	478.5	7.14	7.76
1992-93	7 485.5	536.9	633.8	7.61	8.98
1993-94	8 592.2	697.5	731.0	8.12	8.51
1994-95	10 127.7	826.7	899.7	8.19	8.91
1995-96	11 880.1	10 63.5	12 26.8	9.00	10.38
1996-97	13 682.1	11 88.2	13 89.2	8.72	10.20
1997-98	15 224.4	13 01.0	15 41.8	8.55	10.13
1998-99	17 582.8	13 97.5	17 83.3	7.95	10.14
1999-2000	19 570.0	15 91.0	21 55.3	8.13	11.01

Estimated growth rates (per cent per annum)

	Exports/GDP	Imports/GDP
Entire period (1970-71 to 1998-99)	2.7	2.8
1970-71 to 1979-80	6.4	8.3
1980-81 to 1989-90	0.9	-2.5
1990-91 to 1999-00	2.6	3.6

Source: Data on exports, imports and GDP have been taken from *Economic Survey*, Government of India, 2000-2001. Trade data for 1999-2000 have been taken from CMIE Centre for Monitoring Indian Economy, *Foreign Trade and Balance of Payments* (July 2001).

Table 15:   **Ratio of export and import volume indices to real gross domestic product (index) at constant price 1970-71 to 1998-99**

Year	Export volume index	Import volume index	Real GDP index	Exports /GDP	Imports/GDP
1970-71	59.0	67.2	75.0	0.79	0.90
1971-72	59.2	80.6	75.8	0.78	1.06
1972-73	66.5	76.7	75.6	0.88	1.02
1973-74	69.5	87.2	79.0	0.88	1.10
1974-75	73.7	77.2	79.9	0.92	0.97
1975-76	81.7	76.0	87.1	0.94	0.87
1976-77	96.8	76.1	88.2	1.10	0.86
1977-78	93.2	100.0	94.8	0.98	1.06
1978-79	100.0	100.0	100.0	1.00	1.00
1979-80	106.2	116.4	94.8	1.12	1.23
1980-81	108.1	137.9	101.6	1.06	1.36
1981-82	110.1	150.6	107.8	1.02	1.40
1982-83	116.7	154.6	111.1	1.05	1.39
1983-84	113.0	185.4	120.2	0.94	1.54
1984-85	120.8	156.1	124.8	0.97	1.25
1985-86	111.3	182.3	129.9	0.86	1.40
1986-87	121.3	212.3	135.5	0.90	1.57
1987-88	140.0	204.8	141.3	0.99	1.45
1988-89	152.1	224.2	156.4	0.97	1.43
1989-90	174.9	227.8	167.2	1.05	1.36
1990-91	194.1	237.7	176.1	1.10	1.35
1991-92	208.6	228.0	177.6	1.17	1.28
1992-93	222.9	282.0	186.9	1.19	1.51
1993-94	257.5	329.1	198.5	1.30	1.66
1994-95	292.7	408.3	213.9	1.37	1.91
1995-96	384.3	514.8	229.1	1.68	2.25
1996-97	411.8	511.8	246.3	1.67	2.08
1997-98	386.0	562.1	258.8	1.49	2.17
1998-99	399.2	644.2	275.1	1.45	2.34

Estimated growth rates (per cent per annum)

	Exports/GDP	Imports/GDP
Entire period (1970-71 to 1998-99)	2.0	3.0
1970-71 to 1979-80	3.7	1.1
1980-81 to 1989-90	-0.6	0.3
1990-91 to 1998-99	4.6	7.9

Source: Volume indices for exports and imports, and data on GDP (at factor cost) at constant prices are taken from Ministry of Finance (Economic Division), Government of India, *Economic Survey,* 1999-2000, 2000-2001.

Table 16: **Structure of India's exports and imports, by broad sector division, 1970-71 to 1999-2000 (per cent shares)**

Year	Exports					Imports				
	Merchandise exports			Services	Total	Merchandise imports			Services	Total
	Oil	Non-oil	Total			Oil	Non-oil	Total		
1970-71	0.5	87.0	87.5	12.5	100	7.4	81.2	88.5	11.5	100
1975-76	0.4	83.8	84.2	15.8	100	21.5	70.7	92.2	7.8	100
1980-81	0.3	74.9	75.2	24.8	100	38.3	53.0	91.3	8.7	100
1985-86	4.3	68.6	72.9	27.1	100	22.4	65.9	88.3	11.7	100
1987-88	3.2	74.0	77.2	22.8	100	15.4	69.6	85.0	15.0	100
1990-91	2.3	77.6	79.9	20.1	100	21.8	65.3	87.1	12.9	100
1993-94	1.4	79.4	80.9	19.1	100	20.5	62.6	83.1	16.9	100
1995-96	1.2	80.1	81.2	18.8	100	17.0	65.9	82.9	17.1	100
1996-97	1.2	80.6	81.7	18.3	100	21.9	63.4	85.3	14.7	100
1997-98	0.8	78.0	78.8	21.2	100	16.5	67.2	83.6	16.4	100
1998-99	0.2	71.4	71.6	28.4	100	12.0	67.4	79.4	20.6	100
1999-2000	0.1	70.5	70.5	29.5	100	17.7	62.2	79.9	20.1	100
1970-74	0.6	87.2	87.8	12.2	100	16.0	75.7	91.6	8.4	100
1978-82	3.0	74.6	77.6	22.4	100	33.5	56.5	90.0	10.0	100
1986-90	2.3	76.0	78.3	21.7	100	16.0	70.2	86.3	13.7	100
1995-99	0.6	75.7	76.3	23.7	100	16.8	65.4	82.2	17.8	100

Source: Based on data taken from the Reserve Bank of India *Handbook of Statistics on Indian Economy,* 2000.

Table 17: **Share of exports and imports of manufactured goods in merchandise exports and imports, 1970-71 to 1999-2000**

Year	Total merchandise exports (US$ mn)	Exports of manufactures (US$ mn)	Share of manufactured exports (%)	Total merchandise imports (US$ mn)	Imports of manufactures (US$ mn)	Share of manufactured imports (%)
1970-71	2 031	1 074	52.9	2 162	1 306	60.4
1971-72	2 152	1152	53.5	2 442	1 570	64.3
1972-73	2 569	1 379	53.7	2 433	1 677	68.9
1973-74	3 238	1 741	53.8	3 793	2 051	54.1
1974-75	4 192	2 181	52.0	5 691	2 835	49.8
1975-76	4 649	2 367	50.9	6 064	2 740	45.2
1976-77	5 728	3 385	59.1	5 652	2 498	44.2
1977-78	6 299	3 696	58.7	7 012	3 324	47.4
1978-79	6 960	4 364	62.7	8 279	4 556	55.0
1979-80	7 926	4 733	59.7	11 290	5 609	49.7
1980-81	8 485	4 998	58.9	15 867	7 088	44.7
1981-82	8 704	5 147	59.1	15 173	6 863	45.2
1982-83	9 108	4 709	51.7	14 787	6 910	46.7
1983-84	9 449	4 806	50.9	15 311	7 905	51.6
1984-85	9 878	5 224	52.9	14 412	7 405	51.4
1985-86	8 905	5 210	58.5	16 067	9 127	56.8
1986-87	9 745	6 111	62.7	15 727	10 981	69.8
1987-88	12 089	8 195	67.8	17 156	10 643	62.0
1988-89	13 970	10 110	72.4	19 497	12 343	63.3
1989-90	16 613	11 972	72.1	21 219	13 692	64.5
1990-91	18 145	12 996	71.6	24 073	13 857	57.6
1991-92	17 865	13 148	73.6	19 411	11 117	57.3
1992-93	18 537	14 039	75.7	21 882	12 060	55.1
1993-94	22 238	16 567	74.5	23 306	13 973	60.0
1994-95	26 331	20 404	77.5	28 654	16 356	57.1
1995-96	31 795	23 501	73.9	36 675	21 456	58.5
1996-97	33 470	24 613	73.5	39 132	21 567	55.1
1997-98	35 006	26 545	75.8	41 485	22 456	54.1
1998-99	33 219	25 792	77.6	42 389	22 495	53.1
1999-2000	37 599	29 474	78.4	47 212	22 199	47.0

Trend growth rate

1970-71 to 1999-00		1.6% p.a.			0.2% p.a.

Note: The series on manufactured exports and imports from 1987-88 onwards are not exactly comparable to those for earlier years due to changes in product classification.

Source: Based on data taken from Reserve Bank of India, the *Handbook of Statistics on Indian Economy*, 2000.

Table 18: Commodity composition of India's merchandise exports, pre- and post-reforms: 1987-88 to 1989-90 compared with 1997-98 to 1999-2000

	Average Value ($ million)		Shares (per cent)	
	1987-89	**1997-99**	**1987-89**	**1997-99**
Agriculture and allied products	2 610.2	6052.9	18.4	17.2
Tea	478.4	483.6	3.4	1.4
Coffee	204.3	394.0	1.4	1.1
Rice	248.8	1 038.8	1.7	2.9
Cashew	218.1	444.2	1.5	1.3
Spices	205.3	386.7	1.4	1.1
Marine products	419.7	1 141.9	3.0	3.2
Oil meal	271.1	585.3	1.9	1.7
Others	564.5	1 578.4	4.0	4.5
Ores and minerals	818.5	953.7	5.8	2.7
Iron ore	483.2	375.3	3.4	1.1
Others	335.3	578.5	2.4	1.6
Manufactured goods	10 092.3	27 270.7	71.0	77.3
Leather and manufactures	1 062.3	1 618.6	7.5	4.6
Chemicals and allied products	857.2	3 099.7	6.0	8.8
Plastic and lenolium products	74.2	524.3	0.5	1.5
Rubber, glass, paints, enamels and products	213.9	657.9	1.5	1.9
Engineering goods	1 583.8	4 920.8	11.1	14.0
Readymade garments	1 597.6	4 347.7	11.2	12.3
Textile yarn, fabrics, made-up etc	1 123.7	4 109.2	7.9	11.6
Jute manufactures	174.8	147.8	1.2	0.4
Gems and jewellery	2 742.9	6 303.6	19.3	17.9
Carpets	279.9	442.9	2.0	1.3
Sports goods	48.2	72.8	0.3	0.2
Other manufactures	334.0	1 025.3	2.3	2.9
Petroleum products	422.5	157.4	3.0	0.4
Others	280.2	839.9	2.0	2.4
Total exports	14223.8	35274.6	100.0	100.0

Source: Based on data taken from Reserve Bank of India (2000) the *Handbook of Statistics on Indian Economy.*

Table 19: **Commodity composition of India's merchandise imports, pre- and post- reforms: 1987-88 to 1989-90 compared with 1997-98 to 1999-2000**

	Average Value ($ million)		Shares (per cent)	
	1987-89	**1997-99**	**1987-89**	**1997-99**
Cereals and cereal preparations	273.0	237.6	1.4	0.5
Pulses	199.3	184.4	1.0	0.4
Edible oils	458.8	1 457.4	2.4	3.3
Sugar	69.1	215.3	0.4	0.5
Cashew nuts	47.3	218.9	0.2	0.5
Fertilizer, unmanufactured	297.8	281.7	1.5	0.6
Crude rubber	105.6	146.4	0.5	0.3
Pulp and waste paper	182.6	255.4	0.9	0.6
Metalliferrous ores, metal scrap, etc	497.3	743.0	2.6	1.7
Petroleum crude and its products	3 298.2	8 348.2	17.1	19.1
Coal, coke, briquettes, etc	265.5	1 054.3	1.4	2.4
Manufactured goods				
Fertilizers manufactured	408.7	911.3	2.1	2.1
Paper and paper products	209.1	459.2	1.1	1.1
Iron and steel	1 235.1	1 164.5	6.4	2.7
Non-ferrous metals	580.5	687.2	3.0	1.6
Metal manufactures	134.0	375.8	0.7	0.9
Machine tools	176.3	343.0	0.9	0.8
Machinery, except electrical	1 918.6	3 142.2	9.9	7.2
Electrical machinery	1 003.5	2 896.1	5.2	6.6
Transport equipment	665.1	842.0	3.4	1.9
Project goods	1 154.1	1 770.6	6.0	4.1
Organic and inorganic chemicals	1 098.7	2 839.6	5.7	6.5
Textile yarns, fabrics, made-up etc	177.5	442.0	0.9	1.0
Artificial resins and plastic materials	531.7	691.5	2.8	1.6
Instruments, optical goods, etc	419.5	793.6	2.2	1.8
Medicinal and pharmaceutical products	177.6	373.3	0.9	0.9
Chemical materials and products	136.0	334.8	0.7	0.8
Non-metallic mineral manufactures	98.8	157.1	0.5	0.4
Pearls, precious and semi-precious stones	2 101.4	4 159.5	10.9	9.5
Total	12 226.1	22 383.2	63.4	51.2
Others	1 370.3	8 222.7	7.1	18.8
Total imports	19290.7	43695.1	100.0	100.0

Source: Based on data taken from Reserve Bank of India, 2000, the *Handbook of Statistics on Indian Economy.*

Table 16 shows that the share of services in total imports has steadily increased, from 11.5 per cent in 1970-71 to 20.1 per cent in 1999-2000. The share of service exports in total exports also registered a sharp increase, from 12.5 per cent in 1970-71 to 27.1 per cent in 1985-86, but subsequently there was no steady trend, either upwards or downwards. At the same time, the relative importance of non-oil merchandise imports and exports has been declining. Their share in total imports declined significantly from 81.2 per cent in 1970-71 to 62.2 per cent in 1999-2000, and their share in total exports fell from 87.0 per cent in 1970-71 to 68.6 per cent in 1985-86, but increased slightly in 1999-2000 to 70.5 per cent.

In the analysis of the structure of trade presented in table 16, non-oil merchandise is taken as one category and manufactured goods are combined with agricultural and mineral products. However, exports and imports of manufactured goods are expected to have quite different implications for the economy as compared with exports and imports of primary commodities. It is therefore important to separate trade in manufactured goods from trade in other goods in order to study how the relative importance of these two categories of goods in trade has changed over time. This is done in table 17, which shows the share of exports of manufactured goods in total merchandise exports and the share of manufactured imports in total merchandise imports for different years over the period 1970-71 to 1999-2000. For the entire period, the trend growth rate in the relative share of manufactured exports was 1.6 per cent per annum, while the trend growth rate in the relative share of manufactured imports was 0.2 per cent per annum. Thus there was a clear upward trend in the share of manufactured exports in total merchandise exports, but not in the share of manufactured imports in total merchandise imports. Rather, the share of manufactured imports in total merchandise imports fell. Indeed, it is seen from the table that in the early 1970s, the relative share of manufactured exports was around 53 per cent while the relative share of manufactured imports was in the range of 60 to 70 per cent. But towards the end of the 1990s, the relative share of manufactured exports rose to above 75 per cent, while the relative share of manufactured imports declined to less than 55 per cent.

Focusing attention on the period, 1990-91 to 1999-2000, during which India's trade policy was substantially liberalized, it is seen from Table 17 that there was an upward trend in the relative share of manufactured exports (at the trend rate of 0.7 per cent per annum) and a downward trend in the relative share of manufactured imports (at the trend rate of 1.6 per cent per annum).

Table 18 shows the commodity composition of India's exports in the triennium ending 1989-90 and the triennium ending 1999-2000. The object is to compare the commodity composition of exports before and after the trade reforms of the 1990s. Table 19 presents a similar comparison in respect of the commodity composition of imports.

Comparing the commodity composition of exports between the two periods, 1987-88 to 1989-90 (pre-reform) and 1997-98 to 1999-2000 (post-reform), it is found that the share of manufactured products increased from 71 per cent to 77.3 per cent between the two periods. There was a slight decline in the share of agriculture and allied products, from 18.4 per cent to 17.2 per cent, and a greater decline in the share of petroleum products, from 3 per cent to 0.4 per cent and in the share of ores and minerals from 5.8 per cent to 2.7 per cent.

Among agriculture and allied products, there was a significant fall in the share of tea exports, from 3.4 per cent to 1.4 per cent. The shares of coffee and chashew nut exports also declined. On the other hand, the share of rice in total exports rose from 1.7 per cent to 2.9 per cent.

Among manufactured products, there was a significant increase in the relative shares of chemical and allied products, from 6 per cent to 8.8 per cent, of engineering goods from 11.1 to 14.0 per cent, and of textile yarn, fabrics and made-up articles from 7.9 per cent to 11.6 per cent.[28] There was a decline in the shares of leather and leather products from 7.5 per cent to 4.6 per cent, and gems and jewellery from 19.3 per cent to 17.9 per cent. The share of exports of jute manufacture and carpets declined, while the share of exports of plastic and linoleum products increased.

Since the comparison of commodity composition of exports in Table 18 shows a marked increase in the relative shares of exports of chemicals and allied products and engineering goods in the post-reform period, a more detailed analysis of the exports of various items belonging to these product groups has been carried out. This analysis reveals that within chemicals and allied products there was an increase in the shares of drugs, pharmaceuticals and fine chemicals, and inorganic, organic and agro chemicals. On the other hand, the relative importance of dyes and intermediates in the exports of chemicals and chemical products declined.

A similar detailed analysis of exports of engineering goods reveals that the export share rose for primary and semi-finished iron and steel, machinery and instruments, and electronic goods. On the other hand, the shares of aluminium, ferro-alloys, iron and steel bars and rods, and transport equipment in total engineering exports declined in the post-reform period.

Turning to the commodity composition of imports, it is seen from Table 19, that the share of manufactured products has declined in the post-reform period, from 63.4 per cent in the pre-reform period to 51.2 per cent in the post-reform period. The share of petroleum and coal in imports has increased, while the share of such items as metalliferrous ores and metal scrap has fallen in the post-reform period.

Among manufactured products, there has been a significant fall in import shares for the following product categories: iron and steel basic metal (from 6.4 to 2.7 per cent), non-ferrous basic metals (from 3.0 to 1.6 per cent), machinery other than electrical (from 9.9 to 7.2 per cent), transport equipment (from 3.4 to 1.9 per cent), artificial resins and plastic materials (from 2.8 to 1.6 per cent), and pearls, precious and semi-precious stones (from 10.9 to 9.5 per cent). On the other hand, there has been an increase in the import shares of electrical machinery (from 5.2 to 6.6 per cent), and organic and inorganic chemicals (from 5.7 to 6.5 per cent). It is interesting to note that these two categories of products have gained in importance in both India's exports and imports.

Table 20 shows the value of exports and imports, and the trade balance (all in US dollars) for four major product categories: petroleum, oil and lubricants, manufactured goods, non-manufactured goods (other than oil) and services. These are shown for a number of ears between 1970-71 and 1999-2000. It is seen from the table that the trade balance has been consistently negative for petroleum, oil and lubricants,

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[28] Srinivasan (2001, p.12) notes that liberalization of imports along with exchange rate depreciation raised profitability of selling in international markets. This, according to him, is reflected in the exports of chemicals and allied products, textile yarn, fabrics and made-up articles and engineering goods.

including both crude petroleum and products. By contrast, the trade balance has been almost consistently positive for services. For manufactures, it is interesting to note that the trade balance was negative in the 1970s and 1980s, and it has turned positive during the post-reform period. This is consistent with the earlier observation that in the post-reform period the share of manufactured exports in total exports has increased while the share of manufactured imports in total imports has decreased.

The trade balance for agricultural and mineral products has been largely positive during the period 1970-71 to 1999-2000. However, there was a large negative balance in 1997-98, 1998-99 and 1999-2000.

To sum up, an analysis of the trade data clearly shows that in the 1990s there has been a marked acceleration in the growth of exports and imports. The share of manufactured goods in total exports rose, implying thereby, that the growth of exports of manufactures has been faster than that of other goods. Indeed, exports of manufactures have grown rapidly in the 1990s and at a higher rate than that of imports of manufactures, which has led to a positive trade balance for manufactures. This improvement in India's trade balance for manufactures in the 1990s seems to be attributable, among other factors, to a liberalization of trade policy and to the rationalization of the exchange rate undertaken in the 1990s. The relatively fast growth in world trade of manufactures in the first half of the 1990s must also have helped.

