EXPORT OF ENGINEERING GOODS FROM INDIA

by

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ABSTRACT

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Submitted to the Department of Economics, Massachusetts Institute of Technology, on 16 August 1971 in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

The thesis examines the export of engineering goods from India in the 1960s as a case study of new manufactured exports from developing countries. It is concerned with the problems of transition from import substitution to export by countries which followed inward-oriented strategies of industrialization under regimes of protection and bureaucratic controls. A major purpose is to determine the effect of industrial and trade policies which accompanied import substitution on the incentive to export and the cost of foreign exchange earned by export.

After a review of the development of the engineering industries and the policies which accompanied import substitution, the study deals with three aspects of the transition from import substitution to export. First, it considers policies of the Indian government which discriminated between production of engineering goods for the domestic market and export. A basic feature of policies to promote industrialization was a bias toward import substitution or self-sufficiency in production. The most important aspect of discrimination against export was a higher implicit exchange rate on production for the domestic market than export as a result of protection and overvaluation. After the early 1960s, export promotion policies progressively reduced the gap between implicit exchange rates on production for the domestic market and export. The study considers the contribution of export promotion measures as well as excess-capacity to the expansion of exports of engineering goods in the late 1960s.

Second, the study considers policies of the Indian government which increased the domestic resource cost of foreign exchange earned by export of engineering goods. One important area of policy which

had this effect was import licensing and other bureaucratic controls over the supply of tradable inputs. Industrial and trade policies also reduced the incentive to produce goods to designs which were efficient for export, and export promotion policies were themselves a source of inefficiency.

Third, the study considers several factors, other than policies of the Indian government, which limited the transition from import substitution to export. These include export marketing problems which forced Indian exporters to sell at prices substantially below those received by competitors from advanced countries, foreign collaboration agreements which discriminated against exports, transport costs, and trade barriers abroad.

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ABBREVIATIONS, TERMS, DATES AND EXCHANGE RATES

Abbreviations

ABMEL:	Associated Battery Makers Eastern Limited
ACSR:	Aluminum Conductor Steel Reinforced
ASI:	Annual Survey of Industries (GOI)
CMERI:	Central Mechanical Engineering Research Institute (GOI)
CMTI:	Central Machine Tool Institute (GOI)
CSO:	Central Statistical Organisation (GOI)
DGS&D:	Directorate General of Supply and Disposal (GOI)
DGTD:	Directorate General of Technical Development (GOI)
ECGC:	Export Credit and Guarantee Corporation (GOI)
EEPC:	Engineering Export Promotion Council (GOI)
ESRF:	Economic and Scientific Research Foundation, New Delhi
GOI:	Government of India
HMT:	Hindustan Machine Tools Limited
HSL:	Hindustan Steel Limited
IDBI:	Industrial Development Bank of India (GOI)
IEA:	Indian Engineering Association
IEMA:	Indian Electrical Manufacturers' Association
IIFT:	Indian Institute of Foreign Trade, New Delhi
IISCO:	Indian Iron and Steel Company Limited
JPC:	Joint Plant Committee (GOI)
LMB, LME:	London Metal Bulletin, London Metal Exchange
MMTC:	Minerals and Metals Trading Corporation (GOI)
NCAER:	National Council of Applied Economic Research, New Delhi
NOCIL:	National Organic Chemical Industries Limited
PILC:	Paper Insulated Lead Covered
PVC:	Polyvinyl Chloride
RBI:	Reserve Bank of India (GOI)
Rs:	Indian Rupees

STC:	**State Trading Corporation (GOI)**
TELCO:	Tata Engineering and Locomotive Company Limited
TEXMACO:	Textile Machinery Company Limited
TISCO:	Tata Iron and Steel Company Limited

Terms

Basic metals:	This study uses GOI data for "basic metals." The coverage corresponds closely to UN definitions of "primary metals." (SITC 67-68.)
Current or maintenance imports:	Imported materials, components, and spare parts used in production
Crore:	10 million
Dollar:	US dollar
Engineering industries:	This study uses GOI data for "engineering industries." The coverage corresponds closely to UN definitions of "metalworking industries." (SITC 69, 71-73, 81, 86, and a few minor items from 89.)
Lakh:	100,000
Lok Sabha:	Lower House of the Indian Parliament
Ton:	Metric ton, 1000 kg.

Dates

Years written "1969-70" refer to the government fiscal year from 1 April 1969 to 31 March 1970. Dates written "1969-1970" refer to the two calendar years 1969 and 1970.

First plan:	1951-56
Second plan:	1956-61
Third plan:	1961-66
Annual plans:	1966-69
Fourth plan:	1969-74

Exchange Rates

Unless otherwise noted, rupees have been converted to US dollars at the official exchange rates below:

1939 to 20 September 1949:	Rs. 3.32 = US$1.
21 September 1949 to 5 June 1966:	Rs. 4.76 = US$1.
Since 6 June 1966:	Rs. 7.50 = US$1.

An exchange rate of Rs. 7.04 = US$1 has been used for 1965-66.

CHAPTER I

INTRODUCTION

This examination of the export of engineering goods from India in the 1960s was undertaken as a case study of new manufactured exports from developing countries. It is concerned with the transition from import substitution to export by countries which followed inward-oriented strategies of industrialization under regimes of protection and bureaucratic controls. The engineering industries were chosen because of their central role in planned industrial development and their importance in recent Indian exports. Although the detailed analysis is confined to the Indian experience, its relevance is more general: many aspects of this experience with both import substitution and export were shared by other semi-industrial countries like Argentina, Brazil, and Mexico and the East European countries, and a number of less industrialized countries have been heading in the same direction.

One of the major purposes of the study is to determine the effect of industrial and trade policies which accompanied import substitution on the incentive to export and the cost of foreign exchange earned by export. Consequently, considerable attention is given to the operation of these policies and the incentives which they created.[1] This emphasis reflects a judgment that government policies

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[1] In selection of material an attempt has been made to complement and support the recent analyses of trade and industrial policies by

were responsible for a phenomenal waste of resources measured by the difference between the actual productivity of industrial investment and what could have been achieved under a more efficient set of policies.

The study deals with three aspects of the transition from import substitution to export: (i) policies of the Indian government which discriminated between production of engineering goods for the domestic market and export; (ii) policies of Indian government which increased the domestic resource cost of foreign exchange earned by export of engineering goods; and (iii) factors other than policies of the Indian government which discriminated against production for export compared to the domestic market. These concerns are elaborated below.

(i) A basic feature of policies to promote industrialization was a bias toward self-sufficiency in production or toward saving rather than earning foreign exchange. The most important aspect of discrimination against export was a higher implicit exchange rate on production for the domestic market than export within each industry as a result of protection and overvaluation. In certain cases, mainly steel and aluminum, the government also imposed restrictive export licensing.

This discrimination was a key factor limiting exports of engineering goods, which consequently depended heavily on excess capacity and

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Jagdish N. Bhagwati and Padma Desai (India: Planning for Industrialization) and by Ian Little, Tibor Scitovsky, and Maurice Scott (Industry and Trade in Some Developing Countries) with a minimum of duplication. Familiarity with the analyses in these works, Bhagwati and Desai, 1970, and Little *et al.*, 1970, is consequently assumed in this study.

export subsidies. The study considers in detail the supply factors which contributed to the expansion of exports of engineering goods from India in the late 1960s, particularly excess capacity and export promotion policies which reduced the gap between implicit exchange rates on production for the domestic market and for export.

