Role of Multinational Corporations in Indian Industry

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D E C L A R A T I O N

This is to certify that the Dissertation entitled "ROLE OF MULTINATIONAL CORPORATIONS IN IDNIAN INDUSTRY" by Miss. Ravinder Kaur which is submitted in partial fulfilment of the requirements of the Master of Philosophy degree, is an original work to the best of our knowledge. It has not been previously submitted for any other degree of this or any other University.

We recommend that this dissertation be placed before the examiners for evaluation.

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LIST OF ABBREVIATIONS

1. ABL	Associated Babcock Limited
2. ALCAN	Aluminium Company of Canada
3. ALUCOIN	Aluminium Corporation of India
4.BALCO	Bharat Aluminium Company Limited
5. BCPW	Bengal Chemicals and Pharmaceutical Works
6.BHEL	Bharat Heavy Electricals LImited
7.CEI	Confideration of Engineering Industry
8.DRC	Domestic Resource Costs
9.EPW	Economic and Political Weekly
10.FERA	Foreign Exchange Regulation Act
11. FCRC	Foreign Controlled Rupee Companies
12. FIB	Foreign Investment Board
13. GE	General Electric Company, USA.
14. HINDALCO	Hindustan Aluminium Corporation
15. HL	Hindustan Lever
16. HMT	Hindustan Machine Tools Limited
17. INDAL	Indian Aluminium Company
18. LDCs	Less Developed Countries
19. MALCO	Madras Aluminium company
20. MRTP	Monopoly and Restrictive Trade Practices Act.
21. MNCs	Multinational Corporations

22. NALCO	National Aluminium Company Limited
23. OGL	Open General License
24, OPPI	Organisation of Pharmaceutical Producers of India
25. PFI	Private Foreign Investment
26. RBI	Reserve Bank of India
27. R & D	Research and Development
28. SAIL	Steel Authority of India Limited
29. TELCO	Tata Engineering and Locomotive Company Limited
30. UNCTD	United Nations Conference on Trade and Development .

PREFACE

With the advent of freedom, the pressure for economic development in India necessitated a realistic approach towards foreign capital and technology. The Indian Government has recognised the importance of Multinational Corporations for securing scientific and technical know-how and for the development of the country. Between 1970 and 1985, over 6500 collaborations between foreign and local countryparts had been approved by the Government involving transfer of technologies. This study reviews and assesses the importance of MNCs in terms of investment and transfer of technology in Indian Industry. The impact of MNCs is studied for three industries chemical, engineering and aluminium with references to supporting evidence.

The major findings are that as far as technological development as a result of transfer of technology is concerned, these industries have not been able to adapt many new sophisticated technologies and they, on their own, have not been able to produce new 'frontier' technology

which can compete with basic advances created in the industrialized countries. The impact on Balance of payments as a result of foreign investment is also not very promising since any improvement in export performance is more than offset by the increasing import dependence and remittances. The reasons underlying these trends are discussed and analysed on the basis of studies of a number of scholars over various journals and books.

The present study is a part of my M.Phil. degree work which was done under the active guidance and assistance of my Supervisor Dr.Jayati Ghosh. I am extremely grateful to her for rendering assistance and guiding in preparing this work. I also learnt a great deal from Dr. Ashok Desai of NCAER and Mr. Biswajit Dhar of RIS through discussions which influenced various aspects of the study.

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RAVINDER KAUR

CHAPTER I

INTRODUCTION

Foreign Collaboration is an important channel of international transfer of technology. Recent years have witnessed a sustained growth of interest, from academics as well as policy-makers, in the subject of technological development in the Third World. While the early development literature had tended to ignore the role of technology in the process of industrial development and in determining changing patterns of comparative advantage, and concentrated on 'gaps' in savings and foreign exchange, later thinking has come to view technological 'gaps' as being almost as significant as gaps in investible resources.

The focus of the analysis of technology in LDCs has shifted over time. Early writings focussed on the problem faced by LDC enterprises in absorbing imported modern technology. Then came a concern, which still persists, about the transfer process and its costs: the role of Multinational corporations (MNCs), the nature of technology markets, monopolistic practices in technology sales and the like. Slightly later

and from a different perspective, there arose serious doubts about the appropriateness of modern technology for the conditions of labour surplus, skill and capital-scarce LDCs. Most recently, attention has turned back to the question of technological assimilation, but with important new issues in mind : those of technological 'Learning' in LDC enterprises, their growing capability to produce technology and their 'revealed comparative advantage', in exporting technology in competitive international markets. This development corresponds to the growing propensity in official circles in LDCs to formulate 'technology, plans' and encourage 'technological cooperation'.

The greatest part of the discussion of technology has focussed on how it is transfered to LDC from the developed countries, and within this, on the role of MNCs as the main agent for generating , controlling and commercialising technology.

Technology is transmitted across enterprises and across countries in a wide variety of forms. Some of these are not commercial in the strict sense; scientific exchange publications, migration of skilled people and government assistance. Others are not transfers of 'knowledge' strictly defined: the import of a piece of equipment, while it clearly embodies a certain technology. Others are commercial transfers of technology in the normal usage: turnkey projects, consulting services of various kinds (engineering, construction, financial, managerial etc.), sales of patents and trademarks and direct investment.

Cooper and Hoffman have advanced a three fold categorisation of technology transactions-

a. 'Simple direct' sales of technology, which consist of outright sales of embodied (machinery) or disembodied (specific consulting services) technology by unrelated firms for prices which are more or less competitive;

b. 'Process packaged' sales of technology, where a complete industrial process or plant is

supplied (together with various types of studies and design, commissioning, supervision and training services) by machinery manufactures, independent eengineering firms or final manufactures of products, and

c) 'Project Packaged' sales of technology where the technology is accompanied by other requirements for the commercial operation of a project - i.e. management, capital, brand names etc - and by some element of continuous link or control by the seller (this encompasses Licensing contacts, joint ventures and wholly owned foreign subsidiaries).

Another way of classifying technology transactions is by the nature of the instrument used ie whether technologyis sold in the form of equipment, studies, designing of plants, commissioning, supervision, management, training, licenses or direct investment.This particular categorisation is particularly useful for an 'unpackaging' policy, since it enables the buyer to assess just what it is he is buying,

and to compare it to what his specific needs are.

Alternatively, one could distinguish between Direct investment and the other form of foreign investment viz, portfolio investment in terms of managerial control. + The investor in the case of direct investment unlike the portfolio investment share ownership as well as exercise control over the management of the (investee) enterprise. Most of the enterprise, involving foreign investments are joint stock companies.

In India three sets of definitions of foreign enterprises are used. Under the companies Act 1956, 'Foreign Companies' are defined as companies which are incorporated outside the country but have a place of business in India (often referred to as foreign branches). The

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+ Place of Foreign Controlled Enterprises in Indian Manufacturing - Nagesh Kumar in EPW Nov.16, 1988.

Act also defines a foreign subsidiary as a company in which more than 50% of the equity capital is held by a single foreign company. The second definition is the one used by the Reserve Bank of India (RBI) for its studies on finances of joint stock companies.The Bank defines an Indian company as a 'foreign controlled rupee company' (FCRC) if 25% or more of its equity is held abroad by a single company and its nominees or 40% is held in one country. Finally, for regulatory purposes all Indian companies with more than 40% direct foreign equity have to register themselves under the Foreign Exchange Regulation Act 1973 and are called FERA companies.

Extent and nature of the impact and desirability of the MNCs in Developing countries:

Given the fragmented and uncompetitive nature of many technology markets on the one hand and the weak technological capabilities and poor knowledge on the part of LDC buyers on the other, it is to be expected that LDCs

often get a rough deal in international technology transactions. They may have to pay high direct costs for what they buy (profits, royalties, fees and the like), and they may be subjected to various types of indirect costs (in the form of restrictive clauses, transfer pricing and monopolistic pricing practices , use of predatory market tactics, to suppress local competition etc.) Furthermore, the buyers themselves may worsen their situation by indulging in repetitive purchases of the same technology, by offering very high effective rates of protection that attract in efficient investments, and by not doing enough to encourage bargaining and technological development by local enterprises.

The main fear which'technological dependence' raises is that a passive policy of importing advanced technology from abroad willnot enable LDC enterprises to invest even in local 'learning' of technology in which they have a comparative advantage. In every sort of industry there are technologies which are stable, somewhat 'out of date' and usually somewhat

smaller and less capital intensive as comapred to technologies on the frontier: for these technologies, local enterprises may well be able to develop the capability to design, adapt and even export them efficiently yet a general policy of technological dependence may prevent the basic infrastructure of 'learning' from being set up and the necessary costs and the risks from being undertaken.

These long-term dynamic costs of technology imports may well be much more important than the financial (direct or indirect) costs of buying technology.

Another related issue is the appropriateness and adaptation of technology to the needs of LDCs. One element in LDC's concerns over the market activities of MNCs is the displacement of domestic entrepreneurs. If natives can learn the entreprenuerial ropes in a softer environment without MNC competitors, the argument goes, they can then spread their skills throughout

the economy. MNCs have been entering LDC markets more and more frequently by buying out local firms; indeed this mode of entry is more common the larger the supply of "good" local firms to buy. Concern therefore arises about the fate of native entrepreneurs in 'denationalized enterprises. Evans (1979) noted a handful of cases in which bought-out entrepreneurs transferred their skills to other industries in which local enterprise suffered less disadvantage or no disadvantage. Vernon suggested that since World War II, local LDC enterprises have become more viable competitors by sending managers abroad for business training.

The next group of issues concerns the wages that MNCs pay, the training they provide and the level of employment offered. In LDCs, with surplus labor and a savings constraint, there is the direct benefit given by the difference between the wages actually paid to the local labour employed by the foreign firms and the social opportunity cost of this laor to the host country. MNCs invest considerably

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Evans(1979) "Dependent Development: The Alliance of Multinational, State and Local Capital in Brazil" Princeton, N.J.: at the University Press.

in training LDC labour and they cannot capture all the rents of the training that they provide.

A strong suspicion among LDCs is that MNCs create too few jobs because they fail to adapt their technologies, designed for industrial country wages and capital costs, to the factor prices prevailing in LDCs. This issue has been extensively investigated and it boils down to (i) whether or not the advanced country technologies familiar to the MNCs are economically adaptable to the LDCs' conditions of labour abundance (2) whether or not the MNCs do infact adapt them and (3) whether or not they adapt better than local firms.

The labour intensity of a production process may be quite inflexible: There is only one way to make x or only one that is efficient over a wide range of factor costs.

MNEs make rather infrequent adaptation of technologies that they take to LDCs, the

process technology and quality-control systems being unchanged formost of the cases. The reason could be that adaptations of technology are costly, so that only the inexpensive or the necessary ones get made. Reuber et al (1973)* found that what adaptation occured frequently was because of the smaller scale of operation in LDC markets, rather than different factor prices per se. Both MNEs and domestic companies tend to stick with machinery from their own nations; one possible reason is the transactions costs of making a world wide search to investigate other wares. However the amount of adaptation increases with the subsidiaries' age and experience.

The problem of choice of technology is not a static one of choosing appropriately from a given range of technologies but a dynamic one of evolving new technological frontiers appropriate to the LDC Surely this is a function

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* Ruber G.L. et.al. 1973 .

" Private Foreign Investment in Development"
Oxford Claredon Press

of indigenous R & D. Technological progress had to be essentially based on a cumulative indigenous process so that each round of technological change results in new skills which provide factor inputs needed to sustain further technological advance. However, there is a general tendency to shy away from the R & D by the technology importing firms.+ Indian industries in general spend a relatively small proortion of their sales on R & D and foreign subsidiaries and foreign controlled ventures are by and large, even less conscious of in-plant R & D. There is a calculated reluctance on the part of foreign collaborators to undertake or assist in undertaking R & D within the plant in India. Wherever there in some R & D investment, it is confined to defensive research in order to find out local substitutes for import prohibited inputs. Having once copied the basic designs, Indian industries

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+ Nagesh Kumar - Cost of Technology Imports - The Indian Experience in EPW Aug.1985.

are made dependent upon their foreign collaborators for any technological improvement or innovation. The RBI survey (1974) found that companies which had foreign financial collaboration were less active in setting up R & D, than those which had purely technical collaboration, perhaps owing to availability of newer technology from their parent bodies. Quite apart from the fact that possibility of importing foreign technology in a sphere may damp the Indian initiative to create, duplicate or initiate it, there is evidence that affiliates of MNCs may even be actively hampering the research activity carried out by the local firms. Desai (1980)+ demonstrates how foreign firms attempted to use vague provisions of the Patents Act to thwart the successfull innovations made by Haffkine Institute, Bombay and Excel Industries in the Sixties.

The next issue concerns the net contributions made by MNEs to the capital stocks of

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+ Ashok, V. Desai, 'The Origin & Direction of Industrial R & D in India' Research Policy, Vol.9 (1980).

developing countries. Closely related is the effect of their financial activiies on an LDC's balance of payments. The simple view of foreign investment as capital arbitrage contrasts sharply with observations that foreign affiliates borrow appreciable amounts of their capital locally, earn high profits and shortly are removing more capital from the LDCs than they imported at the outset. The two gap model and the foreign exchange constraints on development provide the basis for much critical discussion of the MNE because of its repatriation of profits and other payments (such as royalties) MNEs contriute to foreign exchange when they first invest in the LDC, of course . The ongoing foreign subsidiary borrow locally, plows back its profits, but eventually remits cumulative earnings that may be large relative to its initial injection of foreign exchange. Its output may replace its imports (and save foreign exchange) but its purchases of imports from abroad are a drain on foreign currency.

Whether or not MNCs promote exports depends

crucially upon the type of industry Agri business for example, is normally export-oriented, and in so far as foreign technology improves agricultural productivity it is likely to stimulate exports. + In the mineral sector, exports may be stimulated by foreign ownership, not because of the discovery of new deposits, or the reduction of waste in extraction, but simply because a high rate of depletion is encouraged by a fear of expropriation. As far as the manufacturing sector is concerned, foreign ownership has different effects on exports for different countries as various studies reveal. No systematic difference between MNEs and indigenous firms are reported for Brazil, Latin American countries and Malaysia. A study for Taiwan suggested that in only one of the industries (electronics) studied, were foreign firms significantly more export oriented than locals. Lall

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+ Multinational Enterprises in LDCs by Mark Casson and Robert D.Pearce . In Norman Gemmell's Surveys in Development Economics Ed.

and Mohammad (1983)++ found evidence of superior exporting performance by foreign firm in India.

When a similar type of analysis is applied to import behaviour the predominant conclusion seems to be that foreign firms tend to have a greater propensity to import than local firm. This is true when the import requirements of collabroator are not met by domestic resources and also due to other tie in clauses which they impose. Another reason could be based on the presumption that where local industry is not able to produce a final product in competition with an MNC, it is unlikely to be able to produce inputs for that product either so that MNC dominated sectors of LDC industry may have a notably high prosperity to import.

The growth of MN operations has led, during the past 20 years to a significant world wide growth of intermediate product trade. An intermediate product is any good passed on from one stage of production to another: a raw material, semi-processed good, or component ready for assembly. In a vertically integrated MNC, successive stages of production are under

++ Lall & Mohammad 1983, Foreign Ownership and Export Peformance in the large corporate sector of India- Journal of Development Press, 20.

common control and so on. An intermediate product exported from an upstream activity and imported into a downstream activity enters into international trade under the control of a single firm. This is an example of intra firm trade. All trade between a subsidiary of an MNC and the parent company or between different subsidiaries of the MNC, in intra-firm trade. Intra firm trade is important because it means that an MNC has direct control over both the import and export of the product. It also gives subsidiaries opportunity to make use of transfer pricing where the value of goods entering into international trade is either overstated or understated in order to misrepresent to authorities (customs, tax, exchange control authorities) the incomes generated by this trade.

The opportunities for transfer pricing are particularly great when intermediate products supplied by the parent to the subsidiary embody significant firm-specific know-how. The overhead cost incurred in developing the product can be imputed to the parent and then recovered by charging a very high price to the subsidiary. Since the intermediate product is specific to the firm, there is no exactly

equivalent product with whose 'arms length' price the transfer price can be compared.This makes it difficult for the customs and tax authorities to challenge the transfer prices.

These tendencies along with other outflows of income (dividends, interest, royalties) from direct investments in LDCs are consistent with the view that foreign investors in LDC are very quick to repatriate income from their investment, infact to much more than what they give to these countries.

Despite all this, LDC governments often offer substantial inducement to MNCs - tax holidays and infrastructure investments for the export-oriented, tariff protection for the import competing. Economic theory casts a skeptical eye at LDCs benefits from some of these concessions. If MNCs are lured into a small national market by an "inefficient" tariff, the investment inflow can reduce national welfare. If an LDC imposes a protective tariff on imports, it impairs its economic welfare because it is too small to improve

its terms of trade thereby If MNC capital were to flow into the LDC's domestic economy, it would simply shift the output-mix towards the import competing capital intensive good, leaving the private incomes of domestic factors of production unchanged but the country as a whole worse off because the government would no longer collect custom duties on the displaced imports. If the MNC capital instead enters the duty-free zone, exactly the same thing happens: Now it attracts labour out of the domestic factor endownment instead of adding capital to it, with the same unfavourable effect on welfare. Therefore, the role of host country's government is very important in the technology transferred and foreign investment and it is ultimately the responsibility of eachindividual country's government to ensure that the MNCs comply with the adopted rules and regulations, with the further aim of protecting the corporations themselves against 'unsound' and 'unfair' competition and of reducing the often demonstrated detrimental effects in both developed and less developed countries.

The aim of this study is to analyse the role of foreign collaborations in India and that of Government of India in Multinational Corporations' operations and to what extent the regulations stipulated have been effective

The organisation of the study is as follows: Chapter II contains an overall view of Indian Industry and it describes the role of Indian policy affecting the operations of multinational companies in Indian Industry, in general. Chapter 3 discusses the impact of foreign investment in Chemical Industry. Since the Engineering industry also has important share in total foreign investment, Chapter 4 deals with the Engineering industry. Unlike Chemical and Engineering Industries which have major share of financial collabroations, Aluminium industry has relied on foreign collaborations more with respect to technical than financial needs. Therefore, the aluminium Industry's performance in the light of foreign technical collaboration is analysed in Chapter 5 and compared with the other two industries. Finally Chapter 6 contains a synopsis of the major findigns of our investigation and analysis.

CHAPTER 2

OVERALL VIEW OF MULTINATIONAL CORPORATIONS IN INDIAN INDUSTRY

India's industrial development, has, to a great extent, been based on technology transferred from the developed world and the multinational corporations. Though scientific and industrial policy statements have paid due obeisance to the notion of technological self-reliance from time to time and the development of domestic technological capabilities has been supported through various measures a large part of the technological needs of Indian industry continue to be met through imported technology. However the awareness on the part of the government of the consequences of undue dependence on foreign technology led to a series of policy measures to control and regulate the process of technology imports.

It is generally recognised that for the acceleration of the rate of economic growth of the developing countries, transfer of

technology is absolutely necessary. But at the same time, there is a belief supported by experience of many years that transfer of technology, if left to the prevailing market forces would inhibit the development of local technological base. Apriori considerations, based on the economic theory of international investment, may lead us to expect that MNCs can be powerful agent of export growth. MNCs are generally wrold leaders in innovation and product differentiation; they have the managerial, entrepreneurial and financial resources to seek out and commercially exploit viable production bases in the third world. Many developing host countries, therefore turn to overseas investors to lead them into international product markets. However, economic theory clearly cannot predict that MNCs will have a comparative advantage over domestic firms in all industries; nor that they can use low cost area in the third world to locate export bases in all sectors; nor that the developing world will in general, because

of law labour costs, necessarily attract export activity (regardless of the availaility of local skills, infrastructure, relative transport costs and so on). In fact, if not regulated, transfer of technology would increase external dependence and accentuates some aspects of underdevelopment as discussed earlier. Further, the technologies transferred are inappropriate both as regards factor use and product type. Modern tchnologies developed in the industrially advanced countries are often urban based, large scale, capital intensive and whose requirements for the capital and intermediate inputs are often import intensive. There is growing distrust on the part of developing countries of foreign dominance in the industrial field through the operations of MNCs.

