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INDIA

Towards globalization

INDUSTRIAL DEVELOPMENT REVIEW SERIES

Published by the Economist Intelligence Unit for the

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

First published 1995

ISBN 0

The Economist Intelligence Unit
15 Regent Street, London, SW1Y 4LR, UK

British Library Cataloguing in Publication Data

India: Towards globalization - Industrial
Development Review Series.
1. India. Industries
I. United Nations *Industrial Development Organization*

ISBN 0

Acknowledgements

This Review has been prepared and written by Isher Judge Ahluwalia of the Centre for Policy Research, New Delhi. She was assisted in the preparation of Chapter II by Jairam Ramesh. Inputs for Chapter III were provided by the Centre for Monitoring Indian Economy, Confederation of Indian Industries and numerous industry sources. Assistance in the preparation of the manuscript was provided by Basu Mohanty and Rakesh Arora. Substantial contribution was also made by Jehamalai Vinanchiarachi, UNIDO Programme Officer, in the finalization of the manuscript. Christina Hakenberg, Margarete Gneiss and M. T. Holzer de Frank were responsible for the preparation and presentation of the camera-ready copy of the final manuscript. The work on the report was carried out under the general direction and supervision of Torben M. Roepstorff, Chief, Industrial Development Review Unit.

Typeset by UNIDO, Vienna
Printed and Bound in Great Britain by the Economist Intelligence Unit

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PREFACE

This Industrial Development Review of India is part of a sales series aimed at strengthening the "country focus" of UNIDO activities. As part of the work of the Industrial Development Review Unit of UNIDO's Programme Support and Monitoring Branch, the Reviews present a survey and analysis of each country's industrial development achievements. The Reviews are intended to provide a service to those within UNIDO and other international agencies concerned with industrial policy, planning, project development and implementation, and to be a ready source of information for governments, investors, industrialists, entrepreneurs, policy-makers, international organizations, aid agencies, academics, and research institutes.

The Reviews have two separate but interrelated objectives: they are designed to facilitate and promote the activities of UNIDO, as well as to serve as an informative and analytical document for the international industrial community. The analyses contained in the Reviews are intended to support the technical assistance programming for industry by providing industry-specific analysis which may serve as an input to programming activities and as a basis for informed discussions. The Reviews are also designed to accommodate the needs of a wide readership in the international community associated with industry, finance, trade, business, research and government, laying the groundwork for undertaking in-depth analyses of specific aspects of industrial development trends, policies and strategies.

This Review comprises three Chapters. Chapter I presents an overview of the economy of India and analyses the macroeconomic context of the ongoing process of liberalization, while also presenting early results and the economic outlook. The structure and performance of the manufacturing sector are analysed in Chapter II with particular reference to growth and structural change, employment, productivity, the role of public and private sectors, trade, location and environmental issues. Chapter III examines the performance and prospects of key industry branches. Data on industrial trends are presented in Annex A, and a negative list of imports is provided in Annex B. A set of other Annexes presents industrial investment information and important contact points for investors. The relative importance of ten industrially more developed states in India is presented in Annex F.

This Review is based on information available as at December 1994.

EXPLANATORY NOTES

References to dollars ($) are to United States dollars, unless otherwise stated.

Dates divided by a slash (1993/94) indicate a fiscal year or a crop year. *Dates* divided by a hyphen (1992-1993) indicate the full period, including the beginning and the end years.

In Tables:

Totals may not add precisely because of rounding.
Two dots (..) indicate that data are not available or not separately reported.
A dash (-) indicates that data are not applicable.

The following *abbreviations* are used in this publication:

ACPC	Association of Coffee Producing Countries
ASEAN	Association of South-East Asian Nations
BIFR	Board for Industrial and Financial Reconstruction
BPE	Bureau of Public Enterprises
CIS	Commonwealth of Independent States
CSIR	Council for Scientific and Industrial Research
ECGC	Export Credit and Guarantee Corporation of India
EOUs	Export-Oriented Units
FERA	Foreign Exchange Regulation Act
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GNP	Gross national product
ICICI	Industrial Credit and Investment Corporation of India
IDBI	Industrial Development Bank of India
IDRA	Industrial Development and Regulation Act
IEMs	Industrial Entrepreneurs' Memoranda
IFCI	Industrial Finance Corporation of India
IISCO	Indian Iron and Steel Company
IMF	International Monetary Fund
IRBI	Industrial Reconstruction Bank of India
MIGA	Multilateral Investment Guarantee Agency
MFA	Multi-Fibre Arrangement
MRTP	Monopoly and Restrictive Trade Practices Act
MVA	Manufacturing value added
NRF	National Renewal Fund
NSIC	National Small Industries Corporation
OECD	Organisation for Economic Co-operation and Development
ONGC	Oil and Natural Gas Corporation Limited
RBI	Reserve Bank of India
Rs	Rupees
SEBI	Securities and Exchange Board of India
SAIL	Steel Authority of India Limited
TELCO	Tata Engineering & Locomotive
TISCO	Tata Iron and Steel Company

TFPG	Total Factor Productivity Growth
TRIMS	Trade Related Investment Measures
UNIDO	United Nations Industrial Development Organization
UTI	Unit Trust of India
UNDP	United Nations Development Programme
UNISTAR	United Nations International Short-Term Advisory Resources
VSP	Visakhapatnam Steel Plant

BASIC INDICATORS

BASIC INDICATORS I: THE ECONOMY

Population (1992/93)	:	878.6 million
Annual growth rate of population (1980/81-1992/93)	:	2.1 per cent
Labour force (1992)	:	319 million
GDP (1993/94)	:	$255,934 million
GDP per capita (1993)	:	$291

Growth of GDP (Percentage) :

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
4.1	4.3	4.3	10.6	6.9	4.9	1.1

1992/93	1993/94	1994/95[a/]
4.0	3.8	5.5

Structure of GDP (Percentage at 1980/81 prices) :

	1970/71	1991/92
Agriculture	44.5	30.8
Industry	18.6	24.7
Manufacturing	16.1	20.3
Construction	5.0	4.6
Other	31.9	39.9

Exports (1993/94) : $22,174 million

Principal exports ($ million, 1993/94) :

Agriculture and allied products	3,994.8
Tea	311.9
Coffee	177.1
Cereals	423.6
Cashew	332.1
Oil meals	736.2
Marine products	808.8
Iron ore	432.7
Manufactured products	16,789.0
Leather goods	1,319.7
Gems and jewellery	3,994.4
Ready-made garments	2,579.6

Imports (1993/94) : $23,213 million

Principal imports ($ million, 1993/94) :

Food and allied products	550.4
Cereals	84.9
Pulses	180.9
Edible oils	52.2
Petroleum, oil and lubricants	5,756.5
Fertilizers	831.2
Capital goods	
Machinery except electrical and machine tools	2,190.7
Electrical machinery	794.4
Transport equipment	1,266.8
Chemicals	1,986.3
Pearls	2,641.2
Iron and steel	781.6

(continued)

Basic Indicators I (continued)

Current account deficit ($ million) :

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
4,845	4,562	4,853	7,996	6,837	9,680	2,029

1992/93	1993/94
3,603	315

International reserves[b/] ($ million) :

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
6,520	6,574	6,223	4,802	3,962	5,834	9,220

1992/93	1993/94
9,832	19,254

Foreign exchange reserves[c/] ($ million):

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
5,472	5,424	5,618	4,226	3,368	2,236	5,631

1992/93	1993/94
6,434	15,068

Outstanding external debt ($ million) :

1988/89	1989/90	1990/91	1991/92	1992/93	1993/94
55.90	74.86	81.91	82.25	89.98	90.63

Debt service ratio[d/] (Percentage) :

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
18.7	24.8	26.8	26.5	30.9	30.9	30.7

1992/93	1993/94
30.6	25.4

Consumer price change (Percentage) :

Industrial workers

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
6.4	8.0	9.5	8.8	6.6	11.2	13.5

1992/93	1993/94
9.9	7.3

Agriculture labourers

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
4.8	4.7	9.9	12.7	5.4	7.6	19.3

1992/93	1993/94
12.4	3.5

Exchange rate[e/] (Rupee equivalents to $1) :

1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
12.23	12.78	12.97	14.48	16.65	17.94	24.47

1992/93	1993/94
25.95	31.37

a/ Forecast.
b/ Including gold and SDRs.
c/ Excluding gold and SDRs.
d/ From 1985/86 to 1988/89, excluding servicing of defence debt.
e/ Annual averages.

BASIC INDICATORS II: THE INDUSTRIAL SECTOR

Manufacturing value added (1992/93) : $42,297 million

MVA per capita (1992/93) : $48

Manufacturing employment (1990/91) : 7.0 million

Growth of MVA (Percentage) (At 1980/81 prices) :

1986/87	1987/88	1988/89	1989/90	1990/91
7.0	7.3	10.1	7.1	6.2

1991/92	1992/93
-3.2	2.0

Structure of MVA (Percentage) :

	1980/81	1990/91
Food, beverages and tobacco	8.4	12.4
Textiles and clothing	21.7	10.4
Wood products	1.0	0.5
Chemicals	15.4	14.7
Machinery and transport equipment	25.8	25.6
Other	27.7	36.4

Share of manufactured exports in total exports (1993/94) : 75.7 per cent

Structure of industrial exports (1993/94) (Percentage) :

Ready-made garments	15.4
Leather and leather products	7.9
Gems and jewellery	23.8
Chemicals	6.0
Engineering goods	11.7
Other	35.2

Share of manufactured imports in total imports (1993/94) : 53.7 per cent

Structure of industrial imports (1993/94) (Percentage) :

Capital goods	38.5
Pearl and stones	20.8
Chemicals	17.1
Fertilizers	8.4
Iron and steel	6.1
Professional instruments	4.3
Other	4.8

Wholesale price index (1981/82=100) :

Manufactured goods

1986/87	1987/88	1988/89	1989/90	1990/91
129.2	138.5	151.5	168.6	182.8

1991/92	1992/93	1993/94
203.4	225.6	243.2

Machinery and machine tools

1986/87	1987/88	1988/89	1989/90	1990/91
127.3	132.3	150.8	166.2	180.2

1991/92	1992/93	1993/94
208.3	230.6	237.9

Transport equipment

1986/87	1987/88	1988/89	1989/90	1990/91
129.6	135.5	148.9	166.2	181.3

1991/92	1992/93	1993/94
202.5	218.1	223.8

BASIC INDICATORS III: INTER-COUNTRY COMPARISON OF SELECTED INDICATORS

Indicator	Unit	India[a/]	China	Mexico	Pakistan	Thailand
Population (mid-1992)	Million	883.6	1,162.2	85.0	119.3	58.0
Area	Thousand square km	3,288	9,561	1,958	796	513
GNP per capita (1992)	$	310	470	3,470	420	1,840
Average annual rate of inflation (1980-1992)	Percentage	8.5	6.5	62.4	7.1	4.2
Private consumption (1992)	Percentage of GDP	5.1	..	74	72	55
Gross domestic investment (1992)	Percentage of GDP	23	..	24	21	40
Gross domestic savings (1992)	Percentage of GDP	22	..	17	14	35
Exports of goods and services (1992)	Percentage of GDP	10	..	13	17	36
Energy consumption per capita (1992)	Kg of oil equivalent	235	600	1,525	223	614
Food industry (1991)	Percentage of MVA	13	15	24	..	28
Textile and clothing (1991)	Percentage of MVA	12	14	9	..	24
Machinery and transport equipment (1991)	Percentage of MVA	27	25	16	..	14
Chemicals (1991)	Percentage of MVA	15	13	14	..	3
Other industries (1991)	Percentage of MVA	33	34	38	..	32
Manufactured exports to OECD countries (1992)	$ Million	10,539	59,429	30,668	3,474	15,197
Current account balance[b/] (1992)	$ Million	-4,809	6,401	-22,811	-1,049	-6,682
Gross international reserves (1992)	$ Million	9,539	24,853	19,171	1,524	21,183
External debt (1992)	$ Million	76,983	69,321	113,378	24,072	39,424
Debt service ratio (1992)	Percentage	25.3	10.3	44.4	25.6	14.1

Source World Bank, *World Development Report 1994* (Washington DC, 1994)

a Data for India may not correspond to those cited elsewhere in this report because of different sources

b After official transfer

(United Nations Industrial Development Organization

SUMMARY

India is experiencing a quiet economic revolution. The transformation is taking place within the framework of an open democratic society offering the largest "free" market in the world. The isolationism is giving way to a new zeal for globalization.

In the 1980s the Indian economy grew at a rate of 5.6 per cent per year, which was not only much higher than before but was also better than the growth record of the developing economies taken together. This was a response to policy initiatives taken during the decade to mitigate the rigours of the earlier regulatory regime, although the very high degree of protection from foreign competition continued. The basic problem of the erosion of the competitiveness of India's exports remained. However, a more activist policy on the exchange rate so as to attain a steady depreciation in the real effective exchange rate was pursued later in the decade with a view to generating faster export growth.

The fiscal policies of the central Government also became expansionary in the 1980s to support growing current expenditure on account of sharply rising interest payments and expenditure on defence and subsidies. The gross fiscal deficit of the central Government increased from 6.2 per cent in 1980/81 to 8.4 per cent by 1990/91. The rate of inflation at 8.2 per cent per year in the 1980s was about the same as in the 1970s partly because of the positive supply response to the policies of deregulation. However, the current-account deficit as a percentage of GDP deteriorated significantly, from 2.5 per cent in 1985/'86 to 3.3 per cent in 1990/91.

The Gulf war of 1990 precipitated the balance-of-payments crisis. The political instability at the beginning of the 1990s further contributed to the collapse of international confidence in the ability of the Government to manage the economy. This caused the market for external commercial loans in 1990/91 and capital outflow of non-resident Indian (NRI) deposits to dry up. As inflation accelerated and foreign exchange reserves dwindled, international default by India seemed a real possibility.

Economic reforms: 1991-1994

It was in this atmosphere of crisis that a newly elected Government launched a programme of economic reforms in June 1991. Fiscal stabilization was combined with wide-ranging reforms in the areas of industrial policy, trade and exchange-rate policies, a radically different approach to foreign investment and financial-sector reforms.

Fiscal stabilization

The fiscal deficit was brought down from 8.4 per cent of GDP in 1990/91 to 5.7 per cent in 1992/93, but increased again to 7.3 per cent in 1993/94. The target for 1994/95 is set at 6 per cent. Subsidies (not including the implicit ones on electricity and irrigation) decreased from 2.4 per cent of GDP in 1989/90 to 1 per cent in 1993/94. The principal incidence of fiscal stabilization was on plan expenditures which support developmental activity. Reform of the tax structure was a key element in the strategy of economic reforms and was guided by the Tax Reform Committee, which had recommended comprehensive restructuring of both direct and indirect taxes.

Inflation slowed down from 13.7 per cent in 1991/92 to 8.4 per cent in 1993/94. However, upward pressure on prices began in the second half of 1993/94 and continued up to September 1994. The average rate of inflation during April-September 1994 compared with the same period of the preceding year was 11 per cent. There was some slowing down of inflation in the subsequent seven weeks. As a result, the average rate of inflation rate for April-November 1994 declined to 10.5 per cent. Fiscal discipline will be crucial for the control of inflation.

Industrial and trade policy reforms

Domestic deregulation has been a central feature of the industrial policy reforms. Many areas of economic activity earlier reserved for the public sector have been opened up to the private sector, while restrictions on the expansion of large industrial houses have been removed. Industrial licensing for investment has also been abolished in all except a few defence and strategic industries. However, not much work has been done on devising an exit policy for non-viable, non-revivable sick units, so as to facilitate smooth restructuring of the industrial sector.

The reduction of custom duties has been a key element in the government's strategy of opening up the Indian economy to foreign competition. The maximum tariff rate was lowered from 250 per cent in 1991 to 65 per cent in 1994, and other rates were also lowered. The average tariff rate on imports into India declined from 76 per cent in 1990/91 to 40 per cent in 1993/94. The reductions in the import duty rate were especially sharp for capital goods.

Import licensing was abolished for all except consumer goods. The negative list for exports was also significantly pruned, removing a number of restrictions earlier applicable to exports, especially those of agricultural commodities.

Rupee convertibility on current account

In July 1991 the rupee was devalued by around 20 per cent in two successive steps and during the three-year period between 1991 and 1994 the Government of India was able to move to full convertibility of the rupee on the current account of balance of payments in April 1994.

Foreign investment policy

The 1990s have seen a radical change in India's policy towards foreign investment, which is now actively encouraged in all sectors, particularly in the infrastructure sectors. It is freely permitted for foreign investors to have up to 51 per cent of the equity in a defined list of 35 industries. For the rest, investors are invited to apply to a new Foreign Investment Promotion Board (FIPB) under the chairmanship of the principal secretary to the Prime Minister. The Board has established an excellent track record of speedy clearances. Foreign equity up to 100 per cent is encouraged in export-oriented units, the power sector, electronics and software technology parks. In the power sector the Government has gone out of its way to attract foreign investment so as to break critical infrastructure bottlenecks. The telecommunications sector opened up with the announcement of the new telecoms policy in May 1994.

Reflecting the positive attitude of the Government, foreign equity of $6 billion was approved by the FIPB during August 1991-September 1994. Actual inflows of foreign investment also showed a marked increase after 1992/93. Total foreign investment inflows increased from around $150 million in 1990/91 to $4.8 billion in 1993/94. The first six months of 1994/95 saw an inflow of $2 billion.

Direct foreign investment inflow in 1993/94 was $600 million, compared with $343 million in 1992/93. In the first six months of 1994/95 direct foreign investment was close to $470 million. In addition, foreign institutional investors invested $1.6 billion in 1993/94 and over $1 billion in the first six months of 1994/95. Indian companies were also able to raise $2.5 billion in Euro-issues in 1993/94 and $1.2 billion in the first six months of 1994/95.

Public-sector reforms

The public sector has been central to India's industrialization within a mixed-economy framework. As of 31 March 1993, total investment in the 237 central public enterprises was close to Rs 1,470 billion. Return on these investments was mostly 2.0-4.5 per cent between 1980/81 and 1992/93. Profitability during the 1980s was much lower in the public sector than in the private sector. Also, by all accounts the profitability was much worse in the public enterprises run by state governments. The heavy losses incurred by most (about 18) of the State Electricity Boards (SEBs) alone are estimated to be about Rs 47 billion in 1992/93.

A compelling situation was created by the inability of the Government to continue to subsidize the public sector through budgetary support. Public enterprises were encouraged to tap the capital market on the strength of their own performance. While some better-performing enterprises were able to do this, many others continue to languish for want of resources or reforms.

An important element of reform has been that most areas earlier reserved for the public sector have been opened up to the private sector. However, privatization of existing public enterprises with an actual change of management control has not formed part of the liberalization strategy so far. The central Government began a programme of divestment of government shareholding in a wide range of public enterprises in 1991/92. The incremental approach to divestment was reflected in four rounds of divestment, although there was no open commitment to bring the government shareholding below 51 per cent. Some of the states have begun to privatize state-owned public enterprises.

Financial-sector reforms

Several initiatives have been taken to reform the banking system and encourage competition by allowing new private sector banks. Interest rates on bank loans (except small loans) were completely deregulated, and there is less pre-emption of bank funds by the Government at interest rates below market rates.

Efforts have been made to modernize the Indian capital market. Firms are now free to issue capital and price new issues according to the prevailing market conditions, subject only to guidelines for the effective disclosure of any information necessary for investor protection. Indian companies have also been allowed to access international capital markets by issuing equity abroad through the mechanism of global depository receipts. Foreign institutional investors have been allowed to invest directly in the Indian capital markets. Market capitalization is estimated at over $100 billion, making India among the leading emerging markets in this respect.

The insurance sector in India, however, has remained a monopoly of the public sector. A high-level committee appointed by the Government recommended that insurance should be opened up to the private sector, including foreign investors. The Government is expected to announce its response to these recommendations shortly.

The manufacturing sector

India has the fifth largest industrial sector in the developing world and is the eleventh largest, including all developed countries. The manufacturing sector, which is highly diversified, accounts for over 80 per cent of the value added in industry.

Growth and structural change

India's industrial growth of 8 per cent per year in the 1980s was interrupted in 1991/92, when the country faced a serious economic crisis. Industrial growth remained slow up to 1993/94, but there are clear signs of an industrial revival beginning in 1994; the growth rate in April-July of 1994/95 was 7.9 per cent, while that in manufacturing was close to 9 per cent over the same period of the preceding year.

The electrical machinery, non-electrical machinery and transport equipment sectors were the worst affected in 1991/92. Recovery of the machinery industries was slow because of a slowdown in industrial investment, particularly in the public sector. But more recently these industries have been showing signs of recovery. The production of capital goods grew by 18.8 per cent during April-July 1994.

Structural change within the industrial sector has meant that traditional industries such as textiles and sugar are less important in their contribution to manufacturing value added, while machinery and equipment industries and chemicals have gained in importance. Food processing is emerging as an important industry and one that is attracting investment, although it is too early to discern the overall structural change after the reforms, more so because the new emerging industries are underrepresented in the statistical indices.

Employment and productivity growth

Employment in the organized sector of manufacturing doubled from 3.6 million in 1960/61 to 7.1 million in 1980/81, but declined in the 1980s at a rate of 0.5 per cent per year. It was estimated to be 6.33 million in 1991. The decline in measured employment during a period when growth in output accelerated has been a major cause for concern, although to some extent this was due to overmanning in the period 1965-1980.

Productivity trends in the organized manufacturing sector in India showed an unambiguous turn for the better in the 1980s after a trend decline of 0.5 per cent per year during 1960-1980. Total factor productivity growth (TFPG) in the organized manufacturing sector improved to 2.7 per cent per year during 1981-1989, while both labour productivity and capital productivity also showed clear improvement. The significant improvement in TFPG was widespread within the manufacturing sector, the most dramatic turn-around being in the consumer non-durables sector.

Scale, location, finance and restructuring

The small-scale sector was expected to play a critical balancing role by producing mainly consumer goods using labour-intensive methods of production and bringing about industrial dispersal. There has been disillusionment with the small-scale units in respect of their contribution to employment. The policy of "reservation" in production for small-scale units has created protective enclaves within the domestic industrial sector with an adverse effect on the competitiveness of Indian industry. A new policy package for small-scale industry was announced in July 1991, but it was a statement of intent rather than a concrete agenda for action.

Policies for industrial dispersal were explicitly designed with a view to generating employment in the different states of India and promoting a more equitable distribution of incomes, but their effectiveness has been limited. The new industrial policy of 1991 envisages the development of infrastructure as a prerequisite for locating industry in "desirable" areas. Together with the emphasis on growth centres, the policy has liberalized location restrictions in a major way.

An extensive network of industrial financial institutions was developed to support the industrialization of the economy. The financial sector saw many changes in the late 1980s with the introduction of a new set of institutions in the areas of venture capital, credit rating, leasing, etc. The institutions were encouraged to raise their own funds from the market. The formal system of consortium finance was replaced by a system of informal loan syndication so as to allow for competition. In recent years the capital market has been an important source of finance for industry.

Industrial restructuring is crucial to the success of ongoing economic reform in India. Large segments of Indian industry are sick in the sense of being persistently loss-making and unable to service their debts. The persistence of sickness is explained largely by the legal framework, which does not allow non-performing industries either to merge with healthy companies or to close down easily. The Board for Industrial and Financial Reconstruction (BIFR) was assigned the task of industrial restructuring in 1987, but its effectiveness has been limited.

In February 1992 the Government established a non-statutory National Renewal Fund (NRF) to help cover the cost of retraining and redeploying labour and also provide compensation to labour affected by industrial restructuring. About 70,000 workers have availed themselves of such schemes. The NRF has been used largely for voluntary retirement compensation and only a limited beginning has been made on retraining and redeployment.

Exports and imports

The most dominant feature of the Indian export performance over the period 1960-1990 was a more or less continuous slide in India's share of world exports to reach a level of 0.5 per cent in 1989/90. The period 1985/86-1989/90 witnessed some improvement as exports grew at 16 per cent per year in US dollar terms. There was a steady rise in the share of manufactured goods in India's total exports, from 55.8 per cent in 1980/81 to 74.6 per cent in 1989/90. The major manufactured exports were gems and jewellery, garments, leather manufactures, engineering goods and chemicals.

The direction of India's exports since the 1980s was towards the Organisation for Economic Co-operation and Development (OECD) economies and away from the economies of eastern Europe and the former Soviet Union, although the latter still accounted for 16 per cent of India's exports in 1990/91. India's export performance in the first two years of the reforms was adversely affected by the collapse of the former Soviet Union. By 1993/94, the Russian Federation accounted for only 2.9 per cent of India's exports. However, exports to hard-currency areas are beginning to respond to the new policies. Exports from India in dollar terms grew by 20.2 per cent in 1993/94 and by 13.9 per cent in April-October 1994.

The phasing out of the Multi-Fibre Arrangement (MFA) and the abolition of import quotas by the United States will have a positive impact on exports of Indian textiles as the ten-year period provides the Indian textile industry with time to restructure and modernize itself in order to regain international competitiveness which it has lost slowly over a long period.

Import growth in the 1990s was very sluggish notwithstanding the major drive towards trade liberalization. This was largely due to the decline in industrial growth after 1990/91, although the depreciation of the real exchange rate of the rupee also contributed. During April-October of 1994/95 imports increased by 19.8 per cent as industrial growth recovered from the recession of the preceding three years. The OECD countries continued to be the major source of imports into India, accounting for 56 per cent of total imports in 1993/94.

Technology policy

Science and technology have been an important part of national planning in India, although the absence of a competitive environment has taken its toll on the technological health of the economy. In 1992/93 India's total R & D expenditure was 0.83 per cent of GNP compared with an average of 0.64 per cent for all developing countries. A substantial proportion of this expenditure was on defence and space. More recently, attempts are being made to encourage technology transfers between defence, space and atomic energy on the one hand and the aviation industry on the other.

The 1991 industrial policy removed the barriers to Indian firms acquiring full packages of technology from abroad on a continuing basis. The technology policy statement of 1993 set the target for spending on research, development and engineering (R,D&E) at 2 per cent of GNP by the year 2000. It called for a substantial increase in the private-sector contribution to national R,D&E expenditure through incentives and other measures. As a result of the Uruguay Round agreement, the Indian Patents Act of 1970 will have to be amended in a major way to allow for product patents in the pharmaceutical (biotechnology), food processing and chemical industries, and the period of protection will also have to be extended.

Enrolment in higher education and outturn of scientific and technical personnel from India's centres of higher education are quantitatively impressive, but its composition does not appear to match India's new requirements and ambitions. Industry's involvement with higher and technical education will necessarily have to increase, given the government policy to increase its support.

Environment policy

Environmental consciousness in India has increased parallel with a rise in pollution in industry, which is due to structural change in the direction of more polluting industrial sectors, the application of outdated technologies and modest compliance with environmental regulations.

India has an elaborate legal framework for environmental protection. The Ministry of Environment and Forests is the primary government agency responsible for environmental protection. Growing activism on the part of the pollution control boards is reflected in the fast-growing number of court cases launched under the Water and Pollution Control and Prevention Acts. The 1992 policy statement on environment and development lays down a mix of regulatory and promotional measures which could be taken to integrate environmental considerations with industrial growth. Fiscal incentives have also been used in recent years to encourage the wider use of pollution control equipment.

Economic outlook

India's economy has already demonstrated a capacity for growth of about 5.5 per cent per year, which was the growth rate actually achieved in the 1980s. Unlike many economies going through structural adjustment and stabilization, which have experienced sharp declines in growth in the

early years, India was able to avoid adverse effects on production. GDP grew by 1 per cent in the first year of the reforms and by close to 4 per cent in each of the two following years. Good agricultural performance during this period certainly helped in adjusting to the change.

Industrial growth was slow but improving. The three years of 1991/92, 1992/93 and 1993/94 recorded growth rates of 1.1, 2.3 and 3.3 per cent per year, respectively. By the fourth quarter of 1993/94, however, recovery was more clearly discernible, and 1994/95 has seen industrial revival. Industrial production grew by 7.9 per cent per year during April-July 1994 over the same period of the preceding year, while production in the manufacturing sector recorded growth of 9 per cent. Capital goods industries, which had been lagging behind, also participated in the growth revival by recording an increase in production of 18.8 per cent.

After slow growth in the first three years, the economy is poised to grow at 5.5 per cent in 1994/95, bringing it back to the trend growth rate of the 1980s. With a continued pursuit of economic reforms in the years ahead it should be possible to achieve an average growth of around 6 per cent, accelerating to 7 per cent in the later 1990s.

Industry branch profiles

As India liberalizes and policy reforms continue, the new economic environment beckons investors to tap the growing markets in India and to use the country as a base for exporting. Profiles for 16 industry branches are presented in this report. An overview of the profiles is presented below.

Food products

The food industry ranges from the major traditional industries such as sugar and tea to the sunrise food processing industries. While new challenges are opening up for the traditional industries, the food processing industries are attracting very strong investor interest. The changing lifestyles and spending patterns of the 250 million-strong middle class, together with increasing urbanization and the increased entry of women into the labour force, have resulted in a rapid expansion of the domestic market for processed foods. The untapped potential is great; India is the second-largest producer of vegetables and fruits in the world, but a large portion of this production is wasted because there are too few processing industries.

A number of large Indian and transnational groups have acquired a strong presence in this sector, particularly since the launching of economic reforms. The Government has put most food-processing industries on the list of priority industries in which foreign investment up to 51 per cent is automatically allowed. Incentives are provided for setting up 100 per cent export-oriented food-processing units. More than 25 per cent of the foreign investment in manufacturing approved in 1993 was in the food-processing sector. Investments worth about $0.6 billion were approved during August 1991-September 1994.

Textiles and garments

Textiles is the largest industry in India, accounting for 20 per cent of industrial production and over one quarter of total export earnings. Combining the traditional handloom sector with the more modern powerloom and mill sectors, the industry today is at the crossroads as it modernizes to prepare for the challenges arising from the fundamental changes in the world trading system in textiles agreed on under the Uruguay Round.

From its peak share of 58 per cent of all developing country exports of textiles (including garments) in 1953, India's share fell precipitously to a meagre 8 per cent by 1969. At present, it

is around 2 per cent. Not only was the textile industry a victim of the heavy-industries-oriented strategy of industrialization, but the policies to protect the "handloom sector" actually prevented the expansion and modernization of the mill sector. It was only when the Textile Policy of 1985 emphasized the need for an integrated policy framework for the different subsectors of textiles that the Government lifted the virtual freeze on the weaving capacity of the mills which had been in place since 1956. Exports of textiles grew at 15.8 per cent per year between 1983/84 and 1993/94.

The competitiveness of the Indian textile and clothing industry can be seen from the influx of international giants such as Benetton, Hugo Boss, Lacoste, Pierre Cardin, Van Heusen, Louis Philippe, Arrow, Wrangler and Levis, to name a few. They are all setting up major production bases in India to exploit the comparative advantage offered by India in this sector.

Jute products

India is the single largest producer of jute products in the world, but the jute industry in India is not in good health. The disintegration of the former Soviet Union has taken away the biggest market for Indian jute goods, although interest in jute packaging material is still alive in many of the newly formed Commonwealth of Independent States (CIS). The Indian jute industry is attempting to recapture these markets without the special arrangements of the earlier period.

The long-term prospects for the jute industry depend on exploiting new opportunities for jute. The Food and Agriculture Organization (FAO) has prepared a long list of diversified jute products that includes household textiles, jute-based apparel and jute-based industrial textiles. The industry has already taken up production of some of these items. But it will need to redesign its machinery and equipment, adopt new technologies and go in for fresh investments for the production of jute fine yarn, blended yarn, processed fabrics and other items to be able to exploit the opportunities provided by the new and growing markets.

Leather and leather products

India has slowly but steadily been transforming its traditional leather industry into a modern and vibrant sector over the past decade or so. With the largest livestock population in the world, India has decided to use its strong base of skilled manpower and low labour costs to exploit its comparative advantage in the manufacture of leather and leather products. Added to the export potential is the attraction of the growing domestic market. Consumption of leather footwear per head, 0.5 pairs per year, is very low compared with over 3 pairs in the United States and around 3.5 pairs in the United Kingdom. As income rises, domestic consumption of leather footwear is bound to rise.

Institutional support for research and development in leather has been combined with a number of policy initiatives to help promote the growth of this industry in a competitive environment. However, the government's industrial policy of reservation for production in the small-scale sector has stood in the way of the industry exploiting the tremendous opportunities offered by the strong increase in world trade of leather and leather products.

Paper and paper board

India has a large paper and newsprint industry, producing 2.3 million tonnes of paper and 0.3 million tonnes of newsprint. Recognizing the constraints on the availability of wood, the

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Government has encouraged, through fiscal incentives, the use of unconventional raw materials such as grass, bagasse, wheat and rice straw, jute and waste paper in the production of paper.

India has a low consumption per head of 3.2 kg of paper, compared with 14 kg in China, 125 kg in the Republic of Korea, 170 kg in Hong Kong and 209 kg in the United States. As literacy and overall standards of living increase, the consumption of paper is expected to increase. At the same time, the industry is likely to face competition from plastics in some areas of packaging, particularly flexible packaging. These challenges will need to be met by upgrading technology, developing economies of scale, manufacturing fibre based on plantation wood and simultaneously improving the productivity of all resources to become cost-effective. Pollution management and safety standards will have to be brought in line with world standards to ensure environment-friendly production.

Cement

The cement industry in India has undergone a major transformation in the 1980s, recording significant modernization and rapid growth. India is the fifth-largest cement manufacturer in the world, accounting for about 4 per cent of world production. While cement consumption per head in India remains much lower than in many other developing economies, faster growth of GDP under the new liberalized economic regime is expected to raise the domestic consumption of cement in India. The rapid rise in the importance of the Asian market in the world trade in cement in the early 1990s also promises medium-term opportunities for cement exports from India.

The principal constraints on cement production in India arise from the quality of coal, power and railway services. But these constraints are eminently surmountable with proper investment in the infrastructure sectors. It should then be possible to exploit the abundance of limestone deposits, clay, gypsum and fly ash profitably in a fast-growing market for cement.

Petroleum refining

India's petroleum refining industry uses domestic as well as imported crude to produce about 85 per cent of the petroleum products consumed in the country. Crude oil production increased sharply after the discovery of offshore oilfields (Bombay High) in the mid-1970s and peaked at 34.1 million tonnes in 1989/90. The subsequent decline in production occurred mainly because of overexploitation of the wells, underinvestment in exploration, and technical constraints such as the high gas-to-oil ratio in the Bombay High wells and lack of correct water content in the Gujarat oilfields.

The demand for petroleum products is estimated to increase by 6.9 per cent per year in the first half of the 1990s and reach about 81 million tonnes in 1996/97. As part of the economic reforms, refining has now been opened up to the private sector and several proposals for setting up refineries have been approved by the Government.

Currently the prices of petroleum products are based on a complex system of administered prices. Subsidies are provided for products that are either consumed by the vulnerable sections of the society or whose consumption is to be encouraged. By law the marketing of major petroleum products is undertaken only by the public-sector oil companies. Either the public sector will have to develop additional marketing networks to meet marketing demands across the country or the new entrants will have to be permitted to market.

Petrochemicals

The petrochemical industry was one of the fastest growing subsectors of manufacturing in India, with an average growth rate of around 12-15 per cent per year in the past ten years. Domestic producers have in the past enjoyed considerable protection from foreign competition through import-licensing and high import duties. This has changed with the economic reforms of the 1990s. Compared with the duty rates of 150 per cent prevailing earlier on some petrochemical products, the maximum duty rates on synthetic fibre/yarns and polymers have been reduced to 65 per cent, with upstream products facing much lower duties. These duty rates are expected to be reduced further. Polyester staple fibre is the only petrochemical product on the restricted list of imports, but even this can be freely imported against special import licences which are issued to exporters and can be traded in the market.

India's competitive advantage in exporting petrochemicals is weak because of the uneconomic plant capacities, infrastructural shortages and high operating costs resulting largely from the cost of feedstocks, power and financing. Nevertheless, as the domestic industry matures and approaches the international levels of scale and technology, some petrochemical products may become internationally competitive provided inputs and financing are available at competitive prices.

Fertilizers

The importance of the fertilizer industry in India is due to its link to agriculture. The Government has aimed at a substantial degree of self-sufficiency in this sector. India's per hectare use of fertilizer is still quite low, but accelerated agricultural development will undoubtedly generate demand.

The industry was subject to rigid price controls for several years. More recently, however, phosphatic and potassic fertilizers have been freed from price controls, but the arrangement continues for urea.

Although the Government has indicated that it will progressively phase out subsidies, it is not clear whether the subsidy on urea will be phased out completely and if so over what period. This has created some uncertainty about future investment in the industry since new plants are much more expensive than the average present cost of production. Also, if urea prices were completely decontrolled, demand might shrink substantially for some time.

Pharmaceuticals

The pharmaceutical industry in India is one of the largest and most technologically advanced in the developing world. In recent years it has emerged as a significant exporter, exporting low-cost bulk drugs to industrialized countries and formulations to developing countries. However, the industry has been able to make use of skilled manpower resources only for the development of synthetic pharmaceutical products. It is also significantly dependent on the import of essential starting raw materials and fine chemicals. In addition, the packaging industry has not kept pace with the development of the pharmaceutical industry.

The Indian pharmaceutical companies have to adjust to the patent laws laid down in the Uruguay Round accord. During the transition period the companies may form joint ventures for the introduction of new products to exploit the opportunities that are still available. They can maximize their advantage as low-cost manufacturers of generic products and export them to the

developed countries. Above all, the major Indian companies will need to make substantial investments in research and development.

Iron and steel

India is well endowed with major raw materials required for a modern steel-making industry, its biggest advantage being the ample availability of good quality iron ore reserves. India's crude steel production during 1993/94 was 18 million tonnes. Notwithstanding the modest growth of world demand for steel and declining demand in developed countries, the Indian steel industry is poised to more than double steel production by the year 2000. This expansion will be primarily due to a rapid growth of expected domestic demand, especially for infrastructural development, as is evidenced from the very low consumption per head of steel products in India compared with other developing countries.

Before the economic reforms of 1991, the integrated steel plants were subjected to extensive pricing and distribution controls. The new policy has created a liberal environment, abolishing licensing and price control and ending the policy of reserving steel for investment by the public sector only. Protective barriers have also been lowered by gradually reducing the tariff rates, although they still remain high at 50 per cent. If infrastructural support to the steel industry in the form of ports, railways and power is ensured, it should be possible to realize the fast growth planned.

Aluminium

India has substantial resources of bauxite to support its drive to become a global player in aluminium. Before the 1991 economic reforms, protection from foreign competition was provided by imposing high customs duties on waste and scrap (85 per cent) and wrought products (105 per cent). The domestic regulatory regime had a stifling effect on the industry.

The aluminium price decontrol of 1989 was a major step forward in the direction of policy reform for the industry. The situation has undergone dramatic change in the 1990s as the regulatory environment has been dismantled, excise duties have been lowered and custom duties have also been reduced. The industry is going through a process of restructuring to respond to the new challenges.

India's consumption per head of aluminium is very low at 0.57 kg compared with 5-7 kg for the Asia-Pacific region. Rapid growth in the power sector, packaging and consumer durables is expected to provide a buoyant domestic market for aluminium. As the industry restructures itself to improve its cost competitiveness, export markets can also be exploited.

National Aluminium (NALCO), which was set up in the 1980s, has already proved itself to be the lowest cost producer of alumina in the world. Indian Aluminium (INDAL), in alliance with Tata Industries and Hydro Aluminium of Norway, and Larsen and Toubro in alliance with Alcoa of the United States, are each planning export-oriented alumina plants of 1 million tonne capacity to be located in Orissa. For the primary smelting sector, a major constraint is the availability of power which accounts for over 25 per cent of the metal's cost.

Machinery and capital equipment

India has a diversified capital goods sector which produces a wide range of products for defence as well as commercial needs and manufactures complete plants for a large number of industries

such as sugar, textiles, cement, steel, petrochemicals, mining, agriculture, power and telecommunications. It was consciously developed by stimulating direct investment in the public sector in heavy industries and pursuing policies of strong import substitution through high tariffs as well as quantitative restrictions. Policies towards the capital goods sector remained restrictive even in the 1980s, when technological modernization became important. Only the rather complex system of import licensing began to be operated with more flexibility than in the past.

The policy towards capital goods has undergone major transformation as part of the new economic policies of the 1990s. Licensing of capital goods imports has been abolished. Import duties on capital goods have been scaled down to a range of 20-40 per cent, representing a substantial reduction from the very high levels prevalent in 1991. On an import-weighted basis these reductions have amounted to a reduction in the average duty on capital goods imports from 97 per cent in 1990/91 to 38 per cent in 1993/94. However, tariffs on capital goods imports are still higher than those prevailing in most other developing economies. Also, anomalies have arisen because inputs such as steel, certain plastics and certain electronic items still benefit from higher protective tariffs.

The technological gap that existed earlier between Indian products and international products has been considerably narrowed due to the rapid induction of foreign technology. With the more recent trend of direct foreign investment in this sector, the process of technological modernization will undoubtedly be speeded up. A key factor in the growth of the machinery industries in future will be the progress made in reducing custom duties on metals and other critical inputs to bring Indian cost levels more in line with world prices.

Automobiles

India is an important manufacturer of automobiles and automotive components. After decades of high regulation, high taxation and heavy protection, policies towards the automobile sector began to change in the 1980s. Domestic deregulation and a liberal approach towards foreign investment and technology have led to greater competition and a wider range of products.

In the passenger car sector, the introduction in the 1980s of a modern energy-efficient car produced by a joint venture of the central Government and the Suzuki Motor Corporation of Japan in the 1980s tapped latent demand and helped to expand the market. Competitive pressures also forced the two established manufacturers to introduce improved models. In the two-wheeler and light commercial vehicle sectors, also, Indian manufacturers entered into collaboration with major Japanese companies and introduced new models. The joint ventures were, however, adversely affected by the appreciation of the yen and the delays in the indigenization programmes. Government policies were also responsible for the fragmentation of capacities.

The 1980s was a major watershed in the development of the automotive component industry in India. The advent of a large number of Japanese investors put pressure on the component industry to enhance capacity, modernize production and improve quality. This decade also saw Japanese collaborations in the auto component industry. The industry has emerged as an internationally competitive sector, recording export growth of 20 per cent per year in dollar terms during 1991-1994.

The automobile boom was interrupted by the economy-wide recession at the beginning of the 1990s. The sharp increase of 60 per cent in the price of petrol in a short span of two years in the aftermath of the Gulf crisis also contributed to the decrease in demand. The Government took a number of initiatives, such as lowering the excise duty on cars and the import duty on

components, to help fight the recession. The reduction in direct taxes also had a favourable effect, and the automobile industry came out of the recession in 1993. Domestic car sales increased by 21.6 per cent in 1993 to reach a volume of 200,000 cars. The first six months of 1994 saw a further acceleration in the growth of automobile sales. While cars and two-wheelers continued to increase at an annual rate of 20 per cent per year, sales of commercial vehicles grew by over 30 per cent per year.

With the liberalization in government policy with respect to industrial licensing and foreign investment in the automobile sector, there is tremendous investor interest in this sector. General Motors, Mercedes Benz, Ford Motor Company and Daewoo Corporation of the Republic of Korea are only some of the big names which have entered the field. With interest rates going down, the easing of government controls and general economic recovery, the fortunes of the industry are looking up. Various non-banking financial service companies, along with the major manufacturers, are offering hire-purchase financing, which is becoming increasingly attractive.

Electronics

The electronics industry in India developed very slowly for many years as a consequence of restrictive policies that discouraged consumer electronics and also discouraged foreign investment and foreign technology in this technology-driven sector. The situation changed in 1982 with the introduction of colour television and the launch of a programme to cover the whole country with a network of television transmitters. The modernization and expansion of the telecommunications system also provided a push for electronics catering to the telecommunications industry. The growing market for computers has been an additional influence on the development of the electronics industry.

The most important element of the resource base of the Indian electronics industry is the abundance of top class technical and managerial manpower. The liberalization of policies since 1991 has transformed the environment, but much more remains to be done in this sector. The highly protective tariffs on materials and components remains a constraint. The small scale of operation is another major constraint.

The potential for immediate market expansion is tremendous in view of the low level of penetration, be it telecommunications, computers or television sets, and is drawing global players into India. Foreign investment amounting to Rs 1.6 billion has been approved so far, and the interest is growing. The latest development is the decision of Sony Corporation of Japan to manufacture colour television sets, broadcasting equipment, software and other high-technology products. Given the entrepreneurial and technical talents already available and the new-found dynamism of the Indian economy, the electronics industry seems poised to become internationally competitive.

I. THE MACROECONOMIC AND INDUSTRIAL POLICY ENVIRONMENT

A. RECENT ECONOMIC TRENDS

India is experiencing a quiet economic revolution. Economic reforms introduced in the wake of a balance of payments crisis in 1991 have taken root and a major restructuring of the economy is taking place. With a population close to 870 million including a middle class of anywhere between 150 million and 250 million, India's domestic market potential among developing countries ranks second only to China's and is close to all countries of the Association of South-East Asian Nations (ASEAN) combined (see Table I.1). The transformation is taking place within the framework of an open democratic society offering the largest "free" market in the world.

The old isolationism is giving way to a new zeal for globalization. Unlike hesitant starts towards liberalization in the 1980s, the change this time is for real, based on a wide and growing consensus about the ineffectiveness of the old inward-oriented regime. The reforms, together with India's immense market, the vast natural resources, a long history of private enterprise, and abundance of associated skills and systems, hold out tremendous promise. However, problems of physical and social infrastructure, slow and time-consuming judicial procedure, labour laws which stand in the way of a modern industrial regime and inadequacy of social insurance remain and act as constraints to the realization of the tremendous potential. Also, unless concerted efforts are made to bring down the rate of growth of population, the increased gross domestic product (GDP) may be eaten away by a fast increasing population rather than increasing the *per capita* incomes and standards of living in the country. The population growth of 2.1 per cent per annum as experienced in the 1980s is too high and needs to be reduced.

Developments in the 1980s

Until 1980, India was a slow-growing economy recording growth rates of 4.1 per cent per annum in the 1950s, 3.8 per cent per annum in the 1960s and 3.3 per cent per annum in the 1970s. In the 1980s India's economic growth accelerated as the economy grew at a rate of 5.6 per cent per annum between 1980/81 and 1989/90 (Fig. I.A).[1/] This was not only much higher than in the earlier decades, but was also better than the growth record of the developing economies taken together (see Table I.2). An increase in the investment rate in India during the 1980s was associated with significant increases in productivity to bring about an acceleration in growth. This was in contrast with the experience in the earlier decades when the investment rates had increased steadily from 10.2 per cent in 1950/51 to 22.1 per cent in 1980/81 (see Fig. I.B) but there was no perceptible acceleration in the growth of GDP.

Table I.1. GNP of selected developing countries, 1992

	Purchasing power parity	
	GNP per head ($)	GNP ($ billion)
China	1,910	2,219
India	1,210	1,070
Brazil	5,250	808
Mexico	7,490	637
Indonesia	2,970	546
Republic of Korea	8,950	394
Thailand	5,890	342
Turkey	5,170	305
Pakistan	2,130	253
Egypt	3,670	202
Argentina	6,080	201
Philippines	2,480	159
Malaysia	8,050	153
Nigeria	1,440	147
Singapore	16,720	50

Source World Bank. *World Development Report*. Washington D.C. 1994.

Table I.2. Macroeconomic indicators: selected countries, 1970s and 1980s

	1970s			1980s		
	GDP growth	Inflation	Rate of investment	GDP growth	Inflation	Rate of investment
India	3.4	8.4	17	5.4[a/]	8.2	20
China	5.2	0.9	28	9.4	5.8	36
Republic of Korea	9.6	20.1	25	9.6	5.6	39
Indonesia	7.2	21.5	16	5.6	8.5	35
Malaysia	7.9	7.3	22	5.7	1.7	36
Philippines	6.0	13.3	21	1.1	14.6	20
Thailand	7.1	9.2	26	7.9	3.7	39
Singapore	8.3	5.9	39	6.6	1.9	37
Turkey	5.9	29.4	20	5.0	44.7	20
Brazil	8.1	38.6	21	2.5	327.6	20
Mexico	6.3	18.1	21	1.2	66.5	23
Argentina	2.5	133.9	22	-0.4	416.9	12
All developing economies	5.3	21.8	21	3.3	53.9	27

Source World Bank. *World Development Report*. Washington D.C. 1993.

a Data for the 1980s refer to the growth between 1980 and 1991.

The previous strategy of industrialization in India was dominated by import substitution, emphasis on heavy industries and a central role for the public sector within a mixed economy. The policy regime facing the industrial sector was characterized by extensive government intervention and discretionary control. In agriculture, growth came initially from the extension of cropped area, and subsequently in the 1970s and 1980s from the "green revolution" based on intensified use of high-yielding varieties of seed, fertilizers, and the spread of irrigation. Over the years, this strategy led to increasing reliance on explicit subsidization of certain inputs such as fertilizers, and implicit subsidization of inputs such as irrigation and power through deliberate underpricing. Nevertheless these subsidies only partially offset the negative impact on agriculture arising from the high level of protection given to Indian industry and the net subsidy to agriculture remained negative.

Fig. I.A. Long-term trends in GDP growth 1950s-1993/94 (Percentage per annum)

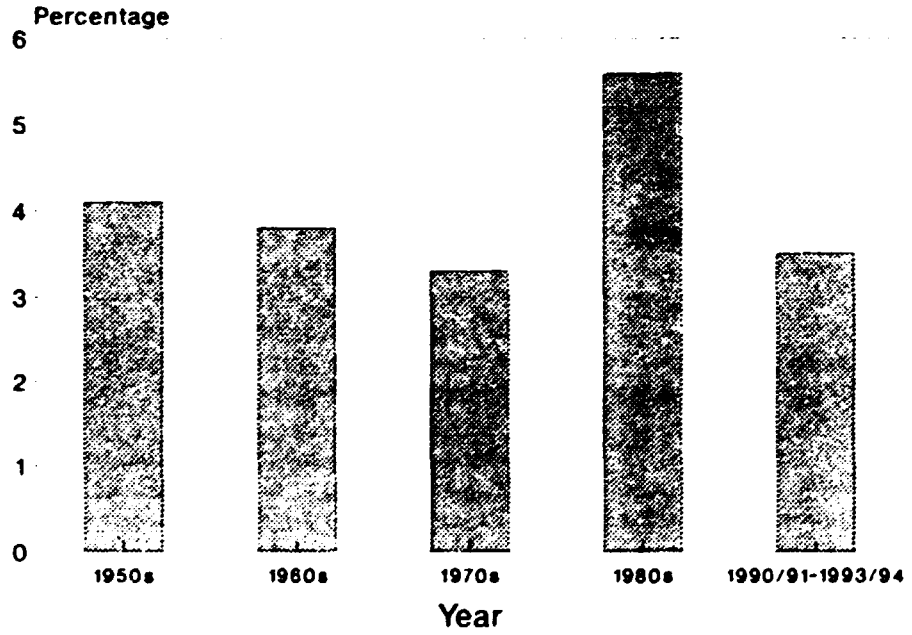
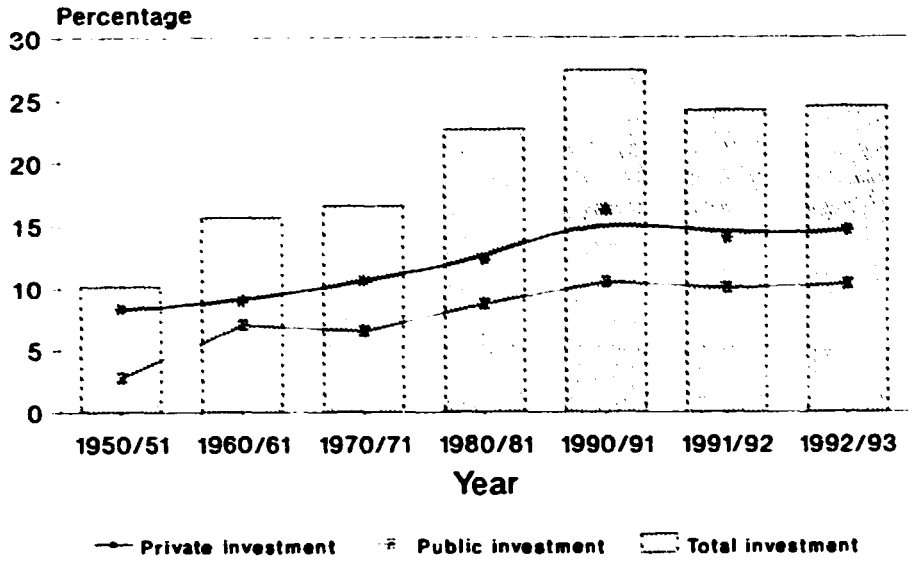


Fig. I.B. Trends in investment, 1950/51-1992/93, selected years (Percentage of GDP)



Box I.A. Structural change in the Indian economy

Over the past four decades, India has made a transition from a predominantly agrarian economy, with 55 per cent of GDP derived from agriculture and only 12.8 per cent from industry in 1950/51, to a more balanced economic structure with the share of agriculture reduced to 31 per cent and that of industry increased to 24 per cent. However, at 31 per cent, the share of agriculture is still higher than the 27 per cent in China and also higher than the 29 per cent for all low-income economies taken together.

Between 1950/51 and 1970/71, the structural transformation of the Indian economy was more in favour of the industrial sector, which increased its share in GDP from 12.8 per cent to 18.6 per cent. In the subsequent 20-year period, it was the services sector which increased its share more. By 1991/92, services accounted for almost 40 per cent of the GDP of India.

Structure of GDP by sector of origin at 1980/81 prices
(Percentage share)

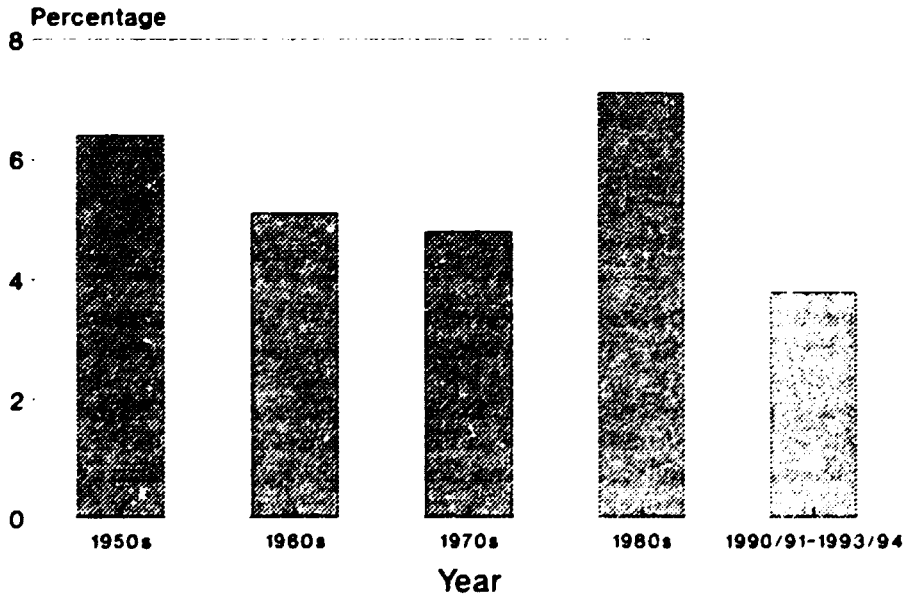
	1950/51	1970/71	1991/92
Agriculture	55.4	44.5	30.3
Industry	12.8	18.6	24.7
Manufacturing	11.4	16.1	20.3
Construction	3.3	5.0	4.6
Services	28.4	31.9	39.9

Domestic deregulation and trade policy reorientation

A process of rethinking about the industrial and trade policy regime began in the late 1970s, and a number of policy initiatives were taken in the 1980s to mitigate the rigours of the regulatory regime. Private investment was given larger scope for participation in the growth process; market forces were allowed to play a somewhat larger role in encouraging better utilization of investments that had already been made; direct taxes were lowered; and licensing controls on foreign trade and investment were liberalized gradually. The very high degree of protection from foreign competition, however, continued throughout the 1980s. The resulting anti-export bias of the trade regime was sought to be offset by increasing the subsidies for exports.

The Indian manufacturing sector responded to the policy reorientation of the 1980s by recording significant productivity gains. After a long-term trend decline of 0.5 per cent per annum in the 1960s and the 1970s, total factor productivity grew at a rate of 2.7 per cent per annum in the 1980s (see Table II.7 in Chapter II). The growth of value added in industry accelerated from 4.8 per cent per annum in the 1970s to over 7 per cent per annum in the 1980s (see Fig. I.C). But the sustainability of the better growth performance was being put to test by the deteriorating macroeconomic environment during the decade.

Fig. I.C. Long-term trends in industrial growth, 1950s-1993/94 (Percentage per annum)



Fiscal imprudence

India's macroeconomic performance up to the end of the 1970s was characterized by reasonable fiscal prudence, but the fiscal position deteriorated significantly in the 1980s for a number of reasons. The fiscal policies of the central Government became increasingly expansionary to support growing levels of government expenditures. Current expenditures of the Government escalated on account of the sharply rising interest payments, defence and subsidies (see Table I.3).

Interest payments as a per cent of GDP more than doubled during the 1980s, increasing steadily from 1.7 per cent in 1980/81 to 3.7 per cent in 1990/91. Defence expenditure in relation to GDP increased from 2.6 per cent in 1980/81 to 3.3 per cent in 1988/89, while subsidies increased from 1.4 per cent in 1980/81 to 2.4 per cent in 1989/90.

Table I.3. Government revenue/expenditure trends, 1980/81-1993/94

Year	Growth in plan expenditure at 1980/81 price (Percentage per year)	Tax revenue (Percentage of GDP)		Selected expenditure items (Percentage of GDP)		
		Direct	Indirect	Defence	Interest	Subsidy
1980/81	..	1.9	5.4	2.6	1.7	1.4
1981/82	4.3	1.7	5.5	2.6	2.0	1.2
1982/83	10.7	1.7	5.6	2.7	2.2	1.3
1983/84	9.7	1.6	5.9	2.7	2.3	1.3
1984/85	11.1	1.5	6.1	2.8	2.6	1.6
1985/86	14.5	1.4	6.6	2.9	2.9	1.8
1986/87	9.5	1.4	6.9	3.4	3.1	1.9
1987/88	-2.7	1.3	7.2	3.0	3.4	1.8
1988/89	0.5	1.5	7.0	3.3	3.4	2.0
1989/90	-2.0	1.3	7.1	3.1	3.6	2.4
1990/91	-6.5	1.3	6.8	2.9	3.7	2.0
1991/92	-4.1	1.7	6.5	2.6	4.1	1.7
1992/93	7.5	1.8	6.4	2.5	4.3	1.4
1993/94	15.9	1.8	6.1	2.4	4.5	1.0

Source: Ministry of Finance, Government of India.

The rising burden of the subsidies was a major factor behind the fiscal deterioration of the 1980s, the main increase being in the fertilizer subsidy. This, however, tells only part of the story, i.e., that relating to food, fertilizer, exports and a few other visible areas. A significant part of the subsidy burden is not visible in the budget. The largest of the invisible subsidies perhaps is the subsidy on power. The electricity tariffs are set by the state Governments and there is a large element of subsidy in the tariff particularly for farmers. Most of the state electricity boards are not even covering their operating costs on the supply of electricity to agriculture because the agricultural tariff is very low and even zero in some states. The problem is further compounded by political interference in the running of the boards resulting in excessive employment, poor operational efficiency and transmission and distribution losses.

In other key areas such as irrigation and road transport also, the public sector organizations which provide these services (mainly in the states sector) have been making large losses which have imposed not only an immediate burden on the budgets of the state Governments to cover the losses but also forced state Governments to fund the expansion of these services through government borrowing. In 1990, the accumulated losses of the state electricity boards on account

of the agricultural subsidy on power amounted to Rs 38 billion. The continuously weakening financial position of the state Governments led to an increase in the states' share of central Government tax collections in the 1980s consequent to an award of the Sixth Finance Commission. This in turn weakened the finances of the central Government.

The returns from heavy central public sector investments were also far short of expectations, and this began to impose a strain on the budget in the 1980s. The central Government was also burdened by a large number of loss making enterprises in the public sector.

The trend of rising tax revenues as a share of GDP slowed down in the 1980s, especially in the second half, as the structure of taxation had become highly distorted. Apart from their effect on allocative efficiency, the high rates of taxation applicable to a narrow base and a proliferation of exemptions and loopholes also reduced compliance and made tax administration difficult. It became evident that basic reforms in tax policy were necessary if revenue buoyancy was to be ensured.

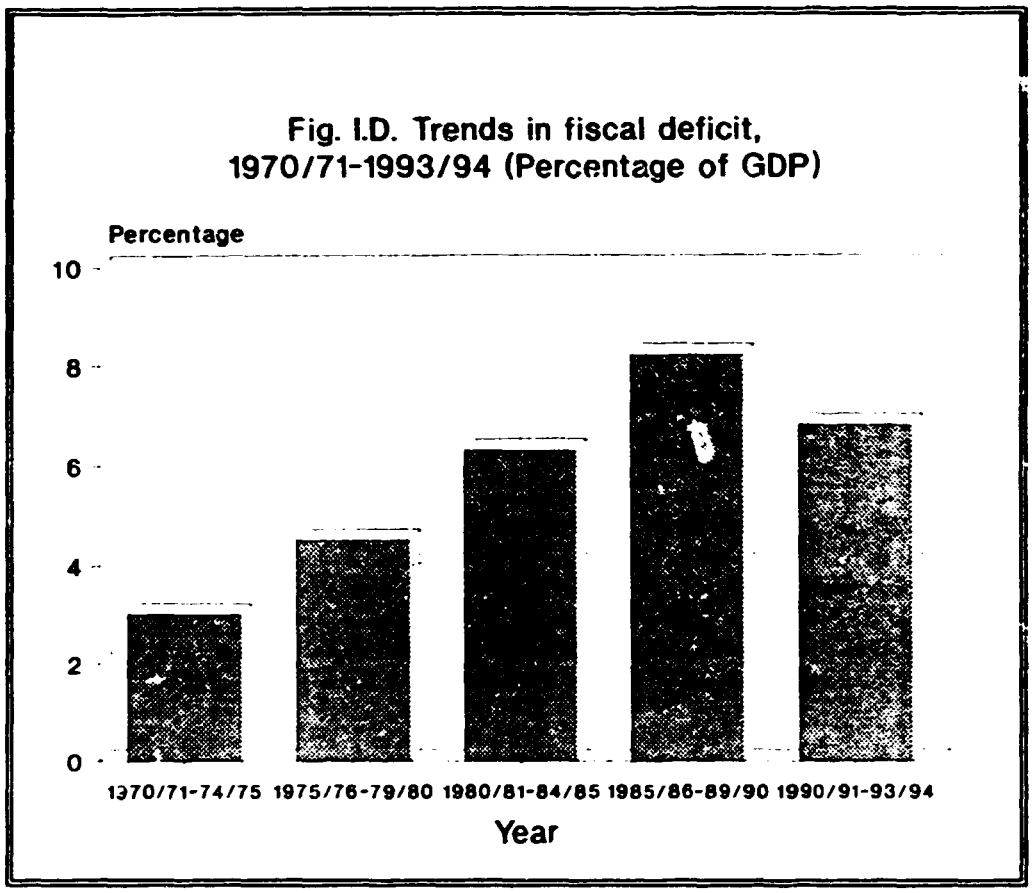
The fiscal current account position of the central Government turned from an average surplus of 1.8 per cent of GDP in the second half of the 1970s to a small deficit in 1980/81 which increased over time to a deficit of 3.3 per cent of GDP in 1990/91. The gross fiscal deficit of the central Government increased from 3.2 per cent of GDP in 1975/76 to 6.2 per cent in 1980/81 and to 8.4 per cent by 1990/91 (see Table I.4). The average level of the fiscal deficit of the central Government in successive five year periods shows the deterioration in the fiscal position (see Fig. I.D).

Table I.4. An overview of the macroeconomic environment, 1970/71-1993/94

Year	Fiscal deficit (Percentage of GDP)	Current account, BOP (Percentage of GDP)	Foreign exchange ($ billion)[a/]	Inflation rate (Percentage over preceding year)
1970/71	3.0	..	0.6	5.5
1975/76	3.2	..	1.6	-1.1
1979/80	5.6	-0.8	6.3	17.1
1980/81	6.2	-1.3	5.8	18.2
1985/86	8.3	-2.5	6.0	4.4
1989/90	7.8	-2.8	3.4	7.4
1990/91	8.4	-3.3	2.2	10.3
1991/92	5.9	-0.9	5.6	13.7
1992/93	5.7	-2.1	6.4	10.1
1993/94	7.3	0.0	15.1	8.4

Source *Economic Survey*, Ministry of Finance

a/ End of fiscal year



Conservative fiscal management up to the end of the 1970s had meant that the inflation rate in the economy was kept by and large under control. Even with the two oil price shocks in the 1970s, the inflation rate accelerated only to 8.4 per cent per annum, much lower than in most other developing economies (see Table I.2). However, the sustained high levels of fiscal deficit during the 1980s had an adverse effect on the macroeconomic environment. There was an inevitable expansionary impact on money supply as a significant part of the fiscal deficit was monetized through borrowing from the Reserve Bank of India. The high fiscal deficits also led to pressure on the balance of payments, especially in the second half of the 1980s when India resorted to a substantially enhanced level of external commercial borrowing.

External debt

India's total external debt (excluding debt owed to the former Union of Soviet Socialist Republics) increased from $22.4 billion in 1981/82 to $71 billion in 1991/92; the proportion of high interest short term debt in the total also increased. The effect of the expansionary fiscal policies of the 1980s on inflation rates was contained by the policies of deregulation which elicited good supply response from the industrial sector and by rising balance of payments deficits. The average inflation in the 1980s was 8.2 per cent per annum, lower than in the 1970s, but higher than for many of the developing economies during this period (see Table I.2).

The decade of the 1980s had opened with a reasonably comfortable foreign exchange reserve position of $7.4 billion at the end of 1979/80 which provided cover for over seven months of imports. The current account deficit in 1979/80 amounted to 0.8 per cent of GDP. But balance of payments issues acquired centre stage in India's macroeconomic management during the 1980s. While the impact of the second oil price shock of 1979 was moderated significantly by the discovery of crude oil in Bombay High in the early part of the decade, the second half of the 1980s saw a significant deterioration in the current account deficit from 2.5 per cent in 1985/86 to 3.3 per cent in 1990/91. This was because of the surge in non-oil imports, e.g., capital goods for technological upgrading, export-related goods as part of the liberalization of imports for export-oriented industries, and defence-related imports.

Export growth actually did much better in the latter part of the 1980s as the real effective exchange rate depreciated by 31 per cent between 1982/83 and 1988/89 (see Fig. I.E). But the improvement in export performance was more than offset by the surge in imports during this period, and private remittances also slowed down (see Fig. I.F and see Fig. I.G). To a large extent, the deterioration in the current account deficit of the balance of payments during the second half of the 1980s reflected the deterioration in the fiscal deficit of the Government.

Fig. I.E. Indices of real effective exchange rate of the rupee, 1960-1993, selected years (1985 = 100)

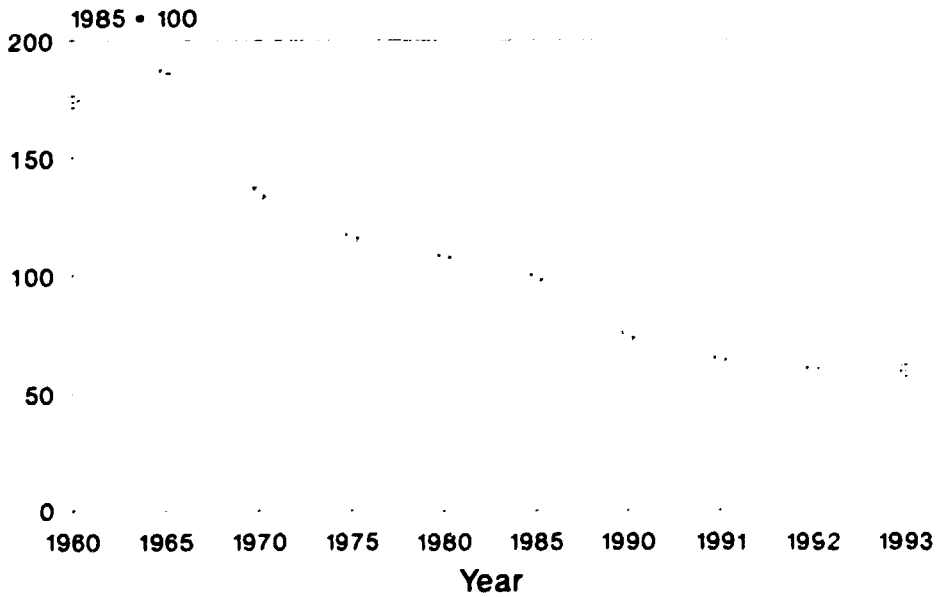


Fig. I.F. Merchandise exports and imports, 1980/81-1993/94 ($ billion)

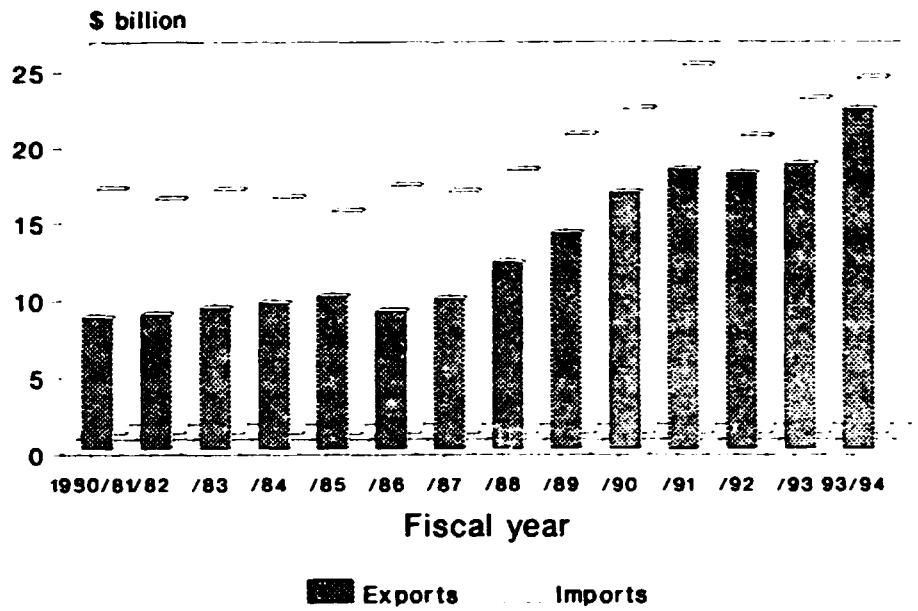
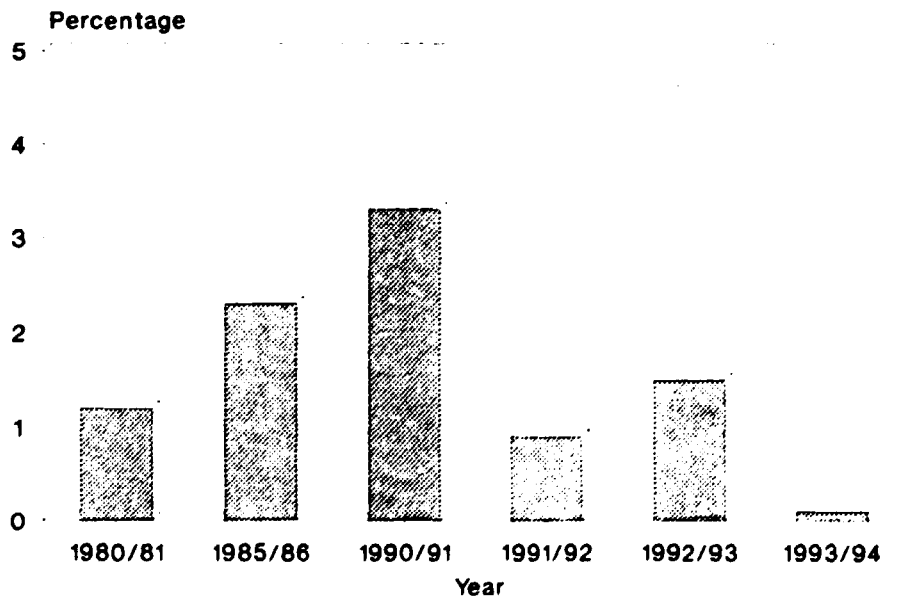
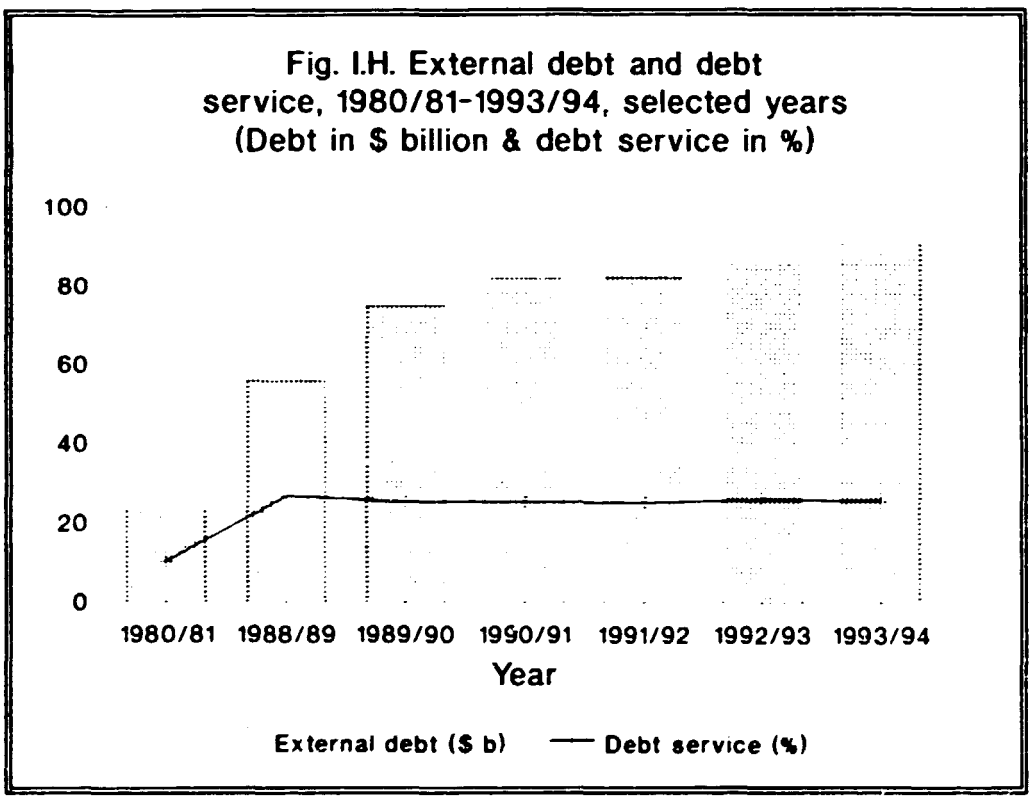


Fig. I.G. Current account deficit as percentage of GDP, 1980/81-1993/94, selected years



The high levels of fiscal deficit in the 1980s were reflected in increased borrowings from the domestic as well as the foreign capital markets which in turn generated a macroeconomic environment with the potential for undoing the gains from the slow process of structural adjustment which was under way. Commercial borrowing and non-resident deposits emerged as important sources of financing the balance of payments deficit. The result was a doubling of external debt and a rise in the debt-service ratio from 13.6 per cent in 1984/85 to 30.9 per cent in 1989/90 (see Fig. I.H).



Towards unsustainable domestic debt

High fiscal deficits in the 1980s also produced an increase in the domestic debt of the Government through borrowing from the domestic commercial banks. The latter were forced to lend to the Government because of the high statutory liquidity requirement which stipulated that a proportion of the demand and time liabilities of the commercial banks had to be held in the form of government securities.

By the start of the 1990s the fiscal position of the central Government had come under severe strain because of sustained borrowing over several years. The interest burden on the accumulated central Government debt had increased from 10.2 per cent of current revenues in 1980/81 to as much as 25.2 per cent in 1990/91. The rising interest burden raised obvious questions about fiscal sustainability.

The crisis of 1990/91: prelude to reforms

The worsening fiscal deficits of the 1980s had weakened the macroeconomic situation, and the Gulf War of 1990 precipitated the balance of payments crisis. The growing political instability at the turn of the decade into the 1990s further contributed towards the collapse of international confidence in the ability of the Government to manage the economy. This led to a drying up of the market for external commercial loans in 1990/91 and capital outflow of non-resident Indian (NRI) deposits. Despite emergency borrowing from the Reserve Tranche and the Compensatory Contingency Financing Facility of the International Monetary Fund (IMF), the level of foreign exchange reserves dropped precipitously to a little over $1 billion in June 1991, barely sufficient to finance imports for a fortnight. The rate of inflation in 1990/91 accelerated to 10.3 per cent from 7.4 per cent in the preceding year. By August 1991, inflation had reached a high of 17 per cent on an annualized basis. As inflation accelerated and foreign exchange reserves dwindled, international default by India seemed a real possibility.

It was in this atmosphere of crisis that a newly elected Government launched a programme of economic reforms in June 1991. The economic crisis of 1991 helped to focus attention on the need for widespread economic reforms directed at fiscal stabilization as well as micro-level changes including industrial and trade policy changes. While the urgency was derived from the gravity of the crisis, the mood was for a cleaner break with the inward oriented policies of the past and preparing the Indian economy for integration with the rest of the world. With dissatisfaction on the functioning of India's inward-oriented regime starting as far back as the late 1970s, it had taken over a decade for the Government to develop the resolve for change. The balance of payments crisis of 1991 forced the timing.

The economic reforms of the 1990s were designed within an overall dual strategy whereby fiscal adjustment aims to bring about macroeconomic stabilization, while structural reforms in industrial, trade and financial policies are designed to strengthen the growth capability of the economy in the medium term and help Indian industry to become internationally competitive.

B. THE ECONOMIC REFORMS

The crisis of 1990/91 forced fiscal stabilization as an integral part of the programme of economic reforms. This was combined with wide ranging reforms in the areas of industrial policy, trade and exchange rate policies, a radically different approach to foreign investment, and financial sector reforms.

Fiscal policy reforms and stabilization

The central Government embarked on a declared objective of bringing the fiscal deficit under control as part of its effort at macroeconomic stabilization. The Government also undertook to begin the task of basic restructuring of the tax system with a view to rationalizing the tax structure and making it both more conducive to economic growth and more buoyant as a source of revenues.

In the first year of the reforms, the Government was able to make impressive progress in reducing the fiscal deficit from a level of 8.4 per cent of GDP in 1990/91 to 5.9 per cent (below the targeted level of 6.5 per cent). The momentum of fiscal stabilization slowed down significantly in 1992/93 when the deficit declined only marginally to 5.7 per cent compared to the target of 5 per cent. There was significant deterioration in 1993/94 when the deficit increased to as much as 7.3

[a] United Nations Industrial Development Organization

per cent of GDP. This was not only substantially higher than the target of 4.7 per cent, but was also higher than the level achieved in each of the previous two years. The reversal in 1993/94 was a matter of concern among domestic and international observers of the Indian economy and the Government has set a target for reducing the deficit to 6 per cent in 1994/95. Achievement of this target is obviously crucial for establishing credibility of the effort at macroeconomic stabilization. An important development in this respect has been the memorandum of understanding that the Government of India signed in August 1994 with the Reserve Bank of India (RBI) to keep the government's borrowing from the RBI within prescribed limits. Fiscal deficits of the Government of India can no longer be automatically financed by borrowing from the RBI. The Government will have to borrow from the market for financing deficits beyond the prescribed limits.

A substantial reduction was achieved in the burden of subsidies on the central budget from 2.4 per cent of GDP in 1989/90 to 1 per cent in 1993/94, although a significant indirect burden of the numerous implicit subsidies such as those for electricity and irrigation and the explicit subsidy on food continued to be borne by the budget. The cash subsidy on exports was abolished in 1991/92 following the devaluation in 1991 and the shift to a more liberal trade policy with a realistic exchange rate. The fertilizer subsidy was reduced following the decontrol of phosphatic fertilizers. Prices of urea, however, remained controlled so that the fertilizer subsidy continued as a charge on the budget.