Discrimination against export explains the fact that no firm was established or substantially expanded to produce engineering goods mainly for export during the period of planned industrial development and the fact that firms seldom modified product designs or invested in export marketing to increase the profitability of export. Had there been no discrimination between production for export and for the domestic market, firms might have achieved greater economies of scale and engaged in more competitive activities like designing. Thus, government policies contributed to higher costs of production in small firms limited to the domestic market and to lower prices realized on exports because of design and marketing problems, and consequently were responsible for higher domestic resource costs of foreign exchange earned by export.

(ii) An important weakness of the industrial and trade policies designed to encourage import substitution was that they increased the domestic resource cost of foreign exchange earned by exports of engineering goods. Government policies created an inefficient industrial structure in terms of scale of production, degree of vertical integration, lack of standardization, obsolete designs, etc. This emphasizes the mistake involved in following inward-oriented policies to achieve industrialization and considering comparative advantage, efficiency, and export only at a later stage.

One important area of policy which had this effect was import licensing and other bureaucratic controls over the supply of tradable inputs. These controls were responsible for higher costs of both current inputs and value added. Policies also reduced the incentive to produce goods to designs which were efficient for export, and export promotion policies were themselves a source of inefficiency.

(iii) Finally, the transition from import substitution to export was limited by several factors, other than policies of the Indian government, which discriminated against production for export. These included transport costs and delivery times, trade barriers abroad, export marketing problems which forced Indian exporters to sell at prices below those received by competitors from advanced countries, and foreign collaboration agreements which discriminated against exports in royalty rates or prohibited export to all but a few countries. Even in these areas government policies played a role by increasing delivery times, limiting the incentive and ability of firms to invest in export marketing, and permitting export restrictions in collaboration agreements.

To justify the critical evaluation which this study makes of Indian trade and industrial policies, it is important to emphasize that India had policy alternatives which would not have required a sacrifice of the level of industrialization. First, the lack of efficiency criteria in bureaucratic decision-making and the inefficient incentives for decentralized decisions created by economic policies cannot be justified on the grounds that they contributed to industrialization or exports: the same levels of domestic value added or employment in the engineering industries and of net foreign exchange earned by export of engineering goods could have been achieved at a lower cost by efficient policies.

Second, as Bhagwati and Desai have argued, India could have relied more on market mechanisms rather than bureautic controls in allocation of resources:

> When Indian planning efforts began in 1950/1 and especially by 1956/7, India had already experienced nearly a century of industrial expansion, growth of industrial entrepreneurship, social overheads, and financial institutions..The sheer growth in size of the modern, factory sector was significant. At the same time, India had inherited from the British an efficient civil service and traditions of responsible administration. There was thus a remarkable endownment of agents and institutions for making rational economic decisions in response to a set of economic policies. India could thus have planned for its further industrialization by exploiting these advantages, and was not constrained in quite the way that several developing countries (only beginning to embark on their industrialization) happens to be.[1]

This point is supported in Chapter II.B by an examination of the development of the engineering industries prior to the second world war.

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[1]Bhagwati and Desai, 1970, p. 7, and Chapters 2 - 3.

Third, the experience of the small East Asian countries, including Hong Kong, Taiwan, and South Korea, provides evidence concerning the feasibility of an alternative strategy of industrialization involving reliance on market mechanisms for allocation of resources, liberal access to tradable inputs, and little or no discrimination between production for the domestic market and export (or even preferences for exports).[1]

While the Indian government liberalized a number of economic policies between 1964 and 1970, each of these steps was very incomplete and the general program of liberalization was short-lived. By 1969-70 there was little evidence of economic liberalism in India, and the substance of Bhagwati and Desai's critique for the period to 1966 was still applicable.

[1]Export-oriented industrialization in the small East Asian countries is discussed in Frankena, 1970.

CHAPTER II

PRODUCTION AND EXPORT OF ENGINEERING GOODS

This chapter outlines the major features of Indian production and exports of engineering goods. One purpose is to provide descriptive data on the industries and exports analyzed in the succeeding chapters. Another is to show by means of an historical sketch of the development of the engineering industries prior to planning that in a period of moderate tariff protection and reliance on market mechanisms entrepreneurs and other factors were induced into production of engineering goods for the domestic market and, in the case of pig iron, for export. This supports Bhagwati and Desai's argument (cited in Chapter I) concerning the existence of alternatives to detailed direct government controls and their related sketch for the manufacturing sector as a whole: there is every reason to believe that industrial development in the 1950s and 1960s could have been carried out with substantially more reliance on market mechanisms in trade and industrial policies.

A. Industrial Coverage of Study

This study covers iron and steel, engineering goods, and tires. Iron and steel, the 24 engineering goods with exports of \$1.3 million or more in any year between 1966-67 and 1969-70, and tires were selected for detailed study, while other engineering goods were covered less systematically. To facilitate presentation of data, several tables with an industrial breakdown are confined to the 26 industries studied in detail and present data for these industries (sometimes with omissions) in the order shown in Table II.1.

TABLE II-1

Twenty-Six Industries Selected for Detailed Study

A. Iron and Steel

1. Iron and steel

B. Engineering Goods

2. Steel pipes, tubes, and fittings
3. Bright steel bars and shaftings
4. Iron and steel castings
5. Steel wire ropes
6. Electric wires and cables
7. Hand, small, and cutting tools
8. Aluminum ingots, sheets, and foils
9. Transmission line towers
10. Fabricated steel structures other than (9)
11. Railway wagons
12. Cotton textile machinery and parts
13. Machine tools
14. Electric machinery
15. Commercial vehicles and jeeps
16. Dry and storage batteries
17. Radios and components
18. Data processing machines
19. Bicycles
20. Stationary diesel engines and parts
21. Automobile parts
22. Vehicular engines and engine parts
23. Bicycle parts
24. Electric fans and parts
25. Builders' hardware including locks

C. Tires

26. Tires and tubes

B. Development of the Engineering Industries Prior to Planning

A very large majority of capacity in the iron and steel, engineering, and tire industries at the end of the 1960s was the result of net investment after the introduction of planning in 1951. Nevertheless, India entered the planning period with significant capacity and entrepreneurship in these industries, especially in steel.[1]

1. Workshops: 1850-1910

The initial phase in the establishment of engineering industries in India occurred between the 1850s and 1910, particularly in the last two decades of this period. Although there were firms manufacturing engineering goods as early as the 1830s,[2] the first significant developments were in response to demands from the cotton and jute textile industries, railways, and coal mining, all of which began in the 1850s. The engineering industries in this period were limited to repair and maintenance workshops and foundries serving equipment users in non-engineering manufacturing, mining, and transportation industries, above all the railways; constructional engineering and structural fabrication; production of iron; government ordnance factories; and a limited amount of cottage production of simple goods, including domestic utensils and agricultural implements.

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[1]For an account of the development of engineering industries in Brazil, see Leff, 1968.

[2]By the 1830s there were iron works (which failed), structural fabricators, foundries, an ordnance factory, shipyards (including production of steamships), and production of screws and clocks.

These activities, particularly those catering to the railways, continued to account for a major share of engineering employment and production throughout the period to the second world war. (See Table II-2).

The limited scope of the developments in this period is indicated by Gadgil, who reports that before the first world war "almost every mechanical appliance used in the country, down to the many simple agricultural implements used on plantations, had to be imported,"[1] and by Myers and Kannappan, who report that during the first world war "the almost complete lack of organized industry in light engineering meant a trickle of inferior replacements to industries subject to heavy wartime strains."[2]

2. Factory Production

Factory production of iron and steel and engineering goods began, with the exception of the Bengal Iron Company established in 1874, in 1907-1911 when the first successful steel mill was established by Tata Iron and Steel (TISCO). The growth of the iron and steel industry is shown in Table II-3.

The first world war increased the demand for Indian iron and steel and engineering goods, but interruption of the supply of imported

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[1]Gadgil, 4th ed., 1942, p. 190.