MNCs have a strong hold over the Indian economy. In fact, even a decade and a half ago, these corporations controlled 53.7% of the assets of the giant sector in India. Table 1 reveals that of 540 MNC branches in the country, 319(59%) were UK-based. US based were second largest in number (88). Together UK and US

based companies accounted for as many as 407 branches or 75% of the total in 1973-74.

TABLE 2.1

Branches of MNCs in India-Countriwise

Country	Number		Assets (Rs.Cr.)	
	1973-74	1978-79	1973-74	1978-79
1. U.K.	319	189	1239	1659
2. U.S.A.	88	64	381	535
3. Japan	21	17	24	64
4. France	8	7	23	51
5. Neatherlands	6	5	26	74
6. Yugoslavia	3	3	53	5
7. Others	95	73	45	13
Total	540	358	1791	2401

Source: Company News and Notes June 1980

In numerical strength, there was a decline to 253 of UK and US-based companies in 1978-79 (or 71% of toal). However, the assets of UKand US-based companies aggregated to Rs.1620

Cr in 1973-74 but their asset position improved to Rs.2194 Cr. in 1978-79. In relative terms, it was over 90% of total assets. In other words, there is a high degree of concentration of assets of US and UK based companies.

Table 2 reveals the industrywise distriution of branches of MNCs. The data reveal that assets of branches in commerce, trade and finance aggregated to Rs.1231 crore in 1973-74 (i.e. 69% of total). The share of this group in assets was Rs.1838 crores in 1978-79 and had improved to 79% in total.

TABLE 2.2

Branches of MNCs in India .Industry wise

	Number		Assets(Rs.Cr.)	
Industry	1973-74	'78-79	1973-74	'78-79
1.Agriculture and allied activities	115	85	223	227
2. Mining and Quarrying	7	7	37	35
3. Processing & Manufacture	80	47	220	151
4. Construction & utilities	32	21	46	102

Contd..

5. Commerce, trade & Finance	154	68	1231	1838
6. Transport , Communication & Storage	39	35	4	6
7. Services	113	95	29	42
Total	540	35	1790	2401

Source: Company News & Notes.

The share of processing and manufacture in total assets was 12% in 1973-74 which has declined further to 6% in 1978-79/ This indicates that the branches of MNCs are hardly interested in developing technology in terms of improving processing and manufacturing industries.

Regarding subsidiaries of MNCs, they are defined as companies incorporated in India in which a single foreign company holds more than 50% of the paid-=up equity capital.

TABLE 2.3

Indian subsidiary of MNCs - Countrywise

	Number		Assets(Rs.Cr.)	
	1973-74	1978-79	1973-74	1978-79
1. U.K.	131	86	834	1050
2. U.S.A.	24	19	177	228
3. Switzerland	11	6	75	60
4. Sweden	8	3	49	44
5. West Germany	5	4	67	118
6. Canada	2	2	85	104
7. Netherlands	1	1	42	60
8. Others	6	4	35	43
Total	188	125	1364	1707

Source; Compiled from Company News and Notes July 1981.

Despite a decline in their numerical strength, together the UK-US based subsidiaries had increased their assets from Rs.1011 Cr. in 1973-74 to Rs.1278 cr in 1978-79. In relative terms, the position remained unaltered and they accounted for about 75% of total assets. Besides this , the subsidiaries of five countries viz Switzerland, Sweden, West Germany, Canada and the Netherlands accounted for assets amounting to Rs.318 cr. in 1973-74. The assets of the subsidiaries of these counties

improved to Rs.386 Cr in 1978-79. However in relative terms, the position remained more or less the same i.e, 23.3% of total assets in 1973-74 and 22.6% in 1978-79

Of the 188 subsidiary companies, 72 were wholly owned. In another 83 subsidiaries of MNCs, the foreign holdings ranged between 50 to 70% and for the remaining 33 subsidiaries the holdings were between 70 to 100%. However the position underwent a change by 197879. The number of wholly owned subsidiaries declined from 72 to 42 i.e. from 38% to about 33% but the number of subsidiaries in the range 70% and less than 100% although declined in absolute term from 33 to 27, in relative terms, it increased from 17.6% to 21.6%. Obviously there is a marginal dilution of equity under FERA guidelines

Table 2.4

Subsidiaries of MNCs- Distribution by %age of equity capital by foreign Companies

	1973-74	1978-79
1. Over 50% but less than 70%	83 (44.1)	57 (45.6)
Over 70% but less than 100%	33 (17.6)	27 (21.6)

3.	100%	72 (38.3)	41 (32.8)
		188	125

Figures in brackers are %age of total in he respectie column

Source: Company News and notes June 1980.

The Reserve Bamk of India publishes studies of the Finances of Foreign controlled Rupee Companies and Branches of Foreign Comapnies, according to which, Indian joint stock companies which are subsidiaries of foreign companies in which40% ormore of equity capital is held y a foreign company of its nominee are treated as foreign controlled rupee companies (FCRCs) ; banking insurance and Government companies are excluded.

Country-wise break up of these companies reveals thedominance of UK-US based companies which accounted for 71% of total strength but 74% in terms of paid-up capital in 1980-81 In absolute terms,212 UK-US based companies accounted for a total paid up capital of Rs.611 cr.

Next in importance were West German Companies with paid up capital of Rs. 68 cr, followedby Switzerland with Rs. 42 cr. ofpaid up capital.

TABLE 25:

Foreign Equity Holding according to country of Controlling interest 1980-81

Country	Subsdiaries of Foreign Cos		Others		Total	
	Wholly owned	Others	Foreign equity Holding 40% and above	25% & above	No. of Cos.	Paid up Capital (Rs.Cr.)
U.K.	8	59	37	46	150 (47.9)	431 (52.1)
USA	8	22	25	17	72 (23)	180 (21.8)
West Germany	-	11	7	15	33 (10.5)	68 (8.2)
Switzerland	-	10	2	4	16 (5.2)	42 (5.1)
Other Countries	2	10	18	12	42 (13.4)	106 (12.8)
Total	18	112	89	94	313	827

Source: Compiled from RBI Bulletin Aug. 1984.

The sectoral distribution of the foerign captial has been moving in favour of manufacturing

TABLE 2.6

Extent and Distribution of Foreign Invesment

Industry Group	%age of Total Foreign Investment		
	March 1970	March 1978	March 1980
I. Plantations	11.7	6.8	4.1
II. Mining	0.8	0.9	0.8
III. Petroleum	147	3.8	3.9
IV. Manufacturing	68.4	84.3	87.0
(i) Food & Beverages	5.7	4.9	4.2
(ii) Textile	3.8	2.5	3.4
(iii) machinery and Machine tools	4.6	6,7	5.5
iv) Transport Equipment	3.5	5.7	7.6
(v) Metal and Metal Product	9.5	12.6	12.7
(vi) Electrical goods	7.4	9.5	10.4
(vii) Chemical & Allied product	22.3	31.4	32.3
(a) Chemicals	8.3	14 0	13.9
(b) Medicine and Pharmaceutical	7.6	9.8	11.3
(c) Others	6.4	7.7	7.0
(viii) Miscellaneous	11.4	11.4	10.7
V. Services	4.4	4.67	4.1
TOTAL	100	100	100

Foreign collaborations are dominated by 'Manufacturing' since this industry group accounts for an investment of the order of Rs.812 cr (i.e. 87% of the total) [See Appendix I for detailed distribution of foreign investment] in 1980. Foreign investments in Plantations declined in importance considerably (from 11.7% to 41%).

After Government's take over of the major oil companies in 1975, foreign invetments is Petroleum also declined to insignificance.

In contast, foreign investments in manufacturing increased very rapidly and the major part of this has been accounted for by Engineering and Chemical industries. Machinery, metals and electrical goods accounted for a total investment of Rs.287 cr ie 30.8% of total in 1980 and chemicals. medicines and pharameceuticals accounted for Rs. i.e.83.2cr of total investment. This high concentration of foreign investment in che chemical and engineering industries is the result of FERA and the industrial licensing policies which put pressure on Foreign companies to bring down their shares in consumer goods and were impelled to invest in engineering and chemical industries. This is because FERA guidelines allowed companies to retain foreign equity holding above 40% on

on condition that they were engaged in core industries or activities requiring sophisticated technology or predominantly export oriented production.

It is widely recognised that foreign collaborations while performing the gap-filling function in the growth process, also produce technological dependence. Generally technology suppliers seek to restrick the use of technology so as to maximise the returns. Control over supply plus the buyers' ignorance regarding the true value of technology can lead to excessively high prices.The Government, while permitting foreign collabroation would also take into account other factors like the likely trade offs involving risks, short and long-term considerations and private versus social costs and benefits. In almost every country, there are a variety of regulations between the foreign and local enerprises in a manner most beneficial to the host country.

In India, the government recognised the importance of foreign collaborations, therefore the initial policy was to treat foreign investments

on par with local enterprises. however the government at the same time regulated their entry as well as their operations, so as to prevent the domination of the national economy by foreign capital. Alternative mechanism ranging from technological collaboration agreements. to joint ventures, later became important sources of technology transfer. Here again the policy was one of selective import and of regulating the terms and conditions of foreign participation. The objective in general was to promote technological self reliance and to reduce the adverse impact on the balance of payments.

Though the overall policy framework was restrictive, there have been some policy swings at different time periods. Broaldy one could discern three phases demarcated in terms of the degree of control exercised by government policy over foreign investment and collaboration. These are: (b) A tight regulatory regime betweeen the mid 1960s and the late 1970s and (c) relaxation of regulations and liberalisation of procedures since then.

* a) Relative flexibility until mid 1960's

It is generaly recognised that a nation's technology import policy is directed towards three main objective.

(a) the cost of import should be minimised

b) The importer should be prevented from paying too much and should maintain a fair measure of bargaining power vis-a-vis the supplier.

(c) The importer should be encouraged to gradually attain technological independence .

On the whole the policy framework should lead to increased productivity growth and competitiveness and should enable thecountry to achieve technological self-reliance. As far as the Indian government's policies towards foreign private investments and transfer of technology are concerned, foreign enterprise has been assured non-discriminatory treatment on par with Indian enterprise within the sectors open to foreign participation. Nevertheless, the government has contributed to reducing the country's dependence on TNCs by duplicating and replacing their activities through establishment and enlargement

of public sector undertakings. [the policy with regard to the oil industry provides a good illustration of this].

Also, Indian authorities have developed a comprehensive and integrated system of controls which aim for a surplus of benefits over costs and disadvantages from MNCs operations. Immediately after Independence, participation of foreign capital and enterprise was incresingly prefered for the rapid industrialisation of the country. The polidies tended to favour the foreign companies with the largest amounts of financial technological resources at the disposal of MNCs.

In 1969, however, a more retrictive, selective and comprehensive approach waa adopted where three illustrative lists of industries specifying the roles allotted to foreign capital in each group were issued. The first list ennumerated industries where foreign investment would be permitted with or without technical collaboration; the second list contained those

where only foreign technical collaboration and not investment, would be permitted; and the third list comprised those where no foereign participation, neither financial nor technical, would be considered necessary +. Besides , several foreign controlled companies came under the purview of the new Monopplies and Restrictive Trade Practices Act (MRTP Act), promulgated in 1969 and the MRTP Rules, issued in 1970. More important though, was the Foreign Exchange Regulation Act (FERA) which was promulgated in 1973 and came into force on Jan 1, 1974.

Section 29 of this Act which directly referred to the operations ofMNCs in India required all non-banking foreign branches and subsidairies with foreign equity exceeding 40% to obtain permission from the RBI to carry on with the business. They also had to obtain

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+ H.P. Aggarwal, Business Collaborations in India, New Delhi 1979.

permission to establish new undertakings, to purchase shares in existing companies, or to acquire wholly or partly any other company. According to the guidelines for administering this section of FERA, the principal rule was that all branches of foreign companies operating in India should convert themselves into Indian Companies with at least 60% local equity participation. Furthermore all subsidiaries of foreign companies should bring down the foreign equity share to 40% or less. Exceptions to these rules were, however, companies exporting at least 60% of their total production Such companies could retain foreign equity shares above 40% The guidelines originally provided for only two levels of foreign equity, namely 74% and 40% Later to provide more flexibility, the government decided to introduce a level of 51%. This level of foreign equity was permitted in cases whereas the company had a turn over of atleast 60% in core sector activities and exported at least 10% of their production. The same level applied to companies exporting at least 40% of their production, irrespective

of the share of core sector activities. In the extreme cases of 100% export oriented units, the foreign equity share could even increase to 100%. According to another essential exception from the principal rule, companies were permitted foreign equity shares above 40% if they engaged in production necessary for India's further industrial development and at the same time, in short supply in the country. Moreover many of the products required sophisticated technology not available from indigenous sources. On the other hand, the test contained practically no consumer goods implying desire on the part of the Indian government to force MNCs away from consumer goods industries and into capital goods industries and industries producing intermediate goods, particularly basic intermediates.

FERA aimed at regulating foreign exchange transactions with a further view to conserving foreign exchange resources and the proper utilisation thereof in the interest of India's economic development. It is therefore necessary to analyse the effects of equity dilution on dividend remittances abroad, balance of payments, transfer of resources, allocation of resources etc.

The equity dilution strategy was based on the assumption that a reduction in foreign equity participation would automatically bring about a reduction in remittances abroad. More specifically, it was expected that the reduction in foreign equity participation would appear as an overal decrease in dividends paid abroad as a percentage of total dividends paid. However as can be seen in the table 2.7 in 1975-76, ie before the process of equity dilution had gathered momentum, the dividends paid abroad amounted to 10.6% of total dividends paid by medium and large public limited companies and even after that, it kept on increasing and reached 20% in 1978-79. Although after 1979, it showed some decline, it had not reached its initial level (before the exactment of FERA) until 1984-85 This suggests that FERA regulatins have not been effective enough.

TABLE 2.7

Dividends Paid Abroad as Percentage

Of Total Dividends by Public Ltd. Cos

	(1) No. of Cos.	(2) Total Div.	(2) Div. paid abroad	(2) as % of (1)
1975-76	1720	18375	1952	10.6
1976-77	1720	20934	3685	17.6
1977-78	1720	22762	4402	19.3
1978-79	1720	25904	5203	20.1
1979-80	1720	28711	4678	16.3
1980-81	1720	31724	4455	14.0
1981-82	1651	36533	5233	14.3Q
1982-83	1651	37616	6427	17.1.
1983-84	1838	39805	7426	18.6
1984-85	1838	45281	6824	15.1

Source: RBI Bulletins May 1980, July 1983, Feb.85, .May 1987

If we just concentrate on foreign controlled Rupee Companies, the same pattern is reflected as shown with reference to the corporate sector.

TABLE 2.8

Dividends Paid Abroad as Percentage of total dividends paid by FCRCs.

	Total Dividends	Dividends paid abroad	Divdends paid as %age of total dividends
	(lakhs of Rs.)		
1975-76	72.63	1627	22.4%
1976-77	9011	NA	-
1977-78	9329	4235	45.4
1978-79	11470	5058	44.1
1979-80	12192	4414	36.1
1980-81	12391	4097	33.2
1982-83	10873	4133	38.0
1983-84	1162	3834	32.9

Thus the share of dividends remitted abroad by FCRCs went up from 22% of total dividends in 1975-76 to more than 45% in 1977-78. Subsequently the share declined but it remained at a higher level than in the mid-70s.

Therefore we see that dividend remittances have not decreased substantially as a result of FERA regulations and as a result there is drain of foreign exchange resources. But dividends form a very small proportion of total

foreign exchange drained out. Imports account for the bulk of the foreign exchange utilized by foreign controlled companies.

TABLE 2.9

Foreign Exchange Utilization by FCRCs

	1975-76		1979-80		1980-81		1982-83		1983-84		1984-85	
	Rs.lakhs	%	Rs.lakhs	%	Rs.lakhs	%	Rs.lakhs	%	Rs.lakhs	%	Rs.lakhs	%
Imports	19321	82.4	39059	84.6	45822	86.4	39165	84.1	384.00	84.5	42057	84.1
Other Expenditure in foreign currency	4113	17.6	7105	15.4	7236	13.6	7392	15.9	7028	15.5	7975	15.9
- Royalty	416	1.8	333	0.7	441	0.8	475	1.0	386	0.8	469	0.9
- Technical fees	389	1.7	579	1.3	663	1.3	279	0.6	378	0.8	356	0.7
- Interest	544	2.3	253	0.6	253	0.5	359	0.8	363	0.8	434	0.9
-Dividends Remitted	1626	6.9	4414	9.6	4097	7.7	4133	8.9	3834	8.4	3712	0.4
Total Outgo in Foreign Currency	23434	100.1	46164	100	5.3058	100	46557	100	45428	100.0	50032	100

Source: RBI Bull Aug.1984, June 1986.

Irrespective of the precise relative importance of dividends and other remittances it remains obvious that the FERA strategy of equity dilution cannot be the only, nor even main instrument for achieving a substantial reduction in the total utilization of foreign exchange by MNCs in India. This is because other factors like attitude of MNC-affiliated companies to profit remittances, business opportunities in India etc are important factors in this regard. For instance, if the prospect for the operations of MNC- afflicted companis are perceived as bleak their managers may favour the largest possible remittances at the earliest. If, on the other hand, the arrangements hold the view that India offers a promising future for their opertions, the policy would be to expand their production base in order to create a better potential for future growth. This does not rule out substantial remittances of profits during periods when these are exceptionally high but it precludes that MNCs would favour the largest possible remittances if this approach would prevent the building up of on expanded production base.

However, the fact that bulk of the outgo of foreign currencyis on account of imports is not only true for foreign controlled companies but also for Indian companies and pattern was similar to that of FCRCs; ie dividends share in the total expenditure in foreign currency is less and has not changed much over time [see Apepndix II for table].

In order to investigate whether FERA has brought about any fulfilment of the objectives of increasing self-reliance and reducing the costs of production in foreign currency, one has to see whether there is decline in remittances relating to total sales of the private corporate sector.

Table 2.10 (next page)

Dividend remittances as a percentage of total sales depict the familiar pattern of increase over the first four years, followed by a decline. Other remittances rose from a level of around 0.5% during the first three years to a level above 0.6 in the later years. Total remittances therefore

Table-2.10

The privite corporate sector's utilisation of foreign currency and total sales.

Year	Sales		Tptal Imports		Total Div paid Abroad		other remittance	
	Rs lakhs	%	Rs lakhs	%	Rs lakhs	%	Rs lakhs	%
1975-76	1317114	100	52072	3.95	1952	0.15	6109	0-46
1976-77	1458100	100	58072	3.91	3685	0.25	7383	0.51
1977-78	1594900	100	86077	5.40	4402	0.28	7386	0.46
1978-79	1756389	100	94607	5.39	5203	0.30	11221	0.64
1979-80	2026793	100	119798	5.91	4678	0.23	12905	0.64
1980-81	2373607	100	137310	5.78	4455	0.19	14297	0.60
1981-82	2928485	100	185296	6.33	5233	0.18	20432	0.70
1982-83	3183700	100	189758	5.96	6427	0.21	32552	1.30
1983-84	3572254	100	187002	5.23	7426	0.21	26653	0.75
1984-85	4122233	100	204344	4.96	6824	0.17	33608	0.81

showed to decline in relation to sales, Even imports as percentage of total sales rose from below 4% to around 5%. Therefore the endeavour to bring about self reliance and reduced cost of production in foreign currency have not been successful.

It is worthy to note that concealed behind these aggrevated figures for all medium and large private sector companies, there is a marked difference between Indian and foreign controlled companies. It is quite natural that FCRCs remit comparatively higher sums in foreign currency on account of dividends, technical payments etc. what is interesting here is that they also import substantially more than their Indian counterparts in proportion to total income, sales and consumption.

In a study by RBI, foreign companies as a whole were characterised by a distinctly higher import content than Indian companies.