Table 20: **India's trade balance ($ million) by major category, 1970-71 to 1999-2000**

	Petroleum, oil, lubricants			Manufactured goods			Agriculture, minerals, etc.			Services		
	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
1970-71	11	180	-169	1 073	1 305	-232	947	678	270	291	280	11
1975-76	22	1 412	-1 390	2 366	2 739	-373	2 261	1 913	348	874	515	359
1980-81	32	6 655	-6 623	4 994	6 861	-1 867	3 459	2 351	1 109	2 804	1 507	1297
1985-86	527	4 078	-3 551	5 209	9 127	-3 918	3 169	2 862	307	3 316	2 124	1192
1987-88	500	3 118	-2 618	8 195	10 642	-2 447	3 393	3 396	-3	3 572	3 027	545
1990-91	523	6 028	-5 505	12 996	13 855	-859	4 627	4 189	437	4 551	3 571	980
1993-94	398	5 759	-5 361	16 656	13 969	2 687	5 185	3 584	1 601	5 264	4 729	535
1995-96	454	7 526	-7 072	23 500	21 837	1 663	7 841	7 313	529	7 346	7 543	-197
1996-97	482	10 036	-9 554	24 613	21 562	3 051	8 375	7 534	841	7 474	6 748	726
1997-98	353	8 164	-7 811	26 545	22 452	4 093	8 109	10 869	-2 760	9 429	8 110	1 319
1998-99	89	6 399	-6 344	25 792	22 495	3 297	7 772	13 891	-6 119	13 186	11 021	2 165
1999-00	30	6 399	-6 369	29 474	22 199	7 275	8 095	14 531	-6 436	15 721	11 865	3 856

Source: Based on data taken from Reserve Bank of India, 2000, the *Handbook of Statistics on Indian Economy*.

In the context of the above discussion, a few comments may be added here about the growth of India's manufactured exports: they have grown faster than world exports since 1980, but not faster than those of most competitors (Lall, 1999), as seen in table 21. They are strikingly similar to those of the group of mature newly industrializing economies (NIEs), although the Indian base is much smaller. On the other hand, the growth rates of India's manufactured exports are much lower than those of the new "second-tier NIEs (Indonesia, Malaysia and Thailand)", China and some countries in Latin America. Furthermore, India's exports are tied to the cycles in world trade. This is probably the reason why the growth in India's manufactured exports during the period 1990-95 was lower than that during 1985-90 in spite of the economic reforms undertaken. Again, it can be noted from table 21 that the link with world demand is stronger for India, than for China, the new "tigers" and Latin America.

Table 21:   Annual growth rates of manufactured exports, current US$ (per cent)

Countries	1980-85	1985-90	1990-95	1996	1997	1998	1999	1990-99
India	4.9	18.2	12.8	2.6	6.7	-2.0	14.3	9.7
World	2.3	15.0	8.6	2.1	5.4	1.3	3.5	6.4
Mature NIEs[a]	7.3	17.9	12.4	2.5	3.6	-7.1	8.8	7.2
New Tigers[b]	4.9	25.2	22.5	4.3	-0.5	-4.3	15.7	14.9
China	N/A	23.1	22.4	2.1	22.5	2.8	7.3	16.3
Latin America[c]	N/A	4.5	20.6	9.2	17.6	8.5	8.3	14.1

[a]Hong Kong (China), Singapore, the Republic of Korea and Taiwan (China).
[b]Indonesia, Malaysia and Thailand.
[c]The growth rates shown in the last four columns are based on export data for Argentina, Brazil and Mexico

Source: The growth rates shown in the first four columns are taken from Lall (1999). Those in the last four columns have been computed using data from *International Trade Statistics, 2000*, WTO, Geneva. Export data on India's exports of manufactures are not available in this source for 1999. The reported series till 1998 has been extrapolated to 1999, using the series on exports of manufactures given in table 17 above (based on Reserve Bank of India data).

Another point to be noted is that India's structure of manufactured exports is dominated in low-technology products and concentrated in slow growing market segments (Lall, 1999). India lacks a base in many high-technology products that are experiencing a

rapid growth in world trade, which might explain its relatively poor performance. It should be emphasized that the trade and industrial reforms of the 1990s have had no major effect on the export structure. A comparison of category-wise growth rates of manufactured exports between India and China made by Tendulkar (1999) for the period 1987-96 shows that, while the growth rates in India were relatively higher for labour-intensive and scale-intensive manufactured products (12.08 and 15.46 per cent per annum respectively) than for differentiated products and skill-intensive products (10.15 and 10.84 per cent per annum respectively), in the case of China the growth rates for the latter two categories were higher than those for the former two categories.[29] Differentiated products and skill-intensive products are technologically more sophisticated. But, the share of these products in India's export basket of manufactured products has not gone up markedly in the post-liberalization era.

3.2   Direction of trade

Having analysed the changes in the commodity composition of India's trade, it would be useful to examine whether there has been any significant change in the direction of India's trade in the post-reform period.

Table 22 shows the direction of India's merchandise trade by major country groups during the period 1970-71 to 1998-99. It can be seen that the countries of the Organisation for Economic Co-operation and Development (OECD) have been and continue to be India's major trading partners. In 1970-71, they accounted for 50.1 per cent of India's exports and 63.8 per cent of India's imports. In 1990-91, they accounted for 53.5 per cent of India's exports, and in 1998-99 for 57.8 per cent. Thus, over the years, OECD countries have become increasingly important destinations for India's exports. On the other hand, as a source of India's imports, these countries have become less important, their share declining from 63.8 per cent in 1970-71 to 54 per cent in 1990-91, with a further reduction in 1998-99. The fall in the share of OECD countries in India's imports between 1970-71 and 1990-91 was largely due to an increase in value of imports of crude oil and petroleum products from OPEC countries.

The countries of Eastern Europe (mainly the then USSR) accounted for 21 per cent of India's exports and 13.5 per cent of India's imports in 1970-71. Thereafter, their share declined, falling drastically after 1990. The share of these countries in India's exports fell from 17.9 per cent in 1990-91 to 2.7 per cent in 1998-99, and in India's imports from 7.8 per cent in 1990-91 to 1.6 per cent in 1998-99. It may be mentioned in this context that, until the early 1990s, a major part of India's trade with East European countries was governed by a rupee-rouble agreement. The termination of the rupee-denominated trade with these countries and the economic turmoil they experienced led to a sharp decline in their trade with India. This decline has partly been offset by an increase in India's trade with members of the Organization of Petroleum Exporting Countries (OPEC) and developing countries (other than OPEC). The OPEC countries accounted for 5.6 per cent of India's exports in 1990-91, and for 10.7 per cent in 1998-99. The share of developing countries in India's exports was 16.8 per cent in 1990-91, increasing to 24.5 per cent in 1998-99. Their share in India's imports also increased.

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[29] See also Srinivasan (2001: 13-15) for a discussion on this point.

Table 22: **Direction of India's trade, by major country groups, 1970-71 to 1998-99 (per cent)**

Exports	1970-71	1980-81	1990-91	1995-96	1996-97	1997-98	1998-99
OECD	50.1	46.6	53.5	55.7	55.6	55.7	57.8
OPEC	6.4	11.1	5.6	9.7	9.7	10.1	10.7
Eastern Europe	21.0	22.1	17.9	3.8	2.9	3.2	2.7
Developing countries (excluding OPEC)	19.8	19.2	16.8	25.7	27.1	26.2	24.5
Others	2.6	1.0	6.2	5.1	4.7	4.8	4.3
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Imports	**1970-71**	**1980-81**	**1990-91**	**1995-96**	**1996-97**	**1997-98**	**1998-99**
OECD	63.8	45.7	54.0	52.4	49.7	51.4	51.6
OPEC	7.7	27.8	16.3	20.9	26.0	22.7	18.3
Eastern Europe	13.5	10.3	7.8	3.4	4.8	2.0	1.6
Developing countries (excluding OPEC)	14.6	15.7	18.4	18.3	16.7	17.9	21.1
Others	0.5	0.5	3.5	5.0	2.7	5.9	7.4
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Government of India, 2000-2001, *Economic Survey.*

Table 23 presents an analysis of India's trade with developing countries for the period 1987-88 to 1999-2000. In 1987-88, developing countries accounted for about 14 per cent of India's exports, and their share increased to about 28 per cent in 1999-2000. Their share in India's imports also increased, from about 17 per cent in 1987-88 to 29 per cent in 1999-2000.

Turning to an analysis of India's trade with developing countries by region, table 23 shows that the member States of the South Asian Association for Regional Cooperation (SAARC) accounted for 10-20 per cent of India's exports to developing countries during the 1990s, but for only 2-4 per cent of India's imports from developing countries. There was no clear upward or downward trend in the share of these countries in India's exports to developing countries or in India's imports from developing countries.

Table 23: **India's trade with developing countries/territories: 1987-88 to 1999-2000**

Exports	Value (US $ million)						Relative shares (per cent)					
	1987-88	**1990-91**	**1993-94**	**1995-96**	**1998-99**	**1999-00**	**1987-88**	**1990-91**	**1993-94**	**1995-96**	**1998-99**	**1999-00**
SAARC*	313.2	533.4	898.2	1 720.6	1 679.2	1 412.6	18	17	15	19	18	13
of which:												
Bangladesh	143.7	305.1	430.2	1049.1	995.6	643.6	8	10	7	11	11	6
Sri Lanka	79.7	130.9	288	401.7	437.1	506.8	5	4	5	4	5	5
Other Asian Countries	1 130	2 076.6	3 993	5 587.2	5 165.3	6 813.9	66	67	69	61	56	65
- of which												
Hong Kong, China	344	596.5	1 249.6	1 821.4	1 880.6	2 551.6	20	19	22	20	20	24
Rep. of Korea	112.4	182.7	206.4	448.3	307.9	428.3	7	6	4	5	3	4
Malaysia	69.6	151	247.3	393.2	321.7	435	4	5	4	4	3	4
Singapore	210.5	379.4	752	901.6	517.5	691.2	12	12	13	10	6	7
Thailand	63.2	247	357.3	472.9	321	456.7	4	8	6	5	3	4
African countries	242.7	393.6	661.2	1 512.4	1 757.2	1 616.5	14	13	11	16	19	15
Latin American countries	33	95.2	244	376.4	610.2	716.2	2	3	4	4	7	7
Total	1 718.8 [14%]	3 098.7 [17%]	5 797.2 [26%]	9 196.6 [29%]	9 211.9 [28%]	10 559.2 [28%]	100	100	100	100	100	100

Note: Figures in [ ] are percentage of India's exports to developing countries in India's total exports to all countries.
  * Members of SAARC are: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

Source: Based on data taken from the Reserve Bank of India, 2000, *Handbook of Statistics on Indian Economy*,

Table 23:   **India's trade with developing countries/territories: 1987-88 to 1999-2000 (continued)**

Imports

	Value of Imports (US$ million)						Relative shares (per cent)					
	1987-88	1990-91	1993-94	1995-96	1998-99	1999-00	1987-88	1990-91	1993-94	1995-96	1998-99	1999-00
SAARC	75.5	131.4	113.7	256.5	465.6	325.2	3	3	3	3	4	2
of which:												
Nepal	33.9	45.4	28.9	49.1	144.9	113.1	1	1	1	1	1	1
Pakistan	21.6	47.1	43.6	45.1	214.4	68.5	1	1	1	1	2	0.5
Other Asian countries	2 001.2	3 240.5	3 460.2	6 169.4	8 069.6	9 159.6	67	72	78	76	68	66
of which:												
Hong Kong, China	92.6	165.6	188.7	388.0	449.3	815.8	3	4	4	5	4	6
Rep. of Korea	257.0	366.1	564.5	824.8	1 394.4	1 210.1	9	8	13	10	12	9
Malaysia	648.3	554.8	249.9	902.7	1 608.4	2 056.8	22	12	6	11	14	15
Singapore	323.4	795.7	626.9	1 091.9	1 384.2	1 506.4	11	18	14	13	12	11
Thailand	50	64.5	57.2	169.7	273.1	320.9	2	1	1	2	2	2
African countries	503.1	572.7	574.6	1131.4	2 626.6	3450.8	17	13	13	14	22	25
Latin American countries	387.4	545.8	287	583.4	723.7	852.9	13	12	6	7	6	6
Total	2 967.2 [17%]	4 490.4 [19%]	4 435.4 [19%]	8 140.4 [21%]	11 885.5 [28%]	13 788.5 [29%]	100	100	100	100	100	100

Note: Figures in [ ] are percentage of imports from developing countries in India's total imports from all countries.
Source: Based on data taken from the Reserve Bank of India, 2000, *Handbook of Statistics on Indian Economy*.

The table also shows that India has a significant trade surplus with South Asian countries. In 1995-96, India's exports to South Asian countries amounted to US$ 1,721 million while imports from these countries amounted to US$ 257 million, resulting in a trade surplus of US$ 1,464 million; this trade surplus declined to US$ 1,088 million in 1999-2000.

The developing countries/territories of Asia other than the SAARC countries (hereafter referred to as non-SAARC Asian countries/territories) dominate in India's trade with developing countries, particularly in the post-reform period. These are mainly the countries territories of East and South-East Asia (particularly Hong Kong (China), Malaysia, the Republic of South Korea, Singapore and Thailand). In 1999-2000, these countries accounted for about two-thirds of India's trade with developing countries. The increase in the share of developing countries in India's trade in the 1990s noted above is mainly a result of the rapid growth of India's trade with the non-SAARC Asian countries in the post-reform period. Between 1990-91 and 1999-2000, India's exports to these countries increased by 228 per cent, while India's imports from these countries increased by 183 per cent. The share of these countries in India's exports has not changed much between 1990-91 and 1999-2000, but their share in India's imports from developing countries has fallen, from 72 per cent in 1990-91 to 66 per cent in 1999-2000. This reflects the growing importance of some other developing countries (especially African countries) as a source of India's imports.

The developing countries of Africa are a more important source of India's imports than are the South Asian countries. But as a destination of India's exports, they are not significantly more important than the South Asian countries. In 1999-2000, African developing countries accounted for 15 per cent of India's exports to developing countries and 25 per cent of India's imports from developing countries. During the 1990s, there has been an upward trend in the share of Africa in India's imports from developing countries, increasing from 13 per cent in 1990-91 to 25 per cent in 1999-2000. By contrast, there was only a small increase in their share in India's exports to developing countries, from 13 per cent in 1990-91 to 15 per cent in 1999-2000.

Another interesting point to note is that while India has a trade surplus with South Asian countries, it has a trade deficit with the developing countries of Africa. In 1999-2000, India's exports to African countries amounted to US$ 1,617 million, while its imports from these countries accounted for US$ 3,451 million, resulting in a trade deficit of US$ 1,834 million.

India' trade with Latin American countries is smaller than its trade with the Asian and African countries. Between 1997 and 2000, Latin American countries accounted for about 7 per cent of India's exports to developing countries, and about 6 per cent of India's imports from developing countries. It is interesting to note that Latin American countries have, over time, become more important as a destination for India's exports but less important as a source of India's imports.

3.3 Associated developments – foreign investment

The analysis of trends in India's trade has considered the growth and structure of trade, the commodity composition of exports and imports and the direction of trade. It has shown that during the 1990s, a period marked by substantial trade liberalization in India, there have been some significant changes in the trade scenario. The following section deals with the inflow of foreign direct investment (FDI) to India.

As noted earlier, India was, historically, not an attractive destination for FDI, owing to a policy regime that discriminated against FDI. According to UNCTAD's, *World Investment Report* (1993), the share of FDI in India's gross domestic capital formation was, on average, 0.3 per cent during 1971-75. This declined even further, to 0.1 per cent from the mid-1970s to the mid-1980s, and rose to 0.2 per cent towards the end of the 1990s. Some degree of policy liberalization during the 1980s following the second world oil crisis in 1979-80, which forced the country to seek IMF assistance for meeting balance of payments obligations, sought to create conditions for attracting FDI. However, the response remained poor. Throughout the 1980s FDI approvals remained below US $ 100 million, except in 1988 and 1989 when the amounts approved were $ 178 and $ 195 million respectively.

The new economic policy initiated in July 1991 sought to create a favourable environment for FDI by sharply reducing tariff rates, substantially liberalizing licensing and other discretionary controls on imports, introducing convertibility of the rupee on current account, amending the Foreign Exchange Regulation Act, dismantling the industrial licensing system, reducing the number of industries reserved for the public sector, and introducing a set of policy measures for easy entry of foreign investment.

In response to the more favourable policy regime, the flow of foreign investment increased rapidly and substantially, from an average of about US $0.2 billion in the second half of the 1980s, to over US $2 billion in the second half of the 1990s (table 24). There was also a large increase in FDI approvals, from US $178 million in 1988 to US $195 million in 1989, and rising sharply thereafter to over US $10 billion in the mid-1990s (table 24). Along with FDI inflows, there was a sharp increase in portfolio investment (table 24). During the period, 1993 to 1996, the average inflow of portfolio investment was about US $3 billion, while the average actual FDI inflow was US $2 billion. In subsequent years, while the average level of portfolio investment inflows fell to about $1.6 billion during the period 1997-98 to 1999-2000, the average actual inflow of FDI increased to about US $2.7 billion.

Table 24:   **Foreign direct investment in India, 1986-1998**

Year	FDI inflows (US$ million)		FDI approvals (US$ million)	Ratio of actual inflows to approvals of FDI (%)	Portfolio investment (US$ million)
	Series 1	Series 2			
1986	118				
1987	212				
1988	91				
1989	252				
1990	238				
1991	141	155	325	47.7	
1992	151	233	1 781	13.1	244*
1993	273	574	3 559	16.1	3 567*
1994		958	4 332	22.1	3 824*
1995		2 100	11 245	18.7	2 748*
1996		2 383	11 142	21.4	3 312*
1997		3 330	15 752	21.1	1 828*
1998		2 230	6 975	32.0	-61*

Source: Series 1 is based on World Bank, *World Debt Tables*, 1994-95; Series 2 is taken from Government of India, *Economic Survey*, 1999-2000. Figures on portfolio investment have been taken from Government of India, *Economic Survey*, 2000-01.

* for fiscal years, April to March.

Although FDI approvals increased sharply in the first half of the 1990s following the economic reforms, reaching levels in excess of US $10 billion in the mid-1990s, the actual inflows of FDI lagged far behind. For most years in the 1990s, the ratio of actual FDI inflows to FDI approvals were about one-fifth or less (table 24).

Table 25 shows FDI approvals by industry during the period 1992 to 1999. Energy (power and fuel) and services industries have the largest shares: 30.3 and 27.4 per cent respectively. Telecommunications, accounted for nearly half of the FDI approvals for the services sector, and transportation including manufacture of transport equipment and transport infrastructure for 8.3 per cent. The share of the manufacturing industries in FDI approvals was about 40 per cent, of which food and agro-based products, chemicals and chemical products, metallurgical industries, and electrical machinery accounted for the bulk of FDI approvals. Taken together, the share of these four industrial groups in FDI approvals was about 24 per cent, and manufacture of transport equipment accounted for about 6 per cent. Thus these five sectors accounted for about 30 per cent of FDI approvals, while the share of all manufacturing industries was about 40 per cent.

A more detailed breakdown of foreign investment approvals by industry is provided in Annex III. It shows the cumulative FDI approvals for the period, August 1991 to August 2000. The shares of export-oriented industries such as textiles and leather are very small; those of import-competing or non-traded industries (such as chemicals and basic metals) are much larger, and they account for most of the FDI flows. In this regard, India's experience has been quite different from that of many other developing countries where FDI has generally played an important role in export-oriented production. In India, FDI has been directed more to domestic market-oriented industries, partly because of government policies (which have favoured FDI in priority industries), and partly because India has a large domestic market, which attracts market-seeking FDI rather than efficiency-seeking FDI.