Interest payments as an element of expenditure rose rapidly in these years so as to reach a level of 4.5 per cent of GDP in 1993/94. This was because the level of fiscal deficit remained high so that total debt was rising, and also because the Government shifted increasingly to borrowing at market-related interest rates. Defence expenditure, being tightly constrained, was not only relatively low compared to most countries but actually fell from 3.3 per cent of GDP in 1988/89 to 2.4 per cent in 1993/94.

The principal incidence of fiscal stabilization in the first two years of the reforms was on plan expenditure which broadly consists of central Government support to new developmental activity in the central budget and loans/grants to states in support of similar activity in the states, although the decline in these expenditures started earlier in 1987/88. There was some increase in capital expenditures in 1993/94 (see Table I.3).

Tax reforms

Reform of the tax structure was a key element in the strategy of economic reforms and was guided by the Tax Reforms Committee which had recommended comprehensive restructuring of both direct and indirect taxes. These proposals were implemented in stages in the budgets of 1991/92, 1992/93 and 1993/94.

By 1994 personal income taxes, which account for 12 per cent of the central Government's tax revenue, had been restructured to reduce the marginal rates of taxation, eliminate exemptions and loopholes, and encourage savings in financial assets. The maximum marginal rate of tax was lowered from 56 per cent in June 1991 to 40 per cent. As part of the tax restructuring, all financial assets including corporate securities were exempted from wealth tax which now applies only to unproductive assets (i.e. residential property in excess of one house, urban land, jewellery etc).

Box 1.B. Centre-State finances

Taxation powers of Government are divided between the centre and the states according to provisions laid down in the Constitution. The major direct taxes levied by the central Government are on personal incomes and corporate profits, while the major indirect taxes are custom duties on imports and excise duties on domestic production. The major source of revenue of the state Government is its tax on retail sales. Recognizing the limits on the taxation power of the states, the Constitution provides that revenues from personal income taxes and excise duties shall be shared by the centre with the states. At present, 85 per cent of the revenue from personal income tax and 45 per cent of excise duties is distributed to the states according to a distribution formula determined by the Finance Commission. The formula is reviewed every five years. The Tenth Finance Commission is expected to submit its report by the end of 1994.

Total expenditure of the central Government amounts to 17.3 per cent of GDP. The state Governments also have substantial budget expenditures which are partly financed by capital transfers from the centre to the states. The consolidated budget of the centre and states, which nets out transfers from the centre to the states shows total expenditure of the centre and states combined to be 32.5 per cent of GDP.

By 1994, capital gains tax had been rationalized to allow inflation indexing before calculating taxable gains, with the resulting long-term capital gains after indexing taxed at 20 per cent. In view of the reduction in the rates of income and wealth tax, some of the earlier deductions from income which were allowed against particular types of financial savings were reduced and rationalized. Various loopholes arising from separate taxation of the incomes of minors were closed and the provision for presumptive taxation was widened. These steps were accompanied by moves to simplify assessment procedures and to extend computerization.

Corporate taxes account for around 12 per cent of the central Government's tax revenue. In 1991/92, the corporate tax structure was complex with different rates for domestic widely held companies (45 per cent) and domestic closely held companies (50 per cent) and a surcharge of 15 per cent applicable to both, while foreign companies paid tax at a rate of 65 per cent without surcharge. Foreign companies in this context are a limited category of companies incorporated abroad and operating in India only through branches such as, for example, airlines and foreign banks. The term does not refer to companies registered in India with foreign ownership of equity. Such companies, even if 100 per cent foreign-owned, are treated as domestic companies. Since 1991/92 corporate tax rates have been simplified and substantially reduced, tax rates for widely held and closely held domestic companies being unified and reduced to 40 per cent. The 15 per cent surcharge continued into 1994, but was expected to be removed eventually. The rate of tax on foreign companies has been reduced to 55 per cent without any surcharge. The new rate structure, combined with generous depreciation provisions, brought the effective Indian corporate tax rates down to fairly modest levels comparable with tax rates prevailing globally. Many rapidly expanding companies pay no tax at all.

Excise duties are the largest single source of revenue for the central Government, accounting for 40 per cent of the total tax revenues. Prior to the economic reforms, about 70 per cent of the

revenue was generated from specific duties rather than *ad valorem* duties, leading to low revenue elasticity with respect to inflation. The number of rates was also very large with numerous exemptions. The system was extremely difficult to administer. A system of tax credits, Modified Value Added Taxation (MODVAT) for excise duties paid on earlier stage inputs, had been introduced in 1986, but it excluded many categories of products. For example, duty paid on capital goods used in production was not eligible and the system was not extended to petroleum products and textiles.

Reform of the excise duty structure was initiated in the 1994/95 budget. The coverage of the tax credit system for duties paid on inputs was substantially extended to include the duty paid on capital goods. The petroleum sector was also brought under the MODVAT system. The number of specific rates was drastically reduced such that about 70 per cent of the revenue comes from *ad valorem* rates. Many exemptions were eliminated, extending the coverage of the system and thus helping to broaden the base. In order to move to a full value added tax as an ultimate goal, the central Government needed to bring about an integration of central taxes on production with state taxes on sales, which would require an amendment to the Constitution.

Customs duties in India have been an important source of revenue for the central Government accounting for 36 per cent of the total tax revenue. The strategy of import-substituting industrialization led to very high protective rates which made the budget heavily dependent on customs revenues as a substantial source of revenue. This dependence increased during the 1980s when quantitative restrictions on imports were gradually converted into high tariff rates. This process is now being reversed since reduction of customs duties has been a key element in the Government's strategy of opening up the Indian economy to foreign competition. Tax revenues as a percentage of GDP fell after 1990/91 primarily because of the decline in customs revenue. In due course the cumulative effect of tax reforms should bring about greater buoyancy, but this will take time.

Taken as a whole, the initiatives for reforming the tax system thus far go a long way towards the objective of a modern tax administration. However, the process of reform is far from complete and further changes are needed to achieve the Government's stated objective.

The overall effect of the stabilization measures on the inflation rate was to bring it down from the levels of 10.3 per cent and 13.7 per cent in 1990/91 and 1991/92, respectively, to 7 per cent in 1992/93. The slippage on stabilization took its toll on the inflation rate in 1993/94, which increased to over 9 per cent by the end of the year and edged up to around 12 per cent in the first quarter of 1994/95. However, the effort at reducing the fiscal deficit in 1994/95 contributed towards a distinct slowing down of inflation in the second quarter of 1994/95 with the rate falling to 8.5 per cent by the end of September 1994. Fiscal discipline will be crucial for the control of inflation.

Industrial policy

Domestic deregulation has been a central feature of the industrial policy reforms. While licensing policies and pricing policies have been reoriented towards providing larger scope for the private sector to contribute to growth, there has been less action on public sector reforms and devising an exit policy for the non-viable and non revivable sick units so as to facilitate smooth restructuring of the industrial sector.

In industrial policy, reforms have centred on loosening the barriers to entry for firms so as to encourage competition in the industrial sector. The licensing requirement for industrial investment

has been abolished in all but 15 industries where either strategic and environmental concerns dominate or the import content is exceptionally high. Delicensing of investment is also motivated by the desire to reduce bureaucratic discretion and increase the role of commercial considerations in investment planning. However, the policy of "reservation" in production for small-scale units has created protective enclaves within the domestic industrial sector with adverse effect on the competitiveness of Indian industry.

In an attempt to encourage greater private sector participation in the economy, the area of industrial activity reserved for the public sector has been considerably reduced to only six industries (see Chapter II). In particular, power generation and distribution, air transport, and the hydrocarbon sector have now been opened up for private investment.

More scope is also provided for large industrial houses to participate in the process of growth. The Monopoly and Restrictive Trade Practices (MRTP) Act has been amended to eliminate the need for prior approval for capacity expansion or diversification on the part of large industrial houses. The requirement for government clearance of industrial location has also been dispensed with (except in the case of 23 cities with populations exceeding 1 million), as has the requirement of the phased manufacturing programme, a programme of forced import substitution for all new projects.

In 1994 the barriers to exit for sick non-viable units, however, still remained. The Board of Industrial and Financial Reconstruction (BIFR) which was set up in the late 1980s to deal with this problem was not able to function effectively within the existing institutional constraints. The Industrial Disputes Act, the Companies Act and the Urban Land Ceiling Act stood in the way of providing the necessary flexibility in redeploying resources from the unproductive and economically non-viable sectors to the more vibrant sectors.

Amendment in the Industrial Disputes Act would allow retrenchment of labour without the need for securing permission of the state Government, while amendment in the Companies Act would facilitate mergers of sick companies with healthy ones and also cut short the long drawn out process of liquidating firms. Amendments in the Urban Land Ceiling Act will enable non-viable sick firms to sell their real estate to settle the claims due to their creditors and make it easier for them to exit.

The Government has established a National Renewal Fund with an initial allocation of Rs 2 billion to ensure that the cost of technological change and modernization does not fall too heavily on the workers. This Fund is expected to provide assistance to cover the cost of retraining and redeployment of labour and also provide compensation to labour affected by industrial restructuring in the public sector. However, actual progress thus far has been very slow because of the slow pace of restructuring of the public sector (see Chapter II).

The Government has brought sick public sector enterprises within the ambit of the BIFR as a way of dealing with the difficult problems of closure of unviable units. But this initiative is of limited use since the BIFR has had difficulty dealing with the sick private companies which have been under its charge for the past few years. For the rest, public sector reforms have largely been limited to providing a commercial orientation in the running of public sector enterprises and allowing competition from the private sector by "dereserving" areas of economic activity earlier reserved for the public sector. The government's policy of incremental divestment of its shares in public sector enterprises during 1991-1994 has brought its share in a number of such enterprises to close to 60 per cent. The latest round of divestment in May 1994 would have brought the government's share further down. So far, the central Government has not adopted an explicit

strategy of privatization involving outright transfer of management of public sector units to the private sector. However, such privatization has taken place in some cases at the state level (see Chapter II). In pursuing privatization, some states like Andhra Pradesh, Gujarat and Haryana are ahead of the central Government. In Uttar Pradesh, also, attempts are being made to privatize some of the sick public enterprises.

Foreign investment policy

The 1990s have seen a radical change in India's policy towards foreign investment. From being rather restrictive and selective for nearly two decades the foreign investment policy has come a long way in becoming friendly and pro-active. Foreign investment is now actively encouraged in all sectors and particularly in the infrastructure sectors.

Government policy in the past preferred that foreign investment be accompanied by technology transfer. The restrictive policy found full expression in the passage of the Foreign Exchange Regulation Act (FERA) of 1973 which imposed a ceiling of 40 per cent on the equity shareholding of foreign companies, required dilution to 40 per cent in the existing companies which were not operating in "high-tech" and strategic areas, and imposed limitations on royalty payments. Most foreign companies diluted to 40 per cent and some, like IBM and Coca-Cola, left the country. Others like the Unilever group diversified into areas such as heavy chemicals and fertilizers. The average level of equity investment in the period 1973-1983 was as low as $10 million per year.

In the second half of the 1980s, although there was no major liberalization of FERA, Government expressed its intention of welcoming foreign investment in industries deemed to be of national importance. While almost one out of every three collaborations involved foreign equity, the average equity participation was still very low. At its annual peak in this phase, foreign investment inflow was about $140 million.

The July 1991 Industrial Policy represented a sharp and radical transformation in policy towards foreign investment. The policy was based on the realization that India had paid a heavy price for resorting to high-cost commercial borrowings in the 1980s, when other countries had derived full advantage of equity investment which is a non-debt creating type of foreign capital inflow. The new policy did away with the 40 per cent limit and freely allowed majority ownership. In order to benefit from professional marketing activities, a foreign equity holding up to 51 per cent is permitted liberally for trading companies as well. They can go up to 100 per cent if they are primarily engaged in exports.

In the new liberalized regime, direct foreign investment is permitted in virtually every sector of the economy. It is freely permitted up to 51 per cent of the equity in a defined list of 35 industries. For investments outside this list, and also where foreign investors seek an equity share exceeding 51 per cent, investors are invited to apply to a newly set up Foreign Investment Promotion Board (FIPB) under the chairmanship of the Principal Secretary to the Prime Minister. The Board has established an excellent track record of speedy clearances. Royalty payments have been considerably liberalized. Technology imports are automatically approved for royalty payments up to 5 per cent of domestic sales and 8 per cent of export sales (both net of tax) with or without lump sum payments up to Rs 10 million. Government permission for hiring foreign technicians in projects is also no longer required.

In industries reserved for the small scale sector foreign equity up to 24 per cent is permitted. Foreign equity up to 100 per cent is encouraged in export-oriented units, the power sector, electronics and software technology parks. In other industries also, foreign equity up to 100 per

cent is permitted on merit. There is no restriction on the use of foreign brand names/trademarks for internal sale.

The Government is specially encouraging foreign investment in infrastructure. In the power sector the Government has gone out of its way to attract foreign investment so as to break critical infrastructure bottlenecks. Not only can a foreign investor hold 100 per cent equity in a venture but tax holidays are also offered for five years for new power projects. Several state Governments are actively negotiating with various foreign investors for setting up private sector power plants. Nine projects involving total foreign equity investment of around $1.5 billion are in the pipeline at present (see Table II.17). The hydrocarbon sector has also attracted significant investor interest. Joint ventures are now permitted in both exploration and development of oil fields and refineries.

The telecommunication sector was opened up with the announcement of a new telecom policy in May 1994. Apart from providing for private investment in value added services, the new policy also encourages private investment in the provision of basic telephone services. Air transport, which until recently was a public sector monopoly, has been opened up to the private sector and some new entrants have begun operations. Private toll roads have also been commissioned.

An indication of the effectiveness of the liberal foreign investment regime in India is the entry of well-established firms such as Enron, Fujitsu, Asahi Glass and Bell Telephone South, on the one hand, and Sony, Peugeot, Mercedes Benz, Kelloggs, McDonald's and Coca-Cola, on the other. Firms such as General Electric, General Motors, and Pepsi are also expanding their operations, while firms like Morgan Stanley, J.P. Morgan, Barings, Jarden Flemming, Oppenheimer, and Mckensie have entered the financial services sector. Between August 1991 and September 1994, over a hundred foreign companies were permitted to set up wholly owned subsidiaries in India. The approvals by FIPB up to September 1994 were close to $6 billion and the proportion of foreign investment going through the FIPB rate was increasing. In the first four months of 1994/95, close to 90 per cent of the investment was approved through this channel, compared with a little over 80 per cent in the preceding two years.

Apart from infrastructure sectors such as power, telecommunications and hydrocarbon, which are expected to continue to attract the major share of foreign investment, in manufacturing the sectors attracting foreign investment are food processing, electronic parts, chemicals, industrial machinery and transport. In services, foreign direct investment has concentrated on computer software and financial industries.

Trade policy

Trade policy reforms have been at the centre of the new economic policies of the 1980s. It was recognized that the earlier overly protective trade policy regime encouraged the development of high cost industries, which in turn made it difficult to achieve export competitiveness without complex and costly systems of subsidy. A gradual process of reducing protective barriers and opening up industry to foreign competition was, therefore, initiated in 1991. The basic objective of the policy was to integrate the Indian economy with the world economy by doing away with the complex system of import licensing and to lower the tariff rates on imports in a phased manner in order to bring them in line with those prevailing in other developing economies.

The earlier regime of pervasive import licensing covering raw materials, other inputs and capital goods had proved to be inefficient and cumbersome and also prone to corruption. Import control through licensing was largely eliminated in the very first year of the reforms for raw materials,

intermediate goods, capital goods and other inputs for production. These goods can be freely imported subject to payment of customs duties except for a small list of items whose import is still not freely allowed. Even these are importable against Special Import Licences given to exporters as an incentive (about 5 per cent of fob value of exports). These special licences are transferable and freely tradeable so that anyone wanting to import items on the negative list can do so by paying the additional premium in the market to buy a special import licence. Imports of finished consumer goods remain restricted, but here too a process of liberalization has begun since a defined list of consumer goods can be freely imported against Special Import Licences (see Annex B).

Along with the elimination of quantitative restrictions, the Government has sought to reduce India's traditionally high customs duties. In 1991, the peak rate of customs duty exceeded 250 per cent on several items and many industrial raw materials or intermediates were subject to duty rates of around 100 per cent. Even capital goods imports were subject to tariff rates of 80 to 90 per cent, which was much higher than the range of 5 to 15 per cent prevailing in most other developing economies. Such high tariffs inevitably raised costs and had a cascading effect on the industrial cost structure in India.

Tariff rates were lowered in each of the four budgets presented from 1991 onwards. The maximum tariff rate by late 1994 was 65 per cent, with tariff rates below the maximum also lowered. The average tariff rate on imports into India declined from 76 per cent in 1990/91 to 40 per cent in 1993/94. After making allowance for the exemptions, the import duty collection rate declined from 42 per cent in 1990/91 to 28 per cent in 1993/94 (see Table I.5).

The reductions in the import duty rates were specially sharp for capital goods. The composite duty rate on "project imports" (imports of various capital goods needed to set up new projects) which was at one time 85 per cent was reduced to 25 per cent. There is an even lower rate of 20 per cent applicable for machinery for electricity generation, petroleum refining, coal mining, and zero for machinery for fertilizer projects.

The Government was not deterred by the revenue shortfalls in the budget for 1993/94 from pursuing the course of tariff reforms in the 1994/95 budget. By late 1994 the import-weighted average tariff rate stood at an estimated 30 per cent on intermediate goods and 38 per cent on capital goods. India's customs duties even after the reforms remained very high but the progress had been substantial. The Government meanwhile indicated its intention to continue the process of duty reduction until the rates were reduced to levels comparable with other developing economies.

Table I.5 **Reductions in tariffs, 1987/88-1993/94**
(Percentage)

Year	Average tariff	Collection rates
1987/88	96.1	53.2
1989/90	71.9	44.4
1990/91	76.7	41.6
1992/93	54.1	32.3
1993/94	40.7	28.0

Source: World Bank

The gradual removal of the anti-export bias through dismantling the regime of import controls and reducing tariffs was combined with some positive measures to promote exports. Although export subsidy was abolished, the tax exemption on earnings from exports and the provision for concessional finance for exports continued. The negative list for exports was significantly pruned, removing a number of restrictions earlier applicable on exports, especially of agricultural commodities. As an added incentive to agro-based exports, export-oriented units (EOUs) in agriculture and allied sectors were allowed to sell up to 50 per cent of their total output in the domestic market instead of only 25 per cent which is the norm for EOUs. The minimum export price for basmati rice was eliminated and export restrictions on superior quality rice and wheat relaxed.

The reduction of subsidies to agriculture in developed countries as part of the implementation of the Uruguay Round should benefit India's emerging exports of agricultural and allied products. The phasing out of the Multi-Fibre Arrangement over 10 years will also make it possible for Indian exporters of garments and textiles to increase their market shares in product categories to regain their competitive advantage, once the domestic policy constraints are removed.

Exchange rate management

Throughout the 1980s India's exchange rate was managed as a fixed but frequently adjusted exchange rate linked to a basket of currencies. Since trade policy in the 1980s was characterized by extensive quantitative restrictions and tariffs were also high, the exchange rate was effectively overvalued compared to the level that would have prevailed if trade restrictions were lower. This in turn made exports less competitive because of the exchange rate overvaluation, a disadvantage which had to be offset by a complex system of incentives and subsidies for exports. Throughout the 1980s the Government undertook periodic but marginal adjustments in the nominal exchange rate, thereby achieving a steady depreciation of the exchange rate in real terms (see Fig. I.F).

In July 1991 export subsidies were abolished as part of the effort at bringing the fiscal deficit under control. Simultaneously the Government announced a devaluation of the rupee of around 20 per cent in two successive steps. This change was accompanied by a liberalization in import policy under which imports earlier obtained through import licences were made freely importable against special licences called exim scrips which were given to exporters. These licences were tradeable and freely transferable. As they became the principle instrument for the import of restricted items of raw materials, inputs, and capital goods, the licences carried a premium in the market which accrued to exporters.

The system was subsequently simplified by abolishing licensing controls and moving to a dual exchange rate system under which 40 per cent of the foreign exchange carried by exporters was surrendered to the Reserve Bank of India at the official exchange rate, while 60 per cent could be sold in the market. Foreign exchange for certain priority purposes such as defence, oil imports and fertilizer imports was procured at the official exchange rate from the portion of the inflow surrendered by exports. Other imports including those earlier imported through exim scrips, were made freely importable against payment in foreign exchange obtained from the market. The dual exchange rate system created a free market in foreign exchange which automatically controlled import demand.

The margin of the free market rate over the official rate was around 20 per cent through most of 1992/93. Because of the stability in the market rate observed in 1992/93, the Government was able to move to a unified floating exchange rate in March 1993. This system worked well in

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practice and the rupee was remarkably stable against the dollar in the period after March 1993. The stability was a reflection of a distinct improvement in the current account of the balance of payments and the large capital inflows experienced in 1993/94. However, there was some erosion of competitive advantage during 1993/94 as domestic inflation exceeded the international rate of inflation.

The relative stability of the exchange rate encouraged the Government to liberalize restrictions on current payments and announce the move to full convertibility on the current account. Accordingly, India accepted all the obligations associated with Article VIII status in the IMF in April 1994. The announcement of full convertibility on the current account was well received as a signal of continuing liberalization. In late 1994, capital account transactions remained subject to restrictions. Although important steps had been taken to encourage capital inflows, and such inflows allowed to be freely repatriated, capital outflows from domestic residents were not allowed. However, the Government had indicated its intention of moving towards convertibility in the capital account after gaining some experience in the functioning of the current account convertibility.

Financial sector reforms

An internationally competitive industrial sector requires a modern financial system. The Government is committed to a package of financial sector reforms to be implemented over a three year period to meet the needs of the new liberal economic environment. Several initiatives have been taken towards reforming the banking system and the capital markets, but much more remains to be done.

There has been a reduction in the Statutory Liquidity Ratio (SLR) and the Cash Reserve Ratio (CRR) that banks have historically had to maintain. The reduction of the CRR to 14 per cent added about $800 million to the lendable reserves of banks. But the reduction in the SLR was more important. The phased reduction in SLR was designed to bring down the level of pre-emption of bank funds by the Government at interest rates below market rates. The interest rates on government securities were increasingly market determined so that government securities could become an attractive instrument for banks and financial institutions to hold voluntarily. Over time, the average SLR was expected to come to 25 per cent, from 33 per cent.

The structure of interest rates has been simplified. Deposit rates for different maturities have been freed subject only to a single ceiling of 10 per cent. On the lending side, the proliferation of specified interest rates for different sizes of loans and for different purposes has been greatly reduced and simplified in a number of steps. Under credit policy changes announced in October 1994, loans up to Rs 25,000 were to have a fixed interest rate of 12 per cent and loans from Rs 25,000 to Rs 200,000 were to be charged an interest rate of 13.5 per cent (reduced in October from 14 per cent for term loans and 15 per cent for working capital loans). For loans above Rs 200,000, which were earlier subject to a minimum lending rate of 15 per cent, the interest rate was completely deregulated. Interest rates for these loans will be set entirely by the banks depending on market conditions.

Prudential norms relating to income recognition, provisioning and capital adequacy applicable to banks have been brought in line with Basle Committee standards. These norms are being phased in gradually to be fully in force by March 1996. The Government has announced a programme of contributing fresh capital to the nationalized banks to meet partially their capital adequacy needs. Banks and financial institutions have also been allowed to access the capital market to expand their equity base and thereby induct private shareholders into public sector banks.

However, the equity holdings of the Government of India will not be diluted below 51 per cent in the process. India's premier commercial bank, the State Bank of India, has already raised close to $500 million as equity from the public. Other public sector banks have similar plans. The Industrial Financial Corporation of India, a term-lending institution has also inducted private shareholders in this manner.

The banking system is being opened up to competition from new private banks. Several new banking licences have been granted. Branches of foreign banks have also been expanded. The increased competition together with the new machinery that is being set up for improved supervision of bank operations and Debt Recovery Tribunals should help strengthen the Indian banking system to meet the new challenges of a competitive economic environment.

India has a fairly well-developed institutional infrastructure for a capital market compared to the emerging economies of South-East Asia. During the 1980s the capital market grew remarkably in size. The corporate sector raised close to $4 billion in the form of debt and new equity. The investing public also expanded especially in the form of subscribers to mutual funds. Historically, Indian companies have preferred debt. Of the capital raised in the 1980s, over 65 per cent was through debt instruments. But the quantitative expansion of the capital market was not matched by necessary qualitative improvements.

The Government has embarked on major reforms relating to the capital market. Several important initiatives have been taken in the past two years to modernize the Indian capital market and raise its standards to those prevailing in countries with well functioning and efficient capital markets. Firms are now free to issue capital and price new issues according to market conditions subject only to guidelines aimed at effective disclosure of information necessary for investor protection. The Securities and Exchange Board of India (SEBI) has been established as an independent statutory authority for regulating the stock exchanges and the major players in the capital markets (brokers, underwriters, merchant bankers, mutual funds, etc.), with a view to establishing a national stock market system in line with international norms and procedures.

A significant initiative has been the opening up of the capital market for portfolio investments. Indian companies have been allowed to access international capital markets by issuing equity abroad through the mechanism of Global Depository Receipts. Foreign institutional investors managing pension funds or other broad based institutional funds have been allowed to invest directly in the Indian capital markets. Favourable tax treatment has been granted to such investments to encourage capital inflows through these routes. These initiatives have come at a time when international fund managers are diversifying their portfolios by investing in "emerging capital markets" and India has benefitted from this trend along with other developing countries. Inflows from international equity issues by Indian companies in 1993/94 were expected to be about $2.5 billion, while foreign institutional investors have invested about $1.5 billion in the domestic capital markets (see Table I.6).

There are over 6,800 companies listed in the 20 stock exchanges in the country making India the third largest country in this regard. In 1993/94 the funds raised by Indian companies in the domestic primary market were Rs 240 billion, i.e. around $8 billion. The Eighth Plan projections show that the Indian private sector will raise close to $20 billion from the capital market during the five years 1992-1997. If market conditions are any indicator, the actual mobilization may far exceed this estimate of the Eighth Plan. There has been a significant shift towards equity in recent years. Close to 60 per cent of the capital raised in 1992/93 was in the form of equity. Market capitalization is estimated at over $100 billion making India among the leading emerging markets in this respect.

Table I.6. Foreign investment inflows by source, 1990/91-1994/95
($ million)

Year	1990/91	1991/92	1992/93	1993/94	April to September 1994/95
Total	165.0	148.0	585.0	4,766.9	2,726.9
Direct foreign investment	165.0	148.0	343.5	600	469.4
Other foreign investment	0.0	0.0	241.5	4,166.9	2,257.5
Foreign institutional investors	(0.0)	(0.0)	(1.0)	(1,652.1)	(1,075.5)
Euro issues	(0.0)	(0.0)	(240.5)	(2,514.8)	(1,182.0)

Source: Ministry of Finance, Government of India.

The real challenge in reforming the financial sector relates to the role of regulation in the liberalized framework. Even in countries like the United States, the financial services sector is subject to a regulatory legislation and operates under the supervision of the Securities and Exchange Commission. The Securities and Exchange Board of India is working towards establishing a fair, transparent and independent regulatory structure to protect the interest of investors who today number 15 million, and to facilitate the efficient functioning of the capital market. This needs to be done without stifling the growth of the capital market.

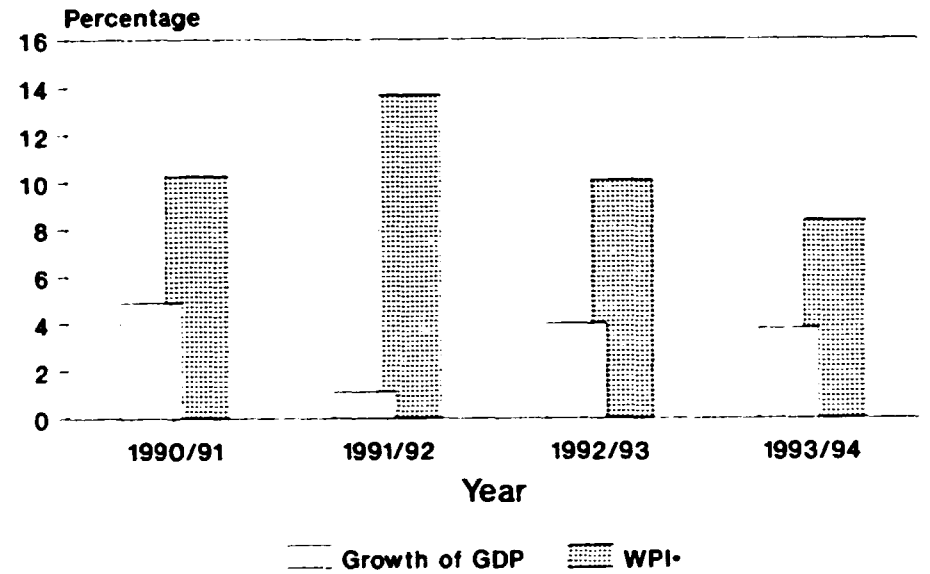
The insurance sector in India has hitherto remained the monopoly of the public sector. The Government appointed a high level committee to make recommendations for reforms in this sector and these included opening up insurance to the private sector including foreign investors. These recommendations are being considered by the Government and a new policy is expected to be announced shortly.

C. EARLY RESULTS AND OUTLOOK

Unlike many economies going through structural adjustment and stabilization which have experienced sharp declines in growth in the early years, India was able to avoid severe adverse effects on production. GDP grew by 1 per cent in the first year of the reforms and by close to 4 per cent in each of the two following years (see Fig. I.1). This was largely due to the fact that agricultural performance in these years was reasonably good but also because there was no severe setback in industry.

Industrial production was almost stagnant in 1991/92 and thereafter improved to 2.3 per cent in 1992/93. This was lower than expected. The Ayodhya crisis of November 1992 and the subsequent social disturbances in Bombay in January 1993, though temporary, took their toll on economic activity and investor confidence. Industrial production grew by 3.3 per cent in 1993/94. Industrial growth was slow during most of 1993/94, but there was a distinct revival in the last quarter of 1993/94. Sanctions from the financial institutions and funds mobilization from the capital market have shown a strong pick up since December 1993. Industrial production data for April-July 1994 also showed much higher growth rates than in the same period last year. Production in the manufacturing sector grew at the rate of 9 per cent per year, while that in the industrial sector as a whole grew at the rate of 7.9 per cent per year. The sharpest recovery was in the capital goods sector which grew by 18.8 per cent per year in April-July 1994.

Fig. I.I. Macro scenario during reform period, 1990/91-1993/94 (Percentage)



• Percentage change of wholesale price index.

Latest wholesale price indices show some slowing down of the rate of inflation from the 12 per cent annual rate that it had reached in the first quarter of 1994/95 to 9.5-10 per cent subsequently. The fiscal deficit also after having got out of control in 1993/94 seems to be on target for 6 per cent of the GDP in the current year, unless there are major disruptions in the second half of the year. The strong build up of foreign exchange reserves which stood at over $19 billion in October 1994 should act as a major deterrent to inflationary expectations. However, bringing the inflation rate down to 7-8 per cent annual rate would require sustained efforts at macroeconomic stabilization.

Export performance during the first two years of the reforms was dominantly affected by the collapse of the former USSR which was one of India's major trading partners. However, after a decline of 1.5 per cent in 1991/92 and sluggish growth of 3.3 per cent in 1992/93, exports (measured in $) began to respond to the new policies as shown by a growth rate of almost 20 per cent in 1993/94. The growth of exports slowed down to about 14 per cent in April-October 1994.

Imports grew much more slowly despite the extensive liberalization of imports and the lowering of custom duties, largely because the industrial recovery was delayed. The growth of imports (in $) during 1993/94 was only 6.1 per cent. Strong export growth combined with modest import growth led to a sharp reduction in the current account deficit in 1993/94 making it unnecessary for India to approach the IMF for balance of payments support. The industrial revival in 1994/95 has brought about a faster growth of imports at 19 per cent during the first six months of the year.

As confidence in the Indian economy improved, there was a sharp increase in capital flows into the economy in response to the policy of welcoming foreign investment including portfolio

investment. In the course of 1993/94 foreign institutional investors invested $1.6 billion in the capital market, while Indian companies raised $2.5 billion in the form of equity issues abroad through GDRs. The resulting inflow of over $4 billion strengthened the balance of payments very considerably. India's foreign exchange reserves increased from $6.4 billion at the beginning of 1993/94 to $15 billion at the start of 1994/95. The Government decided to advance its repayment of amounts due to the IMF in 1994/95. In the first six months of 1994/95, foreign institutional investors brought in $1 billion, while Euro-issues were just a little short of that. Direct foreign investment data, available only up to September 1994, showed capital inflows of $380 million.

India's economy has already demonstrated a capacity for growth at about 5.5 per cent per year, which was the growth rate actually achieved in the 1980s. The economic reforms introduced from 1991 aim at creating a more competitive environment with a greater role for the private sector and greater openness of the economy to both imports of goods and services as well as foreign investment. This is expected to improve the efficiency of resource use in the system to permit a transition to higher rates of growth.

After a period of slow growth in the first three years, the economy is showing signs of strong recovery. A growth rate of 5.5 per cent looks likely for 1994/95, thus bringing the economy back to the trend growth rate of the 1980s. With continued pursuit of economic reforms in the years ahead it should be possible to achieve an average growth of around 6 per cent, accelerating to 7 per cent in the later 1990s.

A critical element in achieving this transition will be the continuation and deepening of the economic reforms. India's reform programme was initially viewed as overly cautious compared to bolder approaches being adopted in many other countries. The experience of the first four years indicates that gradualism helps to create a broader social and political consensus. The reforms command wide support and are seen today as irreversible both domestically and also by foreign investors. This is an important achievement but much depends on how far and how fast the momentum of reforms is maintained.

The Government had made a good start with the elimination of the export subsidy and the reduction in the fertilizer subsidy, but the momentum has slowed down on this front after the first year of reforms. Even more generally, there is need for streamlining government expenditures so as to cut wasteful expenditures and conserve the resources for socially more useful purposes such as direct poverty alleviation programmes and programmes in the social sector.

The process of tax reforms initiated by the Government needs to be pursued further. Simplification of indirect taxes and further reduction in the levels of protection from imports must also have high priority in the next two years. It is also important to push ahead with public sector reforms including closure of unviable public sector units and a bolder approach to privatization. In due course it will also be essential to address the issue of reforming the labour laws which at present are too rigid and do not allow flexibility in downsizing when needed. This would also require the development of effective social security mechanism so that the process of adjustment is socially and economically effective.

The National Renewal Fund is a good beginning but it needs to be strengthened both financially and conceptually. It should become a positive instrument for facilitating retraining and redeployment rather than a negative instrument for merely compensating those who are adversely affected by the process of structural adjustment. More generally, the legal institutional framework needs to be reformed so as to ensure the enforceability of contracts between individuals and organizations without losing time. The institutional framework covering laws such as the Industrial

Disputes Act, the Companies Act and the Urban Land Ceiling Act needs to be overhauled to facilitate the movement of resources out of the sick and uncompetitive sectors into the more dynamic and competitive areas.

An important positive feature of the economic outlook is the attitude of foreign investors. Because of its reputation of being a difficult country for foreign investors, India attracted direct foreign investments of less than $100 million per year in the 1980s. The new policies have evoked considerable interest among foreign investors so that approvals for foreign investment proposals totalled around $6 billion between July 1991 and September 1994. Actual inflows were of course much lower and were projected at around $1 billion in 1994/95. This is a several fold increase compared to the levels prevailing earlier. As the approved projects begin to be implemented, direct foreign investment inflows are well set to exceed $1 billion in 1995/96 and more thereafter. This will bring much needed injection of new technology and product upgradation in many segments of Indian industry.

In any projections of exports in the years ahead, the real effective exchange rate will have to be watched carefully. Appreciation in the real effective exchange rate, arising either out of domestic inflation rates exceeding international inflation rates, or nominal exchange rate appreciation due to capital inflows, will have to be avoided to protect export competitiveness.

Competitiveness is the key to the success of the economic reforms. Accelerated growth is only possible if the economy opens up successfully. This means that exports and imports will grow at a faster pace than the rest of the economy. This will require a marked improvement in the quality of the infrastructure services, quite apart from the sheer increase in their quantity. The most serious potential constraint to the sustainability of the high growth scenario in India could be the availability of infrastructure.

The Government is taking steps to increase the involvement of the private sector - domestic as well as foreign - in power generation. However, success in this pursuit will depend on the government's willingness to evolve a rational pricing policy for power and ensuring better performance of the State Electricity Boards (SEBs) so that they can pay for the power purchased from the private generators. Even if power distribution is privatized at the margin, the SEBs will continue to play a major role in distribution.

Telecommunication is another important infrastructure area which is being opened up to the private sector, although policy reforms have been slower than either desirable or expected. Some initiatives have been taken to open up certain port services to the private sector and also some sections of roads. These initiatives will have to be pursued vigorously.

The public sector, however, will continue to be a major player in infrastructure for the foreseeable future. The public sector performance in this area will therefore need to be significantly improved by making this sector strong and lean. Privatization will help, but a more competitive economic environment, better pricing policies and an effective regulatory framework are necessary for the delivery of infrastructure services from the public sector as well as private.

Indian economic reforms have arrived at a stage where state level participation in the reform process is extremely important. Not only do the states need to undertake fiscal reforms, but they also need to work on creating an economic environment which is welcoming to private investment. To some extent, this is already happening as states are competing with each other to attract investment. But much more is needed to fulfil the rising economic aspirations in the country.

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[1] United Nations Industrial Development Organization

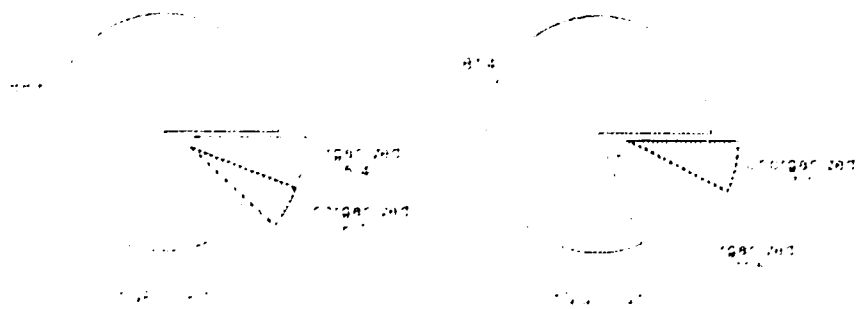
NOTES TO CHAPTER I

1/ National data on GDP at factor cost at 1989/81 prices shows a growth rate of 5.6 per cent per annum between 1980/81 and 1989/90. The data reported in Table I.2 on international comparison is from the *World Development Report 1993*. It shows a lower growth rate of 5.4 per cent for India as it refers to the period from 1980 to 1991.

II. THE MANUFACTURING SECTOR

India has the fifth largest industrial sector in the developing world and the eleventh largest including also developed countries. The manufacturing sector accounts for over 80 per cent of the value added in industry, the rest being contributed by mining and electricity. Unlike many developing countries, India's manufacturing sector is highly diversified spanning the entire range from light consumer goods through intermediates in the metals, chemicals and petrochemicals categories to sophisticated machinery and other capital goods. The organized manufacturing sector is measured to have increased at a faster pace than the unorganized or the unregistered sector, although statistics on the latter are less reliable. By 1990/91, the former accounted for 11.5 per cent of GDP and the latter for 7.1 per cent (see Fig. II.A). The focus of analysis in this Chapter is the organized manufacturing sector due to the availability of reliable data on this sector.[1/]

Fig. II.A. Contribution of organized and unorganized manufacturing to GDP, 1950/51 and 1990/91 (Percentage)



A. GROWTH AND STRUCTURAL CHANGE

India's industrial growth was reasonably satisfactory during the 1980s recording an average of 8 per cent per year. This was interrupted in 1991/92 when the country faced a serious economic crisis. The economic reforms which were launched in the summer of 1991 are beginning to have some impact. Industrial growth remained slow up to 1993/94, but there are clear signs of an industrial revival beginning in 1994; the growth rate in the first four months of 1994/95 was 7.9 per cent.

Long-term trends in industrial growth

After a long phase of stagnation from the mid-1960s to the late 1970s, India's industrial growth performance showed distinct improvement in the 1980s. An overview of actual growth relative to the targets set in the different Five-Year Plans is presented in Table II.1. After the Third Plan (1961/62-1965/66), Indian industry entered a phase of stagnation which lasted until the late 1970s. Industrial growth during this period was not only far short of the targets which were themselves lowered after the Fourth Plan, but was also much slower than in the preceding 15 year period. The Sixth Plan (1980/81-1984/85) witnessed clear industrial recovery, but it was only in the Seventh Plan (1985/86-1990/91) that industrial growth at a rate of 8.5 per cent per year came close to achieving the target of 8.7 per cent per year.

Table II.1. Growth of industrial production, plan targets and actuals, 1951/52-1995/96
(Percentage per year)

Period	Target	Actual
First Plan, 1951/52 to 1955/56	7.0	7.3
Second Plan, 1956/57 to 1960/61	10.5	6.6
Third Plan, 1961/62 to 1965/66	11.0	9.0
Annual Plans, 1966/67 to 1968/69	-	2.0
Fourth Plan, 1969/70 to 1973/74	12.0	4.7
Fifth Plan, 1974/75 to 1978/79	8.0	5.9
Annual Plan, 1979/80	-	-1.4
Sixth Plan, 1980/81 to 1984/85	8.0	5.9
Seventh Plan, 1985/86 to 1989/90	8.7	8.5
Eighth Plan, 1991/92 to 1995/96	8.2	7.2[a/]

Memo :	1990/91	1991/92	1992/93	1993/94
Industrial growth rate	8.3	1.1	2.3	3.3

Source Government of India, Planning Commission

a Average of first three years

Starting in 1991/92, India's industrial sector experienced very low growth rates as Indian industry began to adjust, restructure, and prepare for sustainable growth after the crisis of 1991 while facing more internal and external competition. There were signs of industrial recovery towards the end of 1993/94 and an expectation that industrial growth in 1994/95 would rebound strongly.

: United Nations Industrial Development Organization

Growth in value added in the industrial sector experienced a significant slowdown after the mid-1960s and the slowdown was even more marked in manufacturing (see Table II.2). The slowdown evoked a lively debate in the second half of the 1970s on the possible causes of this phenomenon.[2] Explanations ranged from agricultural drag on industry and worsening income distribution to a slowing down of the process of import substitution and in the growth of public investment. A close look at the disaggregated picture of industrial growth and stagnation and an analysis of these explanations against the empirical evidence, however, shows that a major slowdown in infrastructure investment and the restrictive and regulatory policy regime were the two principal factors contributing to the stagnation.[3]

Table II.2. Sectoral growth trends in production and value added, 1950/51-1993/94
(Percentage per year, compound)

Period	Industry	Manufacturing	Mining	Electricity
A. Growth of industrial production				
1951 to 1965	7.7	5.1	7.8	12.7
1966 to 1980	4.0	3.4	3.6	8.7
1981 to 1990	8.0	7.9	7.0	9.2
1990/91	8.3	8.9	4.5	7.8
1991/92	1.1	-1.5	0.1	8.5
1992/93	2.3	2.1	0.6	5.0
1993/94	3.3	2.8	2.1	7.4
B. Growth of value added				
1950/51 to 1964/65	6.3	6.7	5.6	11.4
1965/66 to 1979/80	4.7	4.6	3.3	7.7
1980/81 to 1989/90	7.3	7.2	7.4	8.9
1990/91	6.6	6.2	4.9	6.8
1991/92	-1.7	-3.2	4.0	7.5
1992/93	2.6	2.0	3.8	6.5

Sources: National Accounts, CSO, Ministry of Industry

The resurgence of the growth of value added in the manufacturing sector in the 1980s was widespread as can be seen from Table II.3. The most rapidly growing industries were petroleum products, food and beverages, footwear, furniture, non-metallic minerals and rubber products. Apart from machinery and transport equipment, two other sectors were conspicuous by the absence of higher growth in the 1980s. Textiles, a major traditional industry, which had been growing at a slow rate of 3.3 per cent per year during 1960-1980, slowed down further to grow by 2.8 per cent per year in the 1980s. Much of the growth in the textile industry in the 1980s was in powerlooms which are not part of the organized manufacturing sector. Basic metals also grew at a low rate of 2.5 per cent per year. Chemicals remained a fast growing group even though their pace slowed down from 9.5 per cent to 7.9 per cent per year.

The growth revival of the 1980s was a response to the slow and gradual shift of the policy framework away from regulation and towards market orientation. The latter process had begun in the late 1970s and continued throughout the 1980s. Expansionary fiscal policies provided the necessary demand stimulus, while the supply side response was generated by a system which was recognizing the importance of market incentives. Domestic deregulation was the focus of policy

review, while the trade policy regime remained restrictive. After a decade or more of policy neglect, infrastructure was once again attracting the attention of policy makers. The rapid growth of petroleum products during this period was a reflection of the discovery of offshore oil and major investment in refineries.

Table II.3. Growth of value added by end-use and industry group, 1960-1989
(Percentage per year, compound)

	1960-1980	1981-1989
Manufacturing		
End-use products	5.5	6.8
Intermediate goods	5.0	7.0
Capital goods	8.9	5.9
Consumer durables	9.2	10.5
Consumer non-durables	4.5	7.1
Two-digit industry group of the National Industrial Classification	**1960-1980**	**1981-1989**
Food	2.0	10.1
Beverages	8.5	12.1
Tobacco	2.2	7.7
Textiles	3.3	2.8
Footwear	13.0	13.7
Wood and cork	4.1	4.1
Furniture	6.5	12.6
Paper and products	8.2	5.4
Printing and publishing	3.9	5.5
Leather products	5.2	8.3
Rubber products	4.7	12.9
Chemicals and products	9.5	7.9
Petroleum products	6.2	20.9
Non-metallic minerals	4.2	10.5
Basic metals	4.7	2.5
Metal products	4.2	5.0
Non-electrical machinery	9.5	4.6
Electrical machinery	11.3	8.8
Transport equipment	6.0	4.5
Miscellaneous	10.3	15.8

Sources: Annual Survey of Industries, C.S.O., Planning Commission.

The capital goods sector did not participate fully in the growth revival of the 1980s for several reasons. First, important user industries like electronics and automobiles modernized quickly and met their demand for capital goods through imports. Second, in industries like fertilizer and power, special import windows were allowed to users at concessional rates of duty. A general trend towards technological modernization in the user industries created demand for modern technology and imported capital goods, while the domestic industry took time to respond. One of the reasons why the capital goods industry was slow to respond was that the structure of protection moved against engineering industries which became less attractive vis-à-vis other industries such as electronics and chemicals.

More generally, the sustainability of the better growth performance in industry was challenged by the balance of payments crisis at the turn of the decade into the 1990s. Macroeconomic mismanagement during the 1980s was an important factor in precipitating the crisis. Structural rigidities rooted in the inward orientation of the policy regime had slowly eroded the competitiveness of Indian industry as India persisted with the policies of import substitution in the 1970s and 1980s when most other developing economies had embarked on an aggressive export-led growth. Competitiveness needed to be restored in order to carve out a path of sustainable growth with true self reliance. This formed the basis of the economic reforms of 1991 aimed at achieving fiscal stabilization with structural adjustment.

Information on industrial growth after 1991/92 is available only through the indices of industrial production (1980/81 = 100) and not through national accounts or the Annual Survey of Industries.[4/] Although these indices suffer from problems of the base year being out of date, limited coverage, and poor response, they are the only sources for up-to-date information on industrial production. It is worth noting, for example, that some of the fastest growing sectors in the economy, such as automobiles (0.14 per cent), leather goods (0.2 per cent), televisions (0.08 per cent), and computers (0.35 per cent) have very low weight in the total.

The indices of industrial production show that industrial growth of 8.3 per cent in 1990/91 was followed by a collapse in 1991/92 when industrial production grew by only 1.1 per cent. There was a gradual recovery thereafter with growth rates of 2.3 per cent and 3.3 per cent in 1992/93 and 1993/94, respectively. This was the period following the crisis of 1991/92 when a programme of structural adjustment and stabilization was under way. While industrial growth was very low during this period, India avoided negative growth rates of industry which were the fate of many a developing country in the early phases of the process of restructuring and adjustment. More recently, the industrial sector has recorded much higher growth rates as discussed below.

The industrial production indices for the two-digit industry groups of the national industrial classification over a ten-year period ending 1993/94 are presented in Fig. II.B. Detailed information on industrial production trends for individual industries is presented in Chapter III. Given the degree of aggregation at the two-digit level and the other limitations of the indices particularly with respect to covering the new and emerging industries, these indices need to be interpreted with caution. For most of the industry groups shown in Fig. II.B, industrial growth during the 1980s was robust. The macroeconomic crisis at the turn of the decade into the 1990s together with the pressures arising from structural factors interrupted the growth process, although the incidence varied from industry to industry.

In food products, large declines in the growth of production in the post-reform period, particularly in 1993/94, are basically reflective of the trends in sugar production, while the newly emerging food processing industry has not yet received adequate representation in the index. If sugar is excluded, food products show a marginal decline of -0.8 per cent in each of the years 1992/93 and 1993/94.

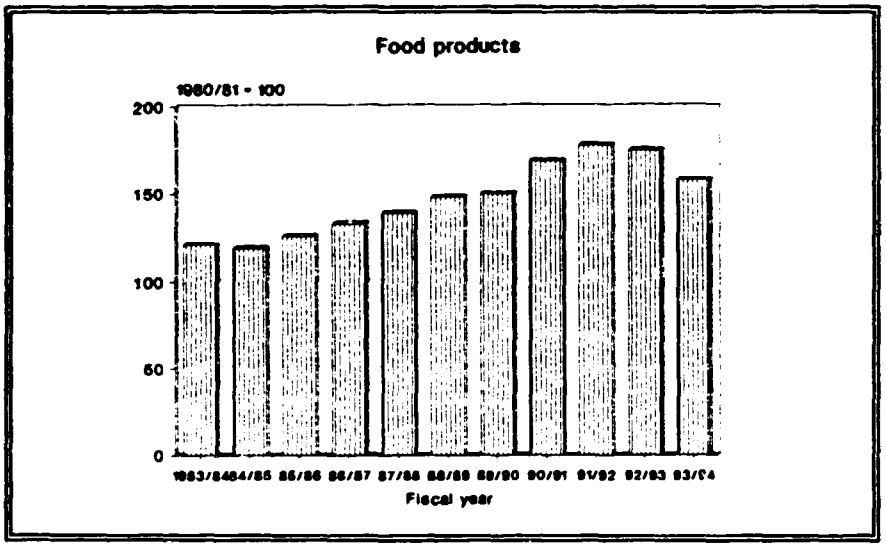
For cotton textiles, the stagnation of the 1980s was followed by robust growth performance in the 1990s except for 1993/94, when the growth process received a setback because of the sharp increase in cotton prices which was due in turn to a large decline in cotton production. Also, a lot of the buoyancy in this sector is in powerlooms in the unorganized sector which is not adequately covered by the index of industrial production.

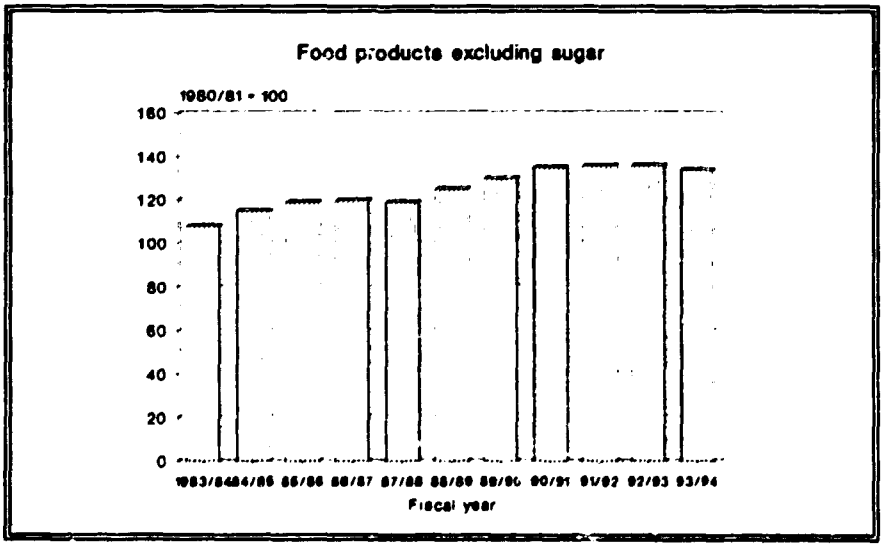
The index for textile products is a good example of an index which is not representative of ground level activity in the sector. Garments (which form part of this group) are reserved for production in the small-scale sector. Since the index does not cover the small-scale sector well, the dynamism

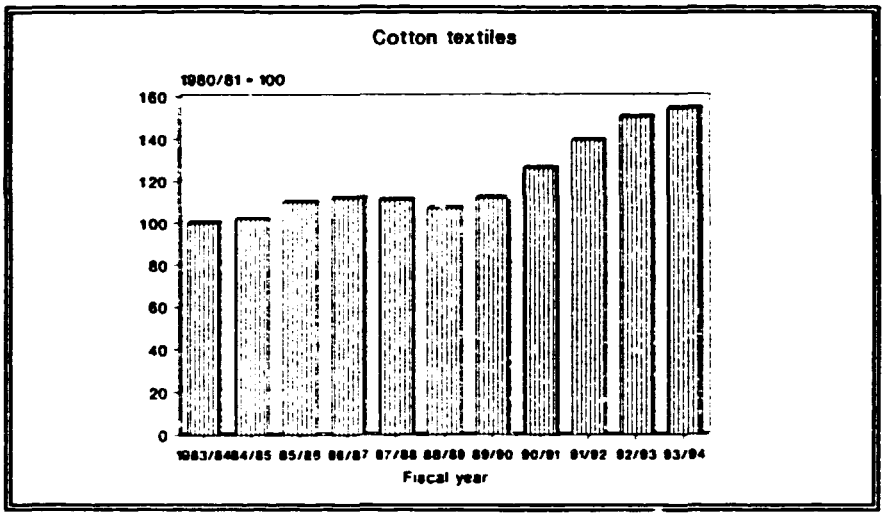
of the garment industry (as for example shown by the export performance of this sector) is not reflected in the production index of textile products. The same is true of leather and leather products.

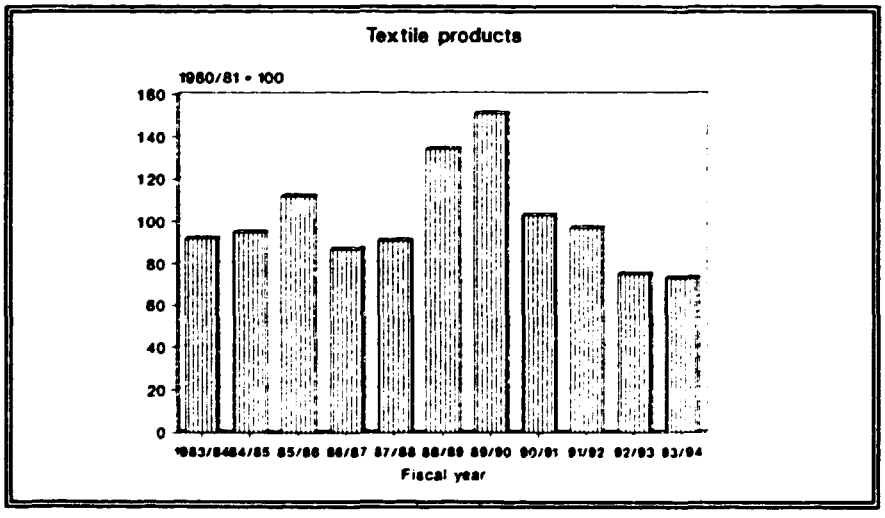
Chemicals and chemical products showed strong growth in production more or less throughout the ten-year period. The index of industrial production for this group recorded an average growth of 6.5 per cent in the post-reform period.

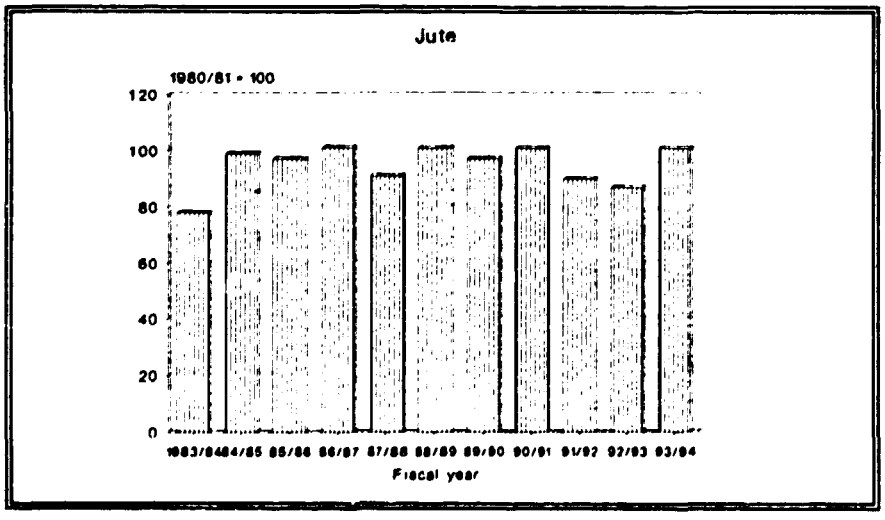
Figs. II.B. Indices of industrial production, 1983/84-1993/94
(1980/81 = 100)

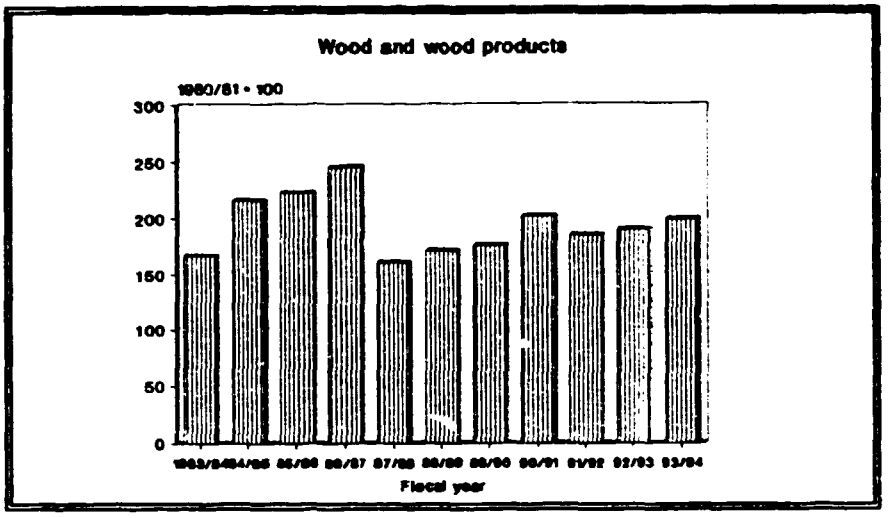


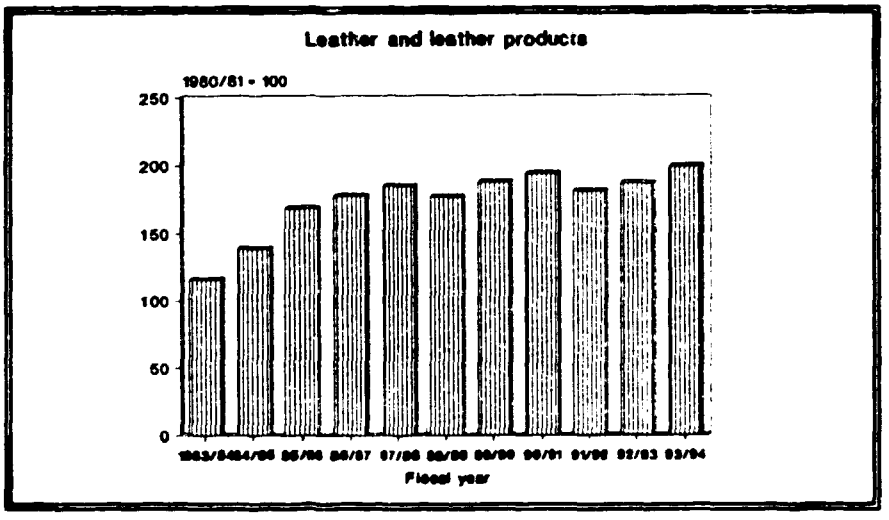


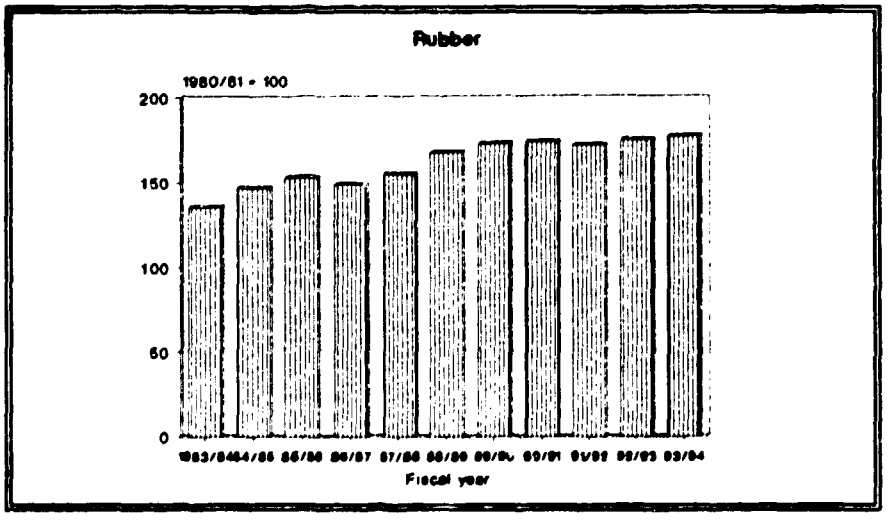


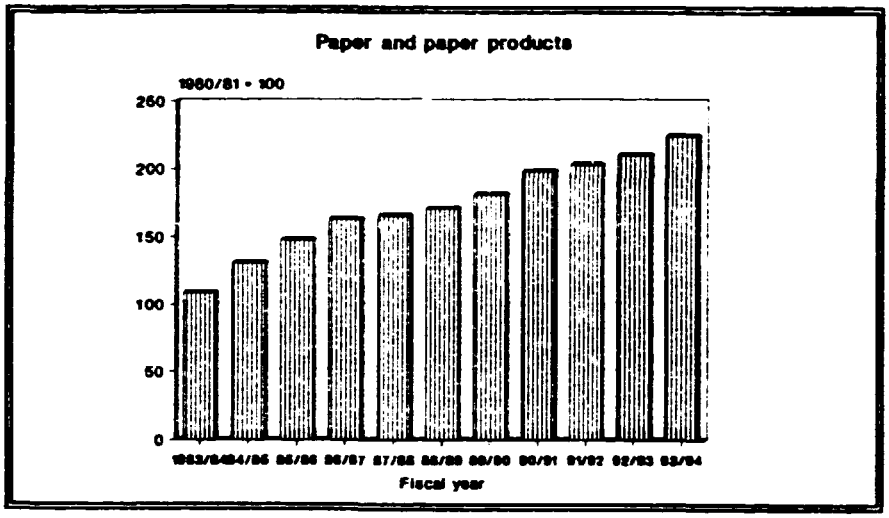


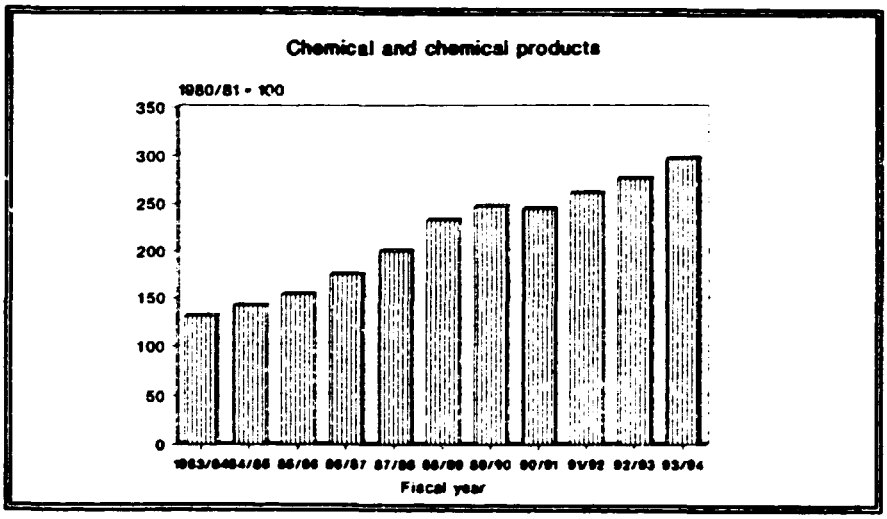


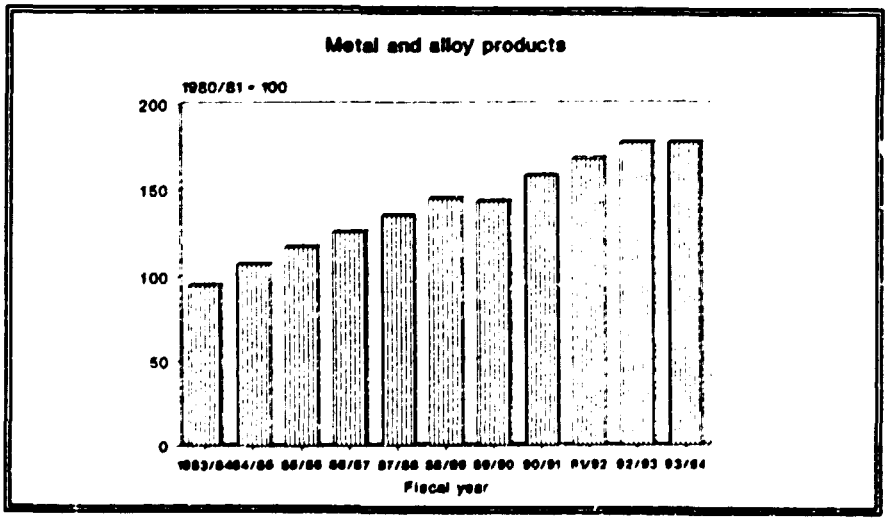


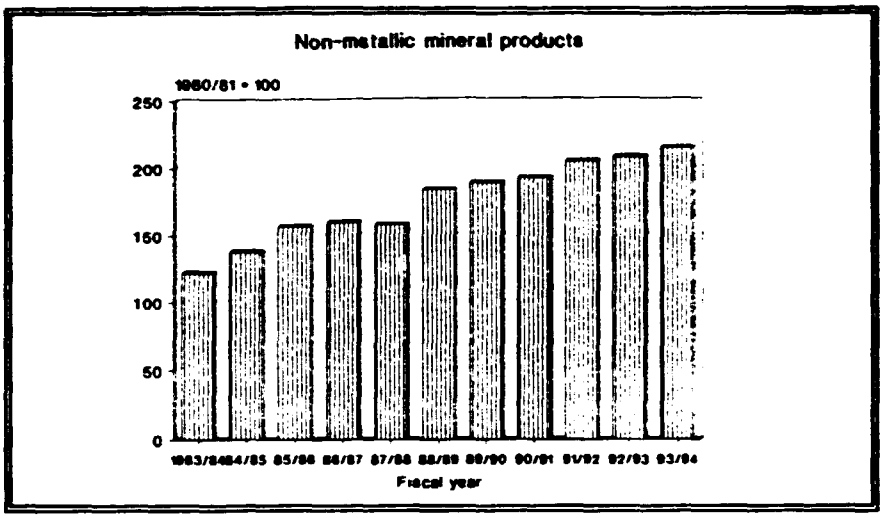


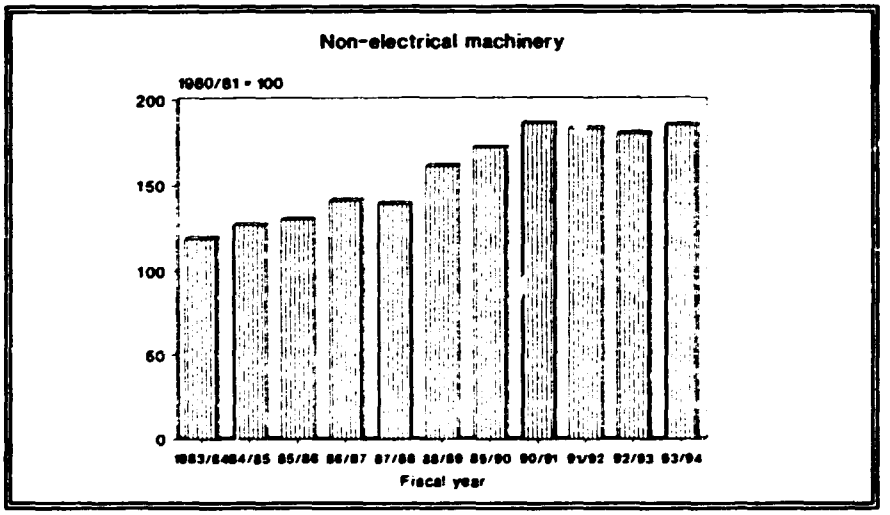


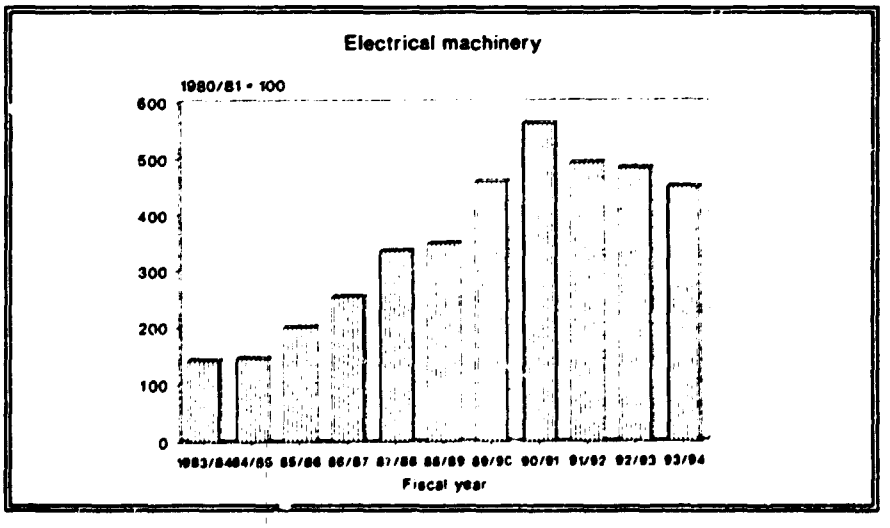


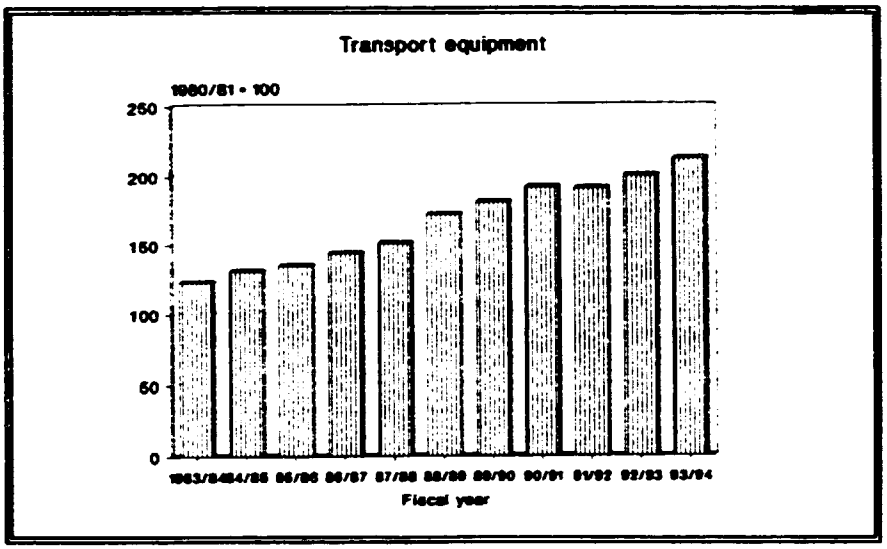












The capital goods sectors such as electrical machinery, non-electrical machinery and transport equipment were the worst affected during the post-reform period. Capital goods production declined at the rate of 8.6 per cent, 0.1 per cent and 5.1 per cent in the years 1991/92, 1992/93 and 1993/94, respectively (see Table II.4). Recovery of these industries was slow because of a slowdown in industrial investment, particularly in the public sector. For many of these industries, 1992/93 and 1993/94 continued to be years of declining production, while transport equipment industry showed better performance with growth rates of production of 5 per cent and 5.8 per cent in the two years, respectively. Electrical machinery, on the other hand, showed a decline in production of 6.8 per cent in 1993/94.

Table II.4. Growth of industrial production by end-use industry groups, 1991/92-1993/94
(Percentage)

Products	1991/92	1992/93	1993/94	April-July 1993	April-July 1994
Total industry	1.1	2.3	3.3	2.2	7.9
Basic goods	6.4	2.7	4.1	4.6	6.6
Intermediate goods	-2.1	5.3	11.2	10.3	4.9
Capital goods	-8.6	-0.1	-5.1	-9.2	18.8
Excluding electrical machinery	-1.3	1.9	4.4	..	2.7
Consumer durables	-10.9	-0.9	15.2	11.1	10.6
Consumer non-durables	4.0	2.5	-0.9	-1.2	3.1
Consumer non-durables excluding sugar	3.5	3.0	2.7	..	4.4

Source: Central Statistical Organization.

Intermediate goods and consumer durables showed strong recovery of 11.2 per cent and 15.2 per cent in 1993/94. Even in consumer non-durables, if sugar is excluded, the decline was arrested as the index of industrial production grew by 2.9 per cent in 1993/94, only a little slower than in 1992/93 when its growth was 3.2 per cent.

There is evidence of strong turnaround in the capital goods sector in the first four months of 1994/95. The latest data for April-July 1994 shows an increase in capital goods production at the rate of 18.8 per cent per year, while the index of industrial production for electrical machinery grew at an annual rate of 28.9 per cent over the same period. As in the case of capital goods, consumer non-durables other than sugar showed a continuing recovery (growth rate of 4.4 per cent) in April-July 1994, while sugar continued its downslide with a decline in production of 29 per cent per year.

Growth in the basic infrastructure sector also picked up beginning with 1993/94 (see Table II.5). In the first two quarters of 1994/95, production of infrastructure sectors increased at the rate of 6.2 per cent compared with 5.9 per cent in the same period of the preceding year.

Table II.5. Growth of industrial production, infrastructure sectors, 1991/92-1993/94
(Percentage)

Sector	1991/92	1992/93	1993/94	April - September 1993	April - September 1994
Total infrastructure	6.4	3.1	4.4	5.9	6.2
Electricity	8.6	5.0	7.4	7.5	7.6
Coal	8.3	3.9	3.2	5.3	2.1
Steel	8.1	3.9	5.7	5.4	7.6
Petroleum	-7.9	-11.2	0.2	-3.6	17.5
Petroleum products	-0.8	4.1	1.6	1.2	4.6
Cement	5.9	5.0	6.8	5.1	7.3

Source: Ministry of Industry, Government of India.

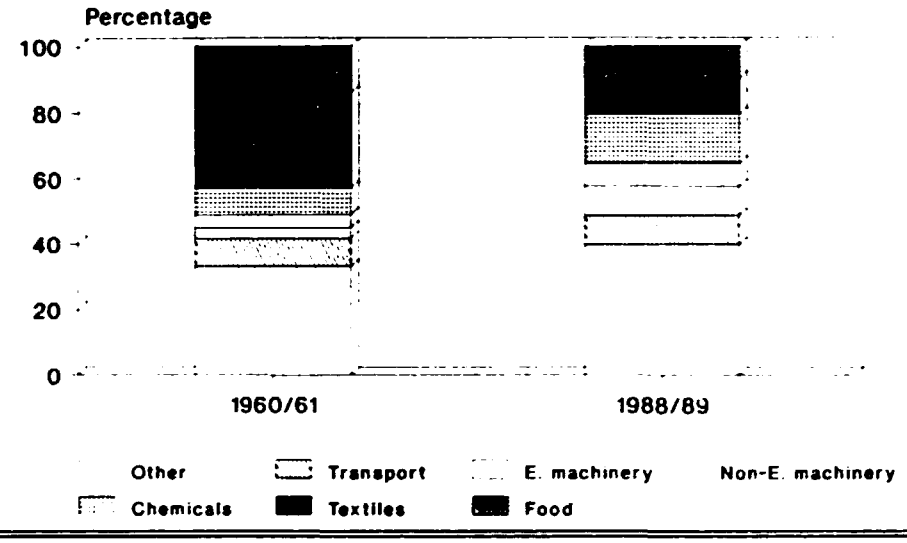
The pattern of industrial diversification

Industrial and trade policies within the framework of Indian planning encouraged diversification of the industrial sector. This is evident in the structural change that has taken place in the past four decades. At independence in 1947 India had inherited an industrial structure which was dominated by light consumer goods industries such as textiles and sugar. Although the first steel plant had been set up and there was some limited development of engineering in railways workshops and assembly plants, these industries had only an insignificant share in industrial production. Successive Five-Year Plans after independence followed policies of self-reliance in the form of import-substitution oriented industrialization behind protective tariffs and restrictive import controls. These policies were combined with public investment policies aimed at setting up new industries. The result was substantial diversification.

Structural change within the industrial sector has meant that traditional industries such as textiles and sugar (part of food products) are less important in terms of their contribution to manufacturing value added today than in 1960/61, while machinery and equipment industry has emerged as an important segment of manufacturing (see Fig. II.C). Textiles, the largest traditional industry with a share in MVA of 29 per cent in 1960/61, has lost its relative importance and accounted for only 11 per cent in 1988/89. Similarly, the share of food products declined from 14 per cent to 9.6 per cent. By contrast, the increased importance of basic metal industries reflects the heavy industry bias in Indian industrialization. The share of electrical and non-electrical machinery which together accounted for 7.1 per cent in 1960/61 also increased to 16 per cent in

1988/89. Another important development has been the rising importance of chemicals and chemical products. This reflects the growth in the fertilizer and pharmaceutical industries on the one hand, and petrochemicals after the discovery of offshore oil in India in the 1980s on the other. The Indian industrial structure is clearly much more diversified than that of most developing countries.

Fig. II.C. Structure of manufacturing value added by industry group, 1960/61 and 1988/89



The extent of structural change can also be seen from the change in the relative importance of the different use-based sectors.[57] In 1960/61, consumer goods accounted for 48.5 per cent of the total value added in the manufacturing sector, while capital goods constituted 12 per cent (see Table II.6). By 1980, the share of consumer goods had declined to 41.3 per cent, while that of capital goods had increased to 20.5 per cent. As a result of the rapid growth in the consumer goods sector in the 1980s, the declining trend in the share of consumer goods was reversed after 1980/81.

Table II.6 **Structure of manufacturing value added by end-use, 1960/61-1988/89, selected years**
(Percentage share)

	1960/61	1970/71	1980/81	1988/89
Intermediate goods	36.3	38.3	36.5	37.0
Consumer goods	48.5	40.1	39.3	41.3
Non-durables	46.3	37.1	35.4	36.3
Durables	2.2	3.0	3.9	5.0
Capital goods	12.1	16.7	21.6	20.5
Unclassified	3.1	4.9	2.6	1.2

Source. C.S.O., Ministry of Planning, Annual Survey of Industries

The onset of economic liberalization in the 1990s is expected to generate further structural changes within the manufacturing sector. For example, food processing is emerging as an important industry attracting investment. Data on value added for the manufacturing sector and its components, however, are not available beyond 1988/89 to ascertain the extent of the structural change. The Industrial Entrepreneurs' Memoranda (IEMs) filed by investors after July 1991 under the Industrial Development and Regulation Act (IDRA) of 1951 reflect only the intentions with respect to investment. A comparison of such intentions during the three years after the onset of economic reforms (i.e., August 1991-July 1994) with the preceding three year period, i.e., 1988-1990, shows that investment intentions rose from 3,009 during 1988-1990 to 16,598 in the post-reform period. Food processing and vegetable oil including *vanaspati*, (hydrogenated vegetable oil) industries emerged as major new attractions after the reforms with investment intentions numbering 1,107 compared with less than 200 in the pre-reform three-year period. By contrast, interest in sugar and rubber goods declined sharply in the liberalized licensing regime. Emerging changes in the structure are less discernible when the analysis focuses on the value of investment. High investment sectors such as basic metals and chemicals are still attracting the maximum investment, accounting for 17 per cent and 22 per cent, respectively, out of the total value of the IEMs. Textiles and cement also remain important areas for investment.