TABLE 2.11

Imported to total Raw Materials, Components , Stores and Spaers Consumed

	1875-76	1976-77	1977-78
1353 Cos.	10.2	11.0	14.5
of which			
276 FCRC	12.8	14.0	15.5
1077 Indian	9,1	9.7	14.%

Subramanian and Pillai also showed the same tendency for the engineering industry (discussed in Chapter 4).

The net impact of foreign investment along the FERA regulations can be assessed by studying the earning side.

It is always felt tht foreign financial and technical collabroation agreements are important. Instruments for promoting exports. ButSubramanian & pillai concluded that foreign affliated companies do not perform better than Indian companies with regard to exports and this can be re=-affirmed on the basis of the RBI study. As the Table2.12 shows, 276 FCRC in mid 70s earned Foreign exchange equal to between 6.1 and 7.4% of net sales. During the same period Indian Companies earning also varied between 6.1 and 7.3% of net sales.

TABLE 2.12

Earnings in Foreign Exhange to Net Sales for Indin & FCRC 1975-76 to 77-78

	1975-76	1976-77	1977-78
Indian Cos(1077)	6.1	7.3	6.9
FCRC(276)	6.1	7.4	7.0

If we look at the net Balance of payments effects for the FCRCs , it is seen that for almostall periods, there has been net outflow of foreign exchange.

TABLE 2.13

Earnings and Expenditure in Foreign Exchange Of Foreign Controlled Rupee Companies (Rs,lakhs)

	1975-76	79-80	80-81	82-83	83-84	84-85
Earnings in foreign Exchange of which	21561	32531	36860	40294	38709	48512
- Exports	20621	30334	35556	35266	35392	44589
Expenditure in foreign exchange of which	23434	46164	53058	46557	45482	50032
- Imports	19321	39059	45822	39165	38400	42057
Direct Bol Effects	-(1873)	-13633	-16198	-6263	-6773	-1520

The impact of foreign investment on India's balance of payments has been negative. There are several

reasons for this - A foreign technology supplier might not like the importing firm to become its competitor in its existing and/or potential markets. Thus most of the foreign collaboration agreements contain clauses placing restrictions on the exports of the technology importing firm.Also the importers' dependence on imports of raw materials etc. also increases because of foreign collabroators' familiarity with foerign sourcs and to provide market to his or his associate's production. Also it is seen that dividends remitted by companies under foreign control are far more than that by Indian companies.Ashok V. Desai+ in a study showed that dividends remitted per company under foreign control were 35 times as high as those remittedby an average company under Indian control. This was partly due to the fact that the average company with minority investment was much smaller than the average company under foreign control. The latter was 1.6 times as large as the former in terms of net assets and 2.1 times as large in terms of paid up capital.

+ New Forms of International Investment in India, Social Scientist.

Therefore looking at the overall impact on balance of payments , foreign controlled companies have not shown a promising trend.Subramanian and Pillai (1979) have also suggested that export performance of foreign affiliates in India is poor and import dependence is quite high.

Apart from the financial impact of MNCs, the MNC interaction is to transfer technology to the developing countries.

Tehnology in the application of scientific knowledge and skills to the setting up, operating, improving and expanding of productive facilities. However it can be narrowly defined to cover the technical aspects of such appl.icators or broadly to incloude managerial, organizational and other aspects.

In developing countries, most industrial technologies are imported from the advaned countries. In India, foreign technical asistance is drawn upon to launch new technologies. However there are marked differences in the reliance on foerign project exe-

cution, which suggest the following paterns. +

(a) For undifferentiated products whose technology is mainly process-centred and embodied in equipment, whose layout is not very complex and whose minimum scale is not very large, the need for the initial transfer of foerign technology tends to be relatively minor, mainly associated with the setting up of the capital equipment (eg. textiles). For undifferentiated products whose technology is larger scale, more complex and more demanding of technical skills, the initial technology import content tends to be greater and more prolonged (e.g. steel and synthetic fibres).

(b) For product - centred engineering technoloies a foreign association seems to be necessary for all but the simplest activities. Thus, even firms which start as independent manufacturers, essentially of copied products, take up foreign collabortions when they move up to more advanced technologies.

+ Sanjay Lall - Learning to Industrialize, 1987.

As discussed earlier, before any foerign technology qualified for import, there remained, untill 1977. several regulatory hurdles before a licensing or direct investment agreement was concluded. For licensing, the Indian government imposed strict controls on the payments permitted and the life of the contract. Royalty payments were normally restricted to 3-5 percent of the value of sales and subject to a 40% tax so that the licensor received, at the maximum, a 3% royalty. The life of a technology contract was limited to 5 years and exceptions were only permitted for export-oriented industries.

For Direct foreign ivnestments, proposals went through the Foreign Inestment Board, which was governed by the FERA of 1974 and by general considerations which permitted equity investmeet as the least preferred means of acquiring foreign technologies. In addition to the strong protection given to local manufacturing technology, Indian policy makers also sought to foster indigenous capabilities in engineering consultancy. Indian

consultants operated in a highly protected environment until the early 1980s. More recently, a few major projects (in fertilities and aluminium) were given to foreign prime contractors, partly because of conditions laid down by aid donors who financed the projects and partly because of the size and complexity of the projects. This does not seem to signal a major opening up of the Indian market to competition by international engineering firm.

The importation of technologyvia licensing was the only form of access which did undergo noticeable liberalization after 1978 which was due to the awareness of large technological lags developing in most manfuacturing industries and, of their relatively poor performances in overseas market.

This then was the general framework ot policies within which Indian industry learned its technological lessons. There has been emphasis on 'self-reliance', national ownership, promotion of indigenous R & D. In India, technology

which is imported is subject to several restrictions. For instance there is considerable evidence that technology suppliers restrict, technology diffusion. Subramanian (1972) found that out of 130 agreements studied as many as 84 (64.6%) had clauses making it obligatory for the recipient firm to keep all the technical information secret and not to transfer , assign or sub-license the sight to know-how to any party.

The RBI Survey (1985 p.37) reprots that nearly 80% of the collabroations signed by the private sector companies had a clause which implied that the technology imported was for exclusive use of the importers and not for sub-licensing. The technology transfer under such conditions remains a closely guarded secret and hence can at best be termed as a private transfer and not a national transfer thus leading to multiple imports. This in turn has implications which limit the diffusion and adaptation of these technologies domestically.

The regulatory clauses also influence the process of absorption and adaptation of the imported technologies. Subramanian (1972) reports that a substantial proportion of the collabroations studied incorproated a clause restricting the freedom of the borrowing company to change the original designs and specification. However, there are certain firms (BHEL and HMT) (in a study by Sanjay Lall 1987) which by virtue of their product range and diversification, have adapted the imported technologies to local condition and upgraded them overtime. On the other hand SAIL and ABl (Associated Babcock Limited) have followed a consistent strategy of importing major technologies for new lines and not modernizing and upgrading existing facilities. This technological lethargy is also a conseuqence of the lack of independent R & D , as shown in the table 2.14.

TABLE 2.14

Research and Development as percentage of Sales

Firm	R & D Sales (%)
ABL	NIL
SAIL	0.3
BHEL	1.9
HMT	2.3

Source: Sanjay Lall - learning to Industrialize pp. 48.

Thus, another factor limiting the progress of adaptation/assimilation (and further innovation) of technology is the tendency to shy away from R & D activit by the technology importing firms. In fact the RBI survey (1974) found that companies which had foreign financial collabroations were less active in setting up R & D than those which had purely technical collabroation, perhaps owing to the availability of newer technology from their parent bodies.

Thus technological capability of the importing country depends on the willingness on the part of the foreign technology suppliers to impart capabilities required for efficient adaptation and absorption, ability of the technology importers to make independent technology choices, diffusion and assimsilation and absorption of the imported technologies, R & D activity etc.

CHAPTER -3-

DIRECT FOREIGN INVESTMENT AND TECHNOLOGY TRANSFER CHEMICAL INDUSTRY

The last few years have witnessed a rapid growth in the field of chemical industry both organic and inorganic . Heavy organic and inorganic chemicals provide the basic building blocks for the manufacture of several downstream products lke drugs, pharmaceuticals, dyestuffs, pesticides, plastics, paints etc.

The chemical indsutry is one of the oldest industries in the country and was in existence even at the dawn of independence. It has made rapid strides in the last two decades and currently the chemical industry's share in the national gross output is about 40 as compared to 8% in 1970-71.+

Taking overseas of annual growth rates in 80s, it is observed that whereas General Index was 4.92 , manufacture of chemical and

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+ Deptt. of Chemicals & Petrochemicals. GOI, MOI, Annual Report 1988-89, & Chemical Business Vol.2, No.10, Jan.5, 1989.

chemical products has been 6.26.

Table 3.1.

Rate of Growth of Industrial Output During Eighties

	Average of annual growth Rate 1980-81 to 1985-86	Avg. of AGR 1984-85 to 1988-89	Avg.of AGR 1980-81to 1988-89
General Index	5.32	5.22	4.42
Chemicals	6.79	6.63	6.26

Source: Index of Industrial Production

The installed capacity of methanot has gone up more than 3 times in 1988-89 from the level of 1984-85 (44 500 tpa). Similarly capacity of pehnol has almost trebled from 21600 tpa to 61600 tpa in 1988-89. Soda ash capacity has also gone up during this period from 1005000 tpa to 1459000 tpa. The production of pesticides is steadily increasing and imports have come down progressively in the last three years.

LIberalised policy has over the years encouraged setting up of medium scale units.The small scale units are being given adequate encouragement by reserving a number of chemicals for exclusive development in the small scale sector.+

+ Supply study on Drugs and Pharmaceuticals in India 1988, Trade Development Authority.

The expansion in production is largely due to increase in demand within the country and pragmatic policies adopted by the government The Indian drug industry is not only the best organised in the developing world but has reached a level where it is able to introduce the newer drugs almost simultnaeously with the MNCs elsewhere.+ The new patent law replacing the old one formulated by the British, came into existence in 1970 as the Indian Patent Act 1970. The main purpose of enacting this new law is to prevent the exploitation by MNCs by way of monopolistic control. To prevent the profiteering in the most improtant sector of food and medicine, the government refused to allow product patents and only the process patents can be registered for food, medicine and chemical substances. As per the Indian Patents Act, the term of patent protection is seven years from the date of filing complete specificiations or five years from the date of sealing in the case of food, drugs and medicines and on all other categories of

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+ Hindu Survey of Industies, March, 1989.

products, the patent protection is 14 years. The US and most of the West European countries consider the patent protection particularly in drugs and medicines as totally inadequate. The US Govt. has been pressing for a 14-year protection in drug industry in India also for some time.

The rationale behind fixing a lower period of protection for food and drugs under the Indian Patent Act is in the context of the fact that the tempo of development and evolution of new processes all over the world is so rapid now, many inventions become obsolate much faster than in the past.

Immediately after Independence international companies were encouraged to set up manufacturing units in India. The main attraction for them was government policy towards foreign capital. It provided no discrimination between foreign and Indian companies in application of general industrial policy and facility.Foreign companies were allowed to repatriate profits and capital

subject to general foreign exchange policy and guidelines. The foreign firms were promised fair compensation in the event of nationalisation. In the early years of post independence, this helped the country to acquire the latest technology and knowhow for the production of different types of drugs and formulations. Necessary infrastructure and base for the growth and development of Indian drug industry was thus provided. However the Hathi Committee which was apppointed by the government was not in the favour of foreign investment and recommended in its report in 1975 [+] that foreign companies engaged in the manufacturing of drugs and pharmaceuticals should not only be directed to bring down their equity to 40% forthwith, but should further reduce its progressively to 26%. But these recommendations were strongly opposed by foreign drug companies and their organisations in India, the Organisation of Pharmaceutical Producers of India (OPPI). Later in March 1978, a new drug policy was announced. According to this, the companies could retin upto 74% foreign equity onlyif a substantial part of their production consisted of basic intermediates and/or

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+ GOI, Ministry of Petrolleum & Chemicals, Report of the Committee on Drugs and Pharmceuticals Industry, 1975.

high technology bulk drugs.

Although these new guidelines left the area for discretionary decisions wide open, there is no doubt that they expressed an intention on the government's part to tighten the control over foreign drug companies. But as the country depended on MNCs for the supply of bulk drugs and medicine, it had to build up parallel and substituting indigenous capacity in order to acquire effective control over the foreign controlled companies. Therefore the objectives were to foster and encourage the growth of the Indian sector, in particular the public sector and small scale industries, with a further view to reducing imports and the dependence on supplies from foreign companies and it is this expanded indigenous capaicty that allowed the government to put more pressure on FERA companies within the pharmaceutical sector by means of withholding industrial approvals. It is another matter that these possibilities were not utilized optimally by the policy implementation authorities due to mutual disagreement and conflict.+

+ Economic Times, Sept.10, 1981.

The OPPI strongly influenced the decision-making processes, particularly in the implementation stage. It is known that the administrative department concerned with the industry, ie. the Chemical Fertilizers Department, was totally opposed to applying FERA provisions on pharmaceutical companies for several years.This made it difficult for the FERA committee to advise the RBI on the permsisible foreign equity participation, because the decisions were taken on a case-by-case basis allowing the Department to exercise discretionary power. The Department later changed its stand on the dilution issue by opposing a recommendation from the Department of Economic Affairs to exempt two phamaceutical companies from dilution.

It should also be added that the conditions for equity dilution were at the same time changed in such a way that transnational pharmaceutical companies, no longer had reasons to fear losing mangement control as a consequence of giving up majority control over equity. At that time, there were 31 FERA companies which had

direct foreign equity exceeding 40% since then 23 comapnies have diluted their foreign equity capital either at 40% or below.

It is seen that foreign sector is concentrated towards formulation of drugs rather than bulk drug production. It may be primarily due to the fact that formulation represent high pay off while bulk drug is of low profitability, secondly, many MNs were interested in continuing purchase of bulk drug required for formulation from their principals at exorbitant prices and finally, capital investment for bulk drug production was proportionately higher than that for formulation.+

During 1973,the "organised sector" comprising of 25 totally foreign, foreign majority equity or totally Indian, accounted for 80% of total turnover of formulation, half of this by the MNs. But over period of time, the share of foreign sector has declined as seen in the table.3.2.++

+ Gaitone B.B., Pharmaceutical Industry in India, Retrospects and Prospects, Leipzig Press,1978.

++ Usha Saxena : Role of Multinationals in India's Foreign Trade 1987.

Table-3.2

Expected Annual Growth Rate of Drugs and Pharmaceutical Industry ++

	Production of Formulation				Annual Growth Rate %
	1976-77		1982-83		
	(Rs Cr) Value	Percentage of total	(Rs Cr) Value	Percentage of total	
1. Public Sector	47	6.7	250	13.3	32.1
2. Indian Organised Sector	241	34.4	700	37.3	19.4
3. Small Scale Sector	120	17.1	350	18.7	19.5
4. Foreign Sector	292	41.7	375	30.7	11.9
. Total	700		1875		

BALANCE OF PAYMENTS POSITION:

India's exports of drugs and pharmaceuticals have shown a promising trend. India exported drugs and pharmaceuticals worth Rs.45 crores in 1975-76 which increased to Rs.222.95 C. 1986-87, an increase of about 395.46% over the period. At present 9% of the ppodution is exported.

The pharmaceutical industry has registered a phenomenal growth during the last one decade registering a share increase in production from Rs.600 cr in 1980 to Rs.3,225 cr now.+

Table 3.3. next page.

As far as all chemicals and related products are concerned, the export eprformance has been impressive there also.

Table 3.,4. next page.

India exported chemicals and related products worth 91 cr.in 1975-76 which increased to Rs.394 cr in 1985-86, an increase of 333% over the period while imports have increased to the tune of 278% over the same period.

+Hindu Survey, March 1989.

Table-3.3

Investment , Production and Exports of drugs and Pharmacenticals (in crores of Rs)

Capital Investment	1988-89	750
R&D Expenditure	1986-87	50
Value of Production of bulk drugs	1988-89	530
	1989-90 (Est)	607
Formulations	1988-89	2690
	1989-90	3225
Value of drugs/Pharmaceuticals		
Imports	1987-88	343.50
	1988-89	467.50
Exports	1987-88	289.60
	1988-89 (Est)	680.00

Table3.4

Exports and Imports of Chemical Industry
(Rs Crores)

Year	Exports	Rate of growth	Imports	Rate of growt
1975-76	91	-	760	-
1976-77	119	30.76	443	-41.71
1977-78	125	5.04	648	46.28
1978-79	156	24.80	836	29.01
1979-80	208	33.33	956	14.35
1980-81	235	12.98	1325	38.59
1981-82	375	59.75	1324	- 0.07
1982-83	348	- 7.2	989	-25.30
1983-84	328	- 5.7	1406	42.16
1984-85	483	47.26	2431	72.90
1985-86	394	-18.42	2873	18.18

Sources : Report of Currency and Finance , Statistical Statements various issues.

TRENDS IN PRIVATE FOREIGN INVESTMENT

The share of foreign direct investment in chemical industry has been increasing in the manufacturing sector. In 1978, manufacturing share in the total foreign stock was 84.3% as compared to 68.4% in 1974. The share of chemical industry in the foreign stock is increasing It was 11.1% of the total in 1964 which increased to 22.3% in 1974 and 31.4% by March 1978. Within the Manufacturing sector, its share is all the more, it increased from 26.6% in 1964 to 32.6% in 1974 to 37.3% in 1978.

Table 3.5. Next page

This increasing trend relfects rising foerign stake in the chemical industry. Foreign capital in India has tended to concentrate in some sectors. A comparison with previous years strongly supports the contention that investment is foreign branches and FCRC has been increasingly concentrated in manufacturing industires [see Appendix I for Indsutry-wise distriution of Foreign Investment]. This pattern in the sectoral allocation of foerign investments may be a result of Indian government's policy, distribution of business opportunities, profitability ratios and growth prospepcts.

Table-3.5

Extent of FFI in Chemical Industry

	March 1964 (Rs Crores)					March 1974 (Rs Crores)					March 1978 (Rs Crores)				
	FOREIGN BRANCHES	FORRIGN CONTROLIED COMPANIES	TOTAL	% TOTAL	% MANUFACTURE	F B	FCRC	TOTAL	% TOTAL	% MANU	FB	FCRC	TOTAL	% TOTAL	% MANU
Chemical & Allied Products	4.2	58.3	62.5	11.1	26.6	12.9	190.8	203.7	22.3	32.6	6.2	269.2	275.4	31.4	37.3
i Chemicals	-	18.7	18.7	3.3	8.0	-	76.0	76.0	8.3	12.2	-	122.3	122.3	13.9	16.6
ii Medicines & Pharmaceuticals	3.9	19.3	23.2	4.1	9.9	10.9	58.7	69.6	7.6	11.1	6.2	79.4	85.6	9.8	11.6
iii Others	0.3	20.3	20.6	3.6	8.8	2.0	56.1	58.1	6.3	9.3	-	67.5	67.5	7.7	9.1
Manuf	22.3	212.3	234.6	41.5	100.0	50.1	574.7	624.8	68.4	100.0	22.1	716.4	738.5	84.3	100.0
Total (ALL india)	259.7	305.8	565.5	100	100	241.6	671.8	913.4	100	100	82.5	793.5	876.0	100	100

Source: Calculated from RBI Bulletins India International

The following table suggests that for some of the key sectors/commodities such as engineering, chemicals, aluminium, rubber products etc. the share of FCRC was even more than 50% during 1972-73. This indicates the degree of dependence of our economy on the operation of foreign companies.+

Table 3.6 (See next page)++

Using the number of foreign collaboration agreements entered into as the indiator of the sectoral allocation of the foreign technology transferred to India, it is seen that although the number of approvals in chemical industry has increased to a very large extent, the percentage share of this industry in the total approvals has registered a fall.

Table 3,7 (See next page)

+ The production data do not include the production by Pvt.Ltd. Cos or by the Unorganised sector. Hence the figures presented of the share of FCRC in total production is possibly overestimated for some sectors.

++ Vijay Kelkar'The Impact of Private Foreign Investment 1964-72 : An Economic Analysis in C.D. Wadhwa(1977)ed. SomeProblems of india's Economic Policy.