**Table 25:   Foreign direct investment approvals by industry
approvals, 1992-1999**

Product category	FDI 1992-1999 (Rs billion)	Shares (per cent)
Food and agro-based products	114.2	5.5
Textiles	31.1	1.5
Paper	29.9	1.4
Chemicals and chemical products	136.4	6.5
Plastic and rubber goods	11.8	0.6
Non-metallic mineral products	39.8	1.9
Metallurgical industries	125.5	6.0
Non-electrical machinery	48.2	2.3
Electrical machinery	133.3	6.4
Miscellaneous industries	31.8	1.5
Transportation	174.1	8.3
Power and fuel	634.5	30.3
Service sector	581.7	27.8
Total	2 092.4	100.0

Source: Centre for Monitoring Indian Economy, *Foreign Trade and Balance of Payments
(various years),*

It has been noted above that in the 1970s and 1980s, FDI flows constituted a very
small proportion of domestic capital formation in India. Although this ratio has increased
with an increased inflow of FDI in the 1990s, but it still remains quite low. This can be seen
from table 26, which compares FDI inflows (including euro issues) with domestic capital
formation for two periods: 1986-87 to 1991-92 and 1992-93 to 1998-99. In the former
period, the contribution of FDI inflows to domestic capital formation was only 0.3 per cent.
In the post-reform period, FDI inflows have increased substantially to 3.9 per cent. This is
higher than the corresponding ratio in the pre-reform period, but still remains small. The
contribution of FDI inflows to capital formation in the registered manufacturing sector has
not been much better. It was about 5 per cent during the period 1992-93 to 1998-99.

Table 26: **Gross capital formation and foreign direct investment in India, 1986-87 to 1998-99**

Period	Gross capital formation (US$ million)		FDI (US$ million)		Ratio of FDI to gross capital formation (per cent)	
	Economy	Manufac-turing (registered)	Economy	Manufac-turing	Economy	Manufac-turing
1986-87 to 1991-92	362 025	64 912	1 052	NA	0.3	NA
1992-93 to 1998-99	542 963	170 528	21 005	8 402	3.9	4.9

Note: The figures on FDI for the period, 1992 to 1998 include Euro issues. The share of manufacturing in FDI inflows is not known. Hence, the share of manufacturing in FDI approvals is used to obtain an estimate of the FDI inflows in the manufacturing sector. Since there has probably been no FDI in unorganized or unregistered manufacturing, only the registered manufacturing sector is considered. The estimates of gross capital formation have been taken from the *National Accounts Statistics*, Central Statistical Organisation.

Although FDI constituted only a small part of the investments made in manufacturing (registered) in the 1990s, it must have had a profound impact on the enterprises in which it was made: they are likely to have become more outward-oriented, causing their export and import intensity to increase. If one compares the sales of the manufacturing companies in which there was infusion of foreign equity in the 1990s with sales of all manufacturing companies, the ratio would, in all probability, be much higher than the 5 per cent share of FDI in capital formation in registered manufacturing, noted above.

Since FDI inflows in the 1990s have gone mostly to import-competing and non-trading sectors, they have obviously not played an important role in increasing India's trade orientation. However, they must have contributed to industrial growth by augmenting investible resources of industrial firms, and, more importantly by fostering technological progress. Further, foreign investment may have contributed to productivity improvement in indigenous manufacturing firms through spillover effects.

4. Trade, employment and wages

This section is concerned with the effects of trade liberalization on employment and wages in Indian manufacturing. It is divided into four subsections: 4.1 describes the data sources and methodology used for the study; 4.2 presents a cross-section analysis for 1995-96, comparing composition of such aspects as employment, capital and skill-intensity, labour productivity and wage differentials across the industry divisions mentioned earlier; 4.3 analyses trends in employment, and inter-temporal changes in employment elasticity covering the period 1973-74 to 1997-98; and finally 4.4 presents an analysis of trends in wages in manufacturing, with a focus on wage inequality.

4.1 Data sources and methodology

For this study on the effect of trade liberalization on employment and wages in Indian manufacturing, the basic source of data is the *Annual Survey of Industries* (ASI), which is published by the Central Statistical Organisation, Department of Statistics, Ministry of Planning and Programme Implementation, Government of India. These data are available for all years from 1959 to 1997-88, except for 1972-73. The industrial classification used in the ASI has been changed twice: in 1973-74, and again from 1988-89 onwards.

For the analysis presented in the paper, ASI data for the period 1973-74 to 1997-98 are used. Data for years prior to 1973 have not been used due to problems in matching industrial classification, and because of the gap in the ASI data series for 1972-73. The choice of the terminal year of the period chosen for analysis has been dictated by the availability of data. At the time of writing this paper, ASI data were not available for the years after 1997-98.

Data on employment, wages and value added at the three-digit level of industrial classification (National Industrial Classification) are used for the analysis. At the three-digit level, there are about 200 industries (codes 200 to 399) (see Annex I for the list of industries along with industry codes in use before and since 1989-90). For some years, more detailed results of ASI are available at the four-digit level of industrial classification. However, there were difficulties in using such data: first of all, it is not possible to construct a regular time-series on such aspects as employment and wage rates for the analysis; and secondly, such detailed data are not available for recent years. Thus, if one worked with four-digit level ASI data, the more recent period (the 1990s) during which major trade reforms took place would have to be excluded from the analysis.

It should be pointed out that ASI data relate to the registered or organized manufacturing industry. They cover factories employing 10 or more workers with power or 20 or more workers without power. It may be mentioned here that organized manufacturing absorbs about one-fifth of total employment in Indian manufacturing, but it accounts for a much higher share of value added (about two-thirds) and value of

production (about half). (*National Accounts Statistics*, Government of India). Data availability on unorganized manufacturing is very poor, and for this reason the analysis had to be confined to the organized manufacturing sector.[30]

The other important source of data for this study is the *Monthly Statistics of the Foreign Trade of India*, published by the Directorate General of Commercial Intelligence and Statistics, Calcutta, Government of India. This source provides import and export data for various commodities for different years as well as details of the destination of exports and source country of imports. However, although it publishes trade data regularly, one difficulty in using this source is that the product classification has been changed twice during the period under study.[31]

Methodology

The basic methodology of the analysis is similar to that of Ghose (2000). The manufacturing industries are classified into five groups: (1) food products, beverages and tobacco products, (2) petroleum refining and petroleum products, (3) export-oriented industries, (4) import-competing industries, and (5) non-trading manufacturing industries. The food, beverages and tobacco products group and petroleum products group are separated from the rest of manufacturing because they are, by and large, resource-based industries, and trade in their products does not necessarily reflect comparative advantage in the Heckscher-Ohlin sense. The industries in the rest of manufacturing are classified into three groups, namely export-oriented, import-competing and non-traded manufacturing, according to the ratio of net exports (exports minus imports) to domestic production.

Identification of the export-oriented and import-competing industries has been done in the following way. Trade data for 1973-74 to 1975-76, 1984-85 to 1986-87, and 1995-96 to 1997-98 are first studied to identify the commodity groups which are relatively more important in terms of India's exports and imports. Then, for the

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[30] Unorganized manufacturing provides employment of very low quality: labour productivity and wages are quite low in this sector. A sizeable part of the employment is in household enterprises, which tend to use unpaid family labour rather than hired workers. From a development perspective, one would not want this type of employment to grow. Hence, focusing on employment in organized manufacturing in the study is appropriate. In should be noted in this context that about three-quarters of the factories covered by ASI employ less than 50 workers. These factories account for about one-sixth of the total employment in the organized manufacturing sector. Also, in about half of these factories, the gross value of plant and machinery is less than one million rupees. These factories account for about 20 per cent of employment in the organized manufacturing sector. Thus, a large proportion of enterprises constitutes small and medium-scale industries. Further, a significant part of the employment in registered modern small-scale industry is covered under ASI.

[31] The trade data are used along with the production data from ASI to compute net export ratios for different industries. These have been computed for three periods of three years each: 1973-74 to 1975-76, 1984-85 to 1986-87 and 1995-96 to 1997-98. For each period, the ASI industrial classification is matched with the product classification in trade data. Due to changes in product classification in ASI and trade data, the matching of the classifications had to be done three times. The changes in product classification in the two data sources has led to some problems of inter-temporal comparability of the net export ratios computed for different industries. However, since these ratios are used only for identifying export-oriented and import-competing industries, and are not used in the analysis directly, the problems of inter-temporal incomparability of net export ratios cause no serious problems.

corresponding ASI industries the ratio of net exports to domestic production is computed. There are some problems in computing these ratios because the trade classification differs considerably from the industrial classification. To match the two classifications, it becomes necessary, in many cases, to go down to a seven-digit classification. Even then, the matching remains far from perfect. Another source of inaccuracy in the computed net export ratios is that, while the production data reported in ASI are for organized industry, the trade data relate to the entire economy. Nevertheless, using the net export ratios with all the limitations, a list of export-oriented industries and import-competing industries (ASI three-digit level) is obtained (see Annex II).

The export-oriented industries and import-competing industries have been further divided into two subgroups depending on the proportion exported to or imported from developing countries. Thus, one "export-oriented (XS)" subgroup includes those export-oriented industries that have been directing a relatively higher proportion (25 per cent or more) of their exports to developing countries. The second, "export-oriented (XN)" subgroup, comprises those industries that have been exporting a relatively higher proportion to developed countries. Similarly, two import-competing subgroups are defined: "import-competing (MS)" and "import-competing (MN)". The MS subgroup comprises those industries whose products face relatively greater competition (25 per cent or more of total imports) from imports from developing countries The division of export-oriented and import-competing industries into the two subgroups is indicated in Annex II. It may be mentioned here that working out the share of developing countries in India's exports and imports of different commodities is quite time-consuming, as the published data are not available in that form. Therefore, this exercise has been done for only one year, 1985-86, the middle of the period under analysis.[32] [33]

To assess the effect of trade liberalization, both cross-section and time-series analyses have been carried out. The cross-section analysis is undertaken for 1995-96, since for that year the published ASI results provide greater details on employment and labour income. The composition of employment, capital intensity and wage differentials between different categories of employees are compared across the five (or seven) industry categories. Some other variables compared are the number of employees per factory (size of enterprise) and gross value added per employee.

The time series analysis covers the period 1973-74 to 1997-98. The trends in a number of variables or ratios are studies for the five (or seven) industry categories. These include employment, real value added, relative share in aggregate manufacturing employment, real value added per employee, number of employees per factory, real wage per worker and real emoluments per employee. Trend growth rates in the periods 1973-74 to 1989-90 and 1990-91 to 1997-98 are compared.

For each three-digit ASI industry, deflation of gross value added has been done by a suitable price index that could be computed from the official series on Wholesale

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[32] For cotton textiles, this exercise is done also for 1975-76, as it is easier to obtain export data separately for produce of the milling, powerloom and handloom sectors.

[33] For watches and clocks, the share of developing countries/territories in India's imports is more than 25 per cent. But, this industry has been placed in the MN subgroup instead of the MS subgroup because the largest share of imports (in 1985-86) is from Hong Kong, China, and it seems that the bulk of the imports from Hong Kong, China probably originate elsewhere and is merely re-exported by the territory.

Price Indices. To obtain real wages and real emoluments, the consumer price index for industrial workers has been used for deflation.

4.2   Factor content of exports and imports

Table 27 shows the main characteristics of the seven groups/subgroups of manufacturing industries in terms of output, employment and fixed capital for 1995-96. The shares of these groups in such aspects as gross value added and employment are shown. Food, beverages and tobacco products, and petroleum products accounted for 21 per cent and 0.4 per cent respectively of total employment in organized manufacturing (in 1995-96). The share of export-oriented industries was 19 per cent and that of import-competing industries was 22 per cent. The non-trading industries group accounted for 39 per cent of employment. The shares of the petroleum products group and import-competing industries group in gross value added and fixed capital were much higher than their shares in employment. The converse was true for the food, beverages and tobacco products group and export-oriented industries group (i.e. their shares in gross value added and fixed capital were lower than their shares in employment).   For the non-trading industries group, its shares in gross value added and fixed capital were almost the same as its share in employment.

A comparison of some important ratios among the five industry categories and subgroups is presented in table 28.   Contrasting the export-oriented and import-competing industry groups, it is found that the import-competing industries have a higher overall employment per factory. But the export-oriented industries have more production workers per factory, as these industries have a higher ratio of production workers to overall employees (84 per cent as against 67 per cent). The ratio of supervisors and managers to total persons employed is much higher in import-competing industries (12 per cent) than in export-oriented industries (4 per cent). It would seem that a significant proportion of workers in import-competing industries are employed through contractors: in these industries 87 per cent of the workers are directly employed compared with 96 per cent in export-oriented industries. Also, the proportion of women workers is much higher in export-oriented industries (13 per cent) than in import-competing industries (4 per cent).

Fixed capital per person employed in import-competing industries is over five times that in export-oriented industries and gross value added per person employed is more than three times higher. Wages paid per worker in import-competing industries are about 75 per cent higher than those in export-oriented industries; emoluments per employee in import-competing industries are more than 100 per cent higher than those in export-oriented industries.

It would have been useful to present a comparison between export-oriented and import-competing industries in terms of skill intensity. The ASI, however, does not provide this information. One can make some judgement on the basis of value added per employee, since a higher ratio of value added to employment is quite likely to be associated with a higher proportion of skilled workers to unskilled workers (Ghose 2000). Another ratio that can be considered is the proportion of employees other than workers in

total employees. In terms of both ratios, the skill intensity of import-competing industries appears to be much higher than that of export-oriented industries.

For most ratios shown in table 28, the values for the non-trading industries group lie between those for the export-oriented and import-competing industries groups. One exception is the average employment size of factories, which is relatively lower in non-trading industries than in export-oriented and import-competing industries.

Turning to the other two industry groups, the food products, beverages and tobacco products group is quite similar to the export-oriented industries group in terms of most ratios. In particular, it may be noted that value added, fixed capital per employee and wage rates are relatively low, while the proportion of women in total employment is relatively high in the food products, beverages and tobacco products group. Again, the proportion of supervisors/managers is relatively low in this industry group, as also in the export-oriented industries. On the other hand, the various ratios for the petroleum products group are similar to those of the import-competing industries group: value added, fixed capital per employee and wage rates are high, and the proportion of supervisors and managers in total employment is high, while the proportion of women in total employment is low.

Some differences may be noted between XS and XN, the two subgroups in the export-oriented industries. The average employment size of factory is almost the same between the two subgroupss. Fixed capital per employee is higher for the XN subgroup (exports directed predominantly to developed countries) than for the XS group (sizeable proportion of exports directed to developing countries). But, value added per employee in the XN subgroup is about the same as in the XS subgroup. One striking difference between XS and XN is in the proportion of women workers: 23 per cent in the XN subgroup and only 5 per cent in the XS subgroup.

Table 27: **Main characteristics of manufacturing industries, 1995-96, according to industry category**
(values in million rupees, and percentage share)

Industry category	No. of Factories	No. of Production Workers	Total Number of Employees	Wages	Emoluments	Products and by-products	Gross value added	Fixed capital
Food products, beverages and tobacco products	31 204	1 508 348	1 845 145	26 932	50 023	893 875	135 011	179 445
	(24%)	(22%)	(21%)	(11%)	(10%)	(16%)	(10%)	(8%)
Petroleum products	278	26 314	38 627	2 818	7 039	364 639	60 661	80 033
	(0.2%)	(0.4%)	(0.4%)	(1.2%)	(1.5%)	(6.6%)	(4.5%)	(3.4%)
Export-oriented	18 790	1 410 969	1 679 524	43 487	68 467	582 935	128 125	189 717
	(15%)	(21%)	(19%)	(18%)	(14%)	(10%)	(10%)	(8%)
- significant exports to developing countries (XS)	10 662	787 715	942 271	26 876	42 708	363 913	74 173	140 110
	(8%)	(12%)	(11%)	(11%)	(9%)	(7%)	(6%)	(6%)
- exports predominantly to developed countries (XN)	8 128	623 254	737 253	16 611	25 758	219 021	53 952	49 607
	(6%)	(9%)	(8%)	(7%)	(5%)	(4%)	(4%)	(2%)

(Table 27 continued)

Industry category	No. of factories	No. of workers	Total no. of persons	Wages	Emoluments	Products and by-products	Gross value added	Fixed capital
Import competing	20 255	1 287 350	1 924 676	69 299	167 262	1 804 467	519 318	1 169 471
	(16%)	(19%)	(22%)	(29%)	(35%)	(32%)	(39%)	(50%)
- significant imports from developing								
countries (MS)	4 342	295 791	441 411	17 204	51 743	660 169	215 012	480 422
	(3.4%)	(4.4%)	(5%)	(7%)	(11%)	(12%)	(16%)	(21%)
- imports predominantly from developed								
countries (MN)	15 913	991 559	1 483 265	52 095	115 520	1 144 299	304 307	689 050
	(12%)	(15%)	(17%)	(22%)	(24%)	(21%)	(23%)	(29%)
Non-trading	59 001	2 562 674	3 439 489	92 990	186 100	1 913 835	497 588	720 755
	(46%)	(38%)	(39%)	(39%)	(39%)	(34%)	(37%)	(31%)
Total	129 528	6 795 655	8 927 461	235 527	478 894	5 559 753	1 340 706	2 339 423

XS= export-oriented: significant share (25% or more) of exports directed to developing countries; XN = export-oriented: exports to developing countries constitute less than 25% of total exports; MS and MN = import-competing, imports from developing countries constituting 25% or more of total imports classified as MS, and below 25% classified as MN.

Table 28: Employment and wage rate in manufacturing industries, 1995-96, by industry category

	Production workers per factory (no.)	Total persons employed per factory (no.)	Workers total no. employed (%)	Wages per worker (Rs.' 000 per annum)	Emoluments per person employed (Rs.' 000 per annum)	Ratio of wages per worker to emoluments per person	Gross value added per person employed (Rs.' 000 per annum)	Fixed capital per person employed (Rs.' 000)	Directly employed out of all workers (%)	Share of women workers in total workers (%)	Share of supervisors/ma-nagers in total persons employed (%)
Food products, beverages and tobacco products	48.3	59.1	82	17.9	27.1	0.66	73.2	97.3	75	26	4
Petroleum products	94.7	138.9	68	107.1	182.2	0.59	1570.4	2071.9	78	1	17
Export-oriented	75.1	89.4	84	30.8	40.8	0.76	76.3	113.0	96	13	4
XS	73.9	88.4	84	34.1	45.3	0.75	78.7	148.7	96	5	5
XN	76.7	90.7	85	26.7	34.9	0.76	73.2	67.3	97	23	4
Import-competing	63.6	95.0	67	53.8	86.9	0.62	269.8	607.6	87	4	12
MS	68.1	101.7	67	58.2	117.2	0.50	487.1	1088.4	85	3	12
MN	62.3	93.2	67	52.5	77.9	0.67	205.2	464.5	88	4	11
Non-trading	43.4	58.3	75	36.3	54.1	0.67	144.7	209.6	87	8	8
All manufacturing	52.5	68.9	76	34.7	53.6	0.65	150.2	262.0	86	12	7

XS, XN = export-oriented subgroups; MS and MN = import-competing subgroups, as defined in table 27.

Similarly, there are differences between the MS and MN subgroups. Fixed capital per employee, value added per employee and emoluments per person employed are relatively higher for the MS group (sizeable part of imports from developing countries) than for the MN group (imports predominantly from developed countries). Also, employment per factory in the MS subgroup is higher than that in the MN group.

Comparative advantage

Leaving aside the petroleum-based industries (which account for a minuscule proportion of manufacturing employment), import-competing industries are the most capital- and skill-intensive (or least labour-intensive), and the food, beverages and tobacco products group is the least capital- and skill-intensive (or most labour-intensive). Export-oriented industries are less labour-intensive than the food, beverages and tobacco product industries, but more labour-intensive than the import-competing and non-trading industry groups. This is broadly consistent with the Heckscher-Ohlin notion of comparative advantage.

Comparing XN with MN (i.e. those trading predominantly with developed countries), it is found that investment per employee and value added per employee are lower in the export-oriented industries than in the import-competing industries (i.e. import-competing industries are relatively more capital-intensive, and skill-intensive). The wage rate is also higher in import-competing industries than in export-oriented industries. One would expect such a pattern to hold for India's trade with developed countries. However, what is interesting to note from table 28 is that the same pattern holds for India's trade with developing countries: industries in the XS subgroup (export-oriented) are more labour-intensive than those in the MS (import competing) subgroup.