The story of Indian industrialization since August 1991 can best be described as one of adjusting to stabilization and moving to a path of recovery. It is too early to discern structural change in value added within the industrial sector, even more so because the newly emerging industries are under-represented in the statistical indices.

B. INDUSTRIAL EMPLOYMENT

Growth of manufacturing employment

The manufacturing sector accounts for less than a quarter of total employment in the organized sector of the economy. Employment in the organized sector of manufacturing doubled from 3.6 million in 1960/61 to 7.1 million in 1980/81, but declined in the 1980s. Compared with a growth rate of 3.3 per cent per year in 1960/61-1980/81, employment declined at a rate of 0.5 per cent per year during 1980/81-1988/89 (see Table II.7). Estimates of employment in the manufacturing sector in 1991 place the number at 6.33 million. There is evidence, however, to suggest that regular wage-employment outside of the formal (organized) sector grew rapidly in urban areas in the 1980s.[6/]

The decline in measured employment during a period when growth in output accelerated has been a major cause for concern. The acceleration in the growth of value added and a slowdown in employment in the 1980s, however, has to be seen against the evidence for the earlier period when a significant slowdown in the growth of value added in 1965/69-1979/80 was associated with only a modest slowdown in the growth of employment (see Table II.8). In the consumer non-durable industries, there was actually a sharp acceleration in employment during 1965/66-1979/80 when growth in value added suffered a slowdown. The roots of the problem can be traced to the developments in a period which was characterized by the creation of additional employment and the slowing down of production.

The overmanning of the earlier period provided the slack which could be utilized in the 1980s to boost growth without adding to employment. There was also the fact of a sharp increase in the real wage rate during the 1980s, after a prolonged phase of wage stability.[7/] The bias against adding to employment may also have arisen from the resistance of managements to handling a

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6/ United Nations Industrial Development Organization

large workforce in an environment dominated by a multiplicity of trade unions and inter-union rivalry. Also, there is reason to believe that firms are increasingly using contract labour rather than payroll labour to meet their labour requirements so as to bypass the rigid labour laws with respect to the hiring and firing of labour.

Table II.7. Industrial employment by end-use industry groups, 1960/61-1988/89, selected years

	Employment (Millions)			Growth in employment (Percentage per year, compound)	
	1960/61	1980/81	1988/89	1960/61-1980/81	1980/81-1988/89
Manufactured goods	3.6	7.1	7.0	3.3	-0.5
Intermediate goods	1.0	2.1	2.1	3.2	-0.1
Capital goods	0.4	1.0	1.1	4.3	0.1
Consumer durables	0.1	0.2	0.3	5.5	2.6
Consumer non-durables	1.9	3.3	3.1	3.0	-1.5
Unclassified	0.2	0.5	0.4	..	..

Source: Annual Survey of Industries, C.S.O., Planning Commission.

Table II.8. Growth of value added and employment by end-use industry groups, 1959/60-1988/89, selected years
(Percentage per year, compound)

	Value added			Employment		
	1959/60 to 1965/66	1965/66 to 1979/80	1980/81 to 1988/89	1959/60 to 1965/66	1965/66 to 1979/80	1980/81 to 1988/89
Manufacturing	9.1	5.0	6.8	4.0	3.5	-0.5
Intermediate	10.9	4.4	7.0	6.2	2.9	-0.1
Consumer non-durables	5.0	4.8	7.1	0.7	4.4	-1.5
Consumer durables	14.0	8.0	10.5	8.8	4.7	2.6
Capital goods	15.9	7.1	5.9	9.1	2.5	0.1

Source: Annual Survey of Industries, C.S.O., Planning Commission.

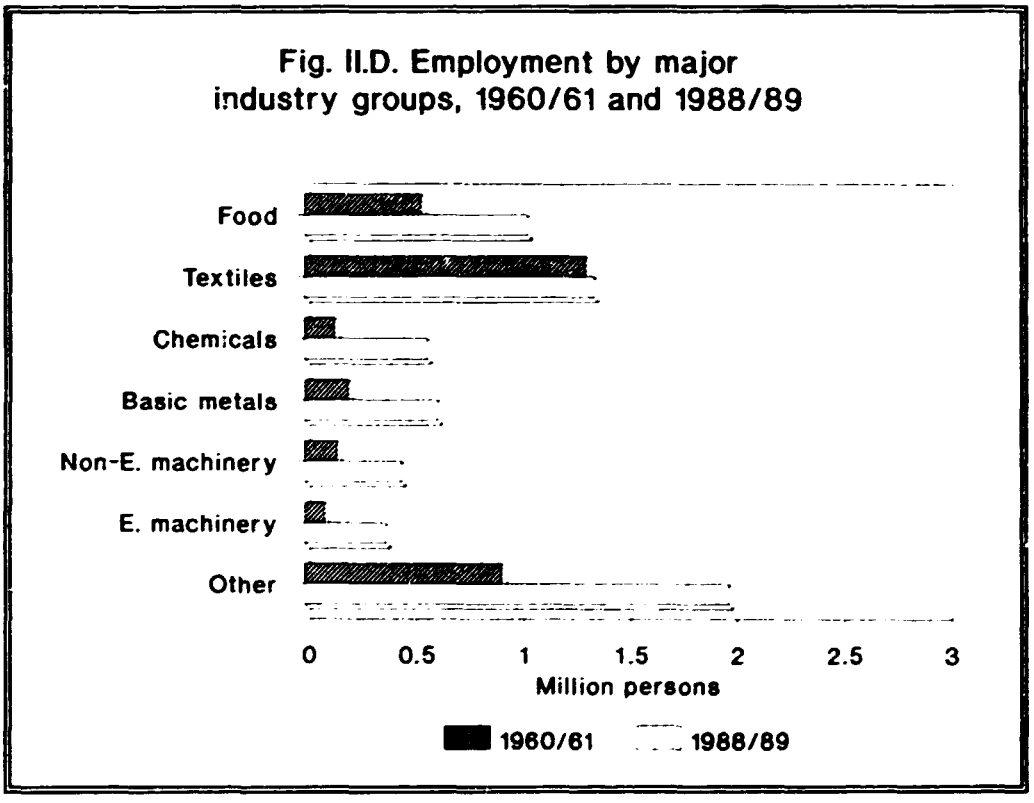
Employment in consumer durables grew the fastest all along. In the 1980s consumer durables was virtually the only sector to have recorded growth in employment, although this represented a slowdown from 4.7 per cent to 2.6 per cent. The decline in employment was particularly marked in the consumer non-durables sector.

Structure of manufacturing employment

Textiles has all along been the major employer, employing 1.35 million persons in 1988/89 compared with 1.31 million persons in 1960/61. Food products have been the next major

employer. Transport equipment, basic metals and chemicals have also emerged as industries employing large number of persons.

The decline in employment in the 1980s was most marked (3.8 per cent per year) in the food group which includes sugar, an important labour-intensive industry. Textiles was another major industry which suffered a decline in employment at the rate of 2.6 per cent per year. The growth of powerlooms in the unorganized sector was at the cost of the organized mill sector. The prolonged labour unrest in the mill sector during the decade also took its toll on employment.



The decline was more marked (3.9 per cent per year) in cotton textiles. There were other industries such as wood and cork, and paper and products which also suffered decline in employment partly reflecting the slowdown in growth in these sectors because of environmental consciousness. Leather products was the only two-digit industry group to have experienced a faster growth of employment in the 1980s than in the earlier period.

C. PRODUCTIVITY TRENDS

Total factor productivity growth

Productivity trends in the organized manufacturing sector in India show a clear turn for the better in the 1980s. Total Factor Productivity Growth (TFPG) recorded a significant improvement after a long period of stagnation during 1960-1980 (see Table II.9).[8/] Unlike partial measures of

productivity such as labour productivity and capital productivity, TFPG measures the change in the overall efficiency with which labour and capital are combined to generate value added.

The partial productivity changes tend to overstate the increase in labour productivity and understate the increase in capital productivity if the capital-labour ratio is increasing sharply over time. A significant feature of the Indian industrial experience has been a sharply rising capital-labour ratio. This may partly reflect the industry's response to an economic environment in which the inflexibility of labour laws with respect to hiring and firing make labour effectively much more costly than shown by the real wage rate. This may also reflect the bias towards capital-intensity which is inherent in a highly protective trade policy regime. This means that the analysis of TFPG assumes greater significance in the Indian context.

Table II.9. Productivity growth in manufacturing by end-use, 1960-1989
(Percentage per year, compound)

	Total factor productivity		Labour productivity		Capital productivity	
	1960-1980	1981-1989	1960-1980	1981-1989	1960-1980	1981-1989
Manufacturing	-0.5	2.7	2.1	7.3	-2.8	-0.7
Intermediate	-1.4	2.4	1.8	7.1	-4.0	-0.3
Capital goods	1.5	2.0	4.4	5.7	-1.6	-0.9
Consumer durables	1.0	2.6	3.5	7.6	-2.2	-1.2
Consumer non-durables	-0.5	3.8	1.4	8.8	-2.1	-0.1

Source Based on data from Annual Survey of Industries (various issues), C.S.O., Planning Commission

It is worth noting that TFPG includes the effect on value added of all causes other than increases in labour and capital. This would include the effect of technical progress, improved machines or better maintenance procedures, improved training and/or experience of labour (learning by doing effect), better organizational skills and indeed better utilization of existing capacities.

After a trend decline of 0.5 per cent per year during 1960-1980, TFPG in the organized manufacturing sector amounted to 2.7 per cent per year during 1981-1989. Both labour productivity and capital productivity showed clear improvement over this period. The growth of labour productivity increased from 2.1 per cent to 7.3 per cent per year, while the decline in capital productivity slowed down from 2.8 per cent per year in the earlier two decades to 0.7 per cent per year in the 1980s.

Table II.10. Productivity trends in manufacturing by major industry groups, 1960-1989
(Percentage per year, compound)

	Total factor productivity		Labour productivity		Capital productivity	
	1960-1980	1981-1989	1960-1980	1981-1989	1960-1980	1981-1989
Food	-3.3	7.6	-2.3	14.5	-3.8	3.7
Beverages	-1.0	3.1	0.7	8.2	-1.6	1.2
Tobacco	-3.3	2.1	-1.7	7.3	-4.4	-2.1
Textiles	0.4	1.9	2.2	5.5	-2.3	-3.2
Footwear	2.2	3.3	3.3	7.3	0.8	-0.3
Wood and cork	-0.9	1.1	1.3	5.7	-3.0	-2.2
Furniture	2.8	9.4	6.1	14.5	-1.5	4.4
Paper and products	1.4	1.2	3.4	6.1	0.2	-2.2
Printing and publishing	0.9	2.6	2.7	6.2	-2.1	-1.8
Leather and products	-0.4	2.2	2.6	3.7	-3.2	0.8
Rubber products	-3.1	4.0	0.6	11.5	-5.5	1.1
Chemicals	-5.8	2.1	2.8	6.0	-3.4	0.5
Petroleum products	-3.8	12.1	-2.2	19.5	-4.2	9.6
Non-metallic minerals	-0.7	1.4	1.1	8.3	-2.2	-1.9
Basic metals	-2.4	-1.3	0.0	1.8	-4.1	-3.6
Metal products	-1.7	0.8	1.1	4.3	-4.0	-1.8
Non-electrical machinery	0.7	0.0	4.3	4.0	-2.9	-2.8
Electrical machinery	1.3	3.2	4.1	6.6	-1.1	0.0
Transport equipment	1.1	1.4	3.2	4.3	-2.3	-2.3
Miscellaneous	1.7	7.7	3.6	11.9	-0.2	5.0

Source: Based on data from Annual Survey of Industries (various issues), C.S.O., Planning Commission.

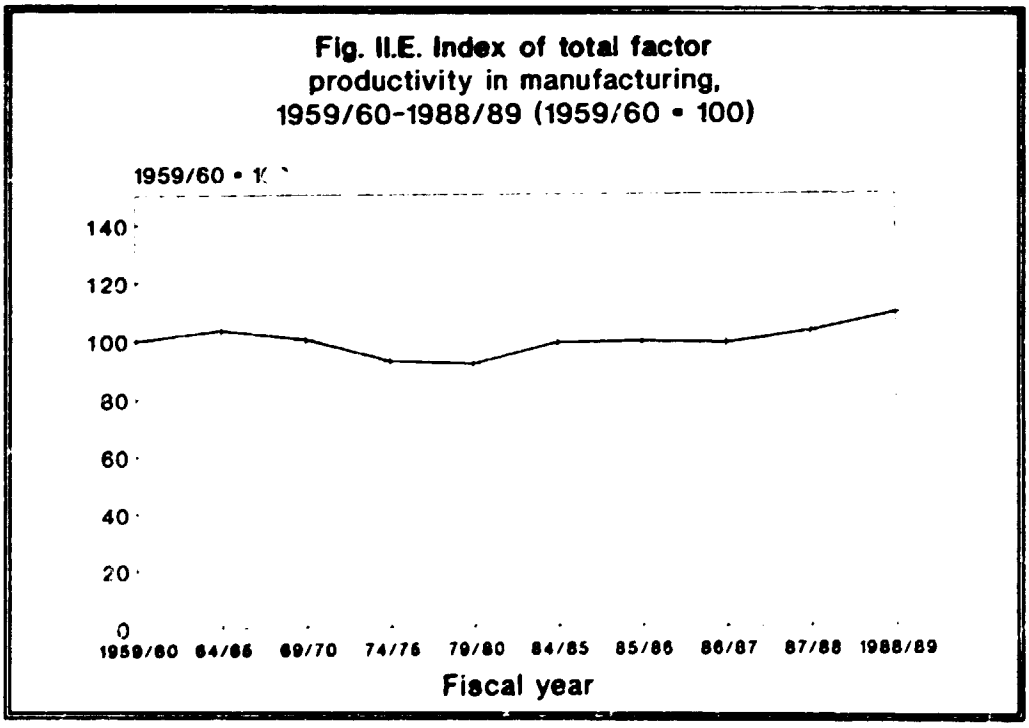
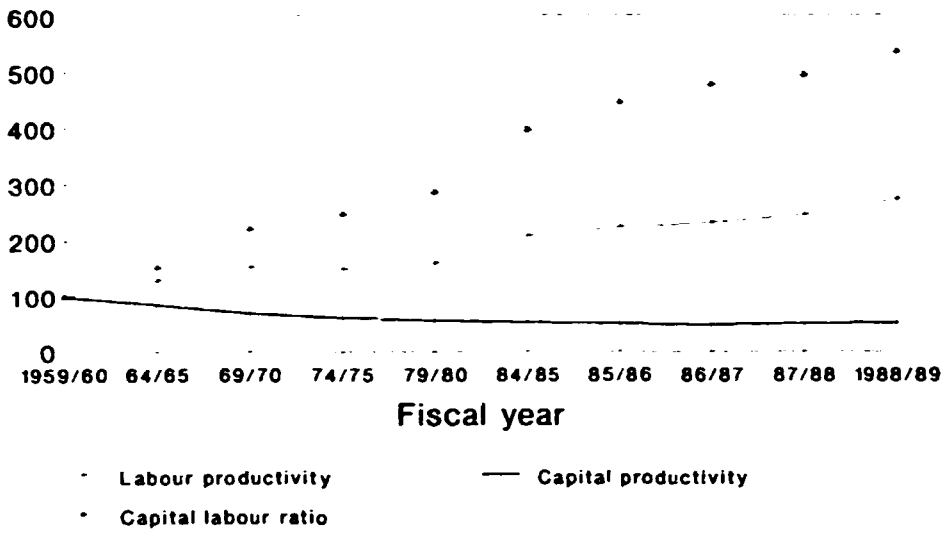


Fig. II.F. Indices of industrial labour productivity, capital productivity and capital labour ratio, 1959/60-1988/89



D. PUBLIC SECTOR PERFORMANCE AND PRIVATIZATION

The public sector has been central to India's industrialization within a mixed economy framework. To ensure the strategic control of the State over the commanding heights of the economy, certain areas of industrial production such as transport and communications, power, hydrocarbons, atomic energy, arms and ammunition, and allied items of defence equipment, were reserved for production in the public sector. The industrial strategy also lay central emphasis on the development of heavy industries in the public sector such that capacities in these industries were created in anticipation of demand. But all along, the private sector had an important role in the industrialization of the economy. By the end of the 1980s the public sector accounted for 55.7 per cent of total investment in manufacturing but only 15 per cent of the value added.

A major feature of the new economic policies introduced after 1991 has been to give the private sector more scope for participation in the growth process. The number of areas exclusively "reserved" for the public sector is reduced to just six, covering defence, atomic energy, minerals for atomic energy, coal, mineral oils and railway transport. Virtually all other areas have been opened to private domestic and foreign investment. Even in the sectors which are still reserved for the public sector private investment is permitted on a case by case basis.

Over the years, the central and state governments have together established close to one thousand enterprises in a wide range of activities. From the original concept of core, strategic and heavy industries, the public sector in India has come a long way in acquiring numerous private units. Many of these were sick units which were not allowed to close down and were taken over by the public sector ostensibly to protect employment, mainly in the textile and the engineering industries.

But public enterprises were also set up in a number of non-core non-strategic areas. By 1993, only about 60 per cent of the total investment in public enterprises was in the areas originally envisaged as the "commanding heights".

By far the most critical of the public enterprises are the 237 enterprises owned and operated by the central Government in manufacturing, mining, infrastructure including energy, and services. As of 31 March 1993, total investment in these enterprises was close to Rs 1,470 billion, of which more than half was concentrated in just 10 enterprises in the fields of power, oil, steel, railways and telecommunications.

Poor financial performance

An overall profitability profile of the public enterprises over the period from 1980/81 to 1992/93 as presented in Table II.11 shows poor returns (mostly between 2 and 4.5 per cent) on the investments made in the public sector. The higher rate of return in the public enterprises in the hydrocarbon sector (9.1 per cent in 1992/93) is more in the nature of rent on natural reserves of oil. If enterprises in the petroleum and power sector are excluded, the net profitability is negative in virtually all the years from 1980/81 onwards.

Table II.11. Profitability profile of central public enterprises, 1980/81-1992/93

	Operating enterprises			Net profits to capital employed (percentage)			
	Total	Profit-making	Loss-making	Total	Petroleum	Power	Others
1980/81	168	..	..	-1.1	5.9	-	-2.3
1981/82	168	..	..	2.0	18.6	-	-0.8
1982/83	193	..	..	2.3	23.3	2.9	-1.5
1983/84	201	109	91	0.8	20.0	3.1	-3.4
1984/85	207	115	90	2.5	17.6	5.6	-1.1
1985/86	211	119	90	2.7	17.2	8.4	-2.2
1986/87	214	109	100	3.4	20.2	5.8	-1.6
1987/88	220	114	103	3.6	20.8	7.9	-1.2
1988/89	226	117	106	4.4	20.6	6.4	0.1
1989/90	233	131	98	4.5	18.7	6.1	0.4
1990/91	236	123	111	2.2	12.0	6.1	-1.1
1991/92	237	134	102	2.1	..	..	..
1992/93	237	131	104	2.4	9.1	-	-

Memo:	1982/83 (Rs billion)	1992/93 (Rs billion)
Profits of profit-making enterprises	16.0	73.5
Losses of loss-making enterprises	9.8	39.5
Capital employed	265.0	1,400.0
Gross profit to capital employed (percentage)	13.1	11.4

Source: Government of India, Bureau of Public Enterprises

A comparison of the financial performance of public sector enterprises with selected private sector companies during the 1980s shows that profitability was much lower in the public sector than in the private sector (see Table II.12). This analysis uses a definition of "capital employed" for the public sector which is comparable to that used in company finance statistics, rather than the one

used by the Bureau of Public Enterprises (BPE).[9/] More recently, in the updating of this exercise, the estimates for the year 1990/91 and afterwards are not comparable with the estimates of the earlier years.[10/] The higher profitability of the private sector still comes through, although in the recession of 1992/93 private profitability was affected more adversely. It is worth noting that the losses of the 47 sick enterprises taken over by the Government accounted for only 22 per cent of the total losses of the 237 enterprises in 1992. This is clearly only part of the problem.

By all accounts the profitability picture is much worse in the public enterprises run by state governments. The heavy losses incurred by most (about 18) of the State Electricity Boards (SEBs) alone are estimated to be of the order of Rs 47 billion in 1992/93 which amount to 14 per cent of the total plan outlays of all states and union territories while power is priced by the state governments at rates which did not even cover the average cost of production excluding depreciation.

Table II.12. Comparison of profitability, public and private sectors, 1980/81-1992/93

	Gross profit to capital employed[a/]		Gross profits to sales		
	Private	Public	Private	Public total	Public non-petroleum manufacturing
1980/81	12.3	4.3	8.5	5.0	5.1
1981/82	11.2	6.5	8.1	7.3	6.1
1982/83	9.8	6.9	7.7	8.3	6.2
1983/84	9.4	6.0	7.5	7.5	2.6
1984/85	9.6	6.6	8.2	8.4	5.6
1985/86	9.5	6.6	8.9	8.5	4.8
1986/87	8.2	6.6	7.6	9.4	5.5
1987/88	8.1	6.2	7.3	8.5	6.6
1988/89	9.4	6.5	8.3	9.2	8.0
1989/90	11.3	6.5	9.6	10.0	9.2
1980/81 to 1984/85	10.5	6.1	8.0	7.3	5.1
1985/86 to 1989/90	9.3	6.5	8.3	9.1	6.8
1980/81 to 1989/90	9.9	6.3	8.1	8.2	6.0
Memo :					
1990/91	22.2	11.6	14.4	14.5	..
1991/92	21.7	13.2	14.6	15.8	..
1992/93	19.8	13.5	14.7	16.2	..

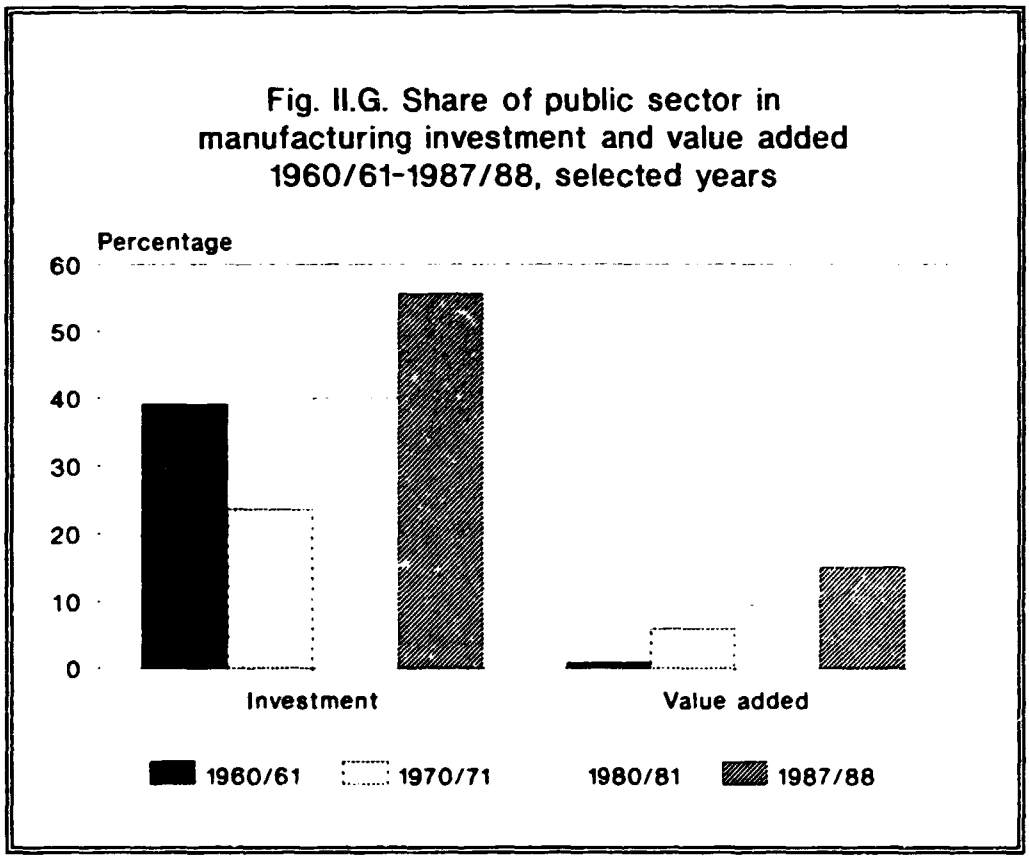
Source Centre for Monitoring Indian Economy

a. For the definition of capital employed, see endnote 9/ to Chapter II.

Factors contributing to the lacklustre performance

Reports by a number of official committees on the functioning of the public sector have highlighted the factors that have contributed to the poor returns on the investments in this sector.[11/] Lack of autonomy, excessive control of the administrative machinery, non-commercial/non-economic constraints such as forced indigenization schedules, location in areas

with weak infrastructure, procurement tied to sources of aid, requirement of quotas on employment, use of particular raw materials and technologies, etc. have been identified as factors which have contributed to the inability of public enterprises to function with commercial orientation. Pricing policies in certain areas were characterized by controlled prices to consumers with plant specific retention prices paid to producers on the basis of individual plant costs, as in the case of fertilizer and cement. This discouraged economizing on costs. While cement prices were decontrolled gradually during the 1980s, it was only in August 1992 under the new economic policy regime that the Government decontrolled the prices of phosphatic fertilizers though the price of nitrogenous fertilizer (urea) continued to be controlled.



Delays at all stages from investment approval to technology selection to location decision and also to the selection of chief executives have had an adverse effect on costs. More generally, the environment for the functioning of the public sector enterprises does not encourage risk-taking in corporate decision-making, an attribute so critical even for survival let alone success in today's complex corporate world.

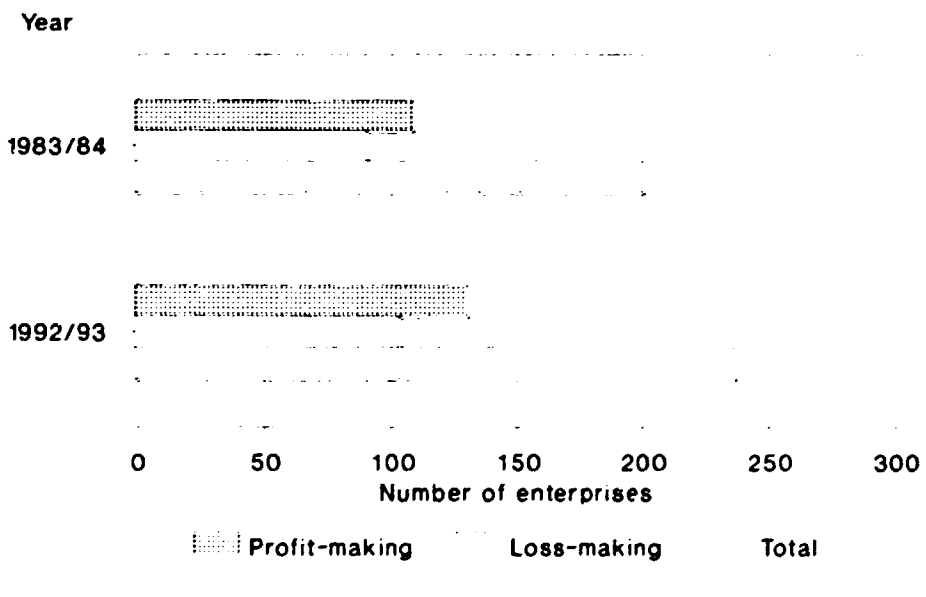
In pursuit of efficiency

An attempt was made in the 1980s to set up some holding companies in sectors such as steel, engineering, textiles, coal and trading. The objective was to centralize corporate decision making and decentralize the operational functioning of the various units of the company concerned, but

the experiment has not worked. Efforts have also been made since the mid-1980s to distance Government from the operational functioning of the enterprises through the use of Memoranda of Understanding (MOU) between a public sector undertaking and the administrative ministry concerned. Even though 102 public enterprises have signed MOU, the latter are seen, at best, as another tool of performance evaluation and a far cry from an instrument which provides effective autonomy to the public enterprise.

A compelling situation has been created by the inability of the state to continue to subsidize the public sector through budgetary support. As the share of budgetary support in financing the investment of public sector enterprises declined from 40 per cent in 1985-1990 to 14 per cent in 1993/94, the enterprises faced a tighter budget constraint. During the 1980s taxable and tax free bonds and debentures had emerged as the mainstay of financing for the public sector. Compared with 7 per cent in 1984/85, the share of such market borrowings in financing the capital investment projects of public enterprises increased to 45 per cent in 1993/94.

Fig. II.H. Number of profit-making and loss-making central public enterprises, 1983/84 and 1992/93



Towards commercial orientation and privatization

Some measures have been taken to "marketize" public enterprises by bringing in more commercial orientation in their functioning. Corporatization of government departments and statutory corporations is also being attempted, e.g., the Mahanagar Telephone Nigam Ltd (MTNL) and Oil and Natural Gas Corporation Limited (ONGC). Some State Transport Departments have been corporatized and there has also been some corporatization in the power generation sector in the

states. Fifty chronic loss-making public enterprises have also been brought under the ambit of the Board for Industrial and Financial Reconstruction (BIFR) as of 1993 to ascertain their viability and revivability and recommend a course of action. In three cases, winding up orders have been issued by the BIFR.

Public enterprises are being encouraged to tap the capital market on the strength of their own performance. Some enterprises are also being permitted to access the international capital markets. Thus, the Indian Petrochemicals Corporation Limited (IPCL), with a strong performance record, was permitted to go for a fresh issue of equity in the capital market to the tune of $50 million in order to finance its expansion. It is extremely important to generate the rate of return on these investments which will make the operations economically viable. With the pressure on performance orientation mounting, the reform of public sector enterprises assumes urgency.

Greenfield privatization is an important component of the new economic policies. Most areas earlier reserved for the public sector are now opened up to the private sector. In particular, special emphasis is being placed on attracting foreign investment in power. The hydrocarbon sector is another area where private investment is being sought. Air transport, which until recently was a public sector monopoly, has been opened up to the private sector and some new entrants have begun operations. Private sector investment in airports is also being allowed in some areas. The telecommunication sector has been opened up with the announcement of a new telecom policy in May 1994. Apart from providing for private investment in value added services, the new policy also encourages private investment in the provision of basic telephone services. The Government has announced a list of road links where private toll roads can be constructed.

Privatization of existing public enterprises with an actual change of management control has not formed part of the liberalization strategy in India so far. However, some significant steps have been taken. The legal status of the public sector automobile company, Maruti Udyog Ltd., changed with effect from 20 June 1992 to a company without direct government responsibility for management. This demonstrated the willingness of the central Government to form a strategic alliance with a joint venture company, the foreign partner in the venture being the Suzuki Motor Corporation of Japan. The Government of India now has 49.7 per cent equity share and the Suzuki Motor Corporation, the joint venture partner 50 per cent. On the other hand the question of the transfer of ownership of the public sector enterprise, Indian Iron and Steel Company (IISCO), remains unresolved. In 1993, the central Government was actively and openly considering the transfer of IISCO to one of three private parties, but there has been no decision. Earlier in 1988 the intended sale of Scooters India Limited, a loss making enterprise, to Bajaj Auto Limited, a market leader in the industry, was successfully resisted by the trade unions.

The central Government has begun a programme of divestment of government shareholding in a wide range of public enterprises since 1991/92. Equity varying between 5 per cent and 20 per cent of the total capital in 31 public enterprises was first divested between December 1991 and February 1992 to public sector financial institutions, yielding Rs 30.4 billion. In the second phase of divestment in October-December 1992, another Rs 19.1 billion was raised by divesting around 5 per cent equity in 16 enterprises. In the third phase which took place in March 1994, the Government has mobilized Rs 22 billion by divesting in seven enterprises. Foreign institutional investors were allowed to buy shares for the first time subject to a ceiling of 5 per cent. Subsequent to divestment, government holdings in the enterprises in which divestment has taken place is still typically higher than 70 per cent, and in more than half the cases higher than 80 per cent (see Table II.13). The divestment programme is continuing in 1994/95 when the Government plans to mobilize Rs 40 billion from divestment in companies including, for the first time, two major oil companies, the Oil and Natural Gas Corporation and the Indian Oil Corporation.

Divestment will take place either through direct auction subject to a reserve price as in previous years, or where the companies are also raising new capital from the public, the divestment of government equity may also be considered in parallel at the same price. It is expected that with this divestment, government shareholding in many of the companies will be reduced below 60 per cent. The two premier oil companies, i.e. the Oil and Natural Gas Corporation and the Indian Oil Corporation as well as the Steel Authority of India have also been allowed to access the capital market directly. The strategy is to follow an incremental approach for divestment without making an open commitment to bring the government shareholding below 51 per cent.

The Rangarajan Committee (1993) which was set up to look into the question of divestment of shares in public sector enterprises has recommended a bolder approach to privatization by divesting up to 74 per cent of the equity of the public enterprises which are not in the sectors reserved (now only six) for public sector, and even 26 per cent of the equity in those public sector enterprises which are reserved for the public sector. A part of the proceeds (Rs 3 billion) of public sector divestment has been used for the National Renewal Fund (NRF) which has been established to provide resources for voluntary retirement, job training and skill development schemes for workers who may be displaced through industrial restructuring and enterprise closures in the public sector.

Table II.13. Share of government holding in central public sector undertakings after divestment, as of 1 May 1994

Cochin Refineries	55.0
Andrew Yule & Co.	62.8
Madras Refineries	67.7
Hindustan Petroleum	62.9
Bharat Petroleum	70.0
Bongaigaon Refineries	74.6
Hindustan Zinc	74.9
Indian Telephone Industries	78.2
Bharat Heavy Electricals	6[illegible]
Bharat Earthmovers	75.0
Bharat Electronics	75.9
Mahanagar Telephone Nigam Limited	67.1
Shipping Corporation of India	81.5
Computer Maintenance Corporation	83.5
Videsh Sanchar Nigam Limited	85.0
Hindustan Photofilms	87.5
National Aluminium Company	87.1
Steel Authority of India Limited	89.5
Hindustan Machines Tools	90.3
Rashtriya Chemical Fertilizers	92.5
Neyvelli Lignite Corporation	93.3
State Trading Corporations	91.0
Hindustan Cables	96.3
Indian Petrochemicals Corporation Limited	80.0
National Fertilizers	97.7
Natural Mineral Development Corporation	98.4
Hindustan Copper	98.9
Dredging Corporation of India	98.6
Fertilizers and Chemicals Travancore Limited	98.3
Hindustan Organic Chemicals	79.9
Minerals and Metals Trading Corporation	99.4

Source Ministry of Industry, Department of Public Enterprises

There has been some action on privatization of the state-owned enterprises. In the first case in India of privatization through divestiture, ownership of Allwyn Nissan, an Andhra State joint venture producing light commercial vehicles, was transferred to Mahindra and Mahindra, an automobile manufacturing company in the private sector. The state of Uttar Pradesh is also attempting privatization of a number of state-owned enterprises.

E. INTERNATIONAL TRADE

The share of foreign trade in India's GNP has been increasing steadily, although it is still much lower than in the countries of East Asia and many in Latin America. Even though the share of merchandise trade in GNP in India increased from 14.5 per cent in 1990 to almost 17 per cent in 1992 and further to 19 per cent in 1993, it was still much lower than the 54 per cent in the Republic of Korea, 36 per cent in China, and 23 per cent in Mexico in 1992.

The crucial nature of India's dependence on imports can be gauged from the fact that most imports into the Indian economy are either crucial for the functioning of the economy, e.g., petroleum and petroleum products, fertilizers and intermediate inputs for production and capital goods for technological upgrading, or critical for meeting the nation's basic consumption needs, i.e., sugar, edible oils, pulses, etc. (see Table II.14). The role of strong export performance in bringing about true self-reliance is therefore indisputable. The new trade policies, however, are based on the broader recognition that export-orientation in the economy would impose an external cost audit on the industrial sector and bring about efficiency gains in the economy.

Opening up to foreign trade

Opening up to foreign trade was a major plank of the new economic policies launched in 1991. A major import liberalization programme has been initiated in the 1990s in recognition of the fact that India's industrial sector has been overprotected for too long and must now be opened up to international competition if it is to develop the competitive strength needed for strong performance in future. The opening up consists of a gradual process of reducing the high level of tariffs and eliminating quantitative restrictions.

Major reductions in tariffs have been introduced over the past three years although tariff levels are still high. The import-weighted average tariff for the whole economy has fallen from 76.7 per cent in 1990/91 to 40 per cent in 1993/94 and further in 1994/95. The peak rate of tariff which was as hign as 220 per cent in 1991 has now been reduced to 65 per cent.

Import licensing has been virtually eliminated for raw materials, intermediate components and capital goods. These can now be freely imported subject to a negative list which is under constant review and has been substantially pruned recently. The negative list as it currently exists for imports and exports is shown in Annex B.

Two windows are available for the import of capital goods at concessional rates of import duty. First, there is a project imports window for projects in the fertilizer, power, coal, and petroleum refining sectors. Capital goods are permitted duty-free for fertilizer projects, while in the other three industries they are permitted with 20 per cent duty. In 1993/94, about 20 per cent of the imports of capital goods were project imports. This will be a growing segment since major investments are planned in these sectors. Second, under the Export Promotion Capital Goods Scheme, capital goods may be imported at 15 per cent duty subject to an export obligation of four times the c.i.f. value of imports to be fulfilled within a period of five years. Under this scheme,

capital goods imports of Rs 46 billion were cleared during the two-year period ending in 1993/94 with export obligation amounting to over Rs 200 billion.

Table II.14. Structure of exports and imports, 1960/61-1993/94, selected years

	1960/61	1970/71	1980/81	1989/90	1990/91	1991/92	1992/93	1993/94
A. Exports								
Agricultural products	44.2	31.7	30.6	17.6	19.4	18.7	17.6	18.0
Iron ore	2.6	7.6	4.5	3.3	3.2	3.2	2.0	1.9
Petroleum products	0.6	0.3	0.1	2.5	2.9	2.4	2.8	1.8
Manufactured goods	45.3	50.3	55.8	74.6	72.9	74.2	76.0	75.7
Gems and jewellery	0.1	2.8	9.6	19.1	16.1	15.3	16.6	17.6
Ready-made garments	0.1	1.9	8.4	11.6	12.3	12.3	12.9	11.3
Engineering goods	2.0	12.0	13.0	8.5	11.9	12.5	13.2	11.7
Chemicals and products	1.1	2.3	3.5	7.8	6.5	8.9	7.4	11.0
Leather and products	3.9	4.7	5.0	7.0	8.0	7.1	6.9	5.8
Jute manufactures	21.0	12.3	4.9	1.1	0.9	0.9	0.7	0.5
Other manufactures	17.0	14.2	11.3	19.4	17.2	17.2	18.3	17.8
Other	7.2	10.0	8.9	1.9	1.6	1.5	1.6	2.6
Total exports	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
B. Imports								
Petroleum	6.1	8.3	41.9	17.8	25.0	27.6	27.9	24.8
Fertilizers	1.1	5.1	5.2	5.0	4.1	4.9	4.5	3.6
Cereal	16.1	13.0	0.8	1.1	0.4	0.4	1.5	0.4
Edible oils	0.3	1.4	5.4	0.6	0.7	0.5	0.3	0.2
Capital goods	31.7	24.7	15.2	24.9	24.2	21.8	20.7	26.0
Other (mostly intermediate)	44.6	47.4	31.4	50.5	45.6	44.8	45.1	45.0
Total imports	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Ministry of Finance, Economic Survey (various issues).

Imports of consumer goods remain restricted even under the new trade policy regime. A small start has been made by allowing the import of consumer goods (from a defined list) against Special Import Licences which are given to exporters as an incentive for exports. These licences, amounting to 5 per cent of the f.o.b. value of exports, can be used to import items on a defined list of consumer goods most of which attract the peak level of duty of 65 per cent. Since the licenses trade at a premium of around 8 per cent, the total effective import protection is around 73 per cent.

The most dominant feature for the Indian export performance over the period 1960-1990 was a more or less continuous slide in India's share of world exports to reach a level of 0.5 per cent in 1989/90. Only in three areas is India's share of world exports substantial. These are tea, leather manufactures and jewellery. In 1990, India's share in world exports was 22 per cent for tea, 12 per cent for leather manufactures, and 9 per cent for gems and jewellery. Other commodity groups where India's share is not negligible include spices (8 per cent), rice (7 per cent), iron ore (7 per cent), and woven fabrics (7 per cent).

The reorientation of the industrial and trade policy regime in the 1980s to release the supply side constraints was combined later in the decade with a more activist policy on the exchange rate so as to attain a steady depreciation in the real effective exchange rate. The improvement in the productivity performance and the loosening of the tight import control regime created a better environment for exports. New incentives for exports, most notably the exemption from tax of profits on export operations, also helped. Consequently, the period 1985/86-1989/90 witnessed growth in exports in US dollars of 16 per cent per year (see Table II.15), while the volume index also increased by 11.5 per cent per year.

A positive development on the export front in the 1980s was a steady rise in the share of manufactured goods in India's total exports from 55.8 per cent in 1980/81 to 74.6 per cent in 1989/90. There was a fast rise in the share of gems and jewellery and ready-made garments during the 1970s and the 1980s, while exports of engineering goods stagnated during the 1970s and declined further in importance in the 1980s. The large increase in the export of petroleum products in the first half of the 1980s, however, was a transitory phenomenon which passed with the development of the refinery capacities in the economy in the second half of the 1980s.

Within the manufactured goods segment, the major export industries are gems and jewellery, garments, leather manufactures, engineering and chemicals. Manufactured goods exports accounted for 92 per cent of the export growth between 1980/81-1985/86 and 1986/87-1991/92.[12/] Of this, the contribution of gems and jewellery was 25 per cent, garments 15 per cent, engineering goods 12 per cent, leather 10 per cent, textiles 10 per cent, and chemicals 10 per cent. Chemicals and leather manufactures emerged as new dynamic export sectors in the 1980s.

Fig. II.1. Financing of central public enterprises' plan projects, 1985-1990 and 1993/94 (Percentage)

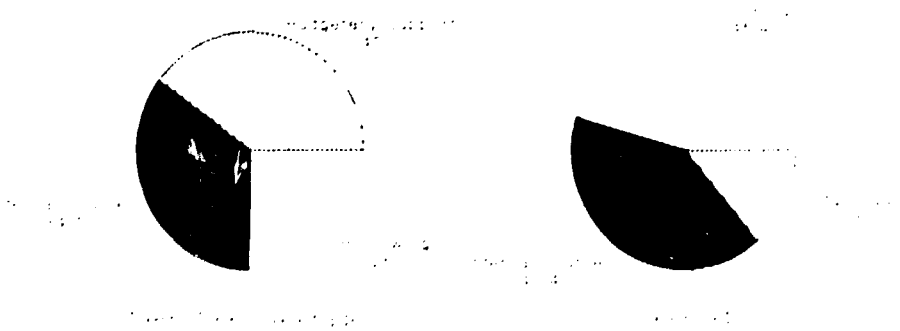


Table II.15. Growth of exports and imports, 1960/61-1994/95
(Percentage per annum)

	1960/61 to 1969/70	1970/71 to 1979/80	1980/81 to 1989/90	1980/81 to 1985/86	1985/86 to 1989/90	1990/91	1991/92	1992/93	1993/94	April-June 1994/95
A. Exports (Rupees)										
Agricultural products	5.5	15.5	8.7	8.6	10.9	25.8	30.2	14.9	32.5	-5.5
Iron ore	23.9	12.6	11.3	12.4	12.2	13.0	36.8	-23.1	22.9	3.9
Petroleum products	13.9	7.3	26.2	127.0	4.0	30.0	9.8	46.0	-9.5	-14.0
Manufactures	10.3	17.1	19.7	11.5	34.9	15.8	37.7	24.9	19.1	13.7
Gems and jewellery	62.5	38.5	25.1	18.2	39.0	-0.8	28.6	31.8	40.8	13.9
Ready-made garments	42.8	40.0	20.7	14.0	30.6	24.4	35.1	27.8	16.7	-6.2
Engineering goods	36.3	24.1	7.9	2.7	22.5	18.1	42.2	29.2	14.5	21.6
Chemicals and products	17.5	24.1	25.6	18.0	45.2	-1.6	84.8	2.3	91.1	18.3
Leather and products	16.1	19.7	23.2	18.3	26.6	28.7	20.3	18.3	11.8	0.6
Jute manufactures	6.3	0.9	0.1	-1.3	2.2	2.4	31.2	-9.2	42.2	-13.1
Other manufactures	7.2	13.3	22.6	10.5	45.6	31.6	35.7	29.6	26.2	14.9
Other	12.9	14.5	-0.6	-17.5	21.2	77.4	-7.2	21.6	22.0	40.7
Total	**10.2**	**19.3**	**14.9**	**11.3**	**26.5**	**17.7**	**35.3**	**21.9**	**29.5**	**9.7**
Total ($)	3.2	18.1	7.2	3.3	15.9	9.2	-1.5	3.8	19.6	9.6
Total (Volume)	3.2	7.3	3.6	1.1	11.5	11.0	7.5	6.8	-	-
Non-petroleum ($)	3.2	18.1	7.7	1.1	16.9	8.9	-0.1	3.3	19.5	10.2
B. Imports (Rupees)										
Petroleum	3.8	41.0	-1.8	-0.8	9.3	72.4	21.4	30.6	5.3	-17.6
Fertilizers	33.7	17.8	12.9	23.8	0.5	-2.0	33.2	20.3	-1.7	-19.7
Cereal	13.4	-2.8	5.0	-3.4	56.0	-53.2	-4.9	458.4	-72.4	-81.3
Edible oils	18.9	51.5	-3.4	6.9	-21.3	56.0	-23.9	-32.7	-1.8	448.9
Capital goods	4.5	16.5	19.7	17.5	16.4	18.9	-0.3	25.7	44.4	10.1
Other (Mostly intermediate)	4.8	17.4	16.9	13.2	23.9	10.0	9.5	35.5	14.6	27.0
Total	**7.2**	**21.6**	**11.2**	**9.1**	**16.4**	**22.3**	**10.8**	**32.4**	**14.9**	**7.7**
Total ($)	0.5	19.3	5.4	1.4	10.5	13.5	-19.4	12.7	6.1	7.6
Total (Volume)	1.9	4.5	5.9	4.8	6.2	4.3	-4.0	22.8	-	-
Non-petroleum ($)	0.7	15.4	10.4	6.4	12.5	3.4	-22.2	12.3	9.3	18.1

Source: Ministry of Finance, Economic Survey (various issues)

The United States is India's largest market, accounting for 18 per cent of India's total exports. Some decline in this share during the 1960s and the 1970s reflected the rising importance of the former USSR in India's exports during that period. This trend was reversed subsequently. There has been a more or less steady increase in the share of the United States in India's exports since 1980/81 reaching over 18 per cent in 1993/94 (see Table II.16).

India's trade with the former USSR was based on bilateral arrangements in which payments for imports from the former USSR were made in rupees as were the repayments of credits extended by the former USSR to India for defence and civilian purposes. The rupees were used by the former USSR to purchase Indian goods. The volume of trade between the two countries in the 1960s and the 1970s was therefore significantly determined by the magnitude of the repayments due on past credit. The share of the former USSR in India's exports increased from 4.5 per cent in 1960/61 to 18.3 per cent in 1980/81. By 1980/81, the former USSR had become India's largest trading partner. However, a decline in its share of India's exports began in the 1980s. The collapse of the former USSR in 1991 caused Indian exports (in US dollars) to this market to decline by 44 per cent in 1991/92 and 66 per cent in 1992/93. The Russian Federation accounted for 2.9 per cent of India's exports in 1993/94.

The direction of India's exports in the 1980s was more towards the OECD economies and away from the economies of eastern Europe. This trend continued in the 1990s so that by 1993/94 the OECD economies received 57 per cent of India's exports, while the share of the eastern European economies declined to 3.8 per cent.

Table II.16. Direction of India's trade, 1960/61-1993/94, selected years
(Percentage share)

Destination	1960/61	1970/71	1980/81	1990/91	1991/92	1992/93	1993/94
A. Exports							
OECD	66.1	50.1	46.6	53.5	57.9	60.3	57.0
EC	36.2	18.4	21.6	27.5	27.0	28.2	26.1
Belgium	0.8	1.3	2.2	3.9	3.7	3.7	3.8
France	1.4	1.2	2.2	2.4	2.4	2.5	2.3
Germany	3.1	2.1	5.7	7.8	7.1	7.2	6.9
Netherlands	1.3	0.9	2.3	2.0	2.1	2.2	2.3
United Kingdom	26.9	11.1	5.9	6.5	6.4	6.5	6.2
North America	18.7	15.2	12.0	15.6	17.4	19.9	19.1
Canada	2.7	1.8	0.9	0.9	1.1	1.0	1.0
United States	16.0	13.5	11.1	14.7	16.4	18.8	18.1
Other OECD	10.1	15.2	10.6	10.4	10.5	9.2	9.1
Australia	3.5	1.6	1.4	1.0	1.1	1.3	1.1
Japan	5.5	13.3	8.9	9.3	9.2	7.7	7.8
OPEC	4.0	6.4	11.1	5.6	8.7	9.6	10.7
Eastern Europe	7.0	21.0	22.1	17.9	10.9	4.7	3.8
Russian Federation[a/]	4.5	13.7	18.3	16.1	9.2	3.2	2.9
Developing countries other than OPEC	14.8	19.9	19.2	16.8	18.1	20.3	
Others	7.9	2.6	1.0	6.2	4.3	5.0	4.4

Table II.16. Continued.

Origin	1960/61	1970/71	1980/81	1990/91	1991/92	1992/93	1993/94
B. Imports							
OECD	78.0	63.8	45.7	54.0	54.2	56.1	56.2
EC	37.1	19.6	21.0	29.4	29.2	30.2	30.1
Belgium	1.4	0.7	2.4	6.3	7.2	8.3	8.1
France	1.9	1.3	2.2	3.0	3.2	2.7	2.6
Germany	10.9	6.6	5.5	8.0	8.0	7.6	7.7
Netherlands	0.9	1.2	1.7	1.8	1.4	1.7	1.6
United Kingdom	19.4	7.8	5.8	6.7	6.2	6.5	6.6
North America	31.0	34.9	14.7	13.4	11.7	11.7	12.7
Canada	1.8	7.2	2.6	1.3	1.4	1.9	1.0
United States	29.2	27.7	12.9	12.1	10.3	9.8	11.7
Other OECD	7.1	7.4	7.4	11.2	10.4	10.6	9.7
Australia	1.6	2.2	1.4	3.4	3.0	3.8	2.8
Japan	5.4	5.1	6.0	7.5	7.1	6.5	6.5
OPEC	4.6	7.7	27.8	19.9	19.9	21.6	22.5
Eastern Europe	3.4	13.5	10.3	7.8	5.1	2.5	1.7
Russian Federation[a/]	1.4	6.5	8.1	5.9	3.8	1.2	1.1
Developing countries other than OPEC	11.8	14.6	15.7	18.4	17.1	15.2	15.4
Others	2.2	0.5	0.5	3.5	3.7	4.6	4.3

Source: Ministry of Commerce.

a/ Refers to former USSR before 1992/93.

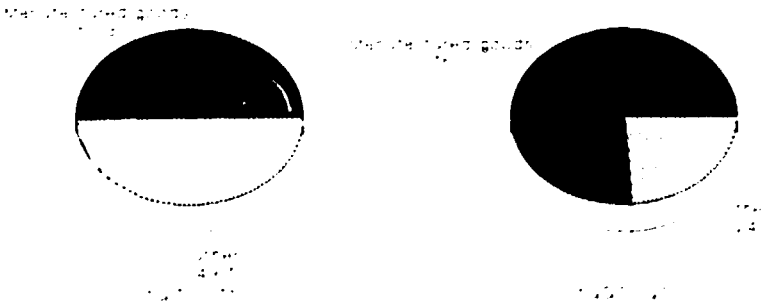
India's export performance in the first two years of the reforms was severely and adversely affected by the collapse of the former USSR. Total exports from India declined by 1.6 per cent in 1991/92 and increased by only 3.3 per cent in 1992/93. However, the underlying structural transformation is now coming to the surface. The number of companies achieving international quality standards by obtaining certification from the ISO 9000 series stands at over 220 compared with less than five in 1991. There was a significant slowdown in export growth in the first quarter of 1994/95 when exports (measured in $) grew at a rate which was little over 9 per cent per year. It is difficult to explain this slowdown without information on the detailed export performance during the quarter, but the slowdown may partly have been the result of an appreciation in the real effective exchange rate in recent months. However, the latest data for August 1994 show a strong growth in exports of over 20 per cent per year. Exports are beginning to respond to the new policies, growing in dollar terms by 20.2 per cent in 1993/94. Export growth has been particularly impressive in plastic, linoleum and metal products. Gems and jewellery and ready-made garments have also maintained their export dynamism. There was some slow down in export growth in the first half of 1994/95 such that exports in dollar terms grew by 13.9 per cent in April-October 1994.

Import growth in the 1990s has been very sluggish notwithstanding the major drive towards trade liberalization. This is largely due to the sharp decline in industrial growth after 1990/91 although the depreciation of the real exchange rate of the rupee has also contributed to the slowing down of imports. In the very first year of stabilization when there was little growth in industrial production in the economy, the severe import squeeze brought about a decline of 19 per cent in imports (in US dollars). The slow process of industrial recovery in the subsequent two years meant sluggish growth of imports. After increasing in 1992/93 by 12.7 per cent in dollar terms

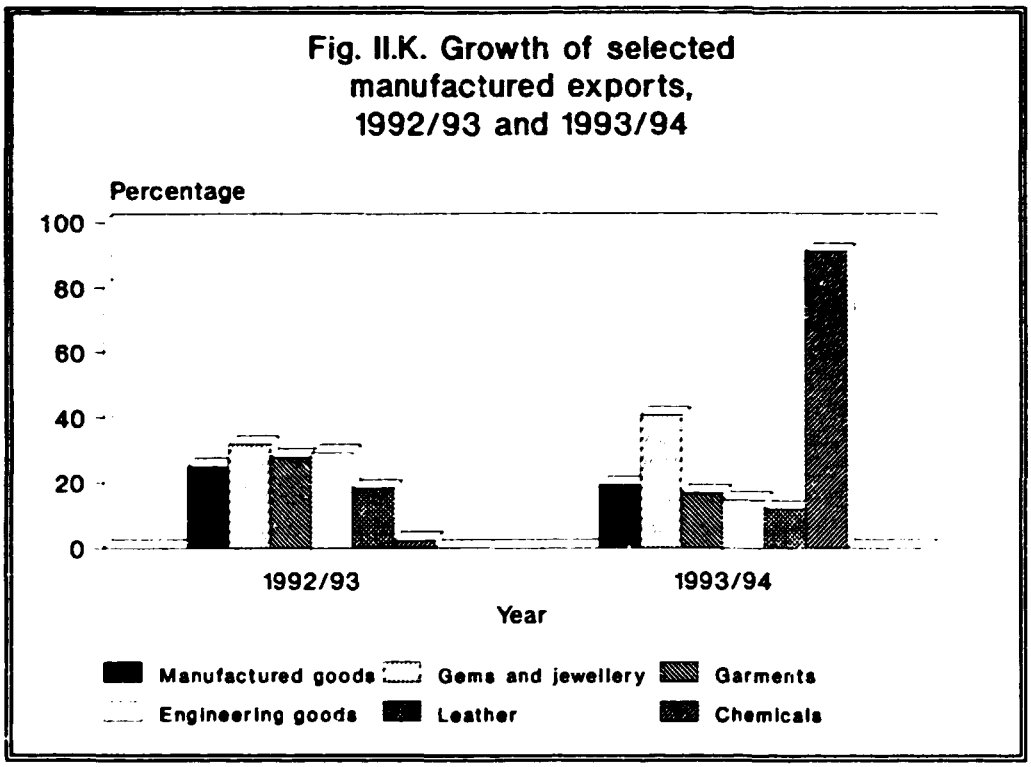
from their low level in 1991/92, imports in 1993/94 increased by 6 per cent in 1993/94. More recently, in the first two quarters of 1994/95, imports increased by 19.8 per cent as industrial growth recovered from the recession of the preceding three years. Non-oil imports increased by 9.3 per cent and 18.1 per cent, respectively, while imports of petroleum declined.

The OECD countries continue to be the dominant source of imports into India, accounting for 56 per cent of total imports in 1993/94. Imports from the eastern European economies declined from 7.8 per cent of the total in 1990/91 to 1.7 per cent in 1993/94, while the share of the Organization of Petroleum Exporting Countries (OPEC) increased from 20 per cent to 22.5 per cent over the same period.

Fig. II.J. Share of manufactured goods in total exports, 1970/71 and 1992/93 (Percentage)



India's current account deficit had reached a high of 3.5 per cent of GDP in 1990/91, which was clearly not sustainable with the "normal" capital flows into the economy. The decline in the deficit to 0.5 per cent of GDP in 1993/94, however, was a reflection of the strong performance of exports combined with sluggish growth of imports in the year as industrial recovery was delayed. Over the medium run, the Eighth Plan (1992-1997) envisages that the current account deficit will be around 1 per cent of GDP.



The Uruguay Round and India

India, one of the 23 founder members of the General Agreement on Tariffs and Trade (GATT), has always stood for a strong and effective multilateral trading system. In April 1994, India signed the Uruguay Round Agreement in Morocco. The Agreement represents both a challenge and an opportunity. For example, while new opportunities open up in textiles, the Agreement provides sufficient time for the Indian textile industry to restructure itself to exploit these opportunities. Agriculture and agro-processing is another area opening up for export opportunities from India. In the areas of patents and plant variety protection legislation, the Agreement calls for certain changes within a specified time-frame. The Trade Related Investment Measures (TRIMS) which refer to discriminatory import restrictions inconsistent with existing GATT rules are not applicable to India's current trade policy.

Given the importance of the textile industry in India, the phasing out of the Multi-Fibre Arrangement (MFA) and abolition of import quotas by the United States will have a positive impact on exports of Indian textiles. While the ten-year period for the phasing out of the import quotas is not satisfactory from the perspective of developing countries as a group, it provides the Indian textile industry with time to restructure and modernize itself to regain the international competitiveness which it lost slowly over a long period.

The Uruguay Round also contain provisions for Tariffs and Multilateral Trade Rules. For industrial products further reductions in the tariffs of the developed countries coupled with more transparent rules for the application of non-tariff measures will facilitate the expansion of manufactured exports.

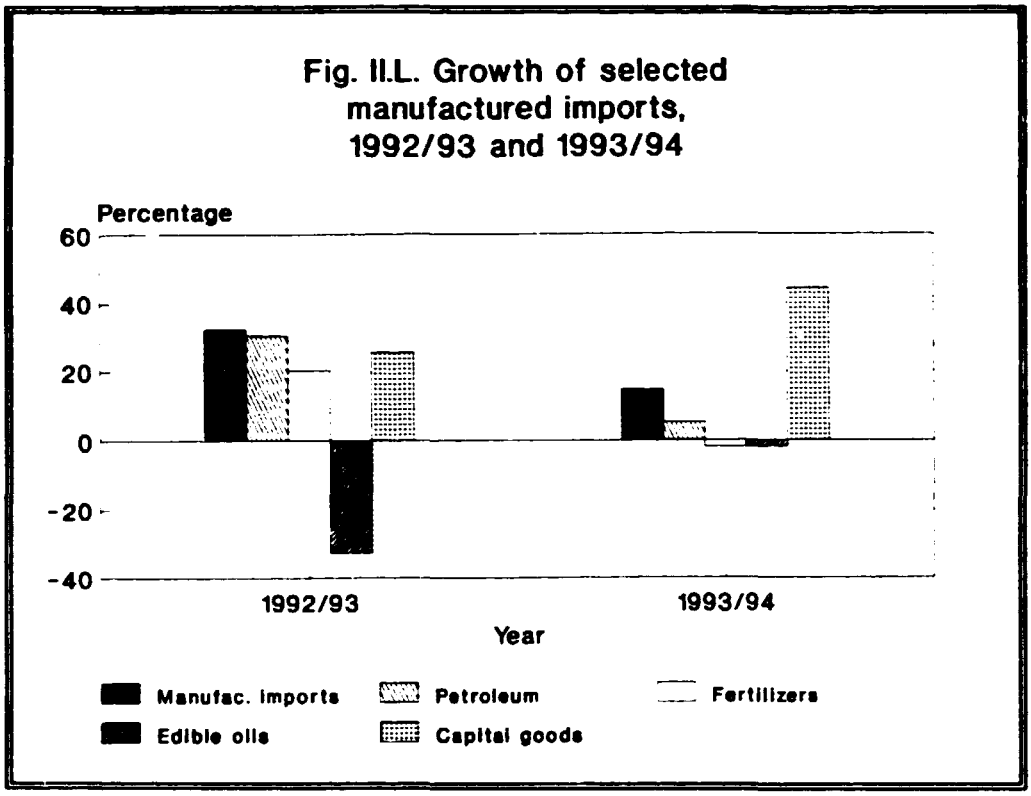
The overall target for tariff reductions under the Uruguay Round was an average of 30 per cent with the aim of reducing "especially high tariffs" and "tariff escalation". In the developed countries the weighted average level of tariffs has already been reduced to around 5 per cent and among many developing countries tariff levels, especially on capital goods, components and industrial raw materials, are relatively low. Because of its high tariff level and import restrictions due to balance of payments reasons India thus stands to benefit substantially from the Uruguay Round Agreement.

India has offered to reduce its tariffs on capital goods, components, intermediates and industrial raw materials, except non-ferrous metals, fertilizers and petrochemical products, and consumer goods, to 40 per cent for products where current tariffs are above the percentage, to 25 per cent for products where current tariffs are between 25 and 40 per cent and to bind the tariff ceiling at 25 per cent for products where current tariffs are below that percentage. These changes are to be implemented in equal rates over a six-year period ending in the year 2000. Even after these tariff reductions Indian tariffs will remain among the highest in the world.

Agriculture in India is subject to net tax to the tune of about 20 per cent of the value of agricultural production, unlike most developed economies where agriculture is heavily subsidized. The reduction in farm subsidies in the developed economies between 1995 and the year 2001 under the Agreement should help boost the prospects of agricultural exports from India. However, India will be called upon to introduce new legislation in regard to the protection of plant varieties.

The main impact of the Uruguay Round on Indian industry will be on Intellectual Property Rights (TRIPS), in particular the patent system. The Indian Patents Act of 1970 will have to be amended in a major way to allow for product patents in the pharmaceutical (biotechnology), food processing and chemical industries. The period of protection will also have to undergo a change from the seven years currently allowed for pharmaceutical and food processing and 14 years for others to 20 years for all. The scope for compulsory licensing will have to be clearly defined and delimited.

India is already a member of the Berne Convention for the protection of literary and artistic works. India's copyright laws are well ahead of provisions laid out in the Uruguay Round. Computer software has been protected as a literary work under the copyright laws since 1983. India is already a signatory to the Washington Treaty of 1989 on Intellectual Property with respect to integrated circuits. The process of enacting a law in accordance with this treaty has already been initiated. Recently the Indian Parliament amended the Copyright Act which provides, *inter alia*, for the protection of performers, sound recorders and broadcasting organizations. India's laws relating to trade marks, trade secrets and industrial designs are on par with generally accepted international standards and any improvements that may be required are only incremental in nature, although there is need for better enforcement.



F. FOREIGN INVESTMENT

A new approach

Policy towards foreign investment has been radically restructured as an essential element in the opening up of the Indian economy. Prior to the economic reforms of the 1990s, India's policy towards foreign investment was highly selective. Important areas of the economy were closed to private investment and therefore to foreign investment. Even in the areas open to private investment, foreign investment was allowed only in the so-called "priority areas" and that too with less than 40 per cent equity.

The Foreign Exchange Regulation Act (FERA) has been substantially amended to remove its restrictive provisions which applied to the operation of companies with foreign equity of 40 per cent or more (commonly known as FERA companies). All companies incorporated in India are now treated alike irrespective of the level of foreign equity. Some of the important changes are that FERA companies can now acquire and sell immovable property. They can also borrow and accept deposits from the public. Raising equity up to 51 per cent for these companies is permitted through the "automatic approval" route if the investments are in any of the 35 listed priority industries. Even in other cases, the Government's approval has been liberal.

In keeping with the policy of progressive liberalization of the foreign exchange regime, India took the final steps for moving to full convertibility on current account and accepted the obligations contained under Article VIII of the International Monetary Fund in August 1994. Following the liberalization of restrictions on current payments, the Government is considering a complete restructuring of the Foreign Exchange Regulation Act.

India has joined the Multilateral Investment Guarantee Agency (MIGA) for protecting foreign investment against risks such as war, civil disturbance and expropriation. A bilateral Investment Protection Agreement has been concluded with the United Kingdom and similar agreements are being negotiated with a dozen other major investing countries.

Foreign companies in India are taxed on all Indian-sourced income and on foreign income if received in India. The tax rates are 30 per cent on royalty and technical service fees, 25 per cent on dividend and interest, and 50 per cent on other income. Corporate tax rate on Indian companies is 40 per cent, with a temporary surcharge of 15 per cent on companies whose income exceeds Rs 75,000. India has signed tax treaties with 40 countries including Canada, France, Germany, Japan, the United Kingdom and United States.

In the new liberalized regime, direct foreign investment is permitted in virtually every sector of the economy. Majority foreign investment (up to 51 per cent) is not only freely allowed for new ventures, but existing companies can also raise their stake. Foreign equity proposals need not be accompanied by foreign technology transfers as required earlier. Royalty payments have been considerably liberalized. Technology imports are automatically approved for royalty payment up to 5 per cent of domestic sales and 8 per cent of export sales (both net of tax) with or without a lump sum payment up to Rs 10 million. In industries reserved for the small-scale sector foreign equity up to 24 per cent is permitted. Foreign equity up to 100 per cent is encouraged in export-oriented units, the power sector, electronics and software technology parks. In other industries also, foreign equity up to 100 per cent is permitted on merit. There is no restriction on the use of foreign brand names/trade marks for internal sale.

A foreign investor has to seek "government approval" in one of two ways. A simple fast track mechanism or "automatic approval" from the Reserve Bank of India is available for projects of certain kinds, e.g., up to 51 per cent equity in high priority industries, up to 100 per cent equity in wholly export-oriented units and all foreign technology agreements which meet certain economic parameters. About 20 per cent of the proposals have gone through the automatic route. For all other proposals including individual cases involving foreign equity participation of over 51 per cent, applications are increasingly processed by a high level Foreign Investment Promotion Board (FIPB). During April-September 1994, 90 percent of the foreign investment approved came through this route. The Board approved a total volume of foreign equity of $6 billion between August 1991 and September 1994. In contrast, direct foreign investment approvals during 1986-1990 averaged just Rs 1.8 billion per year. It is not surprising then that while it took the Government five years to give approval to Pepsi-Cola for entering the Indian market in 1990, only two years later the Government took only three months to grant approval to Coca-Cola. The administrative procedures are much simpler today.

A list of major foreign investment projects in the power sector approved under the new policy regime is provided in Table II.17. In particular, the Government is specially encouraging foreign investment in infrastructure. Joint ventures are now permitted in both exploration and development of oilfields and refineries. In the power sector the Government has gone out of its way to attract foreign investment so as to break critical infrastructure bottlenecks. A foreign investor can hold up to 100 per cent equity. Tax holidays are also offered for five years for new power projects. As a special measure to attract foreign investment in the power sector the central Government has agreed to provide counter-guarantees to ensure performance on power purchase agreements entered into by State Electricity Boards. These initiatives have elicited a positive response. Several state governments are actively negotiating with various foreign investors for setting up private sector power plants. Nine projects involving total foreign equity investment of

over $1.5 billion were in the pipeline in September 1994. Some states are also taking first steps to privatize the distribution process.

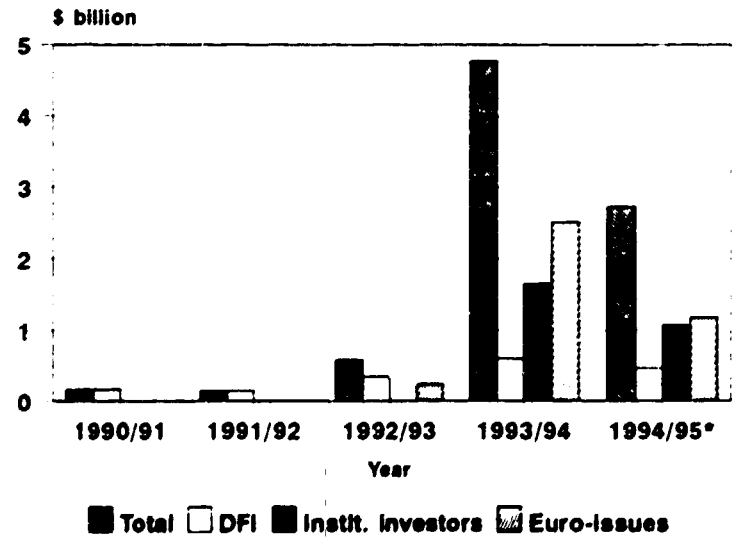
Actual inflows of direct foreign investment are less than the volume of new approvals but they are increasing significantly. The policy guidelines for the infrastructure sectors (power, telecommunications and mining) are in the process of being better defined and better communicated. This should result in the approvals being translated into actual flows at a much faster pace. By June 1994 India had attracted $1.3 billion of actual direct foreign investment. Investors in the United States are by far the largest direct foreign investors in India.

Increasingly, Indian companies and service enterprises are internationalizing their operations. This is reflected not just in the increased share of exports in GDP but also in investments overseas. Of the total number of 167 joint ventures in operation, almost 60 per cent are in the manufacturing sector, others being involved in hotels, restaurants, trading, marketing, consultancy, engineering and construction. Indian equity in these ventures is about Rs 1.5 billion. In addition, there are 263 projects under implementation which involve Indian equity of close to Rs 10.5 billion. More than one-third of the joint ventures are in the East Asia region.

Indian companies are also setting up wholly-owned subsidiaries abroad. These companies, numbering 170, are mainly in the areas of trading, marketing, consultancy, hotels, software and shipping and are located for the most part in Singapore, the United Kingdom and United States. The equity participation amounts to approximately Rs 3.6 billion.

The Government has significantly liberalized the guidelines governing the establishment of Indian joint ventures/wholly-owned subsidiaries abroad. Investments of up to $2 million come under a new "automatic approval" scheme. Greater operational flexibility has also been granted to the Indian overseas ventures in respect of altering its share capital structure and expanding into new lines of businesses.

Fig. II.M. Foreign investment inflows by source, 1990/91-1994/95



* April-September 1994.

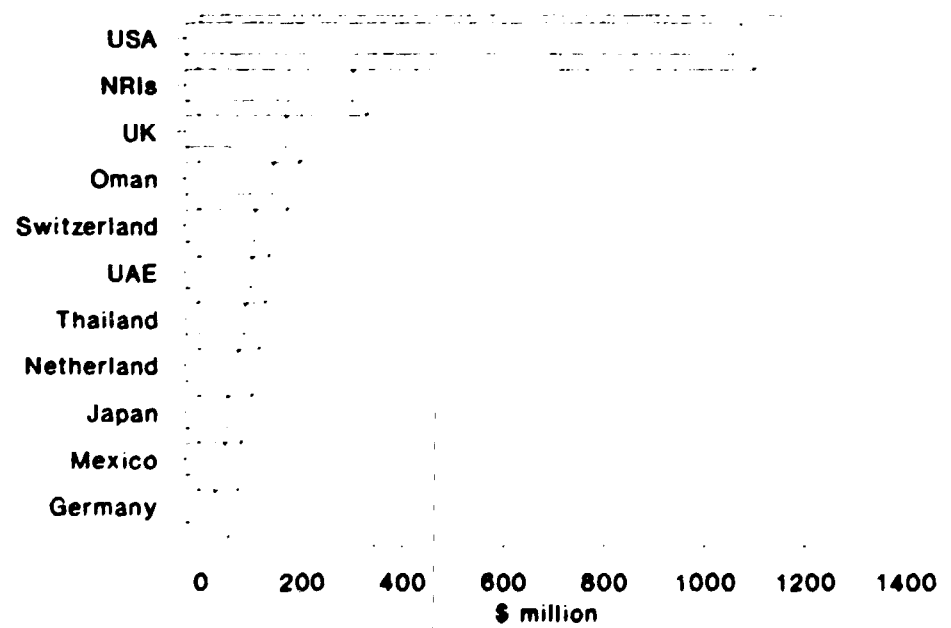
Table II.17. Major foreign investment projects approved, August 1991-May 1994

Foreign collaborator	Indian company	Foreign equity Amount (Rs million)	Foreign equity Share (Percentage)
Power			
1 Enron Power Development Corporation, United States		19,200	75
2 National Power, United Kingdom	Ashok Leyland	3,060	51
3 Cogentrix Development Company, United States		5,120	100
4 Siemens AG, Germany	Gujarat Torrent Energy Corporation	2,170	33
5 AES Transpower United States		2,976	73
6 Non-resident Indian	GVK Industries	2,112	80
7 ST Power System, CMS Energy, United States	Neyveli Lignite Corporation	2,736	95
8 Non-resident Indian	Spectrum Power Generation	1,257	60
9 General Electric Company United Kingdom	Nippon Denro Ispat	8,640	66
Electricité de France, France	Limited, Ispat Alloys		
Total		47,271	-

Source Government of India, Ministry of Industry.

Memo. Total foreign investment in the economy approved by FIPB during August 1991 - September 1994 was $6 billion covering over 5,000 proposals.

Fig. II.N. Direct foreign investment by countries and non-resident Indians, 1993



G. SMALL-SCALE INDUSTRY

The small-scale sector was expected to play a critical balancing role within India's overall heavy industries oriented strategy of industrialization by producing consumer goods using labour-intensive methods of production and bringing about industrial dispersal. A small-scale unit is defined in India as an enterprise with investment in plant and machinery of less than Rs 6 million. For ancillary industries and for industrial units undertaking to export 30 per cent of their annual production, the ceiling is higher at Rs 7.5 million. In practice, over two-thirds of registered small-scale units have invested capital of less than Rs 0.2 million and 85 per cent of less than Rs 0.5 million.

The small-scale sector accounts for 35 per cent of the net value added in manufacturing (see Table II.18).[13] There are two distinct components to the small-scale sector in India - the modern and the traditional. The modern small-scale units use power-operated machinery and are located close to urban areas. Over the years these units have benefitted from a policy which restricts competition from the large-scale units. The traditional units, on the other hand, are generally artisan-based and are located mostly in rural and semi-urban areas, their employment being largely part-time and/or family labour. These units are more in need of an institutional infrastructure which can help with credit, designing, and marketing. The share of the modern sector (including powerlooms) in the output of the small-scale sector increased from 67.5 per cent in 1973/74 to 89 per cent in 1991/92, while the share of traditional industry declined from 16 per cent to 11 per cent (see Table II.19).

Table II.18. Share of small-scale sector in manufacturing, 1987/88

	Share (Percentage)	Net value added) (Rs billion)
Manufacturing	100.0	454.2
Factory sector	59.4	269.8
Non-factory sector	40.6	184.4
Share of small-scale sector	34.8	158.1

Source: National Council for Applied Economic Research

The Small Industries Development Organization (SIDO), the apex agency of the central Government, has a sprawling network of institutes for servicing and rendering technical, managerial, economic, and entrepreneurial consultancy to small-scale industry. There has been some strengthening of the institutional infrastructure in recent years through the setting up of the Small Industries Development Bank of India (SIDBI), a National Small Industries Corporation (NSIC), and a number of entrepreneurship development institutes. However, the effectiveness of the institutional infrastructure has been relatively low. A survey conducted by the National Council of Applied Economic Research (NCAER) (1993) shows that less than 20 per cent of the units had availed themselves of any service from government-run extension and promotional organizations. The survey revealed that more and more, small units are turning to the private sector for technical and other forms of assistance.

Table II.19. Share of traditional and modern industry in the output of small-scale sector, 1973/74-1991/92, selected years
(Percentage)

	1973/74	1984/85	1991/92
Traditional industry	16.1	11.4	10.7
Khadi	0.4	0.3	0.1
Village industries	0.9	1.2	1.1
Handlooms	6.2	4.4	2.1
Sericulture	0.5	0.5	0.5
Handicrafts	7.8	5.4	6.8
Coir	0.4	0.2	0.1
Modern industry	67.5	88.1	89.3
Powerlooms	14.6	8.6	7.4
Other	52.9	78.1	81.9
Other	16.4	0.5	-

Source. Planning Commission.

As the modern small-scale sector grew in importance, the period from 1969 to 1979 saw the development of a number of incentive policies helping small-scale industries and also some restrictive policies limiting competition from large-scale units in certain areas.

Incentives to small-scale industries

Excise duty concessions whereby duties are charged at a lower rate for production up to certain levels have been used extensively to boost the growth of small industry. However, these concessions have also acted as a disincentive for small units to grow in course of time, and graduate to becoming medium and ultimately large-size units. This is because in the present system excise duties are completely exempted up to Rs 3 million of turnover, are charged at a lower rate from Rs 3 million up to Rs 7.5 million and at normal rates thereafter. If the turnover is higher than Rs 20 million, the entire concession is withdrawn.

The state governments also provide incentives such as sales tax exemptions, capital subsidy, subsidy for the purchase of captive power generating sets, priority in the grant of power connections, supply of developed plots/facilities, etc., for the development of the small-scale sector.

The small-scale sector has formed part of the "priority sector" for the purpose of loans from the commercial banks and the banks are obliged to ensure that at least 40 per cent of their commercial advances are directed towards the priority sector. Earlier these loans were at subsidized rates but the subsidy element in such lending has been greatly reduced under the new economic policies, though the element of preferential access continues. The share of the small-scale sector in bank lending increased marginally from 13 per cent to 13.6 per cent (see Table II.20) over the ten-year period from 1983 to 1993. This was the period when the share of the priority sector lending in bank credit declined from 35.7 per cent to 33.8 per cent. Nevertheless, inadequacy of credit and delays in its availability are cited as major problems by the small-scale units in the survey by NCAER (1993). For the small-scale sector as a whole, the shortage of working capital has been estimated to be around 30-40 per cent.

Support of the small-scale sector has also taken the form of protecting it against competition from large-scale units. Certain products have been reserved for exclusive production in the small-scale sector. Under this policy the existing capacities of the large-scale industry are frozen and new production is only allowed in the small-scale sector. Production in the reserved items accounts for 28 per cent of the value of production in the small-scale sector, but the wider effect of reservation lies in precluding production in the large-scale units in a wide range of products. In industries such as garments, leather products and parts of food processing which have high export potential, reservation policy may have come in the way of an efficient exploitation of the comparative advantage.

Table II.20. Share of priority in gross bank credit, March 1983 and March 1993
(Percentage)

	March 1983	March 1993
Priority sector	35.7	33.8
Agriculture	15.3	13.5
Small-scale industry	13.0	13.6
Others	7.4	6.7

Source: Report on Currency and Finance, Reserve Bank of India.

In recent years, relaxations have been made in the reservation policy on a case by case basis and they have been linked with explicit export commitments on the part of the large and medium units. For example, reservation would not apply if a company undertakes to export 75 per cent of its output. For garments, the export commitment is lower at 50 per cent and the investment ceiling is higher at Rs 30 million. But more generally, reservation continues to thwart competition and act as a barrier to new investment and new technology in many areas.