Table-3.6

Share of FCRCS in value of Production by all companies ++

1972-73 (in Lakhs of Rs)

Sector	Produced by FCRCs (.537)	Produced by Public Ltd co. (1960)	Shares of FCRC %
I Agriculture & Allied Products	9083	16390	44.6
i Tea Plantations	9030	15368	58.7
III Processing & Manuf of Food stuffs, tea, tobbaco, Leather Pratts	35756	300784	11.9
III Processing &Manuf of Metls, Chemicals	132213	352368	51.7
i Engineering	95427	210279	45.3
ii Chemicals	73688	104775	70.3
iii Aluminium	8881	9418	94.2
IV Processing & Manuf. nes	29299	86816	33.7
i Mineral Oil	3507	3607	100.0
ii Rubber & Rubber Products	16527	18299	90.0

Source: Constructed from RBI Bulletine for 1974 & 75
nes.: Not else where specified.

Table-3.7

No. of Foreign collabration in Chemical Industry

-6

	1970-73		1974-77		1978-81		1982-85	
	Number	Perc-entage	Number	Perc-entage	Number	Perc-entage	Number	Perc-entage
Chemical Industry	106	11.2	145	12.4	156	10.5	294	9.7
i Fertilizers	1	0.1	-	-	-	-	2	0.1
ii Chemicals other than Fertilizers	94	9.9	136	11.6	142	9.5	283	8.3
iii Photogrephic raw flims a and paper	1	0.1	2	0.2	-	-	11	0.4
iv Dyestuffs	1	0.1	1	0.1	-	-	1	0.0
v Drugs & Pharmaceuti-cals	9	0.9	6	0.5	14	0.9	27	0.9

Source : Indian Invesment Centre, New Delhi.

According to the stated policy of the Indian government, Foreign Collaboration has not been considered necessary in dyes and dyestuffs and 25 pharmaceutical products. During the first few years after the enactment of FERA a separate policy disregarding the Hathi Committee's recommendations, developed. At first, the decision makers chose an interpretatin of the 'core -industries' concept that favoured the foreign companies. Thus they were allowed to retain foreign equity at levels above 40% and upto 74% on account of their manufacturing high priority drug and pharamaceuticals or on account of their employing sophisticated technology. Later, in March 1978, the new drug policy allowed the companies to retain upto 74% foreign equity only if a substantial part of their production consisted of basic intermediates and/or high technology basic drugs.

Strict implementation of this policy would imply, if not an elimination of the industries concerned from the list of approved foerign collaborations, then atleast a drastic reduction in the number of agreements approved. As can

be inferred from the table, this is not how the policy has been enforced. Actually it is very difficult to discern any significant change whatsoever in the overall pattern of approvals by industry during the period studied. However, the simplified distribution of approved foreign collabroation agreements among industries conceals the fact that generally speaking, a shift has occured away from low technology areas towards production processes requiring sophisticated technology. The beneficiaries have been the products the manufacture of which requires comparatively sophisticated technology.

IMPACT OF PRIVATE FOREIGN INVESTMENT:

In evaluating the economic impact of private foreign investment one is trying to quantify the time series of benefits and costs to the domestic economy due to foreign investments and also identify their intangible benefits and costs.

In India, Government regulations are motivated to conserve foreign exchange and properly utilize thereof in the interest of country's economic development.

In order to study the extent to which chemical companies are affected by these policies . the following table presents data on dividends paid abroad by medium and large private sector chemical companies.The figures relate to different time periods and hence the number of companies studied under these periods are also different This is a crude indicator but the only one available to study the general trend of remittanes paid abroad by the chemical industry.

Table 3.8 (next page)

One would expect the reduction in foreign equity participation - as stipulated in FERA- to appear as an overall decrease in dividends paid abroad as a percentage of total dividends paid. However the share of dividend remittances in total dividends went up from 14.7% to 38.3% in 1978-79 and then declined to 14.9% in 1984-85. This reflects a delayed reaction and adjustment to government regulations and its equity dilution policy. Constantly high share of dividends remitted abroad by Medicine and Pharmaceuticals is also at variance with the Indian govern-

Table-3.8

Dividents Paid as Percentage of total Dividents .

	1975-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Chemical &allied Products	14.7	28.6	31.6	38.3	24.3	18.3	15.8	24.8	16.3	14.9
1.Basic Chemical (of which fertilizers)	13.8 (14.8)	19.0 (28.2)	24.0 (24.0)	14.3 (	16.3 (22.6)	12.7 (20.8)	11.8 (21.4)	13.2 (12.9)	11.3 (0.4)	10.9 (21.9
2.Medicine & Pharma-ceuticals	7.9	43.3	43.5	42.9	43.1	47.9	41.5	37.6	25.3	25.5

Sources : RBI Bulletins, Finances of Medium & large Public limited companies May 1980, July 1983, Feb 85, May 87.

ment's policies till early 80s but thereafer there is a tendency to decline to 25.5% in 1984-85 as compared to 47.9% in 1980-81.

No matter how the FERA regulation have affected the drain on foreign exchange resources on account of dividend remittances, it remains to be investigated whether these remittances constituted any substantial part of total remittances abroad.

Table 3.9 (Next page)

This data reveal that remittanes of dividend account for only a minor share of foreign exchange utilisation. Even at its highest level in 1978-79, it did not exceed 12% . On the other hand, Imports account for the bulk of the foreign exchange utilized by foreign controlled companies (it was 91.5% in 1984-85).

Over the years the expenditrue on account of imports has tended to increase, distinctly more after 1979, while all types of remittances as percentage of total expenditure have dropped.

TABLE-3.9

The structure of total Expenditure in foreign currency (chemical Industry)

	1975-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-
Imports	84.9	73.9	85.5	80.8	87.8	90.4	90.3	88.7	91.0	8.
Remittances	15.1	26.1	14.5	19.2	12.2	9.6	9.7	11.3	9.0	8.
(Dividends)	(5.2)	(10.0)	(8.7)	(11.9)	(6.3)	(4.2)	(3.2)	(4.5)	(3.5)	(2

Source :RBI Bulletins May1980, Feb 85, July 83, May 87.

The rise in expenditure on account of imports was probably dueto the rise in oil prices.

As far as the share of dividend remittances in sales is cocnerned, it shows the familiar pattern of increase from 1975-76 to 1978-79 followed by a decline reflecting FERA stipulatios regarding dilutions beginning to take effect.

Table 3.10 (Next Page)

The policy objectives referred to above concerning self-reliance and costs of production in foreign currency also implied endeavours to bring down the share of import in total income, sales and consumption. But the table above(3.10) reveals that these endeavours did not succeed with regard to the chemical industry. on the Contrary. rose from 5.5% to 7.6% over the period investigated.

If we study the performance of Indian companies with that of foreign ontrolled companies then according to K.K.Subramanian and P. Mohanan

Table-3.10

Chemical Industry's Use of Foreign Currency & total Sales

Year	Sales		Total Imports		Dividents paid abroad		Other (Roy, Techfe Remittances etc.	
	Rs lakhs	%	Rs lakhs	%	Rs lakhs	%	Rs lakhs	%
1975-76	195752	100	10839	5.5	664	0.3	1265	6.5
1976-77	224954	100	11019	9.9	1488	0.7	2413	1.1
1977-78	247844	100	16827	6.8	1834	0.7	1229	0.5
1978-79	276814	100	17967	6.5	2644	0.9	1639	0.6
1979-80	308281	100	24610	7.9	1769	0.6	1636	0.5
1980-81	355721	100	29789	8.4	1394	0.4	1778	0.5
1981-82	527511	100	40691	7.7	1427	0.3	2959	0.6
1982-83	578133	100	46450	8.0	176	0.03	3535	0.6
1983-84	631141	100	45510	7.2	159	0.03	2760	0.4
1984-85	754929	100	57495	7.6	3170	0.4	3536	0.5

Source : RBI Bulletins.

Pillai's[+] study of pharmaceuticals industry and dyestuffs and intermediate industry, the average import intensity was higher among foreign controlled companies and it was lowest among Indian firms with no or very low foreign association.

Table 3.11. (Next Page)

In addition to their generally higher propensity to import, as compared to Indian companies, foreign controlled firms have also shown an increasing prefernce for imports. The data reveal a disturbing tendency among foreign controlled companies to import increasingly higher proportions of raw materials, components, stores and spares consumed.

Table 3.12.(next page)

EFFECTS ON THE BALANCE OF PAYMENTS:

The fact that the import content for companies with close foreign connection tend to be higher than that for other companies does not necessarily imply that they inflict a net loss on India. Infact as a consequence of foreign

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+ Subramanian and Pillai, Multinatinals and Idnian Exports, New Delhi, 1979.

Table-3.11

Import Intensity in the total raw materials consumption

Class	Dyestuff	Pharmaceuticals
Cluster I High Foreign Association	16.10	16.12
Cluster II Medium Foreign Association	17.13	18.38
Cluster III Low Foreign Association	12.12	8.68
Cluster IV No Foreign Association	13.21	5.12

Table-3.12

Imported to total raw materials, components, spares and stores consumed (1975-76 to 80-81)

	1975-76	76-77	77-78	78-79	79-80	80-81	82-83	83-84	84-85
Raw Materials & components	14.5	17.7	21.9	19.4	21.3	22.5	19.20	17.77	18.48
Stores & Spares	2.5	3.3	4.6	4.4	4.7	10.7	3.0	7.92	3.62
Total	12.9	15.8	19.8	17.6	19.3	21.1	17.11	16.62	16.81

Sources : Calculated on the basis of data form RBI, FCRC and Branches of foreign cos. Aug 1984, from June 1988.

connections., the economy could earn foreign exchange on account of exports. The MNCs, in particular, command access to superior distribution and marketing systems well suited for channelling exports from India. In Chemical industry, the TNC subsidiaries have increased exports as compared to total net sales, partly with a view to obtaining preferential treatment under FERA.

Table 3.13 (See Next Page)

From the table it is clear that exports and earnings have been increasing in total sales from 1975-76 to 1980-81.

A reent study by RBI also reveals that chemical companies have been increasingly contributing to the export earnings.

Table 3.14 (Next page)

The bulk of the foreign exchange earnings mere from exports whih contributed 91.9% of the total earnings in foreign exchange (Rs.446 cr) in 1984-85. A larger share of the export earnings during the year was accounted by chemical

Table-3.13

Total exports & earnings as percentage of sales

Year	Sales		Total Exports		Total Earnings in foreign currency	
	Rs Lakhs	%	Rs Lakhs	% of sales	Rs Lakhs	% of sales
1975-76	195752	100	6864	3.5	7146	3.6
1976-77	224954	100	8884	3.9	9209	4.0
1977-78	247844	100	9497	3.8	9792	4.0
1978-79	276814	100	11042	3.9	11620	4.2
1979-80	308281	100	13519	4.4	14164	4.6
1980-81	355721	100	16446	4.6	16843	4.7

Table-3.14

Value of Exports of Selected FCRC (Rs Lakhs).

	1982-83	1983-84	1984-85
Tea Plantation	7391	8449	11153
All Textile Industries	688	457	472
Aluminium	837	1087	1283
Engieering	11205	10737	11444
Chemicals	10920	11323	15063
Rubber & Rubber Products	403	346	603
Trading	165	48	194

companis (151 cr) followed by engineering companies (Rs.114 cr) and tea companies (Rs.112 cr).

Despite this promising trend, when we look at the total earnings and total expenditure, the chemical industry shows a negative net impact on the balance of paymentsevery year and the situation is deteriorating.

Tale 3.15 (Next page)

The reason for this deteriorating trend is that although exports are increasing imports of are increasing at a much more rapid pace.

Besides exports and imports and their net impact, another important variable, namely profitability, has also not shown a very impersssive trend. Inspite of larger sales and production growth, the Chemical Indsutry showed an overall decline in profits in 1980-81. However later period 1983-84, 1984-85 has shown some improvement.Compared with all indsutries growth rate, the chemical industry's gross profits growth rate has been less .

Table-3.15

Earnings & Expenditure in Foreign currency (Rs lakhs)

	1975-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Total Earnings in Foreign curr.	7146	9209	9792	11620	14164	16843	25355	25762	23988	27671
Total Expenditure in FC	12766	14920	21147	22250	28015	32961	34077	52351	50005	62858
Direct Bop effect	-5620	-5711	-11355	-10630	-13851	-16118	-19722	-26589	-26067	-35187

Source : RBI Bulletin May80, July 83 , Apr 85, May 87.

While for all industries the compound growth rate of gross proifts was 11% that of the chemical industry was just 7.7% for the period 1976-77 of 1980-87. Again in 1984-85, the growth rate of gross profits was 16.1% for chemicals whereas, for all industries it was 20.5% [See appendix III for details].

Again according to the RBI survey on foreign collaboration, it is quite interesting to note that gross profits as percentage of total capital employed declined in the case of subsidiaries and minority capital participation and in pure technical collabroations, it rose from 7.9 to 11.3 in 1980-81.

Table 3.16

Gross profits as percentage of total capital employed

	Subsidiaries	Minority Capital Participation	Pure technical collaboration
1977-78	20.7	16.1	7.9
1978-79	19.1	16.6	11.3
1979-80	17.5	16.7	14.1
1980-81	15.0	12.7	11.3

In view of the government's policy to foster and encourage the growth of the Indian sector, in particular the public sector and small scale industries with a further view to reducing imports and the dependence on supplies from foerign companies, it is essential to develop indigenous R & D infrastructure to absorb adapt and develop the imported technology.

It appears that neither government nor private Indian companies assign appropriate priority to R & D. It is rather distressing that companies with technical collaboration spend comparatively less on R & D. Several companies do not report any spending at all under this head. According to the RBI's fourth survey report on foreign collaboration in Indian industry. the total foreign exchange payments made on account of royalties, technical fees etc, were considerably higher than the total revenue expenditure for Research and Development.

Table 3.17 (page 93)

Table-3.18

Revenue Expenditure onR&D as percentage of value of production (Rs Lakhs)

Chemical Industry

1 Revenue Exp. on R&D	2 Value of Production of Items produced under collaboration agreement	3 Value of total production	1 as % of 2	1as % of 3	1 Revn. Exp. on R&D	2 Value of prodn (coll)	3 Value of total Prod.	1 as % of 2	1 as % of 3
1062	51463	180571	2.1	0.6	1664	57600	272585	2.9	0.6

Source : RBI survey Report 1985 on Foreign collaboration in Indian Industry.

Table.3.17

R&D Expenditure during 1977-78 to 1980-81 (chemical Industry) (rs lakhs(++

	Subsidiaries	Min capital Participation	Tech collab.	Total	Govt
On Revenue Account	2326	2602	457	5385	404
on Capital Account	506	804	105	1415	317

++ Foreign collaboration in Indian Industry RBI IV survey Report 1985

The total revenue expenditure on R & D by the chemicals and chemical products companies taken as a proportion of value of production was just 0.6% in 1980-81, the same as in 1977-78.

Therefore, inspite of improving exports, the chemical industry faces continuous negative balance of payments. The reasonis that along with the export promotion objective, it has not been after to fulfil the other equally important objective of import substitution and to fulfil this aim, it is essential that in order to build indigenous capacity, sufficient reserach and development is undertaken.

Subramanian in a case study of the Indian Chemical Industry found that the foreign controlled companies by and large were less R & D conscious than their local counterparts and spent insignificant proportion of their turnover on R & D.

Quite apart from the fact that the possibility of importing foerign technology in a sphere many damp the Indian inititive to create, duplicate or initiate it, there is evidence that affiliates of MNCs may even be

actively ham pering the researech activity carried out by the local firms - Sudip Chauduri[+] documents the way an Indian pioneering firm in the field of drugs, viz, Bengal Chemicals and Pharmaceutical works (BCPW) which by the fifties succeeded in developing technology for production of many vital drugs like Thiacetazone, Niketha-nide, Nicotinic Acid, Dapson,Chlorpropanide without any foreign help was harassed by an MNC,

This is not to say that all chemical firms of India have suffered at the hands of multi-nationals. S. Lall (1987) provides illustrative account of Hindutan Level (HL) the largest MN affiliate (of Unilever UK and Holland) in the country which had been allowed to retain majority foreign ownership because of its export performance and its move into 'core' industries (chemicals) Laundry soaps, detergent and various toilet products have come from the parent

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+ Chaudhuri, Sudip, "Bengal Chemicals: 1892-1977: Growth and Decline of an Indigenous Enterprise", Calcutta, Indian Institute of Management, 1981.

company though HL has got its technology in recent years mainly from its own R & D and accumulated experience. Thismaybe considered strange for a majority owned affiliate of one of the world's largest MNS - it may be expected that it would be highly dependent for its technology on parent company R & D However, in the HL case, the normal pattern has been changed in part by the specific needs of the Indian operation and in part by the company's own initiative. HL's R & D set up is the second largest in the private sector (after TELCO) and by far the largest of the MNC affiliates in India. It is Unilever's only major R & D operation in the developing world andin general Unilever allows a great deal of managerial autonomy to the Indian affiliate . Nevertheless, whatever the peculiar features of this case, it is evident that MNG can and do make significant contributions to technolgoical activity in developing host countries. HL's R & D has benefitted from the 'foreign' connection - it has had full and free access to the stream of know how coming from the MNC network and interchange of personnel.

As far as HL's process technology's adaptation to local factor endownments is concerned, it is seen that HL techniques in Soap Manufacture are more labour intensive than its Parent Unilever techniques but as HL claims that its soap manufacturing is very cost efficient (HL's high profitability 19.3% on net networth is one indirect performance indicator to suggest it) which is a result of not only parent company expertise and help, but also a great deal of local effort to supplement andadapt foreign know-how. Similarlyin the chemicals field, HL adapted imported technology for STPP (its chemical plant); glycerine recovery was increasedby replacing open plans with rotating disc contractor. the drawings were provided by Unilever but all the local engineering and implementation was by HL Though H L introduced a large number of products from its parent company, different local market conditions required considerable adaptation of its products. HL drew freely upon the research output of the Unilever network, but effectively blended this with its own basic research effort.

Thus different firms have different experiences due to differenes in the nature of the technologies, scales, skills, risks and infrastructure required.

Also the other major problem is how to manipulate certain conditions in such a way that multinational corporaton are forced into or they acquire an interest in sustaining and accelerating the country's internally - oriented economic development. More specifically, the policy makers must induce the corporations to provide larger financial resources, more adequate technology at lower costs, access to global distribution and marketing systems and other resources in the broadest sense of the term.

CHAPTER 4

DIRECT FOREIGN INVESTMENT AND TECHNOLOGY TRANSFER - ENGINEERING INDUSTRY

The Engineering industry is the key to economic growth with its close forward and backward linkages with every single sector of the national economy. The engineering industry is heterogenous, combining metal products and electrical and non electrical machinery and apparatus, as well as transport equipment.

The Engineering Industry is rightly referred to as the Engine of growth. Its importance can be gauged from its share in the national economy.

Weight in the index of industrial production 32.2%
Share in investment in all industry 30.2%
Share in the value of output of all industry 31.2%
Share in the value added by all industry 35.1%
Share in Employment of all Industry 30.1%
Licences to Engineering industry 58.6%
Foreign Colaborations inEngineering Industry 68.1%.

From a modest beginning, the Indian Engineering Industry now produces a very wide range of products from bicycles to supresonic fighters.

There has been a steady transition in keeping with domestic needs and the requirements of the international markets.

The share of the Engineering industry in all industry has been impressive . It has consistently maintained a higher growth rate than all industry.

TABLE 4.1.

Growth rates in Plan periods (%)

Plan Period	All Industry	Engineering Industry
2nd Plan	6.6	8.7
3rd Plan	9.0	21.8
4th Plan	3.7	5.8
5th Plan	6.2	6.7
6th Plan	6.4	5.9
7th Plan	8.5	11.5

The 1988-89 level of engineering industry is estimated to be Rs.57227 cr. In the year 1985-86 the value of output of engineering industry (the latest year for which the actual data available) was Rs.37431.8 cr.

was Rs.37431.8crore.+

Indian policy makers have perceived of this industry as an important tool in fulfilling the goal of industrial and technological self reliance. ++ One of the key factors responsible for the development of the capital goods sector is that unlike other industries where protection from imports combined with regulatory Policies limited domestic competition, it has been subject to few controls in terms of capacity creation, product mix, level of outut, prices and distribution.