[2]Myers and Kannappan, 1970, p. 39. Buchanan, (1934) 1966, p. 140, states that in the first world war "a few concerns, especially in the neighborhood of Calcutta, furnished the principal machinery for several jute mills," but there is no other evidence of this.

TABLE II-2

Factory Employment in Basic Metals and Engineering Industries, 1899-1961

(000 workers)

Industry	1899	1909	1919	1929	1939	1949	1961
Railway workshops	52[a]	93	134	136	104	108	151
General and electrical engineering	n.a.	n.a.	30	53	58	136	n.a.
Iron and steel	17[b]	24[b]	21	32	41	60	148
Ordnance	13[a]	15	24	22	31	84	n.a.

Through 1939 data are for British India.

a: 1905
b: includes brass foundries
n.a.: not available

Source: Myers and Kannappan, 1970, p. 42. Myers and Kannappan note a number of reservations concerning these data.

The 1911 Census of India reported 50 machinery and engineering workshops employing 23,000, 36 railway workshops employing 99,000, and iron foundries employing between 10,000 and 20,000. Ten of the machinery and engineering workshops and none of the railway workshops were owned and managed by Indians. (Bagchi, 1970, p. 249.)

The 1929 Industrial Census of larger establishments reported:

	Number of Establishments	Employees (000 workers)
Railway workshops	154	142
General engineering	306	50
Iron and steel	6	37
Ordnance	19	24
Shipbuilding and engineering	24	22

(Gadgil, 4th ed., 1942, p. 274.)

TABLE II-3

Production, Import, and Export of Steel, 1907 to 1969-70

(000 tons)

Year	Production		Steel	Steel
	Pig Iron[a]	Steel[b]	Imports	Exports
1907	50[c]	0	n.a.	0
1913-14	n.a.	49[d]	1215	1
1916-17	267[e]	99	n.a.	n.a.
1920-21	n.a.	122	770	1
1929-30	1376	425	968	1
1938-39	1576	738	264	24
1945-46	n.a.	987	178	1
1950-51	1690	1040	344	9
1965-66	7093	4509	872	150
1969-70	7383	5048	390	794

a: includes pig iron used to produce steel
b: finished steel
c: Bengal Iron Company
d: TISCO's initial capacity was 160,000 tons of pig iron and 100,000 tons of steel per year
e: Bengal Iron Company, 120, TISCO, 147.
n.a.: not available

Sources:
Pig Iron:
1907 to 1938-39: Gadgil, 4th ed., 1942, pp. xvi, 251-52.
1950-51: EE, R&S, Vol. 21-3, p. 146.
1965-66 to 1969-70: IEA, HS, 1969-70, p. 165.
Steel:
1907 to 1945-46: Johnson, 1966, pp. 14-15, 18, except 1916-17: Gadgil, 4th ed., 1942, pp. xvi, 251-52.
1950-51 to 1969-70: same as pig iron.

capital goods limited ability to expand capacity. The steel, ordnance, and shipbuilding industries were expanded, and there were some exports of military supplies.

In the post-war boom TISCO was expanded and two new companies were set up to produce pig iron, largely for export to Japan. The latter were the only significant investments ever made in India for production of iron and steel or engineering goods for export. Production of railway wagons began in 1918, and between 1920 and 1923 companies began production of agricultural implements and machinery, tinplate, and copper cables. While production data are not available, Table II-4 provides a list of companies involved in these and subsequent developments before the second world war.[1]

3. Free Trade and Discrimination Against Local Manufacturing

Until 1924-1930, the government of British India did not support local manufacturing. It not only adhered to a policy of free trade, refusing to give even temporary protection to infant industries, but generally discriminated in government procurement in favor of British suppliers against local ones. The furthest the government went to support local manufacturing prior to the 1920s was to guarantee purchases

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[1]Table II-4 does not include ordnance or small scale production, largely in the Punjab: agricultural implements (1920s), sewing machine parts (1925), machine tools including cone-pulley lathes and shapers (1930s), cycle parts and accessories, power-driven sugar-cane mills. Buchanan stated in 1934 that "textile machinery, especially jute machinery, is being constructed, and army factories turn out a variety of military equipment." (Buchanan, (1934) 1966, p. 141.) However, Myers and Kannappan report that production of textile machinery did not start until the second world war. (Myers and Kannappan, 1970, p. 39.)

TABLE II-4

Firms Established to Produce Iron and Steel, Engineering Goods, and Tires Before the Second World War

Product	Date Estab.	Date Prod.	Company[a]	Affiliation	Whether in Production in late 1960s
1. Iron and Steel					
Iron	1874	1875	Bengal Iron Company (later IISCO)	Burn, British agency, (later Martin Burn)	Yes
	1918	1922	Indian Iron and Steel (IISCO)	Martin Burn, British agency	Yes
	1918	1923	Mysore Iron and Steel	State government	Yes
Steel	1907	1911	Tata Iron and Steel (TISCO)	Tata	Yes
		1936	Mysore Iron and Steel	State government	Yes
		1939	IISCO	Martin Burn, British agency	Yes
Steel re-rolling	1936		J.K. Iron and Steel	Singhania	Yes
	1937[b]	1929	Mukand Iron and Steel	Bajaj	Yes
Tinplate	1922	1923	Tinplate Company of India	Shaw Wallace, British agency; Burmah Oil, U.K.; perhaps Tata	Yes
2. Steel pipes and tubes		1931	Indian Hume Pipe	Walchand	Yes
4. Iron and steel castings					
Iron	1874		Bengal Iron Company (later IISCO)	Burn, British agency (later Martin Burn)	Yes
			Many other foundries		
Steel		1928	Bhartia Electric Steel	Hukum Chand	Yes
	1936		J.K. Iron and Steel	Singhania	Yes
	1937[b]	1929	Mukand Iron and Steel	Bajaj	Yes

TABLE II-4 (continued)

Product	Date Estab.	Date Prod.[d]	Company[a]	Affiliation	Whether in Production in late 1960s
6. Electric wires and cables					
Copper cables	1920	1923	Indian Cable	BICC, U.K.	Yes
7. Hand, small and cutting tools					
Small tools	1937		Indian Tool Manufacturers	Birla	Yes
8. Aluminum ingots, sheets, and foils					
Ingots	1938	1943	Indian Aluminium	Alcan, Canada	Yes
	1937	1944	Aluminium Corp. of India	Singhania	Yes
Sheets	1938	1941	Indian Aluminium	Alcan, Canada	Yes
10. Fabricated steel structures	1774/ 1895		Burn	Burn, British agency (later Martin Burn)	Yes
	1788		Jessop	Independent	Yes
	1884		Alcock, Ashdown	Turner Morrison, British agency	Yes
	1930		Braithwaite	Jardine Henderson, British agency	Yes
			Many other firms		
11. Railway wagons	1918		Indian Standard Wagon	Martin Burn, British agency	Yes
		1936	Jessop	Independent	Yes
12. Cotton textile machinery	1939	1943	Textile Machinery Co. (TEXMACO)	Birla	Yes
13. Machine Tools		1935	Kirloskar Brothers/Mysore Kirloskar	Kirloskar	Yes
		1937	Cooper Engineering	Dhanjishah B. Cooper (became Walchand 1940)	Yes
	1937		India Machinery	Indian	n.a.