Purchase and price preference in the case of government purchases is a second major tool for protecting the small-scale sector. The central Government as well as the state governments provide the purchase incentives. However, such purchases account for only 10 per cent of the total purchases.

The absence of an integrated approach to the development of the small, medium and large sectors of industry has left its mark on the pattern of industrialization in India. The level of subcontracting and ancillarization in the Indian engineering industry is much lower than in Japan. Similarly, the Indian automotive companies are more vertically integrated than their Japanese counterparts.

Employment in small-scale industry

There has been disillusionment with the small-scale units in respect of their contribution to employment. A comparison of the census results of 1972 and 1987/88 reveals, for example, that the average employment in a small-scale firm declined from 12 to six. While productivity of capital and labour increased, there was a much sharper increase in the capital-labour ratio. The census results for 1987/88 also show that as many as half of the small-scale units had closed within five years of the start of production and another 29 per cent within six to ten years. The incidence

of closure was higher in units producing metal and electrical products and less in food and textile industries.

Contribution to industrial dispersal

On industrial dispersal, the available evidence suggests some progress between the two censuses as the proportion of units located in backward areas increased from 35 to 62 per cent. However, these figures need to be interpreted with some caution because of differences in coverage. By the time of the second census, some whole states were declared as being backward, and in the case of some backward districts the artisan-type small-scale units in the rural areas of the districts were also included. The census of 1987/88 also estimated that 204 districts (less than half of the total number of districts) accounted for more than 80 per cent of the registered small-scale units. This would suggest only a moderate degree of dispersal.

A new policy package

A new policy package for small-scale industry was announced in July 1991. This was more in the nature of a statement of intent rather than a concrete agenda for action. Apart from raising the investment ceiling for a small-scale unit to Rs 6 million, for the first time, foreign investment up to 24 per cent was permitted in the small-scale sector. The new policy also emphasizes adequacy of credit rather than cheap credit for meeting the finance needs of the small-scale sector. In September 1992, special legislation was introduced to ensure timely settlement of dues to small-scale industries for the supplies made or services rendered by them. The legislation stipulates an interest rate higher than the lending rate by 5 percentage units for delayed payments.

Some elements of the 1991 policy package had yet to be implemented by September 1994. The package had identified the need for a Limited Partnerships Act to expand the supply of venture and risk capital to small industry and to help bring about changes in organization and management in the small-scale sector. The need to liberate small industry and entrepreneurs from what are usually called "inspectors" belonging to different departments such as excise, income tax, labour, power, water supply, environment, and health, and to free small entrepreneurs from unnecessary paperwork was also recognized, but problems remain.

H. INDUSTRIAL LOCATION

Regional balance in growth has been an important element in the development strategy of India. Policies for industrial dispersal were explicitly designed with a view to generating employment in the different states of India and promoting a more equitable distribution of incomes.

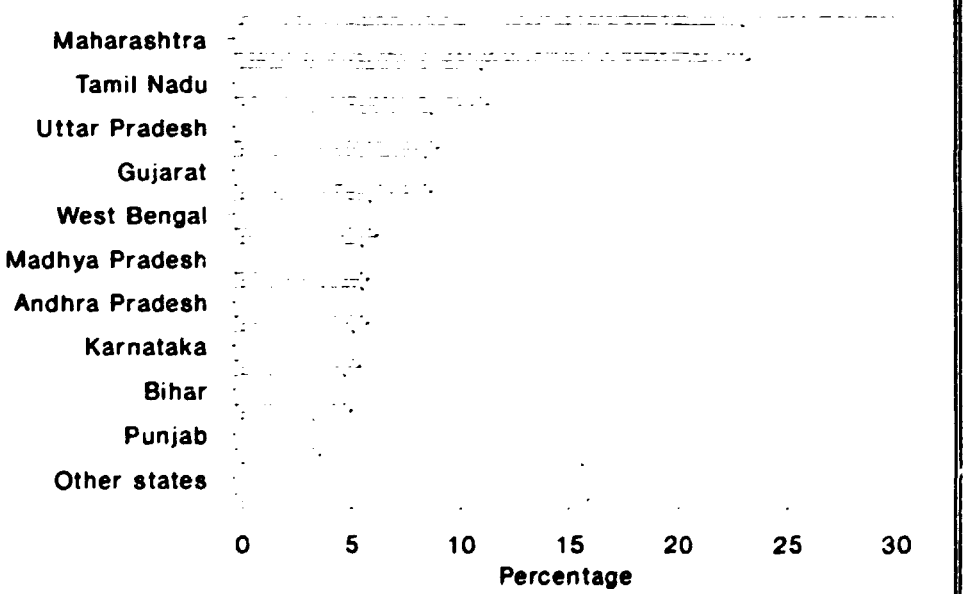
Towards regional balance in industrial development

The development of infrastructure in backward areas and the promotion of small-scale industries were the main instruments of industrial dispersal in the 1950s and the 1960s. Industrial estates were planned in such a way that the Government would provide the basic infrastructure including land and buildings for inducing entrepreneurs to locate industry in these estates. Programmes to promote rural industries were also seen as an important instrument for industrial dispersal. For many years the Government also followed policies of freight equalization for certain major inputs such as iron and steel and cement with a view to promoting industrial development in areas located further away from major sources of raw materials and production centres.

In the event, the industrial estates programme was not able to disperse industrial activity as expected. By the mid-1970s, the share of industrial estates in total output and employment was only 1.7 per cent and 3 per cent, respectively. As many as 30 per cent of the completed sheds in the industrial estates were not operating, the proportion being even higher (50 per cent) for the sheds in the rural areas. Wrong choice of location for these estates has been identified as one of the principal reasons for the ineffectiveness in attracting entrepreneurs, since proximity to markets, availability of raw materials, labour, transport facilities, etc, were not given adequate weight in planning.

Industrial licences were also used as an instrument for locating large and medium private sector plants in backward areas so as to help the development of these areas. In addition, attempts were made to restrict the location of new private industrial units above a certain size within certain limits of the large metropolitan cities with populations of half a million or more.

Fig. II.O. Geographic distribution of industrial net value added by state, 1990/91



Financial incentives emerged as an important policy instrument for industrial dispersal. In 1971, the Planning Commission identified a large number of districts (accounting for 60 per cent of the population and 70 per cent of the area) as "backward". Investments in these districts qualified for a capital investment subsidy (initially 10 per cent and subsequently raised to 15 per cent in 1973). A transport subsidy amounting to 50 per cent of the transport costs of raw materials and finished goods was provided to units located in backward areas of the specified hilly districts. Further incentives in the form of income tax concessions and concessional finance by the term-lending financial institutions were also provided to disperse industrial investment in the "backward" areas. In 1983, the investment subsidy was placed on a sliding scale with higher subsidy to the more

backward districts, the maximum subsidy being given for locating industries in No-Industry Districts.

The effectiveness of the various policy instruments in bringing about industrial dispersal was examined by the National Committee on the Development of Backward Areas (1981). The committee found that of the 247 districts which qualified for concessions, only 15 accounted for 56 per cent of the central Government's investment subsidy up to 1980. Similarly only 22 districts received almost half of the concessional finance disbursed by the all-India term lending institutions. Even in the use of industrial licensing, only two or three districts of the state of Uttar Pradesh accounted for almost 50 per cent of the licences granted to industries to locate in backward areas.

The Committee highlighted the limits of the financial incentives approach. It pointed out the importance of setting up and strengthening infrastructure in backward areas before investment would profitably flow to these areas. It also pointed out the futility of trying to push investment into backward areas if it did not have any downstream effects on the development of the region, e.g., the setting up of a capital-intensive chemical plant which has minimal potential for employing the local population because of the skill-intensity of its employment demands. In 1988, the capital subsidy for investment in backward areas was withdrawn, and the Government expressed its intention to promote growth centres.

A recent analysis of the industrial dispersal in India shows that there is clear evidence of the dispersal of industrial employment in the organized sector, although dispersal was interrupted during 1978-1980, and the pace appears to have slowed down subsequently. The evidence for value added is more mixed. There is some evidence of dispersal in the first half of the 1970s and once again in the early 1980s. It appears that in the 1980s the more advanced states were attracting more industry once again by strengthening the infrastructure in their backward districts.[14/]

Geographical pattern of financial assistance

The changes in the geographical pattern of financial assistance offered by the all-India financial institutions show some dispersal in the 1970s and the 1980s (see Tables II.21 and II.22). The share of Maharashtra, Gujarat and Tamil Nadu, the three largest recipients, in the sanctions and the disbursements of the all-India financial institutions showed a declining trend in the 1970s indicating some progress on the dispersal of investible funds. This trend appears to have reversed in the 1980s. But this is mainly because Maharashtra raised its share significantly by strengthening its industrial, promotional and extension machinery in its backward areas more effectively than the other states.

Infrastructure and growth centres

The New Industrial Policy of 1991 envisages the development of infrastructure as a prerequisite for locating industry in "desirable" areas. The Government has announced an ambitious scheme for the development of growth centres along the lines recommended by the National Committee on the Development of Backward Areas. Over the period 1992-1997, 68 growth centres are proposed to be developed all over the country with assistance from the central Government and financial institutions. These growth centres have been chosen from among those identified by the respective state governments. Each growth centre is expected to have an investment outlay of Rs 300 million. The number of growth centres may well have to be reduced if past experience is to be avoided so that the limited resources may not be thinly spread, thereby nullifying the logic of growth centres through time and cost overruns.

Table II.21. Sanctions of all-India financial institutions by major states, 1971/72-1991/92, selected years
(Percentage share)

	1971/72	1981/82	1991/92
Andhra Pradesh	3.2	10.1	6.7
Assam	0.02	0.5	0.6
Bihar	5.4	3.5	2.2
Gujarat	20.6	12.1	11.9
Haryana	2.8	2.5	2.2
Karnataka	9.8	6.6	5.5
Kerala	1.8	1.7	1.7
Madhya Pradesh	2.3	3.0	4.6
Maharashtra	18.9	18.4	26.2
Orissa	0.7	4.8	1.2
Punjab	1.4	3.0	2.1
Rajasthan	2.3	5.6	3.6
Tamil Nadu	15.3	13.7	8.9
Uttar Pradesh	4.2	7.6	6.3
West Bengal	5.3	7.0	9.4
Share of top three states	54.8	44.2	47.5

Source: Industrial Development Bank of India

Flexible location policy

Together with the emphasis on growth centres, the New Industrial Policy has liberalized location restrictions in a major way. Along with the large scale delicensing of industry that has taken place, location restrictions have been lifted except in the 25 km zone around large cities with population greater than 1 million. There are 23 such cities according to the 1991 census. Even here, if an industrial unit is located within a pre-designated industrial area, no licence is required. Also, for cities with a substantial backlog of restructuring where the adverse impact on employment is likely to be significant, the location policy has been made flexible in order to help the process of industrial regeneration of these cities.

As the National Commission on Urbanization (1988) has argued, there is now a clear rural-urban continuum in India. The question is not just one of decongesting metropolitan cities on the one hand, and creating village-level jobs on the other. Rural hinterlands have emerged and towns in the population range of 20,000 to 50,000 have experienced the fastest increase in employment in the past two decades. The Eighth Plan has allocated Rs 300 million to be used by the Ministry of Urban Development for a Scheme for the Integrated Development of Small and Medium Towns. Such schemes for urban infrastructure development must go hand-in-hand with the needs of industry and other economic activities.

Table II.22. Disbursements of all-India financial institutions by major states, 1971/72-1991/92, selected years
(Percentage share)

	1971/72	1981/82	1991/92
Andhra Pradesh	4.4	6.9	10.2
Assam	0.2	0.4	0.8
Bihar	3.6	2.6	2.2
Gujarat	11.0	13.4	11.6
Haryana	5.1	2.8	2.4
Karnataka	4.5	7.8	4.8
Kerala	2.1	3.5	1.9
Madhya Pradesh	6.2	3.5	4.8
Maharashtra	31.9	20.3	26.2
Orissa	2.6	3.1	2.2
Punjab	1.2	4.5	2.4
Rajasthan	2.2	5.0	3.9
Tamil Nadu	10.9	9.6	8.2
Uttar Pradesh	4.2	7.6	6.3
West Bengal	7.5	8.3	7.5
Share of top three states	53.8	43.3	48.0

Source: Industrial Development Bank of India.

I. INDUSTRIAL FINANCE

The role of financial institutions

A large number of all-India financial institutions other than commercial banks have been engaged in industrial finance activities in the economy. Institutions which have functioned as industrial development banks include the Industrial Development Bank of India (IDBI), the Industrial Finance Corporation of India (IFCI), the Industrial Credit and Investment Corporation of India (ICICI), the Industrial Reconstruction Bank of India (IRBI), the Small Industries Development Bank of India (SIDBI), and the Shipping Credit and Investment Corporation of India (SCICI) whose activities have now expanded beyond shipping. The Unit Trust of India (UTI), the Life Insurance Corporation of India (LIC) and the General Insurance Corporation of India (GIC) are the main investment institutions. Then there are the specialized financial institutions like the Export-Import Bank of India (EXIMBank), the Export Credit and Guarantee Corporation of India (ECGC) and the National Bank for Agriculture and Rural Development (NABARD) which supports agro-industry. These all-India financial institutions are supplemented by state-level financial institutions such as the State Finance Corporations (SFCs) and the State Industrial Development Corporations (SIDCs).

The IDBI is the largest development bank in India. Its sanctions and disbursements in 1993/94 amounted to Rs 129.4 billion and Rs 81 billion, respectively. Also, very rapid growth was recorded by the ICICI whose sanctions increased from Rs 5.1 billion in 1983/84 to Rs 87.3 billion in 1993/94, while its disbursements increased from Rs 3.3 billion to Rs 44.3 billion over the same period. The sanctions and disbursements of the financial institutions are presented in Table II.23. Over the ten-year period ending in 1993/94, there was an almost tenfold increase in the sanctions

of the all-India financial institutions, reaching a level of Rs 423.6 billion. Disbursements also increased from Rs 28.6 billion in 1983/84 to Rs 262 billion in 1993/94.

The development banks provide direct assistance largely in the form of project loans, both in rupees and in foreign currency. Indirect assistance in the form of refinance and bill rediscounting is also provided by the IDBI and SIDBI. The investment institutions make direct subscription to shares and debentures and privately placed debentures, undertake underwriting, and provide special deposits and loans. Their investments in the corporate sector account for about 40 per cent of their portfolio, the rest being taken up by government securities, bank deposits, and other investments in banks.

New institutions

In the late 1980s the financial sector changed with the introduction of a new set of institutions to serve the increasing needs of commerce and trade in the area of venture capital, credit rating, leasing, etc. The Technology Development and Investment Corporation of India (TDICI) was set up to provide venture capital to new technology-based enterprises and entrepreneurs. The Risk Capital and Technology Finance Corporation was established to provide risk capital to new entrepreneurs and to technology-based ventures. Infrastructure Leasing and Financial Services was established to support infrastructure projects such as roads, power and telecommunications, and to provide leasing services for capital assets relating to infrastructural requirements and large projects. Technology Development and Information Company of India was set up to strengthen the base for venture capital particularly to new technology-based companies promoted by new entrepreneurs.

Towards commercial orientation for raising funds

Historically, the financial institutions have depended largely on Government for support. Mobilization of funds by these institutions was helped by a system of large statutory liquidity requirement for commercial banks. It forced the banks to invest a high proportion of their deposits in government securities and other "approved" securities, the latter category involving some allocation in favour of financial institutions. This access has been progressively reduced in recent years with the implementation of the financial sector reforms and the consequent steady reduction in the mandatory statutory liquidity requirement.

Of late, the institutions have been encouraged to raise their own funds from the market. Borrowings at market rates of interest accounted for 54 per cent of IDBI's total borrowings in 1992/93, compared with 32 per cent in 1991/92 and an average of less than 15 per cent in the 1980s. The Industrial Finance Corporation of India was converted into a company in 1993. The company made its maiden public issue of Rs 5.5 billion in December 1993. A similar move seemed subsequently to be under consideration for the IDBI. The ICICI has been in the private sector all along with participation from overseas bilateral and multilateral financial institutions.

With a view to generating competition among the financial institutions, the formal system of consortium finance has been abandoned under the New Economic Policy regime. However, the limitation imposed on individual financial institutions by the prudential norms in the form of a ceiling on lending to any individual borrower has meant that for large projects a system of informal loan syndication has replaced the old formal consortium regime. Loan agreements of the financial institutions with privately managed firms were earlier required to provide for the right of the financial institution to convert the loans into equity. In August 1991, the institutions were permitted not to insist on this provision in future loans and subsequently were also permitted to delete the provision from past loans.

Table II.23. Sanctions and disbursements of major industrial financial institutions, 1983/84-1993/94, selected years
(Rs billion)

	1983/84		1987/88		1993/94	
	Sanctions	Disbursements	Sanctions	Disbursements	Sanctions	Disbursements
IDBI	23.2	17.7	45.8	36.1	129.4	81.0
ICICI	5.1	3.3	12.3	7.7	87.3	44.3
IFCI	3.2	2.2	0.3	6.6	39.8	21.3
IRBI	0.7	0.4	1.9	1.0	4.3	1.9
SFCs	6.4	4.4	13.1	9.4	..	..
SIDCs	3.6	2.4	6.4	4.5	..	..
SIDBI	-	-	-	-	33.2	26.4
UTI	1.7	1.4	9.7	7.1	87.7	66.0
LIC	1.7	1.4	3.8	3.4	16.6	7.9
GIC	1.1	0.8	1.0	1.0	8.2	3.8
SCICI	-	-	1.4	0.5	17.0	10.1
Other	-	-	0.04	0.04	2.0	1.2
Total[a/]	**30.5**	**28.6**	**93.7**	**69.5**	**423.6**	**261.9**

Source: Industrial Development Bank of India.

IDBI: Industrial Development Bank of India
ICICI: Industrial Credit and Investment Corporation of India
IFCI: Industrial Finance Corporation of India
IRBI: Industrial Reconstruction Bank of India
SFCs: State Finance Corporations
SIDCs: State Industrial Development Corporations
SIDBI: Small Industries Development Bank of India
UTI: Unit Trust of India
LIC: Life Insurance Corporation of India
GIC: General Insurance Corporation of India
SCICI: Shipping Credit and Investment Corporation of India

a/ Net of inter-institutional flows.

In recent years the trend has been towards a cafeteria approach whereby a particular financial institution is not bound narrowly to only one set of industrial activities but is free to enter new areas and offer a whole range of services. Thus, mutual funds like the Unit Trust of India have set up commercial banks. Development banks like the ICICI have entered into joint venture collaboration agreements with international merchant banks, and the ICICI is also setting up a commercial bank.

The capital market

The capital market has been an important source of finance for industry especially in recent years. India has a long experience with the stock market, the Bombay Stock Exchange being over a hundred years old. However, as recently as 1980 the total volume of resources mobilized from the capital market was only Rs 2 billion. The Controller of Capital Issues in the Ministry of Finance decided on the price and quantum of capital issues as well as their timing. By 1984/85 the resources raised by the capital market increased to Rs 8.6 billion, and since then there has

been a virtual explosion, the volume of funds raised reaching Rs 218 billion in 1993/94. The securities *scam* of 1992 exposed many weaknesses of the system in coping with the fast changing requirements of the time. A Securities and Exchange Board of India (SEBI) is now functioning to provide a fair, transparent and effective regulatory structure for the continued expansion of the capital market, while the office of the Controller of Capital Issues has been abolished. The National Stock Exchange of India (NSE) was set up in April 1993 to function as an exchange up to international standards. With a fully automated screen based trading system, the NSE commenced operations in June 1994. The Securities Trading corporation of India (STCI) has also been set up to develop an active secondary market in government securities and public sector bonds.

A significant development during 1993 '94 was that for the first time the amount raised in equity was higher than the amount raised in debt (see Table II.24). An Over the Counter Exchange of India (OTCEI) has been established, along the lines of NASDAQ to enable small companies and entrepreneurs to access the capital market. Within a short period of seven years since the first public sector mutual fund was set up in 1987, mutual funds have become a major force for channelling savings, particularly of small investors, into the capital market. At present, there are 15 domestic mutual funds (not including the UTI which is a mutual fund-cum-investment institution) of which seven are in the private sector. They have mobilized over Rs 100 billion for investment in the capital market. The UTI itself has mobilized over Rs.500 billion. In addition, there are five offshore mutual funds which have already invested $550 million in the Indian capital market. Several new private sector mutual funds, domestic and foreign, are in the pipeline.

The growth of the capital market since 1985 has provided a new avenue to Indian companies to raise resources. This is in contrast to the experience in the earlier period when development financial institutions provided the major share of industrial finance. In 1991/92, share capital accounted for 45 per cent of the project cost of companies issuing capital as opposed to only 19 per cent in 1980/81 (see Table II.25). The Eighth Plan envisages that the private corporate sector would raise close to $20 billion from the capital market during 1992-1997. This should finance about 45 per cent of the projected investment of the private sector during this period.

Table II.24. Capital raised by non-government public limited companies, 1980/81-1993/94, selected years
(Rs billion; percentage shares of equity and debentures are given in parentheses)

	1980/81	1985/86	1989/90	1990/91	1991/92	1992/93	1993/94
Equity	0.9	3.6	10.6	9.0	12.6	88.0	114.7
	(47)	(33)	(19)	(23)	(23)	(47)	(53)
Debentures	1.0	7.4	46.6	30.6	43.0	98.9	103.5
	(53)	(67)	(81)	(77)	(77)	(53)	(47)
Convertible	..	..	42.5	23.0	34.7	76.0	75.6
Nonconvertible	..	..	4.1	7.6	8.3	22.9	27.9
Total	**1.9**	**11.0**	**57.2**	**39.6**	**55.6**	**187.0**	**218.3**

Source: Reserve Bank of India and PRIME.

Table II.25. Project financing of companies issuing capital, 1980/81 and 1991/92
(Rs million; figures in parentheses are percentage share)

	1980/81	1991/92
Loans	1,401	15,699
	(36)	(36)
Share capital	738	19,686
	(19)	(45)
Debentures/bonds	638	6,528
	(16)	(15)
Reserves and surplus	1,111	1,398
	(28)	(3)
Total	**3,937**	**44,016**
Number of companies	121	159

Source: Reserve Bank of India

A number of credit rating agencies have sprung up to rate debt instruments. New instruments like commercial paper are being used by the better rated companies. The outstanding issues of commercial paper have risen from Rs 0.6 billion at end-March 1993 to Rs 2.6 billion at mid-October 1993.

In 1993 for the first time foreign institutional investors (FIIs) were allowed to invest in the Indian capital market. There are 259 FIIs with over 200 broad-based institutional funds under them which have registered with SEBI. In 1993/94, the FIIs invested $1.6 billion in the Indian capital market. In April-November 1994 the FIIs have already invested $1.25 billion. The short-term (maturity of less than one year) capital gains of the FIIs are taxed at 30 per cent, while the long-term capital gains are taxed at 10 per cent. Dividend payments are subject to a tax rate of 20 per cent.

Indian companies are also raising equity overseas through the issue of both foreign currency convertible bonds and ordinary shares via the global depository receipt (GDR) mechanism. In 1993/94, about $980 million of such bonds and another $1.5 billion of GDRs were raised in the international capital market by Indian companies. In May 1994, the government policy with respect to the convertible bonds became restrictive; they were allowed only for the purpose of repayment of existing foreign loans. As a result, during April-November 1994, Indian companies raised $1.33 billion in GDRs and $102 million in convertible bonds.

Increasing dependence on the capital market

There is no question that Indian industry has moved away from exclusive reliance on banks and development finance institutions and has made substantial borrowings from the capital market. In 1992/93, disbursements of all-India financial institutions totalled Rs 229 billion. In the same year Indian companies raised over Rs 200 billion from the capital market. The nature of these capital market borrowings has also changed significantly. While 65 per cent of the capital raised from the capital market in the 1980s was in the form of debt instruments since 1992, fifty per cent of the capital raised has been in the form of equity. Even within debentures, convertible debentures account for about two-thirds of the total debt capital raised in that period. All this suggests a broad-basing of ownership patterns and a shift from closely-held companies to more widely-held companies.

[1] United Nations Industrial Development Organization

In view of the increasing dependence on the capital market to meet the requirements of massive investments for building and modernizing the industrial and infrastructural sectors of the economy, efforts are being made to create a market for debt instruments similar to that existing for equity instruments. This will deepen the capital market and offer wider choices to investors. One of the major objectives of the recently established National Stock Exchange is to facilitate nationwide screen-based trading in debt instruments so as to impart liquidity to investors.

A feature of Indian industry has been the substantial holding of the equity of private companies by the public sector financial institutions. To the extent that the financial sector holds substantial corporate equity and the financial institutions are in the public sector, the corporate sector fears government interference. On the other hand, many outside the corporate circle feel that the Government has not utilized the leverage provided by such large equity shareholding in influencing corporate decisions.

J. INDUSTRIAL SICKNESS AND RESTRUCTURING

Industrial restructuring is crucial to the success of the ongoing economic reforms in India. With the opening up to foreign trade and investment and with greater competition in the economy, it is necessary for domestic firms to adapt and restructure themselves so as to cope with the new challenges and manage the consequences of competition and technological change. The backlog of industrial sickness in Indian industry makes the task that much more difficult. The enormous resources that are locked up in sick industrial units, particularly in industries such as textiles and engineering, need to be released so that they can flow into new ventures to generate profitable and productive avenues for employment.

The magnitude of industrial sickness

Large segments of Indian industry are sick in the sense of being persistently loss-making and unable to service their debts. The dimensions of this sickness can be gauged from the fact that in 1992 there were over 2,000 large- and medium-size enterprises in the private sector which were classified as sick with Rs 84.3 billion of bank credit locked up in them (see Table II.26). In addition, a quarter of a million units in the small-scale sector were sick with bank credit outstanding of Rs 31 billion. The share of bank credit to sick units as a proportion of total bank credit increased from 15 per cent in 1982 to 17 per cent in 1992 for small units. For large and medium units, the share was constant at 18 per cent. The textile industry and the engineering industry are the two major defaulters accounting for close to 30 per cent and 25 per cent of the bank credit outstanding, respectively, and the chemical industry for another 10 per cent. The balance is spread across industries like paper, steel, jute and sugar.

Sickness is also a problem in the public sector. In 1992-93, for example, there were over a hundred loss-making enterprises owned and operated by the central Government, making losses of close to Rs 40 billion. Of these 58 were chronic loss-making enterprises which would be considered sick by any economic criteria. The accumulated losses of these enterprises amount to Rs 99 billion which was more than three times their paid up capital of Rs 30 billion. In addition to the loss-making units in the central public sector, there were around 500 enterprises owned and operated by the state governments which have a cumulative loss of over Rs 20 billion against a paid-up capital of Rs 23 billion. This does not include the State Electricity Boards or the State Transport Undertakings which make large losses in most states.

Table II.26. Industrial sickness indicators, 1982-1992, selected years

	Number of units		Bank credit outstanding (Rs billion)	
	Large and medium	Small	Large and medium	Small
1982	1,622	58,551	20.0	5.7
	(2.7)	(97.3)	(77.8)	(22.2)
1984	1,832	91,450	27.6	8.8
	(2.0)	(98.0)	(75.8)	(24.2)
1986	1,964	145,776	35.7	13.1
	(1.3)	(98.7)	(73.1)	(26.8)
1988	2,011	240,573	55.7	21.4
	(0.8)	(99.2)	(72.2)	(27.8)
1990	2,269	218,828	69.2	24.3
	(1.0)	(99.0)	(74.0)	(26.0)
1992	2,149	245,575	84.3	31.0
	(0.9)	(99.1)	(73.1)	(26.9)

Credit to sick units as percentage of credit to the sector

	Large and medium	Small
1982	18	15
1992	18	17

Source: Ministry of Finance, *Economic Survey* (various issues).

The framework for rehabilitation

The persistence of sickness as a phenomenon is to be explained largely in terms of a legal framework in which non-performing industries are not closed down automatically. Political sensitivity about loss of jobs which could result from closure or drastic labour reductions in sick units has made it difficult for sick units to exit or to restructure. In 1986 the Sick Industrial Companies Act (SICA) was enacted to address the problem of industrial sickness in a novel way. Sick units were defined as those that had eroded their net worth fully and had been making cash losses for two years in a row. These units were automatically referred to a statutory Board for Industrial and Financial Reconstruction (BIFR) which was assigned the task of determining whether a viable restructuring programme could be worked out. The BIFR is a ten-member quasi-judicial body which examines each individual sick company, "hears" evidence from labour, management, banks and so on, assesses the potential viability of the unit based on advice from a designated financial institution which has studied the financial viability question and then recommends a course of action such as rehabilitation/revival, merger, closure or winding-up.

Since its inception, the BIFR has examined about 1,200 private companies. Of these, revival and rehabilitation schemes were approved for 415 companies and winding up was recommended for 242 companies. The latter are now with the High Courts awaiting liquidation proceedings. Fifty chronically loss-making public enterprises have also been taken up by the BIFR for detailed scrutiny and in the case of three of these companies winding up orders have been issued.

The effectiveness of the BIFR in facilitating the process of industrial restructuring has been rather limited. First of all, the BIFR comes into the picture at a fairly advanced stage of sickness because of the way sickness has been defined and the way provisions have been laid down for firms to approach the BIFR. Since established firms typically have financial losses for three to five

years before their net worth is fully eroded, by the time they come under BIFR purview, they are already cases of advanced sickness. Incipient sickness is rarely dealt with proactively[15].

A major handicap in the functioning of the BIFR is that its powers are not mandatory. There is another Appellate Tribunal which the aggrieved parties can approach in case they have any dispute with the BIFR recommendation. In about 50 per cent of the cases where winding up has been recommended, the original owners have approached this Appellate Tribunal questioning the BIFR conclusions. The winding-up procedures are also complex and time-consuming. They are managed exclusively by court-appointed official liquidators. The Report of the Inter-Ministerial Working Group on Industrial Restructuring (1992) has highlighted the malfunctioning of the system for liquidation and recommended the use of independent liquidators. A legislative change will be required to set up separate winding-up tribunals to speed up the process of liquidation.

The Industrial Disputes Act is another significant hurdle to the process of smooth industrial restructuring. Under the provisions of this Act a company employing more than 100 workers has to apply for prior permission to the appropriate state government before it can either retrench labour or close down its non-viable operations, although companies falling under the purview of the BIFR are exempt from this provision. Nevertheless, the basic issue of the need for some flexibility for retrenchment while at the same time protecting the interests of labour, i.e., "adjustment with a human face" remains. At present a worker is entitled to up to 30 days of wages as benefit for every year of service by way of gratuity and compensation. The option of providing the severance benefit in the form of an annuity scheme is under consideration as is that of raising the cut-off limit for prior permission from companies with 100 workers to companies with 300 workers.

In February 1992, the Government established a non-statutory National Renewal Fund (NRF) to provide assistance to cover the cost of retraining and redeployment of labour and also provide compensation to labour affected by industrial restructuring. Initially, the NRF is to deal with the public sector although there is provision for extending its scope to the private sector as well.

Since it was established, the NRF has been allocated about Rs 18.5 billion from the central budget, out of which Rs 13.5 billion has been spent on voluntary retirement schemes for the central public sector. About 70,000 workers had availed themselves of such schemes by September 1994. Another Rs 1.7 billion has been spent on meeting the working capital requirements of the public sector National Textile Corporation. The National Textiles Corporation, a central Government undertaking which has the portfolio of 49 sick textile mills taken over by the Government at various points in time, has negotiated a package with labour whereby 35,000 workers have been retrenched. There have also been mergers of a few mills as part of the restructuring exercise. Overall, the Fund has been utilized largely for voluntary retirement compensation and only a limited beginning has been made in retraining and redeployment.

K. INVESTMENT IN TECHNOLOGY AND HUMAN RESOURCE DEVELOPMENT

Science and technology have been an extremely important part of the national planning endeavour in India enjoying political patronage at the highest levels, with the Prime Minister always being the Minister for Science and Technology. India had close to 3.8 million science and technology personnel in 1990 compared with 1.8 million in 1980. The annual out-turn of scientific and technical personnel from institutions of higher learning in India is now close to a quarter of a million. In 1992/93, India's total R&D expenditure was 0.83 per cent of GNP compared to an

[15] United Nations Industrial Development Organization

average of 0.64 per cent for all developing countries. A substantial proportion of this expenditure was on defence and aerospace.

Industrial sector investment on research and development constitutes just over 25 per cent of the national R&D expenditure, amounting to about 0.6 per cent of the sales turnover of Indian industry. This investment has taken place in 1,361 R&D establishments, of which 177 are in the public sector and 1,184 in the private sector. The public sector accounts for almost 43 per cent of the R&D spending. A recent study has analyzed the evidence from Indian private firms to conclude that firms gain significantly from the aggregate spillover of R&D capital in all industries.[16]

Incentives and promotion of research & development

The central Government has been operating a scheme since 1973 for granting recognition to private and public funded laboratories as well as in-house R&D units in the industrial sector. Under this scheme, liberalized import facilities are provided for the purchase of equipment, components, raw materials, etc., necessary for carrying out R&D work. For some years, a weighted tax deduction scheme was also in place to encourage industry to invest in R&D. The scheme, however is applicable only when the company sponsors research and development in designated laboratories, universities and engineering institutions.

The laboratories forming part of the Council for Scientific and Industrial Research (CSIR) constitute an important component of the industrial R&D system. These laboratories were established in the 1950s and 1960s in the hope that technology would be "pushed" into the production system from them. Barring a few instances like chemicals, pesticides, catalysts and leather, however, this push has not taken place. The general perception in industry has been that the CSIR is far removed from the market place and while it may do good scientific work, much of its work is not ready or is not economically and technically fit for commercialization. The functioning of the CSIR has been reviewed by a number of committees, the most recent being in 1986. These committees have identified lack of user involvement, lack of engineering orientation in the laboratories, lack of coupling between engineering design companies and the laboratories, and the lack of adequate pilot plant and demonstration facilities as major factors which have hampered the effectiveness of the CSIR.

In recent years, a realization has emerged that for investments in R&D to be effective in improving products and processes, they must be carried out in the place where the results of R&D will ultimately be used, i.e., the firm. In recent years, the Government has followed a policy that forces the CSIR to earn at least one-third of its funds from its users. This has forced a market discipline on the CSIR to establish linkages with users both in the private and public sectors. As competition increases, Indian companies will themselves begin to see R&D investments as an element of competitive strength.

Since 45 per cent of R&D expenditure is incurred in the areas of defence, space and atomic energy, the Government has been concerned with enhancing the spin-offs from these investments. Laboratories such as the Defence Research and Development Organization (DRDO), the Indian Space Research Organization (ISRO) and the Department of Atomic Energy (DAE) assume significance in this context. The DRDO accounts for about 25 per cent of R&D expenditure, ISRO for 10 per cent and the DAE for another 10 per cent. Attempts are being made to encourage technology transfers between defence, space, and atomic energy, on the one hand, and the aviation industry on the other. ISRO has recently established a company to promote such technology transfers.

Liberalization of technology imports

In the 1980s, while there was liberalization in the imports of embodied technology in the form of capital goods, a restrictive policy on the imports of know-how, designs and drawings and basic engineering continued. The net result was that India's payments for embodied technology were, on an average, almost ten times the payments for disembodied technology throughout the 1980s. This was most unlike the ratios prevailing in countries like Brazil, Japan, and the Republic of Korea.

The 1991 industrial policy removed all barriers to Indian firms acquiring full packages of technology from abroad on a continuing basis. Entrepreneurs are free to import technology - both embodied and disembodied - without having to get government clearance. The regulatory agency which examined all technology import applications from the viewpoint of "essentiality" and "indigenous availability" - the Directorate General of Technical Development (DGTD) - has been disbanded. With increased foreign equity it is also likely that Indian companies will have continuing access to technological developments world-wide.

The determinants of technological strength

Technological innovation and development is no longer seen as a matter of R&D expenditure alone. Increasingly, innovation is being seen as an outcome of an economic policy environment which fosters competition, growth and investment. Firms themselves are realizing that together with R&D, investments in design capability and systems engineering, technological strength is also attained through quality consciousness and training of the workforce. The example of a medium-sized Indian company which has recently won a contract to supply radiator caps to General Motors on the basis of its technological strength has not been lost on Indian industry. The company is not a major investor in formal R&D but has stressed good manufacturing practices. It was the first Indian company to receive the ISO 9000 certification.

The role of higher education

The enrolment in higher education and out-turn of scientific and technical personnel from India's centres of higher education is quantitatively impressive, but its composition does not appear to match India's emerging requirements and ambitions. Enrolment in higher education in 1991/92 was about 4.6 million, of which roughly one-third were women. Science accounted for 20 per cent of this enrolment and engineering technology for another 5 per cent, while the overwhelming majority was in arts, commerce and law. Out of the total out-turn of S&T personnel of 232,000 from universities in 1989, the latest year for which data are available, over 50 per cent had the very basic Bachelor of Science (B.Sc.) degree. Of the out-turn of 95,000 engineering degree/diploma holders, nearly 50 per cent were those belonging to the civil and mechanical engineering disciplines. As India's industrial structure diversifies and deepens, there will be need for a greater out-turn of technical personnel in other specialized disciplines.

Resources have flowed into the creation of universities, institutes of engineering and technology and laboratories, but the foundations of the structure have not been modernized. In recent years, the Government has been implementing a World Bank project for the upgrading and revamping of the industrial training institutes. But more needs to be done by industry itself to upgrade the quality of the workforce at the in-take level and also expand the facilities for training and providing skills. About 43 per cent of the out-turn of the scientific and technical manpower is from private institutions. Industry's involvement with higher and technical education will necessarily have to increase, given the government policy to increase its support to primary education.

Product patents

India has had a patents regime which does not confer product patents in the area of pharmaceuticals, chemicals and food processing. With India having signed the Uruguay Round Accord at Marrakesh in April 1994, the Patents Act of 1970 will have to undergo major changes in relation to product patents, life of the patent and the scope of the compulsory licensing. At the end of 1991/92, there were over 10,000 patents in force, of which only about 12 per cent were Indian. About half of the patents taken by foreigners belong to the United States. Other countries which have significant patenting activity in India are Germany and the United Kingdom. Historically, Indian laboratories and companies have not paid much attention to patenting, but with increased competition, increased investments in R&D, and with changes in the Patents Act, this situation is bound to change. For this, there will need to be a major upgrading in the administration of patents.

The 1993 technology policy statement

A technology policy statement was issued by the Government in 1993. The statement sets a target of spending for research, development and engineering (R,D&E) at 2 per cent of the GNP by the year 2000. It calls for a substantial increase in private sector contribution to national R,D&E expenditure through incentives and other measures. It suggests a consortium approach to bring user and developers of technology for goal-oriented programmes and new product process development. It recommends technology support and services for major export-oriented industries like leather and textiles, and for industries where environmental considerations are important. It highlights the need to improve the quality of management of R&D institutions. Finally, it proposes mission-oriented projects in critical areas. As a follow up to the statement, a few mission projects in the area of sugar and leather have been identified and are under implementation.

L. ENVIRONMENTAL ISSUES

Growing environmental consciousness

Environmental consciousness in India has increased parallel with a rise in pollution intensity in industry due to structural change towards more polluting industrial sectors, the application of outdated technologies and modest compliance with environmental regulations. Highly polluting industries have substantially increased their share in manufacturing value added, especially those industries generating hazardous and toxic wastes. These include electricity, chemicals, petroleum refining, basic metals, non-metallic minerals, paper and leather. As these industries are especially hazardous to health through water and air pollution, there is an urgent need for proper facilities for treatment and disposal of the growing volume of hazardous wastes emanating from these industries. Environmental compliance with emission and pollution control standards has been slow, particularly in small-scale enterprises and older establishments due to financial, technological or managerial constraints. In 1991 less than half the plants operating in major polluting industries complied fully with emission standards or had fully operational effluent-treatment plants.[17] (see Table II.27)

Two landmark events that did much to foster environmental consciousness in Indian industry were the Bhopal gas tragedy of 1984 and the Oleum gas leak in Delhi in 1985. The Bhopal disaster which involved the leak of toxic material from a plant owned by a transnational corporation, resulted in thousands of deaths and injury to tens of thousands of people. Environmental consciousness has also grown with the realization that standards used in the importing countries

could hurt India's exports. This has been experienced already in the case of leather exports to Germany.

Table II. 27. Status of pollution control in identified polluting industries

Industry and particulars of compliance	Number of plants	Percentage of total
Oil industry	12	
Plants complying with effluent and emission standards	6	50.0
Fertilizer industry	110	
Plants complying with emission standards only	49	44.5
Thermal power plants	25	
Plants complying with emission standards	25	35.7
Plants complying with the standards of ashpond effluents	33	47.0
Integrated iron and steel plants	7	
Plants partially complying with effluent and emission standards	6	85.7
Plants not complying with emission standards	1	14.3
Cement industry	94	
Plants complying with emission standards	62	66
Pulp and paper industry	336	
Plants having fully operational ETPs	180	35.1
Plants having partially operational ETPs	31	14.6
Sugar industry	365	
Plants having fully operational ETPs	180	49.3
Plants having partially operational ETPs	31	8.5
Distillery industry	176	
Plants having fully operational ETPs	74	42.0
Plants having partially operational ETPS	32	18.2

Source: B. Bowonder and B. Venkata Rao (Environment and Industrialization in India), World Resources Institute, Washington/Hyderabad, January 1994.

Note: ETP means effluent treatment plant.

Institutional framework and ecological norms

India has an elaborate legal framework for environmental protection. After the United Nations Conference on the Environment held at Stockholm in 1972, India enacted many laws and regulations including the Wildlife Protection Act (1972), the Water (prevention and control of pollution) Act of 1974, the Forest Conservation Act (1980), the Air (prevention and control of pollution) Act of 1981, the Comprehensive Environment (protection) Act of 1986, the Motor Vehicles Act (1988), the Public Liability Insurance Act (1991) and a notification on the Coastal Regulation Zone (1991). These Acts are implemented by a Central Pollution Control Board and various State Pollution Control Boards. In addition, two policy statements were issued in 1992 - one on abatement of pollution and the other on environment and development. India is also a signatory to global regulatory regimes on ozone depletion and climate change.

The Ministry of Environment and Forests in the central Government is the primary government agency responsible for environmental protection. It receives technical support from the Central Pollution Control Board which makes policy and sets minimum national standards. State Pollution Control Boards implement these norms and standards. Together they monitor compliance. Growing activism on the part of these Boards is reflected in the fast growing number of court cases launched under the Water and Pollution Control and Prevention Acts. Such cases increased

from 2,000 in 1987 to over 6,000 in 1993. Violations of laws and ordinances in the fields of water and air protection are punishable by fines up to Rs 5,000 and/or imprisonment up to three months. Violations of the omnibus Environment Act may be punished by fines up to Rs 100,000 and/or imprisonment up to five years. Penalties in the cases decided in favour of Government have involved either imposition of fines or a restraining order. Prison terms for violators have typically not been enforced. The fines currently specified in the legislation are also very low when compared to the costs of ecological compliance. The monetary penalties are not commensurate with the costs avoided by non-compliance. There is also heavy reliance on criminal as opposed to civil or administrative law. This increases time and money costs for all parties.

The 1992 policy statement on environment and development laid down a mix of regulatory and promotional measures which would be taken to integrate environmental considerations with industrial growth. These include incentives for clean technologies, adoption of the "polluter pays" principle, introduction of an environmental audit, public liability insurance, etc. The 1992 statement on the abatement of pollution called for a review of existing standards based on the concentration of pollutants in effluents and in emissions. The statement suggests a revision of these norms to lay down source-related and mass standards which will set specific limits to encourage the minimization of waste, promote recycling and reuse of the materials, as well as conservation of natural resources, particularly water.

The 1994 notification on impact assessment identifies 29 industries which require environmental clearance from the central Government. These industries are listed in Annex C. A company desiring to undertake any new project or the expansion or modernization of any existing facility in these listed industries/sectors has to prepare an environmental impact assessment report/environmental management plan and submit this to the Ministry of Environment and Forests. The notification stipulates that the decision of Government will be forthcoming within 120 days and that the clearance when granted will be valid for five years. Half-yearly monitoring and compliance reports are also stipulated. In addition, there are 45 industries/sectors that require approval from the state governments.

Fiscal incentives for ecological compliance

Fiscal incentives have been used in recent years to encourage the wider adoption of pollution control equipment. These include accelerated depreciation, lower excise and import duties and sales tax rebates on a wide array of pollution control equipment. Capital gains arising out of relocation of industry and consequent reduction of industrial pollution are exempt from capital gains taxation. Less than 10 per cent of the facilities (numbering over 1,500) in 17 highly polluting industries had installed pollution control equipment as of 31 December 1991. By 31 December 1993, over 65 per cent of these facilities had installed the necessary equipment, although the extent to which these industries are actually in compliance with emission and effluent standards is not known.

A problem area in industrial environmental management is small-scale industry. The way small-scale is defined in India and the manner in which fiscal concessions are offered makes it impossible for small firms to invest in pollution control. If they did, they would cross all threshold limits for fiscal benefits. Concerned about this problem, the Government announced a separate scheme for the adoption of clean technology in the small-scale sector. This scheme has two components. The first relates to the establishment of common effluent treatment plants in existing clusters of small-scale industries where the central Gbears 25 per cent of the cost of the plant with a matching contribution by the concerned state government. The balance is expected to come as equity contribution from the industries and from loans from financial institutions. Thirty such

plants have been approved, although only five had been built by September 1994. The second component of the scheme relates to R&D for clean technologies which will benefit the small-scale sector directly. Under this component, financial assistance is provided for development and demonstration projects either by an individual company or by a consortium.

M. THE ROLE OF TECHNICAL COOPERATION

India is a major recipient of both multilateral and bilateral financial and technical assistance in Asia. Total external financial assistance to India accounted for about 10 per cent of the Seventh Plan outlay for development activities. Technical assistance, however, constituted less than 1 per cent of the Plan outlay. Despite its modest size, external assistance in India is seen as an effective means of fostering the process of industrialization. The fourth UNDP Country Programme (1990-1995) has now been extended to 1997 with a view to synchronizing the future country programmes with the country's five year plans. The avenues of multilateral cooperation are identified on the basis of crucial technical cooperation needs and sectoral priorities.

The mid-term review of the Fourth Country Programme for India revealed that in agriculture, the main focus has been on the transfer and application of modern technology to improve productivity. Notable progress has been achieved in biotechnology research for plant improvement, development of low-cost bio-fertilizer, and management of water and land resources. A national environment action programme and a national forestry action programme in support of sustainable development are under way. Initiatives in organic farming and integrated pest management is also being actively pursued.

In the industrial sector technical cooperation inputs are being directed towards enhancing productivity and competitiveness, with an accent on technology transfer. This is partly due to the large number of technology-oriented projects carried over from the previous Country Programme and the continued priority accorded to technology and building-up research and development capabilities in order to enhance productivity, optimize the use of raw materials and upgrade product quality. Capacity-building efforts have hitherto focused on institution-building and the implementation of national programmes. UNDP assistance to small-scale industry has focused on productivity, quality improvement, income-generation and employment issues.

Although institutional capabilities in specific areas have to a large extent been established or enhanced, their commercial viability continues to be a major problem. Accordingly, the focus of the technology-related technical cooperation projects needs to be shifted from institution-building to linkage-building, from provision of high-tech equipment to human resource development and from a supply to a demand-driven approach. Hence, efforts are under way to encourage industry participation in the formulation, management and cost-sharing of technical cooperation projects.

Some of the issues that need to be addressed in the area of energy, natural resource management and the environment are similar to those of industry. The building up of the capacity to harness energy from fossil fuels and non-conventional resources has emphasized technology transfer and human resource development in such areas as reservoir engineering and enhanced oil and gas recovery techniques. Priority is being given to energy conservation. One of the facets of UNDP advocacy of ecological compliance relates to the support given to environment-oriented non-government organizations, the initiation of policy dialogue, the organization of conferences, and support for publications on important environmental issues. While the transport sector needs substantial external assistance to ensure energy efficient and environment-friendly means of passenger and freight transport, the telecommunications segment needs greater participation of

private industry in the provision of telecommunications equipment and specialized services. Substantial technical cooperation inputs will need to be directed towards enhancing private sector participation in telecommunications.

Export promotion warrants special atte ition. The UNDP Programme approach has only recently included export promotion as a major component of technical assistance. Technical assistance to the leather and jute industries accords top priority to the development of new export products, the improvement of quality and productivity and the preparation of export marketing plans and strategies. Being the main engine of export growth, the private sector, particularly small and medium enterprises, merits specia' attention in the context of the current economic reforms. In collaboration with chambers of con.merce and industry associations, several initiatives have already been taken to generate awareness of the new policy environment, facilitate interaction with industrialists from other countries, with a view to dovetailing the experiences of their counterparts and promoting foreign direct investment. Extensive use has already been made of the United Nations International Short-Term Advisory Resources (UNISTAR) and Transfer of Knowledge Through Expatriate Nationals (TOKTEN) programmes in the transfer of technological know-how, particularly for the benefit of small and medium enterprises.

Technology and investment play a vital role in industrial growth and integration into the international economy. Foreign technology and investment inflows are not only to be considered in terms of individual contracts but also in terms of the creation of a national capability to access such inflows and utilize them effectively. A wide ranging approach to technology and investment is needed that will not only attract and retain such inflows but also make optimum use of them for the domestic economy. It is in this context that UNIDO could assist in investment and technology transfer by serving as a focal point of industrial technology; a global source of industrial information and an honest broker for industrial co-operation.

The mid-term review of the Fourth Country Programme argues that in consolidating technical cooperation assistance particular attention should be given to:

(i) alleviating poverty;
(ii) bringing the benefits of technological advances within the reach of the poor and blending modern with traditional technologies;
(iii) shifting projects oriented towards research and development to building linkages between producers and users of knowledge;
(iv) seeking technical assistance for large capital-intensive projects from the suppliers of the capital required;
(v) focusing UNDP technical cooperation in the area of infrastructure on strategies for new areas of planning;
(vi) increasing the thrust of export promotion by integrating and/or streamlining it in projects rather than maintaining it as an independent objective;
(vii) enhancing the potential and status of women;
(viii) providing policy-oriented UNDP assistance, especially in accelerating human development;
(ix) promoting sustainable use of resources, management of the environment and control of pollution; and
(x) orienting public administration training towards development rather than regulation.

Considering the magnitude of resources required to alleviate poverty and to meet human development requirements of a large country like India, particularly in the light of the high priority accorded by the Government to these issues, preference is given to integrating these thematic issues in the concept and design of individual projects.

India continues to be a major target country for UNIDO's technical cooperation activities. UNIDO is involved as an implementing agency in a number of UNDP financed projects and programmes, the most important being the leather sector programme. Others include several institution-building projects in electronics and engineering, such as assistance to the Centre for Very Large-Scale Integrated Circuits, introduction of computer integrated manufacturing at the Central Machine Tool Institute and establishment of institutes for auto parts technology, machine tools technology and pumps, and in essential oils and glass industries. UNIDO also cooperates in the implementation of a sub-project within the jute sector programme on uses of jute in pulp manufacturing. In the area of environmentally sustainable industrial development, cleaner production technologies are being introduced to selected clusters of small-scale industries and a master plan for environmental quality management is being prepared for a highly polluted region in eastern India.

As an implementing agency of the Multilateral Fund for Implementation of the Montreal Protocol, UNIDO is assisting in conversion of the electronic cleaning process for use in non-CAL cleaning, recovery and recycling of CAL refrigerants and, more generally, in phasing out of ozone depleting substances in the unorganized sector.

The largest programmes financed from UNIDO's own resources, mainly from the Industrial Development Fund, address a variety of issues and sectors. To further strengthen the leather sector, UNIDO is introducing efficient methods of effluent treatment to a cluster of tanneries. In the energy sector, UNIDO has carried out a feasibility study on a coal-based power plant in the State of Orissa and assistance is being provided in the establishment of the Lignite Fuel and Energy Research Institute in Neyveli. On a smaller scale, UNIDO is assisting in the selection of technology for producing smokeless coal briquettes.

Small and medium-scale industries are beneficiaries of the Integrated Investment Programme for India. The purpose of the Programme is to increase private investments and to broaden the industrial base by developing joint ventures and other types of technical and financial collaboration between foreign and Indian enterprises. The programme has been extended to ensure thorough follow-up to the Invesmart event held in April 1994.

India has been actively involved in UNIDO's programme for economic cooperation among developing countries (ECDC) by offering information and technology. Indian institutions have recently served as hosts to workshops in such fields of beneficiation of mineral resources and quality issues in software development. Efforts are being made to continue developing ECDC projects with India.[18]

NOTES TO CHAPTER II

1/ Information on the organized manufacturing sector is available from the Annual Survey of Industries which covers all factories, large and small, registered under the Factories Act, 1948. Information on production is also available from the industrial production indices compiled by the Central Statistical Organization. The small-scale sector is represented very inadequately in these indices. Information on the unorganized (or non-factory) non-agriculture sector is available from the Economic Census on non-agricultural establishments which has been carried out periodically since 1977.

2/ See Chakravarty, S., "On the question of home market and prospects for Indian growth", *Economic and Political Weekly*, Special Number, August 1979. Nayyar, D., "Industrial development in India: Some reflection on growth and stagnation", *Economic and Political Weekly*, Special Number, September 1978.

3/ For an empirical exploration of the alternative hypotheses of industrial stagnation, see Ahluwalia, I.J., (1985), *Industrial Growth in India, Stagnation Since the Mid-1960s*, Delhi, Oxford University Press.

4/ The industrial production indices are computed by the Central Statistical Organization based on information on 352 items provided by the Director General of Technical Development (252 items), the Development Commissioner of Small Scale Industries (18 items) and a few other official agencies including the Textiles Commissioner. Textiles is the only sector for which data are provided for the registered and unregistered units. The base year for the index is 1980/81 and the weights have been assigned on the basis of gross value added in the factory sector by the Annual Survey of Industries in that year.

5/ The manufacturing sector is divided into four use-based sectors, i.e., capital goods, intermediate goods, consumer non-durables, and consumer durables. The "basic goods", part of the manufacturing sectors as in the CSO classification is included in intermediate goods sector in our classification.

6/ UNDP, *India: Employment, poverty and economic policy*, December 1993.

7/ Ahluwalia, I.J., *Productivity and Growth in Indian Manufacturing*, Oxford University Press, Delhi 1991.

8/ Extensive documentation and analysis of productivity trends including those in labour productivity and capital productivity are provided in Ahluwalia (1991). An updated summary account of the major features of productivity performance is presented in the text. In a recent study, Balakrishnan and Pushpangadan (1994) have tried double deflation method to arrive at a time series of value added which is significantly different from the official series. Their estimates of value added growth in the 1970s and the 1980s are 11.8 per cent and 5.9 per cent per annum, compared with the official estimates of 5.1 per cent and 6.9 per cent, respectively. Using their time series to obtain estimates of TFPG, they do not find a turnaround in productivity growth in the 1980s. The estimates, however, are questionable because of empirical compromises made in the process of attempting to derive the price index for intermediate inputs for "double deflation".

9/ In a study, conducted by the Centre for Monitoring Indian Economy (CMIE), capital employed is taken to be equivalent to the total of the assets side of the balance sheet, i.e., broadly, gross fixed assets less depreciation, plus investment in shares and securities, and total gross current assets (i.e. receivables, loans and advances, deposits, etc.). In the Public Enterprise Survey of BPE the capital employed is defined as gross block less accumulated depreciation, plus net working capital (i.e. gross current assets, loans and advances, deposits, investment etc. less current liabilities and provisions other than gratuity provision). The latter was modified by the CMIE so that the BPE data on capital employed could be comparable with the data given in other company finance studies.

10/ In their updating, the Centre for Monitoring Indian Economy (April 1994) has used the BPE definition without any modification for comparability.

11/ For example, the L.K. Jha Committee and Sengupta Committee have spelt out many of these factors, 1983, 1984.

12/ World Bank, *India: Country Economic Memorandum*, 1994, Table A.25.

13/ This estimate has been prepared by the NCAER (1993) based on the data from the National Accounts and the two Censuses on the Small-Scale Sector conducted in 1972 and 1987/88. The two censuses together provide valuable information on small-scale industrial units which fall within the purview of the Small-Scale Industries Board, i.e., modern small-scale units.

14/ Mohan Rakesh, *Industrial Locations and their Implications in India*, Ministry of Industry, Government of India, 1993.

15/ *Goswami Committee Report on Industrial Sickness and Restructuring*, Ministry of Finance, Government of India, 1993.

16/ A recent study conducted by Lakshmi Raut shows that if all private firms increase their R&D expenditures by one per cent, the percentage increase in the long-run output of each firm (including those which are not doing R&D) can be quantitatively determined. The long-run effects for the light industries, petrochemicals, heavy industries and the total industrial sector are estimated to be 0.186, 0.158, 0.110 and 0.172, respectively.

17/ World Resources Institute, *The "Second India" Revisited Population, Poverty and Environmental Stress over Two Decades*, by Robert Repetto, August 1994.

18/ This section draws on Governing Council of the United Nations Development Programme, *Country Programme and Mid-term Review, Mid-term Review of the Fourth Country Programme for India*, 10 January 1994.

III. INDUSTRIAL BRANCH PROFILES

A. FOOD PRODUCTS

SUGAR

The sugar industry is the second largest agro-based industry in India after textiles, with a weight of 2.4 per cent in industrial production. India is the largest producer of sugar in the world, with annual output in 1991/92 of 14.6 million tonnes of cane sugar, followed by Brazil with 9.3 million tonnes, China with 8.6 million tonnes, and the United States with 6.7 million tonnes. Since India's domestic demand for sugar is also very large, India is only a marginal participant in world trade in sugar, exporting small quantities of around 500,000 tonnes in years of surplus and importing similar amounts in years of shortage.

There are 417 sugar factories in the country, of which 235 are in the cooperative sector, 112 in the private sector and 70 in the public sector. Most Indian sugar mills are relatively small by international standards and three-quarters of the sugar mills have below 2,500 tonnes per day of crushing capacity. Even in Indian conditions this is much smaller than the optimal economic size, which would be between 4,000 and 5,000 tonnes per day. The public sector plants are generally in the capacity range below 1,250 tonnes per day; cooperative sector plants dominate in the capacity range of 1,250-2,500 tonnes per day, while both cooperatives and private sector plants are present in the range above 2,500 tonnes.

Resource base

India's sugar production is based entirely on sugar cane. India is the largest producer of sugar cane in the world with a total production of close to 240 million tonnes (see Table III.1). Sugar cane is grown in many states of the country but the major cane-producing areas are Uttar Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu, Punjab, Bihar and Haryana.

There are wide variations in sugar cane yields across the states. Uttar Pradesh, which accounts for 50 per cent of the cane area, has much lower yields than Punjab, Haryana and Tamil Nadu. Growth in sugar cane yields per hectare fell from 1.0 per cent per annum in the 1960s to 0.6 per cent per annum in the 1970s, but increased again to 1.4 per cent per annum in the 1980s. There are also significant differences in the recovery percentage of sugar from cane. The recovery is 11.3 per cent in Gujarat and Maharashtra, 10.6 per cent in Karnataka, 10.2 per cent in Andhra Pradesh and 9.2 per cent in Uttar Pradesh. These variations are due to natural factors such as weather, rainfall and pests and they affect the competitiveness of the sugar industry in different regions.

Table III.1. Sugar and sugar cane production and yield, 1960/61-1993/94, selected years

Year	Sugar (Million tonnes)	Sugar cane production (Million tonnes)	Yield per hectare (Tonnes)
1960/61	3.0	110.5	45.8
1970/71	3.7	126.4	48.3
1980/81	5.2	154.2	57.8
1985/86	7.0	170.6	59.9
1986/87	8.5	186.1	60.4
1987/88	9.1	196.7	60.0
1988/89	8.7	203.0	61.0
1989/90	11.0	225.6	65.6
1990/91	12.1	241.0	65.4
1991/92	13.4	254.0	65.8
1992/93	10.6	230.8	63.8
1993/94[a/]	9.8	239.0	68.3

Source: Indian Sugar Mills Association.
a/ Provisional.

Recent trends

Spurred by growth in domestic demand, the sugar industry has expanded over the years with sugar production increasing from 3 million tonnes in 1960/61 to 5.2 million tonnes in 1980/81, representing a growth rate of 2.7 per cent per year. Being an agriculture-based industry, it is naturally subject to substantial weather-induced cyclical variations. Ignoring year-to-year fluctuations, however, the industry has shown continuous expansion over a longer period. The growth rate accelerated in the 1980s to 8.9 per cent per year, taking sugar production to 12 million tonnes in 1990/91. This acceleration was partly a reflection of the faster growth in the domestic economy in the 1980s but partly also of the policy of gradual liberalization of the sugar industry implemented during the 1980s which increased the profitability of the industry and encouraged investment and modernization.

Because sugar is viewed as an essential commodity and the price of sugar is regarded as sensitive, the sugar industry in India has been, and continues to be, subject to price regulation. The extent of regulation has varied, alternating between periods of complete price control and partial price control (dual pricing), with a few very short periods of total decontrol.

A major feature of liberalization of policy towards sugar was the reduction in the extent of price control introduced in the 1980s. Since 1980/81, the policy has been one of partial control or dual pricing under which a proportion of the production of each sugar factory is pre-empted by the government at a pre-determined price under a levy system, and the levy sugar is then distributed by the Government at a controlled price through ration shops. The remaining production of the factory is available for sale in the open market. The trend in levy price and free sale price is presented in Table III.2.

Box III.A. Sugar policy changes

1. Sugar licensing liberalized; new licences opened up to private sector.
2. Minimum economic size of sugar factory raised from 1,250 to 2,500 tonnes of cane crushed per day.
3. Decontrol of the price of molasses.
4. The free-sale proportion of sugar increased to 60 per cent.
5. Duty-free import of sugar allowed.

Table III.2. Sugar price comparisons, 1970/71-1993/94
(Rupees per quintal)

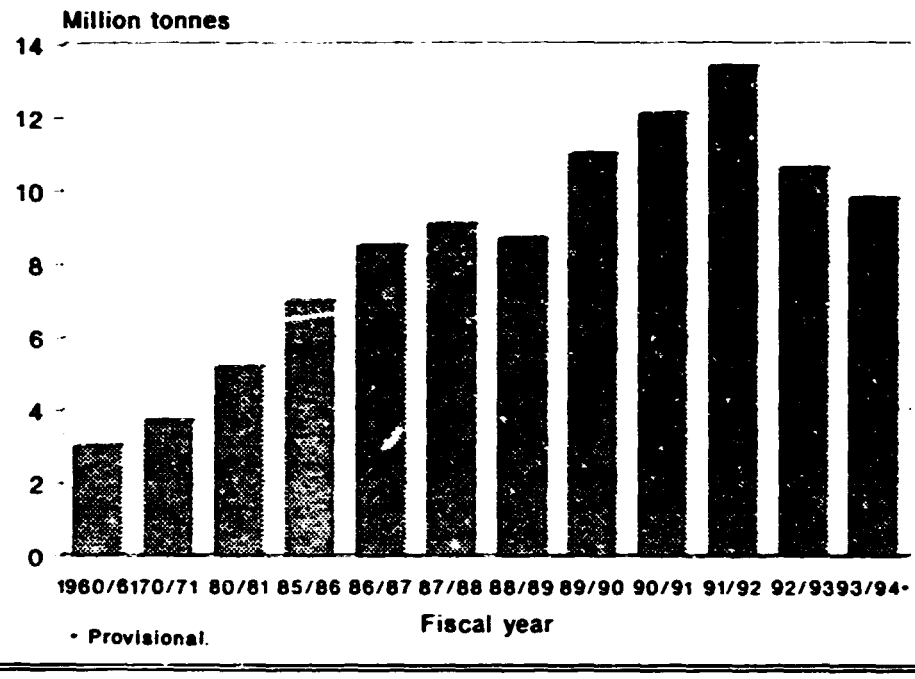
Year	Levy prices	Free sale price
1970/71[a/]	131.1	184
1980/81	285.0	574
1981/82	291.0	451
1982/83	295.0	379
1983/84	311.0	404
1984/85	351.0	488
1985/86	413.1	524
1986/87	421.6	521
1987/88	452.1	556
1988/89	470.0	649
1989/90	532.2	728
1990/91	570.8	745
1991/92	630.3	757
1992/93	673.0	887
1993/94	741.0[b/]	1,177

Source: Indian Sugar Mills Association.

a/ Sugar was decontrolled on 25 May 1971.
b/ This levy price was subsequently lowered by Rs 33 per quintal, to adjust against the higher realization for molasses in the free market.

In 1980/81 the percentage of production pre-empted by the Government under the sugar levy was 65 per cent and only 35 per cent of production was left to the mills for sale in the open market. The free sale proportion was increased to 45 per cent in 1985/86, 50 per cent in 1986/87, 55 per cent in 1988/89 and most recently to 60 per cent in 1992/93. Since new factories benefit from much higher free sale ratios, including even 100 per cent in certain cases, the average free sale proportion for the industry is nearer 65 per cent. Thus, since the early 1980s, the proportion of free market sales has almost doubled.

Fig. III.A. Sugar production, 1960/61-1993/94, selected years



The sugar licensing policy has meanwhile been liberalized with a view to encouraging modernization and also encouraging private production. Until 1990, licensing of the new sugar mills was confined to cooperative sector units. New private sugar mills, though not ruled out under the policy, were effectively discouraged. This was changed in 1990, and new licences were also opened up to the private sector. Prior to 1990, new sugar factories were licensed for a minimum economic capacity of 1,250 tonnes of cane crushed per day, which is significantly below the economically optimal level in Indian conditions of around 4,000 tonnes. This encouraged the proliferation of a large number of small factories. After 1990, the sugar licensing policy was modified to set the minimum economic size at 2,500 tonnes, which could, through subsequent expansion, more easily reach the optimum economic size. Recently the Government has also decontrolled the price of molasses, which removes an important disadvantage afflicting the organized sugar industry compared with its traditional competitors. Some states have implemented this, while others have not.

An indicator of the improved economics of the sugar industry is the steady increase in the proportion of cane absorbed by the sugar industry compared to traditional sweeteners. In 1976/77 the sugar industry absorbed only 32 per cent of cane production, while *gur* (jaggery) and *khandsari* (unrefined sugar) absorbed 56 per cent. By 1991/92 the absorption by sugar factories had increased to 53 per cent, while absorption by *gur* and *khandsari* dropped to 37 per cent. This shift implies a significant gain in economic efficiency in the total production of sweeteners in the country since the wastage of recoverable sugar in the traditional industries is quite high. More recently, however, the reverse has happened with a decline in the cane utilized by the sugar sector to 44.4 per cent in 1992/93 and 41 per cent in 1993/94.

Constraints and prospects

The continuation of a levy system is a burden on the mills, since the price paid for the levy sugar is based on the estimated cost of production, using the statutory minimum price of cane announced by the central Government as the cost of cane to the factory. However, most mills pay a higher price to sugar cane farmers; in some states the state government actually fixes these higher prices which must be paid. The mills, therefore, lose on the levy portion of their production and their viability depends upon whether this loss can be made up in free market sales.

Also, under the present price policy, there is a bias in favour of setting up new smaller scale mills instead of expanding existing mills to economic scales. This is because the scheme currently provides for 100 per cent free sale to new units in normal recovery areas up to a period of 10 years and in high recovery areas up to a period of 8 years. This scheme has naturally prompted establishment of a larger number of new relatively small-scale factories, particularly in the cooperative sector. As a result, whereas the number of sugar mills in India has gone up considerably, to 403 in 1990 and 420 in 1992/93, the largest in any country in the world, the average size of the sugar plant is amongst the lowest at 1,950 tonnes crushed per day (TCD).

Since sugar mills compete for sugar cane with other decentralized producers of traditional sweeteners such as *gur* and *khandsari*, which are not subject to the levy system, there is a built-in bias against the modern sugar industry even though it is more efficient in terms of recovery of sugar from cane. Until recently this bias was heightened by the fact that molasses produced by sugar mills was subject to price and distribution control whereas molasses produced by the other traditional sweeteners was not. The relative importance of the sugar industry compared to *khandsari* and *gur* can be judged from the fact that in 1992/93 the total utilization of cane for sugar was roughly equal to the utilization for the traditional sweeteners. To some extent, the survival of the traditional sweeteners is a reflection of the additional controls imposed on sugar.

There are strong prospects for continued growth of the sugar industry since *per capita* sugar consumption in India is still quite low and rising income levels will provide a source for expansion in domestic demand. Growth in the processed foods industry and in beverages will add substantially to such demand. The availability of cane will, however, be a constraint since the total area available for cane cultivation cannot be readily increased.

The area under cane cultivation as a per cent of total area cultivated increased from 1.7 per cent in 1960/61 to 2.4 per cent in 1991/92. With total cultivable area in India growing very slowly, and sugar cane being a water-intensive crop, it is difficult to imagine continued growth in cane area under cultivation. The main source of expansion in sugar cane supply must come from increases in yields. There is certainly considerable scope for such increases, as Uttar Pradesh and Bihar, which together account for 54 per cent of the cane area, also have yields which are 30 per cent lower than in Maharashtra or Karnataka. What is needed in these areas is more active involvement of the sugar mills with improvement in cane varieties and cane cultivation practices. Direct contact is needed between the factory and the farmer. Part of the problem arises from the poor financial condition of most sugar mills in the area which need major modernization and technological upgrading.

Modernization can come from further rationalization of the sugar policy. The gradual reduction in price control since the early 1980s has undoubtedly been beneficial in encouraging expansion and modernization. The process needs to be strengthened by further reduction in controls leading to complete decontrol of sugar. This will provide an environment in which efficient mills will expand to reach economic size while inefficient ones will close down. It will also remove the bias against the organized sugar mills inherent in the present system of levy. With slower growth in

cane area and possibly also of sugar cane in future, it is essential to phase out wasteful processes which involve a large loss in recoverable sugar production.

TEA

The tea industry is one of the oldest industries of India. Tea remains one of India's dominant export commodities and the most popular beverage across the country. With 421,000 hectares encompassing tea cultivation, India ranks first both in area and production among the 33 tea-growing countries in the world.

Resource base

India accounts for 28 per cent of the world production, 18.7 per cent of world export and 20 per cent of the world consumption of tea. The major tea-growing states are Assam, West Bengal, Tamil Nadu and Kerala, together accounting for 97 per cent of the area under tea cultivation and 98 per cent of production. A significant increase in the production of tea from 285.4 million kg in 1951 to 741.7 million kg stemmed largely from a dramatic increase in the yield per hectare (see Table III.3).

Table III.3. Tea cultivation and production, 1951 and 1991

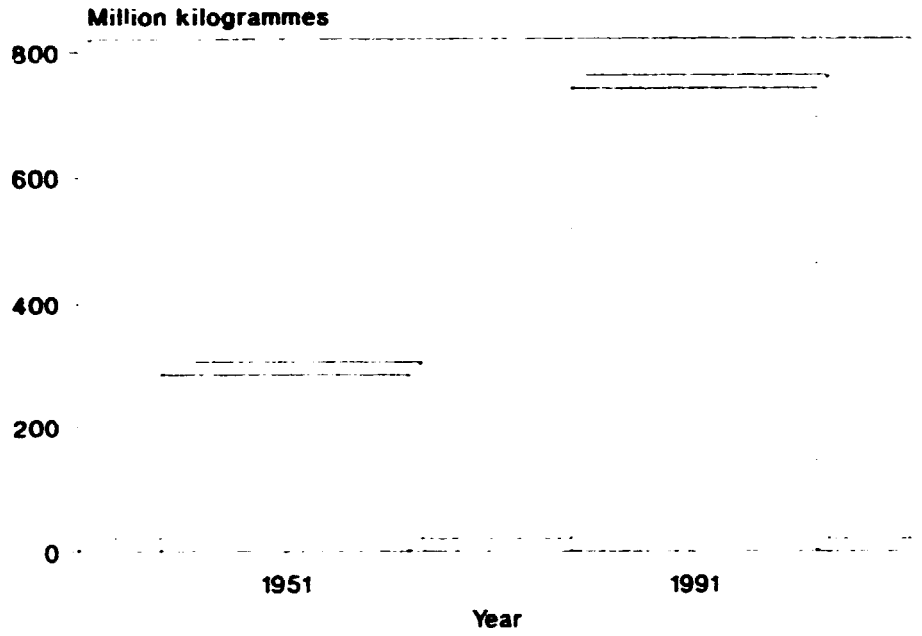
Year	Number of tea gardens	Area (Hectares)	Production (Million kg)	Yield (Kg/Hectare)
1951	6,214	316,870	285.4	901
1991	13,861	421,271	741.7	1,761
Percentage increase over 1951		33	160	95

Source Tea Board of India, Calcutta

Recent trends

For several decades following the establishment of commercial tea plantations in India, the tea industry was totally export-oriented. It was only in the 1950s that the internal consumption of tea began to rise rapidly. The domestic demand pull and severe competition from other tea-producing countries in Asia and Africa contributed to a situation where India's share in world exports fell from 44 per cent in the 1950s to 20 per cent in the 1980s, further slipping to 18.9 per cent in 1991. Nevertheless, tea remains a major export earner: the value of export earnings from tea increased from $4.3 billion in 1980 to $11.1 billion in 1990.

Fig. III.B. Tea production, 1951 and 1991



The state governments in the tea-growing areas of India, particularly Assam and West Bengal, have recently initiated changes in the agricultural income tax structure which are favourable to the industry. The state of Kerala has also notified its intention to follow suit. When these changes take place, the heavy tax burden on the tea industry is expected to be significantly reduced so that it will be almost on a par with central income tax rates.

Since the 1980s there has been a marked shift in the direction of India's tea exports. Exports to developed countries such as Canada, Germany, the United Kingdom and the United States, which were the principal destinations in the 1950s and the 1960s, shrank, while exports to the former Soviet Union, Poland and West Asian and North African countries increased. The collapse of the former Soviet Union, which accounted for more than half of India's exports, created a sudden void. Though exports to non-CIS countries have increased in recent years, this has not offset the loss of the CIS markets.

The major part of India's tea exports is still in the form of loose tea. It is difficult to further penetrate foreign markets without significant improvements in processing and packaging. Brand loyalty also tends to be an important factor determining sales. The promotional cost of establishing a new brand in a foreign market are also phenomenal. The Government is, therefore, encouraging joint ventures with foreign companies in tea-processing.

One of the major functions of the Tea Board is to promote the sale of Indian tea in overseas markets. This is carried out with the help of its overseas offices in Brussels, Dubai, London and

New York. Tea councils work towards generic promotion to increase overall consumption of tea and India is a member of the United Kingdom Tea Council and the German Tea Council. In order to establish the quality image of the speciality teas, three logos - Darjeeling, Assam and Nilgiri - have been introduced by the Tea Board.

A national committee for evolving a long-term strategy for tea has observed that production, technology management and marketing strategies need upgrading and modernization. There is also an urgent need for further expanding the area under tea cultivation, increasing the rate of replanting to achieve a favourable age mix and encouraging research efforts aimed at achieving higher productivity.

Constraints and prospects

Traditionally, the problem of tea has been that the rate of growth of consumption in India has far surpassed that of production. While production grew at 2.5 per cent per year between 1960-1990, consumption grew at a much faster rate of 4.6 per cent per year. Even though there has been some deceleration in the growth of domestic consumption to 3.7 per cent per year in the 1980s, and even if this trend continues in the 1990s, consumption will still grow at a faster rate than production.

A ten-year perspective plan for the period 1991-2000 has recently been drawn up by the Tea Board to achieve a production target of 1,000 million kg by 2000. The nature and extent of developmental work to be undertaken have been identified and the investment required for achieving the target has been quantified. This perspective plan forms the basis for setting the production target during the Eighth Plan period.

It has been estimated that if India is required to retain its current global share of exports and meet the domestic consumption which is growing at 3.6 per cent, the tea requirement will be 270 million kg and 710 million kg, respectively. The total requirement would come to 1,000 million kg by the year 2000. This would mean achieving a growth rate of 3.4 per cent as against the average growth rate of 2.5 per cent per annum achieved between 1960 and 1990.

The estimated investment required to be made over the ten-year period works out at Rs 15.7 billion. The resources for financing development activities would have to come mainly from investment of their own funds by the tea estates and borrowing from regular financial institutions. The Tea Board's role as a catalyst for development activities will be to cover those areas which are not ordinarily covered by bank finance. Ideally there should be a single window service for financing tea development activities, but considering the diverse nature of the conditions prevailing from district to district and also between the tea estates in the same district, governmental assistance through the Tea Board's schemes should continue until the majority of the tea estates in India are in a position to obtain institutional finance. The estimated financial support from the Tea Board for the ten-year period would be around Rs 1.3 billion, while the industry is expected to contribute about Rs 6 billion from its own resources. The balance is expected to come from institutional sources like banks, National Bank for Agriculture and Rural Development (NABARD), Industrial Development Bank of India (IDBI), State Financial Corporation.

The industry's strategy is to convert bulk exports to value-added exports so that export earnings can be protected, although total export volumes will, over the next ten years, decline. In keeping with the policies of liberalization, the Government has also modified various notifications governing export licensing. These steps are expected to assist the efforts of the industry to mount a major thrust on exports of value-added products. Marketing in specific target areas like the

Middle East and the CIS states is also receiving greater attention from the industry, which augurs well for the future. The industry expects to make a breakthrough in productivity, particularly in Assam, where the average yield in 1992 was only 1,670 kg per hectare compared with 2,098 kg per hectare in South India.

COFFEE

India produces 3 per cent of the coffee produced in the world. Coffee cultivation is mainly confined to the country's southern states of Karnataka, Kerala and Tamil Nadu, although it has been extended to non-traditional areas of Andhra Pradesh, Orissa and the north-eastern states. Production is estimated at 212,000 tonnes for 1993/94, compared with 118,053 tonnes in 1989/90 (see Table III.4). There are significant variations in coffee productivity in terms of yield per hectare across states and size of holdings.

Table III.4. Coffee production, 1950/51-1993/94, selected years
(Tonnes)

Year	Arabica	Robusta	Total
1950/51	15,511	3,382	18,893
1960/61	39,526	28,643	68,169
1970/71	58,348	51,883	110,231
1980/81	61,262	57,384	118,646
1981/82	74,110	75,890	150,000
1982/83	74,326	55,626	129,952
1983/84	70,683	34,346	105,029
1984/85	80,046	115,064	195,110
1985/86	72,311	50,139	122,450
1986/87	88,975	103,119	192,094
1987/88	64,556	58,157	122,713
1988/89	94,781	111,934	214,715
1989/90	62,572	55,481	118,053
1990/91	78,311	91,415	169,726
1991/92[a/]	88,320	91,680	180,000
1992/93[a/]	73,120	96,275	169,395
1993/94[a/]	98,300	113,700	212,000

Source Coffee Board of India, Bangalore.

a/ Provisional.

Recent trends

In traditional as well as non-traditional areas, coffee production, which was less than 70,000 tonnes two decades ago, has risen to an average level of 175,000 tonnes and has crossed the 200,000 tonnes mark twice in the last five years. Exports have also been over 100,000 tonnes per year consistently during 1989/90-1992/93 (see Table III.5). The Government has recently introduced the system of Free Sale Quota (FSQ) to improve productivity. This system permits growers to sell 50 per cent of their produce directly either in the domestic market or the international market;

the system of Free Sale Quota (FSQ) to improve productivity. This system permits growers to sell 50 per cent of their produce directly either in the domestic market or the international market; they have to pool the rest of their produce with the Coffee Board. Prior to this, the Government had allowed the growers in the 1992/93 season to sell 30 per cent of their produce in the domestic market without pooling the coffee with the Board under a system called the Internal Sale Quota. The introduction of FSQ has contributed to an unprecedented rise in coffee prices in the domestic market. To contain this price rise, the Government recently directed the Coffee Board to restrict export permits to 100,000 tonnes for the calendar year 1994, with monthly quota not exceeding 5,000 tonnes from September to December 1994.