However although the engineering industry has been assigned the highest growth target, the shortfall in achievement vis-a-vis target has been the most pronounced in this sector so far.

+ Hand book of Statistics - CEI 1989.

++ In the early, 1950s, India depended on imports for abut 70% for its machinery and equipment requirements; in contrast, by 1981-82, nearly 81% of the overall domestic demand for capital goods was met through indigenous production.

Within the engineering sector, the electrical machinery and the transportation sectors have been performing relatively better in recent times mainly because of active demand. The heavy machinery group has shown the poorest performance. The uneven development of the engineering sector in revealed by the following statistics:

TABLE 4.2.

Growth Rate of Engineering Industry

	1970=100			1980-81=100		
	1984-85	1985-86	1986-87 (Apr-Oct)	1984-85	1985-86	1986-87 (Apr-Oct)
Engineering Industry	9.4	5.6	4.9	8.4	12.2	7.7
(a) Basic Metals	7.6	6.7	3.9	12.8	9.0	4.0
(b) Metal Products	-4.7	3.9	4.0	19.2	9.2	6.2
(c) Machinery other than Electrical	10.8	0.5	4.9	6.7	2.0	6.3
(d) Electrical Machinery	3.2	6.2	2.3	4.0	34.8	14.7
(e) Transport Equipment	20.2	10.0	7.9	6.6	3.2	5.1

Source; CEI - Engineering Industry Production Profile

Since the early 1950s when industry relied on imports for 70% of its machinery and equipment requirements the growth and diversification of the capital goods sector have been substantial, even though development among various subsectors has been uneven.

TABLE 4.3.

India, Index of Industrial Poduction

1970=100

	Non Electrical Machinery	Electrical Machinery	Transport Machinery	Total Manufacturing
Weight(%)	5.55	5.32	7.39	81.08
1951	5.4	7.1	14.7	30.5
1955	8.7	13.2	74.3	41.3
1960	24.5	27.1	74.9	55.9
1965	78.6	56.4	153.8	86.1
1970	100	100	100	100
1975	159.6	120.3	106.3	116.0
1980	218.3	168.1	130.4	145.8
Old weight(%)	5.55	5.32	7.39	81.08
1980/81	221.8	176.0	130.6	148.8
1981/82	239.0	182.1	145.5	159.9
1982/3	238.7	174.0	142.5	163.9
1983/84	258.9	184.7	162.6	171.2
Revised wt.(%)	5.61	5.35	7.46	81.08
1983/84	275.7	183.2	182.9	173.2
1984/85	287.1	190.7	195.4	183.0
1985/86	288.5	202.6	215.0	194.2

Source: Data from 1951 to 1980 from World Bank Economic Situation and Prospects of India 1982, 1981/82 to 1984/86 from Eco.Survey 1986-87.

Production growth for non electrical machinery far exceeded the growth for electrical machinery and transport equipment and for the manufacturing sector as a whole.

The growth path of the capital goods sector is characterised by a typical cyclical pattern, which can be explained in terms of fluctuations in the rate of fixed capital formation ingeneral and public investment in particular. In addition regulatory policies played a fairly important role. The decline in output growth of machinery and equipment in the decade 1965-75 can be traced to the restrictions placed by the government on some of the process industries by way of licensing policies and price and distribution controls; which not only inhibited the creation of new capaicty but also served to slow modernisation and plant rehabilitation. On the other hand the stable growth in public investment with clearly defined priorities produced dividends in the period 1955-65 in terms of a higher growth rtae.

Around 1985-86, the expansion of output was disappointing withthe engineering industry growing 4.7% rather than 10% targeted in the Sixth Plan. The growth of non electrical machinery was somewhat faster - at 5.3% but still was not muchabove the total sector growth (World Bank's 1986 figures).

The share of capital good exports in total exports reached 13% in 1980-81 andl3.4% in 1981-82 while its amount increased from Rs.51.6 m in 1956-57 to Rs.10469.5 m in 1981-82 . However considering that Indian engineering exports in 1979 were only 0.1% of world engineering exports, India does not seem to fully exploit its capital goods export potential.

The share of engineering exports in the total exports in the country has dropped from 13.4% in 1981-82 to hasely 8.6 in 1987-88 .+

+ CEI Handbook of Statistics 1988.

The drop in the share has been continuous over the last five years reflecting the levelling out of engineering goods exports. The world exports of engineering goods aggregated $ 602 billion in 1984 ccompared to $ 536 bn in 1980 - an increase of 8.3% Consequently the share of India's engienering goods exports dropped to 0.16% as compared to 0.17% in 1980. In 1984-85, exports aggregated 1150 cr amounting to 3.6% of the engineering production of Rs.33358.75 cr. In the year 1980-81 the share was 4.3% and 1977-78 the share was 5.5%.

India's lack of export orientation was the result of several factos:

Insufficient efforts in export mraketing, delays in receiving drawback duties insufficient financing for project exports and inadequate infrastructure and high input costs, among others.

Since the prices of Indian capital goods are below international prices, protection for the industry may be redundant. In the early

80s, many capital goods imports were subject to a 55% tariffs rate and other non-tariff barrier such as the "indigenous angle clearance" procedure. What are the justfications for protection when domestic products can compete with imported products? One may be that even though prices were competitive, quality and reliability were inferior, and thus were tended to put a high premium on imported machinery that outweighed the price advantages. Another reason could be the strong pressure exerted by long-established industries.

After a sluggish spell in the first half of the 80s, Indian engineeering exports started picking up thanks to the changing global market conditions. In the first half of the 80s, the annual growth rate in engineering exports was barely 5% in the face of stiff competition from Taiwan, South Korea, China and other emerging nations. But it seems India is regaining its position in traditional engineering exports. However product-wise export performance clearly

shows that innovation and product deveopment have not been thestrong points of the domestic engineering industry. Although the government has liberalised import of technology, its adaptation and utilisation for boosting exports of value added products have not been as effective as the policy makers had anticipated. +

A very important factor responsible for this is the weak technological base and not enough efforts to improve it.The engineering products are quite competitive in terms of price in the international market but are not competitive in terms of quality and this is the consequence of lack of modernisation effct and inadequate investment in Research and Development.

Table 4.4. R & D Expenditure as % of GNP

India	0.9	Czechoslovakia	3.9
UK	2.4	GDR	4.3
Sweden	2.4	USSR	4.7
FRG	2.5		
Japan	2.6		
USA	2.7		

+ Hindu Survey of Industries 1988

Source: CEI - Competition and Competitiveness

The Government of India had actively sponsored private sector participation in the capital goods sector. Import substitution have raised profitability, thus offering relatively large incentives for investment. Although the capital goods industry was protected from international competition until the late 1970s, recent liberal policies have ensured a more intense level of competition than in many other sectors of the economy.

One indication of the level of competitiveness of the industries are estimates of domestic resource costs (DRCs) . DRCs estimated for a World Bank Study covering the 1980-82 period indicated that long established manufacture of cement machinery, sugar machinery, pulp and paper manufacturing machinery and boilers were efficient with ranges of DRCs

significantly below 1.0. The study concluded that the prices of Indian capital goods during this period were internationally comeptitive. The disadvantages of high input costs (resulting from both high tariffs on imported raw materrials and monopronistic markets in domestic inputs like steel) were offset by lowunit labour costs.+

Since the 1980-82 period, however, India's favourale position appears to have deteriorated. In particular, the sector has not been as successful as desired in developing high quality products and incorporating advanced technology.

The insufficient technological progress in the capital goods sector can be explained as the outcome of a number of interrelated factors including public sector procurement policies, protection from international

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+ Document of the World Bank - India Indusrial Regulatory Stody Vol.III, Subsector Reports, Dec.9, 1986.

competition and insufficient pressure imposed by domestic user industries on manufacturers in the area of product development. In the area of public sector procurement, the preferential 15% pricing granted to pubic sector firms has constrained competition between public and private firms. The government's fiscal constraints have often led to sudden and drastic changes in the priorities and time schedule of public investment. Since the government is a major buyer of these goods, fluctuations in its demand have had a negative effect on capacity utilization and consequently on profitability. This situation has an adverse effect on

i) the entry of new firms and

ii) technological development

The relatively weakbase in design engineering, product development and production engineering was also a consequence of the high protection against international products which was adopted after 1981-82. Infact, recent measures toward import import liberalization have led to increased upgrading of technology in many sectors. Indian firms, both in public

and private sectors are attempting to improve their competitiveness and leadership in complex capital goods through foreign collaboration.

TABLE 4.5

No. of Foreign Collaboration in Selected Capital Goods Items

	1981	'82	1983	'84	1985	'86	1987
1. Industrial Machinery	130	107	115	138	152	108	132
2. Machine Tools	22	29	44	34	32	13	10
3. Earth moving Machinery	11	9	8	4	11	-	-
4. Transportation	26	28	39	63	101	53	39
5. Agricultural Machinery	-	3	2	2	3	3	-

In response, foreign controlled firms are striving to expand their market share bydiversifying into a higher priced and more sophisticated range of products.

As with other industries the foreign exchange

requirements with regard to foreign collaboration, imports of knowhow and technology and imports of captial goods, coking coal, ferro alloys, sponge iron have to be cleared through the government. Thisrequirement, together with the limitations of domestic availability, have restricted productivity increases. In recognitiion of this problem, several government committees have made recommendations to improve technology policies. The Hussain Committee suggested putting technology imports under OGL in case foreign equity participation is not necessary and allowing selective imports (to be regulated by FIB) where foreign equity participation is unavoidable.The Committee has also suggested combining these measrues with a commitment by firms to increase internally gnnerated R & D for indigenous technological development. Similarly the Ramanathan Committee has proposed greater cooperation between users and manufacturers by drawing up perspective plans for technology development. The first step is the creation ofventure capital fund, which will provide

equity capital to pilot plants attempting commercial application of indigenously developed technology.

FERA companies have emerged as dominant undertakings in selected productlines which are usually technology-intensive and patent-projected (usually for 10-15 years) so that there has been a high degree of market concentration. They account for 93.2% of the market in water treatment plant, 60.4% in dairy machinery, 100% in food processing machinery, 100% in weighing machinery, 92.4% in indusrial filtration equipment and 27% in mining machinery.

Table 4.6

Structure of Ownership and Market share in non electric machinery sector 1983-84

Subsector	Ownership (NO. of Companies)	Sales during 1983-84 Values (Rs.M)	%share
Water treatment Plant	Pvt. FERA(2 Cos)	136.4	93.2
	Pvt.MRTP(3)	5.0	6.8
	Total (5)	141.4	100.0

2. Diary Machinery	Public Sector(1)	9.9	9.2
	Pvt.FERA(i)	64.9	60.4
	Pvt.MRTP (4)	27.6	30.4
	Total for 6Cos.	107.4	100.0
3. Food Processing Machinery	Pvt.FERA (2)	13.3	100.0
4. Weighing Machinery	Pvt.FERA(1)	159.9	100.0
5. Industrial filtration equipment	Pvt.FERA (3) (3)	91.8	92.4%
Mining Machinery	Public Sector(2)	142.9	28.6
	Pvt FERA(2)	78.0	27.0
	Pvt.MRTP(7)	248.2	18.2
	Pvt(Other Cos.)	130.9	26.2
		500.0	100.0

Source; Economic Intelligence Service

Market Shares, Bombay 1986.

Recent measures have decreased the extent domestic regulation. Within the 25 categories that were delicensed in March 1985, seven groups belong to the engineering goods subsector. The industrial machinery goods can now be produced without prior licensing, provided the MRTP and FERA acts, as well as small scale industries reservation restrictions, are satisfied. These liberalisation measures are expected to stimulate competition by expanding a firm's choice of product mix, easing entry of MRTP/FERA Companies and encourgaing Small Scale units to grow into medium scale units.

TRENDS IN DIRECT FOREIGN INVESTMENT

Based on studies by RBI Bulletins in diffrent issues of India's International investment position, itisobserved that the share of Engineering foreign investment in the total manufacturing has increased since 1974. Among various subsectors, the maximums share is enjoyed by electrical goods and machinery followed by machinery and machine tools and transport equip - ment. The same pattern is observed if we look

at the share in total industries. Also it is seen that most of our liabilities are in the form of foreign controlled rupee companies (FCRC) and not foreign branches (FBs) .

Table 4.7 (next page)

The rising share of Foreign controlled rupee companies reflects the increasing importance of foreign investments in Indian firms.Till 1974, the extent of foreign investment was not significantly high compared to March 1964, but by 1978, the share increased to 25.3% as compared to 22.7% in 1974.

As far as the distribution of companies according to the country of controlling interest is concerned, maximum number of companies are from engineering sector. Engineering and chemical industry groups are the most important industry groups of the companies having foreign control.

Table 4.8 contd.

Table-4.7

Extent of Foreign Direct Investment in E ngineering Industry+

INDUSTRY	End Of March 64					End of March 74					End of March 78				
	FB Rscr	FCRC Rscr	TOT Rscr	TOT %	MANU %	FB RS$_{cr}$	FCRC Rscr	TOT Rscr	TOT %	MANU %	FB Rscr	FCRC Rscr	TPT Rscr	TOT %	MAN %
I															
Engineering (a)	1.5	50.3	51.8	9.2	22.1	1.6	140.4	142	15.5	22.7	1.7	185.6	187.3	21.4	25.3
Transport Equipment (b)	.-	15.0	15.0	2.7	6.4	-	31.8	31.8	3.5	5.1	-	45.0	45.0	5.1	6.1
Machinary & Machine tools (c)	1.4	14.6	16.0	2.8	6.8	1.6	40.5	42.1	4.6	6.7	1.7	57.2	58.9	6.7	8.
Electrical goode & Machinary	0.1	20.7	20.8	3.7	8.9	-	68.1	68.1	7.5	10.9	-	83.4	83.4	9.5	11.
II Manufacturing	22.3	212.3	234.6	41.5	10.0	50.1	574.7	624.8	68.4	100	22.1	716.4	738.5	84.3	100
III Total	259.7	305.8	565.5	100		241.6	67.8	913.4	100		82.5	793.5	876.0	100	

+Source: Calculated from RBI Bulletine India's International Investment position July 1975, March 1978, & April 1985.

Table-4.8

DISTRIBUTION OF SELECTED COMPANIES ACCORDING TO INDUSTRY AND COUNTRY OF CONTROLLING INTEREST

INDUSTRY/COUNTRY	1980-81							1984-85						
	UK	USA	West Germany	Switzerland	other countries	Total	% of Total	UK	USA	WG	Switz	Other countries	Total	
1. Agriculture	4	1	-	-	-	5	1.6	13	1	-	-	-	14	6.
2. Mining & Quarrying	1	-	-	-	1	2	0.6	1	-	-	-	1	2	0.
3. Processing & Manuf, Fd Stuffs Textile etc.	11	1	-	2	5	19	6.1	9	-	1	1	2	13	6.
4. P&M Metals, chem. & products	101	57	27											
(a) Engineering	66	27	18	5	18	134	42.8	41	17	11	5	11	85	40.
(b) Chemicals	34	28	9	4	8	83	26.5	21	15	5	5	4	50	24
5. P&M-Not else where classifed	18	9	5	3	5	40	12.8	9	5	2	1	2	19	9.
6. Other industries	15	4	1	1	2	23	7.3	11	3	2	-	4	20	9.
7. All Industries	150	72	33	16	42	313	100	105	42	21	13	27	208	10

Source : RBI Bulletions, Aug 84 June 88. Finances of FCRCs.

Even the percentage share of this industry in the total foreign collaboration approvals is quite high for all periods studied +

Table 4.9

Percentage share of Engineering Industry in the Total foreign collaboration approvals

Industry	1970-73 Number	%age	1974-77 Number	%age	1978-81 No.	%age	1982-85 No.	%age
Engineering	58.9	61.9	747	63.6	1025	68.8	2010	66.2
a) Boilers and steam generating plants	8	0.8	13	1.1	5	0.3	28	0.9
b) Electrical equipment and prime moves (4&5)	173	182	261	22.2	271	18.2	625	20.6
c) Telecommunication	5	0.5	- -	-	23	1.5	53	1.7
d) Transportation & earth moving machinery	84	8.9	88	7.5	116	7.8	263	8.7
e) Industrial Machineey and machine tools (8&9)	237	250	305	26.0	481	32.3	651	21.4

Contd.

+ John Martinussen: TNCs in a Developing countries - The Indian Experience 1988

f) Agricultural Machinery	7	1.8	-	-	[illegible]		0.1	10	0.3
g) Mechanical Engineering Misc.	28	3.0	39	3.3	52		3.5	147	4.8
h) Industrial instruments & Misc.(13-17)	35	3.7	41	3.5	76		5.1	233	7.7

Source: IIC, New Delhi

Note: Figures in brackets refer to Scheduled Industry members in official documents . They are included only where necessary for unambiguous identifications.

Foreign investment has shifted overtime from foreign subsidiaries to joint ventures with Minority equity holdings by foreigners and further to license agreements for technology transfer with euity investment. The pattern of foreign companies operations in the Indian engienering goods production has shifted from equity investment and managerial control to the sale of technology and marketing services as a means of directly controlling returns on corporate assets.

The interest of the foreign collaborator is typically fully protected even if it has a minority participation inequity since technical operation and investments other than equity are controlled primarily by the foreign collaoration. It is noticeale that the licensor or foreign collaborator seeks to maximise his profit by imposing certain clauses in the collaboration agreements thereby restricting the full and free use of the licensee. The regulator clauses may take the form either of export restrictive clauses, such as banning of exports altogether or restricting them to a specific area or conditional payments clauses such as fixed minimum payment of royalty per year or other miscellaneous type of restrictive clauses. According to RBI survey of Foreign collaboration in Indian Industry (1985) the proportion of export restrictive clause agreements to total was fairly high in the case of transport equipment, machinery and machine tools, electrical machinery and apparatus.

Table 4.10

Table-4.10

Industry wise classification of agreements with exports Restrictions (1977-81)

INDUSTRY	Subsidiaries		Minority capital participation		Technical collaboration		Total	
	No of Agreement		No of Agreement		No of Agreement		No of Agreement	
	With export restriction	Total	With export restriction	Total	With exports restriction	Total	With export restriction	Total
1.Plantations & Mining	-	-	1	2	-	-	1	2
2.Petroleum	-	-	-	1	-	-	-	1
3.Manufacturing	29	48	163	283	154	224	346	555
(a)Foods. beverages & tobacco	-	-	-	3	2	3	2	6
(b)Textile Products	-	-	1	6	2	3	3	9
(c)Transport equipment	1	1	12	19	17	21	30	41
(d)Machinary & Machine tools	2	7	62	85	87	118	151	210
(e)Metals and Metal products	2	5	10	24	10	22	22	51
(f)Electrical Machinery&& apparatus	17	21	44	57	19	27	80	105
(g)Chemical & chemical prod.	7	14	21	67	13	22	41	103
i.Basic industry	2	4	9	46	6	14	17	64
ii.Drugs & medicines	4	8	6	10	3	3	13	21
iii.others	1	2	6	11	4	5	11	18
(h)Rubber products	-	-	5	8	2	4	7	12
(i)Miscellaneous	-	-	8	14	2	4	10	18
4. Services	-	1	4	14	3	7	7	22
Total	29	49	168	300	157	231	354	580

In addition, excessive reliance on foreign knowhow may have bad effect on local initiation. This is true in those lines where indigenous capabilities are fully developed. The result is unnecessary duplication of technology. Also there are instances of obselete technology being passed on to the Indian partners by the foreign collaborators. Also, considerable amounts are remitted abroad annually in the form of payments for technical services rendered by the parent company, royalty payments dividends etc. because unless these investments help to increase export earnings or reduce dependence on impors, the out flows in terms of foreign exchange could outweigh the initial gains from foreign participation.

In order to bring down the amount of remittances abroad, the equity dilution strategy was followed in 1973. As far as engineering industry is concerned, it showed neither decline nor sustantial increase in the dividends paid as percentage of total dividens.