TABLE II-4 (continued)

Product	Date Estab.	Date Prod.	Company[a]	Affiliation	Whether in Production in late 1960s
14. Electric machinery					
Transformers		1936	Government Electric Factory	Indian	Yes
Electric motors	1937		Crompton Greaves	Greaves; Crompton Parkinson, U.K.	Yes
15. Commercial vehicles and jeeps					
	1926		Ford (assembly only)	Ford, U.S.	No (closed 1953)
			General Motors (assembly only)	G.M., U.S.	No (closed 1953)
16. Dry and storage batteries					
Dry		1926	Union Carbide	Union Carbide, U.S.	Yes
	1939		Estrela Batteries	Indian	Yes
Storage	1931		Tropical Accumulators	n.a.	n.a.
19. Bicycles	1939		Hind Cycles	Birla	Yes
20. Stationary diesel engines		1933[c]	Cooper Engineering	Dhanjishah B. Cooper (became Walchand 1940)	Yes
	1937	1939	Ruston and Hornsby	Greaves; Ruston and Hornsby, U.K.	Yes
24. Electric fans	1924		Indian Electric Works	n.a.	n.a.
	1935		Jay Engineering	Shri Ram	Yes
	1937		Crompton Greaves	Greaves; Crompton Parkinson, U.K.	Yes
25. Builders' hardware	1920s		Unspecified producer of galvanized hardware	n.a.	n.a.
26. Tires		1936	Dunlop	Dunlop, U.K.	Yes
		1939	Firestone	Firestone, U.S.	Yes
27. Other engineering industries					
Unspecified	1896		Godrej and Boyce	Godrej	Yes
Spare parts	1917		Britannia Engineering	Foreign (later Indian)	Yes
Agricultural implements	1920	1910[d]	Kirloskar Brothers	Kirloskar	Yes

TABLE II-4 (continued)

Product	Date Estab.	Date Prod.	Company[a]	Affiliation	Whether in Production in late 1960s
Agricultural implements	1922		Cooper Engineering	Dhanjishah B. Cooper (became Walchand 1940)	Yes
Sugar cane crushers		1920s	Kirloskar Brothers	Kirloskar	Yes
		1920s	Cooper Engineering	Dhanjishah B. Cooper (became Walchand 1940)	Yes
Power-driven pumps		1926	Kirloskar Brothers	Kirloskar	Yes
		1935	Jyoti	Amin	Yes
		1939	Ruston and Hornsby	Greaves; Ruston and Hornsby, U.K.	Yes
Bolts and nuts	1922		Guest, Keen, Williams	Henry Williams (taken over by Guest, Keen, Nettlefold, U.K. in 1931)	Yes
Wire and wire nails	1924 or 1935		Indian Steel and Wire Products	n.a.	Yes
Enamelled ironware	1920s		Enamelled Ironwares	n.a.	n.a.
Ships		by 1927	Unspecified	n.a.	n.a.
Copper ingot	1924	1929	Indian Copper Corp.	U.K.	Yes
Aluminum utensils	1929		Jeevanlal	Alcan, Canada (later Indian)	Yes
Tinplate containers	1933		Metal Box	Metal Box, U.K.	Yes
	1939		Modi Industries	Modi	Yes
Sewing machines	1935		Jay Engineering	Shri Ram	Yes
Electric lamp bulbs		1936	Mysore Lamp Works	n.a.	Yes
	1938	1941	Bajaj Electricals	Bajaj	Yes
		1939	Electric Lamp Manufacturers	AEI, U.K.	Yes
Dairy machinery	1938		Larsen and Toubro	Two Danish engineers	Yes

Notes to Table II-4:

a: Company names are those used after the Second World War. In several cases these differ from the names used when the companies were established.

b: Manufacturing began earlier under different management.

c: Produced with technical collaboration of Duncan Stratton, U.K.

d: Kirloskar began production of agricultural implements in a workshop before establishing Kirloskar Brothers.

n.a.: not available

from a few firms at prices equal to those of competing imports.[1]

According to Bagchi, the government followed a buy-British policy for procurement in 1900-1930:

> The government of India continued to buy only British-made iron and steel products for all purposes; the railways also...would buy, with rare and insignificant exceptions, railway materials made of iron and steel only from the U.K....The policy had the effect of stunting the growth of railway industries in India, even though railway workshops were set up by all the important railway lines.[2]

Kidron reports that:

> An early attempt at locomotive production foundered when the government and the Railway Board decided to continue their patronage of British manufacturing after the First World War. Plans for shipbuilding and motor-car production took the same course.[3]

Gadgil states that "complaints were made that during the years 1924 to 1927 some orders (for railway wagons) were unnecessarily placed abroad by Indian railways."[4]

Moreover, there was government and institutional discrimination

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[1]Guarantees included one in the 1890s to the Bengal Iron Company for iron and iron castings at 5 percent <u>below</u> the price of imports; one to TISCO when it was set up for steel rails at the price of imports; and one to Indian Standard Wagon in 1918-1924 for railway wagons if prices did not exceed those of imports. It also subsidized an abortive attempt to produce steel at Bengal Iron Company in 1903. (Buchanan, (1934) 1966, pp. 281, 285; Johnson, 1966, p. 12; Gadgil, 4th ed., 1942, p. 259.)

[2]Bagchi, 1970, p. 227. Kidron states that "railway building had little 'spread effect': permission to buy government stores in India came only in 1928 and preference for local manufacturers in 1931." (Kidron, 1965, p. 14.)

[3]Kidron, 1965, p. 15.

[4]Gadgil, 4th ed., 1942, p. 259.

in favor of foreign and against Indian enterprise in India.[1] According to Bagchi, discussing the period 1900-1930:

> One important industry where government patronage was crucial and where Indians were rarely to be found was the engineering industry. Large government contracts for construction and engineering were rarely if ever given to Indian firms. Since engineering firms in a poor economy with little industry had to depend mainly on contracts placed by public authorities, there were practically no large Indian firms.[2]
>
> (Indian) entry into modern industry was barred by European control over foreign trade, wholesale trade, and finance. It required a loosening of this grip--facilitated both by the First World War and the growing importance of internal trade in rela- to external trade which came about in the 1920s and 1930s--before Indian businessmen could effectively challenge the Europeans in the industrial field.[3]

4. Protection: 1924-1939

In 1924 the government abandoned free trade and finally, between 1927 and 1931, shifted from discrimination in favor of British suppliers to discrimination in favor of local suppliers.

Actually, the movement away from free trade began somewhat before this. Buchanan reports that "the general (revenue) tariff was raised by degrees from five percent in 1916 to 15 percent in 1922... This gave real protection to a number of industries."[4] However:

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[1]See Kidron, 1965, pp. 12-16.

[2]Bagchi, 1970, p. 226.

[3]Bagchi, 1970, p. 241. The rate of British investment in India declined from the beginning of the first world war and become negative in 1931-32 to 1936-37. (Kidron, 1965, p. 10.)

[4]Buchanan, (1934) 1966, pp. 163-64. According to GOI, DPI, (annual), the general revenue tariff on engineering goods was 10 percent in 1928 and 25 percent in 1933.

> Until 1923, the Indian fiscal system, although it gave a certain amount of protection to Indian industries, did so only in an unscientific and haphazard manner, since the tariff had been devised for purely revenue requirements.[1]

The major steps taken by the government after 1924 to increase effective protection of local production of steel and engineering goods were:

(i) Protective tariffs (1924-1939): In 1924 the import duty on categories of steel produced by TISCO was increased from the "revenue" rate of 10 percent to the "protective" rate of roughly 15 to 33 1/3 percent.[2] The duty on "fabricated steel," which appears to have been defined as engineering goods made from protected indigenous steel, was raised from 10 to 25 percent. These duties were increased in 1927 and were subsequently adjusted a number of times.

Tariff protection was given to other engineering goods on a selective basis: wire and wire nails were protected until 1928 and in 1932-1934 but not during 1928-1932; railway wagons and ships were not protected at least until 1931; galvanized iron and steel sheets and pipes were protected in 1931-33, nuts and bolts and railway track materials in 1931, and tinplate at some point.