Going by the factor intensity ratios given in table 28, India's trade with developing countries seems to reflect the same kind of comparative advantage as its trade with developed countries. This is somewhat surprising. Interestingly, the ratios in table 28 show that the industries competing with imports from developing countries are significantly more capital-intensive than those industries competing with imports from developed countries. It may be mentioned in this context that a number of highly capital-intensive industries are included in the MS group. These include fertilizers, pesticides, aluminium, zinc, basic chemicals, synthetic resin, plastic materials and synthetic fibres. In all these cases, a sizeable proportion of imports come from developing countries. But, this trade does not seem to be a reflection of comparative advantage in the Heckscher-Ohlin sense. Rather, India's imports of many of these commodities from developing countries is, possibly, a reflection of the availability of cheap power/natural gas/petroleum in the countries from which the imports are being made.

Factory size

Enterprise size is expected to vary inversely with labour intensity. But it is seen from table 28 that employment per factory in export-oriented industries is nearly the same as that in import-competing industries, though export-oriented industries are much more labour intensive than import-competing industries. A closer examination of the data for export-oriented industries reveals that employment per factory is relatively high for the jute textiles industry, especially for factories engaged in spinning, weaving and finishing of jute textiles (over 2,000 workers per factory). If the jute textiles industry is excluded, the employment size per factory of export-oriented industries turns out to be 76.4, lower than that of import-competing industries. However, employment per factory in export-oriented industries still remains higher than that in "food, beverages and tobacco product" industries.

Industries competing with imports from developing countries have, on average, more employees than the industries competing with imports from developed countries. This is probably because of the relatively higher capital intensity of the former group of industries.

Wages

The wage rate is expected to vary directly with labour productivity and capital intensity and hence inversely with labour intensity. Table 28 shows that wages per worker and emoluments per employee are higher in import-competing industries than in export-oriented industries. This is to be expected, since export-oriented industries are more labour-intensive (less capital-intensive) than import-competing industries. However, it is interesting to note that labour remuneration in the food, beverages and tobacco product industries are much lower than it is in the export-oriented industries, even though in terms of capital-labour ratio and labour productivity there is not much difference. Indeed, the former group shows the lowest wages and emoluments among the five industry groups, but they are higher than wages in the unorganized manufacturing sector.

The ratio of wages/emoluments to labour productivity in the "food, beverages and tobacco products" industry group is also significantly lower than that of both the export-oriented industries and the import-competing industries. One possible explanation could be the higher proportion of women employed in these industries than in the other groups. However, as shown, this does not seem to be a valid, or at least not the main, reason. Rather, the main explanation seems to relate to the fact that the proportion of directly employed workers in total workers is relatively lower in this industry group (along with the fact that the wage rate of directly employed workers is higher than that of workers employed through contractors).

Women in employment

Table 28 clearly shows that the proportion of women workers in some industry groups is much higher than in others. There are significant differences in this ratio across industries even within an industry division. To study this aspect further, industries belonging to each major group have been classified into two sets: those employing a low proportion of women and those employing a significant proportion of women (women workers constituting 10 per cent or more of the total workforce). A comparison of wage rates (wages per worker), fixed capital per employee and value added per employee across the two sets of industries for each industry group is presented in table 29.   In all the four industry groups considered for analysis, the average wage rate is lower for the set of industries which employ a significant number of women. Since differences in the average wage can arise from differences in skill levels, a comparison of value added per employee is also made. In the non-trading industries group and the export-oriented industries group, there is not much difference in value added per employee between the two sets of industries, one employing a significant number of women and the other employing a low proportion of women. But the average wage rate is lower for the set of industries in which a significant number of women are employed. This leads one to suspect gender-based discrimination in wage setting in these industries. However, it is seen from table 28 that the XN and XS subgroups differ considerably in terms of the proportion of women employed, but the wage rate in the XN group (more women employed) is not much lower than that in the XS group (fewer women employed). Similarly, in comparing the XN group and the "food, beverages and tobacco" group, it is found that although both groups employ a similarly significant proportion of women, and are similar in terms of labour productivity, the wage rate in the "food, beverages and tobacco" industry group is almost half that in the XN group. Thus, the evidence presented in tables 28 and 29, taken together, does not provide a clear indication of systematic gender-based wage discrimination.[34]

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[34] Within the import-competing industries group, the wage rate is lower for those industries that employ a significant proportion of women compared to the industries that employ a low proportion of women.   The same pattern is found in the food products, beverages and tobacco products group. In this group, there are large differences in value added per employee, and therefore the observed differences in wage rates may be entirely due to differences in the skill levels of workers.

Table 29:   **Women employed, skill intensity and wage rates in various categories of industries**

	Factories (no.)	Employ-ment ('000)	Employment per factory	Proportion of women workers	Wage rate (Rs. '000) per annum	Fixed capital per employee (Rs.)	Value added per employee (Rs. '000) per annum
Non-trading							
- Low employment of women	41 029	2 589	63.1	0.018	41.0	230.4	155.6
- Higher employment of women	17 972	850	47.3	0.239	21.2	146.1	111.3
Export-oriented							
- Low employment of women	11 649	1 212	104.0	0.038	34.1	126.9	68.7
- Higher employment of women	7 141	467	65.5	0.390	21.7	76.9	95.8
Import-competing							
- Low employment of women	18 629	1 686	90.5	0.016	55.3	663.8	289.9
- Higher employment of women	1 626	239	146.8	0.218	39.0	210.9	127.6
Food, beverage, tobacco							
- Low employment of women	19 951	1 044	52.3	0.044	24.0	136.3	101.4
- Higher employment of women	11 253	801	71.2	0.576	11.3	46.4	36.3

Note: Higher employment of women employed = women workers constituting 10 per cent or more of the total workforce.

Another point to note from table 29 is that, in general, value added per employee is relatively lower for industries employing a higher proportion of women (in other words, there are more female workers in low-skill industries). From the table, it is seen that this pattern holds for import-competing, non-trading and "food, beverages and tobacco" industry groups, but not for export-oriented industries. For this industry group, industries employing a high proportion of women workers have a higher labour productivity than industries employing a low proportion of women.[35]

4.3 Trade and employment

Goldar (2000) was one of the first to note a marked acceleration in employment growth in Indian manufacturing in the post-reform period. The study found an acceleration in employment growth in the 1990s both at the aggregate manufacturing level and for most two-digit industries. A recent study undertaken by Tendulkar (2000) has come up with similar findings. This study compared trend growth rates in employment in Indian manufacturing industries in the 1990s with those in the 1980s. It found that growth of employment in manufacturing was faster in the 1990s than in the 1980s, which was known to be a period of very slow (or negative) employment growth in Indian manufacturing. The study estimated that the growth rate of aggregate manufacturing employment increased from – 0.12 per cent per annum during the 1980s to 2.92 per cent per annum during the 1990s.

Table 30 presents time-series data on employment for the five major industrial groups and aggregate manufacturing for the period 1973-74 to 1997-98. Trend growth rates in employment have been computed for the periods 1973-74 to 1989-90 (pre-reform) and 1990-91 to 1997-98 (post-reform), and for the entire period, 1973-74 to 1997-98. These are shown at the bottom of the table. The table clearly shows that the rate of employment growth in manufacturing industries has been significantly higher in the post-reform period than during the pre-reform period. At the aggregate level, the growth rate of employment was found to be 1.6 per cent per annum for the period 1973-74 to 1989-90. This increased to 3.09 per cent per annum during the period 1990-91 to 1997-98.[36] There was acceleration in employment growth in all the five industry groups. Export-oriented industries experienced an increase in the employment growth rate from – 0.57 per cent per annum in 1973-1990 to 3.36 per cent per annum in 1990-1997.

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[35] To examine this issue further, export-oriented industries were ranked according to labour productivity. Then the "average proportion of women workers" was computed for the top half and bottom half of the industries. The proportion of women workers was found to be higher in those industries which ranked high in terms of labour productivity. The same exercise, when done for the import-competing, non-trading, and "food, beverages and tobacco" industry groups, showed an inverse relationship between labour productivity and the proportion of women workers.

[36] Quick estimates of ASI for 1999-2000 (available at www.Indiastat.com) indicate that between 1997-98 and 1999-00 manufacturing (organized) employment grew at the rate of over 5 per cent per annum. Thus for the 1990s, the average annual growth of organized manufacturing employment was about 3.3 per cent per annum.

Table 30:   Manufacturing employment, 1973-74 to 1997-98, by industry category (thousand)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	917.0	9.2	1 375.3	953.4	1 886.4	5 141.3
1974-75	1 144.8	11.6	1 382.1	939.5	1 930.6	5 408.6
1975-76	1 270.6	12.1	1 395.7	1 019.3	1 959.7	5 657.5
1976-77	1 453.0	15.1	1 407.3	1 022.8	1 970.1	5 868.3
1977-78	1 557.2	17.2	1 459.9	1 105.6	2 080.5	6 220.4
1978-79	1 523.8	19.1	1 519.6	1 149.7	2 134.0	6 346.1
1979-80	1 579.8	21.4	1 563.1	1 236.2	2 471.5	6 872.0
1980-81	1 722.7	22.1	1 481.7	1 253.9	2 438.2	6 918.6
1981-82	1 765.9	24.8	1 406.1	1 272.3	2 495.0	6 964.0
1982-83	1 721.0	42.9	1 461.2	1 321.4	2 610.8	7 157.3
1983-84	1 494.1	21.4	1 461.7	1 342.7	2 606.4	6 926.4
1984-85	1 383.7	20.0	1 468.6	1 391.7	2 602.9	6 866.9
1985-86	1 330.8	22.2	1 310.4	1 354.0	2 561.0	6 578.4
1986-87	1 348.0	21.2	1 294.7	1 329.8	2 530.1	6 523.7
1987-88	1 464.8	23.4	1 267.5	1 426.6	2 641.7	6 824.1
1988-89	1 454.0	26.2	1 282.3	1 422.9	2 657.9	6 843.3
1989-90	1 632.4	25.8	1 354.3	1 496.5	2 718.3	7 227.4
1990-91	1 612.6	27.1	1 357.9	1 546.6	2 754.8	7 299.2
1991-92	1 642.2	26.9	1 337.5	1 514.0	2 839.9	7 360.6
1992-93	1 793.2	30.1	1 373.5	1 658.4	2 990.1	7 845.3
1993-94	1 735.5	33.6	1 429.5	1 609.9	3 019.1	7 827.6
1994-95	1 826.6	36.6	1 504.8	1 662.3	3 079.3	8 109.6
1995-96	1 845.1	38.6	1 679.5	1 924.7	3 439.5	8 927.5
1996-97	1 879.9	37.3	1 608.5	1 773.2	3 456.1	8 754.9
1997-98	1 953.1	39.7	1 622.7	1 776.6	3 398.3	8 790.4
Growth rate (% per annum)						
1973-89	1.41	5.26	-0.57	2.80	2.40	1.60
1990-97	2.56	6.09	3.36	2.67	3.44	3.09
1973-97	1.64	4.61	0.22	2.61	2.33	1.78

The fact that employment growth accelerated in all five groups in the 1990s and that the most dramatic acceleration took place in export-oriented industries points to the comparative advantage coming into play (presumably as a result of trade liberalisation)[37] in the Heckscher-Ohlin sense. The evidence also shows that trade liberalization actually stimulated, rather than hurt, the non-export (especially import-competing) industries as a result of a relaxation of general foreign exchange constraints, a point made earlier by Ghose (2000).

Another feature of manufacturing employment growth which needs to be emphasized is that "food, beverages and tobacco products" and export-oriented industries accounted for about 26 per cent of the incremental manufacturing employment between 1973-74 and 1988-89, and for 38 per cent of incremental manufacturing employment between 1989-90 and 1997-98. From this, it may be concluded that trade liberalization increased the relative demand for low-skill labour.

Output growth

The 1990s, when saw major trade reforms were undertaken in India along with reforms in other economic policies, was not only a period of accelerated employment growth in manufacturing but also a period of accelerated output (value added) growth in manufacturing, as seen from table 31. At the aggregate level, the growth rate in real value added in Indian manufacturing was 6.18 per cent per annum during the period 1973-74 to 1989-90. This increased to 9.35 per cent per annum during the period 1990-91 to 1997-97. It appears, therefore, that the acceleration in employment growth in manufacturing employment was, in part, caused by accelerated growth in industrial output in the 1990s, which in turn may be attributed, to a large extent, to trade and other economic policy reforms. It is seen from table 31 that the rate of output growth increased in the 1990s in all the five industrial groups.[38] In the case of export-oriented industries, the growth rate of output increased from 2.43 per cent per annum during the period, 1973-74 to 1989-90, and to 7.07 per cent per annum during the period, 1990-91 to1997-98.

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[37] Srinivasan (2001, p.20) writes: "All the components of reforms, namely, removal of entry barriers, import duty reductions, removal of quantitative restrictions on imports of most of the intermediate and capital goods, not only introduced competition – internal and external – but also contributed toward more efficient allocation of resources by reducing distortions introduced by the earlier policies. The impact is reflected in a higher growth in real manufacturing output and a faster employment growth in the high productivity factory segment."

[38] Analysis of output growth at the two-digit industry level reveals, however, that in nearly half of the two-digit industries, output growth decelerated in the 1990s (Goldar, 2000; Tendulkar, 2000). Evidently, the acceleration at the aggregate level was caused by sharp increases in the output growth rate in some of the two-digit industries.

Table 31: **Real gross value added in manufacturing, 1973-74 to 1997-98, by industry category**

(Rs. Billion, at 1981-82 prices)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	8.5	2.2	18.4	31.7	37.9	98.9
1974-75	10.6	2.4	17.7	33.7	39.2	103.6
1975-76	10.3	2.5	16.9	33.3	37.3	100.3
1976-77	12.4	4.0	17.7	37.1	40.7	111.9
1977-78	13.2	4.8	18.5	38.8	44.1	119.4
1978-79	15.6	3.8	21.9	43.5	49.2	134.0
1979-80	14.2	3.9	23.3	43.1	49.6	134.0
1980-81	11.1	2.9	22.1	43.2	50.6	129.9
1981-82	13.6	3.0	20.2	48.2	53.3	138.2
1982-83	17.0	5.0	19.4	52.0	59.8	153.2
1983-84	23.3	2.4	22.2	57.8	67.5	173.2
1984-85	21.1	4.1	21.1	66.0	69.4	181.7
1985-86	20.9	5.5	21.2	64.3	72.2	184.0
1986-87	22.6	10.1	24.3	61.8	75.3	194.1
1987-88	24.5	11.5	23.4	72.9	83.3	215.5
1988-89	29.5	24.3	25.0	86.4	90.7	255.9
1989-90	34.2	15.7	29.7	98.3	98.9	276.7
1990-91	32.2	14.6	32.4	112.5	112.6	304.3
1991-92	33.5	9.8	31.1	101.2	118.5	294.1
1992-93	33.7	16.5	33.1	129.5	121.5	334.2
1993-94	39.8	17.5	41.3	133.9	147.2	379.6
1994-95	46.8	20.7	44.8	160.7	155.6	428.5
1995-96	46.2	25.8	42.4	194.7	188.8	497.9
1996-97	54.4	26.4	46.4	183.2	199.3	509.7
1997-98	51.1	10.0	50.5	202.0	209.5	523.0

Growth rate (% per annum)

1973-89	7.52	11.28	2.43	6.60	6.18	6.18
1990-97	8.05	14.09	7.07	10.08	9.91	9.35
1973-97	7.44	11.14	4.28	7.99	7.39	7.31

Note: In computing growth rates in the petroleum products group, the figure for 1997-98 has been excluded since there is a sharp variation.

Employment elasticity

Simple employment elasticities (gross), computed by dividing the employment growth rate by the output growth rate, are shown in table 32. The elasticities are shown for the five industry groups and for aggregate manufacturing. The table shows employment elasticity for aggregate manufacturing increased from 0.26 in the pre-reform period, 1973-74 to 1989-90, to 0.33 in the post-reform period, 1990-91 to 1997-98. There was a significant increase in employment elasticity in the food, beverages and tobacco products group and in the export-oriented industries group. Employment elasticity in the export-oriented industries group also increased, from -0.234 to 0.476 between the pre- and post-reform periods. In the other three industry groups, there was a decline in employment elasticity in the post-reform period. In the import-competing industries group, employment elasticity fell from 0.425 in the pre-reform period to 0.264 in the post-reform period.

Table 32 reveals that employment elasticity in the XN group (exports directed predominantly to developed countries) increased during these periods, from 0.197 in 1973-89 to 0.591 in 1990-97; there was a more dramatic increase in employment elasticity in the XS group (a sizeable proportion of exports directed to developing countries), from -0.649 to 0.239. However, there was a marked difference between the two subgroups of import-competing industries in terms of changes in employment elasticity in the post-reform period. Employment elasticity in the MS group (significant imports from developing countries) increased from 0.419 in 1973-89 to 0.595 in 1990-97, but employment elasticity in the MN group (imports predominantly from developed countries) fell from 0.451 to 0.165 between these periods.

Table 32:   **Employment elasticity**

	Food, beverages and tobacco	Petro-leum products	Export oriented	Import competing	Non-trading	All manufac-turing	XS	XN	MS	MN
Employment growth rate (per cent per annum)										
1973 to 1989	1.41	5.26	-0.57	2.80	2.40	1.60	-1.19	0.89	3.34	2.68
1990 to 1997	2.56	6.09	3.36	2.67	3.44	3.09	1.11	6.84	6.48	1.57
1973 to 1997	1.64	4.61	0.22	2.61	2.33	1.78	-0.90	2.41	3.56	2.36
Growth rate in real gross value added (per cent per annum)										
1973 to 1989	7.52	11.28	2.43	6.60	6.18	6.18	1.84	4.49	7.95	5.95
1990 to 1997	8.05	14.09	7.07	10.08	9.91	9.35	4.64	11.58	10.89	9.52
1973 to 1997	7.44	11.14	4.28	7.99	7.39	7.31	2.75	8.03	9.64	7.13
Employment elasticity										
1973 to 1989 (pre-reform)	0.187	0.467	-0.234	0.425	0.389	0.259	-0.649	0.197	0.419	0.451
1990 to 1997 (post- reform)	0.319	0.432	0.476	0.264	0.347	0.330	0.239	0.591	0.595	0.165
1973 to 1997	0.221	0.414	0.052	0.327	0.315	0.243	-0.326	0.300	0.370	0.331

XS = export-oriented, significant proportion (25% or more) exported to developing countries;
XN = export-oriented, exporting less than 25% to developing countries;
MS = import-competing, significant proportion (25% or more) imported from developing countries;
MN = import-competing, importing less than 25% from developing countries.

As noted in the introductory section of this paper, the study by Ghose (2000) concluded that trade reforms should lead to an increase in employment elasticity in the manufacturing sector of developing countries. This is, to some extent, borne out by the experience of Indian manufacturing in the 1990s: there has been an increase in employment elasticity at the aggregate manufacturing level, but in some major industry groups it has decreased. The greater employment elasticity in the manufacturing sector in the 1990s could be due to two factors: increase in employment elasticity in individual categories of industries, and changes in the composition of manufacturing output. It would be useful, therefore, to study changes in the shares of different industry groups in manufacturing output.

Table 33 shows the shares of the five industry groups in real gross output (gross value of production at constant prices) in the manufacturing sector for different years during the period 1973-74 to 1997-98[39] In the 1970s and 1980s the shares of export-oriented industries and "food, beverages and tobacco" industries in real gross output fell, while those of the import-competing industries increased; there was little change in the share of the non-trading industries group. In the 1990s, the output shares of export-oriented and non-trading industries increased, while the shares of the "food, beverages and tobacco" industries continued to decline more sharply. The share of the petroleum products industry group increased in the 1970s and 1980s, and decreased in the 1990s. But, this industry group accounts for a minuscule proportion of manufacturing employment, and therefore the changes in the share of this industry must have had very little effect on employment elasticity in the manufacturing sector.