Table 4.11.

Table- 4.11

Dividends paid abroad as percentage of total Dividends

Industry	1975-76	76-77	77-78	78-79	79-80	80-81	80-81	81-82	82-83	83-84	85-85
Transport eqipment	22.7	20.5	22.0	14.2	15.4	15.6	14.7	14.1	13.2	15.2	13.4
Electrical MacHinary	16.8	22.5	29.1	26.0	24.7	24.2	23.4	24.7	26.3	23.8	29.5
Machinery other than electrical	10.9	14.0	16.8	21.3	20.4	17.4	17.4	16.3	19.3	16.4	14.2
Total & Engineering	16.4	18.8	21.8	20.4	19.6	18.5	17.8	17.6	19.3	17.6	19.1

Source : RBI Bulletins, Finances of medium and large public limited companies, May 1980, Jul 1983, Feb 1985, May 1987.

The percentage share of dividends paid abroad hasnot come down to the level which was prevailing in 1975-76. This shows that government regulations have not been effective enough although transport equipment has shown definite decline but in the case of electrical machinery instead of declining, the ratio was quite high in 1984-85. In the case of machinery other than electrical there is a tendency of decline initiated during 1977-79 thus reflecting delayed response to government regulations.

However dividend remittances do not form a very important component of total expenditure in foerign currency. Expenditure as can be seen from the table below. (See Appendix IV for disaggregated figures).

Table 4.12 (Next page)

The disaggregated figures show that expenditure on account of imports is quite high but the tendency to increase sharply over time is not as great as it is in the case of the chemical industry.According to Subramaniam & Pillai, the import intensity of manufactures with foreign collaboration tends to

Table-4.12

Structure of Expenditure in foreign currency in percentage terms.

Industry	1975-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Engineering										
Imports	88.8	88.1	85.9	85.2	88.5	87.4	91.5	88.5	87.2	84.6
Remittance	11.2	11.9	14.1	14.8	11.5	12.6	8.5	11.5	12.8	15.2
(Dividends)	(2.6)	(3.5)	(4.3)	(3.9)	(3.0)	(2.8)	(2.3)	(2.4)	(2.2)	(2.4)
Electrical Machinery and apparatus										
Imports	88.9	87.4	85.7	78.8	83.7	80.1	88.8	83.1	86.6	83.8
Remittance	11.1	12.6	14.3	21.2	16.3	19.9	11.2	16.9	13.3	16.2
(Dividends)	(3.2)	(4.9)	(6.0)	(5.3)	(4.1)	(3.8)	(4.2)	(4.0)	(3.5)	(3.3)

Con. of Table-4.12

Industry	1975-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Machinary other than Electrical										
Import	86.0	87.2	86.2	86.5	89.1	88.4	87.8	86.4	81.3	79.3
Remittances	14.0	12.8	13.8	13.5	10.9	11.6	12.2	13.6	18.7	20.7
(Dividends)	(1.8)	(2.5)	(3.4)	(4.3)	(3.3)	(2.9)	(2.6)	(2.7)	(2.0)	(1.9)

be higher than that of comparable domestic firms with a lesser degree degree of foreign association. This is primarily due to higher imports by foreign subsidiaries and associates from the parent firms on non-comeptitive prices by virtue of the tie-in clauses in the collabroation agreements or other restrictive practices of similar nature. The expansion of international firms' activities in a developing country thus tends to impose an increasing burden on the balance of payments. As a matter of fact this practice helps the international firms in most cases to counter effectively trade and tariff barriers in developing countries .

According to Subramanian and Pillai the average import intensity is found to be directly varying with the degree of foreign association .

TABLE 4.13

FoeignCollabroation and Import intensity in engineering goods

Cluster of foreign association	Share of import in one unit value of raw material consumption Import Coefficient
High Foreign association	0.2061
Medium " "	0.1521
Low " "	0.1027
No " "	0.1128

Also, imports of raw material in the engineering industry are increasing. Foreign controlled companies are increasingly importing a higher proposition of raw material especially in the case of electrical machinery.
Table 4.14 (next page)

Comparing with all industry averages, the imported ratio is higher in the engineering industry and in this sector itself, the import intensity is much greater for non electrical machinery.

The impact of foreign investment on the balance of payments has been negative since there has been sustained high level of imports and large quantum of other remittances as against exports.
Table 4.15 (next page)

Engienering industry had a positive net impact in just one year 1977-78. Since then the engineering sector has imposed an increasing foreign exchange burden on India. Even the exports as percentage of sales have shown a definite downtrend similar is the pattern observed for total earnings in foreign currency as percentge of sales.

	1975-76	76-77	77-78	78-79	79-80	80-81	82-83	83-84	84-85
b)Machinery other Electrical									
RM	29.1	35.0	32.2	24.3	27.4	25.8	28.0	27.4	27.4
S&S	10.2	14.8	13.4	12.9	37.8	49.0	8.8	10.3	13.9
Total	27.2	33.3	30.4	23.2	28.3	27.7	28.6	26.3	26.6
II All industry averages									
RM	12.3	14.2	14.7	14.0	15.3	16.4	17.2	16.9	17.3
S&S	4.0	5.4	5.7	6.4	9.6	12.9	4.1	5.5	4.1
Total	11.5	13.4	13.9	13.3	14.8	16.1	15.9	15.7	16.0

R M : Raw Material
S & S : Stores and Spares

Table-4.14

Importted to total raw materials, components, stores and spares consumed by Engineering companies.

	1975-76	76-77	77-78	78-79	79-80	80-81	82-83	83-84	84-85
I Engineering									
RM	17.6	19.8	19.0	17.1	18.5	19.1	19.1	19.9	20.2
S&S	8.4	12.1	10.3	11.8	21.2	24.7	6.1	3.7	4.9
Total	16.9	19.3	18.3	16.7	18.7	19.6	18.1	18.9	19.2
a) Electrical Machinary									
RM	14.7	15.4	17.7	18.4	20.6	18.5	24.0	21.9	23.4
S&S	25.6	32,8	28.5	33.0	37.6	41.5	16.6	2.5	3.5
Total	15.1	16.0	18.1	18.9	21.3	19.4	23.7	21.1	22.6

Table -4.15

Earning and Expenditure in Foreign currency (Rs lakhs)

Year	Total Expenditure in foreign coun.	Total Earnings in fc.	Direct Bop effects
Engineering Industry			
1975-76	26508	21003	-5505
1976-77	27966	27601	-365
1977-78	28807	31167	2360
1978-79	34420	31665	-2755
1979-80	50453	31875	-18578
1980-81	61448	36724	-24724
1981-82	868447	46128	-40719
1982-83	88591	50598	-37993
1983-84	92136	49850	-42286
1984-85	94136	58667	-35496
Electrical machinery, apparatus & appliances			
1975-76	7061	7287	226
1976-77	6954	8943	1989
1977-78	8399	10986	2587
1978-79	10003	10487	484
1979-80	14176	11320	-2856
1980-81	18050	14552	-3498
1981-82	18346	18336	- 10
1982-83	20690	20558	- 132

Year	Total Expemditure in foreign coun.	Total Earnings in fc.	Direct Bop Effects
1983-84	21305	19113	-2192
1984-85	25900	16910	-8990
Machinary other than electrical			
1975-76	7672	5852	-1820
1976-77	9869	5792	-4077
1977-78	9190	5687	-3503
1978-79	9815	5891	-3924
1979-80	13767	6244	-7523
1980-81	16217	7676	-8541
1981-82	21926	10912	-11014
1982-83	24106	12161	-11945
1983-84	29974	15377	-14595
1984-85	28129	18670	-9459

Source : RBI Bulletins .

TABLE 4.16

Engineering Industry (Percentage of Sales)

	Sales		Total Exports		Total Earnings in FC	
	Rs. lakhs	%	Rs. lakhs	%	Rs. Lakhs	%
1975-76	323047	100	19644	6.1	21003	6.5
1976-77	363619	100	25369	7.0	27601	7.6
1977-78	387457	100	29175	7.5	31167	8.0
1978-79	433210	100	29254	6.8	31665	7.3
1979-80	528698	100	28793	5.4	31875	6.0
1980-81	658298	100	33625	5.1	36724	5.6
1981-82	860316	100	41299	4.8	4612	5.4
1982-83	922517	100	42713	4.6	50598	5.5
1983-84	1032002	100	40539	3.9	49850	4.8
1984-85	1164369	100	45389	3.9	58667	5.0

If we just concentrate on the FCRC Cos, they also show negative BOP impact but for these selected FCRCs, the balance of payments situation was worse in the earlier periods than later years.

TABLE 4.17

Earnings in Foreign Currency

(Earnings - Expenditure) (Rs.Lakhs)

Year	
1975-76	- 3975
1979-80	- 11335
1980-81	- 13427
1982-83	- 9569
1983-84	-9453
1984-85	- 8715

Source; RBI Bulletins finances of FCRC Aug '84, June 88.

This could be explained by the fact that with equity dilution policy, the number of subsidiaries was reduced and hence export performance improved overtime. This reasoning is in conformity with Subramanian and pillai's conclusions according to which the domestic firms with relatively low degree of foregin association have performed

relatively better in export performance as compared with firms with high degree of foreign association. The export performance index of foreign subsidiaries, in engineering industry was found to be the lowest (0.0348) whereas that of Indian firms with no foreign association was found to be the highest (.1017). The low export performance of firms with foreign control may have to be explained in terms of the global strategy of TNCs attuned to increasing their share of the world market In such a situation it is plausible to argue that TNCs which supply the technology are interested more in the orientation with the host country market than the export market. The strategy is to allocate the world market amongst the units with in the multinationals structure rather than allowing their units to cut across in each other's domain.

As far as the growth performance in terms of profitability, value added etc is concerned it is quite natural to assume that profitability of foreign subsidiaries is much higher than Indian Indin companies because of their superior technology and bargaining power. This is indicated in the

following table where foreign controlled rupee companies have always performed better in terms of profitability vis-a-vis Indian controlled Public and Private Limited Companies.

TABLE 4.18

Gross Profits as percentage of Sales

	75-76	76-77	77-78	78-79	79-80	80-81	82-83	83-84	84-85
FCRC	11.7	12.3	11.5	12. 1	12.0	10.9	11.7	10.9	11.6
ICPPLC	8.1	7.7	7.8	8.2	9.1	8.8	8.1	7.1	7.2

Studying the selected foreign controlled rupee companies, Engineering companies performed better till 1980-81 compared to all industry averages but in 1983-84 and 1984-85 their performance deteriorated. This is true not only with respect to profits but the rate of grown of sales and value of productiion also declined over time.

TABLE 4.19 (Next page)

In addition, we saw that the BOP impact has also been negative. These patterns and trends are basically in contradiction with the official policy of import substitution and export expansion. Paradoxically FERA and the Industrial Licensing policies

Table.4.19

Rate of Growth.

Year	All Companies					Engineering Companies				
	Gross Profits	Profits after tax	Profits after tax	Sales	Value of production	Gross Profits	Profits before tax	Profits after tax	Sales	value of production
1976-77	20.6	19.3	19.4	14.7	12.5	12.8	NA	29.5	13.7	10.9
1977-78	1.8	-7.6	0.8	7.8	7.6	4.6	NA	-0.7	3.7	4.3
1978-79	15.0	30.5	17.8	9.4	10.4	16.0	NA	38.8	12.9	14.1
1979-80	13.9	20.0	15.3	15.2	15.6	20.9	NA	21.7	20.7	22.4
1980-81	5.7	0.3	11.1	12.6	12.7	20.6	NA	21.0	14.5	14.6
Compound growth rate	11.0	10.4	13.9			14.8	NA	21.3		
1983-84	0.6	-1.8	-12.5	7.8	5.1	-2.2	NA	-15.5	7.1	4.0
1984-85	20.5	27.3	35.6	13.1	15.0	4.2		6.1	9.3	10.1

may have contributed to the unintended evolution, in the sense that those policies have acted as pressure on foreign companies to bring down their engagements in consumer goods and other 'light industries' where they had extensive export potentials. Instead they were impelled to expand their operations in engineering and chemicals where they have neither interest in nor the same potentials for export. At the same time this shift to more technology intensive sectors prompted a substantial increases in imports and other remittances.

On the technology front it is seen that a common charcteristic of most engineering industries is the focus on product innovation, with process innovation usually playing a secondary role. In engineering industries, product development is more costly and risky, and most firms are obliged to resort to foreign licenses to induct major new product technologies. But more important is whether or not the foreign technology is adapted and absorbed efficiently. An UNCTAD (1983) + study of Indian

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+ UNCTAD Technology issues in the capital goods sector of 'A Case Study of LeadingMachinery Procedures in India Geneva: UNCTAD 1983.

capital goods industry corroborates that foreign controlled firms were less interested in adaptation. The foreign controlled firms often represent entites permanently dependent upon their parent in home countries for technology. Sanjay Lall (1987) in his study has shown that given the product-centred nature of technical progress in complex engineering industries, both HMT and BHEL have depended heavily on the industrial countries for new product technologies. HMT displays the ability to design some of its own machine tools, drawing upon innovations made abroad but is ultimately unable to keep up with the rapid changes engendered by the increasing use of electronics in machine tools. In addition, its standard, general purpose machine tool section seem to face competitive handicaps when faced with the challenge of aggressive exporters from the Far Eastern NICs (Newly Industrializing countries), while its special purpose tools seem to be expensive by international standards. BHEL has succeeded in assimilating, indigenizing and rationalising a more complex set of technologies, but its independent

product development capabilities are still very limited. Both firm illustrate the innovative limitations of even large firms in developing countries.

Both firms have, however, built up a substantial R & D capability (BHEL 1.9% of sales. HMT seems within striking distance of world frontiers in some product technologies (it claim some of its numerically-controlled tools are fully competitive) butit is doubtful whether it can really keep up with the new and rapidly moving electronic-based technologies in the machine tool industry. BHEL's major product introductions have all been imported, but it has adapted them to local conditions and upgraded them over time. However it cannot at this stage undertake the effort needed to keep up independently with world frontiers. Despite being one of the ten largest firm of its type in the world, it is still small in relation to the real technological leaders (GE, Westinghouse, siemens, etc.) and does not have the large reservior of accumulated knowledge

needed to keep up with them. Possibly it also lacks the very high quality of design staff required and the financial resources to mount large R & D programmes.

Similarly although HMT had entered into 42 licensing agreements (for product technology) by 1982, mostly with leading W. European companies, it complains of starting to suffer from a technological gap in some of its most advanced products. Licensers are unwilling to sell their best and most profitable technologies to unrelated firms at least at the rather low royalties permitted under govenment rules. HMT's own R & D is unable to make the leap to these frontier technologies.

Therefore in a country like India , even the leading enterprises find themselves unable to undertake the development ofmajor new product and process technologies. More interestingly they find it difficult to copy many new advances in product technology (for sophisticated new equipment, for instance) on their own.Thus . the mastery of a certain vintage

of technology does not necessarily provide the wherewithal to jump to thenext vintage, even if the knowledge could be imitated. The scale of R & D, the complexity of the skills and the accumulation of experience required even to copy many major technological changes are too large. It is also possible, however, that the show growth of the Indian market (and constraints to exporting) makes it uneconomical for them to invest in building up the technological capability required.

CHAPTER 5

MULTINATIONAL CORPORATIONS IN ALUMINIUM INDUSTRY

Aluminium, by virtue of its attractive properties like lightness, high strength to weight ratio, high resistance to atmospheric corrosion and chemical attack, good thermal and electrical conductivity etc. has estalished its prominence worldwide. Aluminium metal is destined to occupy a place of high significance and importance in the Indian economy by virtue of its wide ranging applications in Modern industry. It is likely to be the metal of the future in view of its extensive usage and growth envisaged in the end-usig industries.

World Scenario

The installed capacity of primary aluminium in the world in about 18m tonnes, with the developed countries like USA, USSR, Japan and Canada accounting for aout 75% share. Consumption of aluminium in the world has increased from 5000 tonnes at the beginning

of the century to over 16m tonnes at present. Assuming a conservative growth rate of 3.7% the world demand for aluminium is expected to be about 25·8 and 31.6 M tonnes by 1994-95 and 2000 AD respectively as assessed by NCAER.

World reserves of bauxite, the basic raw material for production of aluminium, have been estimated as 32,000 m tonnes. In 1980, Europe accuonted for 44% of the world primary aluminium production though it had 21% of the world bauxite resources, while North America produced 37% primary aluminium although, accounting for only 2% resource of bauxite. Major bauxite producing countries of Oceania, South America, Africa and Asia had been exporting raw-materials to Europe and North America, where adequate hydro-electric power at comparatively low rate for production of aluminium was available. However, presently the rise in energy costs and increase in transportation expenses for exporting bauxite have necessitated movement of alumina (Alumina in the basic raw

material for production of aluminum and is obtained from bauxite). The alumina production capacity set up in the bauxite producing countries includes over 5 m tonnes in South America, about 7m tonnes in Australia and 0.7m tonnes in Africa. These countries have contracts with major aluminium producers in the developed countries for supplying alumina to their existing and new smelters.

Indian Scenario:

Bauxite: India is endowed with large bauxite deposits of the order of 2650 in tonnes, placing the country fifth in rank after Australia, Guinea, Brazil and Jamaica. The production of bauxite, inclusive of purchases from outside sources by the primary producers of aluminium, since 1987-88 onwards is as below;+

TABLE 5.1

PRODUCTION OF BAUXITE (IN TONNES)

YEAR	BALCO	NALCO	INDAL	HINDALCO	MALCO
1987-88	365023	675,016	552700	737,112	NA
	(43,208)			(63,421)	

+ Deptt. of Mines Annual Report 1989-90 GOI, Ministry of Steel & Mines.

1988-89	350,816	1748,450	720,593	681,636	NA
	(164,133)			(138,015)	
1989-90	350,816	1748,450	720,593	681,636	NA
	(164,133)			(138,015)	
1989-90	233,748	1983,309	670,971	653,951	NA
(Upto Feb.90	(157,622)			(57,776)	

[Figures in brackets denote bauxite purchases from outside sources.

BALCO Bharat Aluminium Company Limited
NALCO National Aluminium Company LImited
INDAL Indian Aluminium Company
HINDALCO Hindustan Aluminium Corporation
MALCO Madras Aluminium Company

Alumina:

Alumina is the intermediate product whichis smelted into aluminium metal. The production of calcined alumina from 1987.88 is tabulated below-

TABLE 5.2

PRODUCTION AND EXPORTS OF ALUMINA

Company (In tonnes)

Public Sector	1987-88	1988-89	1989-90 (Upto Feb.90)
BALCO Prodn.	161,145	172,905	167,775
NALCO Prodn.	160,501	562,100	676,200
	(76,840)	(384,161)	(407,893)
Private Sector			
INDAL Prodn.	166,284	177,060	185,020
(exports)	69,795)	(64,674)	(53,362)
HINDALCO Prodn	230,850	254,257	247,251
MALCO Prodn.	16,605	25,861	31,729
(exports)			(11,305)
Total Prodn	735,385	1192,183	1307,975
(exports)	(146,635)	(444,835)	(472,560)

The Indian aluminium industry has a history of over 4 decades. The first aluminium smelter was put into operation at Alupuram, Kerala by Indian Aluminium (INDAL) in 1943. Alumina Plant at Muri (Bihar) with the present capacity of 72,000 tons/year, was commissioned in 1948. Indian Aluminium set up an integrated

aluminium complex with the alumina plant capacity of 165,000 t/yr at Belgaum (karnataka) in 1970. These units were set up with the technical and financial assistance of Aluminium company of Canada (ALCAN).

Aluminium corporation of India (ALUCOIN) JK Nagar, West Bengal installed an integrated aluminium complex with a capacity of 5,000 t/yr of alumina is 1944 with technical know-how from Swiss Aluminium Ltd. The plant later expanded to 18,000 t/yr capacity had to close down in 1973 due to problems of labour and uneconomic working.