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[1] GOI, DPI, 1926-27, p. 68.

[2] Kidron, 1965, p. 13, states that the tariff on steel was 33 1/3 percent. Buchanan reports that it was 15 to 25 percent and that "by 1931 most iron and steel products, including pig iron...were protected to the extent of 15 5/8 to 21 1/4 percent _ad valorem_ (against British imports), plus an addition for non-British goods." (Buchanan, (1934) 1966, p. 286.) The 1924 tariff was set at a specific rate of Rs 30 to Rs 40 per ton (e.g. Rs 40 on steel bars) compared to a price of Rs 110 per ton (plus a subsidy of Rs 36) at which the government agreed in 1926 to purchase rails from TISCO.

(ii) Cash subsidies (1925-1928): Cash subsidies were given on steel and railway wagons produced in India. State governments also absorbed losses on wire and wire nails and on iron produced by Mysore Iron and Steel.

(iii) Duty-free access to imported inputs (from 1927): In 1927 the government removed the revenue duty on zinc used in production of galvanized hardware and on certain classes of machinery and mill stores used in production of cotton textiles. In the 1930s certain commodities were "admitted either free of duty or at exceptionally low rates, e.g. agricultural implements, power machinery, certain classes of railway material," and as of 1933 the regular 25 percent revenue duty on machinery was reduced to 0-10 percent on certain items "in the interests of agriculture and (user) industries."[1]

(iv) Local preferences in procurement (from 1927): In 1926 the government agreed to purchase steel rails from TISCO at a specified price during 1927-1934. In 1928 the government instructed the railways to restrict purchases of wagons and components to India, and Gadgil reports that in the 1930s it was "accepted that distinct preference should be given (in government procurement) to articles of indigenous manufacture as long as the price is 'reasonable.'"[2]

These measures indicate a complex structure of effective protection, with rates frequently changed and discrimination among products.

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[1]GOI, DPI, 1933-34.

[2]Gadgil, 4th ed., 1942, p. 302.

The interesting features of the protection were:

(i) There was almost exclusive reliance on price mechanisms, i.e. tariffs, subsidies, and purchase contracts and preferences at prices set with reference to those of imports. Local preference for procurement of railway wagons after 1928 was the only case found where there was not price competition with imports in spite of protection.

(ii) Except in the case of steel, which was the major beneficiary of protection, the level of effective protection was moderate compared to the level reached under quantitative restrictions after 1950. Much of the nominal protection given was to offset protection of steel used as an input.

(iii) Protection was not automatic or universal. A number of engineering industries like electric cables were denied protection, and protection was withdrawn in other cases like wire and wire nails. It appears that most items of machinery like pumps, stationary diesel engines, and machine tools were not protected apart from revenue tariffs:

> The production of centrifugal pumps appears to have been established in the year 1925...The pioneering firms had to struggle hard to exist in the face of heavy competition against imported ones which were being freely allowed to be imported.[1]

5. Entrepreneurship

In spite of the limited level of effective protection, and even discrimination against local manufacturing and Indian entrepreneurship until about 1930, a number of industries were established before the

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[1]GOI, DGTD, 1965, p. 18.

second world war: iron and steel, 16 of the 24 engineering industries subject to detailed examination in the present study, and tires. Moreover, except for the central government, all the major sources of entrepreneurship in the planning period were involved in these early developments:

(i) British managing agencies: Bird, Martin Burn, Jardine Henderson, Shaw Wallace, and Turner Morrison. The first two of these were among the 20 largest industrial houses in India in the late 1960s and the other three were among the next 53 industrial houses.[1]

(ii) Indian industrial houses: Birla, Shri Ram, Singhania, Tata, Walchand, Amin, Bajaj, Kirloskar, Modi. The first five of these were among the 20 largest industrial houses in India in the late 1960s and the other four were among the next 53 industrial houses.

(iii) Foreign companies: AEI, Alcan, British Insulated Callender's Cables, Crompton Parkinson, Dunlop, Firestone, Ford, GM, Guest Keen Nettlefolds, Metal Box, Union Carbide.

Furthermore, almost all the companies listed in Table II-4 were large in the late 1960s, and many of them were among the top ones listed in Table II-10. Moreover, a substantial proportion of the largest private sector companies of the late 1960s listed in Table II-10 began production prior to the second world war.

It can be concluded that while the economic policies of the planning period had a major impact on the development of the iron and steel,

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[1]The large industrial houses are listed in GOI, MIDITCA, 1969, Appendix 2.

engineering, and tire industries, detailed direct government intervention in the economy was not necessary to achieve industrial development in the 1950s and 1960s. India already had experience in these industries under a regime of market mechanisms.

6. Production Costs and Exports of Iron and Steel

The Bengal Iron Company and IISCO exported a large amount of pig iron during the interwar period, mainly in the 1920s to Japan and the UK,[4] and "the Tariff Board wrote in 1924 that India 'already produces pig iron more cheaply than any other country in the world.'"[1] In the early 1930s Buchanan reported that "pig iron and coarse (iron) castings, such as sewer and water piping, are produced cheaply."[2] Protection for steel was justified in terms of infant industry considerations and later foreign dumping; it is reported that "the Tariff Board found that...eventually the (steel) industry would be able to exist without protection."[3] Johnson states that:

> By 1939 TISCO's mill, one of the largest steel mills in the British Empire, was also one of the lowest cost producers in the world...India's...production at relatively low costs

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[1]Gadgil, 4th ed., 1942, p. 255.

[2]Buchanan, (1934) 1966, p. 291; see also p. 284.

[3]Gadgil, 4th ed., p. 253. In 1934 Buchanan reported that "steel manufacture is still far more expensive than elsewhere...Whether cheap materials and labor can overcome lack of skill is not yet demonstrated ...The hopes of the Tariff Board for lower costs of production were not realized and in 1930 and 1931 further favors were requested and received...This appears, however, to have been due to the fall in demand." (Buchanan, (1934) 1966, pp. 291-92.)

[4]After 1932, Indian pig iron and semi-finished steel were admitted duty-free into the U.K.

> is very good evidence that India possesses a comparative advantage in the production of steel.[1]

In the 1930s, because of excess capacity TISCO exported semi-finished steel under British tariff preferences.[2]

7. Engineering Industries in 1950

Like the first world war but on a larger scale, the second world war stimulated expansion and diversification of the engineering industries,[3] although progress was again constrained by the limited supply of capital goods. Imports were liberalized after the war and production of engineering goods declined temporarily, but starting in 1947 tariffs and import licensing were used to protect domestic industry.

Table II-5 presents data for the basic metals and engineering industries in 1946, the first year for which output data are available. Because of problems valuing output, however, the employment data are probably a more useful measure of the status of the industries. They can be compared with the data in Tables II-2 and II-7.

Table II-6 presents more useful production data for selected industries in 1950-51, immediately before the first plan, and 1955-56, immediately before the second. The data reveal that most of these

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[1] Johnson, 1966, pp. 12-13.

[2] Indian exports and re-exports of steel excluding pig iron totaled 150,000 tons in 1930-31 to 1938-39 (Johnson, 1966, pp. 14-15.)

[3] For example, GOI, MC, 1947, reports that production of machine tools expanded from about 100 machines manufactured by 4 firms in 1939 to 4,100 machines manufactured by 22 "graded" firms in 1946 plus 4,700 machines manufactured by small, "ungraded" firms, mainly in the Punjab. Grading was based on quality standards for government procurement.