Considering the changes in output shares of the industry groups, especially the significant fall in the share of the "food, beverages and tobacco" industry group in the 1990s, it seems reasonable to argue that the changes in industrial composition cannot be an explanation for the increase in employment elasticity in Indian manufacturing in the 1990s. Rather, this increase seems to have been caused mainly by the increase in employment elasticity in the export-oriented industries and the "food, beverages and tobacco" industries.

What caused the increase in these two industry groups? To answer this question, output growth was studied for the different industries belonging to these two groups to determine whether it was caused by changes in the output composition of the industry groups in favour of labour-intensive industries. However, the results of the analysis revealed that this was not the case. The change in the output share of individual industries was found to be positively correlated with the ratio of value added to employment (i.e. the higher the labour-intensity, the lower was the growth rate of output). The increase in employment elasticity could be explained, therefore, by factors that encouraged the use of more labour-intensive methods of production. One such factor was the slowdown in the growth of real wages in the 1990s, discussed further in subsection 4.3 below.

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[39] Since value added figures for the petroleum products group show wild fluctuations, gross output is used in place of value added.

Table 33: **Share of industry groups in gross value of production (at 1981-82 prices), 1973-74 to 1997-98 (per cent)**

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	19.1	3.6	16.1	26.1	35.0	100
1974-75	18.8	5.8	15.2	25.8	34.3	100
1975-76	19.8	6.2	15.1	26.2	32.8	100
1976-77	20.7	6.6	16.4	21.2	35.0	100
1977-78	20.3	7.5	14.0	27.3	30.9	100
1978-79	21.4	7.5	14.2	26.4	30.5	100
1979-80	18.4	8.8	13.8	27.9	31.2	100
1980-81	15.4	8.2	13.5	28.6	34.3	100
1981-82	16.8	8.5	12.3	29.0	33.4	100
1982-83	18.4	10.1	11.4	28.0	32.1	100
1983-84	18.6	8.6	11.4	28.8	32.5	100
1984-85	17.1	9.1	11.1	30.3	32.4	100
1985-86	16.7	9.8	10.9	29.3	33.3	100
1986-87	16.7	9.5	10.6	29.7	33.5	100
1987-88	17.1	9.0	9.9	30.0	34.0	100
1988-89	16.8	10.0	9.4	29.9	33.9	100
1989-90	17.3	8.6	9.5	32.5	32.0	100
1990-91	16.6	9.3	9.2	32.8	32.1	100
1991-92	17.8	5.4	9.8	33.5	33.6	100
1992-93	16.9	6.2	9.7	34.1	33.1	100
1993-94	16.3	6.4	10.5	31.6	35.2	100
1994-95	15.9	6.4	10.6	32.4	34.7	100
1995-96	15.2	7.5	9.5	32.5	35.4	100
1996-97	16.3	6.4	9.5	31.1	36.7	100
1997-98	14.9	4.7	10.0	35.0	35.3	100

Growth rates (per cent per annum)

1973 to 1989	-1.17	4.08	-3.56	1.47	-0.08	
1990 to 1997	-1.79	-3.85	0.46	-0.06	1.55	
1973 to 1997	-1.02	0.09	-2.33	1.31	0.26	

Share of industry groups in employment

Table 34 shows, for different years during 1973-74 to 1997-98, the shares of the five industry groups in manufacturing employment. The rates of change in the shares are shown at the bottom of the table. There was little change in the employment shares of the industry groups in the 1990s, with the exception of the petroleum products group which experienced a significant increase. However, this is of little consequence because, as noted earlier, the petroleum products group accounts for a very small proportion of manufacturing employment. By contrast, there were some significant changes in the employment shares of the export-oriented, import-competing and non-trading industry groups during the period 1973-74 to 1989-90. The share of export-oriented industries fell from 26.7 per cent in 1973-74 to 18.7 per cent in 1989-90 while the shares of the other two groups increased during this period. The downward trend in the share of export-oriented industries was arrested in the 1990s. This could be attributed to the reforms in trade policy and other complementary policies.

Table 34: **Share of industry groups in employment, 1973-74 to 1997-98**
(per cent)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	17.8	0.2	26.7	18.5	36.7	100
1974-75	21.2	0.2	25.6	17.4	35.7	100
1975-76	22.5	0.2	24.7	18.0	34.6	100
1976-77	24.8	0.3	24.0	17.4	33.6	100
1977-78	25.0	0.3	23.5	17.8	33.4	100
1978-79	24.0	0.3	23.9	18.1	33.6	100
1979-80	23.0	0.3	22.7	18.0	36.0	100
1980-81	24.9	0.3	21.4	18.1	35.2	100
1981-82	25.4	0.4	20.2	18.3	35.8	100
1982-83	24.0	0.6	20.4	18.5	36.5	100
1983-84	21.6	0.3	21.1	19.4	37.6	100
1984-85	20.2	0.3	21.4	20.3	37.9	100
1985-86	20.2	0.3	19.9	20.6	38.9	100
1986-87	20.7	0.3	19.8	20.4	38.8	100
1987-88	21.5	0.3	18.6	20.9	38.7	100
1988-89	21.2	0.4	18.7	20.8	38.8	100
1989-90	22.6	0.4	18.7	20.7	37.6	100
1990-91	22.1	0.4	18.6	21.2	37.7	100
1991-92	22.3	0.4	18.2	20.6	38.6	100
1992-93	22.9	0.4	17.5	21.1	38.1	100
1993-94	22.2	0.4	18.3	20.6	38.6	100
1994-95	22.5	0.5	18.6	20.5	38.0	100
1995-96	20.7	0.4	18.8	21.6	38.5	100
1996-97	21.5	0.4	18.4	20.3	39.5	100
1997-98	22.2	0.5	18.5	20.2	38.7	100

Growth rates (per cent per annum)

1973 to 1989	-0.20	3.66	-2.17	1.20	0.80	
1990 to 1997	-0.52	3.00	0.28	-0.42	0.36	
1973 to 1997	-0.14	2.83	-1.56	0.83	0.55	

Employment per factory

Table 35 shows employment per factory in the different industry groups for different years during the period 1973-74 to 1997-98. The average employment size was relatively higher for the export-oriented industries group and petroleum products group, but, in both cases, it declined over time. In the 1970s and 1980s, the average size of employment fell in all five industry groups, the aggregate rate of fall being 1.3 per cent per annum. This downward trend in average factory size was arrested in the 1990s for the food, beverages and tobacco group, import-competing industries group and the non-trading industries group, but persisted in the export-oriented industries group. There was a downward trend also for the petroleum products group, but this can be ignored in view of its very small share in employment; also there were fluctuations in the average §employment size in this group.

A possible explanation for the observed trends in average factory size, is that import competition and FDI may have had a favourable impact on the size of enterprises. These factors possibly caused new enterprises in the non-export industries to be of a relatively larger size, thus arresting the downward trend in average employment. Since these influences do not operate in export-oriented industries (in which FDI has been inconsequential), the downward trend in enterprise size could have continued, but to some extent it was arrested for these industries too in the 1990s. This may have been a result of the existing firms growing in size or the entry of larger firms, since there was greater outward orientation of firms and a need to reap economies of scale to compete effectively in international markets.

ASI data reveal that during the 1990s, the share of factories employing more than 5,000 persons fell from 15.9 per cent of manufacturing employment in 1990-91 to 5.2 per cent of manufacturing employment in 1997-98. This should have led to a fall in the average employment size in manufacturing: but as this did not happen, it appears that there was an opposite influence caused by the entry of new firms employing 100 to 500 persons (or more).

Overall, it seems that trade liberalization had a favourable effect on average enterprise size, tending to raise employment per factory.

Table 35: **Employment per factory, by industry groups 1973-74 to 1997-98**

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	57.8	199.9	150.0	109.5	69.6	84.4
1974-75	73.7	186.3	157.7	104.8	69.6	88.6
1975-76	74.7	189.3	142.2	107.6	61.4	82.9
1976-77	66.9	173.2	128.5	101.0	56.8	75.7
1977-78	67.4	207.1	129.5	98.8	58.6	76.6
1978-79	62.1	203.2	126.5	100.1	59.0	75.3
1979-80	59.7	289.6	121.5	99.0	62.6	75.2
1980-81	66.3	266.7	113.4	99.4	59.7	74.7
1981-82	63.3	238.1	104.1	86.6	55.7	68.9
1982-83	67.2	692.5	126.7	103.4	66.2	80.1
1983-84	58.1	232.9	119.9	99.3	63.2	74.7
1984-85	56.4	237.6	118.9	103.1	62.4	74.5
1985-86	50.8	194.8	104.4	94.6	58.6	67.9
1986-87	55.1	227.5	105.5	95.7	58.6	69.5
1987-88	55.7	112.1	101.2	96.5	59.3	69.4
1988-89	55.3	152.3	100.1	91.8	59.2	68.6
1989-90	57.4	148.5	102.4	89.5	58.8	69.0
1990-91	57.2	158.8	96.0	90.7	58.1	68.2
1991-92	57.5	163.2	92.7	87.9	58.2	67.4
1992-93	60.3	170.0	89.3	91.6	57.9	68.2
1993-94	63.7	143.7	80.9	84.5	55.9	66.2
1994-95	62.1	143.0	85.2	87.6	57.7	67.8
1995-96	59.1	138.9	89.4	95.0	58.3	68.9
1996-97	61.2	135.0	86.5	84.9	60.7	68.7
1997-98	62.2	88.1	87.3	89.5	58.3	68.3

Growth rate (per cent per annum)

1973 to 1989	-1.53	-1.18	-2.51	-0.86	-0.55	-1.31
1990 to 1997	0.98	-6.76	-1.15	-0.16	0.33	0.19
1973 to 1997	-0.53	-2.79	-2.41	-0.82	-0.42	-0.91

Composition of employees

The ratio of workers to total employees is shown in table 36. It is clear that there has been very little change in this ratio in all five industry groups. At the aggregate level, the proportion of production workers in total employees decreased at the rate of 0.2 per cent per annum in the 1970s and 1980s and increased at the rate of 0.1 per cent per annum in the 1990s.

More interesting to study are the changes in the proportion of women workers as shown in table 37. Unfortunately ASI provides very little data on the distribution of employment by sex. For 1995-96, the required data could be obtained at three-digit level, which have been used for tables 28 and 29. For 1989-90, such data are provided in the detailed ASI results at 4-digit level, and have been used for preparing table 37. The data at 4-digit level have been aggregated to obtain estimates at three-digit level. Since such information is available only for some selected years, a time-series cannot be created.

At the aggregate manufacturing level, the proportion of female workers was 14.2 per cent in 1989-90 and 11.5 per cent in 1995-96. Thus, the available figures indicate that in the post-economic-reforms period, there has been a fall in the proportion of women employed in organized manufacturing. Looking at the proportion of women workers in different industry groups, this increased in export-oriented industries, from 9.9 per cent in 1989-90 to 13.2 per cent in 1995-96. But in non-trading industries and in "food, beverages and tobacco products" industries there was a fall (as also in import-competing industries). In the case of "food, beverages and tobacco products" industries, the proportion of women employed fell from 33.7 per cent in 1989-90 to 25.6 per cent in 1995-96.

What explains this fall? A closer examination of the data reveals that it was not due to a change in the industry composition. In a number of industries that employ a relatively large number of women, the proportion of women workers fell between 1989-90 and 1995-96. These include processing edible nuts, coffee curing, roasting and grinding, tobacco stemming and re-drying, manufacture of *bidis* (Indian cigarettes), canning and preservation of fruits and vegetables, and their processing and canning and preservation of fish. The average ratio of women workers to all directly employed workers fell in these industries, from about 70 per cent in 1989-90 to 50 per cent in 1995-96. The reason for the decline in the share of women workers is not clear, but one possibility could be the introduction of more sophisticated techniques of production and processing.

Table 36: **Proportion of workers in total employees, by industry groups, 1973-74 to 1997-98**

(per cent)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	84.0	63.5	88.3	73.5	79.6	81.6
1974-75	80.2	59.6	87.9	71.1	78.3	79.9
1975-76	78.1	63.3	88.1	71.3	78.0	79.3
1976-77	79.8	58.4	87.5	71.1	77.4	79.3
1977-78	80.3	56.3	87.1	69.4	76.4	78.6
1978-79	81.6	58.3	87.0	69.3	76.8	79.0
1979-80	79.7	57.7	86.9	70.3	73.5	77.4
1980-81	79.2	58.8	86.8	68.6	76.6	77.9
1981-82	80.5	58.2	86.6	70.2	76.2	78.2
1982-83	81.1	84.4	86.2	69.9	76.4	78.4
1983-84	82.9	67.4	86.5	69.5	75.3	78.2
1984-85	78.4	62.8	86.5	69.4	76.2	77.4
1985-86	80.6	61.4	85.5	70.2	76.6	77.8
1986-87	81.3	60.5	86.0	70.2	76.2	77.9
1987-88	81.2	63.3	85.9	69.8	75.8	77.5
1988-89	80.7	63.0	85.8	69.5	75.5	77.3
1989-90	82.1	67.0	85.6	69.1	76.0	77.7
1990-91	81.2	69.3	85.5	68.7	75.7	77.2
1991-92	81.3	67.3	85.1	68.3	75.0	76.9
1992-93	80.6	68.4	84.2	68.3	74.8	76.4
1993-94	79.9	69.0	84.4	68.4	74.4	76.2
1994-95	80.7	68.3	84.1	68.5	74.8	76.5
1995-96	81.7	68.1	84.0	66.9	74.5	76.1
1996-97	81.7	68.1	84.7	68.8	74.9	76.9
1997-98	82.5	69.3	84.2	69.4	77.0	78.0

Growth rates (per cent per annum)

1973 to 1989	0.05	0.54	-0.19	-0.19	-0.21	-0.22
1990 to 1997	0.22	0.03	-0.16	0.06	0.13	0.08
1973 to 1997	0.06	0.67	-0.20	-0.19	-0.16	-0.18

Table 37: Proportion of women workers, by industry group, 1989-90 and 1995-96

Industry group	Proportion of women workers in directly employed workers (per cent)	
	1989-90	**1995-96**
Food, beverages, tobacco	33.7	25.6
Petroleum products	1.2	1.0
Export-oriented	9.9	13.2
Import-competing	4.2	3.6
Non-trading	11.1	7.6
All industries	14.2	11.5

4.4   Trade and wages

How trade reforms have influenced the wage inequality between skilled and unskilled labour in Indian manufacturing, is a question of particular interest to this study. However, ASI does not contain information on wages rates of skilled and unskilled labour. Data are available on the number of workers and wages paid to them (excluding value of benefits). Similarly, data are available on the number of persons engaged (including working proprietors and family members actively engaged in the work of the factory even without pay) and total emoluments (including imputed value of benefits) of employees. From these data, one can obtain, at best, the average income received by workers or employees (persons engaged, employee or self-employed), which can be taken as a rough indicator of the wage rate.

Since import-competing industries are, in general, more skill-intensive than the export-oriented industries, the inter-temporal movements in the ratio of average wages per worker (or average emoluments per employee) between the two groups can provide some indication of the narrowing, or otherwise, of wage inequality between skilled and unskilled labour. This is the approach taken here for the analysis of wage inequality, as done by Ghose (2000).

Whether freer trade will lead to an increase in the ratio of the wage rate of unskilled to skilled labour in the manufacturing sector of a developing country depends crucially on the initial conditions prevailing (as noted by Ghose, 2000). The important question is whether a growth of export-oriented industries and the accompanying changes in industrial structure lead to a tightening of the market for industrial labour. Since a surplus labour market condition was prevailing in Indian manufacturing when the trade reforms were introduced in India, and the condition is much the same even today, one would not expect a reduction in wage inequality in the post-reform period, as a result of the trade liberalization. Indeed, the analysis by Ghose (2000) shows that there was no reduction.

Another question of interest is how the real wages have grown in the post-reform period compared to their growth in the earlier period. There are reasons to believe that in the initial years of reform, trade liberalization will have an adverse effect on the growth of real wages. Inasmuch as trade reforms (along with reforms in industrial policy) create a more competitive environment, there will be stronger pressure on domestic manufacturers to reduce costs, and they may therefore try to contain increases in nominal wages. This should result in a downward pressure on growth of real wages. To argue this point differently, as there was a general reduction in the effective rates of protection of domestic industries, thanks to tariff and trade policy reforms, the processing margins must have got squeezed, causing a downward pressure on the income of primary factors, including labour.[40]

The adverse effects of trade reforms on growth of real wages could have been countered by an upward pressure on wages emanating from a tightening of the industrial labour market, if trade reforms had led to a large increase in the demand for labour. This has not happened so far. There was a marked acceleration in employment growth in organized manufacturing in the 1990s (noted in the previous section), but there was no such acceleration in employment growth in unorganized manufacturing, which accounts for the bulk of industrial employment, and thus influences wage determination.

Turning now to actual trends in real wages, table 38 shows how the real wages per worker have varied over the years in the five industry groups and the manufacturing sector. Similarly table 39 shows the inter-temporal variations in emoluments per employee.[41] In both cases, the consumer price index for industrial workers has been used to deflate nominal labour income. It is evident from both these tables that the growth in real wages has slowed down appreciably in the post-reform period. At the aggregate level, the growth rate of real wages per worker declined from 3.29 per cent per annum during the period 1973-74 to 1989-90, and to 1.16 per cent per annum during the period 1990-91 to 1997-98. The growth rate of real emoluments per employee declined from 2.53 to 1.90 per cent per annum between the two periods. As regards the industry groups, the trend growth rates in real wages/emoluments in the period, 1990-91 to 1997-98, were lower than those in the period 1973-74 to 1989-90, in three out of the five industry

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[40] In a study of the Mexican manfucturing sector, Revenga (1997) finds that trade reforms reduced the rents available for capture by firms and workers, and this had a negative effect on wages.

[41] The reported figures on emoluments in ASI 1995-96 are somewhat on the high side in relation to the figures reported in ASI 1994-95 and 1996-97. The figures on wages do not show any such sharp increase. The figures on emoluments for 1995-96 have therefore been adjusted downward, considering the growth rate in wages between 1994-95 and 1995-96 (i.e. the same growth rate has been applied to emoluments).

groups. One exception is the import-competing industries group, which had almost the same rate of growth of real wages during the two periods and somewhat faster growth in emoluments per employee in the post-reform period. The other exception is the petroleum products group, but this group accounts for a very small share of employment in organized manufacturing.

Table 38: Real wages per worker per annum (Rs. '000) by industry groups, 1973-74 to 1997-98 (at 1981-82 prices)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import - competing	Non-trading	All industries
1973-74	2.81	15.78	6.83	8.31	6.12	6.10
1974-75	2.01	15.86	5.42	8.22	5.44	5.15
1975-76	2.37	16.43	7.15	9.27	6.11	6.10
1976-77	2.46	17.61	7.49	10.05	6.65	6.38
1977-78	2.41	17.94	7.27	9.75	6.37	6.15
1978-79	2.92	19.44	8.08	11.79	7.43	7.20
1979-80	2.90	17.03	8.38	11.31	7.43	7.26
1980-81	2.65	12.75	8.51	11.37	7.70	7.21
1981-82	2.61	11.17	8.02	10.86	7.64	6.95
1982-83	3.01	11.04	7.98	11.34	7.89	7.28
1983-84	3.60	15.99	8.10	11.70	8.20	7.75
1984-85	4.00	19.23	8.49	12.72	8.67	8.43
1985-86	4.25	20.82	8.74	12.74	8.71	8.56
1986-87	4.18	23.31	9.03	12.74	8.96	8.68
1987-88	4.29	19.18	8.71	12.90	9.01	8.65
1988-89	4.51	23.70	8.85	13.51	9.37	9.00
1989-90	4.79	22.99	9.08	13.95	9.92	9.30
1990-91	4.96	22.47	9.28	13.92	9.90	9.42
1991-92	4.94	23.09	8.82	12.53	9.70	8.96
1992-93	4.86	23.51	9.11	12.98	9.73	9.10
1993-94	4.98	20.18	8.68	13.76	9.88	9.25
1994-95	5.12	23.98	8.77	15.31	10.32	9.74
1995-96	5.22	31.32	9.01	15.74	10.61	10.13
1996-97	5.42	26.97	8.44	15.22	10.28	9.76
1997-98	4.94	26.34	8.73	15.83	9.97	9.66

Growth rate (% per annum)

1973 to 1989	4.88	2.07	2.10	2.98	3.29	3.15
1990 to 1997	0.81	3.48	-0.80	3.04	0.77	1.16
1973 to 1997	3.99	2.61	1.20	2.34	2.49	2.38

Note: Consumer price index for industrial workers is used for deflation.