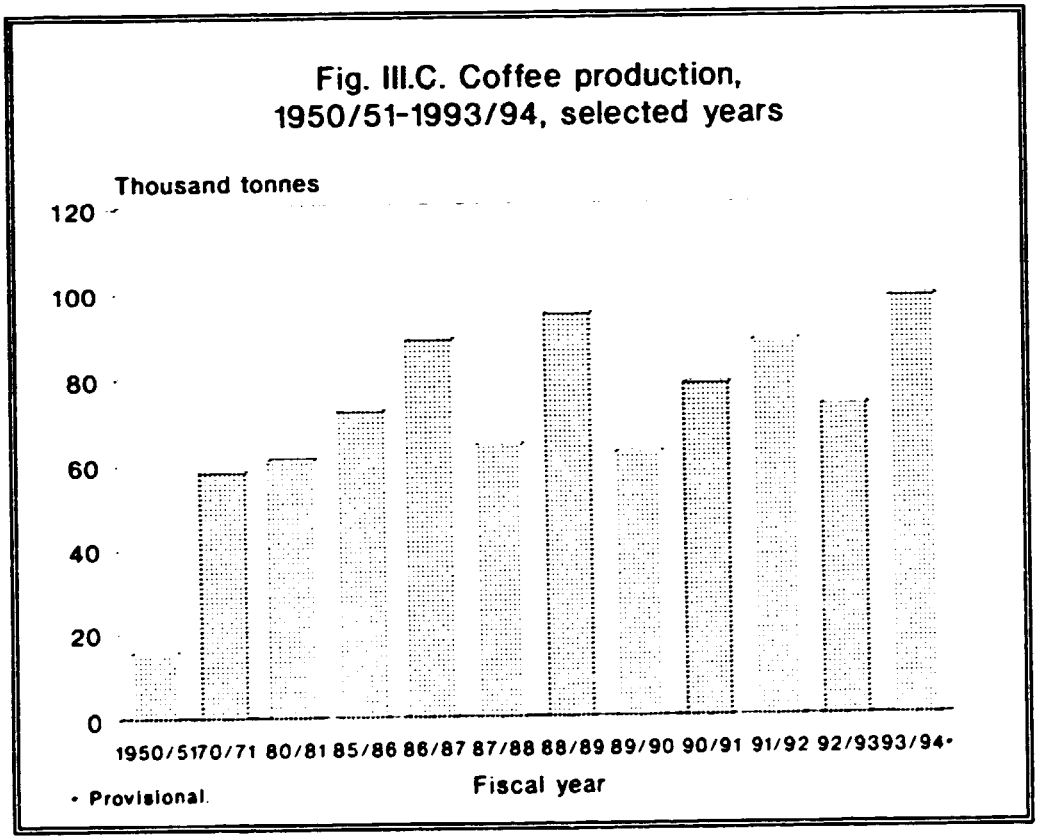


Table III.5. Export of coffee, 1980/81-1993/94

Year	Quantity (Thousand tonnes)	Value (Rs billion)	Value realized per tonne (Rs thousand)
1980/81	89.3	2.1	24.17
1981/82	83.8	1.7	19.89
1982/83	83.8	2.0	24.28
1983/84	71.2	1.8	24.88
1984/85	68.9	2.1	30.43
1985/86	99.3	2.7	27.69
1986/87	86.7	3.6	41.93
1987/88	92.5	2.6	28.11
1988/89	98.3	3.4	34.37
1989/90	134.0	3.6	27.09
1990/91	100.1	2.8	27.86
1991/92	111.4	3.5	31.31
1992/93	113.6	3.8	33.57
1993/94 (April-December)	84.3	3.5	41.12

Source: Coffee Board of India, Bangalore.

Until July 1989, coffee was exported to most countries under the aegis of the International Coffee Agreement and directly to some other countries. While the exports to the International Coffee Organization (ICO) member importing countries were restricted within the quota fixed annually by the ICO for each member exporting country, the exports to non-member countries were without any such restriction, the only condition being that no discount sales should be made to non-member countries. However, since export quotas were suspended with effect from 4 July 1989, there is no restriction on the amount of exports to any destination. There was a major decline in international coffee prices after June 1989 and it was only at the beginning of 1994 that this trend was reversed.

This is mainly because of an overall shortage of coffee in the world market due to heavy damage to the coffee crop in Brazil and also perhaps because of a retention plan for coffee being pursued by the Association of Coffee Producing Countries (ACPC). The high price for coffee in the international market is reflected in coffee prices in India also, although India had an excellent crop in 1993/94. A ban has been imposed on the export of certain low grades of coffee so that it is available to consumers at a reasonable price.

Constraints and prospects

The Coffee Board has been implementing several programmes and research and development projects in order to achieve the Eighth Plan target of 242,000 tonnes and the perspective target of 300,000 tonnes for average annual coffee production by 2000. A nominal area expansion of 15,000 hectares is expected during the Eighth Plan. The production increase is also envisaged through improving productivity which is targeted to reach 1,000 kg per hectare by the turn of the century from the present level of 755 kg per hectare. There is scope for enhancing productivity through better means of irrigation, intensive planting, replanting of high-yielding varieties and improved cultivation practices.

FOOD PROCESSING

Food processing is one of the most important sunrise industries in India. The changing life style and spending pattern of the sizeable 250 million strong middle class, together with increasing urbanization and increased entry of women into the labour force, have resulted in a rapid expansion of the domestic market for processed foods. The industry's added appeal stems from its linkages with the rural sector by stimulating certain types of agricultural production and providing employment opportunities in rural areas. It is also expected to contribute substantially to exports.

A number of large Indian and transnational groups have acquired a strong presence in this sector in recent years, particularly after the laun ing of economic reforms. In order to attract more investment in food processing from both domestic and foreign investors, the Government has put most food-processing industries on the list of priority industries in which foreign investment up to 51 per cent is automatically allowed. Incentives are provided for setting up 100 per cent export-oriented food-processing units. More than 25 per cent of the foreign investment in manufacturing approved in 1993 was in the food processing sector, for which investments worth $0.57 billion were approved during August 1991-September 1994 (see Annex Table A-24).

Recognizing the substantial contribution that the food processing industry can make to income and employment generation in rural India, there is competition between different states to attract investment and, especially since the beginning of 1992, several state governments have announced agricultural and industrial policies for this purpose, such as attractive investment allowances including local sales tax exemptions.

FRUITS AND VEGETABLES

Resource base

India is the second largest producer of fruits and vegetables in the world, accounting for 59 per cent of the world mango production and 13 per cent of the world banana output. India's production of fruits and vegetables is close to 75 million tonnes per year, with mango and banana production accounting for over 50 per cent of India's total fruit production (see Table III.6). However, a large proportion of fruits and vegetables is wasted as a result of the lack of food-processing industries. Fruits which grow in hill districts are often unable to reach consuming centres in fresh condition and the prices are therefore low in the less accessible producing regions.

Since companies are not allowed to own land and plantation cropping is not permitted, contract farming is used by the industrial enterprises to source high-quality raw materials. Industrial enterprises provide farmers with high-yielding varieties of seed, extension services and technology to help improve yields and secure raw material with the required attributes. Unilever Plc has linked up with Tarai Foods, which in turn provides technology and inputs to farmers to grow vegetables which are frozen and marketed by Unilever. Pepsi Foods has been able to help the Punjabi farmers through technology support, so that tomato yields have increased from 15 tonnes per hectare to over 55 tonnes per hectare over a three-year period. In some areas farmers' cooperatives have been formed with successful backward linkages between themselves and the processed food industries.

Mushrooms and asparagus are the new thrust areas of growth. High-quality mushrooms are now being produced, predominantly for export. Asparagus and avocados are also being grown for both domestic and export consumption.

Table III.6. Principal fruit crop production, 1992/93

Fruit	Share in total area (Percentage)	Share in total production (Percentage)
Mango	30.38	30.12
Banana	9.79	21.45
Citrus	10.49	9.77
Apple	5.63	3.84
Guava	3.08	3.60
Pineapple	1.64	2.79
Grapes	0.75	1.45
Others	38.24	26.98

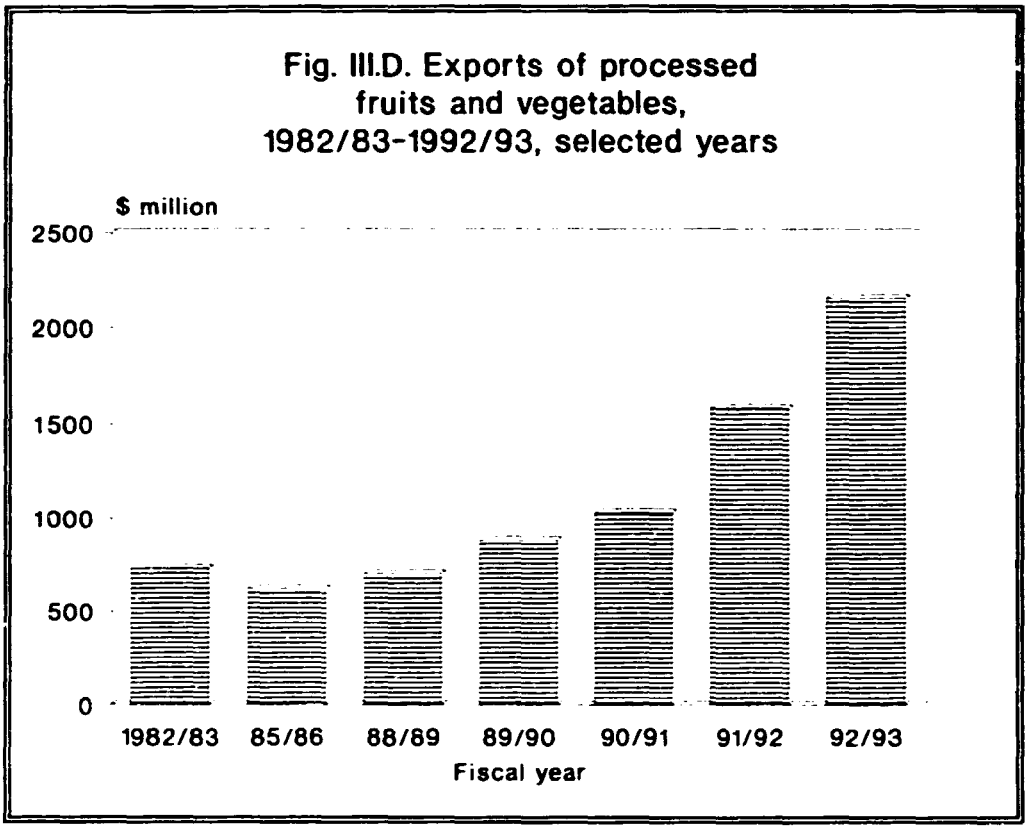
Source: Agricultural Products Export Development Authority and *Annual Report 1992/93*, Ministry of Agriculture.

Recent trends

In the fast-expanding food-processing industry, the installed capacity of fruit and vegetable processing increased from 0.6 million tonnes in 1992 to 1.26 million tonnes in 1995. Major processed fruit and vegetable products are beverages, fruit pulps and juices, canned fruits and vegetables, jams, squashes, pickles, chutney and dehydrated vegetables. More recently, processing industries have ventured into the production of frozen fruit pulps, dehydrated and freeze-dried vegetables, juice concentrates, vegetable curry and canned mushroom products.

The profile of fruit and vegetable processing has been changing significantly, with a number of major players injecting a new sense of dynamism into this segment of manufacturing. Hindustan Foods & Inns, Nestlé, Herbertsons, Corn Products Co. (India), the public-sector Hindustan Vegetable Oils Corporation and Mohan Meakin are among the major players. While the overwhelming majority of the 3,629 producing units registered are either cottage industries (70 per cent) or small-scale units (17 per cent), as several items in the sector are reserved for production in the small-scale sector, larger units are allowed to be set up with an export obligation of 75 per cent.

Large domestic food product manufacturers such as the Hindustan Lever Group companies (subsidiaries of Unilever) have restructured their groups by taking over existing companies in the industry. The large overseas investors into the domestic food-processing industry include Pepsico, McDonald (ready-to-eat food), Consolidated Sea Food Corporation (seafood), Hanchal Exports (banana purée), Reitze Industries (processed fruits and vegetables), Poupon Reitzel (processed foods, pickles), Cargill (citric acid), Valio Engineering (lactose, casein) and Wrigley (chewing gum).



The main markets for India's processed fruits and vegetables are the United Kingdom, the United States, Germany, the Middle East and the Commonwealth of Independent States. Exports of processed fruits and vegetables represented over 30 per cent of production in the late 1980s. Dried and processed vegetables accounted for 41 per cent of the total exports of processed fruits and vegetables in 1991/92 and Bahrain, Kuwait, Saudi Arabia, United Arab Emirates and Yemen absorbed around 37 per cent of India's total exports of processed fruits and vegetables in that year. However, India's exports of processed fruits and vegetables accounted for only 0.5 per cent of world exports during 1986-1990 (see Table III.7). The scope for penetration in these markets is immense.

Table III.7. Exports of processed fruits and vegetables, 1982/83-1992/93

Year	Exports of processed fruits and vegetables ($ million)	Annual growth rate (Percentage)	Percentage of total exports
1982/83	730		0.83
1983/84	500	-32.0	0.51
1984/85	510	3.1	0.44
1985/86	620	21.3	0.57
1986/87	680	9.5	0.55
1987/88	560	-17.8	0.36
1988/89	700	25.0	0.34
1989/90	880	25.6	0.32
1990/91	1,030	17.6	0.32
1991/92	1,580	53.3	0.36
1992/93[a/]	2,150	36.1	0.40

Memo: India's share of world exports of processed fruits and vegetables

1986	1987	1988	1989	1990
0.47	0.48	0.49	0.54	054

Source. Agricultural and Processed Food Exports Export Development Authority.

a/ Estimate.

Constraints and prospects

Agro-climatic conditions in India offer enormous opportunities for providing processed foods and fruits and vegetables in packaged form for exports. India can grow many exotic vegetables that the developed world needs, provided the right inputs are made available to the farmers. In order to ensure the supply of high-quality raw materials, industrial units have to develop a relationship of trust and support *vis-à-vis* small farmers so that both sides honour contracts. Some experiments at contract farming are currently being attempted with the help of the central and state Governments. The raw materials and availability of technical, managerial and agricultural technologists at low wages also offer competitive advantage to these industries in India.

Inadequate transport infrastructure by way of roads, refrigerated vans, cold storage, refrigerated containers on ships, cold storage at airports and frequent cargo flights to the countries of the Organisation for Economic Co-operation and Development (OECD) is an impediment to faster growth of processed foods and agro-based industries. Central and state Governments are trying to improve the situation with respect to infrastructure.

MEAT AND POULTRY PRODUCTS

Resource base

India has the largest livestock population in the world. Almost 55 per cent of the world's buffaloes, 20 per cent of the cattle and goats and 16 per cent of the sheep are in India. Most animals are not reared for meat, though pigs and poultry and goats are reared for both milk and

meat. The slaughter of cows is banned in some Indian states. There is a national ban on beef exports.

India has a good poultry farming system for both meat and eggs. While much of this farming is still carried out by small farmers in villages, many internationally accepted poultry farms were set up near major consuming centres in the period 1983-1993.

Production of various types of meat, including mutton and lamb was estimated by the Food and Agriculture Organization of the United Nations (FAO) to be over 3.5 million tonnes in 1993 (see Table III.8). Currently only 3,400 tonnes are processed. This excludes the unregistered cottage meat-processing units which mainly cater to local needs. Egg production, estimated to be 22 billion eggs in 1992, rose steadily during 1982-1992 and is expected to continue to grow.

Table III.8. Production of meat, 1979-1993, selected years
(Thousand tonnes)

Product	1979-1981	1991	1992	1993[a/]
Beef and buffalo meat	1,670	2,361	2,398	2,458
Sheep and goat meat	456	622	621	634
Pig meat	327	365	366	368
Mutton and lamb meat	21	30	31	47

Source: FAO. *Production Yearbook 1993* (Rome, 1994).

a/ Preliminary.

Recent trends

There are 24 meat processing plants, including 13 which are 100 per cent export-oriented units engaged mainly in the export of meat products. Recently three new export-oriented units processing buffalo meat have been granted approval to start operations. In addition, there are five modern abattoirs, one integrated abattoir meat-processing plant and another integrated buffalo meat-processing plant in the joint sector. As international restaurant chains like Kentucky Fried Chicken, McDonald's (with chicken menu) and Pizza Hut are opening up in India, demand is expected to grow rapidly. Chicken meat is the premier meat in India and the consumption of chicken meat in the domestic market is rising rapidly.

Export of meat and meat preparations grew significantly between 1990/91 and 1992/93 (see Table III.9). The value of buffalo meat exports, which accounted for over 46 per cent of the meat exports from India in 1992/93, rose from Rs 1.1 billion in 1990/91 to Rs 2.1 billion in 1992/93. The major destinations of India's meat exports are Bahrain, Jordan, Kuwait, Malaysia, Maldives, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

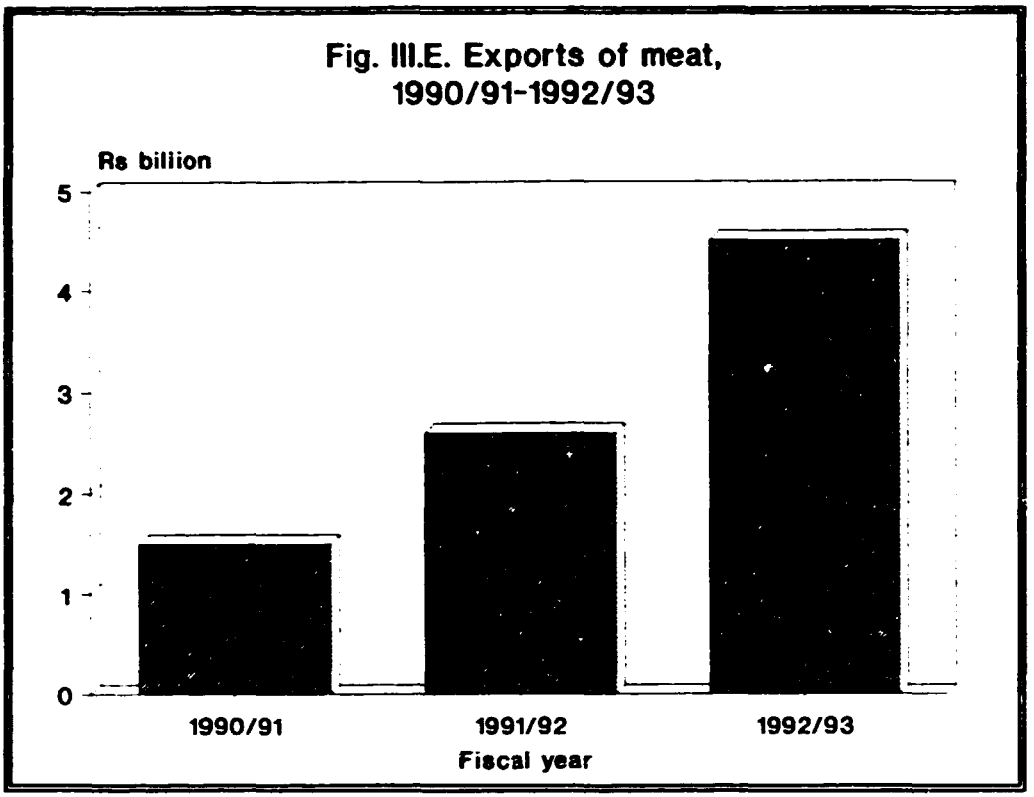


Table III.9. **Meat exports, 1990/91-1992/93**
(Rs million)

	1990/91	1991/92	1992/93
Buffalo meat	1,068.9	1,830.0	2,100
Sheep/goat meat	312.5	470.0	780
Poultry products	22.8	80.0	150
Dairy products	24.7	100.0	160
Animal casings	71.8	150.0	900
Processed meat	8.1	15.0	200
Total	1,509.0	2,645.0	4,520

Source: Ministry of Food Processing Industries

Constraints and prospects

There is a large domestic market for meat and meat products, with mutton (goat meat and sheep meat) and poultry being the preferred types of meat. Poultry and frozen meat offer tremendous opportunities in the country. Since the Gulf countries are India's major market for meat products, there are export opportunities there which can be exploited using foreign technology and expertise.

India produces high-quality animal feeds based on technologies available from transnationals to produce nutritional products for faster animal growth (mainly poultry), using low-cost agricultural raw materials. Organized meat farming, therefore, offers an opportunity for foreign investment with a forward linkage to processed meats, including frozen products.

DAIRY AND DAIRY PRODUCTS

Resource base

India's milk production of over 63 million tonnes in 1993 (see Table III.10) is close to 11 per cent of the world production and the third largest. Most of this production is by small dairy farmers. A special programme called Operation Flood was launched in 1970 to organize district cooperative societies owned and managed by farmers. This brought about what is popularly known as the White Revolution, by which over 7 million farmers in 267 districts all over India produce about 10 million litres of milk per day for sale to consumers in 526 towns and cities under this scheme. During the highest yielding season, from August to March, the milk surplus in the northern and central parts of India needs to be converted into milk products.

Table III.10. Milk production, 1979-1993, selected years
(Thousand tonnes)

Product	1979-1981	1991	1992	1993[a/]
Buffalo milk	17,574	28,200	29,250	30,440
Goat milk	959	2,000	2,200	2,220
Cow milk	13,420	28,200	29,400	30,500

Source: FAO, *Production Yearbook 1993* (Rome, 1994).

a/ Preliminary.

Recent trends

There are over 64,000 dairy cooperatives in India, many of which produce and market milk products such as ghee (clarified butter), butter and even confectionery. The most successful is the Kaira District Cooperative Milk Producers' Union Ltd, popularly known as the Amul Dairy. There are also private-sector dairies in operation. Nestlé, Milkfood, Smith Kline Beecham Consumer Brands, Indodan, Glaxo and Cadbury are among the major corporate giants in the milk products business in India.

About 45 per cent of the total milk produced in the country is consumed as liquid milk and the rest is available for conversion to milk products which are used by the local sweetmeat producers. Only about 10 per cent of the available milk is processed through the organized sector. Ghee, butter, cheese, milk powder, ice cream, malted milk foods, condensed milk and baby foods are the milk products manufactured in the organized sector. There are over 275 dairy plants and 83 milk product factories in the cooperative, private and public sectors with an installed capacity of 16 million litres per day (or 45 million tonnes per year).

A number of state governments run cooperative ventures to produce milk-based products. The major dairy products in the country are baby foods, weaning foods, malted milk products, instant sweet mixes, ice creams, frozen desserts, etc. Cheese production is very limited, although it is growing. Sales of these products are being promoted by intensive advertisements and promotional efforts by the organized sector.

There are restrictions on the exports of selected dairy products. Exports of milk and sterilized milk are permitted only against licences. Recently the Government has allowed the private sector to export milk products.

Constraints and prospects

With the spread of India's White Revolution, the availability of milk per head is expected to increase to 246 grams per day by the year 2000 compared with 165 grams per day in the late 1980s. A significant increase in the availability of milk augurs well for the export of processed milk products. Demand for milk products is estimated at 29.8 million tonnes and 33.8 million tonnes in 1995 and 2000 respectively. The local market is growing, with fast food chains like Pizza Hut entering the local market. The conversion of surplus milk into cheese and milk products offers opportunities for servicing the Gulf and Asian markets, which are short of milk.

State governments often specify milk shed areas for each processing unit, with the objective that the processing unit carries out backward linkage to increase milk yields. Helping small farmers with veterinary and breeding services, artificial insemination, cattle feed to increase milk yields, will be necessary in order to promote healthy linkages. Much research has gone into improving cattle breeds through crossing exotic breeds with Indian breeds, acclimatizing them to the Indian condition and thus improving milk yields. There is scope for technical inputs from foreign investors in research and development to raise milk productivity. Large cooperative infrastructures have been developed at the village level for supplying milk to chilling centres, from where they are transported to the processing plants. In addition, there are milk suppliers who collect milk and supply it to the processing units. Organized milk production in large farms has been tried very selectively.

Climatic conditions require expensive refrigerated transport facilities for moving milk from production areas to processing unit. Similarly, processing dairy products with a short shelf-life needs refrigerated transportation and expensive refrigerated facilities at the retail level. These constraints will have to be overcome through more investment.

FISH PROCESSING

Resource base

India's potential in fisheries is substantially greater than its current levels of exploitation. There is a wide variety of fish available in the Indian waters, including prawns, tuna and pomfret. The total catch of marine and inland fish in 1992/93 was 4.35 million tonnes (see Table III.11). The Government provides support to the small fishermen both by subsidizing fishing boats and by helping with the marketing of products. It also encourages trawling. An estimated 142,450 traditional fishing boats, 34,000 mechanized fishing vessels and 180 deep-sea fishing vessels are in operation. The onshore facilities include four major and 23 minor fishing harbours.

Table III.11. Fish production, 1970/71-1992/93, selected years
(Million tonnes)

Year	Marine	Inland	Total
1970/71	1.09	0.67	1.76
1980/81	1.55	0.89	2.44
1985/86	1.72	1.16	2.88
1988/89	1.82	1.33	3.15
1989/90	2.27	1.40	3.67
1990/91	2.30	1.54	3.84
1991/92	2.44	1.56	4.00
1992/93	2.57	1.78	4.35

Source: Ministry of Agriculture, *Annual Report 1992/93*.

There are opportunities for fresh-water aquaculture in West Bengal, Andhra Pradesh, Tamil Nadu, Kerala and Gujarat. Fresh-water aquaculture has recently started to emphasize carp and catfish. In saline water areas prawn fishing is the major aquaculture and good yields have been established ranging between 8 and 15 tonnes per hectare. Since agro-climatic conditions in India are very suitable for fish growing, the fish-feed industry has potential for growth and is now in a developmental stage.

The vast marine and inland water resources in India have traditionally been utilized only for meeting domestic demand. It was only in the 1980s that the organized corporate sector began exploiting this largely underutilized sector. However, the processing of marine products into canned and frozen forms is carried out almost entirely for the export market. In 1993 there were 223 freezing units with a capacity of 2,170 tonnes, 25 canning units with a capacity of 84.5 tonnes, 129 ice-making units with a capacity of 1,820 tonnes, 24 fish-meal units with a capacity of 419 tonnes and 297 cold-storage units with a capacity of 20,348 tonnes.

Recent trends

Leading industrial companies like Hindustan Lever, NOCIL, Dunlop, ITC, United Breweries, Thapar Group and Amalgam Foods are engaged in exporting marine products. Local demand for fish products has remained high and exports of marine products have continued to record a steady increase over the years, rising more than threefold from Rs 5,980 million in 1988/89 to Rs 17,674 million in 1992/93 (see Table III.12).

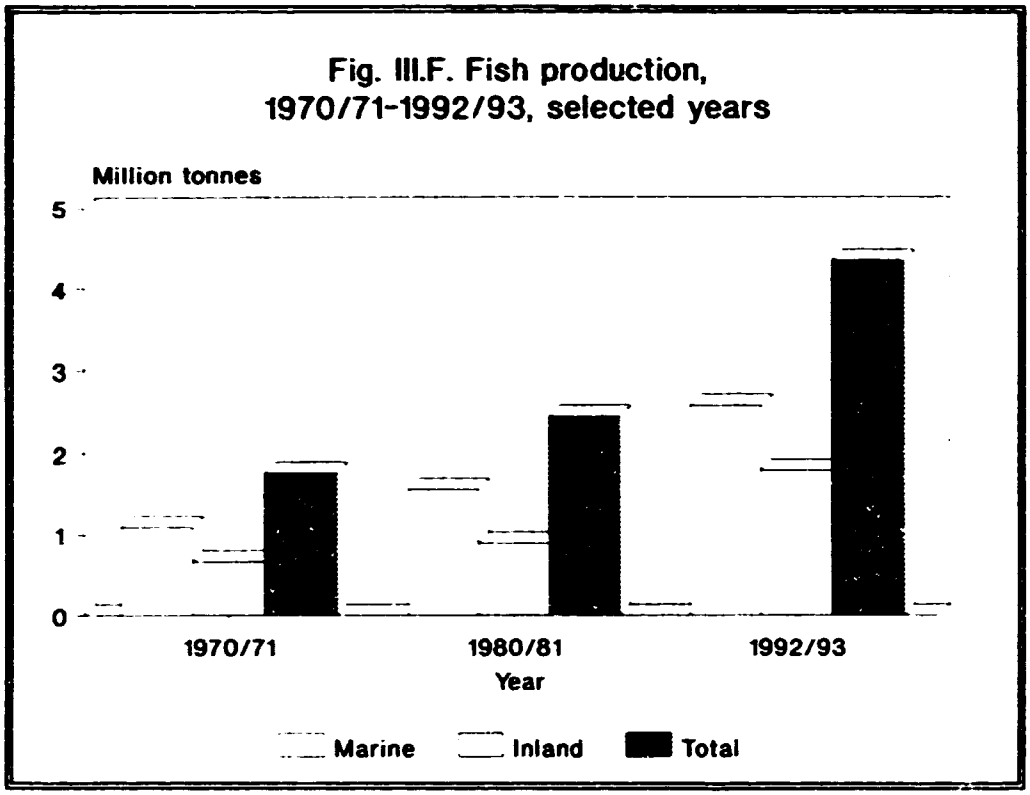


Table III.12. Exports of marine products, 1988/89-1992/93, selected years

Year	Exports (Rs million)
1988/89	5,980
1989/90	6,350
1990/91	8,940
1991/92	13,750
1992/93	17,674

Source: Ministry of Food Processing Industries.

The potential of annual exploitable fishing resources from the Indian Exclusive Economic Zone (EEZ) was estimated in 1993/94 at 3.9 million tonnes, of which tuna is estimated to be around 250,000 tonnes. Efforts are under way to build facilities for handling tuna in fresh/frozen and canned forms and it has been decided to establish tuna and other fish-processing centres. The Government is to provide grants for these projects to the extent of 50 per cent of capital costs.

Constraints and prospects

The total potential is estimated to be almost double the 1992/93 production of 4.35 million tonnes from marine and inland sources. It is estimated that only 10 per cent of the marine catch is accounted for by deep-sea resources, which are underutilized. Trawling has not succeeded because of the difficulty of tracking fish in warm waters, but trawling for deep-sea fishing in the organized sector should help to overcome this constraint. In aquaculture, there is a need for technological inputs for fish farming and securing fish farms from poaching.

BEVERAGES

Beverages such as cola, orange and lemon are amongst the popular soft drinks in India. Fruit juice preparations are also becoming popular. Liquor manufactured in India generally is categorized as beer, country liquor and Indian-made foreign liquor (IMFL). The production of IMFL comprises wine, whisky, rum, vodka, gin and brandy. Premixed drinks using gin, lime, rum and cola are also sold. While the recently introduced draught beer has sold well, canned beer is becoming increasingly popular. The illicit distillation that takes place on a large scale indicates the extent of the unsatisfied demand for liquor.

Resource base

Fruits and vegetables are abundantly available for the production of non-alcoholic beverages. Molasses, a by-product of the sugar industry, is the principal raw material used in India for the production of alcohol. Barley, maize, potatoes, grapes, yeast and hops are the other raw materials used for the production of alcoholic beverages. These are abundantly available in India.

Recent trends

There are 54 enterprises in the organized sector with an installed capacity of 3,592 million bottles of non-alcoholic sweetened beverages. The production of soft drinks rose from 1,350 million bottles in 1980 to 2,800 million bottles in 1992. The unorganized sector accounts for 25 per cent of the total production of soft drinks in India. Well-established producers with widely advertised brands continue to penetrate the huge domestic market. Pepsi and Coca-Cola are the market leaders.

The policy in earlier years was to severely discourage the consumption of alcoholic beverages; this resulted in the imposition of total prohibition in some states. However, the resultant problems of illicit distillation and spurious liquor affecting the health of the population, leakage of revenue and problems of enforcement, led to a review of the policy. Licensing for the manufacture of beer and alcohol based on non-molasses raw materials was liberalized in 1989. The industry bears a steep tax burden and is a major source of revenue for state governments. In spite of the high prices, demand is large and has been increasing at a significant rate. This makes additional capacity creation viable and attractive.

There are 32 licensed breweries producing beer, with an installed capacity of 130 million litres. Of the 212 distilleries producing alcohol with an installed capacity of 1,933 litres per annum, only 24 distilleries are engaged in the production of IMFL and 31 units produce country liquor. The remaining 157 distilleries manufacture either industrial alcohol or bulk as potable alcohol for further processing in other distilleries. Only recently has wine production begun on a substantial scale.

Box III.B. Policy for alcoholic beverages

Alcoholic beverage production is subject to compulsory licensing. For a number of years there was a ban on the creation of additional capacities for the brewing of beer, but this was lifted in 1989. There has been no ban on 100 per cent export-oriented units. For other potable alcohol, the ban on manufacture was relaxed in 1988 to permit production from non-molasses-based raw materials.

The import of potable alcohol is subject to government licensing.

There are restrictions on the movement of liquor between states and where permitted such movements carry taxes.

Fresh applications for the manufacture of beer and potable alcohol for Domestic Tariff Area (DTA) sales have not been entertained since March/April 1991. However, non-resident Indians with 100 per cent foreign equity can apply for industrial licences for the manufacture of beer for DTA sales.

Source: Ministry of Food Processing Industries.

Constraints and prospects

Beverage producers continue to reap high profits from buoyant domestic demand despite the problems of illicit distillation and the sale of spurious products. The new capacity for the manufacture of a wide range of alcoholic and non-alcoholic beverages reflects the growing demand. India is also emerging as one of the major exporters of soft drinks.

CONFECTIONERY AND CHOCOLATES

Resource base

Cocoa beans, milk and sugar are the principal ingredients of confectionery and chocolate products. Coconut is also being increasingly used for the production of confectionery and chocolate products. Indian coconut production of 7.7 million tonnes accounted for 18 per cent of the world production of coconut in 1993. India's resource base for sugar and milk can be gauged from information furnished in the respective product profiles in this chapter. Since the domestic production of cocoa beans is inadequate, the confectionery and chocolate industry depends heavily on imports (see Table III.13).

Table III.13. Production and imports of cocoa beans, 1991-1993
(Thousand tonnes)

	1991	1992	1993
Production	6	7	7
Imports	1,038	1,800	..

Source: FAO. *Yearbook of Production Statistics, 1993* (Rome, 1994), and *Yearbook of Trade Statistics 1992* (Rome, 1993).

Recent trends

There are six major chocolate manufacturers and around 25 confectionery units in the organized sector. A few transnationals are entering the confectionery and chocolate industry and are in the process of setting up new plants. The large major transnationals, such as Nestlé and Cadbury, are the two market leaders. A local Indian milk cooperative-based producer, Amul, is also a large producer of chocolates. The production of cocoa products, such as chocolates, drinking chocolate, cocoa butter and cocoa-based milk foods, has been steady in recent years (see Table III.14) and the total production of such products has been estimated at 41,200 tonnes for 1993/94.

Exports of chocolate and related products grew from 97,000 tonnes in 1990 to 100,000 tonnes in 1992, but this is negligible in value terms. The principal markets are Australia, Canada, Nepal, Saudi Arabia and Sri Lanka.

Table III.14. Production of cocoa products, 1990/91-1993/94
(Tonnes)

Year	Production
1990/91	39,383
1991/92	40,600
1992/93	40,700
1993/94[a/]	41,200

Source: Ministry of Food Processing Industries.

a/ Estimate.

Constraints and prospects

The consumption of chocolates and confectionery per head per year in India is low compared with the developed world: the total size of the chocolate market is estimated to be around 9,000 tonnes and of confectionery products around 30,000 tonnes, so that there is still scope for substantial growth. With the large emerging middle class of close to 250 million people, the demand for confectionery and chocolate products is on the increase. The easy availability of raw materials,

including sugar and imported cocoa beans, means that large foreign investors could make India a base for servicing the Asian and Gulf markets.

INSTANT CONVENIENCE FOODS

Resource base

India's strong agricultural base offers a wide range of raw materials for the production of a variety of ready-to-cook and ready-to-eat products. The industry, however, is still in its embryonic stage, with a preponderance of small-scale activities. But this profile is changing fast and transnational companies are making deep inroads into the production of convenience foods.

Macaroni and noodles are an emerging sector and two large transnationals, Nestlé and Brooke Bond, have joined India Nissan Foods. This convenience food is gaining importance and is a favourite with the younger generation. Companies such as Unilever are closely examining the market for expansion and growth. Pepsi has already made a large investment in production facilities and the marketing of snacks.

Recent trends

The production of instant convenience food items rose from 12,612 tonnes in 1987 to 15,200 tonnes in 1992, growing at an annual rate of over 20 per cent. This increase stemmed largely from technical progress in the processing and packaging industries, which led to the introduction of a wide range of products.

Pepsi Foods' recent endeavour typifies the emerging trends in instant convenience food production. The company is using part of its capacity, which remains idle due to the seasonal unavailability of raw materials for making tomato paste and processing chillies. A production facility has already been set up for the aseptic packaging of chilli paste with a shelf life of around 18 months. Pepsi hopes to penetrate successfully the markets of the Pacific Rim countries which import relatively expensive chilli paste from Thailand and Malaysia. Research is also being done into converting tomato and chilli pastes into powders.

This industry offers opportunities for linkage with the farmers for the production of the right quality raw material. For example, Pepsi Foods has imported Frito Lay potato seeds, which are the high-solid, low-sugar variety. These are currently being multiplied in the hills of Himachal Pradesh before being introduced to farmers in Punjab and other areas.

Constraints and prospects

There exists a very large market for snack foods in India, estimated to be over 300,000 tonnes per year. Of this, branded products from the organized sector account for less than 1 per cent of the total market. The market for soups, ready-to-eat meals, instant food mixes and dehydrated products is also very underdeveloped. However, with the growing number of working couples, there is tremendous potential for growth.

The high cost of the packaging material and the short shelf-life in hot climatic conditions act as constraints. Technological inputs into packaging will be necessary, and cost-effective programmes will be required to cut the expenditure on packaging, in order to enable the brand-name products to be priced reasonably.

B. TEXTILES

The textile industry is the largest industrial subsector in India, accounting for 20 per cent of industrial production and over a quarter of total export earnings. In 1960/61, textiles accounted for 29 per cent of the manufacturing value added. As was to be expected, its share has declined over time as India's manufacturing sector has diversified with the addition of new fast-growing industries. Nevertheless textiles still account for about 10 per cent of the value added in manufacturing and about 19 per cent of employment in the organized sector. If employment in the unorganized sector is taken into account, its share in total industrial employment is much larger.

The weaving sector of the industry spans the entire range of technology and corporate organization from organized sector mills at one end to a decentralized traditional handloom sector at the other, with a very substantial decentralized powerloom sector in the middle, where individual units are small but use modern technology in the form of powerlooms.

Resource base

The textile industry in India continues to be predominantly cotton-based although the share of cotton in the total raw material requirements declined from 93 per cent in 1970/71 to 83 per cent in 1993/94. The share of polyester fibre in the total fibre consumption of the textile industry increased from less than 1 per cent in 1970/71 to 2 per cent in 1980/81 and further to 8 per cent in 1993/94.

Cotton is mainly cultivated in the states of Maharashtra, Gujarat and Madhya Pradesh in the western region, Punjab, Haryana and Rajasthan in the northern region, and Andhra Pradesh, Karnataka and Tamil Nadu in the southern region. India produces a very wide range of cotton varieties and generally has a surplus of long and extra long-staple cotton which is in high demand for exports (see Table III.15). India's cotton yields are much lower than those prevailing in other major cotton growing countries because of the inefficient use of land for growing cotton in India. Cotton prices in India are generally lower than world prices.

Table III.15. Production, consumption and export of cotton, 1980/81-1993/94, selected years
(Million tonnes)

Cotton year[a/]	Production	Consumption	Exports
1980/81	1.33	1.30	0.12
1990/91	1.99	1.96	0.20
1991/92	2.02	1.75	0 01
1992/93	2.30	2.11	0.23
1993/94	2.30	1.98	0.05
	Compound growth rate (Percentage per annum)		
1980/81 to 1990/91	4.11	4.20	5.20
1990/91 to 1993/94	4.94	0.33	-37.00

Source: Ministry of Textiles.

a/ The cotton production year is September-August.

The man-made fibre industry grew substantially after the establishment of large petrochemical plants in the late 1970s. The production of man-made fibres and yarns (excluding tyre yarns) increased more than four times, at the rate of 11.7 per cent per annum, from 187,900 tonnes in 1980/81 to 787,600 tonnes in 1993/94. This group includes both cellulosic and synthetic fibres and yarns. The production of cellulosic fibre and yarn increased relatively slowly, at the rate of 4.7 per cent per annum, from 124,000 tonnes to 225,000 tonnes. However, the production of synthetic fibres and yarns increased much faster, at the rate of 18.2 per cent per year, from 63,900 tonnes to 562,500 tonnes (see Table III.16). In the 1980s India developed a significant domestic capacity for production of synthetic fibres and yarns, but much of the capacity was of a high-cost nature with suboptimal-scale plants supported by high protective walls. India has no particular resource advantage in producing synthetic fibres and yarns, being a net importer of petroleum products, but over time a synthetic fibres or yarn industry has developed and improved its competitiveness as part of a growing petrochemical industry.

Table III.16. Production and imports of man-made fibres and yarn, 1980/81-1993/94, selected years
(Thousand tonnes)

	1980/81	1985/86	1990/91	1991/92	1992/93	1993/94
Production	187.9	304.6	616.9	639.4	716.5	787.6
Cellulosic fibre/yarn	124.0	132.0	211.1	210.8	210.4	225.1
Viscose staple fibre	82.7	90.0	160.1	158.1	162.5	175.1
Viscose filament yarn	41.4	42.0	50.9	52.7	48.5	50.0
Synthetic fibre/yarn	63.9	172.6	405.7	428.6	506.1	562.5
Nylon filament yarn	20.7	39.4	39.8	30.9	32.5	34.7
Polyester staple fibre	22.4	42.8	134.2	135.9	161.8	188.5
Polyester filament yarn	10.7	67.4	185.3	207.6	246.5	277.1
Acrylic staple fibre	10.1	21.8	42.5	47.0	55.0	62.3
Imports						
Polyester staple fibre	4.3	16.1	10.5	8.4	8.7	..
Polyester filament yarn	1.5	2.1	1.1	0.4	0.3	..
Acrylic staple fibre	11.1	7.8	26.8	3.9	3.3	..

Source: Ministry of Textiles

India has the fifth largest population of sheep in the world. Indigenous wool production is largely of carpet quality. Apparel wool accounts for only about 10 per cent of the total wool production. The requirements of fine quality wool by the organized mills and the hosiery sector are almost exclusively met by imports.

Raw silk production was 14,200 tonnes in 1992/93. India is the second largest producer of raw silk in the world. Seventy per cent of the raw silk is woven in handlooms and the remaining 30 per cent in powerlooms. In order to tap the potential of silk production in the country, a national sericulture project, assisted by the World Bank and the Swiss Development Corporation, has been implemented since April 1989 in the five traditional sericulture states of Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu and Kashmir, and 12 other states where silk production is not a traditional activity.

Recent trends

Trends in production in the textile industry have been powerfully affected by the policy regime. The policy of protecting cotton as a raw material by high taxation of synthetics, combined with high-cost production behind protective walls, has meant that the Indian textile industry is much more cotton-based than it would otherwise have been. Nevertheless the production of synthetic fabrics and blended fabrics has increased rapidly. As shown in Table III.17, the production of cotton yarn increased by only 3.3 per cent per annum between 1980/81 and 1993/94 whereas blended yarns increased at 5.9 per cent and filament yarns at 13.1 per cent. This trend is repeated in the statistics on fabric production. The production of cotton fabrics between 1980/81 and 1993/94 increased at an annual rate of 4.5 per cent, whereas the production of blended fabrics increased at the rate of 6.2 per cent and non-cotton fabrics at a very much faster rate of 11.2 per cent.

Table III.17. Recent trends in textile production, 1980/81-1993/94

	1980/81	1982/83	1990/91	1991/92	1992/93	1993/94
Yarn (thousand tonnes)	1,371	1,263	2,100	2,097	2,222	2,428
Spun yarn	1,298	1,179	1,824	1,806	1,895	2,066
Cotton	1,067	966	1,510	1,450	1,523	1,624
Blends	144	129	207	234	247	304
Non-cotton	87	84	107	122	125	138
Filament yarn	73	82	276	291	372	362
Polyester	11	24	185	207	247	277
Viscose	41	33	51	53	48	50
Nylon	21	25	40	31	32	35
Fabrics (thousand square metres)	12,444	11,635	22,928	22,588	25,045	25,942
By sector						
Mills	4,533	3,006	2,589	2,376	2,000	1,990
Powerlooms	4,802	5,445	16,044	16,089	17,828	18,482
Handlooms	3,109	3,234	4,295	4,123	5,219	5,470
By material						
Cotton	9,488	8,764	15,431	14,674	16,343	16,716
Blends	1,391	1,334	2,371	2,712	2,683	3,030
Non-cotton	1,565	1,587	5,126	5,229	6,019	6,196

: United Nations Industrial Development Organization

Table II.17. Continued.

Compound growth rates (Percentage per annum)

	1981/82-1990/91	1990/91-1993/94	1981/82-1993/94
Yarn	4.4	5.0	4.5
Spun yarn	3.5	4.2	3.6
Cotton	3.5	2.5	3.3
Blends	3.7	13.7	5.9
Non-cotton	2.1	8.8	3.6
Filament yarn	14.2	9.5	13.1
Polyester	32.7	14.4	28.2
Viscose	2.2	-0.6	1.5
Nylon	6.6	-4.3	4.0
Fabrics	6.3	4.2	5.8
By sector			
Mill	-5.3	-8.4	-6.0
Powerlooms	12.8	5.0	10.9
Handlooms	3.3	8.5	4.5
By material			
Cotton	4.9	2.7	4.5
Blends	5.5	7.7	6.2
Non-cotton	12.3	6.7	11.2

Source: Ministry of Textiles.

The structure of the textile industry has also been affected by the deliberate government policy of discriminating against mills over many years. The weaving capacity of mills was tightly controlled, ostensibly to help handloom production. Handlooms were seen as a key labour-intensive sector which required protection against the onslaught of the more capital-intensive mill sector. In the event, the beneficiary of this policy was the powerloom sector. This sector, by virtue of being decentralized, did not suffer from licensing and capacity restrictions placed on the organized sector mills. The technology in powerlooms was comparable to that of the mill sector, except perhaps at the most advanced end of the technology, and it did not suffer from restrictive labour regulations which handicapped the mill sector.

As a result, the mill sector has increasingly consisted of spinning mills. Weaving survives only in the composite spinning and weaving mills, and these have declined over time. In 1960, about 11 per cent of the world's installed spindleage was located in India. This increased to 15 per cent in 1987 with virtually all the expansion in the specialized spinning mill sector. India has the largest number of spindles (26.41 million in 1989) in the world.

Production in the mill sector actually declined from 4.5 million square metres in 1980/81 to just below 2.0 million square metres in 1993/94. Production in the handloom sector increased from 3.1 million square metres to 5.5 million square metres, but the share of handlooms in total production of fabrics declined from around 25 per cent in 1980/81 to about 20 per cent in 1993/94. The powerloom sector in this period grew at an annual rate of 10.9 per cent and actually increased its share in fabric production from 38.6 per cent to 71.2 per cent.

The National Textile Corporation (NTC) was set up in 1968 with the primary objective of managing 16 sick mills that had been taken over by the Government. By 1973 the number of sick mills in government hands had gone up to 103. These were nationalized in 1974. Subsequently, more mills were taken over, bringing the number of mills under the care of NTC to 124. By 1984, the accumulated cash losses of the NTC mills had reached Rs 8 billion, and today they are Rs 27 billion. About Rs 18 billion of these losses have already been reimbursed by the Government of India.

Box III.C. Major highlights of textile policy

India's textile policy has traditionally favoured cotton over man-made fibres. The highly protectionist policy towards the production of synthetic fibres and yarns, combined with a domestic industrial policy which encouraged fragmentation of capacity, ensured that domestic production of synthetic fibres and yarns was much more costly than in the rest of the world. This was compounded by a tax policy which treated synthetic fibres and yarns as luxury goods and subjected them to much higher rates of taxation.

Restraints were placed on the expansion of mills to help the handloom sector which was viewed as an employment-intensive sector. In fact the principal beneficiary of this policy has been the powerloom sector which has expanded rapidly at the expense of both the mills and the handloom sector.

Government policy in the 1960s and 1970s favoured production for the domestic market rather than exports. This was because the policies brought about higher relative profitability in the protected domestic market for a number of reasons, including an overvalued currency. Exports were primarily viewed as a means to acquire licenses/permission to import equipment and consumables for the profitable up-market segment of the domestic economy.

The following are some of the significant policy changes since July 1991:

(i) The textile industry was delicensed in August 1991 under the New Industrial Policy. The Textile Control Order, 1986, was repealed in December 1992 and was finally replaced by the Textiles (Development and Regulation) Order 1993. Under the new policy, no prior approval of the Government is required to set up textile mills, including powerlooms. Restrictions on wool and silk powerlooms have also been removed.

(ii) Machinery for textiles can be imported at a concessional customs duty rate of 15 per cent by exporters subject to an export obligation of four times the value of the machinery. The access to modern textile machinery at reasonable prices through imports is significant because of one of the problems faced by textile mills in the earlier protective regime has been the lack of availability of modern textile machinery within reasonable delivery schedules.

(iii) Customs duty rates on imports of raw materials and intermediates have been reduced substantially. (See Box III.D)

From the peak share of 58 per cent of all developing country exports of textiles (including garments) in 1953, India's share fell precipitously to a meagre 8 per cent by 1969. At present, it is around 2 per cent. The textile industry was a victim not only of the heavy-industries-oriented strategy of industrialization but also of the policies to protect the handloom sector, which actually prevented the expansion and modernization of the mill sector. For example, it was only when the Textile Policy of 1985 emphasized the need for an integrated policy frame for the different subsectors of textiles that the Government lifted the virtual freeze on the weaving capacity of the mills which had been in place since 1956.

The export performance of textiles improved in the 1980s, with exports growing at the rate of 15.8 per cent per annum between 1983/84 and 1993/94 (see Table III.18). In the fourfold increase in earnings from textile exports in the decade ending 1993/94, the dominant contribution was made by cotton textiles. However, exports of textiles from man-made fibres also increased in importance so as to increase their share from less than 7 per cent in 1983/84 to almost 20 per cent in 1993/94.

The increase in jeans exports from India created a growing demand for high quality denim. This provided an opportunity for exploiting India's comparative advantage in the short staple variety of cotton with coarse count yarn. Arvind Mills was the first in the late 1980s to set up a sophisticated dyeing plant, air-jet looms and finishing facilities for denim. In 1994 the company was expected to produce 50 million metres of denim, making it the fifth largest producer of denim in the world. Its exports have also accelerated to reach a level of Rs 1 billion in 1993/94. Modern Group, an export-oriented unit for denim fabrics with a capacity of 10.5 million metres per annum, started production in 1991 with the technical collaboration of Atlantic Mills of the United States. Many others have followed suit, the last to enter being K.G. Denim Ltd of Coimbatore with a capacity the same as the Modern Group and a buy-back arrangement of 40 per cent of its production with its foreign collaborator, Lois International of Belgium. While the high energy costs at present are a constraining factor, the potential for exports is substantial. A major boost to the denim industry has been provided by the setting up of production centres in India by top brand names such as Wrangler and Levi Strauss.

Table III.18. Exports of textiles, 1981/82-1993/94
($ million)

Year	Cotton textiles (man-made/ powerloom), including yarn	Cotton textiles (Handloom)	Man-made fibre textiles	Woollen textiles	Silk textiles	Total
1981/82	316.8	137.4	41.7	168.9	77.7	742.5
1982/83	325.2	133.8	57.1	178.5	85.7	780.3
1983/84	308.9	121.8	49.7	119.2	91.4	691.0
1984/85	396.6	141.6	45.4	128.3	103.4	815.3
1985/86	384.0	131.9	40.8	124.7	127.7	809.1
1986/87	438.6	129.7	53.4	135.5	152.4	909.6
1987/88	796.6	184.1	122.3	125.3	153.8	1,382.1
1988/89	730.2	196.2	185.8	187.8	189.2	1,489.2
1989/90	890.8	205.3	353.9	261.0	189.1	1,900.1
1990/91	1,143.3	227.0	354.2	51.4	243.0	2,013.0
1991/92	1,284.3	281.6	445.1	68.1	274.2	2,353.3
1992/93	1,256.0	339.1	338.0	102.5	236.2	2,355.5
1993/94	1,594.5	413.7	585.8	142.9	252.5	2,989.4

Table III.18. Continued.

Compound growth rates (Percentage per annum)

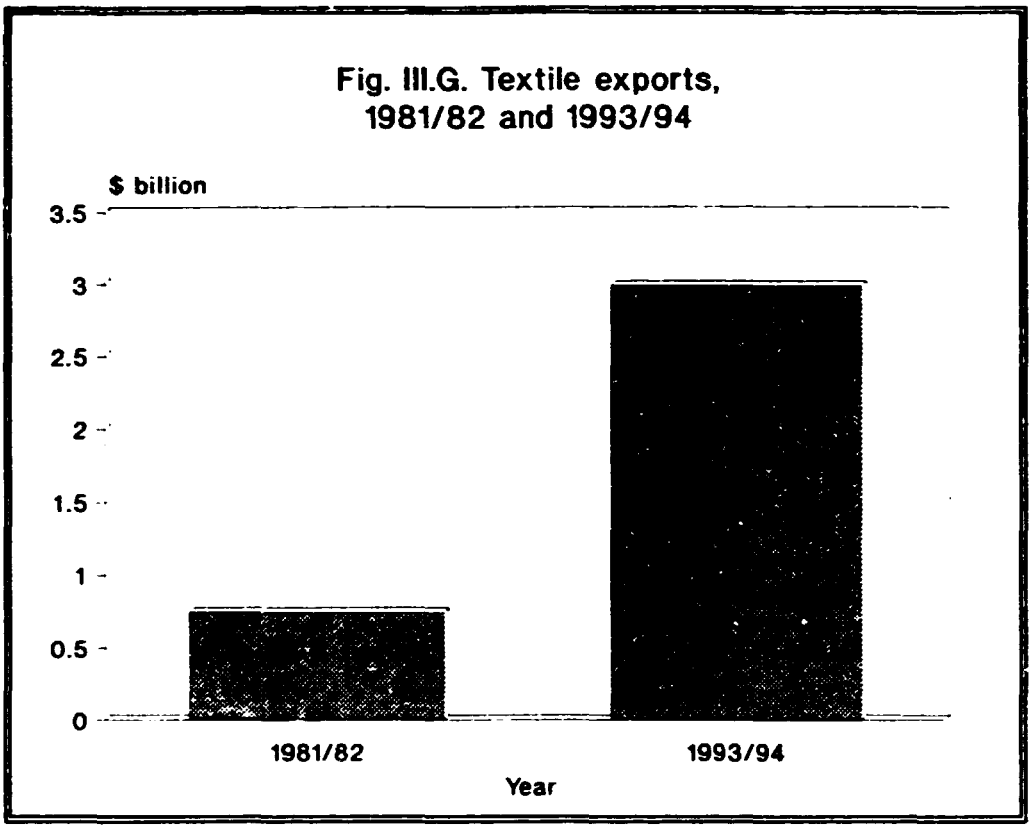
	1981/82-1990/91	1990/91-1993/94	1983/84-1993/94
Cotton textiles (man-made/powerloom), including yarn	15.3	11.7	17.8
Cotton textiles (handloom)	5.7	22.1	13.0
Man-made fibre textiles	26.8	18.3	28.0
Woollen textiles	-12.4	40.6	1.8
Silk textiles	13.5	12.9	10.7
Total	11.7	14.1	15.8

Source: Ministry of Textiles.

Another area of dynamism has been that of terry fabrics. This is an area of cost competitiveness and high margins. A typical high quality terry fabric manufacturer is Welspun Polyesters which started production in late 1993 and earned almost Rs 1 billion in 1993/94, having had enthusiastic response from the buyers of the fabric.

Box III.D. Custom duties: textiles
(Percentage)

	Pre-1991	Present
Polyester filament yarn	180	65
Nylon filament yarn	100	65
Polyester fibres	180 (plus Rs 7/kg)	65
Viscose fibre	40	25
Viscose filament yarn	45	40
Acrylic fibre	150	65
Blended yarns	150	65
Woollen yarn	110	65
Cotton yarn	105	25



The competitiveness of the textile industry can be gauged by the rush of foreign investments in this sector in the post-reform period. Between August 1991 and June 1994, foreign investment proposals worth Rs 3.9 billion were approved for this sector (see Annex Table A-25). The approvals for textile production (including garments) numbered 148, of which 50 were technical and 98 were financial collaborations.

Constraints and prospects

The textile industry in India has to make up for lost time. In order to regain the position in the world which it enjoyed only 40 years ago, the process of restructuring must be carried forward. A policy package is required not only to address the problems of the mill sector, the powerloom sector and the handloom sector within an integrated framework but also to attend to the important issues of fibre use, cotton pricing and cotton yield.

In the mill sector the challenge lies in separating the revivable mills from those which must be closed down. The introduction of Modified Value Added Tax (MODVAT) to textiles as recommended by the Tax Reform Committee should help reduce the working capital requirement and hence the interest cost of the organized textile mills. In many cases, surplus land available with the mills can be disposed of in order to raise resources for the purpose of compensating the labour force and perhaps even rehabilitating some of the mills. But the Urban Land Ceiling Act has stood in the way of the sick mills' ability to sell their land or real estate in order to restructure themselves. The prohibition of new industrial investments in cities with a population of over half a million, which was in force from 1977 to 1991, has also impeded textile restructuring in cities such as Bombay and Ahmedabad.

A substantial amount has been spent from the National Renewal Fund (NRF) on Voluntary Retirement Schemes for close to 35,000 textile workers to help streamline the workforce in the mills. But more needs to be done, especially in the area of retraining and assistance in the redeployment of labour.

In meeting the challenges of globalization more emphasis will have to be placed on quality production for exports. The decentralized system of production prevalent in India has an advantage of lower labour costs and of freedom from excessively rigid labour laws that deny manufacturers in the organized sector the flexibility they need to retrench labour in times of difficulty. But this system of manufacture is not suitable for high quality standardized products. High value products which are marketed under leading brand names demand the highest standards in fabrics and freedom from defects, which cannot be achieved in the decentralized sector. A successful export drive will therefore have to be based to a much greater extent on production from modern mills, while the bulk of the domestic demand for fabrics could be met by the powerloom sector. The handloom sector will have to concentrate more on high value products for domestic as well as export markets.

Increased competition in the international arena is leading to product specialization in textiles. Countries are trying for niche markets to boost their textile exports. There are lessons to be learnt from the experience of the East Asian economies such as China, Hong Kong, Republic of Korea and Taiwan Province of China, which now dominate world exports in textiles and clothing. Clothing accounted for 55 per cent of the textile exports from Taiwan Province and for 86 per cent of those from Hong Kong in 1988/89. Except for Pakistan, whose cotton yarn exports accounted for nearly one half of its total textile exports in 1988/89, other Asian economies are increasingly focusing on clothing exports.

The Uruguay Round Agreement to phase out the Multi Fibre Arrangement (MFA) over ten years holds out the prospect of a liberalized world trade regime in textiles. Countries which have a competitive edge should be able to do well. The textile industry in India must modernize rapidly if it is to meet this challenge.

The Agreement will have a significant impact on textiles and clothing in two ways. Firstly, quotas on specified products will be gradually abolished over a ten-year transition period.[1/] This would involve a 16 per cent reduction in the quotas for total imports into the MFA quota countries and areas (United States, European Union, Canada, Finland, Norway and Austria) on the date of commencement of the agreement, 17 per cent after three years, 18 per cent after four years and the remaining 49 per cent at the end of the transition period. Secondly, the agreement encompasses "growth factors" of 16, 25 and 27 per cent, respectively, applied to the normal quota growth rates under the existing bilateral agreements for the products that remain under quota. From the date of coming into force only multilateral arrangements under the Uruguay Round Agreement will apply to the textiles and clothing sector while bilateral discriminatory practices adopted by quota countries will cease to exist.

India stands to gain from the Uruguay Agreement in textiles and clothing notwithstanding the fact that the liberalization of the sector is back-loaded during the ten-year transition period. The back-loading will be offset by the above-mentioned "growth factors" in quotas during the transition period. This period would need to be utilized for strengthening the competitiveness of the industry with a view to positioning the industry to meet competitive pressures from other developing countries in the post-MFA period. Concerted efforts are required to upgrade technology, improve quality and strengthen marketing. Investments in the modernization of textile and garment factories are needed to improve quality and diversify exports, particularly of cotton-based products.

1/ United Nations Industrial Development Organization

where India enjoys competitive strength. Even though redeployment of textiles and garments production from high-wage economies (Taiwan Province and Hong Kong) to low-wage countries is already taking place within the Asian region, Indian textile and clothing industries will face fierce competition from other developing countries, especially Bangladesh, China, Indonesia, Pakistan, Sri Lanka and Viet Nam, in a quota-free world. This will once again provide Indian textiles with an opportunity to regain their position in world trade.

C. GARMENTS

Resource base

The resource base for the garment industry is provided by the textile industry in India. The fibre base for garments centres around cotton for woven clothes and wool for knitwear. The cotton garment market is still active in the richer nations of western Europe and in the United States despite the strong emergence of low-cost, durable synthetic blends. The use of synthetic and blended fabrics in Indian garments, which was minimal until 1980, picked up sharply during 1985-1990. Unlike the successful garment-exporting economies such as Hong Kong, Taiwan Province and the Republic of Korea, which do not grow any cotton but make use of their access to the world market for raw cotton, the Indian cotton textile industry has relied on the domestic production of raw cotton for the bulk of its requirements.

Recent trends

Garments have emerged as one of the most dynamic segments of the textiles sector. Exports of ready-made garments grew at the rate of 18.5 per cent per annum over the ten-year period ending in 1992/93. Both in 1992 and 1993, garment exports from India not only exceeded the targets set by the Government but grew almost twice as fast as world exports, 20.1 per cent and 20.2 per cent in 1992 and 1993, respectively. Garment exports have become the single largest net foreign exchange earner, accounting for about 15 per cent of the country's export earnings. It is significant that these exports have taken place with very little import content.

The garment export sector centres on extensive subcontracting system making use of powerloom fabrics and second-hand machinery. Hard currency areas such as the United States and the European Union have been the principal markets for India's garment exports. The apparel industry in the developed western nations is characterized by a large degree of protectionism through high tariffs and quantitative restrictions incorporated in the Multi Fibre Arrangement (MFA). Although these trade barriers have acted as a major stumbling block, India has been able to reap the maximum benefit from this constrained scenario by fully utilizing the quotas that have been made available. Still garment exports from India account for only 2 per cent of world trade. The recent change in the policy of the Government of India to allow large-scale units to enter the garment industry if they undertake an export obligation of 50 per cent of their production is a move to help exploit the potential for garment exports further.

India's garment exports have catered to the global market, with different economies acquiring prominence at different points in time. In 1970, the former Soviet Union was India's major export market, accounting for more than 50 per cent of its garment exports. During the 1970s the share of the developed countries increased rapidly, while that of the developing countries and the former Soviet Union fell considerably.

During the decade 1983-1993, the principal export markets for Indian garments have been the quota-controlled regimes of western Europe and the United States. During this period, the relative shifts in the shares going to the United States and the European Union have largely been governed by the extent to which the quota allocations to India were increased (see Table III.19). The share of east European economies declined from 13 per cent in 1983 to 6 per cent in 1993, while that of the developing economies as a whole remained stagnant at around 10 per cent.

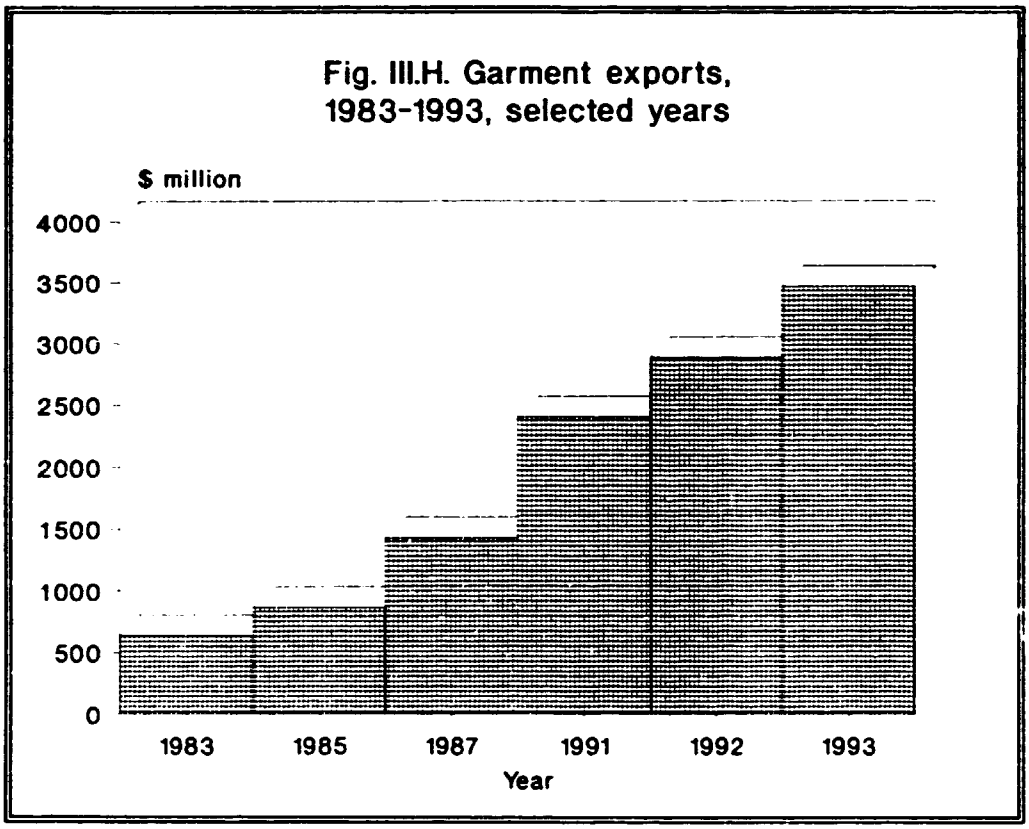
Table III.19. Garment exports by destination, 1983-1993, selected years

Destination	1983	1985	1987	1991	1992	1993
			Value ($ million)			
Western Europe	255	325	708	1,117	1,378	1,674
United States	219	283	466	590	781	892
Japan	14	33	29	83	125	119
South East Asia	1	2	7	13	15	21
Soviet Union/CIS[a/]	71	141	128	128	71	172
Eastern Europe other than former Soviet Union	12	10	9	41	47	41
West Asia and North Africa	10	8	13	134	163	211
Others	52	61	69	295	303	337
Total	**634**	**863**	**1,429**	**2,401**	**2,883**	**3,467**
			Share (Percentage)			
Western Europe	40.2	37.7	49.5	46.5	47.8	48.3
United States	34.5	32.8	32.6	24.6	27.1	25.7
Japan	2.2	3.8	2.0	3.5	4.3	3.4
South East Asia	0.2	0.2	0.5	0.5	0.5	0.6
Soviet Union/CIS[a/]	11.2	16.3	9.0	5.3	2.5	5.0
Eastern Europe other than former Soviet Union	1.9	1.2	0.6	1.7	1.6	1.2
West Asia and North Africa	1.6	0.9	0.9	5.6	5.7	6.1
Others	8.2	7.1	4.8	12.3	10.5	9.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source Apparel Export Promotion Council, *Handbook of Export Statistics*

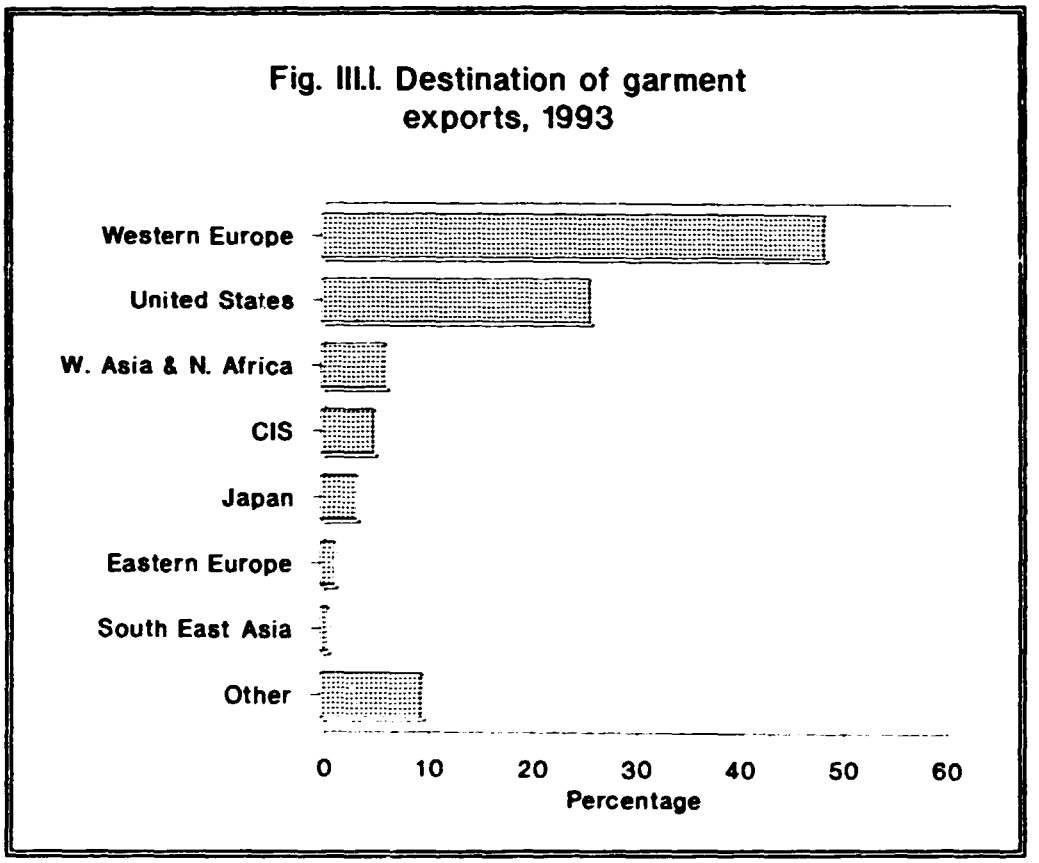
a Figures for 1983, 1985 and 1987 refer to the former Soviet Union, those for 1991, 1992 and 1993 are for the Commonwealth of Independent States

Japan is a fast growing non-quota market for Indian garments. India's garment exports to Japan increased from $14 million in 1983 to $119 million in 1993, although India supplies at present no more than 1 per cent of the garments imported by Japan. Amongst the developed countries, Japan's import regulations on garments and textiles are undoubtedly the most liberal.



Since three-quarters of India's garment exports are to the restricted markets of the United States and the European Union, any increase in exports to these countries can come about only by improving the quality and thereby increasing the value of the garments sold. Though India has fully utilized its quotas in almost all the countries and categories during recent years, the unit value realization has been rather low. A new Export Entitlement Distribution Policy for 1994-1996, generally known as the Quota Policy, has been announced with a view to increasing the unit value realization for quota items, simplifying procedures and imparting greater transparency in quota allotments.

Garments are reserved for the small-scale sector, which means that production units cannot exceed an investment level of Rs 6 million in plant and equipment and Rs 7.5 million for ancillaries. Larger units are only allowed to be set up if they export 75 per cent of production. However, in July 1993, these restrictions were liberalized to allow non-small-scale garment units to be set up with an export obligation of 50 per cent, provided investment in fixed assets in plant and machinery does not exceed Rs 30 million. The Government has also followed, since July 1991, liberal policies on foreign investment and technology agreements, including the free use of foreign brand names.



The competitiveness of the Indian textiles and its clothing industry can be seen from the influx of international giants such as Benetton, Hugo Boss, Lacoste, Pierre Cardin, Van Heusen, Louis Phillipe, Arrow, Wrangler and Levis, to name a few. These multinational concerns are all setting up production bases in India to tap the growing domestic market and exploit the comparative advantage offered by India for exports from this sector. Foreign investment approvals since July 1991 have amounted to $124.5 million.

Constraints and prospects

A major constraint to the realization of India's full potential in the garment sector has been the policy of reservation of garment production to the small-scale sector. Most companies consider an export obligation of 75 per cent, and that in perpetuity, to be an unduly stiff imposition. Consequently, there was very little response from large-scale undertakings for the manufacture of garments. The liberalization of July 1993 has significantly weakened this constraint, but the reservation policy remains at variance with the new liberal regime.

There is scope for substantial investment in the garment industry in specialized products. Increased foreign investment, besides bringing in the much needed foreign equity, would expose Indian garment manufacturers to the kind of technology and processing being adopted by internationally reputed garment manufacturers. India's competitors, including Hong Kong, the Republic of Korea, China and Taiwan Province have been pursuing a liberal foreign direct

investment policy aimed at upgrading the quality and improving the level of technology in the garment industry. In India, there is an urgent need to upgrade the technology of garment manufacturing as well as to develop human skills to absorb such technological upgrading.

India's garment export industry has flourished on account of cotton-based apparel. Its garment exports are still focused on fashion clothing items which are characterized by rapidly shifting consumer tastes and high obsolescence. This is not to suggest that India should desist from exporting these items just because they are volatile in nature. But it would be better for India's garment exports in the long run if these fashion garments were coupled with standard garments which are usually based on synthetic or blended fabrics. Higher value addition could be attained using a blend of man-made fibres.

Small exporters have a limited volume of demand for specific fabrics for particular purposes. Short runs of specific designs with stringent quality demands typify the fabric requirement for ready-made garments. This has deterred integrated mills from supplying fabric to garment exporters. This in turn has necessitated greater reliance on powerlooms where quality control standards are difficult to enforce. The reorientation of the mill sector to the fabric requirements of the apparel sector will become feasible only if the apparel sector itself undergoes some restructuring to strive for higher growth in exports of standardized garments based on standardized fabrics. India at present lacks the fabric base suitable for exports such as has been built up, for example, by China. On the other hand, imported fabrics sourced by countries and areas like Hong Kong and the Republic of Korea are cheaper than the fabrics domestically available to the Indian garment exporters.

The fabric producers need access to internationally priced man-made fibres, and these industries, in turn, require internationally priced raw material inputs. The size and internal efficiency of the synthetic fibre producers is now such that they can produce competitively priced fibre if their inputs are provided at international prices. This is a major issue which will determine the future substantial growth of India's garment export industry.

Global textile imports show an international specialization trend towards finished products. India can take advantage of the trend by devising suitable production and export strategies. Although the reservation requirement has been relaxed for units which accept an export obligation of more than 50 per cent, it continues to discourage the setting up of large-scale units which could export in large quantities in a quality controlled manner. So far, India has concentrated entirely on the export of cotton-based apparel. Man-made fibre blends account for 60 per cent of the international trade in garments. This growth area will need to be tapped. Already, of the total proposed investment in textiles as of November 1993 of Rs 139 billion, Rs 69 billion is being invested in the man-made fibre industry, while Rs 52 billion and Rs 11 billion are in cotton and blended textiles and in textile products, respectively.

As mentioned under textiles, the conclusion of the Uruguay Round and the agreement to phase out the Multi Fibre Arrangement over ten years represent important developments with immediate implication for India's garment industry. Although the manner of the phase-out involving substantial back-loading is disappointing, there is no doubt that it presents important opportunities for the future. India will face competition from Bangladesh, China, Indonesia, Malaysia, Pakistan, Sri Lanka and Thailand in exploiting these opportunities.

D. JUTE PRODUCTS

India is the single largest producer of jute products in the world, contributing about 40 per cent of global production, compared to 25 per cent by China and 15 per cent by Bangladesh. The jute industry is not healthy by any standard. Production has been stagnant for the last 15 years. There are 73 jute mills in the country providing employment to 250,000 workers but most of the mills are in financial difficulties. As of December 1992, 12 jute mills employing 34,000 workers were closed for this reason. From a situation where 85 per cent of the production of jute manufactures was exported in 1950/51, the industry has come to a stage where only 15 per cent of the production is exported.

Resource base

The jute industry in India was severely affected by the 1947 partition because jute mills were located in West Bengal while the jute growing areas were in East Bengal which became East Pakistan and then Bangladesh. After independence the Government of India initiated a policy of encouraging indigenous cultivation of jute. At present the area under jute is around 865,000 hectares (see Table III.20) mainly in West Bengal, with Bihar and Assam being the other major producers. Jute is mainly cultivated under rain-fed conditions and hence is dependent on the monsoon.

Table III.20. Area, production and yield of jute, 1971/72-1991/92, selected years
(Three-year average)

	1971/72	1981/82	1991/92
Area (thousand hectares)	777	867	865
Production (thousand tonnes)	900	1,080	1,584
Yield (kilogrammes per hectare)	1,256	1,345	1,852

Source: Ministry of Textiles.

Recent trends

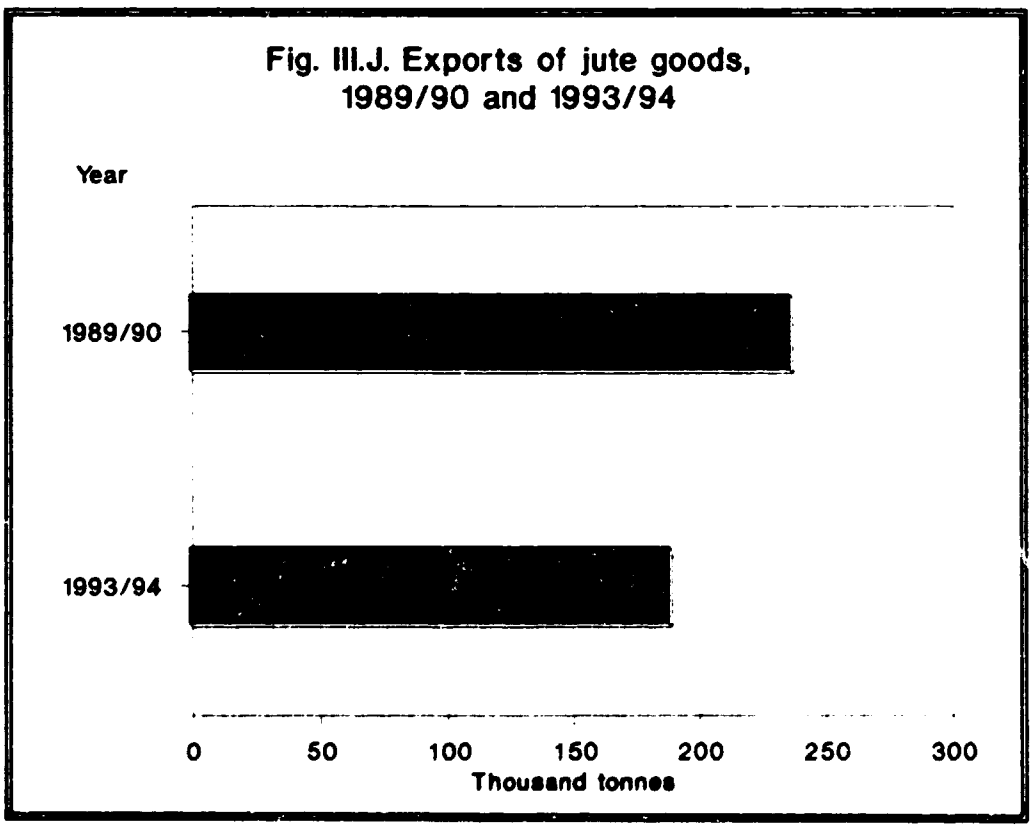
The jute mills supply yarn for the production of hessian, sacking and carpet backing cloth. Hessian and sacking account for about 80 per cent of the production and are consumed mainly in the domestic market for packing food grains, sugar, fertilizers and cement. The demand for these products has stagnated in the face of increasing availability of synthetic materials for packing and carpet backing. Compulsory use of jute goods in the supply and distribution of specific commodities have been attempted by the Government as an interim measure. Data pertaining recent trends in production, consumption and exports are presented in Table III.21.

Table III.21. Production, consumption and exports of jute goods, 1989/90-1992/93, selected years
(Thousand tonnes)

	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95 April-July
Production of jute goods	1,304	1,430	1,278	1,310	1,448	507[a/]
of which:						
Sacking	671	808	650	659	784	239
Hessian	347	331	339	318	342	124
Consumption (July to June)	1,108	1,235	1,080	1,098	1,239	338
Exports of jute goods						
(Thousand tonnes)	237	219	237	196	189	58
(Rs billion)	3.0	3.0	3.9	3.5	3.4	1.1

Source: Ministry of Textiles.

a/ Production data are from April to August.