TABLE II-5

Production of Basic Metals and Engineering Goods in 1946

Industry	Number of Factories	Employment (000 workers)	Output (Rs. mil.)	Value Added (Rs. mil.)
Iron and steel, smelting, rolling, and re-rolling	107	59.1	339.0	160.2
General engineering, and electrical engineering (n.e.s.)	1053	100.6	270.5	113.2
Aluminum, copper, brass	133	17.4	131.1	47.8
Electric fans	34	4.5	15.6	7.9
Bicycles	5	1.6	4.4	2.3
Electric lamps	6	0.6	3.5	0.9
Producer gas plants	5	0.3	1.0	0.6
Sewing machines	3	0.7	1.0	0.5
Total	1346	184.6	766.1	333.4

n.e.s.: not elsewhere specified.

Note: Rupees in current prices. Exchange rate in 1946 was Rs. 3.32 = U.S.$1.

Coverage of data: Establishments employing 20 or more workers in any manufacturing process carried on with power.

Source: GOI, Census of Manufacturing Industries (1946), cited by Bhagwati and Desai, 1970, pp. 41-42.

TABLE II-6

Production of Iron and Steel, Engineering Goods, and Tires, 1950-51 and 1955-56

	Units	1950-51 Units	1950-51 Ratio to late 1960s peak	1955-56 Units	1955-56 Ratio to late 1960s peak	Late 1960s peak (1965-66 to 1969-70) Units
1. Iron and Steel						
Pig iron	mil.ton	1.69	23	1.95	26	7.39
Pig iron for sale	mil.ton	0.4	26	0.4	26	1.54
Ingot steel	mil.ton	1.47	22	1.73	26	6.60
Finished steel	mil.ton	1.04	21	1.30	26	5.05
2. Steel pipes and tubes	000 ton	n.a.		30[d]	11	280
3. Bright steel bars and shaftings	000 ton	n.a.		0.3	1	42.1
4. Iron and steel castings						
Steel	000 ton	n.a.		15	27	56
5. Steel wire ropes	000 ton	n.a.		3.0[d]	17	17.6
6. Electric wires and cables						
Aluminum conductors	000 ton	1.7	2	8.2	11	72.5
Bare copper conductors	000 ton	5.0	161	8.6	277	3.1
Rubber and plastic insulated	mil.mtr	n.a.		79	20	399
Paper insulated	0 km	0	0	0	0	478
7. Hand, small, and cutting tools						
Hacksaw blades	mil.nos.	n.a.		1.3	4	29.7
Steel files	mil.nos.	n.a.		0.5	4	12.9
Tungsten carbide	ton	n.a.		0	0	118
Twist drills	mil.nos.	n.a.		0.7	8	9.2

TABLE II-6 (continued)

	Units	1950-51 Units	1950-51 Ratio to late 1960s peak	1955-56 Units	1955-56 Ratio to late 1960s peak	Late 1960s peak (1965-66 to 1969-70) Units
8. Aluminum ingots, sheets, and foils						
Ingots	000 ton	3.5	3	7.4	5	135.0
Sheets and circles	000 ton	4.3[a]	11	10.2	27	38.1
Foils	000 ton	n.a.		1.3	29	4.5
9 & 10. Fabricated steel structures	000 ton	n.a.		91	34	271
11. Railway wagons	000 nos.	2.9	11	15.3	58	26.5
12. Cotton textile machinery	Rs.mil.	n.a.		54	25	216
Looms	000 nos.	1.9	56	2.9	85	3.4
Ring spinning frames	000 nos.	0.26	12	0.86	41	2.11
Carding Engines	000 nos.	n.a.		0.65	38	1.71
13. Machine tools[e]	Rs.mil.	3	1	8 to 15	2 to 4	354
14. Electric machinery						
Power transformers	mil KVA	0.18	3	0.63	12	5.41
Electric motors	000 h.p.	99	4	272	12	2291
Switchgear	Rs.mil.	n.a.		4	2	170[b]
15. Commercial vehicles and jeeps						
Commercial vehicles	000 nos.	1.9	5	9.2	26	35.9
Jeeps	000 nos.	0	0	2.9	28	10.4
16. Dry and storage batteries						
Dry	mil. nos.	137	29	161	34	469
Storage	000 nos.	200	17	235	20	1184
17. Radios	000 nos.	54	3	102	6	1748
18. Data processing machines	nos.	0	0	0	0	3000
19. Bicycles	mil.nos.	0.10	5	0.51	26	1.97
20. Stationary diesel engines	000 nos.	6	4	10	7	143

TABLE II-6 (continued)

	Units	1950-51 Units	1950-51 Ratio to late 1960s peak	1955-56 Units	1955-56 Ratio to late 1960s peak	Late 1960s peak (1965-66 to 1969-70) Units
21. Automobile parts	Rs. mil.	n.a.		20	2	960
22. Vehicular engines	000 nos.	0	0	3.4[a]	42	8.1
23. Bicycle parts	Rs. mil.	n.a.		14	12	114
24. Electric fans	mil.nos.	0.20	13	0.29	19	1.55
25. Building hardware	000 ton	n.a.		3.5	38	9.2
26. Tires and tubes						
Auto tires	mil.nos.	0.86	35	0.88	35	2.48[c]
Bicycle tires	mil.nos.	3.95	18	5.75	26	22.34[c]
Auto tubes	mil.nos.	0.53	19	0.79	29	2.75[c]

a: 1952
b: 1965, not necessarily peak
c: 1967, not necessarily peak
d: Capacity, not production
e: Includes machine tool accessories and related items as well as metal-working machine tools and hence is more inclusive than the definition of machine tools in Table II-9.
n.a.: not available.

Source: GOI, MCI, 1962b and 1962c; GOI, PC, and GOI, TC, publications listed in bibliography.

industries were started by 1950. The most important exceptions were commercial vehicles (until about 1953 local operations were limited to assembly), vehicular engines, and automobile parts. Although Table II-6 indicates a wide range among industries in the ratio of output in 1950-51 to the peak achieved in the late 1960s, Tables II-5, II-7, and II-8 indicate that aggregate employment and output in basic metals and engineering industries in 1950-51 were about 15 percent of the levels in 1966.

According to a RBI study, of the 495 private sector companies in basic metals and engineering industries operating in 1964 with foreign technical or financial collaboration, 100 or 20 percent were incorporated by the end of 1947.[1]

The conclusion one can draw from these data is that, while there was a great expansion and diversification during 1951-1966, India began the planning period with a substantial base in the iron and steel, engineering, and tire industries.

C. Government Intervention in Industrialization after 1950

Government planning of economic development began in 1951 with a series of five-year plans. The following features were characteristic of the planning and promotion of industrial development, particularly after the first plan and the initial foreign exchange crisis in 1956-58. They had a major impact on the incentive to export engineering goods and

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[1]GOI, RBI, 1968, pp. 12, 41, 69. For coverage of data see Table II-11.

the cost of foreign exchange earned.[1]

(i) There was a strong, explicit bias toward autarchic development and movement toward self-sufficiency in production, with discrimination in direct controls and implicit exchange rates in favor of import substitution and against exports.

(ii) There was a strong bias toward allocation of resources to manufacturing, particularly basic metals, capital goods, and chemical industries, rather than agriculture or consumer goods, and there was a bias toward investment rather than current production.

(iii) Political power and other goals constrained efficient allocation, with biases toward regional balance and small scale and against majority foreign ownership. There was substantial investment in government sector companies in steel and engineering industries, particularly heavy capital goods.

(iv) There was a tendency to plan total investment at a level beyond feasible domestic savings and net foreign capital inflow, to underestimate foreign exchange requirements of industrial investment and production as well as other uses like food and military supplies, and to overestimate the rate of growth. High ex-ante absorption discouraged exports and led to depletion of foreign exchange reserves, accumulation of a large external debt, and after 1963-64 inflation. Plan targets could

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[1] See Bhagwati and Desai, 1970, for a full discussion. See also GOI, PC (Hazari), 1967b, and GOI, LSS, 1968, for a critical government review of policies.

not be achieved according to schedule and there were unintended imbalances, with both shortages in capacity and production which could not be covered by imports and excess capacity.