Hindustan Aluminium (HINDALCO) commissioned its Alumina Plant based on knowhow from Kaisers, USA, as a part of integrated aluminium complex with initial capacity of 40,000 t/yr of alumina at Renukoot, Mirzapur (UP) in 1962. Expansion of alumina Plant to 300,000 t/yr is under way with the technical assistance of ALUTERVFKI of Hungary. Madras Aluminium Co.(MALCO) started production of alumina in 1965 from its 50,000 tons/yr Plant

set up at Mettur (TN) with technology from Montecatini, Italy.

The first public sector aluminium complex was established by Bharat Aluminium Col. Ltd. at Korba (MP) in 1973, with the commissioning of its 200,000 t/yr Alumina plant, with technical assistance from ALUTERV-FKI.

Another integrated aluminium complex in Orissa under Public Sector undertaking National Aluminium Company (NALCO) has been set up with technology from Pechiney, France. The Alumina Plant with a capacity of 800,000 t/yr is located at Damanjodi,Orissa and is under advance stage of commissiosning. Out of the total production, about 375,000 t/yr will be exported and remaining 425,000 t/yr will be utilized for conversion to aluminium.

Production of Alumina during 1983-86 and anticipated production for 1990-91, 1994-95 and 1999-2000 in shown in the following table.

TABLE 5.3

Alumina Production in India

Production (thousand t/yr)

	Actual			Anticipated		
S.No.	Plant	1983-84	84-85	85-86	1990-91	94-95	99-2000
1.	Balco	127.345	169.640	175.855	200	200	200
2.	HINDALCO	180.544	181.594	194.576	300	300	300
3.	INDAL	214.240	212.150	188.710	195	220	220
4.	MALCO	15,201	27.874	22.492	32	50	50
5.	NALCO	NIL	NIL	NIL	80	800	800

The present installed capacity of alumina production for the various plants in India is about 1,587,000 t/yr. In 1987-88 the total production of alumina from the five primary companies was 735385 tonnes out of which 146635 tonnes was exported.

All the plants under private sector were designed and engineered by foreign collaborators. In case of NALCO, the basic engineering was supplied by the foreign know-how suppliers and detailed engineering was carried out by Indian consultants. The process know-how/basic engineering suppliers for the Indian plants are indicated in the following table.

TABLE 5.4

Foreign Process know-how Linkage for Alumina in India

S.No.	Plant	Process knowhow and basic engineering supplier
1.	INDAL	Aluminium Co.of Canada
2.	HINDALCO	Kaisers, USA
3.	HALCO	Montecatini, Italy
4.	ALUCOIN	Swiss Aluminium Co., Switzerland
5.	BALCO	ALUTERU - FKI, Hungary
6.	NALCO	Aluminium Pechiney, France.

About two tonnes of alumina is required to produce one tonne of aluminium metal. Production of aluminium first began in India with the setting up of an aluminium smelter with a capacity of 2500t/yr at Alupuram in Kerala by INDAL in collaboration with Alcan Canada in 1943, based on imported alumina. Subsequently ALUCOIN set up an aluminium smalter of 2,500 t/yr capacity at Jaykaynagar, WB utilising indigenous bauxite. After a period of slow growth, the aluminium industry made rapid strides in the past two decades achieving an average growth rate of 9%. The installed capacity for production of primary aluminium in India was 362,000 t/yr in in 1985. In 1988-89 the capacity increased to

47,000 t/yr and the product was 357000 tons. and demand 360,000 tons there was deficit of 3000 tons and had to be imported. The growth of the aluminium industry in India is closely linked and to a great extent dependent on the corresponding growth in the power generation sector. While the installed capacity of primary aluminium in the country has increased from 250,000 t in 1975 to 362,000 t in 1985, the cpacity utilization has declined to about 62% in 1985 as compared to 75% in 1975. Major constraint has been inadequate electric power supply to the aluminium smelters in India. The uncertain power supply not only results in heavy production loss , but also increased specific consumption of various costly input materials.

But power shortage is only one facet of the problem faced by the industry. The system of administered pricing for a primary metal has failed to cope with the rising production costs, and as a result, profitability has often been at uneconomic levels.

A major contributory factor to the rising costs of the industry is the pricing policy

of the public sectors. Among the major inputs going into the making of aluminium, power, petroleum, cake and pitch are supplied by the public sector. Much of the rise in the cost of production is accounted for by these three inputs.

Primary aluminium metal has been subject to administered pricing in its present form since the yeaer 1978. Under the prevaiing system, retention prices are fixed for each manufacturing enterprise with the objective of ensuring a stipulated rate of return on net worth, at varying levels of capacity utilisation. But, since administered prices cannot be revised frequently and input prices generally keep on rising, the net effect is a rising cost of production, continuously eroding the margin initially envisaged in the administered price.

In this context, the profitability during the period 1977-83 for the four aluminium manufacturers is indicated below. The computations are based on balance-sheet data and uniform assumption of corporate tax liabilty at 57.75%. +

+ Aluminium Industry in India Problems & Prospects. Vol.I. by Radhakrishanan & Kalra NCAER 1987.

TABLE 5.5.

Profitability Performance of Aluminium Cos (%ages)

	INDAL		HINDALCO		MALCO		BALCO	
Year	C.U.	P.A.T. as % of N.W.	C.U.	P.A.T. as % of N.W.	C.U.	P.A.T. as% of N.W.	C.U.	PAT as % of N.W.
1977	68	9.51	77	13.10	68	-	32	-
1978	86	10.82	69	9.54	92	4.90	34	-
1979	86	10.90	78	8.45	90	10.73	30	-
1980	60	5,83	75	1.56	90	2.28	30	-
1981	91	4. 46	64	6.21	59	-	36	-
1982	73	5.28	76	5.75	57	-	44	-
1983	44	-	78	7.69	20	-	-	-

C.U. Capacity Utilisation Rate

P.A.T. = Profit after tax N.W. = Net Worth

The Central Government Pricing policy of 1978 provided for a controlled pool prices for aluminium metal while each producer was to have a different retention price. The retention price of a producesr was a post standard tax return on shareholder's funds.The rate of return was linked to capacity utilisation. A 55% smelter operating rate would entitle only 7% return, rising to 12% return for 90% utilsiation.

But we see that none of the companies have achieved the maximum returnof 12% of net worth after payment of taxes, even when operating at 90% of capacity. For all the companies, profitability falls well below the assumption implied in the formulae for fixing the retention prices. With the exception of 1978 and 1979, profitability is seen as lower than even the 70% after tax return at 55% capacity utilisation provided for in the retention price formulae. And all the companies, with the exception of BALCO, had operated at well over 55% utilisation of capacity.The evidence is indeed inclusive to prove that the objectives of the retention price formulae have not been realised in practice.

The profitabilitypicture is even more depressing when adjusted for non operating incomes. In the context of the principles underlying the retention prices, it is only the operating profits that should be taken into consideration for determining the after-tax rate of return . If the operating profits are adjusted for payment of corporate taxes and then related to the net worth of the respective cos, the following position will emerge.

TABLE 5.6

After tax operating profits as a percentage of Net Worth

Year	INDAL	HINDALCO	MALCO	BALCO
1978	9.71	8.87	4.22	-
1979	8.87	7.60	10.14	-
1980	4.22	0.17	1.69	-
1981	3.38	4.22	-	-
1982	3.80	4.65	-	-
1983	-	2.53	-	-

It is clear that the companies have been gradually approaching a near non-viable state for the years. It is particularly noteworthy that MALCO had become non-profitable even when operating at over 55% of capacity. In the case of BALCO, not only was profitability not attained till 1983, but even the net worth had become negative with recurring levels of very low capacity utilisation.

Another aspect of the operations and its effect on profitabilityis worth noting . The profits indicated for INDAL and HINDALCO, especially after 1979, appear to be the result of gains accruing

from downstream operations rather than from the production primary metal. And since neither MALCO nor BALCO had any significant downstream operations during this period, they were inevitably in the red. Obviously, the retention prices for primary metal, not only did not result in the attainment of its objectives but were not even adequate to support viable operations.

Another important factor (and which is of more relevance in the present context) has been the technology which is adopted by the respective companies.

All the plants under private sector and Korba Alumina Plant under Public Sector were designed and engineered by foreign collaborators. In case of NALCO, the basic engineering was supplied by the foreign know-how supplier and detailed engineering was carried out by Indian consultants. It is seen that the designed norms in general for NALCO Plant are better except for bauxite, which reflects the superiority of technology adopted for the plant.+

+ Technology Evaluation and Norms Study in Aluminium Industry, Dept. of Science and Industrial Research October 1988.

In terms of capacity utilisation and profitability, apart from NALCO, HINDALCO has been able to maintain a relatively steady performance over the years. This has been so due to various technologies imported and adapted by this company. As we know, in the modernisation schemes, the main thrust is towards saving of energy, petroleum product and other inputs. In this context, HINDALCO has been able to expand and modernize its alumina plant with the installation of a Gas Suspension Calciner whose deisgn and technology was provided by Smidth and Co. of Denmark. The Calciner has helped the company to achieve substantial energy saving, where as an almost nonviable plant viz MALCO is dependent on power supplies from thepublic utility systems. Also, HINDALCO has adoptedHydrogarnet technology of ALUTERUFKI of Hungary which increases alumina recovery, reduces soda lossæ etc.

Similarly INDAL which receivers technology, R & D and engineering back up from Alcan International Limited (Canada) has imporved its product-mix as a result of fuller utilisation of the addition to capacities and modernisations carried out at its various plants.

As aluminium smelting is highly power intensive process, power in considered to be a prime factor in determining economics of aluminium production. The requirement of power varies from plant to plant depending on the technology adopted. In India, all primary aluminium produces have installed their smalters based on different design parameters adooted at the time by their foreign know how suppliers. It is seen that only NALCO, among all Indian plants has introduced the current energy efficient technology with D.C. power consumption of 13,742 Kwh per tonne of aluminium; Others have consumption power much more than this (around 17000 KWH per tonne of aluminium).

The technological parameters prevailing in Indian and international aluminium industry are almost similar. However international Plants operating at amperages from 150-280 KA achieve the high current efficicncy from 90% to 94% at average current density of 0.70 AMP/Cm^2 . In comparism only the NALCO Plant in India had designed cell amperage of 175KA to achievethe current efficiency of 91% at current density of 0.78 Amp/Cm^2. Other Indian aluminium

plants are designed between 50 KA to 100 KA at current efficiency limiting to 85% and current density ranging from 0.67 to 1.00 AMP/ Cm^2 in line with the level of technology prevailing at the time these were designed. Similarly, consumption of various input materials and power by aluminium industry is much less for NALCO plant. Thus it is observed that other Indian plants are based on old and outdated designs and there is not enough effort, through R & D, to update the technologies. The technological gaps can be filled by modernisation of the old/out dated plants by adopting improvements existing in plants abroad. In general there is considerable scope for improving the technological level (except NALCO).

[Due to data and information gaps, it is not possible to fully assess the impact and effectiveness of the technology agreements in the aluminium industry.]

As far as the extent and impact of foerign investment is concerned, RBI Bulletins on the financial performane of the selected foreign controlled

rupee companies reveal that foreign collaborators have minimum controllign interest in the aluminium industry after Mining & Quarrying.

TABLE 5.7

Distribution of selected Companies according to Foreign controlling interest

Industry/Industry Grp	1980-81	1984-85
I Agriculture and allied activities	5	14
II Mining and Quarrying	2	2
III. Processing & Manufacture -textiles tobacco, batha and products thereof	19	13
IV. Processing & Manufacture	224	140
(a) Aluminium	3+4(other metals)	5(including other metals
(b) Engineering	134	85
(c) Chemicals	83	50
V. Processing & Manufacture not elsewhere apecified	40	19
VI Other Industries	23	20
VII All Industries	313	208

In India, Aluminium industryhas relied upon foreign collaborations more for technical help than for financial investment Added to this fact, FERA stipulations, which aimed at regularly foreign exchange transactions to conserve foreign exchange resources, reduced foreign equity participation in all companies except those which qualified for exemption due to special contributions to the economic development of the country.

With equity dilution, one would expect a reduction in remittances abroad. On the basis of studies by RBI Bulletins Finances of Mdeium and large Public Limited Companies, the share of dividends paid abroad as a percentage of total dividends, the share continuously increased till 1977-78 and after 1979-80, it showed neither significant increased nor significant decline, though in 1984-85, there was sharp drop from 44.19% to 16.69% .

Table 5·8 : DIVIDENDS PAID ABROAD As % OF TOTAL DIVIDENDS

1974-76	27.86
1976-77	30.67
1977-78	41.80
1978-79	2.19
1979-80	47.18
1980-81	21.23
1981-82	45.45
1982-83	32.70
1983-89	44.19
1984-85	16.69

As far as dividends as percentage of sales is concerned, this has shown definite decline after 1980. This reflects delayed reaction of the FERA regulations.

TABLE 5.9

Remittances as a percentage of sales

	Dividends as percentage of sales	Imports as percentage of sales	Other remittances as percentage of sales
1975-76	0.84	1.63	0.41
1976-77	1.00	1.54	0.24
1977-78	1.36	1.85	0.18
1978-79	0.11	1.36	0.16
1979-80	1.56	3.62	0.16
1980-81	0.57	4.17	0.16
1981082	0.90	2.58	0.18
1982-83	0.55	1.91	0.25
1983-84	0.58	2.23	0.26
1984-85	0.25	2.35	0.21

Another important change which is observed is that after 1979, technical fees, which formed no part of expenditure in foreign currency, started increasing. No technical payments before this period was caused partly by stricter regulations for royalty

payments enforced by the government in 1968. Subseuqently, resort to Lumpsum payments for technology, modifications of the regulations and special facilities for various industries all paved the way for a significant increase in technical payment.

TABLE 5.10

(Aluminium Industry)

Expenditure in foerign Currency(Rs. lakhs)

6	Dividends	Royalty	Technical Fees	Professional Consultation fees	Others
1975-76	95	-	-	-	46
1976-77	184	-	-	-	42
1977-78	217	-	-	-	29
1978079	20	-	-	-	28
1979-80	32.6	-	2	-	31
1980-81	131	=	6	=	31
1981-82	260	-	13		39
1982-83	191	-	31	-	55
1983-84	175	-	26		53
1984-85	110	-	19	-	74

However, remittances on acount of dividends, technical payments, etc., only constitute a minor share of total

foreign exchange utilization by the private corporate sector. The bulk of the outgo is on account of imports.

TABLE 5.11

Remittances as Percentage of total Expenditure

	1975-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Imports :	56.61	54.62	54.44	83.28	67.89	85.86	20,57	70.37	72.98	83,88
1.Raw Material	33.85	41.97	38.15	52,96	45.89	70.45	56.60	53.05	55.53	70.39
ii)Capital Goods	10.15	-	3.52	2.44	12.16	6.39	6.13	8.56	6.38	5.02
iii)Spares and Component	12.62	12,62	12,78	27,87	9,84	9,01	7,83	8,77	11,06	8,41
Other Remittances	43.39	45.38	45.56	16.72	32.11	14/14	29.43	29.63	27.02	16.42
i) Dividend	29.23	36.95	40.19	6.97	29.16	11.03	24.53	20.43	18.62	8.90
ii) Royalty	-	-	-	-	-	-	-	-	-	-
iii) Technical fees	-	-	-	-	0.18	0.51	1.73	3.32	2.77	1.54
iv) professional &consultation	-	-	-	-	-	-	-	-	-	-
v) Others	14.15	8.43	5.36	9.76	2.77	2.60	3.68	5.88	5.64	5,99

There is general tendency for foreign controlled companies to import relativel more than Indian counterparts. In addition, foreign controlled firms have also shownan increasing preference for imports. In the aluminium industry, lately there is a tendency for increasingly importing higher porportions of raw materia;s and spares of stores.

TABLE 5.12.

Imported to total raw materails, pares and stores consumed by Aluminium Companies

	1975-76	76-78	77-78	78-79	79-80	80-81	82-83	83- 84	84-85
Raw Material	526	5.91	9.10	7.55	7.52	19.88	6.59	13.27	14.86
Stores/Spares	7.36	5.43	9.36	11.08	8.91	10.05	7.96	9.22	9.93
Total	5.48	5.86	9.14	7.98	7.68	18.90	6.70	12.93	14.41

Source: RBI Bullertine Finances of FCRC, Aug.1984, June 1988,

But when compared with Chemical and Engineering industries, the imported share in the total is much less in the case of Aluminium industry than the other two industries and hence the restrictions with regard to source of imports and magnitude of imports are not as stringent as in the case of chemical and Engineering companies.

Effects on the Balance of Payments

The fact that the import content for companies with close foreign connections tend to be higher than that for other companies does not necessarily imply that they inflict a net loss on the country. They could easily balance ot offset the outgo in foreign currency on account of imports, repatriated earnings and other remittances by exporting and thus earning equivalent amounts of foreign currency.

However, in the caes of aluminium industry it is seen that expenditure in foreign currency (of which major part is on account of imports) for outweighed the earnings in foreign currency

except for the year 1976-77 . Again In 1983-84 and 1984-85, the balance of payment have shown positive effect. The negative BOP has been due to increasing oil prices and hence increasing imports and as far as exports are concerned, HINDALCO and INDAL are earning some foreign exchange on account of exports, others have not able even able to produce enough for domestic demand.

Table 5.13

Earnings and Expenditure in Foreign Currency ((Rs.Lakhs)

Year	Earnings	Expenditure	Net Earnings in foreign current (DirectBOP Effect)
1975-76	19	325	- 306
1976-77	1995	498	+1497
1977-78	475	540	- 65
1978-79	266	287	-21
1979-80	459	1118	-659
1980-81	737	1188	-451
1981-82	305	1060	-755
1982-83	877	935	-58
1983-84	1104	940	+164
1984-85	1300	1236	+64

In terms of magnitude, the negative balance of payments effect was much less mainly because the extent of foreign investment in aluminium industry was much less than Chemical and Engineering industries, and unlike these two industries, 1983-84 and 1984-85 showed positive effect on BOP. This could be due to firstly less burden of imports obligations and secondly improving performance two of its companies, INDAL & HINDALCO and commissioning of new plant NALCO, which uses much superior technology, than any of the other plants. But otherwise, there exists considerable gap between the latest technological trends followed the world over and prevailing technology in Indian plants which reflects lack of upgradation and diffusion of new technology.

CHAPTER 6

SUMMARY AND CONCLUSIONS

This study has discussed the behaviour of MNCs in less developed countries in particular, India. The role of MNCs in less developed countries has attracted considerable controversy. Writers sympthetic to the MNC emphasize its role in transferring a package of resources to the LDC. The main components of this package are said to be technology, capital and access to world markets. It is claimed that the transfer of these resources generates efficiency gains and LDCs can bargin for a share of these gains for themselves. Critics emphasice its role in redistributing income in favour of its own Managers and shareholders and the adverse impact on employment balance of payments etc. Several writers (notably Streeten 1974, and Vaitsos 1974] have suggested that however technology efficient an MNC project in an LDC may be, a host country will only be sure of achieving benefits from it after a successful outcome

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+ Streeten P.L. (1974) The Theory of development Policy and Vaitsos . C.V. (1974) Income distribution and welfare, considerations in J.H. Dunning (ed.) Economic Analysis and the MNE London: Allen & Unwin.

to negotiations between its government and the foreign enterprise. Thus it is desirable to regulate the MNC's activities in order to extract the greatest possible benefits for the fuller development of LDC host countries

Chapter 1 contains general background and Literature to MNC involvement in LDCs. It also discourses various aspects of technology transfers, appropriateness of MNC technologies to LDCs, the alternative arrangements available for its transfer and effects of technology transfers are also appraised in general.

Multinational Operations in Indian Industry

Chapter 2 focuses on the role of foreign investment in Indian industry and to what extent government regulations have affected the operations of MNC's. The main form of legislation afecting MNC's in India was the Foreign Exchange Regulation Act which was promulgated in 1973 and enforced in 1984. The guidelines for administering section 29 of this Act (which referred directly to the operations of MNCs in India) were announced in 1973 and later amended in 1976 According to these guidelines the principal

rule was that all branches of foreign companies operating in India should convert themselves into Indian companies with atleast 60% local equity participation. Furthermore all subsidiaries of foreign companies should bring down the foreign equity share to 40% or less., These guidelines, provided for 3 levels of foreign equity: 74%, 51% and 40% . Companies were allowed to certain foreign equity holding above 40% and upto 74% on condition that they were engaged in (i) core industries (ii) predominantly export oriented production (iii) activities requiring sophisticated technology or specialised skills or (iv) tea plantation activities.