The disintegration of the former Soviet Union has taken away the biggest market for Indian jute goods, but interest in jute packaging materials is still alive in many of the newly formed states of the CIS region. The Indian jute industry is attempting to recapture these markets without special arrangements. The reduced supplies of jute yarn from Thailand to western Europe have also created a new opportunity for the Indian jute industry. Over the last three years, the jute industry has been making efforts to increase its exports to the General Currency Area.

More important, jute manufactures such as jute/blended furnishing fabrics, made-up items (soft luggage, shopping bags, and travel accessories), floor coverings, jute non-wovens and deodorized jute bags for packaging food materials are receiving special attention from buyers in Europe, Japan, Hong Kong, Republic of Korea and other new markets. Exports of these high value products are expected to increase from less than Rs 600 million in 1991/92 to over Rs 4 billion by 1996/97, their share in total exports of jute goods increasing from 15 per cent to 50 per cent.

Constraints and prospects

The long-term prospects for the jute industry depend on realization of the potential of jute fibre and the ability to exploit its advantages in new lines and activities. FAO has prepared a long list of diversified jute products which includes household textiles (such as jute/jute blend yarns, upholstery, sheetings, curtains, carpets, blankets and jute wall coverings/dividers), jute-based apparel (jeans, safari or summer suits, etc.), jute-based industrial textiles (soft luggage fabrics, tarpaulins and awnings, coated fabrics, geo-textiles), jute- einforced plastics (jute stick particle board and decorative laminates), fire-retardant jute (brattice cloth and barrier fabric), jute fabric/yarn-based handicrafts (shopping bags, jute mattings and floor tiles, dolls and jute-based painted/printed wall coverings and room dividers on frames and jute knits), and jute/jute-blend non-woven items (carpet underlays, insulations, air-conditioners, filter fabrics, wiper cloths and dust bags). The industry has already taken up production of some of these items.

One of the most promising areas has been jute geo-textiles which have applications in erosion control and reinforcement of certain types roads or constructions. Since jute is biodegradable, it is considered far more environment-friendly than synthetics.

These developments provide opportunity to the organized traditional jute industry to redesign its machinery and equipment, adopt new technologies and make fresh investments for production of jute fine yarn, blended yarn, processed fabrics and other items to exploit the opportunities provided by the new and growing markets.

Export-oriented jute manufacturers have realized that they should actively become an integral part of the textile scene and derive maximum advantage from the ensuing liberalized and quota-free international trade in textiles. A UNDP-sponsored jute programme is assisting jute manufacturers in accelerating their export-drive.

The biggest potential for exploitation of jute in non-textile areas are jute composites (wood substitute) and jute pulp for paper manufacture. These two product categories have the potential for bulk consumption of jute fibre in new areas. Selected entrepreneurs are being assisted to establish manufacturing units for jute composites which are now available for test marketing. The user agencies involved in furniture, building, interior decoration, tea, fruits, garments, textiles and engineering are getting involved in the test marketing efforts which would help in the evolving of standard processes, quality specifications and other parameters acceptable at the national and international levels. The Ministry of Urban Development has also included jute as one of the

renewable building materials in the context of the ban on use of timber in all its construction activities.

The use of jute for paper is also being explored and a major international R&D contract for development of jute pulp of international grade and quality is under way. This project envisages cooperation with a large manufacturer of specialty paper whose final objective is to set up a mother jute pulp plant of 50,000 metric tonnes per annum.

With the increase in demand for fibre for different applications for various end-uses, there is an incentive for the jute growing farmer to cultivate jute of different grades and qualities. There is evidence of the emergence of a new class of jute entrepreneurs ready and willing to deploy the fibre for diverse value added applications. The Government of India, in association with these entrepreneurs, is facilitating this development under the auspices of the National Centre for Jute Diversification which was set up in 1992. It is expected to play the crucial catalytic role for dissemination of new technologies and to provide an interface between the entrepreneurs and the ever-changing market demands.

E. LEATHER AND LEATHER PRODUCTS

India has a large but traditional leather industry which is being modernized in order to improve its technological and competitive position. The industry has been dominated by the small-scale and cottage sector which accounts for nearly 85 per cent of total production. Even though government policy focused on this industry in the 1980s to provide incentives and support for the production and export of value-added products, it did not favour the emergence of medium-sized and large units unless they accepted stringent export obligations. The Government's industrial policy of reservation for production in the small-scale sector of this industry has stood in the way of the industry as a whole exploiting the tremendous opportunities offered by the strong increases in world trade.

Resource base

India has the largest livestock population in the world, accounting for 69 per cent of the total. Of the 419 million livestock, 189 million are cattle and 70 million are buffaloes. The annual capacity for tanning and finishing leather is 193 million pieces of hides and skins. The various programmes for improvement of animal husbandry should improve the availability of the main varieties of hides and skins (see Table III.22). The export of raw hides and skins and semi-processed hides and skins is banned in order to allow for the adequate availability of resources for the value-added products. Nowadays the advanced countries are the major producers of hides and skins.

Current policy permits the duty-free import of all types of leathers. This is important because India does not produce thick hides over 1.4 mm, which are used for making a variety of footwear, or pigskins, which are used for making cheap garments, shoes and other articles.

Leather chemicals, also an important part of the leather industry, are produced domestically in substantial quantities. Chemicals account for 10-15 per cent of the final value of finished leather.

Table III.22. Availability of hides and skins in India, 1987-2000, selected years
(Million pieces)

Category	1987	1990/91	1994/95	2000
Cattle	23.6	24.2	25.0	26.4
Buffalo hides	18.0	19.1	20.6	23.2
Total bovine	**41.6**	**43.3**	**45.6**	**49.6**
Goatskins	77.7	87.4	101.5	126.1
Sheepskins	32.8	34.9	37.8	42.4
Total ovine	**110.5**	**122.3**	**139.3**	**168.5**

Source: Eighth Plan Working Group Report.

Recent trends

Global trade in leather and leather products has been registering a rapid growth in the past decade despite the emergence of various substitutes. World imports of leather increased from $4 billion in 1972 to $16.3 billion in 1985 and an estimated $41.5 billion in 1992.

Among the various uses of leather in manufacturing, footwear production accounts for 50 per cent globally, upholstery for 10 per cent, and personal utility items such as wallets, briefcases, handbags, belts for the rest. It is expected that footwear will continue to be the principal leather-using sector, while leather garments and upholstery will improve their shares somewhat. Apart from exporting footwear and footwear components, the Indian leather industry has rapidly diversified into exporting leather garments and leather goods in recent years.

Data from the *Annual Survey of Industries* on value-added for leather and leather products provide a longer-term perspective on the growth of this sector. This information shows that the value-added of this industry, adjusted for inflation, grew at the rate of 8.3 per cent per annum during the 1980s, compared with 5.2 per cent per annum in the 1960s and 1970s. Because of the problems of data coverage for the extensive small-scale and unorganized sectors in this industry, these are generally regarded as underestimates. Industry data on the value of production indicate faster growth.

The dynamism experienced by the leather industry is better reflected in the export growth of 16 per cent per annum between 1972 and 1991. However, the performance up to 1982/83 is less impressive when viewed in the context of the tremendous rise in global trade in leather products over this period. Also, the leather exports of India until 1982/83 consisted predominantly of semi-finished and finished leather, whose share in the total value of exports was 65 per cent in this period.

The beginning of a change in this sector may be traced to 1973, when the export of raw leather was banned and emphasis was placed on a phased reduction in semi-finished leather exports and on increasing the exports of finished leather and leather products. By the late 1970s, with improvement in the quality of leather to international standards, major shoe manufacturers in the United States, western Europe and the former Soviet Union negotiated the import of shoe uppers from India. Shoe upper factories were allowed to be set up in the organized sector, with 100 per

cent export obligation, though this figure was reduced to 75 per cent subsequently. Duties on the import of a range of capital goods were reduced. In the years 1985-1990 there was substantial growth of modern production facilities, particularly in the manufacture of shoe uppers.

The consumption of footwear in India in 1991 was estimated by the Eighth Plan Working Group Report at 380 million pairs, of which 95 million pairs were closed shoes, 250 million pairs were chappals and 45 million pairs were sandals. By 1994/95 the consumption was expected to have risen to 456 million pairs, with 114 million pairs of closed shoes, 282 million pairs of chappals and 60 million pairs of sandals. However, leather footwear production in the organized sector has been slow to grow.

With the disintegration of the former Soviet Union in 1990/91 and the continuing decline of the shoe industry in western Europe and the United States, the demand for shoe uppers stagnated or declined in many countries. This, coupled with the realization that the future of the Indian footwear industry, both in the domestic and the export markets, depended on the growth of footwear production, leading to more investment in setting up shoe factories and in converting existing shoe upper capacity into shoes.

The recent lowering of customs duty on leather machinery and raw materials is likely to strengthen the cost effectiveness of the footwear industry (See Box III.E and Box III.F).

Box III.E. Policy initiatives in leather

1. No industrial licence required for capital goods and chemicals going into leather industry nor for components other than some for footwear.

2. No industrial licence required for tanneries, footwear, leather outerwear and leather goods and accessories if investment in plant and machinery is less than Rs 6 million.

3. Imports of chemicals, components, consumables, etc. allowed liberally at a concessional tariff.

4. Import duty on machinery and raw materials for the leather industry dropped from 25-50 per cent to a uniform 20 per cent.

5. Foreign equity up to 51 per cent and automatic approvals of foreign technology agreements permitted in leather chemicals and auxiliaries, leather footwear, garments and leather goods.

6. Foreign export/trading companies allowed to open branches in India or invest in trading companies in India up to 51 per cent.

7. Duty-free imports of raw hides and skins, chrome-tanned crust and finished leather allowed.

Box III.F. Customs duty reduction: leather sector
(Percentage)

	Pre-1991	Present
Raw leather	105	0
Leather products	150	65
Leather machinery and raw material	25-50	20

The current production of leather footwear from organized factories in India is 30 million pairs per annum and increasing fast. This is revealed in the value of exports of footwear from India, which increased from $103 million in 1989/90 to $243 million in 1993/94. In the corresponding period, export of footwear components decreased from $311 million to $237 million. Footwear and footwear components together accounted for 36 per cent of India's exports from the leather industry in 1993/94.

Exports (measured in US dollars) of leather and leather products from India grew at the rate of 19.5 per cent per annum from 1982/83 to 1990/91, although there was some decline in these exports in 1991/92. The disruption in exports to the former Soviet Union was a major factor. After 1991/92 there was a slow recovery in India's exports of leather products (see Table III.23) mainly because of the increased exports of leather garments and leather goods. Footwear exports also picked up in 1993/94.

A significant development after 1985/86 was a sharp acceleration in the growth of leather garment exports. These exports grew at a rate of 45 per cent per annum between 1985/86 and 1993/94. Even in footwear, there was movement in the direction of value-added with an acceleration in the exports of finished shoes and a decline in the exports of footwear components.

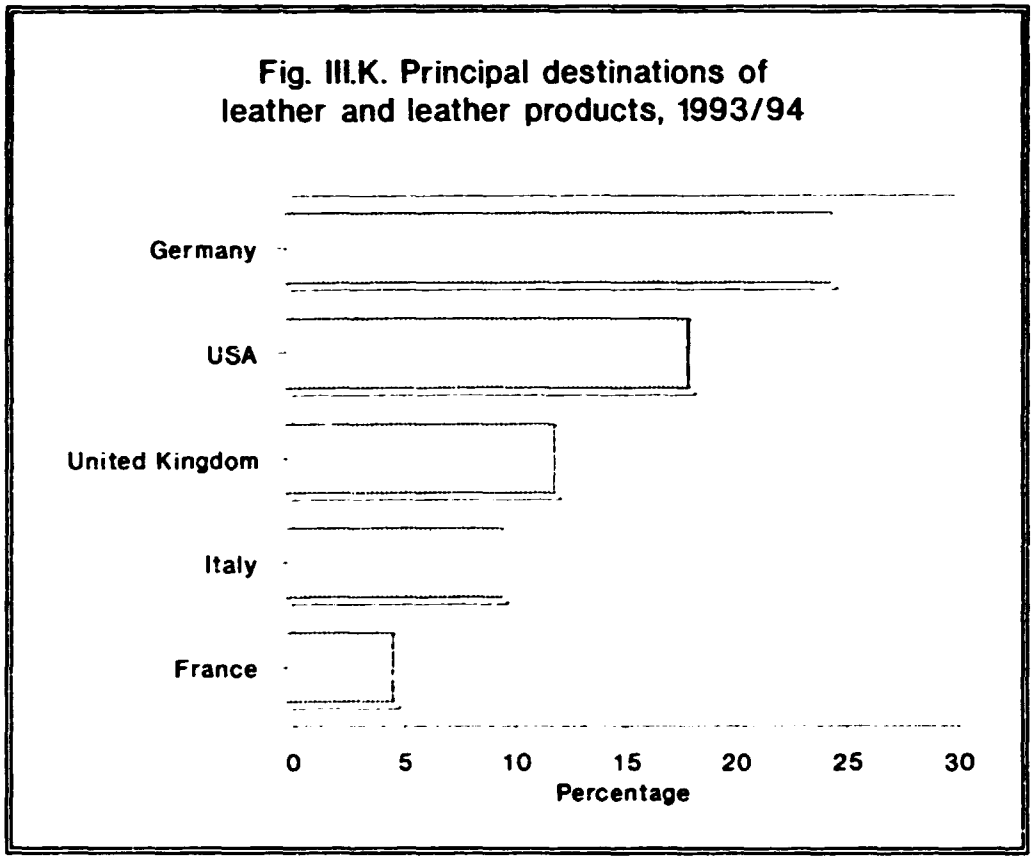
The Government has been providing institutional support to the leather and leather products industry through research into the design and quality improvement of leather. The Central Leather Research Institute was set up by the Government to facilitate the modernization of the industry. The Institute, with its focus on research and training in production, design and quality control, has provided a strong impetus for the development of a modern leather industry in India. Moreover, there is a network of other institutions engaged in the promotion of skills and technical manpower needed for the growth of this industry. The Indian Institute of Leather Products supports the training of technical manpower for footwear, leather garments and accessories. The Footwear Design and Development Institute, the National Institute of Fashion Technology and the Central Footwear Training Centre are other major institutes providing support. The Council for Leather Exports helps the industry to promote exports.

Table III.23. Export of leather and leather products, 1983/84-1993/94
($ million)

	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94
Semi-finished leather	49.7	44.7	42.0	42.0	50.6	28.5	12.6	2.2	-	-	-
Finished leather	182.3	280.5	251.5	320.7	339.1	411.3	416.3	425.2	294.6	280.6	253.6
Leather footwear	21.9	24.3	28.8	64.3	89.3	82.4	102.9	122.9	174.8	164.2	242.9
Footwear components	105.8	120.7	166.1	192.5	226.0	269.4	311.1	319.7	269.1	246.0	236.8
Leather garments	6.3	8.6	14.6	49.8	73.8	105.2	199.8	321.8	298.9	325.6	352.8
Leather goods	40.4	51.9	74.3	77.0	89.8	121.2	175.8	227.0	210.5	261.1	233.5
Total	406.4 (30.6)	530.7 (8.9)	578.1 (29.1)	746.3 (16.4)	868.7 (17.2)	1017.9 (19.7)	1,218.5 (16.4)	1,418.8 (-12.0)	1,247.9 (2.4)	1,277.5 (3.3)	1,319.7

Source: Council for Leather Exports.

Note: Figures in parentheses show growth rate over the preceding year.



To supplement these efforts further, the National Leather Development Programme with assistance from the United Nations Development Programme (UNDP), is being implemented for the integrated development of the industry. The Programme aims to strengthen the industry in critical areas such as human resource development, design and product development, research and development, export enhancement, pollution control and development systems. The four-year programme started in June 1992 and is being implemented through selected organizations and agencies.

The industry appears to be responding to the policy measures as well as to the institutional support as it moves from being a cottage industry to a modern export-thrust manufacturing industry. Over the past decade a number of modern export-oriented units have entered the industry with technical collaboration and equity investment from foreign investors. Puma, Reebok, Nike and Adidas are all trying to get involved in the Indian footwear industry. But for leather products as a whole, foreign investment intentions in the leather sector so far do not match its potential offered. Since August 1991, 61 foreign collaboration proposals for an investment of nearby Rs 520 million have been approved (see Annex Table A-26). A great deal more remains to be done to accelerate the process of modernization.

Constraints and prospects

Demand for leather products is high in the industrialized countries. The annual consumption *per capita* of leather footwear in the United States is projected at over three pairs, and in Germany, the United Kingdom, Italy and France at over 3.5 pairs. The consumption of leather wearing apparel is also very high. The relative saturation of consumption in the industrialized countries, however, has been combined with a decline in their own production bases. For example, non-rubber footwear production in the United States declined from 660 million pairs in 1969 to 163 million pairs in 1993. Similar trends are seen in most European countries. Italy is the only country which is still able to produce a sizeable quantity of leather footwear. The main factor responsible for the decline of the domestic industry in these countries is the rising cost of production due to high wage levels and stringent environmental regulations. Since this is likely to continue, the switch from domestic sources to imports on the part of the industrialized countries will continue to provide additional markets. Future increases in the demand for leather products are also expected to come from consumption in the newly industrializing countries.

Added to the export potential is the attraction of the growing domestic market. India's consumption *per capita* per year of leather footwear is very low at 0.46 pairs, compared with 0.75 pairs in Pakistan, around 3 pairs in the United States and over 3.5 pairs in the United Kingdom. This is expected to rise to at least 0.60 pairs by the year 2000 as incomes rise.

The Extreme Focus Group on Footwear, constituted by the Ministry of Commerce in 1991, highlighted the tremendous growth potential of the industry. This was followed in 1993 by the Murthy Committee Report, sponsored by the Ministry of Industry, which spelt out the potential for the leather sector, keeping in view the growing trade opportunities and India's competitive strength.

Not only is global trade expected to increase in size, but the likely decline of some of the key players in the global market, such as Italy, the Republic of Korea, Spain and Taiwan Province, because of rising wage costs, will also provide fresh opportunities for other exporters. India's realization of this potential will depend upon the ability to compete on grounds of price, quality, delivery and reliability. Government policy has played an important role in modernizing the leather industry, although more remains to be done. In particular, reservation for production in the small-scale sector is anathema for an industry which has such strong export potential.

F. CEMENT

India is the fifth largest cement manufacturer in the world, accounting for about 4 per cent of world production. The cement industry in India underwent a major transformation in the 1980s, recording significant modernization and rapid growth. While *per capita* cement consumption in India remains much lower than in other developing economies such as Brazil, China, Indonesia, Mexico, Malaysia and Thailand (see Table III.24), faster growth of GDP in the new liberalized economic regime is expected to raise the domestic consumption of cement in India. The rapid rise in the importance of the Asian market in world cement trade in the early 1990s also offers promise of medium-term opportunities for cement exports from India.

Table III.24. Comparison of per capita cement consumption, selected countries, 1960-1991, selected years
(Tonnes)

	1960	1970	1980	1990	1991
World average	**104**	**158**	**203**	**217**	**216**
Japan	223	528	704	681	698
United States	299	326	310	324	284
France	289	551	524	444	423
Mexico	89	148	233	247	265
Brazil	63	101	211	173	178
Malaysia		89	196	317	395
Thailand	16	73	118	338	389
China	17	39	80	180	202
Indonesia	5	10	36	77	84
India	18	26	30	57	59

Source. Cembureau.

Resource base

The raw materials required for cement manufacture are limestone, clay, gypsum, slag and fly-ash. India has adequate deposits of limestone, the principal raw material. As of December 1991, the reserves of cement-grade limestone deposits were estimated at 89.8 billion tonnes, sufficient to meet the needs for a few hundred years (see Table III.25). Approximately 1.5 tonnes of limestone are required to manufacture one tonne of cement.

Coal plays a dual role in the manufacture of cement. Apart from acting as a fuel to provide requisite heat and temperature for the formation of clinker, its ash content (basically silica) constitutes raw material for the formation of clinker. India is the fourth largest producer of coal in the world. Its reserves of coal were estimated at 193.8 billion tonnes as of January 1, 1993. The poor and variable quality of the coal, however, has tended to pose problems in production operations and maintenance of the equipment, while also increasing heat consumption. Some cement plants in the south have started using lignite which is available locally. Coal with less ash content is also being increasingly imported as customs duty on coal has been lowered in recent years.

Cement, like all process industries, requires uninterrupted power supply. In India, the quality of power tends to be adversely affected by trippings, interruptions, low voltage and frequency variations. With an increase in the captive power generation capacity of industry from approximately 118 MW in 1982/83 to 722 MW in 1992/93, the proportion of cement production using captive power plants increased from 3 per cent in 1982/83 to 19 per cent in 1992/93.

Table III.25. Limestone deposits as of December 1991

States	Limestone deposits Cement grade (Million tonnes)	Share (Percentage)
Andhra Pradesh	30,434	33.9
Assam	806	0.9
Gujarat	10,399	11.6
Himachal Pradesh	5,505	6.1
Madhya Pradesh	6,209	6.9
Maharashtra	1,809	2.0
Meghalaya	4,308	4.8
Karnataka	11,891	13.2
Rajasthan	7,503	8.3
Bihar	1,070	1.2
Jammu and Kashmir	5,506	6.1
Tamil Nadu	1,406	1.6
Uttar Pradesh	1,329	1.5
Arunachal Pradesh	384	0.4
Goa, Daman, Diu	49	..
Hyderabad	29	0.1
Haryana	50	..
Kerala	90	0.2
Lakshadweep	12	..
Manipur	436	0.5
Nagaland	594	0.7
Orissa	10	..
West Bengal		
Total	**89,829**	**100.0**

Source: National Council for Cement and Building Materials.

The cement industry is also heavily dependent on transportation facilities for hauling coal as well as clinker or cement. The high ratio of transportation cost to value in cement implies that location is a very important element in the calculation of cost. For this reason, most cement plants tend to service regional markets. Even so, transportation is a major input in the industry.

Recent trends

Cement was one of the first industries to be deregulated in the 1980s. The industry had been subjected to a stifling regime of price and distribution controls. By the end of the 1970s it was dominated by technologically obsolete and undersized plants which were supported in their inefficient operations by a regime which regulated not only the price and distribution of cement but also, for the most part, investments. The mention of cement conjured up images of scarcity, adulteration and corruption. The trend in the installed capacities through this period shows a distinct slowing down in capacity additions during the 1970s (see Table III.26).

Table III.26. Trends in capacity and production of cement[a/], 1960/61-1993/94, selected years
(Million tonnes)

End of year	Installed capacity	Production
1960/61	9.30	7.97
1965/66	12.00	10.97
1973/74	19.76	14.66
1978/79	22.58	19.42
1980/81	26.99	18.56
1981/82	29.35	21.06
1982/83	33.51	23.50
1983/84	36.00	27.00
1984/85	42.00	30.13
1985/86	44.00	33.11
1986/87	54.40	36.40
1987/88	57.47	39.37
1988/89	58.97	44.08
1989/90	61.55	45.41
1990/91	64.36	48.90
1991/92	66.59	53.61
1992/93	70.19	54.08
1993/94	76.96	57.96

Source: Cement Manufacturers' Association of India.

a/ Includes mini-cement plants.

The most significant milestone in the policy history of the cement industry in India was the partial decontrol of price and distribution of cement in 1982. Against a background of eroding profitability of the cement industry during the 1970s, a process of policy reforms was set in motion in 1977 when a favourable price formula was introduced for new units ensuring a 12 per cent post-tax return on net worth. In 1982, a segment of the output of the firms producing cement was freed from price and distribution controls. This policy was designed to allow generation of internal funds and make investment in cement attractive. The pricing policy was combined with liberal industrial licensing policies, particularly for large industrial houses, to encourage investment. The relative profitability of cement companies clearly improved in the 1980s. Competition led to the development of brand names for cement. Prices began to decline. In 1989 the Government announced the complete decontrol of the price and distribution of cement.

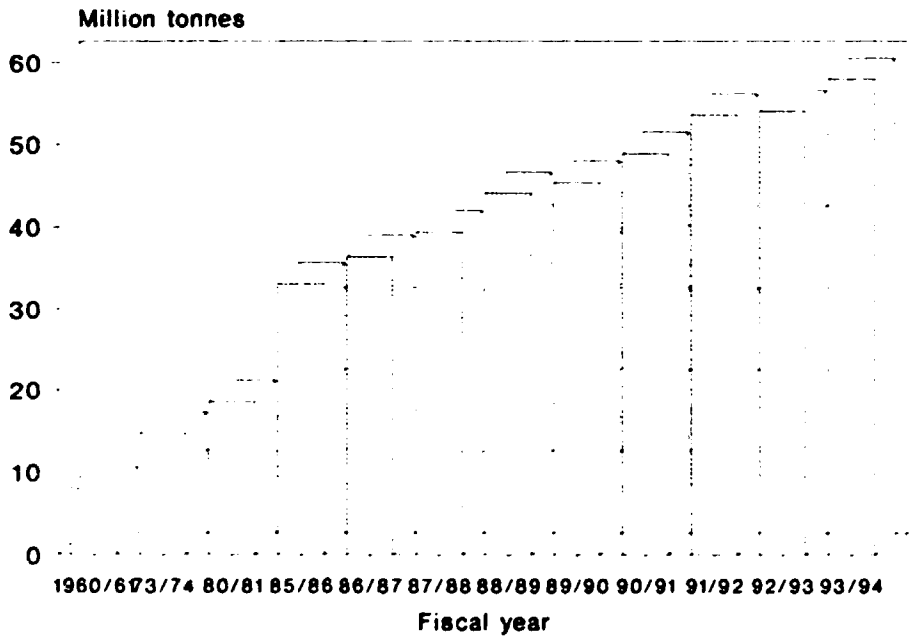
The response from the industry to the Government's policy initiatives of deregulation was very enthusiastic indeed. Between 1982/83 and 1991/92, installed capacity increased at a rate of 7.7 per cent per annum and production at 8 per cent per annum, compared with growth rates of 2.9 and 3.4 per cent per annum, respectively, during the previous decade. There was a flood of entries into the industry from first-time cement producers. The new investments were on scales much larger than the existing ones and in (dry process) technologies which were more energy-efficient. As a result, the growth in capacity and production in the 1980s was associated with rapid modernization of the industry.

[a/] United Nations Industrial Development Organization

A recent study of the cement industry including detailed analysis of 20 corporations in the industry for the past six years shows how some of the new entrants in the post-1982 period distinguished themselves by achieving very high efficiency and profitability levels. The study also shows how competitive pressures drove other firms in the industry to seek to emulate the high standards set by these firms.[2/]

The large cement plants in the private sector, however, coexist with cement plants in the public sector and mini cement plants. The public sector produces a little over 5 million tonnes, roughly 10 per cent of the total cement production. The public sector companies have incurred substantial losses and their future prospects are dependent on Government support. The mini cement plants produce another 3 million tonnes. The mini cement plants are made viable by large fiscal concessions.

Fig. III.L. Cement production, 1960/61-1993/94, selected years



Of the 200 odd mini cement plants, many are closed while others are incurring increasing losses. It may be difficult for them to withstand the competitive pressures arising from the large modern cement plants in the private sector. As for the competition among the latter, in recent years it has taken the form of higher grades of Portland cement to attract business through non-price competition.

With the lowering of the custom duty on cement from 105 per cent before 1991 to 65 per cent at present (see Box III.G), the competition from imports will also increase. But the industry is well-poised to face this challenge.

Box III.G. Customs duty reduction in cement
(Percentage)

	Pre-1991	Present
Ordinary cement	105	65
White cement	105	65

A number of foreign investment proposals amounting to Rs 2.2 billion have been approved in the period from August 1991 to June 1994 (see Annex Table A-27).

Constraints and prospects

The principal constraints on cement production in India arise from the quality of coal, power and railway services. The high and variable ash content of coal leads not only to high energy consumption and pollution but also makes the task of maintaining the equipment more difficult. The interruption and frequency variations in power supply are also damaging to a continuous process industry such as cement. The limited availability of railway wagons and bulk handling facilities impose further constraints for an industry whose operations are highly transport-intensive.

The transportation constraint can be released by the setting up of split level plants. Moving clinker in open wagons is easier and cheaper than moving bagged cement in closed wagons or by road. Also, moving towards a product range which includes Pozzolona Portland cement for some market segments is an alternative which is driven not only by technology and the market but is also environment-friendly as it uses fly-ash.

The cement industry is likely to benefit from the development of roads and ports as infrastructure development goes ahead. The large investments which are expected in the power sector should help provide a crucial input to the industry.

The future prospects of the cement industry in India, however, are linked to the prospect of higher GDP growth in the economy and a favourable environment for exports. As the process of economic recovery picks up, the demand for cement is bound to grow rapidly.

Export markets in the neighbouring countries are also growing. In 1993/94 India exported close to 3 million tonnes of cement and clinker, much more than ever before. Even though cement is typically traded on a marginal-cost-plus basis to keep operating capacities at a high level, the efficient Indian coast-based manufacturers are competitive for exporting to neighbouring countries even on a full-cost basis. Not only have the fast growing South East Asian economies turned major importers of cement and together with Bangladesh and the Middle East constitute a potential market of close to 15 million tonnes, but Taiwan Province and the Republic of Korea also have import needs of an almost equal magnitude. Japan and China have benefited from these openings in recent years, and the Indian cement industry today is poised to take advantage of these positive developments in the region.

G. PAPER AND PAPER BOARD

India has a widespread paper and newsprint industry with 380 paper-mills and five newsprint mills manufacturing annually 2.3 million tonnes of paper and 0.3 million tonnes of newsprint, respectively. India is deficient in newsprint, importing about 40 per cent of its requirement. However, additional capacity in the pipeline together with diversion of capacity from existing paper mills is expected to increase the availability of domestic newsprint to meet future demand. Writing and printing paper accounts for about half of the total paper production in the country, while wrapping and packaging paper and boards account for the rest. The share of speciality paper in the total value of paper production is substantial and growing.

Resource base

India does not have ample resources of hardwood to generate the wood pulp needed for paper production. The constraint on hardwood is the very low forest cover in the country. As against a desired forest cover of about 33 per cent, available statistics indicate that only 19.4 per cent of the total land is under forest cover. Even this percentage is widely regarded as an overestimate since much of the land shown as forest land is seriously degraded. The national forest policy emphasizes the need for increasing forest cover to 33 per cent and stipulates that forest-based industries must raise their raw material needs through farm forestry by involving the growers. The paper manufacturers have, however, pleaded to be allowed to raise plantations on their own. The Department of Wasteland Development is exploring the possibility of using certain kinds of wastelands for plantation.

Recognizing the constraints on the availability of wood, the Government has encouraged, through fiscal incentives, use of unconventional raw materials such as grass, bagasse, wheat and rice straw, jute and waste paper. However, there are various constraints on the ability to use these raw materials because of their seasonal availability, dependence on monsoons, and problems of storage and transportation on account of their bulk. Besides, wheat and rice straw are used as animal fodder, and bagasse is burnt in sugar mills to produce steam. Also, by and large, agricultural waste fibres do not lend themselves to making superior grades of paper and therefore this application is restricted to ordinary varieties of writing and packaging paper. The use of these non-conventional raw materials also requires significant modifications to the existing plant and machinery of the paper plants. Notwithstanding these difficulties, there has been a discernible shift towards use of non-conventional materials in the paper industry. Waste paper has emerged as an alternative to wood pulp to manufacture various grades of paper, mostly packaging grades. A good number of paper plants in India use waste paper, including imported waste paper. Waste paper accounts for 23 per cent of the production of paper and paper board. In keeping with the worldwide effort to recycle waste paper, the paper industry in India is stepping up its use of recycled fibre. India imports almost 50 per cent of its waste paper requirement.

Recent trends

Up to the end of the 1960s, paper production was mainly in large integrated paper-mills. Production lagged behind demand as new investments were not forthcoming in the absence of forest raw materials. Responding to the acute shortage of paper in the early 1970s, the Government introduced controls on the production of writing and printing papers and ordered mills to produce these in fixed proportions. It also requisitioned a fixed percentage of production at controlled prices for supply to government agencies for printing notebooks and other reading material. During this period, the Government also started encouraging the setting up of small paper plants based on unconventional raw materials. These plants had shorter gestation periods

and they were also expected to help industrial dispersal, unlike the integrated paper-mills, which had been set up near forest cover mainly in eastern and southern India.

The new paper-mills of small capacities were allowed to import second-hand paper machinery. Fiscal benefits in the form of concessional excise duty rates were also provided. Several of these small paper plants had capacities below 30 tonnes per day as against a size of 100 tonnes per day or more for the larger mills.

By the end of the 1980s there were over 300 small paper-mills accounting for more than half of the total installed capacity in the paper industry. The uneconomic size of these plants, combined with the industry's overall vulnerability to the supply of raw materials, had led to a large number of these units turning sick. At present 151 paper mills are either sick or not in production. In retrospect the policy of encouraging small paper plants was clearly misplaced. It has led to a steady decline in the average size of paper-mills in India to around 10,000 tonnes in 1993 compared with 50,000 tonnes in South-East Asia and 85,000 tonnes in the Asia Pacific region.

Trends in production of paper and paper board reflect the constraints described above. Production increased rapidly in the early years with an annual rate of growth of 10 per cent per annum in the 1950s and 8 per cent per annum in the 1960s. The growth rate declined sharply to 3.8 per cent per annum in the 1970s and subsequently improved to 5.8 per cent per annum in the 1980s. More recently, there has been an acceleration in growth with total production increasing by 8.3 per cent in 1992 and 6.6 per cent in 1993 (Table III.27). Several policy measures have been taken by the Government with a view to helping modernize the paper industry and reduce the environmental degradation caused by the industry. The major initiatives are listed below in Box III.H.

Box III.H. Recent policy initiatives: paper industry

(i) The industry continues to be regulated through licensing because of environmental concerns. However, units which use 75 per cent or more pulp derived from non-conventional sources such as agricultural residue, bagasse, grass, jute etc. are exempt from compulsory licensing.

(ii) Paper-mills using agricultural residues and other non-conventional raw materials to the extent of 50 per cent or more are charged concessional rate of excise duty (10 per cent).

(iii) Manufacture of paper containing not less than 75 per cent by weight of pulp made from rice and wheat straw, jute, mesta or bagasse is charged a concessional rate of excise duty (5 per cent).

(iv) Wood pulp and waste paper can be freely imported at a low rate (10 per cent) of customs duty.

(v) Import of newsprint is allowed duty-free.

(vi) Automatic approval of foreign technology agreements and foreign equity participation up to 51 per cent is permitted in paper and pulp including paper products.

(vii) The tariff rate on the import of paper declined from 145 per cent in July 1991 to 65 per cent at present.

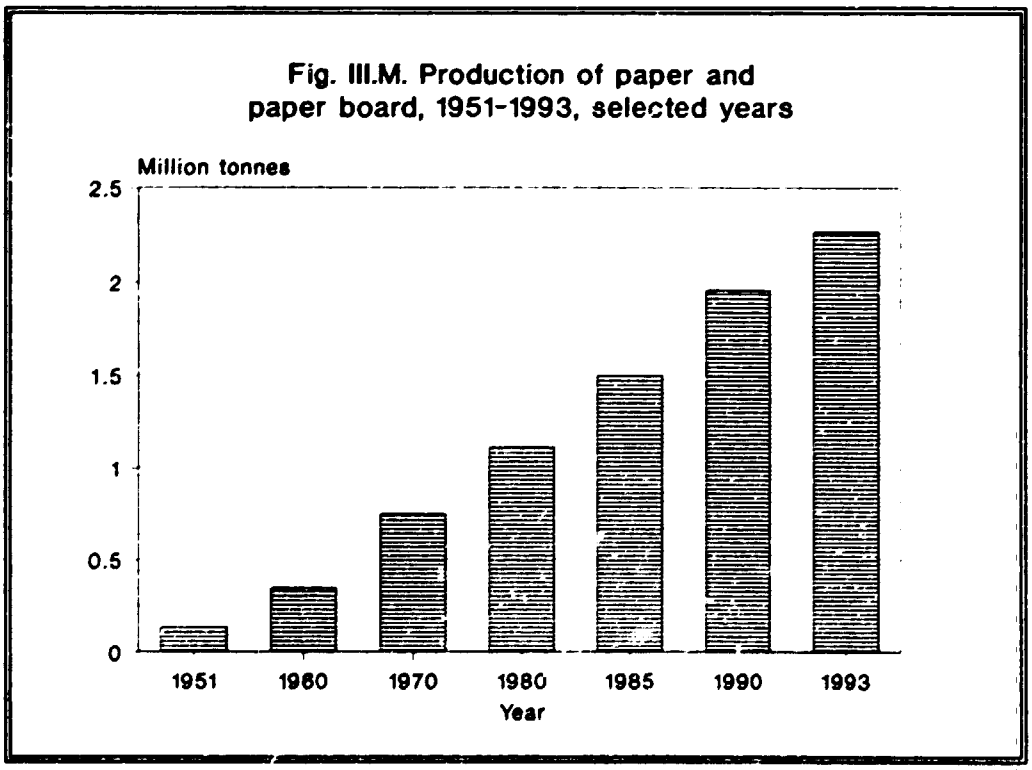
(viii) The budget for 1994/95 has attempted a major rationalization of excise duties by replacing the numerous specific and *ad valorem* rates on different types of paper with a general range of duty of 5 to 20 per cent.

Table III.27. Production and capacity utilization, paper and paper board, 1951-1993, selected years
(Million tonnes)

Year	Installed capacity	Production	Capacity utilization (Percentage)
1951	0.137	0.132	96.35
1960	0.400	0.345	86.25
1970	0.880	0.750	85.23
1980	1.556	1.112	71.47
1981	1.660	1.240	74.70
1982	1.820	1.210	66.48
1983	1.920	1.200	62.50
1984	2.170	1.320	60.83
1985	2.350	1.500	63.83
1986	2.660	1.580	59.40
1987	2.760	1.680	60.87
1988	2.850	1.720	60.35
1989	3.014	1.850	61.38
1990	3.049	1.956	64.15
1991	3.284	1.965	59.84
1992	3.418	2.128	62.20
1993[a/]	3.786	2.268	59.90

Source: Director General of Technical Development, Ministry of Industry.

a/ Estimate.



Constraints and prospects

As literacy and the overall standard of living increases, the consumption of paper is expected to increase. India has a low *per capita* consumption of paper by international standards. *Per capita* annual consumption of paper in India is 3.2 kilograms as against 14 kilograms in China, 125 kilograms in the Republic of Korea, 170 kilograms in Hong Kong and 309 kilograms in the United States. At the same time, the industry is likely to face competition from plastics in some areas of packaging, particularly flexible packaging. New competition will also emerge from superior quality and cost-effective products from global suppliers with reduced import tariffs. India will therefore have to focus on cost-effective production and quality products to become competitive. These challenges will need to be met by upgrading technology, developing economies of scale, manufacturing fibre based on plantation wood and simultaneously improving the productivity of all resources to become cost effective. Pollution management and safety standards will also have to be brought on par with world standards to ensure environment-friendly production.

H. PETROLEUM REFINING

India has a substantial petroleum-refining sector which refines domestic as well as imported crude to produce about 85 per cent of the petroleum products consumed in the country. Until recently the petroleum sector including production of crude oil, refining as well as marketing, was reserved for the public sector. As part of the new economic policies this sector has been thrown open for private-sector investment.

Resource base

The geological resources of hydrocarbons in India are estimated at 21.31 billion tonnes. About one half of these resources are in the form of natural gas. Nearly 61 per cent of the total hydrocarbons are onshore and the remaining 39 per cent are offshore. As of 1 January 1993, the proven geological reserves of hydrocarbons were estimated at 5.9 billion tonnes. These established reserves are spread over Bombay offshore, Kutch offshore, Cambay basin, Rajasthan, the Assam-Arakan belt, Krishna-Godavari onshore and offshore basin and Cauvery onshore and offshore basin. The recoverable reserves of crude petroleum as of 1 April 1993 were estimated at around 780 million tonnes, of which Bombay High offshore alone accounts for 60 per cent, followed by Assam onshore and Gujarat onshore at 20 per cent each.

Trends in crude oil production and imports

Crude oil production increased sharply after the discovery of Bombay High in the mid-1970s. Oil production during the 1980s increased at a rate of 11.2 per cent per year. The production peaked at 34.09 million tonnes during 1989/90 (see Table III.28), of which Bombay High contributed 21.9 million tonnes. Production from the Bombay High oilfields entered into a phase of decline when the overworked oil wells were shut down compulsorily during 1990/91. Thereafter production declined to 33.02 million tonnes in 1990/91 and dipped further to 26.95 million tonnes during 1992/93. Production during 1993/94 was 27.03 million tonnes.

Compared with a growth rate of 11 per cent per year during the 1980s, crude oil production declined at the rate of 5.6 per cent per year during 1990/91-1993/94. The decline in crude oil production is not due to inadequate reserves. India is in a far more comfortable position than a number of other countries in terms of oil reserves, as is indicated by its reserve/production ratio

of 28.1 in 1992 as compared with 9.8 in the United States, 5.9 in the United Kingdom, 14.9 in Malaysia and 22.2 in China. The decline has occurred mainly because of technical constraints such as the high gas-to-oil ratio in Bombay High wells, the high water content in the North Gujarat fields and inadequate water injection in the Gandhar field of Southern Gujarat. In addition to these short-term constraints, there has also been the problem of overexploitation of wells and underinvestment in exploration and other activities.

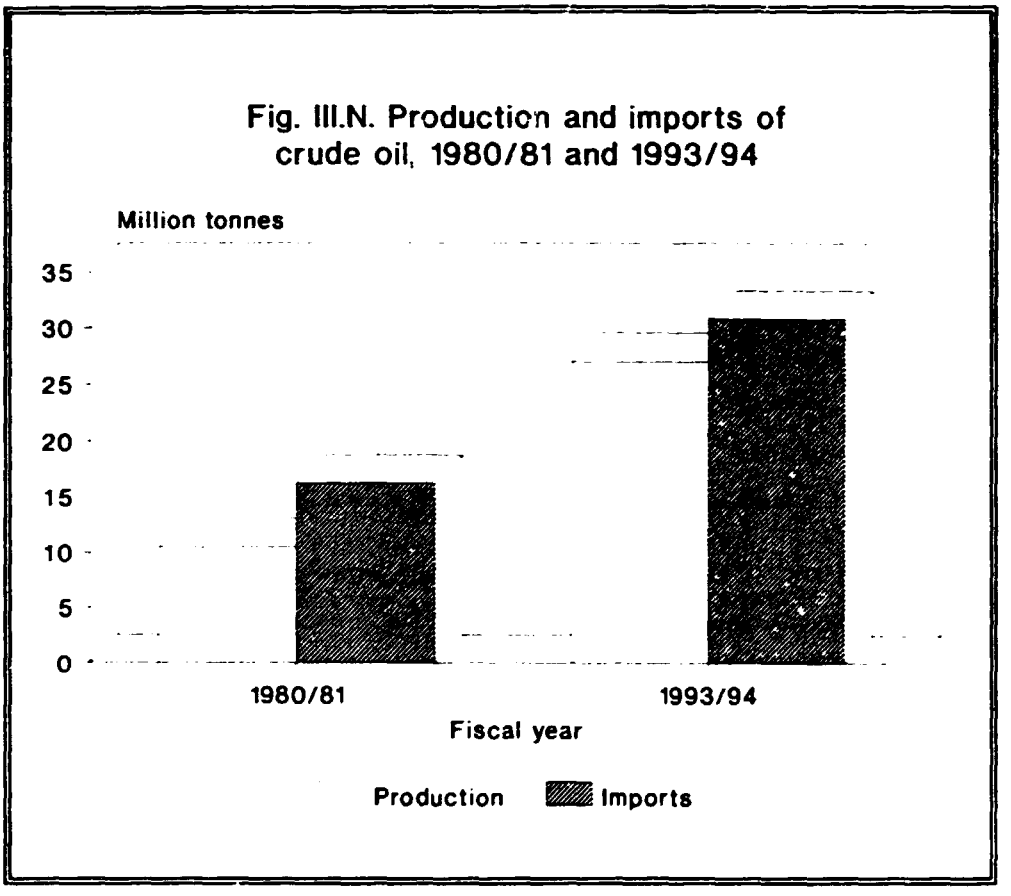
The decline in domestic production led to a higher dependence on imports of crude oil and petroleum products. Imports of crude oil increased at an annual rate of 2.4 per cent between 1980/81 and 1990/91. The share of imported crude in domestic consumption declined sharply from nearly 63 per cent in 1980/81 to 40 per cent by 1990/91. During 1991/92 this share increased to 47 per cent, rising to 55 per cent in 1992/93.

Table III.28. Crude oil production and imports, 1980/81-1996/97, selected years

Year	Production (Million tonnes)	Imports (Million tonnes)	Percentage change over previous year: Production	Percentage change over previous year: Imports
1980/81	10.51	16.25	-10.7	0.8
1985/86	30.17	15.14	4.1	11.0
1986/87	30.47	15.43	1.0	2.2
1987/88	30.36	17.73	-0.4	14.5
1988/89	32.04	17.82	5.5	0.5
1989/90	34.09	19.49	6.4	9.4
1990/91	33.02	20.70	-3.1	6.2
1991/92	30.35	23.99	-8.1	15.9
1992/93	26.95	29.25	-11.2	22.6
1993/94	27.03	30.82	0.3	5.4
Eighth Plan estimates				
1992/93	28.46	..	-6.2	..
1993/94	31.62	..	11.1	..
1994/95	44.35	..	40.3	..
1995/96	45.80	..	3.3	..
1996/97	47.08	..	2.8	..

Source: Ministry of Petroleum and Natural Gas.

Until recently crude oil exploration and production was undertaken exclusively by the two public-sector units, the Oil and Natural Gas Commission and Oil India Limited. Under the new economic policy, petroleum exploration and production, including production from already developed fields, has been opened up for private-sector investment. Agreements have recently been reached with private-sector investors for the further development of some already developed offshore fields.



Trends in production of petroleum products

As of March 1993 India had 12 refineries with an aggregate refining capacity of 52.8 million tonnes. Another refinery with a capacity of 0.5 million tonnes per year was commissioned in September 1993. These refineries are able to meet 85 per cent of the total consumption of petroleum products. All existing refineries are in the public sector. The Indian Oil Corporation owns six refineries with a total capacity of 24.4 million tonnes, followed by the Hindustan Petroleum Corporation (HPCL) with two refineries of 10 million tonnes capacity (see Table III.29).

The total investment in gross fixed assets in these refineries is of about Rs 979 billion. The total turnover of these refineries during 1992/93 was Rs 430.70 billion with a net profit of Rs 12.64 billion. Until recently the Indian Oil Corporation was the sole authorized agent allowed to import crude oil and petroleum products. Marketing and distribution were handled by the Indian Oil Corporation, Hindustan Petroleum Corporation, Bharat Petroleum Corporation and Indo Burma Petroleum Corporation Ltd. As part of the liberalization of economic policies the private sector is now allowed to import and market certain petroleum products.

Table III.29. Production of petroleum products by refinery, 1980/81-1992/93, selected years
(Million tonnes)

Refinery	Installed capacity as of 1 April 1994	1980/81	1990/91	1991/92	1992/93
Indian Oil Corporation, Bombay	500	477	540	524	523
Bharat Petroleum Corporation, Bombay	6,000	4,629	6,603	6,630	6,875
HPCL, Bombay	5,500	2,907	5,506	4,496	5,619
HPCL, Visakh	4,500	1,208	3,231	3,676	4,274
Indian Oil Corporation,Guwahati	1,000	577	712	793	749
Indian Oil Corporation, Barauni	3,300	432	2,206	2,060	2,097
Indian Oil Corporation, Gujarat	9,500	6,629	8,791	8,877	9,258
Indian Oil Corporation, Haldia	2,750	2,056	2,608	2,791	2,810
Indian Oil Corporation, Mathura	7,500	-	7,414	7,825	7,430
CRL, Cochin	4,500	2,795	4,715	4,554	4,853
MRL, Madras	6,500	2,376	5,279	5,147	4,927
BRPL, Assam	1,350	37	957	976	944
MRL, Narimanam	500				
Total	**53,400**	**24,123**	**48,562**	**48,349**	**50,359**

Source: Ministry of Petroleum and Natural Gas.

Petroleum products

The total production of petroleum products from these refineries increased at a rate of 7.2 per cent per year during the 1980s and domestic consumption increased at a rate of 5.9 per cent per year. This differential in growth rates caused a reduction in imports of petroleum products during this period. Production declined marginally by 0.4 per cent during 1991/92 and increased by 4.2 per cent in 1992/93. There was a marginal increase of 1.5 per cent during 1993/94. Consumption of petroleum products slowed down in 1991/92 and 1992/93 reflecting the slower growth of the economy in these years recovering from the crisis of 1990/91.

The rapid growth of road transport, including passenger cars, has contributed significantly to the increase in consumption of diesel and petrol. Nearly two thirds of the consumption of the middle distillates is accounted for by high-speed diesel. The large-scale introduction of diesel pump sets in agriculture has also contributed to the growth of demand for diesel. Kerosene accounts for about 25 per cent of the consumption of middle distillates and is used largely as cooking fuel and lighting in households. Demand for liquefied petroleum gas (LPG), an alternative cooking fuel, has been growing rapidly but is constrained by supply.

The demand for petroleum products is estimated to increase by 6.9 per cent per year in the first half of the 1990s to reach about 81 million tonnes in 1996/97. This demand would be met by indigenous production to the extent of about 62 million tonnes, and a gap of 26 million tonnes would be covered by imports. By 2001-2002 India would require about 102 million tonnes of

petroleum products. The share of light distillates would be 25 per cent, that of middle distillates 58 per cent and that of heavy-ends would be about 17 per cent.

Box III.I. Policy initiatives on petroleum refining

The following are the major changes in the policies for the petroleum sector.

(i) Petroleum exploration, development and refining has been thrown open to the private sector. Norms and procedures for private investment have been streamlined for quick and timely approval. Major international oil companies like Shell, Caltex and ESSO (Exxon), which had left India after the nationalization of the oil refining and marketing industry in 1974, have now returned and are establishing joint ventures.

(ii) Since August 1992 "discovered" oil fields have been offered to private companies for development. Two such contracts have already been awarded. Since January 1993 a system of continuous bidding during a year for exploration blocks has been initiated. Companies have been invited to carry out surveys and are allowed to sell the data generated.

(iii) A parallel marketing system for petroleum products was established in April 1993 for three major products, t :at is LPG, SKO and LSHS, under which private parties are now allowed to import and market these commodities at market-determined rates. Similarly, as a policy initiative, lubricants and lube base oils were made free-trade products in November 1993.

(iv) Import duty on LPG was reduced from 85 per cent to 25 per cent in January 1994, and was further reduced to 15 per cent effective from 28 February 1994 to give a boost to the parallel marketing system.

Box III.J. Customs and excise duties: petroleum refining
(Percentage)

	Customs duty		Excise duty	
	Pre-1991	Present	Pre-1991	Present
Naphtha	Nil	Nil	Varying	10
HSD	Nil	30	specific	10
Motor spirit	Nil	30	rates	20
Kerosene	Nil	Nil		10
LPG	110	15		10

Although the existing refineries are all in the public sector there has been a major change in policy in this regard following the economic reforms. Refining has now been opened up to the private sector and several private sector proposals for refineries and other facilities for producing petroleum products have been approved by the Government (see Annex Table A-28).

Constraints and prospects

Currently the prices of petroleum products are administered by the Government and are based on a complex system of administered prices. Each refinery receives a retention price for each product it produces, taking into account its cost of production, a standard throughput pattern and a provision for return on equity. Consumer prices are separately fixed with an element of cross-subsidy under which some product prices are kept below the cost of production.

Subsidies are provided for products which are either consumed by the vulnerable sections of the society or whose consumption is to be encouraged. In an environment where prices were determined by market forces, such subsidies would have to be removed. In the short run this would inevitably lead to an increase in the prices of some petroleum products. Past experience suggests a high elasticity of consumption with respect to price. Diesel, kerosene and LPG are the major subsidized products. Since the marketing of major petroleum products like MS/HSD are, by law, still undertaken by the public-sector oil companies only, none of the new refineries in the private sector has so far proposed setting up marketing networks. In such a situation either the public sector will have to develop additional marketing networks to meet marketing demands across the country, or marketing will have to be permitted to the new entrants.

I. PETROCHEMICALS

The petrochemical industry is one of the fastest growing subsectors of manufacturing in India, with an average growth rate of around 12-15 per cent per year from 1983/84-1993/94. The industry is fairly diversified and includes almost the entire range of petrochemicals, including synthetic fibres, elastomers (synthetic rubber), polymers, fibre intermediates (dimethyl terephthalate (DMT), polyterephthalic acid (PTA)) and basic building blocks (ethylene, propylene, benzene, etc.). Rapid growth in production since the late 1980s has greatly reduced the dependence on imports from around 60 per cent in the late 1980s to 25 per cent at present.

Resource base

The basic feedstocks for the petrochemical industry are petroleum refinery products, such as naphtha, kerosene and cracked LPG, and products from natural gas. The domestic supply of these feedstocks depends upon the growth of refineries, which in turn is driven mainly by the demand for middle distillates. The discovery of the Bombay High oilfields in the 1970s provided the required momentum for the growth of petroleum refining and the petrochemical industry.

The availability of naphtha for petrochemicals has been affected by the existence of a policy to allocate naphtha preferentially to fertilizers. About half of the total naphtha available is used for the production of fertilizers and a quarter for petrochemicals. It is estimated that naphtha would be in short supply even if adequate refining capacity were created to attain self-sufficiency in petroleum products by the end of the century.

Gas could be an effective substitute for both naphtha and kerosene. However, gas production in the country is quite a recent phenomenon and is severely constrained by the lack of investment and marketing support.

Recent trends

The petrochemical industry has expanded rapidly since the early 1980s, responding to the rising demand for synthetic textile materials and the growing use of plastics in many areas. A rapid expansion in capacity has resulted in stronger domestic competition, although domestic producers have in the past enjoyed considerable protection from foreign competition through import licensing and high import duties. More recently, the level of duty protection has been reduced as part of the new economic policies.

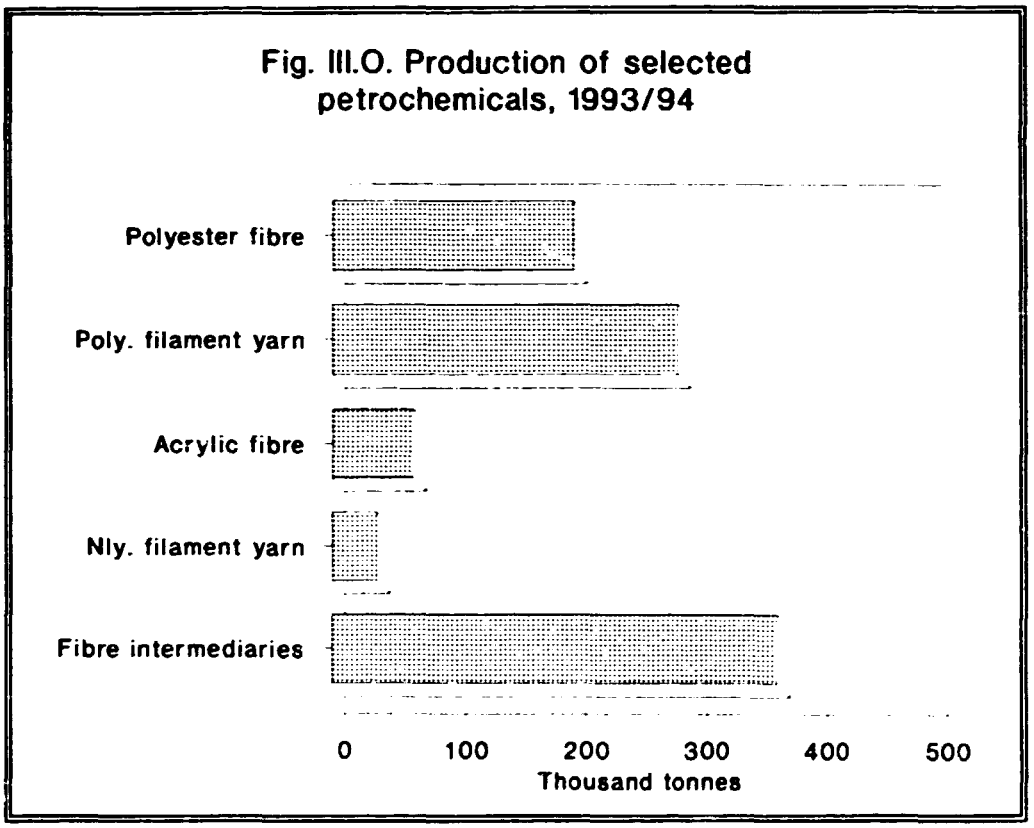
Synthetic fibres

The growth of the synthetic fibre industry was triggered in the 1980s when large domestic capacities were built up. As a result, the economy has not only attained self-sufficiency in synthetic fibres but has also succeeded in exporting a small amount of polyester staple fibre and polyester filament yarn. Exceptionally high growth rates were recorded in the 1980s by polyester staple fibre (19 per cent) and polyester filament yarn (24 per cent), reflecting the low initial base, and the growth rate slowed down subsequently in the 1990s; even so it remained high in absolute terms at 12-13 per cent. The consumption of nylon filament yarn has levelled off in the 1990s largely because of a shift in consumption in favour of polyester and blended fabrics. Data on the volume of major synthetic fibre production are presented in Table III.30.

Table III.30. Production of synthetic fibre and fibre intermediates, 1983/84-1993/94, selected years
(Thousand tonnes)

Year	Polyester staple fibre	Polyester filament yarn	Acrylic fibre	Nylon filament yarn	Fibre intermediates DMT/PTA
1983/84	26.7	47.9	16.6	30.4	25.1
1990/91	134.2	195.3	42.4	39.9	126.9
1993/94	200.1	286.2	67.5	37.3	369.2
Annual compound growth rates (Percentage)					
1983/84-1990/91	19.1	24.0	14.5	3.3	26.0
1990/91-1993/94	12.3	13.6	14.9	-1.6	42.7

Source. Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals.



Polymers

The production of low-density polyethylene (LDPE), high-density polyethylene (HDPE) and polyvinyl chloride (PVC) dominates the polymer group. Demand for these products was spurred by the rapidly growing demand for packaging and the widespread use of plastics in almost all walks of life. Production of polymers increased fast in the 1980s and accelerated further during the 1990s (see Table III.31).

Table III.31. Production of major polymers, 1983/84-1993/94, selected years
(Thousand tonnes)

Year	LDPE[b/]	HDPE[c/]	Polypropylene	PVC[d/]	Polystyrene
1983/84	107.1	38.9	27.3	100.7	15.8
1990/91	108.7	34.1	49.8	147.0	23.3
1993/94[a/]	171.1	179.6	91.3	358.4	40.8
Annual compound growth rates (Percentage)					
1983/84-1990/91	0.2	-0.2	9.0	5.5	5.7
1990/91-1993/94	16.3	74.0	22.4	34.6	20.5

Source Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals.

a Estimate.
b Low-density polyethylene.
c High-density polyethylene.
d Polyvinyl chloride.

Elastomers (synthetic rubber)

Elastomers play a complementary role to natural rubber in India and the ratio of the latter to the former is stable. The production of synthetic rubber fell drastically during 1990/91-1993/94 (see Table III.32). The growth of the synthetic rubber industry has been hampered to some extent by the lack of availability of monomers like butadiene. However, the availability of other raw materials such as styrene and acrylonitrile was expected to improve following the commissioning of new capacities.

Table III.32. Production of elastomers, 1983/84-1993/94
(Thousand tonnes)

Year	Styrene-butadiene rubber	Polybutadiene rubber
1983/84	21.1	11.5
1990/91	40.4	15.4
1993/94	28.9	14.8

Source Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals.

To meet the growing demand of petrochemicals in the country, several large projects are currently at various stages of implementation (see Table III.33). These projects involve a total investment of the equivalent of $8 billion. If all these projects materialize, the total capacity of the petrochemical sector is expected to increase to over 6 million tonnes, making India self-sufficient in petrochemicals.

Table III.33. Major petrochemical projects approved by the Government

Project	Feedstock	Capacity (Thousand tonnes)	Investment (Rs billion)
Olefin complexes			
IPCL-Gandhar	Gas	300	35
Reliance-Hazira	Natural gas	750	60
GAIL-Auriya	Gas	300	35
Assam	Gas naphtha	300	35
Haldia	Naphtha	300	35
Vizag	Naphtha	300	35
NOZIR	Naphtha	300	35
Aromatic complexes			
JK Petrochemical	Naphtha	140 P-Xylene 200 PTA	20
NAPCO	Naphtha	140 P-Xylene 200 PTA	20
Total		**2,930**	**310**

Source: Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals.

The liberalization of industrial and trade policies in 1991 has had an impact on the industry in many ways. Industrial liberalization and the removal of government restrictions on investments by large domestic firms has helped domestic producers to set up new plants more easily and has also encouraged a shift to plants which are closer to economic scale. It has also encouraged technology inflow, foreign investment and global tie-ups. The policy has also exposed the domestic industry to international competition through imports. All major petrochemical products are now freely importable and therefore import licensing restrictions are not a barrier to import as they were earlier. Polyester staple fibre is the only petrochemical product which is on the restricted list of imports, but it can be freely imported against special import licences which are issued to exporters and can be traded in the market. The import tariff structure for the petrochemical industry has also been rationalized and significantly reduced since 1991. Compared with the duty rates of 150 per cent prevailing earlier on some petrochemical products, the maximum duty rates on synthetic fibre/yarns and polymers have been reduced to 65 per cent, with upstream products facing much lower duties. These duty rates are expected to be reduced further in subsequent years.

Constraints and prospects

The petrochemical industry is facing constraints resulting from high raw material costs, uneconomic plant capacities and high capital costs which affect the cost structure of this very capital-intensive industry. In spite of these constraints, significant growth is taking place. The current level of production of petrochemicals is not adequate to meet the growing demand, which is estimated to increase by 15 per cent per year by the year 2000 (see Table III.34). At present excess demand for these products is met by imports. Massive private investment is planned to meet the requirement in the coming years.

Table III.34. Capacity (cap) and consumption (con) of petrochemicals, 1979/80-2000, selected years
(Thousand tonnes)

Product	1979/80			1990/91			2000		
	cap	con	con/cap[a/]	cap	con	cap/con[a/]	cap	con	cap/con[a/]
Polymers	296	247	83	481	892	185	2,370	2,497	105
Elastomer	60	42	70	72	105	146	200	294	147
Aromatics	177	165	93	315	357	113	b/	b/	
Other chemicals	108	119	110	487	374	77	831	945	114
Synthetic fibres	116	88	76	588	454	77	833	1,176	141
Intermediates	109	90	83	655	791	121	2,119	2,198	104
Total	**866**	**751**	**87**	**2,958**	**2,973**	**101**	**6,353**	**7,110**	**112**

Source: Department of Chemicals and Petrochemicals, *Annual Report 1993-94*.

a/ Percentage.
b/ Included in intermediates for the year 2000 projections.

While the petrochemical industry in India is poised for rapid expansion, the global petrochemicals market faces problems of overcapacity. Petrochemical prices on the world market have been relatively low in the last two years and although they have firmed up recently, the medium-term prospects remain soft because of continuing capacity expansion in Saudi Arabia, China, India, the Republic of Korea, Taiwan Province of China and Indonesia. Many of these countries follow an aggressive export strategy and can be expected to ensure adequate availability of petrochemicals worldwide subject only to the underlying trends in oil prices. Indian industry will have to compete against freely available petrochemical products subject to moderate tariffs. India's competitive advantage in exporting petrochemicals is weak because of the high costs of inputs. Indian production costs are also high due to high capital and infrastructural shortages and high operating costs resulting largely from the costs of feedstocks, power and financing. Nevertheless, as the domestic industry matures and approaches the international levels of scale and technology, some petrochemicals products may become internationally competitive provided inputs and financing are available on internationally competitive terms.

J. FERTILIZERS

The importance of the fertilizer industry in India is due to its link to agriculture. The Government has aimed at a substantial degree of self-sufficiency in this sector, with imports supplementing domestic production. India's fertilizer industry produces 20 different types of fertilizers, the most important being nitrogenous fertilizers such as urea and diammonium phosphate and single superphosphate.

The industry comprises public-sector units, cooperative sector units and private-sector units. At present there are 57 large and medium-sized fertilizer plants and about 80 smaller units producing single superphosphate. The industry has been subject to rigid price control for several years, with each producer receiving a price separately calculated on the basis of the cost of each unit, with a

subsidy to ensure that the price to the farmer is substantially below the average cost of production. This policy has been modified recently by freeing phosphatic and potassic fertilizers from controls, but the arrangement continues for urea.

Resource base

The raw materials naphtha and natural gas are domestically available for the production of nitrogenous fertilizers. Production of phosphatic fertilizers is based largely on imported raw materials. Potassic fertilizers are not produced in the country as there are no known reserves of potash.

Nitrogenous fertilizer plants set up before 1980 used naphtha as the feedstock. Between 1978 and 1982 a number of ammonia plants were set up with fuel oil as feedstock. In addition, two coal-based plants were set up in 1980 in an effort to reduce dependence on hydrocarbon sources, but these have not performed to expected standards.

Due to the availability of associated and free gas from the oilfields in Bombay since 1985, some gas-based fertilizer plants have been set up. Since there are rich recoverable reserves of natural gas in the country, the Government lays emphasis on gas as the future feedstock for all urea plants. In 1992/93, gas accounted for 48 per cent of the total production of fertilizers, followed by naphtha (27 per cent), fuel oil (15 per cent), ammonia (7 per cent) and coal (1 per cent).

The domestic raw material base for the production of phosphatic fertilizers is negligible. Indigenous supplies of rock phosphate are less than 5 per cent of the total requirement. As a result, India imports rock phosphate and sulphur to meet the needs of the local manufacturers for phosphoric acid. In 1992/93 domestic production meets about one fifth of the total demand, the remaining four fifths of phosphoric acid consumption being met by imports (see Table III.35). India has no source of elemental sulphur, which is produced only as a by-product from some of the petroleum refineries and fuel oil.

Recent trends

Production of nitrogenous and phosphatic fertilizers increased at an annual rate of more than 11 per cent between 1980/81 and 1990/91. The growth of nitrogenous fertilizer production slackened during 1991/92-1992/93 mainly because of the delays in the commissioning of new gas-based plants.

Table III.35. Production and imports of raw materials for fertilizer production, 1980/81-1992/93, selected years
(Thousand tonnes)

Year	Rock phosphate		Sulphuric acid		Phosphoric acid	
	Production	Imports	Production	Imports	Production	Imports
1980/81	448	1,845	2,183	816	275	-
1990/91	553	3,366	3,522	1,848	372	959
1992/93	605	..	..	..	354	1,439

Source Department of Fertilizers, Ministry of Chemicals and Fertilizers

There was an absolute decline in the production of phosphatic fertilizer because demand was adversely affected by the withdrawal of the subsidy following the decontrol of phosphatic and potassic fertilizer prices in 1992. The steep fall in demand was caused by the sharp increase (100 per cent) in the price of this fertilizer (see Table III.36). Demand is expected to recover once the impact of the price rise has been absorbed.

Table III.36. Consumption of fertilizers, 1980/81-1993/94, selected years
(Million tonnes)

Year	Nitrogen (N)		Phosphate (P)		Potash (K)	Total[a/]	
	Production	Consumption	Production	Consumption	Consumption	Production	Consumption
1980/81	2.2	3.7	0.6	1.2	0.6	3.0	5.5
1990/91	7.0	8.0	2.1	3.2	1.3	9.1	12.5
1992/93	7.4	8.4	2.3	2.8	0.9	9.7	12.1
1993/94[b/]	7.3	9.4	1.8	2.8	0.9	9.1	13.1
Annual compound growth rates (Percentage)							
1980/81-1990/91	12.3	8.0	10.1	10.3	8.0	11.7	8.0
1990/91-1993/94	1.4	5.5	-5.0	-4.4	-11.5	0.0	1.6

Source: Department of Fertilizers, Ministry of Chemicals and Fertilizers

a Production relates to N + P and consumption relates to N + P + K
b/ Estimate

With the increased domestic production of nitrogenous fertilizers, the import growth in these fertilizers declined significantly during the 1980s. However, imports of potassic and phosphatic fertilizers grew significantly during the same period because of the input constraints on domestic production. The imports of urea increased during 1991/92-1993/94 mainly because of continuing growth of demand for nitrogenous fertilizer while supply stagnated.

There has been a significant improvement in the level of capacity utilization in the industry over the years, varying in recent years at around 84 per cent for nitrogenous plants and 60 per cent for phosphatic plants. The problem of low production and capacity utilization in parts of the fertilizer industry is mainly due to technological obsolescence.

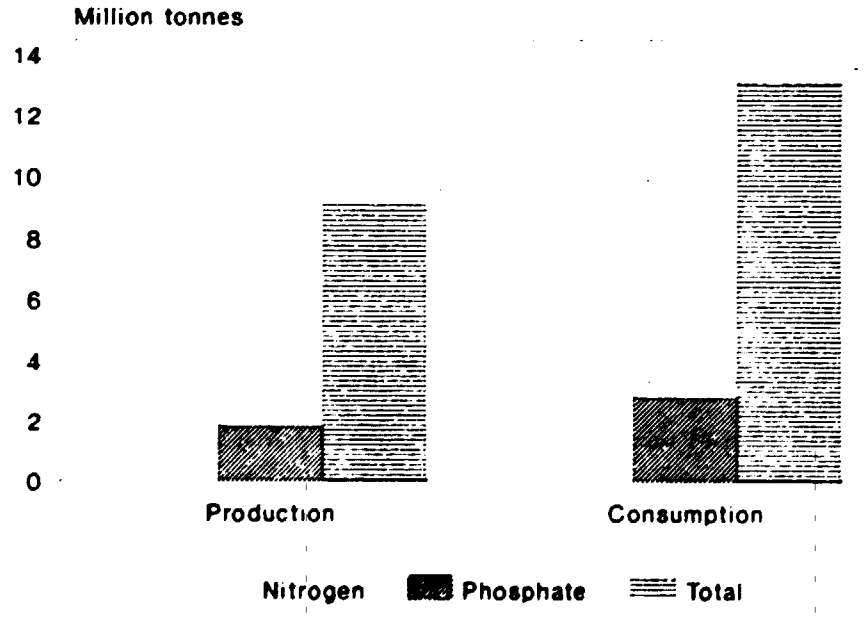
Box III.K. Price control and fertilizer subsidy

Fertilizer prices have been controlled by the Government through a retention price-cum-subsidy scheme for indigenous nitrogenous and phosphatic fertilizer units since November 1, 1977. Under this system each producer received a fixed producer price, determined separately for each plant on the basis of its cost of production, some norms of efficiency and the requirement of a 12 per cent post-tax return on equity. Consumer prices were kept lower than the average of producer prices and the difference was made up by a central Government subsidy.

The policy was designed both to ensure a reasonable return on investment and to provide fertilizers to farmers at reasonable prices so that their application in farming could be enhanced. Subsidy was also paid on imported fertilizers to maintain parity between the cost of imports and the domestic consumer price. The subsidy on domestic and imported fertilizers increased from Rs 19 billion in 1984/85 to around Rs 61 billion in 1992/93 (almost $2 billion), placing a heavy burden on the central budget.

The system was reviewed in 1992 and in an effort to contain the budgetary burden the prices of phosphatic and potassic fertilizers were decontrolled. However, the system was retained for nitrogenous fertilizers.

Fig. III.P. Production and consumption of fertilizers, 1993/94



Constraints and prospects

India's consumption of fertilizer per hectare is still quite low, but accelerated agricultural development will undoubtedly generate a growing demand. This should stimulate domestic production as long as the availability of raw materials justifies it.

Although the Government has indicated that it will progressively phase out subsidies, it is not clear whether the subsidy on urea will be phased out completely and if so over what period. This has created some uncertainty about future investment in the industry since new plants are much more expensive than the average present cost of production. If urea prices were to be completely decontrolled, demand might shrink substantially for some time.

The application of fertilizers in India indicates overuse of nitrogen relative to phosphates and potassium, compared with the ideal ratio of 5:4:2. In this context, the partial decontrol of phosphates and potassium, which led to an increase in their prices, has worsened the situation.

K. PHARMACEUTICALS

India's pharmaceutical industry has grown from a fledgling in the 1950s, based largely on converting imported bulk drugs into formulations, to one producing a wide variety of bulk drugs and formulations covering a large number of therapeutic groups. With a total turnover of around Rs 83 billion for bulk drugs and formulations combined, the industry is today one of the largest and most technologically advanced in the developing world. In recent years it has emerged as a significant exporter, exporting low-cost bulk drugs to industrialized countries and formulations to developing countries.

Resource base

The pool of scientifically and technically skilled and competent professionals has enabled India to have a visible presence in the international market as one of the few developing countries that are net exporters of pharmaceutical products. The industry, however, has been able to make use of skilled manpower resources only for the development of synthetic pharmaceutical products. It lacks technology in the capital-intensive areas of fermentation and biotechnology. Raw materials and technologies based on fermentation continue to be imported.

Recent trends

Until the recent liberalization through the announcement of the new drug policy in May 1994, the pharmaceutical industry in India was subjected to numerous controls. Certain items were reserved exclusively for production by the public sector. Licensing restrictions on foreign-owned companies were designed to limit their area of operation to producing from the basic stage. This was supplemented by extensive price controls and a deliberate policy of encouraging production in the small-scale sector by exempting it from the controls. Bulk drug producers were also required to supply part of their production to non-associated formulators.

The industry has evolved into four distinct segments as a result of the differential policies of the Government.

Public-sector units: There are four major public-sector units: Bengal Chemicals & Pharmaceuticals Ltd, Bengal Immunity Ltd, Hindustan Antibiotics Ltd and Indian Drugs and Pharmaceuticals Ltd.

All these units are making losses and suffering from outdated technology. They have concentrated on the manufacture of essential drugs, which are subject to tight price controls. The public-sector units account for only about 2 per cent of the market.

Foreign-owned companies: Many of the internationally known drug companies are operating in India through their Indian subsidiaries, in which they hold 40 per cent or more of foreign equity, for example Astra Ltd, Bayer, Burroughs Wellcome, Cyanamid, Glaxo, Hoechst, Parke Davis, Pfizer, Rhône Poulenc and Sandoz. These companies together account for about 40 per cent of the market. Most of them have been in India for a long time. However, as a consequence of the restrictive drug policy of the Government, they have not kept up their investments and new product introduction.

Organized-sector Indian companies: There are a large number of Indian-owned pharmaceutical companies in the private sector, many of which have substantial technological capabilities and have shown considerable dynamism. These include companies such as Ranbaxy, Cipla, Cadila, Dr Reddy's Laboratories, Lupin, Alembic, Sarabhai and Wockhardt Ltd.

Small-scale units: There are more than 8,000 small-scale pharmaceutical manufacturers. Most of them manufacture formulations from bulk drugs produced by the organized-sector units or from imports. The proliferation of these small manufacturers was encouraged by government policy, which gave special incentives to small-scale producers, including exemption of their products from price controls.

The growth of production in bulk drugs and formulations since 1980 is summarized in Table III.37. The growth rate in current rupee values was around 12 per cent per annum in the 1980s and accelerated to 22 per cent per annum in 1990/91-1993/94.

Table III.37. Trends in production, 1980/81-1993/94, selected years
(Rs million)

	1980/81	1990/91	1991/92	1992/93	1993/94
Bulk drugs	2,400	7,300	9,000	11,500	13,200
Formulations	12,000	38,400	48,000	60,000	69,000

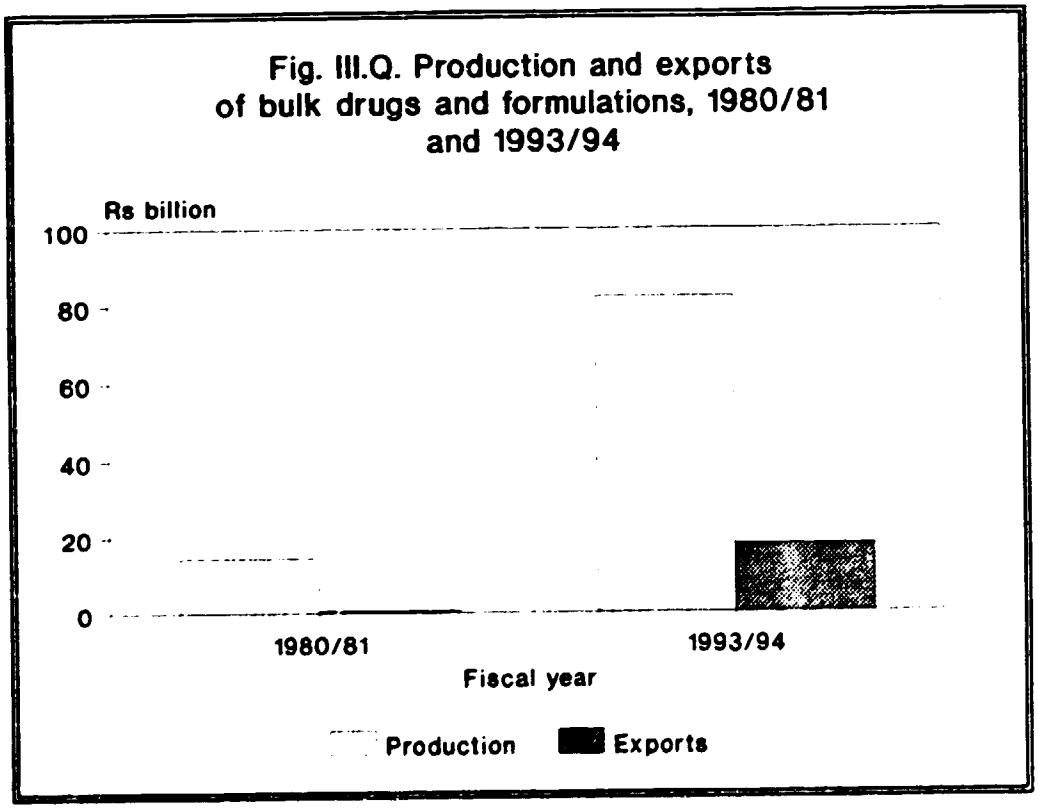
Source: Ministry of Chemicals and Fertilizers.

An important positive development in recent years has been the growth of exports in the pharmaceutical industry. Exports of bulk drugs increased from Rs 185 million in 1983/84 to over Rs 10 billion in 1993/94 (see Table III.38). The increase in the export of formulations is also substantial, from Rs 615 million in 1983/84 to Rs 7.7 billion in 1993/94.

Table III.38. Export trends, 1980/81-1993/94, selected years
(Rs million)

	1980/81	1983/84	1988/89	1991/92	1992/93	1993/94
Bulk drugs	113	185	2,429	7,226	8,561	10,096
Formulations	351	615	1,573	5,585	5,537	7,718

Source: Ministry of Commerce.



The drug policy of 1994 sought to remove barriers to the growth of the industry. Highlights of the policy are summarized in Box III.L.

Box III.L. Highlights of the new drug policy, 1994

1. Industrial licensing has been abolished. Other restrictions on ratio parameters, sale to non-associated formulators etc. have been removed.

2. Foreign equity up to 51 per cent is permitted. Foreign collaborations are to be automatically granted.

3. The span of price control will be 50 per cent as against the earlier 70 per cent of the medicines marketed.

4. There will be one category of price-controlled drugs, with maximum allowable post manufacturing expenses of 100 per cent, as against two such categories earlier.

5. A national drug authority will be set up on the lines of the United States Federal Drug Administration.

The growth of the Indian pharmaceutical industry is to a significant extent attributable to the Indian Patent Act of 1970, which provided for only patents on the particular process of producing pharmaceuticals for a period of seven years. This provided opportunities for the Indian industry to introduce products still under patent in the developed countries. The GATT agreement of 1994 allows for product patents to be introduced in India in the year 2005 after a transition period of ten years. The industry therefore has to gear up for competition. Indigenous research and development will play a very important role in the industry's development.