(v) There was a strong bias toward detailed bureaucratic allocation of resources and controls over all aspects of industrial development and trade rather than reliance on the market.

(vi) Within the sphere of decisions taken over by the government and bureaucracy, detailed capacity and production targets were set without reference to costs or detailed study of demand, and no attempt was made to minimize the cost of achieving targets in selection or implementation of projects. According to Hazari:

> The Planning Commission has never, on its own, set out the criteria for fixation of priorities...To my knowledge, no exercise has been undertaken to assess the relative costs of securing additional output from existing against fresh investment or of domestic manufacture against imports. Setting and licensing of physical targets have not been reinforced with considerations of unit costs and over-all financing.[1]

In the case of public sector investment and allocation of investment licenses to the private sector, no attempt was made to choose efficient project locations, scales, or technologies, even subject to the constraints in (iii). Import licenses and scarce materials like steel were allocated without regard to efficiency and reallocation was prohibited. Protection afforded by industrial and import licensing and toleration of losses by public sector firms made socially inefficient investments privately profitable or at least able to survive losses.

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[1] GOI, PC (Hazari), 1967b, p. 19.

(vii) Although other decisions were left to individual enterprises and market mechanisms, government policy created incentives for substantial social inefficiency in allocation of resources by these profit maximizing units. No upper limit was fixed on effective protection in manufacturing, and even operations with negative value added at international prices were privately profitable. Regardless of domestic production costs, quality, design, and service, import of a product was automatically banned if it was manufactured in India, or where allowed import was restricted to a point where effective protection and order backlogs for domestic production remained high. Domestic content and export requirements made production contingent on activities which independently were not only privately unprofitable but highly inefficient. There were wide variations in effective exchange rates for similar activities, including export of different products. Allocation of inputs in relation to capacity encouraged expansion while there was excess capacity. Foreign exchange, capital, and steel were underpriced. Protection, excess capacity, price controls based on costs, and government procurement rules emphasizing price reduced or eliminated the response of profits to improvements in management of production, quality, marketing, and design while dependence of profits on bureaucratic approvals and allocations diverted entrepreneurial resources into government liaison. There were many restrictions without economic rationale, and government regulations not only constrained the set of actions which could be taken to maximize profits but their complexity delayed and increased the cost of investment and operation.

In short, planned industrialization took place under a regime of inefficient economic policies.

D. Industrial Structure in the 1960s

1. Level of Production

Table II-7 shows capital, employment, output, and value added in the basic metals and engineering industries in 1966, when these industries accounted for 30-36 percent of all Indian manufacturing activity measured by inputs or outputs. At Indian prices the gross output of the basic metals industries was $1040 million while the gross output of the engineering industries (excluding aluminum) was $1840 million.[1]

Tables II-8 and II-9 show the increase in output in the aggregate and for individual industries. For the aggregate, expansion was roughly seven-fold between 1951 and 1970. Table II-8 provides index numbers of production while Table II-9 provides data on capacity and production from 1960-61 to 1969-70 for the 26 industries examined in detail in this study. The production data are comparable to those for 1950-51 and 1955-56 in Table II-6. However, capacity data are unreliable.[2]

The ratio of domestic production to imports of basic metals and engineering goods indicates a high degree of self-sufficiency by

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[1]Very roughly, at international prices these were $900 million and $1300 million, respectively.

[2]See notes to Table II-9.

TABLE II-7

Capital, Employment, Output, and Value Added in Production of Basic Metals and Engineering Goods, 1966

	Capital ($ mil)	Employment (000 workers)	Output ($ mil)	Value Added ($ mil)
I. Basic Metals	1825	321	1038	258
Iron and steel	1607	293	866	203
Non-ferrous metals	217	28	172	55
II. Engineering Goods	1689	817	1839	534
Total (I) - (II)	3514	1138	2877	792

Notes:

Values converted at Rs. 7.50 = $U.S. $1

Capital includes fixed and working capital.

Value added excludes depreciation as well as current inputs.

Aluminum is included in "non-ferrous metals" and excluded from "engineering goods".

ASI data cover all units employing 10 or more persons with power or 20 or more persons without power, excluding factories under control of the Ministry of Defence. Ministry of Defence factories manufacture ammunition, weapons, motor vehicles, and military stores. It is reported that "in 1968, the value of arms, ammunition and vehicles produced in the Ordnance and Departmental factories exceeded Rs. 100 crores ($133 million) excluding clothing, high altitude equipment and general stores." (Dagli, 1969, p. 195).

Source: GOI, CSO, Annual Survey of Industries (1966). Data are reproduced in EE, 26 December 1969, pp. 1343-49.

TABLE II-8

Index Numbers of Production of Basic Metals and Engineering Goods, 1951-1970

Year	Basic Metals and Engineering Goods	Basic Metals	Engineering Goods
1951	15	25	11
1956	36	30	39
1961	58	62	57
1965	107	95	112
1966	100	100	100
1967	98	96	99
1968	103	102	103
1969	110	110	109
1970[a]	109	108	109

a: January to May, 1970.

These are quantity indices at 1960 relative prices, scaled so that the indices for 1966 equal 100.

Source: GOI, CSO, MSPSII, November-December 1968, and IEA, HS, 1969-70, p.8.

TABLE II-9

Capacity and Production in Iron and Steel, Engineering, and Tire Industries, 1960-61 to 1969-70

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
1. Iron and Steel (million tons)											
Pig Iron	C[a]	2.82	5.64	5.64	5.64	5.64	5.64	5.64	5.64	8.00	8.96[f]
	P	4.31			6.53	6.67	7.09	7.00	6.89	7.29	7.39
	U	153			116	118	126	124	122	91	82
Pig iron for sale	P	1.1	1.0	1.1	1.16	1.09	1.18	1.01	1.22	1.50	1.54
Ingot steel	C[a]	1.57	4.57	4.57	4.57	4.57	4.57	4.57	7.00	9.10	9.05[f]
	P	3.42	4.3	5.4	5.94	6.14	6.53	6.60	6.33	6.51	6.43
	U	218	94	118	130	134	143	144	90	72	71
Finished steel	C[a]	1.76	3.64	3.64	3.64	3.64	3.64	3.64	7.05[g]	6.90	7.05[fh]
	P	2.39	2.8	4.0	4.30	4.43	4.51	4.49	4.05	4.90	5.05
	U	136	80	110	118	122	124	123	57	71	72
2. Steel Pipes and Tubes (000 tons)	C[a]	187	187	187	240	282	272	316	409	589	472
	P[b]	105	139	156	215	258	241	265	213	256	280
	U	56	74	83	90	91	89	84	52	43	59
3. Bright Steel Bars (000 tons)	C[a]	5.3					28.7	30.7	50.8	50.8	57.5
	P	5.0				14.0	29.6	29.2	25.2	34.0	42.1
	U	94					103	95	50	67	73
4. Iron and Steel Castings (000 tons)											
Cast Iron Spun Pipes	C[a]				196	193	280	282	330	470	438
	P				188[c]	231	248	226	145	133[c]	135[c]
	U				96	120	89	80	44	28	31