FERA aimed at regulating foreign exchange transactions by diluting foreign equity on the assumption that there will be reduction in remittances abroad and hence improvement in BOP But Chap 2' analysis shows that FERA regulations have not been effective enough and the bulk of outgo of foreign currency is on account of imports. An important conclusion reached is

that higher concentration of foreign investment makes the industry more dependent on imports and any attempt to reduce this dependence by reducing foreign equity has not been successful. This is because there are other factors which are equally or more important than government regulations like business opportunities in India, attitude of MNC- affliated companies etc. Also the enactment of fERA contributed to channelling foreign capital and technology from consumer goods into capital goods and basic intermediate goods, particularly those involving application of sophisticated technology and those which are export oriented.Thus we see that foreign controlled rupee companies are increasingly found in the manufacturing sector. This chapter deals with impact of foreign investment on Indian industry is general. As far as the growth performance in terms of profitability, value added etc. is concerned, it is quite natural to assume that the profitability of foreign subsidiaries is much higher than Indian companies because of their superior technology and bargaining power.

For a clear scrutiny we have discussed chemical, Engineering and Aluminium industry groups separtely. We have chosen chemicals and Engineering industires since they are the most important industry groups accounting for foreign investment and Aluminium industry, since it has very little direct foreign investment and basically has technical collaborations makes for a good comparison with the other two industries.

Chapter 3 surveys the rapid growth which chemical industry has witnessed since last few years.The expansion in production is largely due to increase in demand within the country and pragmatic policics adopted by the government.Under the new Patent Act, lower period of protection for food and drugs has been fixed which has enabled/ Indian drug industry to reach a level where it is able to introduce the newer drugs almost simultaneously with the MNCs elsewhere. But in order to foster and encourage the growth of the Indian sector, with a further view to reducing imports and the dependence on supplies from foreign companies, the government

put pressure on FERA companies but due tomutual disagreement and conflict between authorities, the steps have not been taken effectively. The equity dilution policy has not been enforced to the maximum extent as can be seen in the dividends remittances share in the total dividends which did not decrease till 1979 but thereafter it has shown a decline reflecting a delayed reaction and adjustment to government regulation and its equity dilution policy.

However, chemical industry has been contributing to export earning of the country but due to its import obligations the net impact on BOP in deteriorating. It has not been able to fulfil the import substitution objective. One reason could be that with increasing foreign investments, the industry has been importing more and more and to solve this problem it is very important that more and more expenditure is incurred on R & D which unfortunately is very little in Indian chemical industry. The negative BOP impact is the consequence of , besides the reasons mentioned above, certain aspects of the export promotion policies which

worked against the objectives embodied in FERA. For instance many MNCs managed to get themselves registered under schemes like concessions to Export Houses, thus securing for themselves exceptional treatment.

Chapter 4 focuses on the Engienering industry. Recent measures towards import liberalisation have led to increased upgrading of technology in many sectors. FERA companies have emerged as dominant undertakings in selected product lines which are usually technology intensive and patent protected. Foreign investment in the Indian Engineering industry has shifted over time from foreign subsidaries to joint ventures with minority equity holdings by foreigners and further to license agreements for technology trnasfer with equity investment . But as observed in the case of chemical industry, the share of dividends paid abroad has not decreased substantially as a result of this . Within the Engineering sector, transport equipment sector has shown a definite decline but electrical machinery instead of declining show very high proportion of dividends remitted abroad. The expenditure on account of imports is quite high

but compared to Chemical industry, the tendency to increase overtime is not so sharp. The impact of foreign investment on BOP has been negative as in the case of Chemical industry since there has been a high level of imports and quantum of other remittances as against exports.

FERA and the industrial licensing policies have acted as pressure on foreign companies to bring down their engagements in consumer goods and other light industreis where they had extensive export potential . Instead they were impelled to expand their operations in engineering and chemical industires where they have neither interest nor the same potential for exports. At the same time this shift tomore technology intensive sectors induced substantial increase in imports and other remittances. These and other aspects , it appears, were not properly considered while evolving various tools of policy in 1970s and later.

Unlike these industries, aluminium industry has very little share of foreign investment and hence the impact on BOP due to foreign investment has not been pronounced as in the case

case of other industries discussed. The contribution of MNS to Aluminium industry in India is mainly in terms of technical collaboration but it is seen that in general, technology transfered is not upgraded withtime and there are technological gaps between international and Indian designs. Secondly, not enough Research and Development is undertakenby the companies themselves which is crucial for the industry since it has to economise on energy and power Infact the companies (BALCO and MALCO) which have not performed well have been able to do so due to dependence on external sources for power, among other factors.

However the problem on technological front is faced by the other two industries also. It is seen that even leading firms find it difficult to adapt many new sophisticated technologies and cannot undertake the development of major new product and process technologies.

India is not yet able to produce new 'frontier' techbnology and its comparitive advantage

still lies in using basic advances in knowledge created in the industrialized countries and adapting them to the local environment . Within this broad constrain t, the depth to which technological capability can be efficiently carried out depends very much on the nature of technologies in question (complexity, speed of change, interaction of different scientific discipline, scale of production required and so on) and the country's own endowments (technical work force, range of industrial experience, size of market, natural resourcees etc.)

The limits to technological capabilities and absorption in a country are set not only by the interaction owes of technologies with endowments but also by constraints resulting from government policy. In Indian case, the technology absorbed and diffused over itself less to inherent limitations in its learning capabilities than to biases and restriction imposed by government policies. Thus, while technological development (as a result of transfer of foreign technology) was stimulated by policy, it was also contained by it; guided in particular by directions and inhibited from being fully exploited in efficient production.

SELECTED BIBLIOGRAPH

- Aggarwal H.P., Business Collabroation in India, New Delhi 1979.

- Annual Reports of five Aluminium Companies - BALCO, INDAL, HINDALCO, MALCO, NALCO, various issues.

- Casson M. and Pearce, Robert D. Multinational Enterprises in LDCs in Norman Gemmell (Ed.) Surveys in Development Economics.

- Chaudhuri Sudip "Bengal Chemicals: 1892-1977 Growth and Decline of an Indigenous Enterprise". Culcutta IIM, 1981.

- Chemical Business Vol.2 No.10, Jan 5-19, 1989.

- Company News and Notes June 1980 - July 1981

- Department of Science and Industrial Research (oct 1988) - Technology Evaluation and Norms Study in Aluminium Industry.

- Department of Mines, annual Report 1989-90, Government of India, Ministry of Steel and Mines.

* Confideration of Engineering Industry Hand Book of Statistics 1988-89

- C E I Engineering Industry Production Profile

Department of Chemicals and Petrochemicals, GOI, Ministry of Industry Annual Report 1988-89.

Desai, Ashok V.(1980) "Tne Origin and Direction of Industrial R & D in India" research Policy Volume 9.

*

Document of the world Bank (1986) India Industrial Regulating Study Volume II Subsector Reports

Economic Survey 1986-87

Kelkar, Vijay 'The impact of Private foreign investment 1964-72: An Economic Analysis in C.D. Wadhwa (Ed) "Some Problems of India's Economic Policy" New Delhi, TMH 1979.

Economic Times September, 10, 1981

- Evans P (1979) "Dependent Development" The Alliance of Multinational, State and local capital in Brazil" Princeton, NJ: at the University Press.

Gaitone B.B. (1978) Pharmaeutical Indsutry in India, Retrospects and Prospects, Liepzig Press .

* Desai Ashok V, New Forms of International Investmenet in India, Social Scientist.

Government of India, Ministry of Petroleum and Chemicals. Report of the Committee on Drugs and Pharmaceuticals Industry 1975.

- Hindu Survey of Industries (1988)

- Hindu Survey of Industries March 1989.

- Kumar, Nagesh - Cost of Technology Imports: The Indian Experience in EPW August 1985.

- Kumar, Nagesh (1988) Place of Froeign Controlled Enterprises in Indian Manufacturing in EPW, Nov.1988.

- Lall, Sanjay (1987) Learning to industrialize. The Macmillan Press Limited, London.

- Lall S. and Mohammed S (1983): Foreign ownership and Export Performance in the Large Corporate Sector in India- Journal of Development Studies,20.

Martinussen J. TNCs in a developing country - The Indian Experience 1988. Sage Publciation New Delhi.

- Radhakrishnan P.N. and Kalre G D (1987) Aluminium Industry in India Problems and Prospects Vol.I. NCAER

- Reuber G.L. et.al. (1973) "Private Foreign Investment in Development" Oxford: Claredon Press, 1973.

- Reserve Bank of India Bulletin - India's International Investment Position
July (1975)
May 1978
April 1985.

- RBI Bulletin Finances of Foreign controlled Rupee companies Aug. 1984
June 1988

RBI Survey report on Foreign Collabroation in Indian Indsutry
- Second Survey 1974
Fourth Survey 1985

RBI Bulletin Finances of Medium and Large Public Limited Companies
- May 1980
- July 1983
- February 1985
- May 1987

- Saxena, Usha (1987) Role of Multinationals in India's Foreign Trade.

- Subramanian K.K. and P.M. Pillai Multinationals and Indian Exports New Delhi: Allied 1979.

- Streeten P.L. (1974) The theory of development policyin J.H. Dunning (ed) Economic analysis and Multinational Enterprise London: Allen and Unwin.

- Trade Development Authority (1988) Supply side on Drugs and Pharmaceuticals in India.

- Vaitsos C.V. (1974) Income distribution and Welfare considerations in J.H. Dunning (Ed.) Book.

- UNCTAD (1983) : Technology issues in the capital goods Sector A Case Study of Leading Machinery Pocedures in Indai . Geneva.

- World Bank (1982) Economic Situation and Prospects of India.

APPENDIX-I

EXTENT AND DISRIBUTION OF FOREIGN DIRECT INVESTMENT IN INDIA (Rs).

INDUSTRY GROUP	MARCH 1964				MARCH 1974			
	FB	FCRC	TOTAL	% OF TOTAL	FB	FCRC	TOTAL	% OF TOTAL
I Plantations	96.4	9.5	105.9	18.6	92.0	15.1	107.1	11.7
II Mining	4.7	-	4.7	0.8	4.1	2.8	6.9	0.8
III Petroleum	80.6	62.7	143.3	25.2	73.5	61.1	134.6	14.7
IV Manufacturing	22.3	207.8	231.7	40.8	50.1	574.7	624.8	68.4
1. Food & Beverages	0.2	30.0	30.2	5.3	3.0	49.1	52.1	5.7
2. Textile	9.5	7.1	16.6	2.9	12.9	22.7	35.6	3.89
3. Machinary & Machine Tools	1.4	14.3	15.7	2.8	1.6	40.5	42.1	4.6
4. Transport Equipment	-	15.0	15.0	2.6	-	31.8	31.8	3.5
5. Metal & Metal Products	2.0	31.1	33.1	5.8	5.1	81.6	86.7	9.5
6. Electrical goods	0.1	18.1	18.2	3.2	-	68.1	68.1	7.4
7. Chemicals & allied products	4.2	58.3	62.5	11.0	12.9	190.8	203.7	22.3

Contd...

INDUSTRY GROUP	MARCH 1964				MARCH 1974			
	FB	FCRC	TOTAL	% OF TOTAL	FB	FCRC	TOTAL	% OF TOTAL
(a) Chemicals	-	18.7	18.7	3.3	-	76.0	76.0	8.3
(b) Medicine & Pharmaceuticals	3.9	19.3	23.2	4.1	10.9	58.7	69.6	7.6
(c) Others	0.3	20.3	20.6	3.6	2.0	56.1	58.1	6.4
8. Miscellaneous	4.9	35.5	40.4	7.1	14.6	90.1	104.7	11.4
V Services	55.7	26.6	82.3	14.5	21.9	18.1	40.0	4.4
Total	259.7	305.8	567.9	100	241.6	671.8	913.4	100

TRY GROUP	MARCH 1978				MARCH 1980			
	FB	FCRC	TOTAL	% OF TOTAL	FB	FCRC	TOTAL	% OF TOTAL
I Plantations	28.6	26.5	55.1	6.3	10.0	28.5	38.5	4.1
II Mining	2.5	5.3	7.8	0.9	2.3	5.5	7.8	0.8
III Petroleum	7.7	726.0	733.7	83.6	10.5	726.3	836.8	83.9
IV Manufacturing	22.1	716.4	738.5	84.8	12159	789.7	811.6	87.0
1. Food & Beverages	3.9	38.9	42.8	4.9	2.7	36.4	39.1	4.2
2. Textile	1.9	20.3	22.2	2.5	8.1	23.9	32.0	3.4
3. Machinery & Machine Tools	1.7	57.2	58.9	6.7	-	51.5	51.5	5.5
4. Transport & equipment	-	45.0	45.0	5.1	-	71.0	71.0	7.6
5. Metal & Metal Products	1.3	109.5	110.8	12.6	-	118.7	118.7	12.7
6. Electrical goods	-	83.4	83.4	9.5	-	97.5	97.5	10.4
7. Chemicals & Allied Products	6.2	269.2	275.4	31.4	4.0	297.8	301.8	32.3
(a) Chemicals	-	112.3	112.3	14.0	-	130.6	130.6	13.9
(b) Medicine & Pharmaceuticals	6.2	79.4	85.6	9.8	4.0	101.7	105.7	11.3

INDUSTRY GROUP	MARCH 1978				MARCH 1980			
	FB	FCRC	TOTAL	% OF TOTAL	FB	FCRC	TOTAL	% OF TOTAL
(c) Others	-	67.5	67.5	7.7	-	65.5	65.5	7.0
8. Miscellaneous	7.1	92.9	100.0	11.4	7.1	92.9	100.0	10.7
V Services	21.6	19.3	40.9	4.67	15.7	22.8	38.5	4.1
Total	82.5	793.5	876.0	100	60.4	872.8	933.2	100

APPENDIX-II

STRUCTURE OF EXPENDITURE IN FOREIGN CURRENCY BY MEDIUM AND LARGE COMPANIES 1975-76 TO 1984-85

	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
IMPORTS	86.6	83.8	88.0	85.2	87.2	88.0	87.8	83.0	83.2	82.0
OF WHICH										
RAW MATERIALS	66.1	63.9	71.3	66.2	66.5	62.9	62.3	59.2	57.1	60.6
CAPITAL GOODS	9.8	9.3	7.5	8.5	7.8	12.3	13.5	13.6	14.3	11.1
STORE & SPARES AND OTHERS	10.7	10.6	9.2	10.6	12.9	12.7	12.0	10.2	11.9	10.3
REMITTANCES	13.4	16.2	12.0	14.8	12.8	12.0	12.2	17.0	16.8	18.0
OF WHICH										
DIVIDENDS	3.2	5.4	4.5	4.7	3.4	2.9	2.5	2.8	3.3	2.7
ROYALITY	1.4	1.4	1.0	0.7	0.7	0.7	0.8	0.8	0.8	0.9
TECHNICAL FEES AND OTHER FEES	1.4	2.9	0.6	0.9	0.8	0.9	0.5	0.8	0.8	0.9
OTHER REMITTANCES	7.4	6.5	5.9	8.5	7.9	7.6	8.4	12.6	11.9	13.5

APPENDIX-III

GROWTH RATE OF CHEMICAL INDUSTRY.

GROWTH RATE OF GROSS PROFITS

1976-77	22.4
1977-78	9.4
1978-79	13.6
1979-80	6.7
1980-81	-10.8
Compound Growth Rate	7.7
1983-84	2-1
1984-85	16.1

YEAR	GROSS PROFITS AS % OF SALES	GROSS PROFITS AS % OF TOTAL SALES	PROFITS AFTER TAX AS % OF NET WORTH
1975-76	14.3	19.2	17.0
1979-80	14.5	20.0	16.8
1980-81	11.8	16.7	15.4
1982-83	11.2	15.6	15.9
1983-84	10.5	14.2	13.5
1984-85	10.0	13.7	16.4

APPENDIX-IV

STRUCTURE OF EXPENDITURE IN FOREIGN CURRENCY IN PERCENTAGE TERMS :-

INDUSTRY	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
IMPORTS	88.8	88.1	85.9	85.2	88.5	87.4	91.5	88.5	87.2	84.6
Raw materials	65.9	64.4	61.3	61.2	64.8	59.8	63.8	61.7	54.3	57.9
Capital goods	9.8	10.7	10.9	9.5	7.5	8.9	8.7	11.8	14.6	11.5
Stores and Spares	13.1	12.9	13.6	14.6	15.8	18.7	19.0	15.0	18.4	15.2
REMITTANCES	11.2	11.9	14.1	14.8	11.5	12.6	8.5	11.5	12.8	15.4
Dividends	2.6	3.5	4.3	3.9	3.0	2.8	2.3	2.4	2.2	2.4
Royality	1.9	2.4	2.2	1.6	1.5	1.3	1.4	1.3	1.4	1.8
Techenical Fees	1.9	1.5	1.3	1.1	1.0	1.1	0.6	1.1	0.8	1.0
Other remittances	4.9	4.6	6.4	8.2	6.0	7.5	4.2	6.7	8.4	10.3

Electrical Machinary and apparatus.

INDUSTRY	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
IMPORTS	88.9	87.4	85.7	78.8	83.7	80.1	88.8	83.1	86.6	83.8
Raw materials	77.8	75.2	73.6	62.8	69.7	65.9	75.3	67.2	65.7	67.6
Capital goods	3.5	4.2	5.6	6.9	5.0	4.9	6.9	9.6	9.2	9.8
Stores & spares	7.6	8.0	6.5	9.1	8.9	9.4	6.5	6.2	11.8	6.4
REMITTANES	11.1	12.6	14.3	21.2	16.3	19.9	11.2	16.9	13.3	16.2
Dividends	3.2	4.9	6.0	5.3	4.1	3.8	4.2	4.0	3.5	3.3
Royalty	1.3	1.7	1.4	1.3	1.0	1.1	1.5	1.4	1.1	1.1
Techinical fees	2.6	2.1	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.9
Other remittance	4.0	3.9	6.1	13.8	10.5	14.2	4.7	10.8	8-1	10.8

MACHINERY OTHER THAN ELECTRICAL

INDUSTRY	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
IMPORTS	86.0	87.2	86.2	86.5	89.1	88.4	87.8	86.4	81.3	79.3
Raw material	58.0	63.9	58.7	57.3	59.2	51.1	52.3	44.8	31.7	45.2
Capital goods	6.8	7.6	10.7	13.5	10.4	9.2	10.8	14.8	20.1	9.7
Stores & spares	21.2	15.7	16.8	15.7	19.5	28.0	24.6	26.8	29.4	24.4
REMITTANCE	14.0	12.8	13.8	13.5	10.9	11.6	12.2	13.6	18.7	20.7
Dividends	1.8	2.5	3.4	4.3	3.3	2.9	2.6	2.7	2.0	1.9
Royality	3.0	3.8	3.2	2.1	1.8	1.8	2.9	2.8	2.5	2.3
Techinical fee	2.9	2.1	2.4	1.9	1.7	1.9	1.3	1.5	1.2	1.6
Other remittance	6.3	4.4	4.8	5.2	4.1	5.0	5.4	6.6	13.1	14.8

Appendix-V-

Item	Average of annual Growth Rate 1980-81 to 1985-86	Average of annual Growth Rate 1984-85 to 1988-87	Average of annual Growth rate 1980-81 to 1988-89
General Index	5.32	5.22	4.42
Mining and quarrying	6.13	4.15	4.81
Manufacturing	5.11	5.31	4.31
Beverage and Tobacco industries	2.31	3.15	2.51
Manufacture of textiles	2.20	2.05	1.16
Manufacture of chemicals and chemical products	6.79	6.63	6.26
Manufacture of Machinary except electrical machinary	3.97	4.68	4.32