Table 39: Real emoluments per employee per annum (Rs. '000) by industry groups, 1973-74 to 1997-98 (at 1981-82 prices)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
1973-74	3.84	22.19	7.63	11.39	7.91	7.78
1974-75	2.78	21.26	7.62	10.97	7.30	7.09
1975-76	3.22	24.24	8.08	12.07	7.97	7.70
1976-77	3.18	24.82	8.30	13.01	8.70	8.03
1977-78	3.17	23.40	8.61	12.82	8.55	8.02
1978-79	3.57	23.98	8.71	13.32	9.04	8.47
1979-80	3.52	21.39	9.11	13.59	9.47	8.80
1980-81	3.21	14.47	9.10	13.43	9.22	8.48
1981-82	3.17	13.49	8.76	13.16	9.19	8.32
1982-83	4.16	14.52	8.68	13.65	9.60	8.88
1983-84	4.52	21.75	8.79	14.01	9.83	9.31
1984-85	4.93	26.02	9.21	15.38	10.53	10.14
1985-86	5.17	26.30	9.40	15.15	10.47	10.20
1986-87	5.11	28.51	9.72	15.50	10.74	10.40
1987-88	5.22	23.92	9.45	15.64	10.83	10.42
1988-89	5.41	26.39	9.46	15.60	10.93	10.51
1989-90	5.77	26.93	9.75	16.70	11.63	11.06
1990-91	5.89	25.06	9.93	16.38	11.55	11.07
1991-92	5.90	26.72	9.51	15.05	11.21	10.56
1992-93	5.88	26.15	9.65	17.18	11.54	11.16
1993-94	6.11	24.34	9.51	17.15	11.79	11.27
1994-95	6.25	27.58	9.63	18.12	12.48	11.77
1995-96	6.46	35.92	9.88	18.22	12.78	12.20
1996-97	6.77	30.50	9.34	18.53	12.60	12.03
1997-98	6.28	31.48	9.88	19.25	12.60	12.12

Growth rate (% per annum)

1973 to 1989	4.14	1.08	1.37	2.24	2.49	2.53
1990 to 1997	1.72	3.97	-0.05	2.85	1.85	1.90
1973 to 1997	3.62	1.76	0.90	2.04	2.12	2.17

Note: Consumer price index for industrial workers is used for deflation. Reported figures on emoluments for 1995-96 have been adjusted downwards, as explained in the text.

Table 40 presents the growth rates in the real product wage. To obtain the real product wage, nominal wages (for each three-digit industry) have been deflated by output price indices. It is seen that the growth rate of the real product wage was lower in the 1990s than in the 1980s. At the aggregate level, this growth rate declined, from 5.43 per cent per annum during the 1980s, and to 2.57 per cent per annum during the 1990s. A comparison between the periods 1973-74 to 1989-90 and 1990-91 to 1997-98 shows a fall in the growth rate of the real product wage during the latter period for aggregate manufacturing, and for the "food, beverages and tobacco products" group, non-trading industries group and the export-oriented industries group. However, in the import-competing industries group, the growth rate of the real product wage was more rapid in the 1990s than during 1973-74 to 1989-90.

Table 40: Growth rate of real wages by industry groups, 1973-74 to 1997-98

(per cent per annum)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import-competing	Non-trading	All industries
Real wages per worker						
1973 to 1989	4.88	2.07	2.10	2.98	3.29	3.15
1980 to 1989	6.94	8.81	1.25	2.59	2.82	3.22
1990 to 1997	0.81	3.48	-0.80	3.04	0.77	1.16
1973 to 1997	3.99	2.61	1.20	2.34	2.49	2.38
Real product wage per worker						
1973 to 1989	6.04	0.94	3.51	3.27	3.12	3.67
1980 to 1989	9.20	12.50	3.67	4.72	4.84	5.43
1990 to 1997	0.55	3.97	-0.68	4.58	3.01	2.57
1973 to 1997	4.74	2.51	2.12	3.18	3.22	3.26

Although there are differences in growth of real wages in the different industry groups, the overall conclusion that may be drawn from tables 38, 39 and 40 is that there has been an appreciable slowdown in the growth of real wages and real product wages in Indian manufacturing industries in the 1990s compared with the 1970s and 1980s, especially in comparison with the decade of the 1980s.

Since there was a slowdown in both real wages and real product wages, it clearly was not caused by changes in relative prices. A deceleration in labour productivity growth or a decline in the ratio of wages to productivity could be two possible causes of the slowdown in the growth of real wages. These two aspects have therefore been investigated. Table 41 shows real value added per employee (labour productivity) in the five industry groups in the period, 1973-74 to 1997-98. Table 42 shows trends in the ratio of real wages to real labour productivity. Labour productivity in manufacturing grew at a rate of 6.27 per cent per annum in the 1990s as against 4.58 per cent per annum in the 1970s and 1980s. Clearly, there has been an acceleration, rather than a deceleration in labour productivity growth in manufacturing in the 1990s. This was found in four industry groups, being relatively more marked in the import-competing industries group and non-trading industries group. It is only in the "food, beverages and tobacco" industries group that there was a slight deceleration in labour productivity growth in the 1990s.

Since there is no indication of a fall in the growth rate of labour productivity for most of the industry groups in the 1990s, this cannot provide an explanation for the slowdown in the growth of real wages. We therefore consider the other possibility, namely a fall in the ratio of wages to productivity. Indeed, table 42 shows that there was an accelerated fall in this ratio in the 1990s: in the aggregate manufacturing sector this ratio fell at the rate of 1.52 per cent per annum during the 1970s and 1980s, and at 2.88 per cent per annum during the 1990s. A similar pattern is seen in all the industry groups, except petroleum products.

The accelerated fall in the ratio of real wages to labour productivity is most marked for export-oriented industries and "food products, beverages and tobacco products" industries. These two industry groups also had the most marked fall in the growth rate of real emoluments per employee, as well as the most marked increase in growth rates of employment.

What has led to the accelerated fall in the ratio of real wages to labour productivity? Changes in the composition of workers/employees might be considered a possible cause, but there are no indications of this. As noted earlier, the ratio of production workers to total employees has not changed much in the post-reform period (see table 36). There has been a slight decrease in the proportion of women workers, but this cannot, obviously, explain the slowdown in growth of real wages. The food, beverages and tobacco products industries reduced the proportion of women workers substantially; yet, there has been a marked slowdown in the growth of real wages. The share of directly employed workers in total workers increased slightly, from about 86 per cent in 1989-90 to 87 per cent in 1995-96. Thus, this cannot be considered a cause of slowdown in growth of real wages either. Clearly, the explanation lies elsewhere.

Table 41: Real value added per employee (Rs. '000 per annum) by industry groups, 1973-74 to 1997-98

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import -competing	Non-trading	All industries
1973-74	9.29	244.57	13.41	33.26	20.12	19.23
1974-75	9.26	205.63	12.82	35.90	20.31	19.16
1975-76	8.13	204.04	12.13	32.65	19.01	17.72
1976-77	8.51	267.63	12.61	36.26	20.66	19.07
1977-78	8.46	277.71	12.70	35.13	21.18	19.19
1978-79	10.23	197.58	14.43	37.82	23.07	21.12
1979-80	8.96	180.09	14.88	34.89	20.07	19.50
1980-81	6.45	130.21	14.94	34.42	20.77	18.78
1981-82	7.68	122.13	14.36	37.85	21.35	19.85
1982-83	9.85	117.09	13.30	39.36	22.89	21.40
1983-84	15.58	109.92	15.22	43.06	25.91	25.01
1984-85	15.25	204.86	14.37	47.42	26.65	26.45
1985-86	15.69	249.28	16.17	47.46	28.18	27.98
1986-87	16.76	479.24	18.80	46.45	29.77	29.76
1987-88	16.76	489.39	18.43	51.08	31.53	31.59
1988-89	20.30	926.31	19.51	60.70	34.14	37.39
1989-90	20.97	606.02	21.90	65.70	36.37	38.29
1990-91	19.97	536.89	23.83	72.77	40.89	41.69
1991-92	20.41	363.13	23.24	66.86	41.74	39.96
1992-93	18.79	547.77	24.08	78.06	40.62	42.59
1993-94	22.95	519.53	28.88	83.15	48.74	48.50
1994-95	25.64	564.27	29.74	96.66	50.54	52.84
1995-96	25.03	667.71	25.26	101.17	54.90	55.78
1996-97	28.93	707.44	28.84	103.32	57.68	58.22
1997-98	26.17	251.04	31.10	113.68	61.64	59.49

Growth rate (% per annum)

1973 to 1989	6.11	6.01	3.00	3.79	3.78	4.58
1990 to 1997	5.49	7.41	3.71	7.41	6.47	6.27
1973 to 1997	5.80	6.51	4.06	5.38	5.06	5.53

Note: Industry-wise wholesale price indices are used for deflation. For petroleum products, growth rates have been computed after excluding 1997-98, owing to a wide fluctuation prior to that.

Table 42: Share of real emoluments in real value added by industry groups, 1973-74 to 1997-98 (emoluments and value added at 1981-82 prices)

	Food, beverages, tobacco	Petroleum products	Export-oriented	Import - competing	Non-trading	All industries
1973-74	0.408	0.178	0.543	0.419	0.484	0.461
1974-75	0.320	0.151	0.594	0.364	0.457	0.429
1975-76	0.414	0.160	0.706	0.400	0.469	0.473
1976-77	0.361	0.116	0.643	0.375	0.440	0.430
1977-78	0.398	0.113	0.640	0.407	0.444	0.444
1978-79	0.421	0.166	0.556	0.377	0.417	0.420
1979-80	0.415	0.154	0.529	0.394	0.469	0.440
1980-81	0.450	0.120	0.558	0.389	0.440	0.437
1981-82	0.412	0.110	0.610	0.348	0.430	0.419
1982-83	0.475	0.130	0.665	0.363	0.421	0.429
1983-84	0.343	0.226	0.622	0.367	0.408	0.411
1984-85	0.384	0.153	0.652	0.367	0.424	0.419
1985-86	0.380	0.121	0.636	0.355	0.400	0.401
1986-87	0.362	0.071	0.634	0.391	0.408	0.408
1987-88	0.381	0.063	0.625	0.376	0.400	0.396
1988-89	0.328	0.039	0.567	0.314	0.377	0.337
1989-90	0.315	0.065	0.483	0.300	0.368	0.332
1990-91	0.360	0.064	0.458	0.281	0.335	0.318
1991-92	0.360	0.098	0.463	0.285	0.325	0.322
1992-93	0.381	0.061	0.468	0.271	0.345	0.318
1993-94	0.304	0.059	0.382	0.258	0.300	0.283
1994-95	0.270	0.063	0.351	0.232	0.303	0.266
1995-96	0.316	0.078	0.413	0.227	0.295	0.269
1996-97	0.293	0.060	0.366	0.244	0.294	0.271
1997-98	0.283	0.167	0.381	0.243	0.286	0.276

Growth rate (% per annum)

1973 to 1989	-0.78	-6.06	-0.27	-1.15	-1.37	-1.52
1990 to 1997	-4.03	-2.19	-3.47	-2.87	-2.45	-2.88
1973 to 1997	-1.34	-4.95	-2.23	-2.41	-2.17	-2.46

Note: Both emoluments and value added are deflated by product price indices.
For computing growth rates for petroleum products group, 1997-98 is excluded.
Figures on emoluments for 1995-96 are adjusted downwards as explained in the text.

That there was a marked fall in the growth rate of the real product wage in Indian manufacturing in the 1990s has been noted in earlier studies by Goldar (2000) and Tendulkar (2000). Based on these studies, it seems reasonable to argue that the slow-down in growth of the real product wage in the 1990s has contributed to an increase in the growth rate of manufacturing employment. There is no definite explanation for what caused the slowdown in the growth rate of real wages and real product wages, and the accelerated fall in the ratio of real wages to labour productivity in Indian manufacturing in the 1990s. This is an issue that future research will have to investigate. However, it would, perhaps, not be wrong to argue that trade liberalization is one of the major causes of the slowdown in growth of real wages, since it has created a more competitive environment.

Inequality in wages

Table 43 shows the ratio of wage rates between export-oriented, import-competing and non-trading industries, and table 44 shows these ratios for the subgroups of export-oriented and import-competing industries. The ratio of wage rates in export-oriented industries to those in import-competing industries declined significantly in the period 1973-74 to 1989-90, and even more steeply in subsequent years. A similar pattern can be seen for the ratio of wage rates in export-oriented industries to non-trading industries. It appears, therefore, that the ratio of wage rates of unskilled workers to skilled workers did not increase in the post-reform period. Rather, there was possibly a widening of the wage gap between skilled and unskilled labour.

An analysis for the subgroups (table 44) shows that the ratio of wages between groups XN and MN (i.e. exports and imports mainly with developed countries) have declined in the 1970s and 1980s, with an even steeper fall in the 1990s. This is the same pattern as observed between the wage rates in export-oriented and import-competing industries in table 43. The interpretation is also similar – there is indication of a widening gap in the wage rates between skilled and unskilled workers in the 1990s. The ratio of wages between groups XS and MS (exports and imports mainly with developing countries) shows a downward trend in both the pre- and post-reform periods, and there is no indication of an accelerated fall in the wage ratio. Instead, it remains by and large stable in the 1970s and 1980s, with a fall in the 1990s.

Table 43: **Ratio of wage rates between export-oriented, import-competing and non-trading industry groups**

	Emoluments per employee			Wages per worker		
	EO to NT	IC to NT	EO to IC	EO to NT	IC to NT	EO to IC
1973-74	0.964	1.439	0.670	1.115	1.357	0.822
1974-75	1.044	1.503	0.695	0.997	1.511	0.660
1975-76	1.014	1.514	0.670	1.170	1.516	0.771
1976-77	0.954	1.495	0.638	1.127	1.511	0.746
1977-78	1.008	1.500	0.672	1.141	1.531	0.745
1978-79	0.964	1.473	0.654	1.088	1.586	0.686
1979-80	0.962	1.435	0.670	1.128	1.523	0.741
1980-81	0.987	1.458	0.677	1.105	1.477	0.748
1981-82	0.953	1.432	0.666	1.050	1.422	0.738
1982-83	0.904	1.422	0.636	1.011	1.438	0.703
1983-84	0.894	1.425	0.627	0.988	1.427	0.692
1984-85	0.875	1.461	0.599	0.980	1.467	0.668
1985-86	0.898	1.448	0.621	1.003	1.463	0.686
1986-87	0.904	1.442	0.627	1.008	1.422	0.709
1987-88	0.873	1.445	0.604	0.967	1.431	0.675
1988-89	0.865	1.428	0.606	0.944	1.442	0.655
1989-90	0.838	1.436	0.584	0.915	1.407	0.650
1990-91	0.860	1.419	0.606	0.937	1.407	0.666
1991-92	0.848	1.343	0.632	0.910	1.293	0.704
1992-93	0.836	1.489	0.561	0.936	1.334	0.701
1993-94	0.806	1.455	0.554	0.878	1.393	0.631
1994-95	0.772	1.452	0.532	0.849	1.483	0.573
1995-96	0.773	1.426	0.542	0.849	1.483	0.573
1996-97	0.741	1.471	0.504	0.821	1.481	0.554
1997-98	0.784	1.528	0.513	0.875	1.588	0.551

Growth rates (per cent per annum)

1973 to 1989	-1.13	-0.26	-0.87	-1.19	-0.31	-0.88
1990 to 1997	-1.90	1.00	-2.90	-1.57	2.27	-3.84
1973 to 1997	-1.21	-0.08	-1.13	-1.29	-0.15	-1.14

EO = export oriented; IC = import-competing; NT = non-trading.

Table 44: **Ratio of wage rates between the export-oriented and import-competing industry subgroups**

	Emoluments per employee				Wages per worker
	XS/XN	MS/MN	XS/MS	XN/MN	XN /MN
1973-74	1.199	1.114	0.644	0.598	0.717
1974-75	1.355	1.213	0.639	0.572	0.639
1975-76	1.313	1.104	0.660	0.555	0.643
1976-77	1.221	1.125	0.611	0.563	0.649
1977-78	1.274	1.151	0.637	0.576	0.652
1978-79	1.327	1.237	0.593	0.553	0.569
1979-80	1.220	1.139	0.637	0.595	0.658
1980-81	1.192	1.172	0.627	0.616	0.668
1981-82	1.157	1.243	0.583	0.626	0.656
1982-83	1.266	1.156	0.603	0.550	0.602
1983-84	1.319	1.163	0.595	0.525	0.572
1984-85	1.269	1.153	0.573	0.520	0.578
1985-86	1.207	1.194	0.570	0.564	0.624
1986-87	1.202	1.257	0.551	0.577	0.652
1987-88	1.261	1.268	0.537	0.540	0.594
1988-89	1.245	1.132	0.588	0.535	0.575
1989-90	1.269	1.150	0.564	0.511	0.570
1990-91	1.237	1.259	0.542	0.551	0.610
1991-92	1.296	1.339	0.549	0.567	0.636
1992-93	1.210	1.316	0.485	0.528	0.646
1993-94	1.310	1.203	0.529	0.486	0.564
1994-95	1.356	1.191	0.523	0.459	0.491
1995-96	1.318	1.221	0.522	0.484	0.507
1996-97	1.222	1.174	0.484	0.464	0.497
1997-98	1.188	1.109	0.511	0.477	0.516

Growth rate (% per annum)

1973 to 1989	-0.15	0.28	-1.01	-0.58	-0.87
1990 to 1997	-0.34	-2.12	-0.99	-2.78	-3.89
1973 to 1997	0.00	0.24	-1.12	-0.88	-1.00

XS= export oriented, significant exports (25% or more) to developing countries;
XM = export-oriented, exporting less than 25% to developing countries;
MS and MN = import-competing industry subgroups, defined similarly.

It was noted in Section 4.2 above that, among the five industry groups, the "food beverages and tobacco products" industries group pays the lowest wages. Table 45 compares the wage rate in this group with the wage rates in non-trading and import-competing industries. It is seen that in the 1970s and 1980s, the ratio of wages in the "food, beverages and tobacco products" industries increased significantly relative to wages in the import-competing and non-trading industries; but in the 1990s, it fell significantly, at the rate of 2.23 per cent per annum. This is again indicative of the widening wage gap between skilled and unskilled labour.

The last two columns of table 45 present a very simple measure of wage inequality. This measure is formed by taking the difference between the wage rate in import-competing industries (highest wages, ignoring petroleum products) and in "food, beverages and tobacco products" industries (lowest wages), and dividing the figure so obtained by the average wage rate in the manufacturing sector. This computation has been done separately for wages per worker and emoluments per employee. It is clearly seen from table 45 that this measure of wage inequality has been declining in the 1970s and 1980s, but increasing significantly in the 1990s.

In table 46, the analysis of growth in wage rates is carried further. The period covered for the analysis is 1989-90 to 1997-98. The industries belonging to different industry groups are classified according to the number of women employed and the skill intensity (value added per employee taken as a proxy), and the behaviour of real wages is studied for the different sets of industries. The table clearly shows that growth in the wage rate has been relatively faster in those industries which have a higher skill intensity. This is indicative of increasing wage inequality in Indian manufacturing (also shown in tables 43 and 44). As regards the relationship between growth in the wage rate and the extent of women employed, there are differences among industry groups. But for the two industry groups which account for the dominant share of women employed in Indian manufacturing (organized), the growth rate of real wages is found to be higher for industries which employ a relatively higher proportion of women. This is indicative of a relatively faster increase in wage rates for women workers, possibly showing that there has been, in the post-reform period, some reduction in the difference between the average earnings of men and women employed in organized Indian manufacturing.