Constraints and prospects

The pharmaceutical industry in India is significantly dependent on the import of essential starting raw materials and fine chemicals. In addition, the packaging industry has not kept pace with the development of the pharmaceutical industry. This may be a direct result of stringent price controls which affected the industry's ability to improve packaging. Overall, this is a major handicap as quality packaging is essential for the stability of pharmaceutical products, especially under tropical conditions.

In the ten years that Indian pharmaceutical companies have to adjust to the patent laws laid down in the GATT rules, one or more of the following courses are open to them. They may become licensees of original research companies, enter into strategic alliances or form joint ventures for the introduction of new products, exploit product introduction opportunities that are still available during the transition period, such as the custom synthesis of chemical compounds and intermediates, and/or concentrate on generic products.

The industry can maximize its advantage as a low-cost manufacturer of generic products by selling them in the developed countries, which offer an increasingly large market for generic products in

order to contain health-care costs. This will require substantial investment in upgrading Indian manufacturing facilities and adherence to international quality standards.

In the medium to long term the major Indian companies will have to invest substantially in research and development. Lacking in experience and resources, Indian companies may need to collaborate with international research companies which may be attracted by the availability of skilled manpower and the low cost of research in India.

Most of these opportunities can be exploited through substantial investment, but the new drug policy may not help generate the surplus required to fund this. Competition among Indian companies in a highly fragmented market will also erode the profitability of the industry, especially of the smaller companies which would not be able to garner the resources necessary to pursue the opportunities available. The industry may therefore witness a trend towards consolidation, with surviving small units becoming ancillary to the larger ones.

L. IRON AND STEEL

India's steel industry consists of seven integrated steel plants and around 177 mini-steel electric arc furnaces and secondary rerollers. Total crude steel production during 1993/94 was 18 million tonnes, of which about 14 million tonnes was from the integrated steel plants. Prior to the economic reforms of 1991, the integrated steel plants were subjected to extensive pricing and distribution controls. Creation of new capacity was subject to licensing and the general policy was one of encouraging only public sector investment in large-scale steel plants. The industry was relatively closed to foreign competition with steel imports subject to import licences and high tariffs.

The new policy has created a liberal environment with the abolition of licensing and price control and an end to the policy of reserving steel for investment only by the public sector. Protective barriers have also been lowered by gradually reducing the tariff rates, while tariff rates still remain high at 50 per cent. Significantly, the government also announced that the public sector steel plant at Visakhapatnam which, though technically modern and efficient, had suffered from enormous cost overruns arising from the delays in implementation, would be the last integrated steel plant in the public sector. Instead, the public sector will concentrate on modernization, technological upgrading and expansion of output from the existing locations and facilities. Therefore, the private sector is expected to play a larger role in the Indian steel industry in the years to come.

In spite of the modest growth of world demand for steel and declining demand in developed countries, the Indian steel industry is poised for more than a doubling of steel production by the year 2000. This expansion is primarily due to a rapid growth of expected domestic demand, especially for infrastructural development, and is evidenced by the very low per capita consumption of steel products in India compared with other developing countries.

Resource base

India is well endowed with the major raw materials required for a modern steel-making industry. India's biggest advantage in steel-making is ample availability of good quality iron ore reserves, amounting to 12.7 billion tonnes in 1990. The bulk of these reserves (9.6 billion tonnes) are of haematite ore which is suitable for steel production (see Table III.39). At the current rate of exploitation of 57 million tonnes per year, including around 30 million tonnes of exports, the total reserves would last for more than 160 years.

India also has large reserves (8.6 billion tonnes) of coking coal, but these suffer from the problem of high ash content (17-21 per cent). At the current rate of exploitation, the reserves of prime coking coal would last for 100 years and the rest for much longer. However, the high ash content of the coal, even after washing and beneficiation, is a major problem. At present, the Steel Authority of India Limited (SAIL) and the Tata Iron and Steel Company (TISCO) are importing coking coal to blend it in a proportion of 25 to 30 per cent with indigenous coal, while the Visakhapatnam Steel Plant (VSP) is importing 75 per cent, to achieve major improvements in efficiency and reduction in production costs. About 40-50 per cent of the total coking coal requirement will continue to be imported on quality considerations.

India has sizeable reserves of fluxes, comprising limestone (1.7 billion tonnes), dolomite (9.8 billion tonnes) and manganese ore (0.2 billion tonnes). On current rates of exploitation, these reserves would last longer than the reserves of the primary raw materials of iron ore and coal.

Table III.39. Haematite ore reserves by state and grade[a/], 1990
(Million tonnes)

State	High grade	Medium grade	Low grade	Other	Bulk dust/ black iron	Total
Bihar	34.4	1,791.3	903.2	186.3	50.8	2,966.0
Orissa	313.3	1,287.6	752.0	304.8	8.6	2,666.3
Eastern Region	**347.7**	**3,078.9**	**1,655.2**	**491.1**	**59.4**	**5,632.3**
Madhya Pradesh	**558.4**	**483.2**	**516.0**	**401.8**	**71.0**	**2,030.4**
Karnataka	221.2	437.9	72.3	194.7	0.6	926.7
Andhra Pradesh	6.4	5.2	31.7	3.6		45.9
Southern Region	**227.6**	**443.1**	**104.0**	**197.3**	**0.6**	**972.6**
Goa	13.5	153.2	465.4	117.2	12.2	761.5
Maharashtra	0.3	34.5	14.8	126.3		175.9
Western Region	**13.8**	**187.7**	**480.2**	**243.5**	**12.2**	**937.4**
Rajastan	-	0.2	6.4	2.3	-	9.0
Northern Region	**-**	**0.2**	**6.4**	**2.3**	**-**	**9.0**
Total	**1,147.5**	**4,193.1**	**2,761.8**	**1,336.1**	**143.2**	**9,581.8**

Source Center for Monitoring Indian Economy

a. The grades are defined as high with Fe of 65 per cent, medium with Fe of 62-65 per cent, and low with Fe of less than 62 per cent

The stock of metals in the Indian economy is low and the rate of scrapping of metal-based products is also low. Moreover, with a shift in steel casting technology towards continuous casting, the scrap generation by the main producers is likely to decline. Close to half the present scrap requirement is imported and India is likely to remain a net importer of scrap for steel-making and re-rolling industries. Some of it can potentially be substituted by sponge iron, as India has a wide resource base of non-coking coal and natural gas to support a large domestic production of sponge iron.

India's natural gas reserves are projected to last for more than 25 years at more than double the rate of current production. Gas is being commercially produced in the north-eastern, western and southern regions of the country at the rate of 50 million metric standard cubic metres per day. This is expected to double by the year 2005.

Skilled manpower is an additional asset which is suitably employed in the Indian steel industry. More than 40 per cent of the workers employed by the main producers (SAIL, TISCO, VSP) are skilled, and another 40 per cent semi-skilled. The overall industrial relations climate in the steel sector in India is peaceful.

Recent trends

Steel was regarded as a crucial industry by Indian planners, but the actual growth of steel capacity and production has not been impressive. There was a sharp increase in production in the 1950s from a very low base of 1.5 million tonnes in 1950/51 to 3.4 million tonnes in 1960/61, representing an annual growth rate of 8.6 per cent. The growth slowed down in the 1960s to 6.3 per cent per annum and faltered to 4 per cent in the 1970s. It picked up marginally to 4.7 per cent per annum in the 1980s, but this is still well below expectations as well as capabilities.

Part of the reason for the slow growth of steel production in India, despite the substantial comparative advantage that India has in producing steel, is the poor performance of the public sector steel industry (see Table III.40). For a variety of reasons, partly having to do with excessive Government control on prices and product-mix and partly persistent overmanning, the public sector steel industry was never able to generate adequate funds to finance increases in capacity as well as modernization.

An elaborate framework of industrial and trade policies affected the performance of both public sector and private sector integrated steel plants, but the public sector was affected more adversely. By 1986/87, the capacity utilization of the only remaining primary producer in the private sector was 100 per cent, while that in the public sector plants taken together was 70 per cent, and that too, after de-rating substantial capacities in these plants by 1993/94. However, by 1993/94 capacity utilization in the public sector steel plants improved to a level higher than 90 per cent, with the exception of VSP and Durgapur where the plants were in a phase of stabilization as was TISCO due to the commissioning of new units. Table II.41 presents steel production, trade and consumption data for 1993/94.

Table III.40. Production of crude steel by sector, 1950/51-1999/2000
(Million tonnes)

Year	Public sector			Private sector				Total	Share of public sector
	SAIL[a/]	VIZAG	Total	TISCO	IISCO	Secondary sector	Total		
1950/51	-	-	-	1.08	0.34	0.08	1.50	1.50	0
1960/61	0.78	-	0.78	1.63	0.91	0.10	2.64	3.42	22
1969/70	3.78	-	3.78	1.71	0.70	0.35	2.76	6.54	58
1970/71	3.61	-	3.61	1.72	0.63	0.34	2.69	6.30	57
1980/81	5.48	-	5.48	1.88	-	2.03	3.91	9.39	58
1981/82	6.64	-	6.64	1.96	-	2.16	4.12	10.76	62
1982/83	6.68	-	6.68	1.96	-	1.36	3.34	10.02	67
1983/84	5.96	-	5.96	1.97	-	2.50	4.47	10.43	57
1984/85	6.25	-	6.25	2.05	-	1.94	3.99	10.24	61
1985/86	6.97	-	6.97	2.10	-	2.56	4.66	11.63	60
1986/87	6.84	-	6.84	2.25	-	2.54	4.79	11.63	59
1987/88	6.94	-	6.94	2.28	-	2.75	5.03	11.97	58
1988/89	8.48	-	8.48	2.31	-	2.71	5.02	13.50	63
1989/90	8.27	-	8.27	2.32	-	2.78	5.10	13.37	62
1990/91	8.76	-	8.76	2.30	-	3.86	6.16	14.92	59
1991/92	9.63	0.59	10.22	2.42	-	3.35	5.77	15.99	64
1992/93	9.83	1.05	10.88	2.48	-	3.80	6.28	17.16	63
1993/94	9.83	1.36	11.19	2.49	-	3.07	5.56	16.75	67
1999/2000[b/]	16.20	3.00	19.20	3.10	-	12.70	15.80	35.00	55

Source: SAIL Iron & Steel Statistics, Steel Scenario Statistical Yearbook July 1994, and other industry sources

a/ Steel Authority of India Ltd. (SAIL) has five integrated steel plants located at Bhilai, Durgapur, Rourkela, Bokaro and Burnpur. IISCO (Burnpur) was nationalized in the early 1970s. Therefore, its production is shown under SAIL from 1980/81 onwards.

b/ Crude steel production for the year 1999/2000 is a projection based on plans of the existing producers and the greenfield projects which are likely to materialize.

Taking advantage of the strict regimentation imposed on the primary producers in the period from 1970 to the mid-1980s, a number of entrepreneurs entered the industry to expand electric arc furnaces, leading to the creation of substantial capacity in this sector. This secondary steel sector comprising mini-steel plants was heavily dependent on imported scrap, mainly from the United States and western Europe.

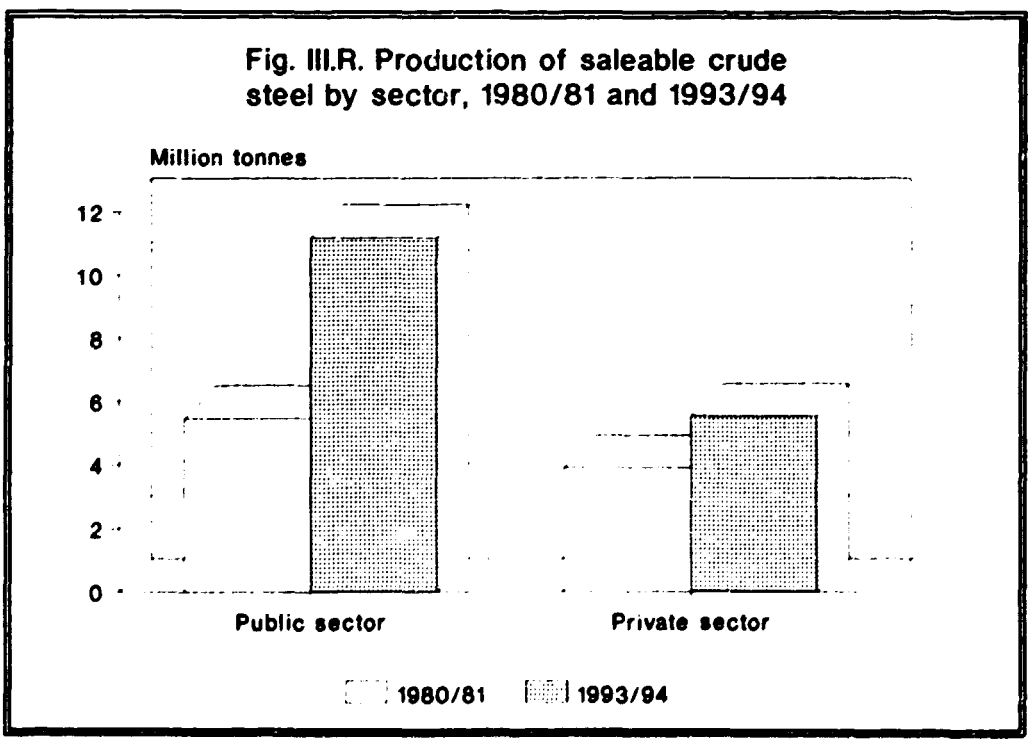
Prior to liberalization the secondary sector benefited from the fact that its prices were not subject to price control. More recently, with price liberalization for the steel sector and general deregulation, it has to compete on a level playing field with integrated steel plants and its weaknesses have surfaced. With increases in the rates of power and the prices of scrap, this industry, which dominates the rebar and light structural market, has suffered a major setback.

Table III.41. Production, trade and consumption of steel, 1993/94
(Million tonnes)

	Production	Import	Export	Consumption
Pig iron	2.25	0.02	0.62	1.65
Scrap[a/]	2.80	2.6	0.00	5.40
Sponge iron	2.40	-	0.70	1.80
Semi-finished steel	6.03	0.09	0.58	5.54
Finished steel	15.18	1.02	1.26	14.94
Flats	6.93	0.96	0.47	7.42
Plates	1.59	0.07	0.31	1.35
Hot-rolled coils/skelp	2.19	0.33	0.04	2.48
Hot-rolled sheets	0.44	0.06	0.00	0.50
Cold-rolled sheets/coils	1.74	0.13	0.03	1.84
GP/GC sheets	0.58	0.00	0.07	0.51
Electrical sheets	0.11	0.06	0.00	0.17
Tin plates	0.09	0.14	0.00	0.23
TMBP	0.07	0.06	0.00	0.13
Pipes	0.12	0.11	0.02	0.21
Non-flats	8.25	0.06	0.79	7.52
Bars and rods	5.79	0.01	0.63	5.17
Structural	1.87	0.00	0.16	1.71
Railway material	0.59	0.05	0.00	0.64
Alloy and special steels	1.20	0.06	0.03	1.23

Source: SAIL. Iron & Steel Statistics. Steel Scenario Statistical Year-book July 1994 and other industry sources.

a/ The data for scrap is for the calendar year 1992 as reported in *International Iron & Steel Statistics.*

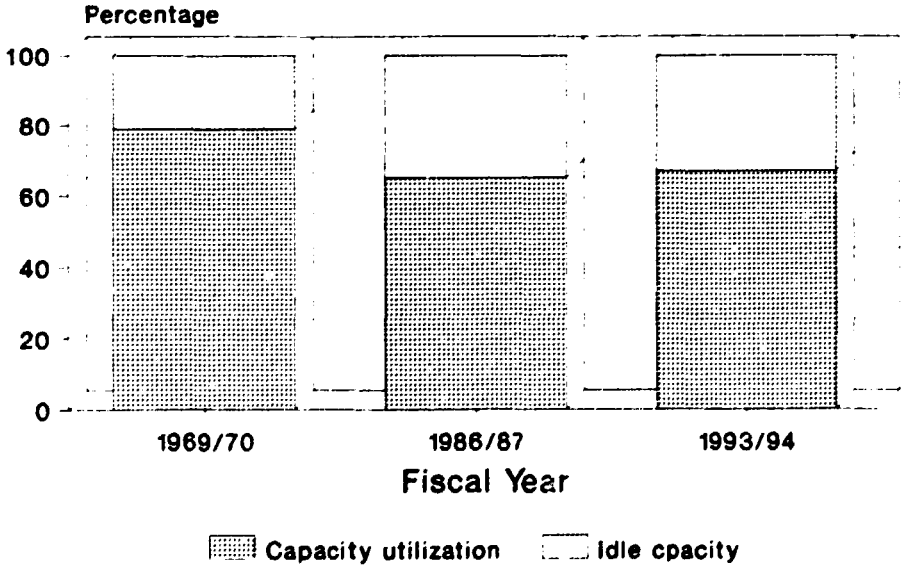


Capacity utilization in the secondary sector declined from 70 per cent in 1969/70 to 43 per cent in 1986/87 and 38 per cent in 1993/94. This sector has been looking for solutions to its problems which lie in the introduction of new technology which can either replace scrap or reduce the utilization of power.

The main producers based on the blast furnace (BF) route, mainly in the public sector, produce close to 80 per cent of saleable mild steel. In contrast, the entire production of alloy and special steels is non-BF so far. More than 85 per cent of alloy and special steels production in India comes from the private sector.

A large proportion (54 per cent) of the steel produced in India is in the form of long products, like bars and rods, and structural and railway parts. In recent years, there has been a shift in steel production towards flat products such as hot-rolled and cold-rolled coils, sheets and plates used in the automotive and the white goods sectors. However, long-run projections indicate that long products would continue to constitute close to 55 per cent of the steel consumption in India due to a large potential for the absorption of steel in the infrastructure sectors. India also produces 2.3 million tonnes of pig iron and 2.4 million tonnes of sponge iron. More than 90 per cent of the pig iron production in India comes from the main producers in the public sector, while more than 90 per cent of the sponge iron production comes from the private sector.

Fig. III.S. Capacity utilization in Indian steel industry, 1969/70, 1986/87 and 1993/94



India has a long way to go to come up to international technological standards. The share of the outdated and inefficient open-hearth furnace process in total steel production is 23 per cent compared with 10 per cent for the world as a whole and 14 per cent for China. The share of the more efficient basic oxygen furnace process is 46 per cent compared with 60 per cent for the world and 64 per cent for China. Similarly, the share of the more efficient continuous casting process is 20 per cent in India compared with 70 per cent for the world and 34 per cent for China.

A process of modernization of the Indian steel industry began in the mid-1980s, with the integrated steel plants in both the public and private sectors engaging in technological upgrading of the existing facilities towards energy-efficient technologies such as moving from the open hearth furnace to the basic oxygen furnace (BOF) and continuous casting (CC). The public sector company, SAIL, has undertaken programmes of technological upgrading, introducing BOF furnaces at Durgapur and Rourkela steel plants. Significantly, the modernization of the SAIL plants is being executed without any budgetary support. Starting early in the 1980s, TISCO launched its modernization programme which covered the installation of LD furnaces, billet casters, a state-of-the-art bar and rod and hot strip mill and a new blast furnace, thereby achieving parity with international standards and specifications.

India has a comparative advantage in the production of steel. Even with its current inefficient technological status (leading to high specific consumptions), Indian iron ore (per tonne of steel) costs only 32 per cent as much as Japanese ore. Indian iron ore prices are only 26 per cent of the iron ore prices paid by the Japanese steel producers. In spite of a very low overall labour productivity in India, the cost of labour (per tonne of steel) is 31 per cent lower in India than in Japan. The advantage in terms of factor price of labour is much higher, with wage rates in India being only 3 per cent of those prevailing in Japan. As a result, labour costs in India make up only around 15 per cent of the cost of steel compared to levels ranging between 25 per cent and 35 per cent in the developed countries like Japan and United States. Besides, Indian labour in the existing units is largely skilled and is open to new technology, retraining and redeployment.

Once the process of modernization and technology upgrading by the main producers is completed, it would provide a competitive edge to these producers in the future steel markets in India and abroad. Using state-of-the-art technology, it is possible to set up steelworks in India which will be cost-competitive internationally. A recent study[3] substantiates the claim that efforts made by the Indian steel industry to become globally competitive in recent years have attained success. In 1991 and 1992, the cost per tonne of steel in India was declining, while in Germany, Japan, the United Kingdom and the United States it was increasing. Indian steel (excluding taxes and levies) was cost-competitive against developed countries' steel in 1992 (see Table III.42).

Table III.42. Steel cost comparisons: India and selected countries, 1981-1992
($ per tonne)

Year	United States	Japan	Germany[a/]	United Kingdom	Republic of Korea	India	
						SAIL	TISCO
1981	555.9	483.1	464.5	573.3	294.0	354.4	252.7
1982	684.1	452.0	480.7	510.1	297.0	407.0	322.9
1983	593.6	452.7	415.4	403.0	271.0	485.7	364.3
1984	555.8	403.1	372.4	370.3	267.0	445.3	339.2
1985	523.2	393.5	355.4	359.6	255.0	475.1	370.8
1986	510.7	503.2	427.7	377.5	255.0	479.0	375.1
1987	481.0	510.3	471.2	377.2	-	508.1	415.7
1988	481.0	533.1	475.3	407.1	-	514.8	438.5
1989	490.3	512.6	461.5	401.4	-	508.8	439.0
1990	493.5	507.3	541.5	468.6	-	517.7	427.1
1991	518.1	541.6	538.4	474.8	-	429.3	368.3
1992	522.4	585.8	586.1	479.5	-	384.6	361.6

Source Steel Sector Study, Investment and Credit Rating Agency

a Data for 1981-1989 inclusive refer to the Federal Republic of Germany

A number of policy reforms have been undertaken in the steel industry, ranging from delicensing for investment purposes to removal of price and distribution control, reduction in import tariffs and a more liberal foreign investment regime (see Box III.M). The Government has also started a process of divesting its equity in SAIL.

Box III.M. Policy changes: steel industry

Policy changes	Implications for steel industry in India
(i) Reductions in import tariffs on steel from the high levels of 85 to 120 per cent in July 1991 to a maximum tariff of 50 per cent in 1994. These are expected to soon be further reduced to 20 to 30 per cent.	Increased competition from imports for the domestic producers, putting pressures for quality improvement and cost reduction.
(ii) Pricing and distribution controls removed.	Steel prices to be determined by market forces.
(iii) Steel open to private sector investment with no licensing requirements for broad banding and integration. No more greenfield steel investment in the public sector.	Will generate increased competition from the private sector.
(iv) Foreign investment allowed up to 51 per cent with automatic approval for technology transfer agreements.	New steel capacities may be set up with modern technology and majority foreign equity participation.
(v) Divestment of government shares (10.87 per cent) in SAIL; encouragement of joint ventures in critical linkage areas like power and potential areas like cement and information technology.	Will generate motivation for better financial performance to satisfy the new private shareholders of SAIL; profitable diversification options to be actively perused by public enterprises to maximize returns.

The macroeconomic stabilization efforts of the Government, however, led to a decline in investments in the early years of reforms, in the process creating recessionary conditions in the Indian industrial sector. Domestic steel consumption declined by 1 per cent per annum from 1991/92 to 1993/94. Steel production, however, grew at a modest rate of 4 per cent per annum but this was largely because the industry was able to increase exports to offset the domestic recession. However, exports were driven more by the devaluation of the Indian rupee and the domestic recession and less by the competitiveness of Indian steel.

In general, the integrated steel plants have survived the recession with relatively better financial results and growth. New marketing strategies are being pursued by each of the main producers to cope with the competitive environment. The secondary sector producers, on the other hand,

have been badly hit because of their inefficient technological base by the rationalization of the power tariff and excise duties and the firming of international scrap prices.

Most of the new investments are in the direct reduction-electric arc furnace (DR-EAF) integrated route with the bulk of the DRI output based on the gas route. There have also been attempts by the existing secondary sector units to move into forward and backward integration. The bulk of marginal capacity is directed towards flat products in view of their high returns compared to long products. There is likely to be some excess capacity in the hot-rolled coil segment in the medium term. Most of the new greenfield capacity which is either announced or is under creation would be widely distributed, with more than half of it located in the Western region, followed by the Southern and Northern regions, each accounting for 15 per cent of the new capacity creation. This would reduce the mismatch between the locations of supply (in the Eastern region) and demand (in the Western, Southern and Northern regions).

A number of foreign collaboration proposals have recently been approved. As of June 1994, 93 foreign collaborations involving investments worth Rs 6.8 billion were approved (see Annex Table A-29).

Constraints and prospects

With accelerated development and modernization of infrastructure, the demand for steel in India is bound to grow. India's current per capita consumption of steel at 22 kg is much lower than the average of 62 kg for the developing countries as a group and the much larger average consumption of 374 kg for the industrialized countries. Consumption in the key sectors, such as agriculture, infrastructure and the rural sector, is very low. Regionally, too, steel consumption in India is skewed towards the west and south. There is a very wide scope for expanding the consumption of steel in India in absolute terms with a wider distribution across sectors and regions and a potential for high penetration in key sectors of agriculture and infrastructure. The overall size of the domestic market in India by the year 2000 is projected at 30-35 million tonnes of finished steel which is more than double the present consumption levels.

The constraint imposed by coal can be overcome in several ways. There are options to shift to the DR-EAF (based on natural gas) or to shift the new capacities to locations where imported coal could be economically blended. With the phasing down of the steel industry in the developed countries, there are opportunities for redeployment of second-hand equipment and economizing in capital costs. Such options are being exercised by some of the new entrants in the Indian steel sector. One new direction is the use of non-coking coal (indigenous/imported) for iron-making in processes like COREX. This has already been announced for a unit to be located on the west coast of India.

The infrastructural support to the domestic steel industry in the form of ports, rail transportation and power utilities needs to be expanded through liberalization of these sectors. The focus of policy on attracting foreign investment in the power sector fits in with this need. Coal mining is being allowed on selective basis for captive use. Privatization or encouraging greenfield private investment in roads and ports is also being actively considered as part of the ongoing economic reforms.

An analysis of the growth and competitiveness of the emerging leaders in the steel sector, particularly in the newly industrializing countries, reveals that a policy environment based on active government support has contributed a great deal in enhancing their competitiveness. The lesson

for Indian policy makers is to use the policy framework to foster competitiveness rather than protection.

The unfinished agenda of the economic reforms in the steel sector covers areas such as further reductions in tariffs from the present high level of 50 per cent, labour reforms to reduce the load of overmanning and exit policy to provide a smooth exit for the terminally sick in this industry. In SAIL, a voluntary retirement scheme introduced a few years back gave partial results. The older plants will have a large number of workers retiring in the course of the next five years and replacements are being tightly controlled. Public sector reforms and privatization would help to widen the ownership base of the public sector units in the steel industry and make them board-managed companies with freedom to make corporate decisions independent of the Government. Tax reforms are needed to remove irrational levies such as entry tax on interstate movement and also reduce the tariff barriers to allow easier access to imported steel while providing adequate safeguards against dumping.

If the policy environment in India meets the challenge of accomplishing the unfinished agenda of reforms, then the Indian steel industry's future prospects are extremely bright. India has a potentially large home market and a large natural resource base with comparative advantages in most of the raw materials and labour. With the ongoing economic reforms, this comparative advantage can be converted into a competitive one for leading the future growth of the steel industry in India.

M. ALUMINIUM

The aluminium industry in India consists of five primary metal producers and a large number of secondary producers. Of the five, two are in the public sector and three in the private sector. The latest primary producer to enter the fray was National Aluminium Company (NALCO) in the late 1980s, with state-of-the-art technology. NALCO, which has no semi-fabricating facilities, sells its entire primary metal output. After meeting their captive semi-fabricating requirements, Bharat Aluminium (BALCO) and Hindustan Aluminium (HINDALCO) sell their residual primary metal output. Owing to severe power cuts, Indian Aluminium (INDAL) is a net buyer of aluminium. Madras Aluminium (MALCO) is not currently operational.

Resource base

India has substantial basic resources of bauxite to support its drive to become a global player in aluminium. India's tradition of waste recovery also works to its advantage; every piece of aluminium gets collected and reused.

Bauxite, the basic raw material for the manufacture of aluminium, is found in abundance in the country, the total recoverable reserves being of the order of 2,525 million tonnes (see Table III.43). Most of these reserves are located close to the coast. At the current rate of production, the reserves would last for nearly 280 years.

There are, broadly, two grades of bauxite available in India. The first, constituting about 20 per cent of the total and found in Gujarat, has very high alumina content and is best suited for non-metallurgical use. The second is more widely available and is more suited for producing metallurgical-grade alumina, which is the raw material for aluminium metal. Because of its high Gibbsite content, this grade of bauxite lends itself to being refined into alumina at low temperatures and therefore uses less energy.

Table III.43. Recoverable reserves of bauxite, as of April 1990
(Million tonnes)

State	Proved	Total
Orissa	310	1,442
Andhra Pradesh	170	592
Maharashtra	58	87
Bihar	12	61
Madhya Pradesh	63	141
Gujarat	36	198
Total	**649**	**2,521**

Source: Ministry of Mines.

Waste recovery and scrap collection is a long-standing practice in India. Around 90,000 to 100,000 tonnes of aluminium scrap, nearly 25 per cent of the country's total primary metal production, is recycled every year.

A large pool of technicians, scientists, engineers and other professionals directly employed in the aluminium business in India is an additional asset. India has been a major source of skilled manpower for aluminium smelters and fabrication plants in the Middle East.

Recent trends

The current installed capacity of the aluminium industry in India is 610,000 tonnes per annum. Capacity in operation, however, is 520,000 tonnes per annum due to the closure of two smelters owing to uneconomic power tariffs imposed by the State Electricity Board for HINDALCO and a weak financial position in the case of MALCO. Demand grew at a compound growth rate of 9 per cent per annum during the five-year period ending 1990/91 but declined during the period 1991/92-1992/93. This largely reflects the reduction in offtake by the state electricity boards due to financial pressures and the general recession in the economy which affected other consumer segments. The 1980s saw the emergence of NALCO in the public sector which became a trendsetter in production efficiency. As capacity nearly doubled over the decade, production levels increased from 200,000 tonnes in 1980/81 to almost 450,000 tonnes in 1990/91.

A process of deintegration has been going on in the world aluminium industry since the late 1970s. Companies and countries have selected activities in which they can sustain competitiveness, and have got out of others. This trend began to be reflected in India in the 1980s, leading to a proliferation of independent producers of sheets, foils and extrusion and rods. NALCO, capitalizing on the competitive advantage provided by the bauxite from the Orissa mines, set up its smelter to use only 50 per cent of the installed capacity of alumina and exported the rest.

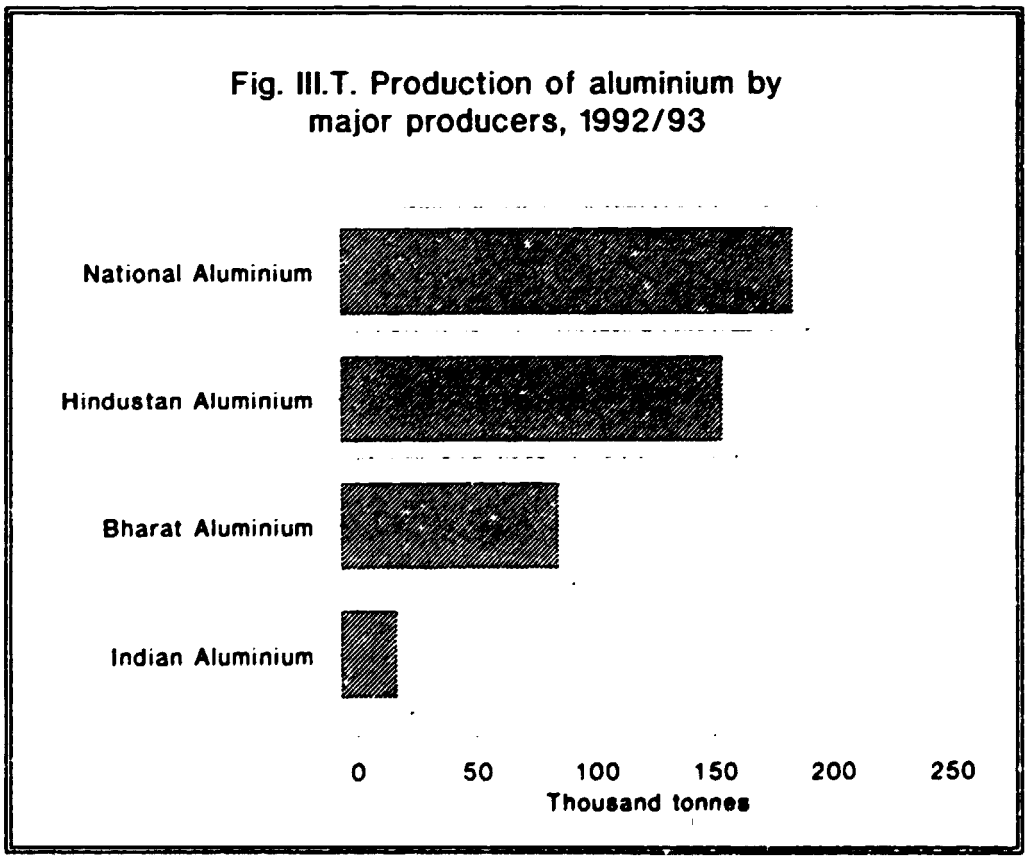
At present, the bulk of alumina production is being exported from India. Like Australia, India could be a highly competitive supplier of alumina to the world. Some of its competitive strength is lost at the next stage of production because of the high power intensity in the production of aluminium, power being a very scarce and expensive input.

In aluminium, there was substantial capacity expansion during the 1970s but production did not keep pace with the increasing capacity (see Table III.44). Inadequate power supply was a major factor in constraining capacity utilization during the 1970s. The Aluminium Control Order, 1970, was another. In recent years, the use of aluminium in utensils, doors, windows and automotive castings has been encouraged through concessional fiscal levies. Environmental concerns also favour the replacement of wood by aluminium.

Table III.44. Capacity, production and sales of aluminium, major aluminium producers, 1992/93

Producers	Capacity (Thousand tonnes)	Production (Thousand tonnes)	Sales (Rs billion)
National Aluminium (NALCO)	218	190	11.9
Hindustan Aluminium (HINDALCO)	150	160	9.8
Bharat Aluminium (BALCO)	100	91	5.1
Indian Aluminium (INDALCO)	117	23	7.6
Madras Aluminium (MALCO)	25	..	..

Source: Ministry of Mines



Prior to the economic reforms of 1991, protection from foreign competition was provided to aluminium by imposing high custom duties on waste and scrap (85 per cent) and wrought products (105 per cent). The domestic regulatory regime, including the aluminium price control, had a stifling effect on the industry. Besides, heavy excise duties on aluminium encouraged the use of steel even where the intrinsic lightness and anti-corrosivity of aluminium made it the more rational choice. The situation has undergone dramatic change in the 1990s as the regulatory environment has been dismantled, excise duties have been lowered and custom duties have also been reduced (see Box III.N).

Box III.N. Major policy reforms

Aluminium price decontrol

The aluminium price decontrol of 1989 was a major turning point for the industry as the rate of return on investments in this industry was no longer artificially suppressed. As the price of aluminium increased, the independents were adversely affected, while the organized sector set out to plan major expansions in capacity. In the liberalized economic regime of trade policy reform, as the custom duty on aluminium has been lowered, competition from imports has become a reality.

At present the domestic aluminium industry is protected by an import duty of 25 per cent and a countervailing duty (to match the excise duty on domestic production) of 25 per cent.

Customs duty reduction (percentage)

	Pre-1991	Present
Ingots	5 (plus Rs 6,000/MT)	25
Waste and scrap	85	25
Wrought products	105	50

Excise duty reduction (percentage)

Ingots	20 (plus Rs 2,500/MT)	20
Waste and scrap	30	20
Wrought products	35	20

In the semi-fabrication sector, estimates of capacity and production are less reliable as the number of players is large. A significant number of them operate in the unorganized sector. Demand stimulus from construction has been slow. However, the growth of this sector cannot be measured entirely in tonnage because, with the development of aluminium fabrication technologies, down-gauging has been an important trend worldwide and in India. For example, aluminium sheet used for closures and packaging has on average become 25 per cent thinner over the last decade. Similarly, aluminium used in vial caps has been downgauged by nearly 35 per cent and some aluminium roofing sheet as much as 47 per cent.

Quality consciousness now pervades the market. Customer demand for improved quality including ISO 9000 certification is pushing the entire industry to take the quality route. The variable quality and quantity of metal supply owing to swings in international prices and production problems at

home tends to inhibit the investment drive that could lead to wider and more beneficial application of the metal.

The aluminium price decontrol of 1989 was a major step forward in the direction of policy reform for the industry. This was followed by the reduction in tariffs in the post-1991 period. Excise duties have also been lowered to stimulate domestic demand. The industry has responded positively to these changes. Production of aluminium peaked in 1992/93 at 484,000 tonnes and then declined to 465,000 tonnes in 1993/94. The industry is going through a process of restructuring to respond to the new challenges.

Waste recovery in India at present is essentially in the unorganized sector which employs obsolete technology, resulting in poor quality of metal, heavy environment pollution and health hazards for the employees. With breakthroughs in the recycling technology, it is possible to produce very high grade metal without adverse effects on the environment. The Indian tradition of collecting every bit of scrap could be an important asset. Of late, recycling of aluminium has assumed importance because of the technological advances in the developed economies in the last decade.

Two major foreign collaboration agreements have recently been approved for the production of aluminium products (see Annex Table A-30), one of them with 100 per cent foreign equity.

Constraints and prospects

The per capita consumption of aluminium in India is very low at 0.57 kilograms compared to 22 kilograms in the United States and 16.4 kilograms in Germany. It is also much lower than the per capita consumption of 5-7 kg in the Asia-Pacific region. Compared to other developing economies, the volume and variety of applications of aluminium in India in the building, transport, machinery, consumer durables, packaging and telecommunications sectors is very low and the quality and design are very poor. Also, there are no block uses of aluminium in the country, e.g. railway freight cars, large aluminium containers, gas cylinders, automotive wheels and engine blocks and cycle rims. The major consumer of aluminium in India is the electrical sector (37 per cent), followed by transportation (19 per cent), consumer durables (12 per cent) and the fast-growing packaging sector. Demand from the electrical sector is likely to grow with the emphasis that the present Government is placing on attracting investment - domestic as well as foreign - in the power sector in the liberalized economic regime.

As the trend towards deintegration of the aluminium industry strengthens worldwide and in India, it is important to recognize the role of the various subsectors which constitute the aluminium industry, and develop policies accordingly. To date the emphasis in India has been on primary aluminium. System flexibility with regard to balancing demand with or without imports, and rapid response in terms of import duties and levies, would go a long way in providing the confidence needed for growth in the downstream sectors. At present, user industries are growing rapidly, while the supply of metal is insufficient.

NALCO has already proved itself to be the lowest cost producer of alumina in the world. INDAL in alliance with Tata Industries and Hydro Aluminium of Norway, and Larsen & Toubro, in alliance with Alcoa of the United States, are each planning export-oriented alumina plants of 1 million tonne capacity to be located in Orissa. Each of these plants can be expanded to as much as to 2 million tonnes per annum capacity. NALCO's alumina plant of 800,000 tonnes capacity is also amenable to brownfield expansion to 1.2-1.5 million tonnes. All these are in Orissa. Beyond that, there is the prospect offered by the bauxite deposits in Andhra Pradesh and Maharashtra. A clear declaration on the bauxite areas available for exploitation is also called for, to encourage investment based on the otherwise attractive bauxite available in India.

For the primary smelting sector, a major constraint is imposed by the availability of power which is an important input accounting for over 25 per cent of the metal cost. The economic capacity for aluminium smelters today is 200,000 tonnes per annum, which requires in turn power-generating capacity ranging between 400 and 500 MW. Investment in power of that magnitude by a greenfield smelter would push up the cost of the metal at least in the initial 10 to 15 years of operation. It is necessary, therefore, for the Government to clarify whether greenfield smelters will have to have their own captive power, and also whether such captive power is permitted only on the basis of coal or also on the basis of hydroelectric resources. In China, aluminium has been declared a strategically necessary material and claims priority for power allocation.

By becoming a global player in alumina, India (like Japan) may also be able to solve its metal supply problem through tolling or through equity swaps with smelters which do not have captive alumina.

Given the large domestic market and the availability of skilled manpower, India can also grow into being a significant supplier of semi-fabricated and fabricated aluminium products. However, metal shortage and the high price of world metal may act as strong inhibitors to the growth of semi-fabricated products in India. The quality of fabrication and lack of development in design are two constraints upon the semi-fabricating and fabricating industries. While market pull will lead to rapid upgrading of quality and designs, a concerted effort at research and development will lend speed to the exercise.

A demand spurt is expected in 1994/95 in virtually all segments of the market for aluminium metal and its semi-fabricated products. Prices have already hardened worldwide and thanks to the efforts made to export Indian semi-fabricated products since 1991, the export market shows excellent prospects.

Excellent opportunities also exist for modern, hi-tech, large scrap recycling based not only on domestic scrap generation but also on imported scrap. This is an employment-intensive activity and India will have a competitive advantage for the foreseeable future.

N. MACHINERY AND CAPITAL GOODS

Indian industrial planning has traditionally given special importance to the capital goods sector. This was because the strategy was heavily influenced by the Mahalanobis model, which essentially reflected a closed economy framework, in which the creation of a larger capital goods sector was seen to be essential to sustain high levels of investment. The strategy was implemented by following a policy of stimulating direct investment by the public sector in capital goods and also by encouraging private investment in machinery and other capital goods through policies of strong import substitution.

As a result, India has an extensive capital goods industry which today accounts for close to 20 per cent of the organized manufacturing sector. It produces a wide range of products for defence as well as commercial needs and manufactures complete plants and machineries for a large number of industries such as sugar, textiles, cement, steel, petrochemicals, mining, agriculture, power and telecommunications. The industry encompasses public sector units in the heavy machinery and equipment sectors (including machine tools), large private sector units producing a wide range of machinery and small-scale units producing simple machinery.

Resource base

Iron and steel forms the basic resource for the development of the machinery industries (see industry branch profile of iron and steel, Chapter III, Section L). India has developed a large and diversified metal industries base which supplies critical inputs to the machinery industries. Mining, which was earlier largely reserved for the public sector, is now opening up, with 13 minerals (such as gold, diamond, tin, copper, zinc, iron ore) having been dereserved for exploitation by the private sector. Import duties on metals have also been lowered substantially. All this provides a good base for a healthy development of the capital goods sector in future.

Recent trends

Value added in electrical machinery, adjusted for price changes, grew at a compound annual average rate of close to 9 per cent in the period from 1980/81 to 1988/89, while that in non-electrical machinery grew at the rate of 4.6 per cent per year. The industrial production data show a much faster growth of electrical machinery during the 1980s (see Table III.45). To some extent this is because of the much faster growth of the electronics industry in the 1980s. The latter is included as part of electrical machinery in the index but not in the Annual Survey of Industry classification which is the source of the value added data.

In the 1980s when the Indian industrial sector began to be deregulated and technological modernization became important, the policy towards capital goods began to be reviewed. Users of the capital goods were critical of restrictions on the import of machinery which were aimed at protecting the high cost and often also the technological inadequacies of domestically produced machines. There was a growing demand for import liberalization and for low tariffs on imported machinery to stimulate technological upgrading of Indian industries and make them more competitive. At the same time, some policy-makers believed that developing the domestic capital goods industry was necessary to conserve the scarce foreign exchange and build a strong indigenous technological base, all of which called for import regulations and high tariffs. The need for high tariffs on capital goods was also justified in terms of the high cost of inputs such as steel, and it was argued that the effective protection of capital goods was actually much lower.

Table III.45. Growth of machinery production, 1980/81-1994

	1980/81-1990/91	1991/92	1992/93	1993/94	April-June 1994
Non-electrical machinery	6.4	-2.0	-1.3	2.7	7.6
Electrical machinery	18.8	-12.1	-2.1	-6.8	22.2
Machinery (total)	13.9	-9.5	-1.9	-4.1	21.9

Source Ministry of Industry

In the event, the import of capital goods remained subject to licensing restrictions during the 1980s, but the system was operated with greater flexibility than in the past. Greater weight was given to the need for technological modernization in determining the justifiability of import, especially in the case of new investments. Imports of machinery were permitted relatively easily, and at lower tariffs for new projects, especially for industries such as fertilizer and petrochemicals, and also for 100 per cent export-oriented units. However, the overall policy remained restrictive.

In 1987 there was a reaction against the freedom to import capital goods for new projects at lower rates. The rate of duty for capital goods imported for projects other than fertilizer projects was raised to 80 per cent, reflecting the need for using tariffs for protection as import licensing was weakened.

The new economic policies aim at making Indian industry internationally competitive, and this has led to major changes in the policy towards importing capital goods. Import licensing of capital goods has been abolished and Indian investors are free to buy the capital goods they need either from domestic sellers or from imports. Equally important, the duty levels on capital goods imports have been reduced.

Import duties on capital goods have been scaled down to a range of 20–40 per cent, representing a substantial reduction from the levels prevalent in 1991 (see Box III.O). The import duty on capital goods has been reduced to 25 per cent in general, with a special zero duty provision for fertilizer projects and a duty of 20 per cent on power projects. Duties on specified machinery items range from 25 per cent to 45 per cent. Units registered under the 100 per cent Export-Oriented Units (EOU) scheme and units in the free-trade zones are allowed duty-free import of capital goods. Besides, under the Export Promotion Capital Goods (EPCG) scheme any actual user can import capital goods with a facility of 15 per cent duty by undertaking to export four to five times the value of the machines over a period of four to five years. On an import-weighted basis these reductions in tariff rates have amounted to a reduction in the average duty on capital goods imports from 97 per cent in 1990/91 to 38 per cent in 1993/94.

Box III.O. Customs duty reduction for machinery industries, 1991/92 and 1994/95
(Percentage)

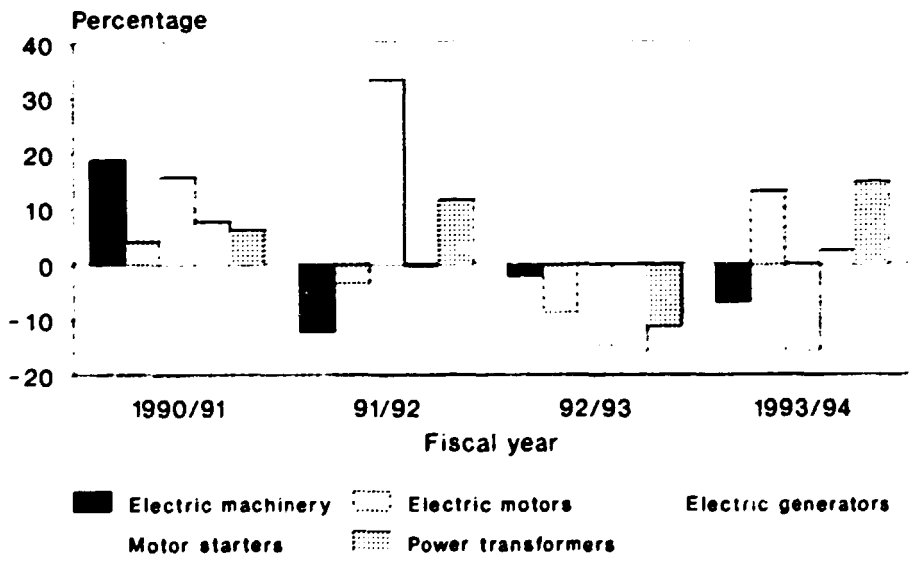
	1991/9 (After 1991 budget)	1994/95
General machinery	105, 80, 40	25
Machine tools	125, 90, 70	45, 35
Project imports		
General	80	25
Fertilizer	15	nil
Petroleum refining	80	25
Power	30, 40	20
Coal-mining	80	25
Electronics	60	25

Source: Ministry of Finance.

Although the reduction in import duties on capital goods is substantial, tariffs are still higher than those prevailing in most other developing economies. Continued high rates of protection reduce the international competitiveness of Indian industry and this is a frequent complaint of investors, although it can be argued that their costs can be absorbed for domestic sales because of higher levels of protection available for most user sectors.

The liberalized policy towards imports of capital goods has yet to show up in any large shift in import propensity towards imported capital goods. The import substitution phase of the 1960s is reflected in a sharp decline in the import ratio up to the early 1970s and its maintenance at a low level during the 1970s. The ratio began to increase again in the 1980s but declined in 1988/89, probably reflecting the imposition of an 80 per cent tariff on project imports in 1987. It has risen marginally again in 1992/93 following the new policies and is estimated to increase further in 1994/95 and subsequent years as the full impact of the new policy is felt.

Fig. III.U. Growth of machinery production by selected products, 1990/91-1993/94



The reduction in the protective tariff for capital goods has been accompanied by a reduction in duties on components and raw materials for capital goods also, but there are inputs on which duty rates have not been reduced to the same level or lower than the duty on capital goods. Inputs such as steel and certain types of plastics and certain electronic items benefit from the higher level of protective tariff. This has generated strong pressure from the capital goods industry on the Government to eliminate these anomalies and reduce duty rates on these items to a level comparable with duties on capital goods.

Annex Table A-31 presents the major foreign investment approvals for the machinery industries. Foreign investment proposals of over Rs 25 billion were approved in the period from August 1991 to September 1994.

Constraints and prospects

India's machinery-producing sector, although initially developed behind high protective walls, has demonstrated substantial strengths and is capable of producing cost-effective products which can hold their own in an increasingly open market. It has also made a small beginning in exports. The technological gap which existed earlier between Indian products and international products has been considerably narrowed due to the rapid introduction of foreign technology. With the more recent trend of direct foreign investment in this sector, the process of technological modernization will undoubtedly be speeded up.

A key factor in the growth of the machinery industries will be the rate of progress made in reducing custom duties on metals and other critical inputs to bring Indian cost levels more in line with world prices. The tariff structure at present contains anomalies because the customs duties on capital goods has been reduced more sharply in the first few years to encourage investment and modernization in the economy, while the pace of reduction in duties on some of the key inputs has been more gradual. However, these anomalies can be easily corrected over the next two years.

O. AUTOMOBILES

India is an important major manufacturer of automobiles and automotive components. Its production of two-wheeler vehicles is among the largest in the world. However, India's share in the world production of cars and commercial vehicles is 0.5 per cent and 2 per cent, respectively. Automotive components have emerged as a strong sector of the Indian automobile industry in recent years.

After decades of high regulation and heavy protection, policies towards the automobile sector began to change in the 1980s. Domestic deregulation and a liberal approach towards foreign investment and technology led to greater competition and a wider range of products. The automobile boom was interrupted by the overall economic recession at the beginning of the 1990s. The automotive industry came out of the recession in 1993 and was forging ahead in 1994.

Automotive design and safety regulations are evolving in India. Seat-belts are now mandatory in new passenger vehicles, safety glass is required for all vehicle windows and windshields, and crash standards have been imposed for vehicle integrity. Fuel efficiency norms came into being in 1983, while emission standards started developing after 1989. The Environment Ministry has proposed new emission standards that come into effect in 1996. Fuel emission norms equivalent to the Euro-1 norms will be introduced in India during the 1990s. The Euro-2 norms which are due to be adopted in Europe shortly are scheduled to be introduced in India by the year 2003.

Passenger cars

The passenger car industry in India developed within a highly regulated and protected economic environment during 1950-1980. Import controls and very high tariff rates on cars cut off all competition from imports. Domestic industrial licensing ensured that there was little competition within the economy. The industry was dominated by two indigenous producers, Hindustan Motors and Premier Automobile Ltd. and until the early 1980s the only passenger cars on the market were

updated versions of European technology of the late 1950s and early 1960s. High excise duties and the poor quality of the roads also had their effect in curbing demand.

In 1981 Maruti Udyog Ltd was set up as a Government company with the objective of modernizing the passenger car industry. The Suzuki Motor Corporation of Japan was the joint-venture collaborator with 26 per cent equity and an option to increase equity up to 40 per cent. The product offered by this company tapped the latent demand for a fuel-efficient car from the growing middle classes of India and thereby helped to expand the market. Competitive pressures also forced the other manufacturers to introduce improved models.

The market for cars grew at a rate of 16.8 per cent per annum during the 1980s compared with 3.6 per cent during the 1970s, despite the fact that the excise duty on cars was raised from 15 per cent in 1983 to 42 per cent in 1989 and 66 per cent in 1991, and the import duty on automotive components increased from 40 per cent to 60 per cent and then to 70 per cent over the same period of 1983-1991.

The economy's recession of 1991 and 1992 had a specially severe impact on the automobile sector. The sharp increase of 60 per cent in the price of petrol in a short span of two years in the aftermath of the Gulf crisis also contributed to it. Car sales declined by 1.2 per cent in 1991 and 4.6 per cent in 1992. This led to a moderation of the high excise duties on motor cars, reducing duties in two stages from 60 per cent to 40 per cent in March 1993. Import duty on components was reduced to 50 per cent in March 1993. Import duty on steel and other raw materials was reduced from 85 per cent to 50 per cent in March 1994. Various state governments also reduced the sales tax on passenger cars.

The industry came out of the recession in 1993, with domestic sales increasing by 21.6 per cent in 1993 to reach a volume of 200,000 (see Table III.46). This was partly a reaction to the change in indirect taxes on cars and partly also the result of lower direct taxes increasing disposable income, easier availability of finance and improved corporate profitability. The revival has continued into 1994 and car sales during January-August 1994 were 21 per cent higher than in the same period of the preceding year.

The industry is set for further modernization and several manufacturers have announced ambitious plans for the introduction of new products in collaboration with well-known foreign firms (see Annex Table A-32). Mercedes-Benz, the automotive subsidiary of Daimler-Benz of Germany, has formed a joint venture with Tata Engineering & Locomotive (Telco) of India, one of the world's leading makers of commercial vehicles, with an investment of about DM 250 million (£102.4 million) for the assembly in India of Mercedes-Benz E-Class executive cars as well as petrol and diesel engines. Daimler-Benz holds a stake of just over 10 per cent in Telco. Volkswagen of Germany, the leading European car maker, has also signed a memorandum of understanding with Eicher Goodearth of India to study the feasibility of joint vehicle production in India. The Eicher group produces Mitsubishi light commercial vehicles under licence in India. General Motors and Hindustan Motors have announced a 50-50 joint venture to produce the Opel Astra, General Motors' best-selling car in Europe. The agreement provides for production to begin in the third quarter of 1995, starting with 20,000 cars a year. Daewoo Corporation of the Republic of Korea is to make its latest Racer car for India's upper middle-class market, starting in September 1995, and producing 25,000 cars in the first year. Daewoo will emerge as the majority shareholder after a restructuring of the existing Indian joint venture, DCM-Toyota.

Table III.46. Sales of automobiles, 1980-1994, selected years
(Thousands)

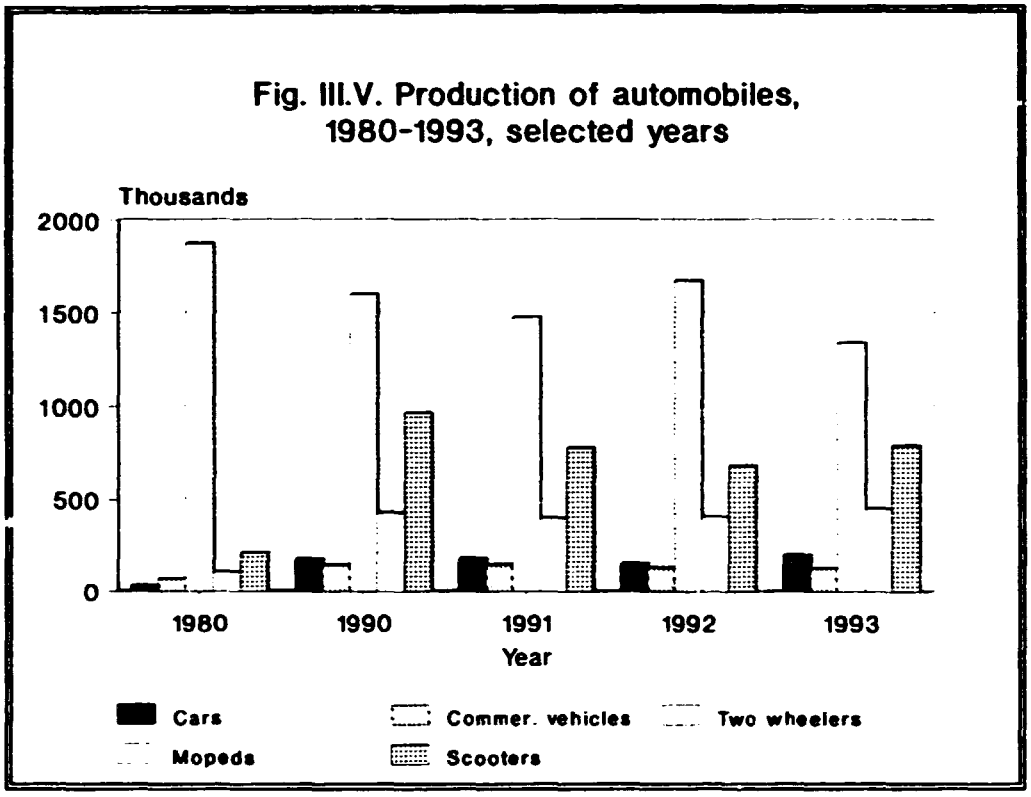
	1980	1990	1991	1992	1993	Jan-Aug 1994
Cars	37.0	174.6	172.5	164.5	200.0	156.2
Jeeps	15.7	41.4	33.1	39.3	44.6	32.2
Commercial vehicles	68.4	141.1	139.3	126.2	136.6	116.7
Light commercial vehicles (LCVs)	19.5	56.0	55.0	50.9	68.8	57.0
Medium and heavy commercial vehicles MCVs/HCVs	48.9	85.1	84.3	75.3	68.6	59.6
Two-wheelers	373.7	1,854.0	1,635.5	1,477.9	1,693.2	1,328.1
Mopeds	104.5	438.2	402.3	408.0	451.9	317.0
Scooters	167.8	940.5	800.6	689.4	805.9	625.8
Motorcycles	101.3	475.2	432.5	380.4	435.4	385.3

Growth rates (per cent per annum)

	1980-1990	1991	1992	1993	Jan-Aug 1994
Cars	16.8	- 1.2	- 4.6	21.6	21.0
Jeeps	10.2	-20.0	18.7	13.5	20.0
Commercial vehicles	7.5	- 1.3	- 9.4	8.2	34.8
LCVs	11.1	- 1.8	- 7.5	35.2	34.0
MCVs/HCVs	5.7	- 0.9	-10.7	-8.9	35.0
Two-wheelers	17.3	-11.8	- 9.6	14.6	20.6
Mopeds	15.4	- 8.2	1.4	10.8	9.0
Scooters	18.8	-14.9	-13.9	16.9	19.0
Motorcycles	16.7	- 9.0	-12.0	14.5	36.0

Source: Automotive Component Manufacturers Association and Association of Indian Automobile Manufacturers

At the same time Maruti-Suzuki is expanding its production capacity from 130,000 vehicles to 200,000 by the end of 1994 in order to expand sales in both the domestic and export markets. Suzuki is to begin exporting its Alto minicar to western Europe from India. Alto, launched earlier this year in India as Maruti Zen, is the first model Suzuki has developed as an overseas production base for introduction in overseas markets.



Mopeds, motorcycles and scooters

Two-wheelers provide a popular and affordable mode of transport for India's vast middle classes. The major moped manufacturers are TVS-Suzuki and Kinetic Engineering Ltd. The major manufacturers of scooters are Bajaj Auto Ltd, Lohia Machines Ltd and Kinetic Engineering. Motorcycles are manufactured by Indo-Japanese collaborations like Bajaj-Kawasaki, Hero Honda, TVS-Suzuki and Escorts-Yamaha, which command the major share of the market.

Policy towards the two-wheeler industry underwent a significant change in the 1980s when the Government allowed the import of foreign technology and liberalized product range restrictions. As Indian manufacturers of two-wheelers entered into collaborations with major Japanese companies, this led to the introduction of newer improved models. With upgraded technology, fuel efficiency and reliability, together with price, became important criteria in influencing consumer choice. Even in quantitative terms the two-wheeler industry saw steady progress during the 1980s, with production and sales growing at the rates of 16.2 and 17.3 per cent per annum respectively.

During 1990-1992 production of two-wheelers dropped from 1.88 million units to 1.48 million units. The recovery during 1993 brought production to 1.7 million units and the buoyant market conditions in 1994 were generating rapid growth. In the first eight months of 1994 sales of motorcycles and scooters grew by 36 per cent per annum and 19 per cent per annum respectively, while moped sales lagged behind at 9 per cent per annum.

Scooters form 50 per cent of the two-wheeler market. Up to the late 1980s demand for scooters far exceeded the supply, a situation which has now been reversed. Scooter sales increased at the rate of 18.8 per cent per annum between 1980 and 1990.

Motorcycle sales grew at a rate of 16.7 per cent per annum during the 1980s. The mid-1980s saw the introduction of 100-cc motorcycles with Japanese collaboration. Hero Honda was the sole occupant of the four-stroke segment. Successive rises in petrol prices saw Hero Honda cornering a major share of the market. At the end of the 1980s Bajaj Auto (with Kawasaki) introduced its own four-stroke motorcycle. This sector is geared for a major shake-up and manufacturers are introducing or planning to introduce new vehicles.

Mopeds were the most rapidly growing segment of the two-wheeler industry between 1970 and 1984, increasing their share of the total production from 11 per cent to 44 per cent. To some extent this was due to the emergence of the rural market, where mopeds found acceptance. As competition from scooters and motorcycles picked up in the second half of the 1980s in response to the liberalized regime, the moped industry was adversely affected. In fact this industry has been ailing since the mid-1980s and sales declined continuously from 1988 to 1991. The industry has been diversifying from single-speed mopeds in the 50-75 cc range to new models with automatic transmission, multispeed scooters and minimotorcycles.

Not only did the two-wheeler industry come out of its recessionary phase in 1993, but the longer-term prospects for this industry are also very bright. Given the high rate of urbanization (3.5 per cent per annum during the 1980s and likely to continue at the same rate), the number of small cities is likely to grow in the years to come. Since the mass transit system is unlikely to be developed at a fast enough pace, the demand for two-wheelers is expected to increase. New markets are also emerging in the rural areas with the expansion and improvement in the condition of rural roads and the development of a wider net for distribution channels. There is also the increasing demand from women, which may be met by developing new products which combine the features of motorcycles and scooters. Some manufacturers have also started exports of two-wheelers. There is potential for export growth, particularly to South-East Asia and Latin America, as this industry modernizes itself and widens its product range.

Three-wheelers

The Indian automobile industry includes a three-wheeler segment, mainly used as urban passenger taxi transport and also as a delivery vehicle. The total production of three-wheelers was 95,000 in 1991, which represented a threefold increase over 1976. Bajaj Auto Ltd, Automobile Products of India Ltd and Scooters India Ltd are the principal producers of three-wheelers in India. Of these, Bajaj Auto accounts for 80 per cent of the total production.

Commercial vehicles

Commercial vehicles had a small and stagnant market until the 1970s. The slow growth of rail transport fuelled the growth of the road transport sector, but the poor quality of the road infrastructure tended to limit the demand for commercial vehicles. Government policies in the past regulated this industry in two areas: light commercial vehicles of 1-2 tonnes payload used for short distance haulage and medium heavy commercial vehicles of 8-10 tonnes payload, which included trucks and buses. Until 1985 licensing regulations prevented major bus and truck producers from diversifying their product range.

The change in government policies towards the automotive sector in 1980 meant that Japanese manufacturers like Toyota, Nissan, Mitsubishi and Mazda entered the commercial vehicle sector, collaborating with local partners in the light commercial vehicle segment (gross vehicle weight up to 6 metric tonnes). During 1983-1993, growth in commercial vehicles was led by the light commercial vehicle (LCV) segment at a rate of 9.4 per cent per annum. The joint ventures,

however, were adversely affected by the appreciation of the yen and delays in the indigenization programmes.

Government policies were also responsible for the fragmentation of capacity in the LCV segment caused by the multiplicity of licences issued by the Government during the 1980s. However, market forces are increasingly pointing towards structural consolidation. In recent years the dominant players have consolidated their positions and there have been no new entries. This is an area where indigenous technology has done well in the market in competition with products from joint ventures with major international producers. Telco, a late entrant in the LCV market in 1986, has cornered 50 per cent of the market share, while Bajaj Tempo accounts for another 30 per cent. Bajaj Tempo has a technical collaboration with Mercedes-Benz to manufacture its T-1 range of LCVs.

The medium and heavy commercial vehicle sector (MCVs/HCVs) producing trucks and buses is dominated by two producers, Telco and Ashok Leyland; Hindustan Motors has an insignificant market share. Telco and Ashok Leyland figure among the top ten producers of MCVs/HCVs in the world. Telco with its market share of almost 70 per cent has entered into a joint venture with Cummins Engineering Company of the United States to manufacture high-performance engines in 1995 to meet world-class emission and fuel-efficiency norms. Telco currently exports about 12.5 per cent of its total sales of products which have been developed based on indigenous technology. In 1987 IVECO of Italy and the Hindujas, through a jointly owned foreign company, acquired a controlling stake of 51 per cent in Ashok Leyland. This company is the largest bus supplier to the state transport corporations in India. At present its products are available with HINO engines from Japan. The company plans to introduce the products of IVECO into the fast-growing LCV/ICV (intermediate commercial vehicle with gross vehicle weight of 7-8 tonnes) segment. IVECO is likely to use Ashok Leyland as a production base for exports to its global distribution network. The long-run leadership in the MCV/HCV market will be determined on the basis of appropriate design, reliability and after-sale service. Unlike the LCV sector, the MCV/HCV sector, which accounted for almost 70 per cent of the sale of commercial vehicles in 1983, grew by only 1 per cent per annum between 1983 and 1993. By 1993 the share of MCVs/HCVs had declined to 50 per cent of the commercial vehicles market.

The macroeconomic stabilization measures of 1991 and 1992 and the associated credit squeeze had an especially adverse effect on the demand for commercial vehicles. Sales of LCVs declined from 56,000 in 1990 to 55,000 in 1991, while those of MCVs/HCVs declined from 85,000 to 84,300. The recession deepened in 1992 and brought the sales down to 50,869 (a decline of 7.5 per cent) and 75,320 (a decline of 10.7 per cent) in 1992. The budget for 1993/94 lowered the excise duty rates on commercial vehicles from 23.125 per cent to 15.125 per cent in an effort to help the industry.

With the general economic upturn, the LVC industry was well on its way to recovery, although the MCV/HCV segment was still languishing in 1993. In January-August 1994 both segments of the commercial vehicles industry showed sales growth of well over 30 per cent. However, competition from imports was still absent because import duties in the range of 81.5-131 per cent on commercial vehicles and 37.5-114.5 on parts and components still remain high. Commercial vehicle sales are projected to grow at close to 9 per cent per annum until the year 2000; the LCV segment is projected to grow at a faster rate of 11 per cent per annum and the MCV/HCV segment at 7 per cent per annum.

Automotive components

The decade of the 1980s was a watershed in the development of the automotive component industry in India. The advent of a large number of Japanese investors on the scene in the early

1980s, spearheaded by Suzuki through its joint venture with the Government of India (Maruti Udyog Ltd), brought in much larger volumes and also put pressure on the component industry to enhance capacity, develop new products and lay greater stress on quality. In 1986 the Government of India removed licensing restrictions on auto components. Some component manufacturers started business during this period to cater to the growing volumes of vehicle production. Investment grew rapidly and new products such as molycoated piston rings, cera metallic clutches, dual-brake systems, diaphragm clutches and asbestos-free brake linings were developed for the first time. This period also witnessed Japanese collaborations in the auto component industry.

The Indian auto component industry has emerged as an internationally competitive industry capable of penetrating world markets. It is no longer a young industry catering to demand from the domestic automobile industry. It was for this reason the industry was able to step forward confidently into export markets in the 1990s, withstanding the shock of a deep recession in the Indian vehicle industry between 1991 and 1993. Exports grew at 20 per cent per annum in dollar terms during 1991-1994.

The satisfying turnaround in the fortunes of the Indian vehicle industry in 1993/94 means that the component industry is maintaining a growth of 25 per cent in production and 17 per cent in exports in dollar terms. The economic reforms introduced by the Government in 1991 have begun to pay dividends. The delicensing of the passenger car industry has been a very significant signal that the Indian automotive industry can be a major vehicle of growth.

However, the major spurt in the demand for the component industry can only be consolidated if there is a rapid addition to capacity through new investment. In 1992/93, even during the recessionary period, the Indian component industry made an investment of about Rs 5 billion in new plant and machinery. Investment rose to Rs 7.8 billion in 1993/94 and is expected to touch Rs 11 billion in 1994/95.

Constraints and prospects

Road transport is playing an increasingly important role in meeting India's growing needs. Its share of surface freight traffic has increased from 12 per cent in 1951 to 38 per cent in 1981 and almost 60 per cent in 1991, while that of passenger traffic has increased from 26 per cent in 1951 to 62 per cent in 1981 and just under 80 per cent in 1991.

Efforts are being made by the Government to attract private investment in roads. A few projects have been undertaken on a Build-Operate-Transfer (BOT) basis, but for these to yield quick results, the legal procedures concerning acquisition of land by the private sector need to be simplified. If this is combined with more privatization of passenger transport, this should generate strong demand for the commercial vehicle industry. At present, over 50 per cent of Indian bus transportation is in private hands and this is expected to increase in the next two or three years.

The prospects for the commercial vehicle industry have improved. With interest rates going down, easing of government controls and general economic recovery, the fortunes of the industry are looking up. Various non-banking financial service companies, along with the major manufacturers, are offering hire-purchase financing, which is becoming increasingly attractive.

P. ELECTRONICS

The electronics industry in India developed very slowly for many years as a consequence of restrictive policies which discouraged consumer electronics and also discouraged foreign investment and foreign technology in this technology-driven sector. The situation changed in 1982 with the introduction of colour television of a programme to cover the whole country with a network of television transmitters. Similarly, modernization and expansion of the telecommunication system with a switch over from the old cross-bar exchange to electronic exchanges provided a push for electronics catering to the communication industry. The introduction of computerization in government offices and in organizations such as the railways also created a market for computers. All this has stimulated the growth of the component industry. Electronics has been one of the fastest growing industries in the 1980s.

Box III.P. Liberal policy regime on electronics

There is no more licensing except for defence-related items and four items of consumer electronics, namely video cassette recorders, colour television sets, compact disc players and tape recorders. Almost all electronic components can be imported without an import licence. The same is true for the import of capital goods and raw materials for electronics. Import duties have been substantially reduced, though they are still much higher than the international average. Duties on components and materials have also come down (see Box III.Q). There are no locational restrictions on setting up any electronics units. Since electronics has been assigned the status of a priority industry, foreign investment up to 51 per cent does not require any approval but rather is subject to automatic approval. Though Foreign Investment Promotion Board (FIPB) approval is required for more than 51 per cent foreign equity, there has been no rejection of any request for even 100 per cent equity in the electronics industry.

Resource base

The most important element of the resource base of the Indian electronics industry is the abundance of top class technical and managerial manpower. It was in recognition of this fact that Texas Instruments set up a chip design centre in India in 1986 and Novell set up a product development centre more recently. The availability of world class technical skills in India ensures that technical know-how needed for high quality manufacture can be easily absorbed to attain world standards.

Most of the special materials used in the manufacture of electronic components are not produced in India. The high incidence of customs duty pushes up the cost of the imported materials in India but the Government has already begun the process of reducing these duties, although more remains to be done (see Box III.Q).

Box III.Q. Customs duty reduction in electronics
(Percentage)

	Pre-1991	Present
Television sets	150	65
Video cassette recorders	150	65
Computers	85	65
Raw materials	40-60	20
Piece parts	60-80	30
Components	80-90	40

Recent trends

The policy regime before June 1991 was highly regulated in line with the overall strategy of inward-oriented industrialization.[4/] Under the four-tier tariff structure (materials, parts of components, components and equipment), a rather high degree of protection had been built up for even the most unviable units manufacturing the smallest parts or input materials. The liberalization of the economy in 1991 has made a significant difference.

A significant portion of the Indian electronics industry is geared towards manufacture of components e.g. resistors, capacitors and memory chips. This phenomenon can be traced to the policies of import substitution which encouraged Indian industry to target low technology component manufacture which had a ready-made domestic market and was shielded from international competition. This resulted in the build-up of an electronics infrastructure which was high cost by international standards. In the rest of the world, component manufacture is done by very large, vertically integrated companies. The very high duties on components and materials and the high cost of indigenous components stand in the way of developing electronic equipment industries which earn higher margins.

Almost two thirds of the electronic components produced in India go to consumer electronics, of which about half are specific to the television industry only. A quarter of the components produced domestically are for the telecommunications sector. The component industry in India is focused mainly on picture tubes, semiconductors, resistors, capacitors, printed circuit boards, ferrite components, electromechanical components etc. Semiconductor devices account for only 7 per cent of the production in India compared to around 30 per cent in industrialized countries. The production of integrated circuits is almost negligible. The value of electronics production grew dramatically from Rs 12.2 billion in 1982 to RS 137.2 billion in 1993 (see Table III.47).

Table III.47. Electronics production, 1982-1993, selected years (Rs million)

Item	1982	1988	1991	1993
Consumer electronics	3,395	24,000	30,000	38,500
Industrial electronics	1,900	9,362	14,100	17,000
Computers	522	4,860	8,300	10,500
Communication equipment	2,548	9,000	19,350	31,500
Strategic electronics	1,084	3,900	5,150	3,580
Components	2,140	10,233	17,500	24,600
Free-trade zone hardware	457	1,840	2,685	4,505
Computer software for export	129	850	3,300	7,000
Total	12,175	63,685	100,425	137,185

Source: Department of Electronics.

In the face of policy reforms the components industry is looking for greater vertical integration, capacity expansion and technology infusion. The colour picture tube (CPT) industry is a case in point. Far from being intimidated, the industry is now going for major expansion projects and looking to export markets. Hotline of India, in partnership with Goldstar of the Republic of Korea, is setting up a unit for manufacturing 3.6 million colour picture tubes. JCT Electronics and SAMTEL Colour, two of the existing colour picture tubes manufacturers, are creating additional capacities of 2 million and 1 million, respectively. By 1997, Indian colour picture tube production will exceed the projected demand of 7 million colour television sets in the Indian market. Major investments are also being made in glass shell manufacturing. Large international companies like Matsushita, Sony and Goldstar, which are coming in with plans for major investments in entertainment electronics, are encouraging well-known component manufacturers to set up operations in India. The large investments proposed in the telecommunications sector will also have a similar impact on the component industry.

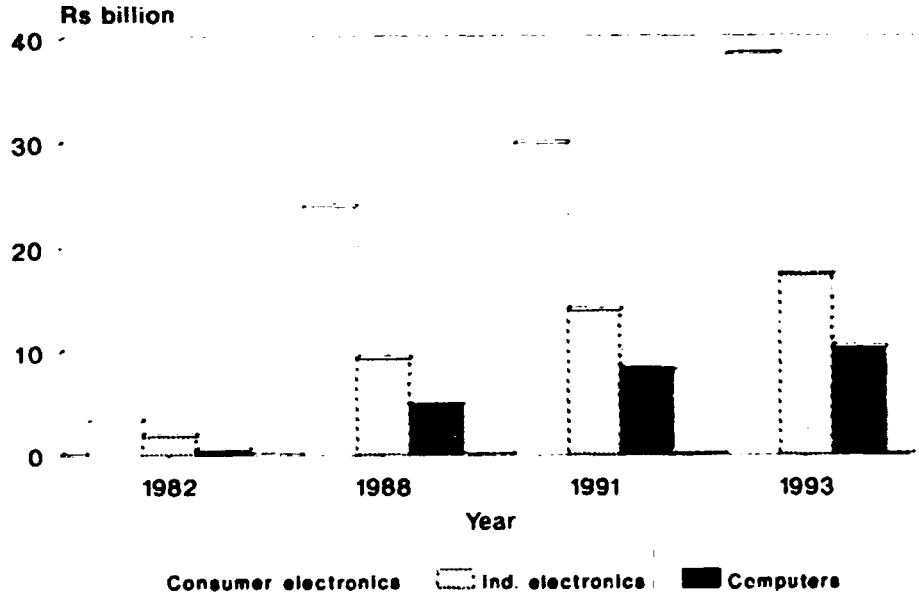
The establishment of a chain of 21 laboratories of international standards for testing and quality control has been a very significant achievement of the last few years. These labs, set up under the Directorate of Standard, Testing and Quality Control with financial and technical assistance from Germany, provide assistance to the Indian industry in testing and calibration, product development, system reliability prediction and assessment and training in quality and reliability. The Directorate has succeeded in generating greater quality consciousness in the Indian industry. Already 65 Indian electronics companies have got ISO 9000 certification.

Exports of electronic equipment and components from India have been quite modest so far, because in the pre-liberalization era, it used to be more profitable to sell in the domestic market than export. To some extent, this has been corrected now and Indian companies are increasingly looking for export opportunities. There are still some problems of harassment by customs and procedural difficulties in procuring inputs at international prices. On the other hand, the flexibility and additional incentives provided by the schemes for electronic hardware technology parks and software technology parks are attracting companies to set up export-oriented operations. These parks are specifically designed to fulfil the needs of a globally oriented electronic industry. These are schemes for export-oriented production in customs-bonded premises.

Under the software technology park scheme, datacom equipment as well as computer hardware and software can be imported duty-free. There is an export obligation equivalent to 1.5 times the sum of the wage bill and the foreign exchange outgoings on account of import of computer hardware and software. Under the electronic hardware technology park scheme, capital goods as well as all inputs can be imported duty-free. There is no fixed value addition requirement, but domestic market access at concessional duty is available on a graded scale based on value added. Exports from India include colour and black and white television sets, audio equipment, monitors, power supplies, headset assembly, magnetic media, picture tubes, electrolytic capacitors, printed circuit boards, ferrites, etc.

Foreign investment amounting to Rs 1.6 billion has got approval in this sector so far, and the interest is growing (see Annex Table A-33). The latest development is the decision of Sony Corporation of Japan to manufacture colour television sets, broadcasting equipment, software and other hi-tech products.

Fig. III.W. Production of selected electronics, 1982-1993, selected years



Television sets

The television industry, which had been the locomotive of growth in the 1980s, started stagnating towards the end of the decade, as the continuous rise in taxes made television sets unaffordable to many potential consumers. Several of the smaller companies had to bow out during the latter part of the decade, a process which was inevitable and desirable, and the market came to be dominated by half a dozen Indian companies. However, even the largest of these companies sells only half a million sets, which is small by international standards.

In a significant reversal of past policy, the Government reduced the tax rates for television sets and components in 1993, leading to substantial price reductions. This, along with the availability of satellite television since 1992, has set off a small boom, with the market now growing at about 30 per cent per annum. The growth rate will be much higher in the coming years as several channels with local language programmes become available and as more entertainment programmes are offered as opposed to an almost exclusive focus in the past on education and social issues. In the wake of the liberalization in policy with respect to the use of foreign brand names and foreign technical collaborations, a number of major international companies are now poised to enter the Indian television market. Sony Corporation of Japan has recently been granted approval to set up a 100 per cent owned subsidiary for producing colour television sets and other electronic items. Competition in this sector is likely to intensify before the industry stabilizes and may lead to another shake-out.

Telecommunications

Reforms in the telecommunication sector have lagged behind in the general process of economic reforms in the economy. However, some important steps have already been taken. The earlier monopolization by the public sector of telecommunications equipment manufacture has been given up, and international companies like Alcatel, Fujitsu, Siemens and Ericsson are manufacturing switching equipment. Terminal equipment and small exchanges are already being manufactured by a number of units. Value added services have been thrown open to the private sector. Two private sector companies are in the process of setting up very small aperture satellite networks. Private sector companies are being licensed to operate cellular phones and paging systems.

The National Telecom Policy announced on 13 May 1994 takes the further step of opening up the provision of basic services to the private sector. With the implementation of this policy, the Indian telecommunication scene will undergo a major transformation. Already, there is increased focus on consumer needs as MTNL has started franchises all over the country by way of ISD/STD booths. This transformation is opening up immense opportunities for service providers and equipment manufacturers. The new service providers will add a substantial demand for telecommunications equipment and while much of this may be imported to begin with, it is likely to create an expanding market in which competitive suppliers will be able to thrive. India, along with China, is likely to become the world's largest and most attractive market for telecommunication equipment. This will provide a boost to hardware manufacture and software development in India.

Information technology and computers

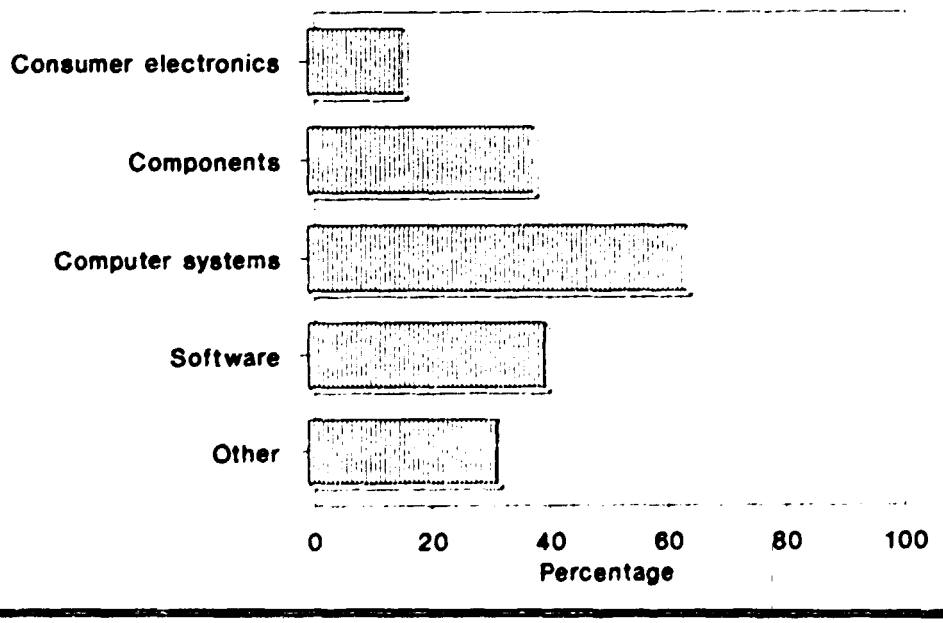
The second half of the 1980s saw rapid growth in the production of computers in India. The National Informatics Centre set up NICNET linking nearly 500 townships within its network with the offices of the central and state governments. Several Indian computer companies also started up during this period. The Indian market for computers, however, remained confined to government and corporate offices. The former Soviet Union also offered an interesting market opportunity abroad. A recent sign of the growing awareness of the importance of information technology in India is the rapid growth of the computer training business directed at a broader clientele than the corporate sector. There is now a fast-growing home market for personal computers which is very price conscious. As the tariff levels come down and prices get slashed, this market is expected to grow even faster. Indeed, India could be market for 1 million personal computers by 1997. In the wake of the opening up of the economy, Indian business (both manufacturing and services) is increasingly looking to information technology to improve productivity and competitiveness. The improvement in telecommunications infrastructure is also beginning to make networking a reality.

Before the liberalization of the economy, the Indian computer market was dominated by half a dozen Indian manufacturers. The main threat to them came from the unorganized sector (the garage assemblers). This scene is fast changing even though the unorganized sector continues to grow faster than the organized sector. Already the industry is growing at a healthy rate of over 30 per cent per annum, but it is now poised to take off on a much steeper growth trajectory.

The price of Indian-made computers remains high because of the high level of fiscal protection (65 per cent) and the relatively high tariff (40 per cent) on components which have to be imported, such as central processing unit chips, memory modules and hard disc drives. As the tariff level comes down, domestic computer prices are expected to drop, giving a fillip to the computer market. Most of the other peripherals and components are manufactured domestically and are available at competitive prices.

The most conspicuous case of foreign investment approved in the information technology sector after the reforms was the re-entry of IBM in partnership with the well known Indian business house of Tata. Subsequently, Hewlett-Packard acquired a majority stake in the largest of the Indian computer manufacturing companies. Other major international companies like DELL and Compaq have chosen to take advantage of a new scheme, electronic hardware technology park, which permits a company to use the domestic market entitlement accruing to an export-oriented unit to sell an item different from the exported products. Thus, an Indian company sells complete motherboards to DELL and sells DELL computers in the Indian market at a concessional rate of duty. Motorola has started manufacturing two-way radios in Bangalore under the electronic hardware technology park scheme. A number of fresh investments and technical collaborations are in the pipeline and the Indian computer industry is looking forward to very exciting times.

Fig. III.X. Import intensity of electronics production by product, 1994



Software

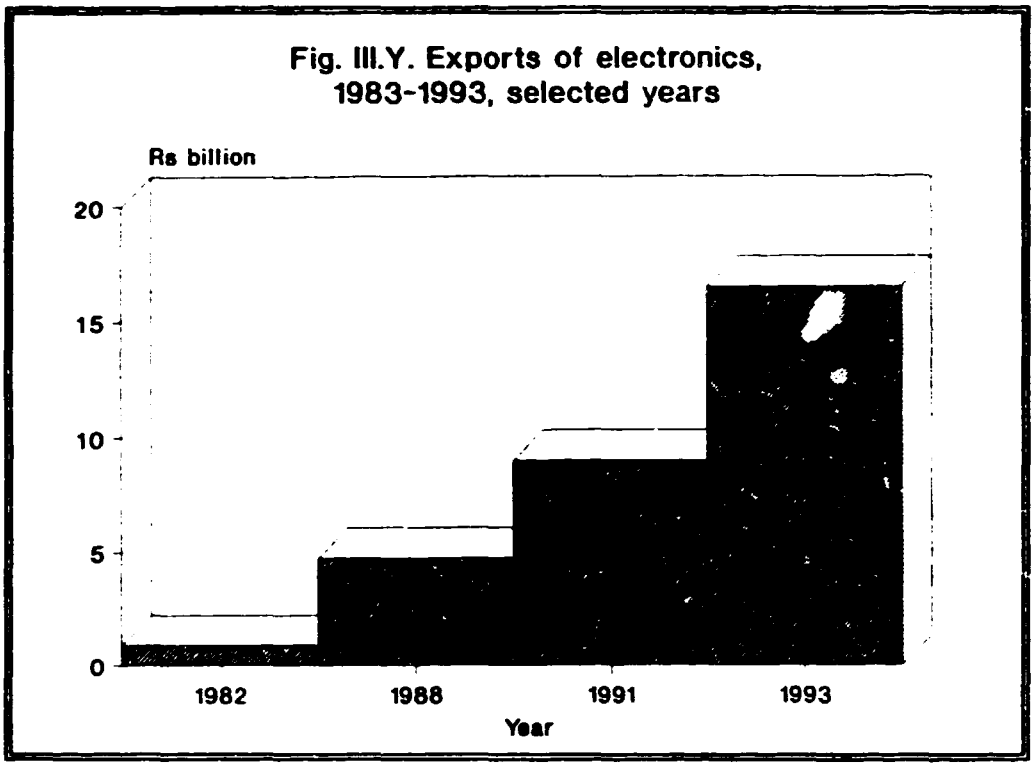
The Indian computer software industry is still relatively small but has gained a reputation for quality and price competitiveness. India's software industry is primarily export-oriented although there has also been increasing demand for application-specific software within the country, particularly in the service and banking sectors, e.g. Banknet. Software and services exports have been growing rapidly. Initially almost the entire software exports were to the United States market but the share has now come down to 65 per cent, with Europe accounting for another 20 per cent. Recognizing the cost advantage of developing software in India, the European Union has now set up Software Support Services and Education Centre at Bangalore to create a body of Indian software personnel oriented towards the European platforms and way of working. As the industry grows, it is likely to face a shortage of personnel capable of managing turnkey projects.

Software did not suffer from all the constraints which manufacturing had to face under an inward-looking policy regime because competitiveness in this sector depends primarily on the quality of technical and skilled manpower. Many Indian educational institutions are of international standard. The software industry has come to acquire a certain glamour in the Indian milieu and hence attracts the best talents.

The advantages of technical manpower, combined with a rather fortuitous decision taken by the Government some years ago to adopt UNIX as the industry standard, provided a headstart to the Indian software industry. Access to the latest models of computer hardware and software tools, and availability of high-speed data communication links were rather limited in the pre-liberalization days. In order to meet the need for a reliable telecommunications system for speedy date transmission, the Department of Electronics has set up three earth stations at Bangalore, Hyderabad and Thiruvannanthapuram. Three more are expected to be set up shortly at Gandhinagar (Gujarat), Bhubaneshwar (Orissa) and Noida (Uttar Pradesh) near New Delhi. The other facilities for data transmission are provided by the Videsh Sanchar Nigam Limited and SATCOM. Companies operating in all the major centres like Bangalore, Madras, Bombay and Delhi are able to get 64 Kbps data communications link to any part of the world for a price that is much lower than the prevailing rates in Europe. Software exporters are also able to import computer hardware on payment of 15 per cent customs duty.

India is now internationally recognized as a reliable source of software. It is therefore not surprising that most of the international information technology majors have set up software development operations in India. These include IBM, Motorola, DEC, UNISYS, AT&T, Bull, Hewlett-Packard, Verifon, Cadence, Citicorp, Novell, Dunn & Bradstreet, Hughs Systems and Siemens. Although the largest of the software companies is an Indian company, Tata Consultancy Services, the list of the top ten is dominated by international companies. Initially, the Indian software industry grew up as provider of on-site services in the United States. With high-speed data communication links becoming available at a reasonable price, the scenario has undergone a dramatic change. Offshore development of software in India is now coming into vogue.

The identification of India as the most cost-effective source of high quality software in a report commissioned by the World Bank and the growing official concern and support for protection of intellectual property rights have persuaded major international companies to think in terms of product development in India. The decision of Novell to set up its first product development centre outside North America in India is an example. Siemens has also started developing telecommunications software in India. Significantly, Motorola's software development operation in India seems to enjoy a higher quality rating than the parent company's operations in the United States.



Constraints and prospects

A major constraint to the development of the electronics industry in India is the highly protective structure of tariffs on materials and components. Not only is the duty of 20 per cent on materials and 40 per cent on components too high for the industry to be globally competitive, but matters are made worse by the fact that many materials can only be imported at the peak level of tariff. The Government has attempted to resolve this problem by devising the electronic hardware technology park scheme, but for a healthy growth of the electronics sector, a further fine-tuning of tariffs, especially those relating to computers and micro-electronics, is necessary.

The small scale of operations is another major constraint. In most cases, the scale is below the critical minimum required for economic viability. Because of the small scale, companies are unable to invest in marketing as well as R&D. The large Indian business houses with financial muscle avoid making forays into electronics for fear of the fast pace of the changes in technology. This, however, is now beginning to change.

Considerable improvement is also called for in the procedures for clearance of incoming and outgoing cargo if international operations are to become attractive. The absence of a truly modern infrastructural system and paperless transactions is another constraint.

The potential for immediate market expansion is tremendous in view of the low level of penetration. This is true of almost every segment of electronics, be it telecommunications, computers or television. The attraction of such a large market is drawing global players into India. Given the entrepreneurial and technical talents already available and the new-found dynamism of the Indian economy, the industry seems well-poised to respond to these challenges.

NOTES TO CHAPTER III

1/ A.V. Ganesan, *The GATT Uruguay Round Agreement, Opportunities and Challenges*, Rajiv Gandhi Institute for Contemporary Studies, EGICS paper No. 8, 1994, New Delhi.

2/ "The Indian Cement Industry", *Investment and Credit Rating Agency, Industry Watch Series* (August 1994).

3/ "The Indian Steel Industry, 1994", Investment and Credit Rating Agency, *Industry Watch Series*.

4/ For an appreciation of the policy perspectives and changes in India's electronics sectors, see Vittal (1994), India Incorporated: Reflections on the Indian Electronics Industry, Vikas, New Delhi.

ANNEX A
STATISTICAL TABLES

Table A-1. Structure of manufacturing value added by major industry groups, 1960/61-1988/89, selected years
(Percentage share)

Two-digit industry group of the National Industrial Classification	1960/61	1970/71	1980/81	1988/89
Food products	14.0	9.0	6.0	9.6
Beverages	0.5	0.8	1.0	1.0
Tobacco	3.4	2.5	1.4	1.9
Textiles	28.8	20.2	21.7	10.8
Footwear	0.2	0.4	0.7	1.2
Wood and cork	0.8	0.6	0.5	0.4
Furniture and fixtures	0.4	0.5	0.5	0.7
Paper and products	1.3	2.6	2.2	1.5
Printing and publishing	2.4	2.5	1.7	1.6
Leather products	0.3	0.4	0.2	0.5
Rubber products	2.5	2.5	1.8	2.8
Chemicals and products	8.4	12.4	15.4	14.7
Petroleum products	1.8	1.8	1.6	4.9
Non-metallic mineral products	4.0	3.8	3.3	4.3
Basic metals	9.5	9.6	11.4	13.7
Metal products	3.0	3.2	2.5	2.6
Non-electrical machinery	3.9	6.5	8.1	7.1
Electrical machinery	3.2	6.1	8.8	8.9
Transport equipment	8.6	8.2	8.9	9.1
Miscellaneous	2.9	6.3	2.3	2.6
Manufacturing total	100.0	100.0	100.0	100.0

Sources: *Annual Survey of Industries* (various issues), C.S.O. and Ministry of Planning

Table A-2. Employment trends by major industry groups, 1960/61-1988/89, selected years

	Employment (Million)			Growth in employment (Percentage per annum)	
	1960/61	1980/81	1988/89	1960-1980	1981-1989
Food	0.54	1.32	1.04	4.4	-3.8
Beverages	0.01	0.04	0.05	7.8	3.6
Tobacco	0.28	0.30	0.38	3.9	0.4
Textiles	1.31	1.69	1.35	1.0	-2.6
Footwear	0.01	0.08	0.13	9.4	5.9
Wood and cork	0.04	0.07	0.07	2.7	-1.5
Furniture	0.02	0.02	0.02	0.4	-1.6
Paper and products	0.05	0.13	0.13	4.6	-0.6
Printing and publishing	0.11	0.15	0.15	1.1	-0.7
Leather products	0.02	0.03	0.05	2.5	4.5
Rubber products	0.04	0.08	0.10	4.1	1.3
Chemicals and products	0.14	0.49	0.57	6.5	1.8
Petroleum products	0.01	0.04	0.05	8.6	1.2
Non-metallic minerals	0.18	0.36	0.44	3.0	2.1
Basic metals	0.20	0.58	0.62	4.7	0.6
Metal products	0.09	0.19	0.21	3.0	0.7
Non-electrical machinery	0.15	0.41	0.45	5.0	0.6
Electrical machinery	0.09	0.32	0.38	6.9	2.1
Transport equipment	0.32	0.63	0.67	2.7	0.2
Miscellaneous	0.06	0.14	0.20	6.4	3.5

Sources: *Annual Survey of Industries* (various issues). C.S.O. and Planning Commission.

Table A-3. Tariff rates for selected industry groups, 1990/91-1993/94
(Percentage)

	1990/91	1991/92	1992/93	1993/94
A. Import-weighted averages				
Total	87	64	47	33
Agricultural products	70	30	25	17
Capital goods	97	76	50	38
Intermediate goods	114	55	40	31
Consumer goods	164	144		
B. Import duty collection rates				
Total	47	44	37	
Food products	47	27	12	
Capital goods	60	64	53	
Chemicals	92	82	71	
Man-made fibres	83	63	45	

Source: Ministry of Finance, Government of India and World Bank

Table A-4. Sugar cane recovery and yield, major states, 1992/93

State	Recovery (Percentage)	Yield (Tonnes per hectare)
Assam	8.4	38.8
West Bengal	8.0	57.7
Bihar	9.4	45.4
Uttar Pradesh	9.7	55.4
Punjab	9.4	56.9
Haryana	10.0	48.9
Rajasthan	9.4	46.5
Madhya Pradesh	9.9	33.4
Gujarat	11.3	85.5
Maharashtra	11.3	76.4
Karnataka	10.6	86.0
Andhra Pradesh	10.2	72.1
Orissa	9.1	64.6
Tamil Nadu	9.4	104.0
Kerala	8.0	69.3
Pondicherry	9.4	80.5
Goa	9.5	42.3
Nagaland	7.9	50.0
All India	**10.3**	**63.8**

Source: Indian Sugar Mills Association

Table A-5. Productivity of coffee cultivation, average of 1987/88 and 1988/89
(Kilogrammes per hectare)

Size of holdings (Hectare)	Karnataka	Kerala	Tamil Nadu	Other states
0 - 4	929	407	357	526
4 - 10	1,090	189	367	152
Above 10	1,107	363	659	200

Source: Coffee Board of India, Bangalore

Table A-6. Raw material consumption in textile production, 1970/71-1993/94, selected years

	Thousand tonnes			Percentage share		
	1970/71	1980/81	1993/94	1970/71	1980/81	1993/94
Cotton	1,123	1,313	1,965	93.1	88.1	83.3
Cellulosic	73	133	147	6.0	9.0	6.2
Polyester	10	29	186	0.8	2.0	7.9
Acrylic	-	6	51	-	0.4	2.2
Others	1	8	11	0.1	0.5	0.4
Total	**1,206**	**1,489**	**2,360**	**100.0**	**100.0**	**100.0**

Source: Ministry of Textiles.

Table A-7. Installed capacity in textile mills, 1979/80-1992/93, selected years

End-year	Mills (Number)			Installed capacity (Million)	
	Spinning	Composite	Total	Spindles	Looms
1979/80	400	291	691	21.1	0.208
1989/90	770	281	1,051	26.6	0.181
1993/94	906	269	1,175	28.3	0.169
Compound growth rate (percentage per year)					
1979/80-1989/90	6.8	-0.3	4.3	2.3	-1.4
1989/90-1993/94	4.2	-1.1	2.8	1.6	-3.2

Source: Ministry of Textiles.

Table A-8. Regional distribution of textile mills and installed capacity, 1993

States	Mills (Number)			Installed capacity (Thousand)	
	Spinning	Composite	Total	Spindles	Looms
Andhra Pradesh	70	2	72	1,610	1.2
Tamil Nadu	463	22	485	8,740	7.9
Gujarat	34	87	121	4,038	52.9
Maharashtra	62	75	137	4,965	55.8
Total	**629**	**186**	**815**	**19,353**	**117.3**
Share in all-India total (percentage)	72	69	71	69	74.0

Source: Ministry of Textiles.

Table A-9. Direction of Indian exports of leather and leather products, 1988/89-1993/94 ($ million)

Country	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94
Germany	199.8	249.0	350.5	278.3	301.2	324.1
Italy	75.7	139.5	172.3	123.5	120.9	129.3
United Kingdom	111.5	135.1	171.8	144.9	141.3	159.2
Belgium	5.0	5.1	6.8	9.7	10.3	8.9
Denmark	9.1	15.6	22.0	21.5	19.3	20.8
France	43.2	53.1	62.7	61.3	78.4	63.7
Greece	0.7	0.6	0.9	0.6	2.2	2.3
Ireland	0.2	0.2	0.3	0.5	0.9	0.9
Netherlands	16.5	18.0	23.9	21.7	26.5	27.9
Portugal	10.2	13.6	20.6	19.2	20.3	14.8
Spain	9.4	16.0	25.1	27.7	32.7	25.0
CIS	215.4	178.9	175.4	159.9	80.3	39.2
Czechoslovakia	11.5	10.4	9.2	20.5	10.9	12.7
United States	133.2	156.1	174.8	176.3	208.1	240.9
Canada	11.5	17.9	16.3	18.7	18.0	15.9
Japan	19.4	20.8	27.8	20.3	23.8	15.9
Australia	22.6	26.3	25.6	24.9	24.2	26.5
Switzerland	8.8	13.2	15.5	17.9	17.0	16.1
Republic of Korea	5.3	8.9	11.0	8.2	7.6	4.3
Others	108.9	140.0	105.8	92.3	133.4	171.2
Total	**1,017.9**	**1,218.3**	**1,418.3**	**1,247.9**	**1,277.3**	**1,319.6**

Source: Eighth Plan Working Group Report.

Table A-10. Coal reserves, 1993

State	Proven	Indicated	Inferred	Total	Share
	(Million tonnes)				(Percentage)
West Bengal	10,590	10,867	3,666	25,123	13
Bihar	28,993	28,801	6,579	64,373	33
Madhya Pradesh	9,387	20,480	9,156	39,023	20
Maharashtra	3,170	1,179	1,927	6,276	3
Orissa	5,714	22,120	18,384	46,218	24
Andhra Pradesh	6,079	916	3,843	10,838	5
Others	919	549	458	1,926	2
Total[a/]	**64,852** (33)	**84,912** (44)	**44,013** (23)	**193,777** (100)	**100**

Source: Cement Manufacturers' Association of India.

a/ Figures in parenthesis indicate shares of proven, indicated and inferred reserves in the total.

Table A-11. Measures of relative profitability of cement, 1980/81-1991/92

Year	Return on total net assets (Reserve Bank of India)		Return on capital employed (ICICI Portfolio of companies)	
	All industry average	Cement companies	All industry average	Cement companies
1980/81	12.7	5.2	18.3	3.9
1981/82	12.3	5.9	18.0	10.0
1982/83	11.3	13.9	16.1	22.2
1983/84	10.0	11.9	14.0	17.7
1984/85	10.3	7.8	14.5	13.3
1985/86	10.1	7.0	16.8	12.3
1986/87	9.3	5.4	14.0	8.1
1987/88	9.1	4.2	12.7	7.2
1988/89	..	..	14.3	5.2
1989/90	..	..	15.2	7.9
1990/91	..	..	15.6	23.2
1991/92	..	..	15.9	30.4

Sources: Reserve Bank of India (RBI) (1993) and The Industrial Credit and Investment Corporation of India Limited (ICICI) (1984/85,1989/90 and 1991/92).

Notes: Return in both cases is profit before tax with interest added back, but not including depreciation. Total net assets is defined by the RBI as the total of assets in the balance sheet net of depreciation. ICICI defines capital employed as share capital, reserves and surplus and all borrowings.

Table A-12. Production and consumption of petroleum products, 1980/81-1993/94
(Million tonnes)

Year	Production	Consumption	Gross imports
1980/81	24.123	30.896	7.289
1981/82	28.182	32.523	4.884
1982/83	31.242	34.657	5.028
1983/84	33.149	35.841	4.328
1984/85	33.513	38.795	6.092
1985/86	39.881	40.872	3.865
1986/87	42.761	43.662	3.047
1987/88	44.728	46.416	3.948
1988/89	45.699	50.092	6.495
1989/90	48.690	54.095	6.564
1990/91	48.562	55.035	8.660
1991/92	48.349	56.974	9.445
1992/93	50.359	58,902	11.283
1993/94[a/]	51.084	60.677	12.076

Source: Ministry of Petroleum and Natural Gas

a/ Provisional

Table A-13. Expansion and new refineries to 1999

	Location	Refining capacity (Million tonnes)	Capital outlay (Rs million)	Completion schedule
Madras Refinery	Thanjavur	0.5	1,140	September 1993
Indian Oil Corporation	Koyali	3.0	7,570	March 1994
Indian Oil Corporation	Digboi	0.7	3,510	September 1994
Bongaigaon Refineries	Bongaigaon	1.0	2,230	December 1994
Indian Oil Corporation	Barauni	0.5	2,000	December 1994
Indian Oil Corporation	Kamrup	0.2	200	December 1994
Cochin Refineries	Ambalamugal	3.0	4,810	March 1995
Bharat Petroleum Corporation	Bombay	0.5	0	March 1995
Madras Refinery	Manali	3.0	14,000	April 1996
Black Gold Refineries	Visakhapatnam	2.5	8,000	April 1996
Hindustan Petroleum Corp.	Vizag	2.5	3,600	April 1996
Reliance Petroleum	Jamnagar	9.0	51,420	June 1996
Mangalore Refinery	Mangalore	6.0	36,000	July 1996
Indian Oil Corporation	Karnal	6.0	38,680	April 1997
Numaligarh Refinery	Numaligarh	3.0	30,000	December 1997
Bharat Petroleum Corporation	Sagar	6.0	56,000	April 1999
Parmar Refinery Corporation	Jamnagar	5.0	45,000	End 1999
Hindustan Petroleum Corp.	Ratnagiri	6.0	43,000	End 1999
Essar Oil Limited	Jamnagar	9.0	40,500	End 1999
Ashok Leyland	Paradeep	6.0	30,310	End 1999

Source: Ministry of Petroleum and Natural Gas.

Table A-14. Major petrochemical projects approved by the government

Project	Feedstock	Capacity (Thousand tonnes)	Investment (Rs billion)
Olefin complexes			
IPCL-Gandhar	Gas	300	35
Reliance-Hazira	Natural gas	750	60
GAIL-Auriya	Gas	300	35
Assam	Gas/naphtha	300	35
Haldia	Naphtha	300	35
Vizag	Naphtha	300	35
Aromatic complexes			
JK Petrochemicals	Naphtha	140 P-xylene 200 PTA	20
NAPCO	Naphtha	140 P-xylene 200 PTA	20
Total		**2,930**	**275**

Source Department of Chemicals and Petrochemicals

Table A-15. Fertilizer projects under implementation by sector

Project (State)	Capacity (in lakh tonnes) Nitrogen	Phosphate	Date of government approval/ issue of LI/IL	Project cost (Rs crores)	Expected date of commissioning
A. Public sector					
HFC-Haldia Fert Project, Midnapur (West Bengal)	1.51	-	71/11 (Original) 81/07 (Revised)	88.03 (Original) 281.96 (Revised)	Uncertain
B. Private sector					
CFCL, Gadepan (Rajashtan)	3.34	-	16.10.84	764.00 (Original) 1,200.00 (Revised)	Went into production in December 1993
Tata Chemicals Lt., Babrala (Uttar Pradesh)	3.34	-	28.06.85	980.00 (Original) 1,250.00 (Revised)	August 1994
Bindal Agro Chemicals Ltd., Shahjahanpur (Uttar Pradesh)	3.34	-	12.07.89	695.00 (Original) 1,250.00 (Revised)	August 1994
Expansion of Vijaipur Fertilizer Project	3.34	-	30.09.93	987.30 (Original)	October 1996
Expansion of Aonla Fertilizer Project	3.34	-	30.09.93	960.00 (Original)	October 1996

Source: Ministry of Chemicals and Fertilizers.

Table A-16. Drugs and pharmaceuticals (monitored bulk drugs), estimated demand and actual production (organized sector), 1990/91-1992/93

Name of the drug	Unit	1990/91 Actual production	1991/92 Estimated demand	1991/92 Actual production	1992/93 Estimated demand
I. Antibiotics					
1. Penicillin					
a) Penicillin G Sodium	MMU	94.39	330.00	110.23	330.00
b) Penicillin G Procaine	MMU	108.83		145.56	
c) Penicillin G (1st Crystels)	MMU	935.44	1,779.00	1,017.28	2,046.00
d) Penicillin G Benzathene	MMU	16.77		25.34	
2. Streptomycin	T	159.19	180.00	167.98	180.00
3. Chloramphenicol Powder[a/]	T	91.49	200.00	89.94	200.00
4. Chloramphenicol Palmitate[a/]	T	19.35		17.08	
5. Tetracycline	T	219.04	266.00	174.26	280.00
6. Oxytetracycline	T	168.90	174.00	177.33	152.00
7. Ampicillin Trihydrate[a/]	T	406.08	456.00	308.22[b/]	525.00
8. Erythromycin	T	57.60	82.00	91.85[b/]	88.00
9. Amoxillin	T	97.92	152.00	84.33[b/]	175.00
10. Doxycyline	T	2.12	12.00	1.26	12.00
11. Gentamycin	Kg	1,609.00	6,655.00	675.00	7,320.00
12. Framycetin	T	6.36	4.00	8.12	4.00
13. Rifampicin[a/]	T	87.49	205.00	40.45	236.00
14. Ampicillin Sodium	T	15.30	91.00	39.34	105.00
15. Cloxacillin	T	73.04	53.00	92.93[b/]	59.00
16. Cephalexin	T	80.15	91.00	60.51[b/]	105.00
17. Griseofulvin	T	-	53.00	8.65	59.00
II. Sulpha Drugs					
1. Sulphamethoxazole[a/]	T	2,103.30	665.00	2,042.89[b/]	732.00
2. Sulphadimidine	T	122.86	250.00	110.18	250.00
3. Sulphacetamide	T	34.71	58.00	55.28	61.00
4. Sulphadiazine	T	4.07	87.00	-	91.00
5. Sulphamoxole	T	63.97	69.00	49.49	73.00
6. Sulphaphenazole	T	2.91	50.00	-	50.00
7. Sulphaguanidine	T	48.00	180.00	84.45	180.00
8. Sulphasomidine	T	15.48	60.00	2.24	60.00
III. Vitamins					
1. Vitamin A	MMU	82.49	110.00	71.19	115.00
2. Vitamin B1	T	73.37	116.00	78.80	125.00
3. Vitamin B2	T	24.57	49.00	19.84	52.00
4. Vitamin B12	Kg	333.13	270.00	354.88	288.00
5. Vitamin C	T	900.12	984.00	863.01	1,033.00
6. Vitamin D3	Kg	461.00[b/]	492.00	322.00	517.00
7. Vitamin E	T	93.97	21.00	174.20	22.00
8. Folic Acid	T	1.94	9.00	3.21	10.00
9. Nicotine Acid[a/]	T	0.86	278.00	0.60	292.00
10. Nicotinamide[a/]	T	188.07		100.40	
11. Vitamin B6	T	40.97	64.00	57.47	67.00

(continued)

Table A-16. (Continued)

Name of the drug	Unit	1990/91 Actual production	1991/92 Estimated demand	1991/92 Actual production	1992/93 Estimated demand
IV. Analgesics and Antipyretics, etc.					
1. Analgin	T	138.30	1,736.00	261.30	1,823.00
2. Aspirin	T	1,494.32	1,852.00	1,320.67	1,945.00
3. Oxyphenbutazone	T	5.53	60.00	8.26	60.00
4. Phenyl Butazone[a/]	T	33.12	90.00	29.14	90.00
5. Paracetamol[a/]	T	39.65	2,662.00	6.18	2,928.00
6. Pithidine	Kg	460.00	695.00	161.00	729.00
7. Ibuprofen	T	777.78	183.00	731.37	210.00
8. Piroxicam	T	1.15	1.33	1.37	1.40
V. Corticosteroids					
1. Dexamethazone	Kg	362.00	695.00	377.00[b/]	729.00
2. Betamethasone	Kg	1,141.00	1,389.00	1,190.00	1,459.00
3. Prednisolone	Kg	2,246.00	5,209.00	1,949.00	5,470.00
4. Hydrocortisone	Kg	15.00	1,100.00	2.00	1,155.00
VI. Anti TB Drugs					
1. PAS and its Salts[a/]	T	45.37	60.00	25.19[b/]	60.00
2. INH[a/]	T	44.93	333.00	25.45	366.00
3. Thiacetazone	T	10.73	81.00	1.25	85.00
4. Ethambutol	T	569.68	399.00	532.79[b/]	439.00
5. Pyrazinamide[a/]	T	98.71	73.00	63.29[b/]	81.00
VII. Anti-malarials					
1. Chloroquin	T	218.20	200.00	196.22[b/]	200.00
2. Amodiaquin	T	35.24	20.00	30.82	20.00
VIII. Anti-dysentery Drugs					
1. Metronidazole[a/]	T	331.92	532.00	273.86[b/]	586.00
2. Tinidazole[a/]	T	41.25[b/]	53.00	37.26[b/]	59.00
3. Diloxanide Furoate	T	-	93.00	-	102.00
4. Iodochlorohydroxyquinoline	T	194.50	n.a.	215.64	n.a.
5. Furazelidone[a/]	T	-	299.00	-	324.00
IX. Antidiabetics					
1. Chlorpropamide	T	67.57	46.00	44.38	49.00
2. Tolbutamide	T	44.05	25.00	34.67	25.00
3. Glybenclamide	T	3.07	2.00	4.03	2.00
4. Insulin	MU	2,703.00	4,658.00	3,097.00	5,124.00
X. CNS Stimulants					
1. Caffeine[a/]	T	55.39	156.00	48.91	164.00
2. Nikethamide[a/]	T	0.06	3.00	0.06	3.00
XI. Diuretics					
1. Frusemide	T	7.80	9.00	7.59	10.00
2. Acetazoiamide	T	6.30	3.00	4.06	3.00
3. Hydrochlorothiazide	T	16.47	4.00	8.58	4.00
4. Spironelactone	T	0.57	1.74	0.26	0.82

(continued)

Table A-16. (Continued)

Name of the drug	Unit	1990/91 Actual production	1991/92 Estimated demand	1991/92 Actual production	1992/93 Estimated demand
XII. Anti-asthmatics					
1. Ephedrine	T	49.49	58.00	40.00[b/]	61.00
2. Salbutamol	Kg	7,765.00	3,473.00	11,557.00[b/]	3,647.00
3. Terbutaline	Kg	480.00	521.00	465.00	547.00
4. Theophylline	T	175.64}		178.94}	
		}	289.00	}	304.00
5. Aminophylline	T	3.65}		6.96}	
XIII.Cardiovascular Drugs					
1. Propranolol[a/]	T	3.76	14.00	6.91[b/]	15.00
2. Xanthino' Nicotinate	T	15.05	17.00	13.33	18.00
3. Digoxin	Kg	26.00	41.00	17.85	43.00
4. methyl Dopa	T	49.53	58.00	31.14	61.00
XIV. Anaesthetics					
1. Lignocaine/Xylocaine	T	6.14	27.00	6.18	29.00
2. Procaine	T	37.31	80.00	48.41	88.00
XV. Antihistamins					
1. Pheneramine Maleate	T	26.06	29.00	38.00	30.00
2. Diphenhydramine[a/]	T	1.20	21.00	1.53	22.00
XVI. Antihelmentics					
1. Piperazine and Salts[a/]	T	-	50.00	-	50.00
2. Mebendazole	T	9.44	68.00	6.90[b/]	79.00
3. Tetramisole/Levamisole	T	6.98	27.00	18.67[b/]	29.00
4. Pyrantel Palmoate	T	46.91	19.00	48.73	19.00
XVII.Tranquillizers and Sedatives					
1. Phenobarbitone	T	0.92	20.00	1.26	20.00
2. Diazepam[a/]	T	2.26	25.00	1.13	26.00
3. Trifluperazine	T	0.24	2.50	0.10	2.50
4. Imipramine	T	2.49	6.00	0.43	6.00
5. Nitrazepam	Kg	240.00	490.00	250.00	524.00
XVIII.Anti-filarials					
1. Diethyl Carbamazine (DEC Citrate)	T	7.82	45.00	8.27	45.00
XIX. Anti-leprotics					
1. Dapsone	T	4.07	58.00	13.30	61.00
2. Clofazamine	T	1.37	2.89	1.64	3.04
XXI. Other antibacterial					
1. Trimethoprim	T	344.14	133.00	377.49[b/]	146.00
2. Nalidixic Acid	T	26.10	47.00	27.86	51.00
XXII.Gastrointestinal					
1. Ranitidine	T	127.15	53.00	98.22[b/]	59.00

Source: Ministry of Chemicals and Fertilizers.

a/ Major production is in small-scale sector which is not included in this statement

b/ Estimate.

Table A-17. Capacity utilization in steel industry, 1950/51-1993/94, selected years

	1950/51			1969/79			1986/87			1993/94	
	C	P	CU	C	P	CU	C	P	CU	C	P
Bhilai		-		2.50	1.86	74	3.40	2.23	66	4.00	4.03
Durgapur		-		1.60	0.82	51	1.15	0.92	80	1.15	0.62
Rourkela		-		1.80	1.10	61	1.40	1.10	79	1.40	1.15
Bokaro		-			-		3.10	2.06	66	4.00	3.71
IISCO		<------In private sector------>					0.67	0.53	79	0.37	0.32
Vizag		-			-			-		3.00	1.36
Public sector		-		5.90	3.78	64	9.72	6.84	70	13.92	11.19
TISCO	1.00	1.08	108	2.00	1.71	86	2.25	2.25	100	3.00	2.49
IISCO	0.50	0.34	68	1.00	0.70	70	<----------In public sector------>				
Secondary sector	0.10	0.08	80	0.50	0.35	70	6.00	2.56	43	8.00	3.07
Private sector	1.6	1.50	94	3.50	2.76	79	8.25	4.81	58	11.0	5.56
Total	**1.6**	**1.50**	**94**	**9.40**	**6.54**	**79**	**17.97**	**11.65**	**65**	**24.92**	**16.75**

Source: Steel Authority of India Ltd (SAIL).

Note: C, P and CU stand for capacity (in million tonnes), production (in million tonnes) and capacity utilization (in percentage), respectively. The capacities of Durgapur, Rourkela and IISCO were derated in the 1970s, due to some inherent technological bottlenecks in their expansion programme.

Table A-18. Saleable steel production, 1993/94
(Million tonnes)

	Mild steel			Alloy steel
	Main producers (BF)	Secondary sector (Non-BF)	Total	(Non-BF)
Public sector	9.81	0.00	9.81	0.18
Private sector	2.15	3.22	5.37	1.02
Total	**11.96**	**3.22**	**15.18**	**1.20**

Source: SAIL.

Note: BF route is the Blast Furnace Route, and the Non-BF route is the use of Director Reduction/Electric Arc furnaces, re-rolling mills and induction furnaces, etc. The figures for the secondary sectors are for crude steel, viz. pencil ingots, concast billets.

Table A-19. Technological status of Indian steel industry, crude steel production by process
(Percentage distribution)

	Basic oxygen furnace route	Electric arc furnace route	Open hearth furnace route	Total	Continuously-cast steel output (Percentage of total)
World (average)	60	30	10	100	70
India	46	31	23	100	20
China	64	22	14	100	34
Republic of Korea	67	33	-	100	98
Taiwan Province	53	47	-	100	99
Brazil	78	20	-	100	57
Japan	69	31	-	100	96
United States	62	38	-	100	86
Canada	65	35	-	100	91
Germany	77	22	1	100	94
France	70	30	-	100	95
United Kingdom	74	26	-	100	94
Eastern Europe	47	14	39	100	24

Source: International Iron and Steel Institution Statistics.

Note: The open hearth route is most energy intensive and is technologically inefficient in terms of productivity. A higher share of continuously-cast steel output in the total steel production, signifies a technological advantage in terms of higher yields and productivity.

Table A-20. Per capita consumption of crude steel, selected countries, 1975-1992, selected years
(Kilogrammes per capita)

	1975	1980	1985	1990	1992
Industrialized economies		436.9	384.6	415.5	374.0
Developing economies		44.4	49.6	58.0	62.4
Republic of Korea	84.0	160.0	277.2	501.0	532.3
Taiwan Province	-	355.4	328.0	754.7	1,024.0
Brazil	106.0	117.9	88.5	67.8	65.5
Mexico	103.0	148.7	98.7	99.4	111.0
Venezuela	196.0	186.3	102.1	84.2	105.0
Egypt	42.0	48.5	71.4	88.6	90.9
Saudi Arabia	196.0	335.7	324.9	190.3	226.8
Former USSR	554.0	566.1	566.3	528.6	395.3
China	38.8	43.6	67.8	59.3	71.3
India	14.0	16.5	19.2	26.2	21.7

Source: Investment and Credit Rating Agency. *The Indian Steel Industry*, 1994.

Table A-21. Production of aluminium, 1993/94
(Kg tonnes per year)

	Extrusions	Alumina	Metal	Sheet	Foil
Primary producers	2,020	460	130	6	28
Indalco	270	41	74	6	8
Hindalco	350	170	32	-	10
Balco	200	92	24	-	10
Nalco	800	157	-	-	-
Malco					
Secondary producers					
Organized	-	-	20	12	27
Unorganized	-	-	80	-	15
Total	**2,020**	**460**	**230**	**18**	**70**

Source: Ministry of Mines.

Table A-22. Import intensity of Indian electronics, 1994
(Percentage)

Sector	Import intensity
Consumer electronics	16
Components	38
Computer systems	64
Software	40
Others	32
Average	31

Source: Department of Electronics.

Table A-23. Production of automobiles, 1980-1993, selected years
(Thousands)

	1980	1990	1991	1992	1993	January-August 1994
Cars	30.5	176.8	178.9	153.9	199.6	154.9
Jeeps	15.1	41.9	30.4	38.2	44.3	31.3
Commercial vehicles	68.3	145.6	145.7	128.1	127.8	122.4
LCVs	19.6	57.5	56.3	50.1	66.9	59.9
MCV/HCVs	48.6	88.1	89.4	77.9	68.8	62.5
Two wheelers	417.6	1,875.5	1,603.1	1,477.2	1,673.7	1,333.4
Mopeds	106.1	428.5	398.1	405.9	451.4	313.6
Scooters	209.9	968.4	780.3	684.3	793.8	644.2
Motorcycles	101.6	478.5	424.6	387.0	428.5	381.6

Growth rates (per cent per year)

	1980-1990	1991	1992	1993	January-August 1994
Cars	19.2	1.2	-14.0	30.0	20.0
Jeeps	10.7	-27.4	25.7	16.0	19.0
Commercial vehicles	7.9	0.1	-12.1	-0.3	56.4
LCVs	11.4	-2.1	-11.0	33.5	47.0
MCV/HCVs	6.1	1.5	-12.9	-11.7	67.0
Two wheelers	16.2	-14.5	-7.9	13.3	24.5
Mopeds	15.0	-7.1	2.0	11.2	9.0
Scooters	16.5	-19.4	-12.3	16.0	27.0
Motorcycles	15.4	-11.3	-8.9	10.7	37.0

Sources Automobile Component Manufacturers Association and Association of Indian Automobile Manufacturers

Table A-24. Foreign investment in food processing, August 1991-September 1994

Amount (total) (Rs million)	Number of approvals		
	Total	Technical	Financial
17,751.82	293	64	229

Major projects approved by FIPB

Foreign collaborator	Indian company	Item of manufacturing	Foreign equity (Rs million)
Kellogg Co, United States	Kellogg Co, New Delhi	Food processing, breakfast cereals	1,800.00 (100)
CP Aquacutune Business Group, Thailand	-	Shrimp feed Mill processed Shrimps	3,660.00 (100)
Coca Cola South Asia Holdings Inc.	-	Beverage	600.00 (100)
Pizza Hut International, Hong Kong	-	Restaurants	631.00 (100)
Dadi Balsara (NRI), Singapore	Mount Everest	Mineral water	748.00 (71)
Petron International Inc	Petron International, Pune	Sugar, industrial alcohol, non-ethylene glycol	500.00 (31)
M/s Heinz Italia, SPA Milan, Italy	-	Food processing and nutritional products	2,840.00 (100)

Source: Secretariat of Industrial Approvals, Ministry of Industry

Note: Figures in parentheses indicate percentage shares

Table A-25. Foreign collaboration approvals in textiles and garments, August 1991-June 1994

Amount (Rs million)	Numbers Total	Technical	Financial
3,908.97	148	50	98

Major projects approved by FIPB

Foreign collaborator	Indian company	Product	Foreign equity (Rs million)
EMS Inventa AG Switzerland	Somani Swiss Industries New Delhi	Partially oriented yarn	420 (17.50)
NRI	Maruti Plastics Hyderabad	Dyed printed cotton fabrics	72 (40.00)
Chodngnam Spinning Company Republic of Korea	Sunil Jain New Delhi	Cotton yarn, blended yarn and viscose rayon spun yarn	100.40 (25.00)
Chemtex International Inc. United States	Sridaar Polyesters Calcutta	Polyester filament, yarn/polyester staple fibre	1,500 (37.50)
U.A. Afser United Kingdom	Parakaram Technofab New Delhi	Grey and dyed knitted fabrics and garments	28 (29.33)

Source: Secretariat of Industrial Approvals, Ministry of Industry.

Note: Figures in parentheses indicate percentage shares.

Table A-26. Foreign investment in leather and leather products, August 1991-June 1994

Amount approved (Rs million)	Number of projects		
	Total	Technical	Financial
519.73	60	18	43

Major projects approved by FIPB

Foreign collaborator	Indian company	Item of manufacturing	Foreign equity (Rs million)
Bata, Netherlands	Bata India, Calcutta	Footwear, leather products	59.22 (66.7)
Nimex Italia, Italy	Micro Tubes, New Delhi	Footwear and components	13.00 (54.2)
Globe Shoe, United Kingdom	Dipankar Purakaayastha, Calcutta	Footwear	29.40 (100)
NRI	Euro Leder Fashion, Madras	Garments	31.20 (100)

Source Secretariat of Industrial Approvals, Ministry of Industry.

Note Figures in parentheses indicate percentage shares.

Table A-27. Foreign collaboration approvals in cement, August 1991-June 1994

Amount (Rs million)	Numbers		
	Total	Technical	Financial
2,232.31	32	16	16

Main projects approved by FIPB

Foreign collaborator	Indian company	Item manufactured	Foreign equity (Rs million)
F.L. Smidth & Co. A/S Copenhagen, Denmark	Karan Cement Bombay	All varieties of Portland cement other than white cement	252 (12)
JSC Rusfintors, Russia	Phoenix International New Delhi	Ordinary Portland cement, Portland Pozolana cement	1,000 (4)

Source Secretariat of Industrial Approvals, Ministry of Industry.

Note Figures in parentheses indicate percentage shares.

Table A-28. Foreign collaboration approvals in petroleum refining, August 1991-June 1994

Amount (Rs million)	Numbers		
	Total	Technical	Financial
24,150.60	54	26	28

Major projects

Foreign collaborator	Indian company	Product	Foreign equity (Rs million)
Chandaria Group Geneva, Switzerland	Essar Investments Bombay	Oil refinery	2,620 (25)
ENI Group Italy	Harrison Malayalam	Lube oil Carbon black	390
Columbian Chemicals Co. USA		Betumin, slack waz	..
International Petroleum SA Switzerland		Crude oil refinery	6,000 (100)
C. Itochu Co. Japan	Reliance Industries Bombay	Base oil lubricating refinery	893 (35)
C. Itochu Co. Japan	Reliance Industries Bombay	Oil refinery	2,340 (26)
Oman Oil Company Sultanate of Oman	Bharat Petroleum Corporation Bombay	Petroleum products	3,477.5 (26)
Omal Oil Company	HPC Bombay	Petroleum products	1,950 (26)
Mundogas Far East Trading Ltd. Hong Kong	Southern LPG Madras	LPG bottling plant	85 (85)
Petrodyne Inc. USA	Petro Energy Products Company Madras	Motor Sprit/naphtha etc.	960.8 (57)

Source Secretariat of Industrial Approvals, Ministry of Industry.

Note Figures in parentheses indicate percentage shares.

Table A-29. Foreign collaboration in iron and steel, August 1992-June 1994

Amount (Rs million)	Number		
	Total	Technical	Financial
6,866.11	93	58	35

Major projects approval by FIPB

Foreign collaborator	Indian company	Product	Foreign equity (Rs million)
Caparo Group, UK	--	Hot rolled coils pig iron	2,700 (16.88)
Ispat Mexicana S.A., Mexico	Nippon Denro Ispat, Calcutta	Steel	1,500 (25.00)
Gold Star Investment, UAE	Orind Steels, Orissa	Iron and steel	4,000 (24.24)
China Metallurgical Imports and Exports, China	Mideast Integrated Steel, New Delhi	Pig iron	247.22 (20.62)

Source: Secretariat of Industrial Approval, Ministry of Industry.

Note: Figures in parentheses indicate percentage shares.

Table A-30. Foreign collaboration in aluminium production, August 1991-June 1994

Foreign collaborator	Indian company	Product	Foreign equity (Rs million)
Fata Huner Engineering Italy	International Aluminium Production, Orissa	Aluminium strips, cold rolled sheets/coils	472.5 (50)
Hunter Douglas Seahold Netherlands	Hunter Douglas Seahold New Delhi	Aluminium and articles and pre-fabricated building materials	505 (100)

Source Secretariat of Industrial Approvals, Ministry of Industry

Note Figures in parentheses indicate percentage shares

Table A-31. Foreign investment in machinery industries, August 1991-September 1994

Amount (Rs million)	Numbers		
	Total	Technical	Financial
26,007.2	1,741	1,011	730

Major projects

Foreign collaborator	Indian company	Item of manufacture	Foreign equity (Rs million)
Spinderfabrik Suessen Suhurr Stahlecker & Grill GM, Germany	Suessen Aisa, Bomay	Textile, spinning machinery	248.05 (55)
The Black & Decker Corporation, United States	Black & Decker Corporation, Bombay	Electro mechanical tools and parts and accessories thereof; electic steam irons and parts	76.50 (51)
Maschinenfabrik Riethr AG Switzerland	Riether - LMW Machinery, Tamil Nadu	Ring frame assembly	125.00 (50)
Metito Overseas	Metito Overseas New Delhi	Engineering and production of water and waste water treatment equipment	63.18 (100)
GE Capital Corporation United States	GE Capital Corporation	A joint-venture in India	3,159 (100)
Asea Brown Boveri Switzerland	Asea Brown Boveri Bombay	Electric equipment	410.00 (50.99)
General Electric Company United States	Godrej Applicances Pvt. Ltd.	Refrigerators, compressors etc.	480.00 (40)

Source: Secretariat of Industrial Approvals, Ministry of Industry.

Note: Figures in parentheses indicate percentage shares.

Table A-32. Foreign investment approvals in automobiles, August 1991-September 1994

Amount (Total) (Rs million)	Numbers		
	Total	Technical	Financial
7,284.18	220	138	82

Major projects approved by FIPB

Foreign collaborator	Indian company	Item of manufacture	Foreign equity (Rs million)
Automobiles Peugeot	Premier Automobiles, New Delhi	Passenger cars	1,200.00 (50)
General Motors Corporation, United States	Hindustan Motors, Calcutta	Passenger cars	780.00 (30)
American Tires Ltd. United States	Tamil Nadu Industrial Industrial Development, Tamil Nadu	Steel radials and automobile tyres	416.99
Goodyear Tyre and Rubber Company, United States	South Asia Tyres New Delhi	Automotive tyres	123.7 (26)
Reynold International Unied States	RPG Industries Calcutta	Aluminium automotive wheels	119 (25.50)
Daimler-Benz AG, Germany	Mercedez-Benz India Pvt. Ltd. c/o TELCO Bombay	Passenger cars	1,785 (51)

Source: Secretariat of Industrial Approvals, Ministry of Industry.

Note: Figures in parentheses indicate percentage shares.

Table A-33. Foreign collaboration approvals in electronics, August 1991-June 1994

Amount (Rs million)	Numbers		
	Total	Technical	Financial
1,642.09	129	63	66

Major projects approved by FIPB

Foreign collaborator	Indian company	Product	Foreign equity (Rs million)
Matsushita Electric Industries, Japan		Joint-venture company in India	315.50 (80)
Motorola Singapore Singapore	Motorola Singapore New Delhi	Production and marketing of data communication	252.40 (100)
Fujitsu Japan	Madhya Pradesh State Electronics Development Corporation Optel Telecommunications	Microwaves, radio communication systems optical subscriber loop systems and multiplex systems	317.20 (61)
AMP Incorporated United States	-	Electrical and electronic connectors for TV, telephone, computers, etc.	230.61 (100)
Computer Vision Corporation, U.S.A.		Computer software	3,159.00 (100)
Lyon Capital Incorporated, U.S.A.	Credence Sound and Vision, Bombay	Video software, recorded video cassettes	127.00 (66)
Itochu Corporation Japan	Fuji India Telecom, New Delhi	Digital electronic switching	130.00 (71)
Sony Corporation, Japan		CTVs, broadcasting equipment etc.	314.00 (100)

Source Secretariat Industrial Approvals, Ministry of Industry.

Note Figures in parentheses indicate percentage shares

ANNEX B
NEGATIVE LIST OF IMPORTS

ANNEX B. Negative list of imports

Item	Nature of restrictions (1) Imports not permitted	(2) Imports permitted only against licence	(3) Imports permitted for export against licence	(4) Remarks
Prohibited items				
1. Tallow, fat and/or oils, rendered, unrendered or otherwise of any animal origin including the following:	X			
(i) lard stearine, oleo stearine, tallow stearine, lard oil, oleo oil and tallow oil not emulsified or mixed or prepared in any way;	X			
(ii) Neat's-foot oil and fats from bone or waste;	X			
(iii) Poultry fats rendered or solvent extracted;	X			
(iv) fats and oils of fish/marine origin, whether or not refined, excluding cod liver oil, squid liver oil or a mixture thereof and Fish Lipid Oil containing Eicospentaenoic acid and Docosahexaenoic acid; and	X			
(v) Margarine, imitation lard and other prepared edible fats of animal origin.	X			
2. Animal rennet	X			
3. Wild animals including their parts and products and ivory	X			
4. Any pesticide, insecticide, weedicide, herbicide, rodenticide and miticide, which has not been registered or which is prohibited for import under the Insecticides Act, 1969 and formulations thereof	X			
Restricted items				
A. CONSUMER GOODS				
All consumer goods, howsoever described, of industrial, agricultural mineral or animal origin, whether in SKD/CKD condition or ready to assemble sets or in finished form.		X		
1. Consumer electronic goods, equipment and systems, howsoever described		X		

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
2. Consumer telecommunication equipment			X	
3. Watches in SKD/CKD or assembled condition as well as movements (mechanical); watch cases; watch dials		X		
4. Cotton, woollen, silk, man-made and blended fabrics including cotton Terry Towel fabrics		X		
5. Concentrates of alcoholic beverages		X		
6. Wines (tonic or medicated)		X		
7. Saffron		X		
8. Cloves, cinnamon and cassia			X	
9. Sports goods/equipment		X		
10. Cameras		X		Import will be allowed against a licence or in accordance with a Public Notice issued in this behalf. Photographic studios and accredited cameramen, accredited correspondents of foreign broadcasting or television organizations, foreign news agencies of foreign newspapers my be permitted to import in accordance with the specified conditions.
11. Gifts of consumer goods		X		Charitable, religious or educational institutions and such persons as may be specified or otherwise approved by the Central Government may be permitted to import in accordance with the specified conditions.
B. PRECIOUS, SEMI-PRECIOUS AND OTHER STONES				
1. Cubic Zirconia			X	
2. Stones: (i) Rough diamonds;			X	
(ii) Synthetic stones finished or unworked (other that synthetic ruby unworked); and			X	
(iii) Emerald/rubies and sapphires, semi-precious and precious stones And pearls (real or cultured)			X	
3. Granite, porphyry, basalt, sand stone and other monumental or building stone, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs			X	
4. Onyx			X	

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
5. Marble, travertine, ecaussine and other calcareous monumental or building stone, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs			X	
C. SAFETY, SECURITY AND RELATED ITEMS				
1. Paper for security printing, currency		X		
2. Empty/discharged cartridges of all bores/sizes		X		
3. Fire arms				Not permitted to be imported except against a license by renowned shooters/rifle clubs for their own use on the recommendation of the Department of Youth Affairs and Sports, Government of India.
4. Ammunition		X		Import permitted against a licence by: (i) Renowned shooters/rifle clubs for their own use on the recommendation of the Department of Youth Affairs and Sports, Government of India; and (ii) Licensed arms dealers of the specified type of ammunition subject to such conditions as may be specified.
5. Explosives				Government Departments and public sector undertakings, on the recommendation of the Controller of explosives, Government of India, may be permitted to import.
6. Chloro Fluoro Hydro Carbons (Freon Gases)		X		
7. (i) $CFCl_3$ - (CFC-11) - Trichloro fluoro methane (ii) CF_2Cl_2 - (CFC-12) - Dichloro difluoro methane (iii) $C_2F_3Cl_3$ (CFC-113) 1,1,2 Trichloro trifluoro methane (iv) $C_2F_4Cl_2$ (CFC-114) - 1,2 Dichloro tetrafluoro ethane (v) C_2F_5Cl - (CFC-115) - Chloro pentafluoro ethane (vi) CF_2BrCl - (halon-1211) - Bromo chloro difluoro methane (vii) CF_3Br 0 (halon-1301) - Bromo trifluoro methane (viii) $C_2F_4Br_2$ - (halon-2402) - Dibromo tetrafluoro ethane				Import is permitted without a license provided the import is made from a country which is a party to the "Montreal Protocol on substances that deplete the ozone layer". List of the countries which are parties to the Montreal Protocol will be notified by Director General of Foreign Trade from time to time. However, import from countries which are not parties to the Montreal Protocol is prohibited.

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
8. (i) Communication jamming equipment, static/mobile/man-portable (ii) Electronic components for (i) above including antennae, RF power amplifiers, noise generators				The Department of Central Government may be permitted to import against licence. However, import by any other category of importers is prohibited.
9. Acetic Anhydride		X		
D. SEEDS, PLANTS AND ANIMALS				
1. Animals, birds and reptiles (including their parts and products)		X		Import permitted against a licence to zoos and zoological parks, recognized scientific/ research institutions, circus companies, private individuals, on the recommendation of Chief Wild Life Warden of a State Government subject to the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
2. Stallions and brood mares		X		Import permitted against a licence on the recommendation of the Director, Animal Husbandry and Veterinary Services of a State Government.
3. Livestock (excluding equine), pureline stocks, birds' eggs, frozen semen/embryo, parent stock (poultry) and commercial chicks		X		Import permitted against a licence on the recommendation of the Department of Agriculture and Cooperation, Government of India.
4. Plants, fruits and seeds		X		(a) Imports of seeds of wheat, paddy, coarse cereals, pulses, oilseeds and fodder for sowing is permitted without a licence subject to fulfilment of the provisions of the New Policy on Seed Development, 1988 and in accordance with a permit for import granted under the Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989.

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
				(b) Import of seeds of vegetables, flowers, fruits and plants, tubers and bulbs of flowers, cutting, sapling, budwood, etc. of flowers and fruits for sowing or planting is permitted without a licence in accordance with a permit for import granted under the Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989. (c) Import of seeds, fruits and plants for consumption or other purposes is permitted against a licence or in accordance with a Public Notice in this behalf. (d) Import of plants, their products and derivatives shall also be subject to the provisions of the Conventions on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
E. INSECTICIDES AND PESTICIDES				
1. DDT - Technical 75 Wdp		X		
F. ELECTRONIC ITEMS				
1. Cathode ray tubes, the following:		X		
20" and 21" size colour TV picture tubes, sub-assembly thereof and assembly containing colour TV picture tube		X		
2. Populated, loaded or stuffed printed circuit boards		X		
3. Audio magnetic tapes in all forms excluding 35 mm and 16 mm sprocketed tapes		X		
4. Video-magnetic tapes in hubs and reels, rolls, pancakes, jumbo rolls- in all forms		X		

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
5. Computer systems, including personal computers up to a CIF value of Rs 1.50 lakhs or keyboards or monitors, each with a CIF value of below Rs 7,500. For this purpose, a computer system will consist of a single CPU including one keyboard and monitor, and in-built peripherals, but excluding any add on peripherals		X		
G. DRUGS AND PHARMACEUTICALS				
1. All types of penicillin		X		
2. 6-APA		X		
3. Tetracycline/Oxytetracycline and their salts		X		
4. Streptomycin		X		
5. Rifampicin		X		
6. Intermediates of Rifampicin, namely		X		
(i) 3 Formyl Rifa S.V;		X		
(ii) Rifa S/Rifa S Sodium; and		X		
(iii) 1-Amino-4Methyl- Piperazine		X		
7. Vitamin B1, Vitamin B2 and their salts		X		
8. Vitamin B12		X		
H. CHEMICALS AND ALLIED ITEMS				
1. Allyl Isothiocyanate		X		
2. Capacitor fluids - PCB type		X		
I. ITEMS RELATING TO THE SMALL-SCALE SECTOR				
1. Copper oxychloride		X		
2. Dimethyl Sulphate		X		
3. DNPT (Dinitroso Pentamethylene tetramine)		X		
4. Flavouring essences - all types (including those for liquors)		X		
5. Niacin/Nicotinic Acid/Niacinamide/Nicotinamide/Acid amide		X		
6. Mixtures of odoriferous substances/mixtures of resinoids		X		
7. Phthalate Plasticizers		X		
8. Perfumery compounds/synthetic essential oils		X		
9. Lead and rule cutters		X		

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
10. Mounting tables		X		
11. Paper cutting knives of all sizes		X		
12. Paper cutting machines, excluding machines with devices such as automatic programme cutting or three knife trimmers		X		
13. Wire stitching machines single headed		X		
14. Drawing and mathematical instruments		X		
15. Domestic water meters		X		
16. All types of dumpy levels/engineer's levels/builder's levels (not automatic) and quick set levels with or without horizontal circles		X		
J. MISCELLANEOUS ITEMS				
1. Aircraft helicopters		X		
2. Ships, trawlers, boats and other water transport crafts		X		
3. Commercial and passenger automobile vehicles, including two wheelers, three wheelers and personal type vehicles		X		
4. Gold in any form including liquid gold		X		
5. Coir (fibre/yarn/fabrics)		X		
6. Newsprint		X		
7. Raw cotton and cotton yarn		X		
8. Raw silk		X		
9. Polyester staple fibre/tow		X		
10. Natural rubber		X		
11. Diesel generating sets up to 1500 kVA (excluding DG sets with no-break system)		X		
12. Electric portable generators up to 3.5 kVA		X		
13. Radio active material				Permitted to be imported on the recommendation of the department of Atomic Energy.
14. Rare earth oxides including rutile sand		X		
15. Cinematograph feature films and video films				Import will be permitted by (a) National Film Archives of India, Film and Television Institute of India, and Children's Film Society of India; (b) by others subject to such conditions as may be specified in this behalf.

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
16. Crude palm stearin		X		
17. Feed grade maize (i.e. maize unfit for human consumption but fit for use as poultry or animal feed)				Import will be permitted without actual user condition by any person subject to registration of the import contract/Letter of Credit with NAFED.
18. Naphtha				Import permitted without a licence subject to the condition that the importer shall sell the return stream of naphtha to crude oil refineries only. The sale will be on commercial terms as may be settled between the importer and the refinery. However, the importer may use the return stream as an industrial feedstock for his own captive consumption, but the balance left, if any, shall be sold to crude oil refineries only.
19. Silver in any form		X		
20. Spinnerettes made mainly of gold		X		

LIST OF CONSUMER GOODS IMPORTABLE WITHOUT LICENCE

1. All kinds of contraceptives
2. All kinds of timer logs
3. All types of trimmings and embellishments, fasteners, buttons, etc. for garments, made-ups, knitwear, plastic/leather goods
4. Amateur radio communications equipment including kits, accessories, instruments, spares and components
5. Art and chrome paper/board
6. Asafoetida (Hing)
7. Audio-visual news or audio-visual views material including news clippings.
8. Bus and truck tyres, all types
9. Children's films (including video films) certified by the Central Board of Film Certification to be "Children's Films"
10. Computer software

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
11. Crude drugs required for the manufacture of Ayurvedic and Unani medicines, as listed in the Appendix XLVIII of the Handbook of Procedures, 1992-1997.				Import permitted only to the manufacturers of the concerned Ayurvedic and Unani medicines holding valid manufacturing license, subject to actual user condition. Import of jade, pearl and corals will be allowed only in powder form and of non-jewellery quality only.
12. Dipping oil for treatment of grapes				
13. Drawing paper				
14. Drugs, medicines, pharmaceuticals and medical equipment/instruments/ apparatus except those specifically restricted for import in this list				
15. Dry fruits including almonds and dates				
16. Edible wax for waxing fresh fruits and vegetables				
17. Educational, scientific and technical books, journals, news magazines and newspapers				
18. Facsimile machine				
19. Finished rolls of cinematographic colour films (unexposed) positive				
20. Fish meal in powdered form				
21. Float glass				
22. Grape guard paper				
23. Homeopathic medicines and drugs				
24. Instruments and equipment required by the blind including braille typewriters				
25. Jamdani sarees				
26. Learning aids, such as language records, cassettes and videos				
27. Photo copier				
28. Photographic films (black and white) other than 120 and 620 size rolls				
29. Photographic films (colour)				
30. Prawn, shrimp and poultry feed				
31. Pulses.				However, the import of any toxic pulses such as blanche fleur or vicia sativa is prohibited
32. Raw cashewnut				
33. Rock salt				
34. Rudraksha beads				

(continued)

ANNEX B. Negative list of imports (continued)

Item	(1)	(2)	(3)	(4)
35. Teaching aids, including: (i) Micro films, microfiches and reader-cum-printers; and (ii) Film strips/slides, audio cassettes, video tapes and video discs of educational nature				
36. Wheat gluten				
37. Refined sugar				
38. Outboard motors.				Import permitted only to actual users.
39. Computerized braille printing presses				
40. Text reading systems for visually handicapped persons				
41. Aspherical lenses of magnification 4-9 in different configurations like spectacle magnifier, hand-held magnifier, and table magnifier				
42. Frequency modulated hearing aid system for hearing handicapped persons in group situation				
43. Artificial limbs				

Source: *Export and Import Policy*, Ministry of Commerce, Government of India, March 1994.

ANNEX C
INDUSTRIAL INVESTMENT INFORMATION

ANNEX C

INDUSTRIAL INVESTMENT INFORMATION

Forms of business presence

Foreign companies may start business operations in India through technical collaborations, direct investment or both.

There are a number of entry options available to foreign investors in the manufacturing, trading or services sectors. They can start operations:

- as a company incorporated in India or as a branch operation
- by setting up a new company
- as a joint venture with an Indian partners or entirely on their own
- through a project office or a liaison office.

Areas of operation

Foreign investors may invest in all areas except industries such as defence, atomic energy and railway transport. While 6 industries of the statement on Industrial Policy have been reserved for the public sector, private and foreign participation is permitted in some areas within these industries such as mining, oil exploration refining and marketing, and parts of the railway transport sector.

Local participation

It is not necessary for foreign investors to have a local partner, even when the foreign investor wishes to hold less than the full equity of the company. The portion of the equity not proposed to be held by the foreign investor can be offered to the public.

Industrial licence

No industrial licence is required in India except for

- Industries reserved for the public sector
- 15 specified industries of strategic, social or environmental concern
- Industries reserved for the small-scale sector.

Applications for industrial licences amy be submitted to the Secretariat of Industrial Approvals (SIA) in the Ministry of Industry.

Where an industrial licence is not required, companies are required to file an Industrial Entrepreneur's Memorandum with SIA. This is meant mainly for monitoring industrial activity in the economy and trends therein.

Entry approvals

Approvals for direct foreign investment in India follow two routes. Certain proposals are automatically given approval by the Reserve Bank of India. Other proposals which do not meet the parameters of automatic approval are cleared by the government on a case by case basis.

Automatic approvals

Automatic approvals for foreign investment in new ventures are possible for projects in 35 specified industry groups which satisfy certain specified conditions:

- foreign equity proposed is 51 per cent of the total
- foreign equity covers the foreign exchange requirement for the import of capital goods, which should be new and not second hand.

Foreign equity proposals up to 51 per cent in trading companies primarily engaged in exports, are also eligible for automatic approval.

Units set in Export Processing Zones (EPZs) and 100 per cent Export-Oriented Units (EOUs), including those with foreign equity proposals up to 100 per cent, also obtain automatic approvals subject to certain conditions.

Other approvals

Foreign equity up to 100 per cent is permitted in a number of industries, subject to certain conditions. The Foreign Investment Promotion Board (FIPB), a especially empowered Board has been set up in the office of the Prime Minister to speed up the approval process. Clearance of proposals by the FIPB take around six weeks on an average.

Approvals for branch, liaison and project offices

Such operations are of a limited nature, and are primarily meant for promoting business interests of the parent company or for international trading. The Reserve Bank of India (RBI) gives approvals for these proposals and foreign companies may apply to RBI in prescribed forms, available with Indian Missions abroad.

Technical collaborations

Foreign technical agreements receive automatic approval from RBI in certain cases:

- If one time payments are not more than Rs 10 million.
- Royalty payments do not exceed 5 per cent of domestic sales and 8 per cent of exports over a 10-year period from the date of the agreement, or over a 7-year period from commencement of production.

The prescribed rates are net of Indian taxes.

In the case of foreign technology agreements for the hotel and tourism related industry, automatic approval of the Reserve Bank of India is available subject to the following parameters:

- The one time fees for technical and consultancy services do not exceed $200,000

- Payments for franchising and marketing/publicity support do not exceed 3 per cent of gross room sales

- Management fees do not exceed 10 per cent of the foreign exchange earning provided the foreign entity contributes 25 per cent of the equity. This will also cover payments for marketing and publicity support.

All other proposals require the prior approval of the government. Applications may be submitted to SIA.

Raising foreign equity in existing companies

The RBI gives automatic approval to certain categories of companies for raising foreign equity, including those which do not have any foreign equity.

Companies wishing to raise foreign equity as part of an expansion programme

An existing company wishing to raise foreign equity up to 51 per cent may do so as part of an expansion programme. The expansion programme must be in high priority industries shown in Annex III to the Statement on Industrial Policy of 24 July 1991. The fresh or additional equity should be part of the financing of the expansion programme. The increase in equity level must result from expansion of the equity base of the existing company and the money to be remitted should be in foreign exchange. The company itself need not be exclusively engaged in activities listed in the above-mentioned Annex, only the proposed expansion must be predominantly in the high priority industries.

Companies wishing to raise foreign equity without any expansion programme

An existing company predominantly engaged in high priority industries can also raise foreign equity up to 51 per cent without an expansion programme. The increase in equity level must result from expansion of the equity base of the existing company. The foreign equity must be from remittance of foreign exchange.

Other proposals

All other proposals for inducting or raising foreign equity in existing companies will be subject to prior approval of the Government. This will include proposals for raising foreign equity up to 51 per cent in existing companies which do not meet any or all of the criteria outlines for automatic approval as also proposals for raising foreign equity beyond 51 per cent in existing companies.

Repatriation

Repatriation of capital

Foreign capital invested in India can be repatriated, along with any capital appreciation, after the payment of taxes due on them. The disinvestment is permitted in terms of the letters of approval granted at the time of approving the foreign collaboration. The Reserve Bank of India (RBI) permits disinvestment nearly automatically through the stock exchanges for listed shares at market

prices. In the case of unlisted shares, the sale price is required to be approved by RBI, prior to disinvestment.

Repatriation of sale proceeds

The Reserve Bank of India approval is required for repatriation of sale proceeds of assets held in India. Repatriation in foreign exchange is permitted, with prior RBI approval, subject to payment of taxes.

Royalties and technical know-how fees

Indian companies that enter into technology transfer agreements with foreign companies are permitted to remit payments towards know-how and royalty at the terms of the foreign collaboration agreement approved.

Technical service fees

Companies can hire the services of foreign technician and make remittances for technical service fees, subject to the terms approved by the Reserve Bank of India.

Dividends

Profits and dividends earned in India are repatriable after the payment of taxes due on them. No permission of RBI is necessary and authorized dealers have been delegated the powers to remit dividend. In a limited list of 22 consumer goods industries, repatriation of dividend is subject to a requirement of dividend balancing against export earnings for a period of 7 years from commencement of production. Balancing is not required beyond this period.

Other remittances

Remittances of profits by companies incorporated outside India to their Head Offices are permissible with prior RBI approval.

Similarly, remittances of winding-up proceeds of representative offices in India are permitted with prior RBI approval, after winding-up procedures are completed and the net remittable surplus has been established.

In addition, sundry remittances are allowed for items like gifts, repair charges for imported machinery, maintenance, legal expenses, etc.

Hiring foreign nationals

Indian companies may engage the services of foreign nationals (including non-residents of Indian nationality/origin). Applications for remittance of remuneration to foreign nationals should be made by Indian firms/companies to authorized dealers. Before allowing the remittance, authorized dealers are required to verify that:

- Prior clearance of the Ministry of Home Affairs has been obtained if the period of engagement of any single foreign national exceeds three months at a time.

- The total duration of engagement of foreign nationals by the applicant firm or company does not exceed twelve man-months in a calendar year.

- The amount of remittance sought is in accordance with the terms of contract entered into by the applicant company with the foreign national.

- The services of the foreign national are not covered either by any foreign collaboration agreement entered into by the Indian company or any under warranty/guarantee obtained providing for deputation of the foreign nationals without any remuneration or any payment during the warranty/guarantee period.

A five-year multiple entry visa can be obtained from Indian embassies/consulates. Foreign nationals planning on staying for more than short durations need to register with the Registrar of Foreigners located in all major cities.

There are special tax incentives for working in India for short periods.

Source: Reproduced from *Investment: India means business*, Economic Coordination Unit, Ministry of External Affairs, Government of India, New Delhi, October 1994.

ANNEX D
CLEARANCE REQUIRED FOR INDUSTRIAL UNDERTAKINGS

ANNEX D

CLEARANCE REQUIRED FOR INDUSTRIAL UNDERTAKINGS

Item of clearance	Whom to approach
Letter of Intent (LI) Industrial Licence (IL) Required for specific industries as stated in Industrial Policy	Secretariat for Industrial Approvals (SIA) Department of Industrial Development
Approvals from Chief Inspector of Factories Required under Factories Act, 1948	Chief Inspector of Factories
Pollution Control Board Required under Pollution Control Act	Member Secretary, Pollution Control Board
Director of Town Planning Required as per Government orders	Director of Town Planning
Director of Medical Services Required as per Government orders	Director of Medical Services
Incorporation of the Company Required under the Companies Act, 1956	Registrar of Companies
Foreign Collaboration Required under the guidelines and statutory requirement of GOI	Secretariat of Industrial Approvals (SIA) Department of Industrial Development only for selected items
Need-Based Approvals Appointment of Managing Director for Public Limited Co. and fixation of remuneration and other allowances. Required under the Companies Act, 1956 and rules thereunder	The Secretary Department of Company Affairs Company Law Board
Share holding by foreign collaborators, permission for know-how/collaboration and for investment for Gulf countries	The Controller Exchange Control Department Reserve Bank of India
Use and storage of explosives including furnace oil in factory. Required under the Explosives Act, 1884	Chief Controller of Explosives Department of Explosives

Permission to manufacture drugs/cosmetics. Required under Drugs and Cosmetics Act, 1940	Commissioner Food and Drugs Administration
Boiler Inspection Certificate. Required for any boiler before commencement of production under Indian Boiler Regulations, 1950	Chief Inspector of Boilers
Extraction of Minerals Required under the Mines and Minerals Development and Regulation Act, 1957 and Mineral Commission Rules, 1069	Director of Mines and Geology

Source Reproduced from *Investment - India means business*, Economic Coordination Unit, Ministry of External Affairs, Government of India, New Delhi, October 1994

ANNEX E
LIST OF PROJECTS/INDUSTRIES REQUIRING ENVIRONMENTAL CLEARANCE FROM THE CENTRAL GOVERNMENT

ANNEX E

LIST OF PROJECTS/INDUSTRIES REQUIRING ENVIRONMENTAL CLEARANCE FROM THE CENTRAL GOVERNMENT

1. Nuclear power plants
2. River valley projects
3. Ports, harbours and airports
4. Petroleum and refineries
5. Chemical fertilizers
6. Pesticides
7. Petrochemicals
8. Pharmaceuticals
9. Exploration, production, transportation and storage of oil and gas
10. Synthetic rubber
11. Asbestos and asbestos products
12. Hydrocyanic acid and derivatives
13. Primary metallurgical industries
14. Electric arc furnaces
15. Chlor alkali
16. Paints
17. Viscose staple fibre and filament yarn
18. Storage batteries
19. Tourism
20. Thermal power plants
21. Mining projects with lease more than 12.5 acres
22. Highways
23. Tarred roads in Himalayas/forest areas
24. Distilleries
25. Raw skins and hides
26. Pulp, paper and newsprint
27. Dyes
28. Cement
29. Foundries
30. Electroplating

Source Reproduced from *Investment - India means business*, Economic Coordination Unit, Ministry of External Affairs, Government of India, New Delhi, October 1994.

ANNEX F
RELATIVE IMPORTANCE OF 10 INDUSTRIALLY MORE DEVELOPED STATES IN INDIA

ANNEX F

RELATIVE IMPORTANCE OF 10 INDUSTRIALLY MORE DEVELOPED STATES IN INDIA

(The following 10 states accounted for 84 per cent of national net value added in industry in 1990/91)

Maharashtra	
Number of factories:	15,595
Number of workers:	908,457
Number of employees:	1,239,152
Share in net value added:	23.3
Structure of industrial value added:	
Chemicals and chemical products	17.7
Rubber, petroleum and coal products	10.5
Machinery other than transport equipment	16.9
Food products	5.1
Basic metals and alloys	5.3
Transport equipment and parts	6.8
Electricity	14.0
Others	23.6

Tamil Nadu	
Number of factories:	14,617
Number of workers:	766,377
Number of employees:	962,589
Share in net value added:	11.3
Structure of industrial value added:	
Cotton textiles	14.6
Machinery other than transport equipment	12.2
Chemicals and chemical products	11.1
Food products	7.6
Rubber, petroleum and coal products	6.8
Transport equipment and parts	13.0
Electricity	12.2
Others	22.6

Uttar Pradesh

Number of factories:	10,417
Number of workers:	619,864
Number of employees:	789,011
Share in net value added:	9.0
Structure of industrial value added:	
Food products	10.4
Rubber, petroleum and coal products	8.4
Machinery other than transport equipment	16.2
Chemicals and chemical products	8.7
Basic metals and alloys	6.8
Transport equipment and parts	5.7
Electricity	22.2
Others	21.6

Gujarat

Number of factories:	10,943
Number of workers:	523,929
Number of employees:	675,447
Share in net value added:	8.7
Structure of industrial value added:	
Chemicals and chemical products	28.9
Food products	6.7
Rubber, petroleum and coal products	4.4
Machinery other than transport equipment	10.6
Cotton textiles	9.6
Wool and silk textiles	7.8
Electricity	14.5
Others	17.4

West Bengal

Number of factories:	5,606
Number of workers:	578,651
Number of employees:	740,980
Share in net value added:	6.2
Structure of industrial value added:	
Basic metals and alloys	15.0
Rubber, petroleum and coal products	7.4
Machinery other than transport equipment	13.9
Food products	5.6
Chemicals and chemical products	8.6
Jute textiles	12.1
Electricity	9.5
Others	27.8

Madhya Pradesh

Number of factories:	3,962
Number of workers:	287,899
Number of employees:	417,099
Share in net value added:	5.8
Structure of industrial value added:	
Basic metals and alloys	29.0
Food products	5.5
Non-metallic mineral products	13.0
Machinery other than transport equipment	10.6
Chemicals and chemical products	6.7
Wool and silk textiles	5.5
Electricity	13.7
Others	16.0

Andhra Pradesh

Number of factories:	15,205
Number of workers:	699,885
Number of employees:	832,120
Share in net value added:	5.8
Structure of industrial value added:	
Food products	12.6
Machinery other than transport equipment	16.6
Basic metals and alloys	8.9
Rubber, petroleum and coal products	3.0
Chemicals and chemical products	5.7
Beverages	9.7
Electricity	19.3
Others	24.2

Karnataka

Number of factories:	5,911
Number of workers:	307,929
Number of employees:	418,955
Share in net value added:	5.4
Structure of industrial value added:	
Machinery other than transport equipment	24.0
Food products	6.7
Basic metals and alloys	6.9
Chemicals and chemical products	7.4
Transport equipment and parts	7.4
Paper and paper products	4.0
Electricity	14.3
Others	29.2

Bihar

Number of factories:	3,409
Number of workers:	280,420
Number of employees:	360,362
Share in net value added:	5.0
Structure of industrial value added:	
Basic metals and alloys	54.5
Rubber, petroleum and coal products	9.2
Transport equipment and parts	12.3
Machinery other than transport equipment	3.6
Chemicals and chemical products	3.0
Food products	1.3
Electricity	4.9
Others	11.2

Punjab

Number of factories:	6,255
Number of workers:	311,670
Number of employees:	400,960
Share in net value added:	3.6
Structure of industrial value added:	
Food products	13.8
Basic metals and alloys	7.7
Transport equipment and parts	11.4
Wool and silk textiles	11.4
Chemicals and chemical products	8.0
Machinery other than transport equipment	7.6
Electricity	14.8
Others	25.3

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