The finding that in the period after trade liberalization there has been a widening gap in wage inequality, calls for an explanation. It would appear that trade liberalization increased the demand for unskilled or low-skilled labour, but with little impact on its real wages because of excess supply conditions. On the other hand, the demand for skilled labour has continued to rise; import competition and FDI probably gave a boost to the wages of this category of workers. The net result has been greater wage inequality.

Table 45: Ratio of wage rates and dispersion in labour income

	Ratio of wage rates (Wages per worker)		Dispersion in labour income	
	FBT to NT	**FBT to IC**	**Wages per worker**	**Emoluments per employee**
1973-74	0.459	0.338	0.90	0.97
1974-75	0.370	0.245	1.20	1.16
1975-76	0.387	0.255	1.13	1.15
1976-77	0.370	0.245	1.19	1.22
1977-78	0.378	0.247	1.20	1.20
1978-79	0.392	0.247	1.23	1.15
1979-80	0.391	0.257	1.16	1.14
1980-81	0.345	0.233	1.21	1.21
1981-82	0.341	0.240	1.19	1.20
1982-83	0.382	0.266	1.14	1.07
1983-84	0.438	0.307	1.05	1.02
1984-85	0.462	0.315	1.03	1.03
1985-86	0.488	0.334	0.99	0.98
1986-87	0.466	0.328	0.99	1.00
1987-88	0.476	0.333	1.00	1.00
1988-89	0.481	0.334	1.00	0.97
1989-90	0.483	0.343	0.98	0.99
1990-91	0.501	0.356	0.95	0.95
1991-92	0.509	0.394	0.85	0.87
1992-93	0.499	0.374	0.89	1.01
1993-94	0.504	0.362	0.95	0.98
1994-95	0.496	0.334	1.05	1.01
1995-96	0.492	0.332	1.04	0.96
1996-97	0.528	0.356	1.00	0.98
1997-98	0.495	0.312	1.13	1.07

Growth rates (per cent per annum)

1973 to 1989	1.59	1.90	-0.94	-1.09
1990 to 1997	0.04	-2.23	3.08	1.58
1973 to 1997	1.50	1.66	-0.75	-0.82

FBT= food, beverages and tobacco; NT = non-trading; IC = import-competing
Regarding dispersion in labour income, see text for the measure used.

Table 46: Growth of real wage rates, industry classified by trade orientation, women employed and skill levels, 1989-90 to 1997-98

	Growth rate (% per annum)	
	Wages per worker	**Emoluments per employee**
Non-trading		
Higher employment of women	2.4	0.7
Low employment of women	-0.3	1.6
Low skill levels	-0.2	0.4
High skill levels	-0.1	1.5
Export-oriented		
Higher employment of women	1.5	2.0
Low employment of women	-0.2	0.6
Low skill levels	-0.9	-0.2
High skill levels	1.7	2.5
Import-competing		
Higher employment of women	-2.9	-1.7
Low employment of women	1.6	1.8
Low skill levels	-1.9	-1.0
High skill levels	1.6	1.8
Food, beverages, tobacco products		
Higher employment of women	0.9	2.1
Low employment of women	0.6	1.0
Low skill levels	0.2	0.8
High skill levels	1.3	1.8

Note: Growth rates are based on point-to-point comparison.
Significant employment of women = women workers constituting 10% or more
of total workers. Skill levels in industry are based on value added per employee,
as data on skill composition of employees are not available.

Before concluding this section, it would be useful to make a few observations on growth of employment in the unorganized manufacturing sector, which has not been covered in the above analysis. Since the unorganized sector accounts for about four-fifths of manufacturing employment in India (as mentioned earlier), trends in employment in this sector in the post-reform period are of interest. Although very little data is available for the unorganized manufacturing sector, it is, nevertheless, possible to make some rough estimates of employment in this sector by using the results of "employment and unemployment" surveys, undertaken by the National Sample Survey Organisation (NSSO) from time to time[42], coupled with ASI data.   The NSS survey results provide an estimate of employment for aggregate manufacturing, and by subtracting employment estimates for organized manufacturing, as given in ASI, the unorganized component may be derived.

Table 47 presents estimates of growth rates of employment in organized, unorganized and total manufacturing in various sub-periods during 1973-74 to 1999-00. It shows that employment in the unorganized manufacturing sector grew rapidly during the 1970s and 1980s, but decreased significantly in the 1990s, while employment in organized manufacturing accelerated.   The deceleration in employment growth in unorganized manufacturing brought down the growth rate of aggregate employment in manufacturing.

Table 47: Growth rate of employment in manufacturing (per cent per annum)

Period	Organized manufacturing	Unorganized manufacturing	Total manufacturing
1973-78	4.88	6.16	5.83
1978-83	1.86	3.69	3.23
1983-88	-0.45	3.97	3.00
1988-94	2.31	1.08	1.34
1994-2000	3.68	1.45	1.87

Source: Computed from NSSO and ASI data. Estimates of total manufacturing employment for 1993-94 and 1999-2000 have been taken from Sundaram (2001).

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[42] For example, National Sample Survey Organisation (2000). *Employment and Unemployment in India*, 1999-2000, Key Results, NSS 55th Round, July 1999 – June 2000, National Sample Survey Organisation, Department of Statistics, Government of India, May 2001.

The deceleration in employment growth in unorganized manufacturing in the 1990s probably has little to do with trade liberalization and other economic reforms. It may, in the main, be a reflection of some structural changes under way in this sector.

5.   Conclusion

There was major trade liberalization in India beginning from July 1991: tariff rates were drastically reduced, export incentives were rationalized, quantitative restrictions on imports (and exports) were substantially eased, and the exchange rate became largely market determined. Complementary changes were undertaken in industrial policy and policies relating to FDI and foreign technology imports. This paper has examined the effects of trade liberalization on employment and wages in Indian manufacturing. The key questions investigated were: whether trade liberalization led to a faster growth in manufacturing employment; whether there was an increase in employment elasticity; whether there was an increase in the share of export-oriented industries in manufacturing employment; and whether there was a reduction in wage inequality between skilled and unskilled labour in Indian manufacturing. For the purpose of the study, trends in trade were analysed for the period 1970-71 to 1999-2000. Also, trends in employment and wages in the organized manufacturing sector and major industry groups were analysed for the period 1973-74 to 1997-98.

The analysis of trade data revealed a sharp break in trends in 1991: the growth rate of both exports and imports accelerated in the 1990s compared with the previous decade. Also, there was a significant increase in the ratio of exports to GDP and imports to GDP. The analysis revealed further that there was a rapid growth in manufactured exports in the 1990s, and in the share of manufactured exports in total exports. The trade balance for manufactured goods turned from negative to positive. The analysis also revealed a substantial rise in FDI inflows in the 1990s, attributable to the economic reforms, including trade liberalization.

An analysis of the factor content of trade (based on data for 1995-96) showed that export-oriented industries have been less capital- and skill-intensive (more labour-intensive) than import-competing industries, which is consistent with the Heckscher-Ohlin notion of comparative advantage. From the analysis, India's trade with developing countries appears to reflect the same kind of comparative advantage as its trade with developed countries. Two other findings were that: (a) export-oriented industries had a significantly higher proportion of women workers (13%) than import-competing and non-trading industries; and the "food, beverages and tobacco products" industry group had an even higher proportion (26%) of women workers; (b) the wage rate in export-oriented industries was lower than that in import-competing and non-trading industries, but the lowest was in the food, beverages and tobacco products industry group. The wage rate in this group was about half the average wage rate of the export-oriented industries, which itself was lower than the average for the manufacturing sector.

The analysis of time-series data on employment for organized manufacturing and major industry groups revealed a marked acceleration in employment growth in the

1990s. At the aggregate level, the growth rate of employment was 1.6 per cent per annum in the period 1973-74 to 1989-90, and this increased to 3.1 per cent per annum in the period 1990-91 to 1997-98. There was also an acceleration in output growth. Indeed, faster growth in industrial output contributed to faster growth in industrial employment. The increase in output growth can, in turn, be attributed, in large measure, to economic reforms, especially trade reforms and FDI.

Employment elasticity (gross) in manufacturing was 0.26 in the period 1973-74 to 1989-90, and this increased to 0.33 in the period 1990-91 to 1997-98. There was a sharp increase in employment elasticity in export-oriented industries (especially those exporting substantially to developing countries), which contributed to an increase in employment elasticity at the aggregate level. The "food, beverages and tobacco products" industry group also registered an increase in employment elasticity, which again contributed to an increase in employment elasticity at the aggregate level.

Trade reforms seem to have contributed to acceleration in employment growth in organized manufacturing in two ways. First, they helped promote industrial growth by providing better access to inputs and capital goods (for example, in general there was a relaxation of foreign exchange constraints) and by encouraging foreign investment. Secondly, they encouraged rapid growth in export-oriented industries, and since these industries are more labour-intensive, this had a favourable effect on employment. In general, trade liberalization seems to have encouraged the growth of labour-intensive industries and labour-intensive methods of production, and this led to an increase in employment elasticity, resulting in faster growth in employment in manufacturing.

Though there are reasons to expect an increase in the share of export-oriented industries in manufacturing employment, this did not take place in the 1990s. This does not imply, however, that trade liberalization did not have a favourable effect on export-oriented industries. Analysis of employment data revealed that the significant downward trend in the share of export-oriented industries in manufacturing employment, during the period, 1973-74 to 1989-90 was arrested in the 1990s, presumably due to trade liberalization.

There are two other findings from the analysis of trends in employment. One is that export-oriented industries and "food, beverages and tobacco products" industries accounted for 26 per cent of incremental manufacturing employment in the 1970s and 1980s, and 38 per cent of incremental manufacturing employment in the 1990s. Thus, arguably, trade liberalization increased relative demand for unskilled or low-skilled labour, which is an expected effect of trade liberalization. The second finding is that there was a fall in the proportion of women workers in manufacturing in the 1990s (i.e. the post-reform period). In export-oriented industries, this proportion rose, but in the "food, beverage and tobacco products" industries, and to a lesser extent in non-trading and import-competing industries, the proportion of women workers fell.

An analysis of trends in real wages/emoluments revealed that there was a significant slowdown of growth in real wages in the 1990s (which contributed to accelerated employment growth). The growth rate of real wages per worker fell from 3.15 per cent per annum during the 1970s and 1980s to 1.16 per cent per annum during the 1990s. For real emoluments per employee, the growth rate fell from 2.53 in the 1970s

and 1980s to 1.9 per cent per annum in the 1990s. There was also a fall in the growth rate of the real product wage.

The slowdown in the growth of real wages was not due to a declining growth in labour productivity; rather, it was caused by a fall in the ratio of wages to productivity. The analysis also showed that the slowdown in growth of real wages in the 1990s was not due to changes in labour composition. One possible explanation could be that the competitive pressures on the economy resulting from trade liberalization and other accompanying economic reforms tended to eliminate the rents associated with the earlier protective trade and industrial policy regime.

On the issue of wage inequality, the analysis of trends indicated that instead of an increase in the ratio of the wage rate of unskilled labour to that of skilled labour in the post-reform period, it seems to have declined in the 1990s. Overall, inequality in labour remuneration seems to have increased in the period following trade liberalization. But, as noted by Ghose (2000), the initial industrial labour market conditions in India were such that reforms could not have had a particularly favourable effect on the wage rate of unskilled labour which would have reduced wage inequality.   If the growth in employment in manufacturing continues at its present pace, it could lead to a tightening in the industrial labour market, resulting in a reduction of wage inequality. At the same time, it is heartening to note that there are indications of reduced differences between the earnings of men and women workers; the evidence suggests that the average wage rate has grown faster in those industries which employ a relatively higher proportion of women than in industries which employ few women.

Annexes

Annex I: ASI manufacturing industries at three-digit level

Industrial groups

Gr. no.	Description	NIC-1970	NIC-1987
1	Slaughtering, preparation and preservation of meat	200	200
2	Dairy products	201	201
3	Canning and preservation of fruits and vegetables	202	202
4	Canning, preservation and processing of fish, crustaceans etc.	203	203
5	Grain mill products	204	204
6	Bakery products	205	205
7	Manufacture and refining of sugar	206	206
8	Indigenous sugar, *khandsari, gur* etc	207	207
9	Production of common salt	208	208
10	Cocoa, chocolate and sugar confectionery	209	209
11	Hydrogenated oils, vanaspati, ghee, etc	210	210
12	Other edible oils and fats	211	211+212
13	Tea processing	212	213
14	Coffee curing, roasting and grinding	213	214
15	Cashewnut processing	214	215
16	Manufacture of ice	215	216
17	Manufacture of prepared animal feeds	216	217
18	Manufacture of starch	217	218
19	Manufacture of food products n.e.c.	219	219
20	Distilling, rectifying and blending of spirits	220	220
21	Wine industries	221	221
22	Malt liquors and malt	222	222
23	Country liquor and toddy	223	223
24	Soft drinks and carbonated water	224	224
25	Tobacco stemming, re-drying, etc	225	225
26	Manufacture of *bidis*	226	226
27	Cigars, cigarettes, cheroots, and cigarette tobacco	227	227
28	Manufacture of chewing tobacco, snuff, *zarda*	228	228
29	Manufacture of tobacco and tobacco products n.e.c.	229	229
30	Cotton ginning, cleaning and baling	230	230
31	Cotton spinning, weaving and finishing of cotton textiles in mills	231	235
32	Printing, dyeing and bleaching of cotton textiles	232	236
33	Cotton spinning other than in mills	233	231
34	Production of *khadi*	234	232
35	Weaving and finishing of cotton textiles in handlooms	235	233
36	Weaving and finishing of cotton textiles in power looms	236	234
	cotton textiles n.e.c.	239	
37	Wool cleaning, baling and pressing	240	240
38	Wool spinning, weaving and finishing in mills	241	242
39	Wool spinning, weaving and finishing other than in mills	242	241
40	Dyeing and bleaching of woollen textiles	243	243
	manufacture of wool not elsewhere classified	244s	
41	Spinning, weaving and finishing of silk textiles	245	244+245
42	Printing, dyeing and bleaching of silk textiles	246	246
43	Spinning, weaving and finishing of synthetic fibre textiles	247	247
44	Printing, dyeing and bleaching of synthetic textiles,	248	248
	silk and synthetic textiles n.e.c.	249	

45 Jute and mesta pressing and baling	250	250
46 Jute and mesta spinning and weaving	251	251+254
46a Dyeing, printing and bleaching of jute textiles	252	257
47 Preparing, spinning, weaving and finishing of hemp and other coarse fibres	253	253+256 +259
Manufacture of jute bags and other jute textiles, n.e.c.	259	
48 Knitting mills	260	260
49 Threads, cordage, ropes, twines, nets, etc	261	261
50 Embroidery and making of crapes, laces, and fringes	262	262
51 Weaving carpets, rugs, etc.	263	263+264
52 Manufacture of all types of textiles garments, wearing apparel	264	265
53 Raincoats, hats, etc.	265	266
54 Manufacture of made-up textile goods	266	267
55 Manufacture of water proof textiles	267	268
56 Coir and coir products	268	252+255 +258
57 Manufacture of textile n.e.c.	269	269
58 Manufacture of veneer, plywood and their products	270	271
59 Sawing and planing of wood	271	270
60 Manufacture of wooden and cane boxes, crates, etc	272	273
61 Manufacture of structural wooden goods	273	272
62 Manufacture of wooden industrial goods	274	274
63 Manufacture of cork and cork products	275	275
64 Manufacture of wooden furniture and fixtures	276	276
65 Manufacture of bamboo and cane furniture	277	277
66 Manufacture of wood, bamboo and cane products n.e.c.	279	279
67 Manufacture of pulp, paper and paper board	280	280+283
68 Manufacture of container and boxes of paper or paper board	281	281
69 Manufacture of paper and paper board articles and pulp products n.e.c.	282+283	282
70 Printing and publishing of newspapers	284	284
71 Printing and publishing of periodicals, books etc	285	285
72 Printing of bank notes, currency notes, stamps, etc	286	286
73 Engraving, etching, block making etc	287	287
74 Book binding	288	288
75 Printing, publishing and allied activities n.e.c.	289	289
76 Tanning, curing, finishing, embossing, and japanning of leather	290	290
77 Manufacture of footwear (except rubber or plastic footwear)	291	291
78 Wearing apparel of leather and substitutes of leather	292	292
79 Leather consumer goods except footwear and apparel	293	293
80 Scrapping, currying, tanning, bleaching and dying of fur and other pelts	294	294
81 Wearing apparel of fur and pelts	295	295
82 Manufacture of fur and skin rugs	296	296
83 Manufacture of leather and fur products n.e.c.	299	299
84 Tyre and tube industries	300	310
85 Footwear made of rubber or plastics	301	311
86 Rubber products n.e.c.	302	312
87 Plastic products n.e.c.	303	313
88 Petroleum refineries	304	314+315
89 Products of petroleum n.e.c.	305	316
processing of nuclear fuel		317
90 Coke oven products	306	318

91 Coal and coal tar products n.e.c.	307	319
92 Industrial organic and inorganic chemicals	310	300
93 Fertilizers and pesticides	311	301
94 Paints, varnishes and lacquers	312	303
95 Drugs and medicine	313	304
96 Manufacture of perfumes, cosmetics, tooth paste, soaps, synthetic detergents, shampoos, and other toilet preparations	314	305
97 Manufacture of matches	317	307
98 Manufacture of explosives, ammunition and fireworks	318	308
99 Manufacture of inedible oils	315	309*
100 Manufacture of turpentine, synthetic resins, plastic materials and synthetic fibre	316	302+306
101 Manufacture of chemical products n.e.c.	319	309*
102 Manufacture of structural clay products	320	320
103 Manufacture of glass and glass products	321	321
104 Manufacture of earthenware, earthen pottery, and plaster products	322+327	322
105 Manufacture of chinaware and porcelain-ware	323	323
106 Manufacture of cement, lime and plaster	324	324
107 Manufacture of mica products	325	325
108 Structural stone goods, stone dressing and stone crushing, etc	326	326
109 Asbestos cement and other cement products	328	327
110 Miscellaneous non-metallic mineral products	329	329
111 Iron and steel industries	330	330+331
112 Casting and forging of iron and steel	331	337
113 Manufacture of ferro-alloys	332	332
114 Copper manufacturing	333	333
115 Brass manufacturing	334	334
116 Aluminium manufacturing	335	335
117 Zinc manufacturing	336	336
118 Other non-ferrous metal industries	339	338+339
119 Fabricated metal products	340	341
120 Manufacture of structural metal products	341	340
121 Furniture and fixtures, primarily of metal	342	342
122 Manufacture of handtools and general hardware	343	343
123 Enamelling, japanning, lacquering, galvanising, plating and polishing of metal products	344	344+345
124 Metal utensils, cutlery and kitchenware	345	346
125 Manufacture of metal products n.e.c.	349	349
126 Agricultural machinery	350	350
127 Machinery for construction and mining industries	351	351
128 Prime movers, boilers, and steam generating plants	352	352
129 Machinery for food and textiles industries	353	353
130 Machinery for other than food and textiles industries	354	354
131 Refrigerators, air conditioners, etc	355	355
132 Manufacture, alteration and repair of general items of non-electrical machinery, components, equipment etc	356	356
133 Machine tools, and their parts and accessories	357	357
134 Office, computing and accounting machinery and parts	358	358
135 Manufacture and repair of non-electrical machinery n.e.c.	359	359
136 Electrical industrial machinery and apparatus	360	360
137 Insulated wires and cables	361	361
138 Dry and wet batteries	362	362
139 Manufacture of electrical apparatus, appliances and parts	363	363+364
140 Radio, television, telephones, etc	364	365+366

141 Electronic computers, control instruments, etc	366	367
142 Electronic components, and accessories n.e.c.	367	368
143 X-ray apparatus and electrical machinery n.e.c.	365+369	369
144 Ship building and repairing	370	370
145 Locomotives and parts	371	371
146 Railway wagon, coaches and other railroad equipment	372+373	372
147 Motor vehicles and parts	374	373+374
148 Motor cycles, scooters, and parts	375	375
149 Bicycles, cycle-rickshaw and parts	376	376
150 Air craft and its parts	377	377
151 Bullock-carts, push-carts, hand-carts, etc	378	378
152 Transport equipment and parts n.e.c.	379	379
153 Medical, surgical and scientific equipment	380	380
154 Photographic and optical goods	381	381
155 Manufacture of watches and clocks	382	382
156 Manufacture of jewellery and related articles	383	383
157 Minting of currency coins	384	384
158 Manufacture of sports and athletic goods	385	385
159 Manufacture of musical instruments	386	386
160 Manufacture of stationery articles n.e.c. (pens, pencils, etc)	387	387
161 Manufacture of miscellaneous products n.e.c.	389	388+389
162 Repair of capital goods (new groups in NIC 1987)		390 to 399

Note: NIC = National Industrial Classification. NIC 1970 has been used in ASI from 1973-74 to 1988-89. From 1989-90, NIC 1987 has been used. Although an attempt is made above to work out a correspondence between the two classifications, exact correspondence may not be there for many industries. However, this is not a serious limitation of the analysis of presented here because when major groups are formed, for example, food products, or export-oriented industries, or import-competing industries, the coverage by and large matches between the two classifications.

Annex II : Export-oriented and import-competing manufacturing industries

Export-oriented Industries

Gr. no.	Description	NIC-1970	NIC-1987
31	Cotton spinning, weaving etc and finishing of cotton textile in mills (XS)	231	235
32	Printing, dyeing and bleaching of cotton textiles (XS)	232	236
35	Weaving and finishing of cotton textiles in handlooms (XS)	235	233
36	Weaving and finishing of cotton textiles in power looms (XS) cotton textiles n.e.c.	236 239	234
41	Spinning, weaving and finishing of silk textiles	245	244+245
42	Printing, dyeing and bleaching of silk textiles	246	246
46	Jute and mesta spinning and weaving	251	251+254
46a	Dyeing, printing and bleaching of jute textiles	252	257
46b	Manufacture of jute bags and other jute textiles, n.e.c.	259	
48	Knitting mills	260	260
50	Embroidery and making of crapes, laces, and fringes (XS)	262	262
51	Weaving carpets, rugs, etc.	263	263+264
52	Manufacture of all types of textiles garments, wearing apparel	264	265
54	Manufacture of made-up textile goods	266	267
56	Coir and coir products	268	252+255 +258
76	Tanning, curing, finishing, embossing, and japanning of leather	290	290
77	Manufacture of footwear (except rubber or plastic footwear)	291	291
78	Wearing apparel of leather and substitutes of leather	292	292
79	Leather consumer goods except footwear and apparel	293	293
107	Manufacture of mica products	325	325
120	Manufacture of structural metal products (XS)	341	340
122	Manufacture of handtools and general hardware (XS)	343	343
124	Metal utensils, cutlery and kitchenware (XS)	345	346
149	Bicycles, cycle-rickshaw and parts (XS)	376	376
156	Manufacture of jewellery and related articles (XS)	383	383
158	Manufacture of sports and athletic goods	385	385

Import-competing industries

Gr. no.	Description	NIC-1970	NIC-1987
67	Manufacture of pulp, paper and paper board	280	280+283
92	Industrial organic and inorganic chemicals (MS)	310	300
93	Fertilizers and pesticides (MS)	311	301
100	Manufacture of turpentine, synthetic resins, plastic materials and synthetic fibre (MS)	316	302+306
101	Manufacture of chemical products n.e.c.	319	309*
111	Iron and steel industries	330	330+331
114	Copper manufacturing (MS)	333	333
116	Aluminium manufacturing (MS)	335	335
117	Zinc manufacturing (MS)	336	336
118	Other non-ferrous metal industries (MS)	339	338+339

127 Machinery for construction and mining industries	351	351
128 Prime movers, boilers, and steam generating plants	352	352
129 Machinery for food and textiles industries	353	353
130 Machinery for other than food and textiles industries	354	354
132 Manufacture, alteration and repair of general items of non-electrical machinery, components, equipment etc	356	356
133 Machine tools, and their parts and accessories	357	357
134 Office, computing and accounting machinery and parts	358	358
136 Electrical industrial machinery and apparatus	360	360
140 Radio, television, telephones, etc	364	365+366
142 Electronic components, and accessories n.e.c. (MS)	367	368
143 X-ray apparatus and electrical machinery n.e.c.	365+369	369
150 Air craft and its parts	377	377
153 Medical, surgical and scientific equipment	380	380
154 Photographic and optical goods	381	381
155 Manufacture of watches and clocks	382	382

XS= export-oriented with 25% or higher proportion exported to developing countries
MS= import-competing, 25% or higher proportion of imports are from developing countries

Notes: (1) For cotton spinning, weaving, etc and finishing of cotton textiles in mills, the ratio of exports to developing countries to total exports is found to be 24% (in 1975-76). A significant part of these exports are to east European countries. If such exports are excluded, the proportion of exports to developing countries is found to be higher than 25%. This industry has, accordingly, been included in the XS group.

(2) For "printing, dyeing and bleaching of cotton textiles" and "cotton textiles nec", separate data on exports are not available. Since cotton textiles in mills, powerlooms, and handlooms are all taken as export-oriented, these two groups are also taken as export-oriented. Further, since cotton textiles in mills, powerlooms and handlooms are taken as belonging to the XS group, these two industries have been treated similarly.

Annex III
SECTOR-WISE BREAKDOWN OF FOREIGN DIRECT INVESTMENT AND
TECHNICAL COLLABORATION APPROVED DURING THE PERIOD,
01/08/1991 to 31/08/2000

(Amount in Rs.million)

Sno. Name of Industry	No. of Approvals		Amount of FDI approved	% total amount approved
	Total	Technical	Financial	
1.METALLURGICAL				
FERROUS	362	214	148	73 756.51
				3.16
NON-FERROUS	63	30	33	7 718.62
				0.33
SPECIAL ALLOYS	83	51	32	8 485.60
				0.36
MINING SERVICES	49	12	37	41 482.58
				1.78
MISC. (OTHR ITEMS)	74	38	46	11 852.62
				0.51
Total	631	335	298	143 295.94
				6.14
2.FUELS				
POWER	219	17	202	34 2413.48	14.66
POWER (OTHER)	68	6	62	3 111.38	2.27
OIL REFINERY	238	111	127	95 298.57	8.36
OIL REFINERY (OTHER)	98	57	41	45 468.09	1.95
OTHER (FUELS)	140	50	90	35 577.24	1.53
Total	763	241	522	671 918.76	28.77
3.BOILERS AND STEAM GENERATING PLANTS	75	42	33	1 466.61	0.06
4.PRIME MOVERS OTHER THAN ELECTRICALS	61	38	23	917.24	0.04
5.ELECTRICALS EQUIPMENT				
ELECTRICAL EQUIPMENT	1527	853	674	55 388.87	2.37
COMPUTER SOFTWARE IND.	1392	78	1314	8 5652.11	3.67
ELECTRONICS	429	146	283	28 020.64	1.20
COMPUTER HARDWARE	3	–	3	9.04	–
OTHERS(S/W)	43	16	27	863.47	0.04
Total	3394	1093	2301	169 934.13	7.28
6.TELECOMMUNICATIONS				
TELECOMMUNICATIONS	317	98	219	91 579.74	3.92
RADIO PAGING	50	4	46	12 308.95	0.53
CELLULAR MOBILE/BASIC TELEPHONE SERVICE	180	10	170	26 0045.30	11.13
TELECOMMUNICATION(I&B)	94	3	91	76 851.32	3.29
OTHERS(TELECOMMUNICATIONS)	23	2	21	7 508.53	0.32

```
        Total              664        117    547   448 293.85  19.19
        -------------------------------------------------------------------------
---------
 7.TRANSPORTATION INDUSTRY
    AUTOMOBILE INDUSTRY     711        391    320    42 701.39   1.83
AIR/SEA TRANSPORT          158         17    141    26 335.12   1.1
PASSENGER CARS              57          5     52    72 001.96   3.08
AUTO ANCILLARIES/PARTS     168         79     89    20 631.34   0.88
PORTS                       16          –     16    12 494.50   0.53
OTHERS (TRANSPORT)         106         31     75     8 112.68   0.35
        -------------------------------------------------------------------------
---------
        Total             1216        523    693   182 277.00   7.80
        -------------------------------------------------------------------------
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 8.INDUSTRIAL MACHINERY   1310        799    511    22 255.74   0.95

 9.MACHINE TOOLS           193         86    107     3 758.37   0.17

10.AGRICULTURAL MACHINERY   45         30     15     4 528.39   0.19

11.EARTH-MOVING MACHINERY   65         39     26     1 058.46   0.05

12.MISCELLANEOUS MECHANICAL 765        317    448    14 963.84   0.64
   & ENGINEERING EQUIPMENT

13.COMMERCIAL, OFFICE &      84         30     54    11 522.64   0.49
   HOUSEHOLD EQUIPMENT

14.MEDICAL AND SURGICAL      81         26     55     3 168.57   0.14
   APPLIANCES

15.INDUSTRIAL INSTRUMENTS   171         97     74     1 234.75   0.05

16.SCIENTIFIC INSTRUMENTS    43         14     29       657.36   0.03

17.MATHEMATICAL, SURVEYING AND  6        2      4       383.70   0.02
   DRAWING INSTRUMENTS

18.FERTILIZERS               64         57      7     2 468.85   0.11

19.CHEMICALS (OTHER THAN   1553        761    792   121 309.41   5.19
   FERTILIZERS)

20.PHOTOGRAPHIC RAW FILM AND 27         11     16     2 366.87   0.10
   PAPER

21.DYE-STUFFS                19          3     16     1 112.18   0.05

22.DRUGS AND PHARMACEUTICALS 389        208    181    13 469.38   0.58

23.TEXTILE (INCLUD DYED,    668        131    537    33 121.92   1.42
   PRINTED)

24.PAPER AND PULP INCLUDING 172         63    109    31 155.15   1.33
    PAPER PRODUCTS

25.SUGAR                      7          1      6    10 007.50   0.43

26.fERMENTATION INDUSTRIES   65         20     45    11 312.03   0.48

27.FOOD PROCESSING INDUSTRIES
   FOOD PRODUCTS            683        123    560    85 957.26   3.68
   MARINE PRODUCTS           91         20     71       921.66   0.04
   MISCELLANEOUS (FOOD PRODUCTS)  6       –      6       118.31   0.01
        -------------------------------------------------------------------------
---------
        Total              780        143    637    86 997.23   3.72
        -------------------------------------------------------------------------
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28.VEGETABLE OILS AND VANASPATI	41	3	37	2 422.31	0.11
29.SOAPS, COSMETICS AND TOILET REPARATIONS	54	18	36	3 3674.23	0.14
30.RUBBER GOODS	200	100	100	11 825.45	0.51
31.LEATHER, LEATHER GOODS AND PICKERS	184	36	148	3 016.12	0.13
32.GLUE & GELATIN	4	–	2	14.25	0.00
33.GLASS	102	32	68	17 764.33	0.76
34.CERAMICS	216	59	154	8 746.83	0.37
35.CEMENT AND GYPSUM PRODUCTS	94	37	57	16 839.38	0.72
36.TIMBER PRODUCTS	16	2	14	334.64	0.01
37.DEFENCE INDUSTRIES	6	5	1	34.70	–

38.CONSULTANCY SERVICES

DESIGN & ENGG. SERVICES	281	58	223	10 351.44	0.44
MANAGEMENT SERVICES	179	22	153	4 819.55	0.21
MARKETING	48	7	40	523.30	0.02
CONSTRUCTION	14	2	12	564.78	0.03
OTHERS (CONSULTANCY SERVICE)	42	5	36	4 265.42	0.18

Total	564	95	469	20 524.49	0.88

39.SERVICE SECTOR

FINANCIAL	345	8	337	103 075.06	4.41
NON-FINANCIAL SERVICES	316	20	296	31 166.78	1.33
BANKING SERVICES	24	–	24	1 811.83	0.08
HOSPITAL & DIAGNOSTIC CENTRES	87	13	74	6 518.80	0.28
OTHER SERVICES	32	4	28	8 329.10	0.36

Total	804	43	759	150 901.60	6.46

40.HOTELS & TOURISM

HOTELS & RESTAURANTS	346	124	222	35 513.50	1.52
TOURISM	73	16	57	7 679.34	0.33
OTHERS (HOTELS & TOURISM)	13	3	10	2 527.48	0.11

--------- Total	432	143	289	45 737.32	1.96

41.TRADING	457	18	439	20 086.91	0.86

42.MISCELLANEOUS INDUSTRIES

HORTICULTURE	104	38	66	1 708.71	0.07
AGRICULTURE	139	53	86	2015.28	0.09
FLORICULTURE	182	70	112	2 889.51	0.12
DIAMONDS	7	–	7	452.30	0.02
ORNAMENTS & GOLD	9	–	9	148.38	0.01
CONSTRUCTION ACTIVITIES	40	5	35	4 629.80	0.20
TEA/COFFEE	5	3	2	3 172.50	0.14
CIGARETTES	2	1	1	73.50	–

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PRINTING OF BOOKS ETC.           6          1        5                    12.82     -
COIR                            10          2        8                     6.19     -
OTHERS (MISC. INDUSTRIES)      930        491      439             3 869.13      1.02
     ------------------------------------------------------------------------------
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     Total                     1434        664      770            39 018.13      1.97
     ------------------------------------------------------------------------------
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     ------------------------------------------------------------------------------
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     Grand Total             17919       6486    11433           2 235 616.84  100.00
     ------------------------------------------------------------------------------
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Legends: FDI – Foreign Direct Investment
Source : India Investment Centre, *SIA Newsletter* 09/2000, New Delhi

References

Ahluwalia, I.J. 1992. "Trade policy and industrialisation in India", in B. Debroy (ed.): *Global and Indian trade policy changes* (Delhi, Anupama Publications).

Ahuja, R. 2001. *Export incentives in India within WTO framework*, working paper no. 72 (New Delhi, Indian Council for Research on International Economic Relations) July.

Aksoy, M.A. 1991. *The Indian Trade Regime*, Policy Research Working Paper No. 989 (Washington, DC, World Bank).

Aksoy, M.A.; Ettori, F.M. 1992. *Protection and industrial structure in India*, Policy Research Working Paper, No. 990 (Washington, DC, World Bank)

Bhagawati, J.; Srinivasan, T.N. 1975. *Foreign trade regimes and economic development: India* (New York, Columbia University Press).

Centre for Monitoring Indian Economy. 2001. *Foreign Trade and Balance of Payments* (Centre for Monitoring Indian Economy Private Ltd., Bombay).

Central Statistical Organisation (various years). Annual Survey of Industries, Ministry of Planning and Programme Implementation, New Delhi, Government of India.

Ettori, F.M. 1990. *The perverse effect of high taxation of capital goods in India*, Policy Research Working Paper, No. 433 (Washington, DC, World Bank).

Ghose, A.K. 2000. *Trade liberalization and manufacturing employment*, Employment Paper no. 2000/3 (Geneva, International Labour Office).

Goldar, B. 2000. "Employment growth in organised manufacturing in India", in *Economic and Political Weekly*, vol. 35, no. 14, April 1-7.

Goldar, B.N., Narayana, A.V.L., Saleem, H.N. 1992. *Structure of nominal tariff rates in India*, Studies in Industrial Development, Paper no. 3 (New Delhi, Office of the Economic Adviser, Ministry of Industry, Government of India) July.

Goldar, B.N., Saleem, H.N. 1992. *India's tariff structure: Effective rates of protection of Indian industries*, Studies in Industrial Development, Paper no. 5 (New Delhi, Ministry of Industry, Government of India) October.

Goldar, B., Mehta, R. 2001. "The Budget and Customs Duties", in *Economic and Political Weekly*, vol. 34, no. 12, March 24, pp. 989-991.

Government of India, various years. *National Accounts Statistics,* Ministry of Planning and Programme Implementation, New Delhi.

Government of India. 2000. *Economic Survey,* 1999-2000, Ministry of Finance (Economic Division), Government of India.

Joseph, M. 1992. *Exchange rate policy* (New Delhi, Deep & Deep Publications).

Joshi, V. 1984. *The nominal and real effective exchange rate of the Indian rupee,1971-83*, Reserve Bank of India Occasional Papers, vol. 5, no. 1, June (Bombay, Reserve Bank of India).**)**

Joshi, V., Little, I.M.D. 1996. *India's economic reforms: 1991-200* (Delhi, Oxford University Press).

Lall, S. 1999. "India's manufactured exports: Comparative structure and prospects", in *World Development*, vol. 27, no. 10, pp. 1769-86.

Mehta, R. 1999. *Tariff and non-tariff barriers of the Indian economy: A profile*, Report (New Delhi, Research and Information System for the Non-aligned and Other Developing Countries).

Mehta, R. 2000. "Removal of QRs and Impact on India's Import", in *Economic and Political Weekly*, May 6, pp. 1667-1671.

Mohan, R. 1992. "Industrial policy and controls" in Jalan, B. (ed.): *The Indian economy: Problems and prospects* (New Delhi, Viking Press).

Mohan, R. and Aggarwal, V. 1990. "Commands and controls: Planning for Indian industrial development, 1951-1990", in *Journal of Comparative Economics*, vol.14, pp.681-712.

Nagaraj, R. 2000. "Organised manufacturing employment", in *Economic and Political Weekly*, September 16, pp. 3445-3448.

National Sample Survey Organisation. 2000. *Employment and Unemployment in India 1999-2000* (New Delhi, Department of Statistics, Ministry of Statistics and Programme Implementation).

Nouroz, H. 2001. *Protection in Indian manufacturing: An empirical study* (Delhi, MacMillan India Ltd).

Pursell, G. 1996. "Indian trade policy since the 1991/92 reform" (Washington, DC, World Bank, mimeo).

Reserve Bank of India. 2000. *Handbook of Statistics on Indian Economy, 2000.*

Revenga, A. 1997. Employment and wage effects of trade liberalization: The case of Mexican manufacturing", in *Journal of Labor Economics*, vol. 15, no. 3, pt. 2, pp. S20-S43.

Saran, V., Mukherji, I.N. 2001. *India's external sector reforms* (New Delhi, Oxford University Press).

Sen, P. 1992. "From dirigisme to convertibility: Analysis of India's recent trade policy changes", in Debroy, B. (ed.): *Global and Indian trade policy changes* (Delhi:, Anupama Publications).

Srinivasan, T.N. 1994. "Foreign Trade Policies and India's Development", in Srinivasan, T.N. (ed.): *Agriculture and trade in China and India* (San Francisco, CA, International Center for Economic Growth).

Srinivasan, T.N. 2001. *India's reform of external sector policies and future multilateral trade negotiations*, Discussion Paper no. 830 (New Haven, CT, Yale University, Economic Growth Center).

Sundaram, K. 2001. "Employment and poverty in the 1990s: Further results from NSS 55[th] Round Employment-Unemployment Survey, 1999-2000", in *Economic and Political Weekly*, August 11, pp. 3039-49.

Tendulkar, S. 1999. *Export in India's growth process*, Working Paper no. 46 (New Delhi, Indian Council for Research on International Economic Relations) January 1999.

Tendulkar, S. 2000. "Employment growth in factory manufacturing sector during pre- and post-reform periods", paper presented at a Conference to honour Professor K.L. Krishna on the theme, Industrialisation in a Reforming Economy: A Quantitative Assessment, Delhi Delhi School of Economics) December 20-22.

UNCTAD. 1993. *World Investment Report, 1993* (New York and Geneva, United Nations).

Wadhva, C.D. 1994. *Economic reforms in India and the market economy* (New Delhi, Allied Publishers Limited).

World Bank. 1989. *India: An industrialising economy in transition* (Washington, DC, World Bank).

World Bank. 2000. *India: Policies to reduce poverty and accelerate sustainable development, Report no. 1947-IN.* (Washington, DC, World Bank).