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Iron Castings[d]	C[a]									410	385
	P[c]						350		283	176	158
	U									43	41
Malleable Iron Castings[d]	C[a]								38	24	22
	P[c]					12	14	15[e]	14	11	13
	U								37	46	59
Steel Castings	C[a]	40	40	47	59	59	85	123	118	185	126
	P[b]	33	38	44	50	55	56	53	50	47	46
	U	83	94	93	84	94	66	43	42	25	37
5. Steel Wire Ropes (000 tons)	C[a]	6.4	6.4	10.0	10.0	18.6	21.8	28.4	28.4	34.4	36.2
	P[b]	3.3	2.8	3.7	7.0	12.1	12.9	12.3	13.2	14.0	17.6
	U	52	54	37	70	65	59	43	46	41	49
6. Electric Wires and Cables											
Aluminum Conductors (000 tons)	C[a]	19.6	19.6	27.6	42.6	42.6	59.9	75.5	89.2	103.0	94.8
	P[b]	22.8	22.8	28.8	32.4	49.1	40.6	52.7	72.5	55.3	62.6
	U	116	116	104	76	115	68	70	81	54	66
Bare Copper Conductors (000 tons)	C[a]	18.1	18.1	18.1	18.1	18.1	15.4	15.4	14.4	19.0	14.4
	P[b]	9.9	7.6	4.9	4.4	5.3	3.1	1.8	0.8	1.0	2.1
	U	55	42	27	24	29	20	12	6	5	15
Rubber and Plastic Insulated Cables (mil. meters)	C[a]	239	239	362	362	362	653	782	861	858	883
	P[b]	209	210	276	320	373	364	399	367	376	395
	U	87	88	76	88	103	56	51	43	44	45

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Paper Insulated	C[a]	62	62	142	142	142	637	637	836	944	1345
Power Cables	P[b]	92	121	206	246	316	478	435	245	241	224
(10 km)	U	147	195	145	173	223	75	68	29	26	17
7. Hand, small, and Cutting Tools											
Hacksaw Blades	C[a]	38.0	38.0	44.9	44.9	50.2	50.2	43.6	43.6	27.1	41.0
(mil.nos.)	P[b]	11.8	19.2	17.5	21.5	29.7	29.7	19.7	26.4	24.2	24.1
	U	31	51	39	48	59	59	45	61	89	59
Steel Files	C[a]	4.6	5.3	6.6	7.8	7.8	8.6	10.4	10.4		10.1
(mil.nos.)	P[b]	3.0	3.6	6.0	6.6	5.6	8.2	9.7	10.3	12.6	12.9
	U	65	68	91	85	72	95	93	99		123
Tungsten Carbide (tons	C[a]	6	10	18	22	22	72	74	74	127	146
	P[b]	4	3	7	20	32	40	47	42	61	118
	U	73	35	41	89	145	56	64	57	48	81
Twist Drills	C[a]	3.1		3.5	4.0	4.0	6.9	10.2	10.2	10.0	10.1
(mil.nos.)	P[b]	1.5	2.7	3.8	4.7	7.2	8.0	7.7	7.6	8.5	9.2
	U	50		108	116	177	117	76	75	85	92
Forged Hand	C[a]									31.0	36.4
Tools (Rs.mil.)	P[b]								26.7	31.3	42.6
	U									101	117
Tungsten Carbide Tipped	C[a]									880	930
Tools (000 nos.)	P[b]								660	560	540
	U									64	58

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
8. Aluminum Ingots, Sheets, and Foils (000 tons)											
Ingots	C[a]	18	22	53	53	53	73	94	94	117	169
	P	18	20	43	54	55	62	73	100	125	135
	U	101	90	80	101	103	85	78	107	107	80
Sheets and Circles	C[a]	20.4	21.6	22.2	22.2	22.2	43.9	43.9	44.0	60.6	60.6
	P[b]	16.3	16.9	16.3	22.3	22.6	25.2	31.8	22.6	35.2	38.1
	U	80	78	73	100	102	57	72	51	58	63
Foils	C[a]	2.0	3.0	3.0	3.0	3.0	6.5	6.5	6.5	6.5	6.5
	P[b]	3.0	3.2	2.6	2.4	2.6	2.7	3.9	4.5	4.0	4.3
	U	148	107	86	81	87	42	60	69	62	66
9 & 10. Fabricated Steel Structures (000 tons)											
Fabricated structurals including transmission line towers	C[a]	347						652[j]		650	496
	P[c]	150	200[k]			241[j]	292[j]			142	170
	U	43								22	34
Transmission line towers	C[a]						54	69	66		
	P					43	44	43	47		
	U						81	62	71		

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Fabricated steel structurals											
Light and medium[d]	C[a]								234		
	P[c]					300	125	71[e]	54		
	U								23		
Heavy	C[a]						113	136	138		
	P						102	77	24		
	U						90	57	17		
11. Railway Wagons (000 nos in terms of 4-wheeelers)	C[a]								29.9		34.1
	P[b]	10.8	16.8	25.2	30.0	24.2	26.5	15.0	12.0	13.4	12.0
	U								40		35
12. Cotton Textile Machinery (Rs. million)	C	120	125	130	190	220		400	400	400	450
	P	104	125	130	185	216	216	169	158	145[c]	139[c]
	U	87	100	100	97	98		42	40	36	31
Looms (000 nos)	C[a]	10.6	10.6	10.6	10.6	14.4	8.1	8.2	8.7		
	P[b]	5.6	7.6	5.9	5.2	3.6	3.4	2.5	1.7		
	U	53	72	56	49	25	42	30	20		
Ring spinning frames (000 nos)	C[a]	2.04	2.04	2.04	2.04	3.76	1.68	1.68	1.68		
	P[b]	1.13	1.40	1.57	1.99	2.24	2.11	1.21	1.14		
	U	55	69	77	98	60	126	72	68		
Carding engines (000 nos)	C[a]	2.64	2.64	2.40	2.40	2.56	1.08	1.08	1.08		
	P[b]	1.08	1.32	1.50	1.60	1.97	1.71	0.88	0.45		
	U	41	50	63	67	77	158	81	42		
Shuttles (000 nos)	C[a]	132	132	132	132	132	132	132	132		
	P[b]	127	154	184	181	191	120	114	90		
	U	96	117	139	137	145	91	86	68		

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
13. Machine Tools (Rs.million)	C[a]	59				175	301	324	381	509	514[c]
	P	76				205	232	270	196	180	206
	U					117	77	83	51	35	40
14. Electric machinery											
Power Transformers (mil.KVA)	C[a]	1.25	1.25	1.40	2.00	2.00	2.12	2.18	5.07	5.73	6.00
	P[b]	1.28	1.80	2.30	2.63	3.83	4.46	4.95	5.33	4.80	5.41
	U	102	144	164	132	192	210	227	105	84	90
Electric Motors (000 h.p.)	C[a]	600	600	1140	1140	1140	1356	1356	1416	2548	2980
	P[b]	696	828	984	1188	1435	1756	2095	2030	2130	2291
	U	116	138	86	104	126	129	154	143	84	77
Motor Starters (000 nos)	C[a]			156	204	204	276	288	294	234	378
	P[b]		108	132	192	225	311	426	419	360	453
	U			85	94	110	113	148	143	154	120
15. Commercial Vehicles and jeeps (000 nos)											
Commercial Vehicles	C[a]								62.0	57.0	57.5
	P[b]	27.5	25.6	26.9	28.4	36.9	35.4	35.6	30.8	35.9	35.5
	U								50	63	62
Jeeps	C[a]								10.0	10.0	10.0
	P[b]	5.5	7.1	7.6	8.2	8.9	10.4	10.1	4.4	7.8	8.5
	U								44	78	85

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
16. Dry and storage batteries											
Dry (mil. nos.)	C^a	224	224	224	224	224	289	289	359	439	479
	P^b	208	214	240	276	298	284	359	316	436	469
	U	93	95	107	123	133	98	124	88	99	98
Storage (000 nos.)	C^a	379	379	379	660	660	673	673	796	782	1068
	P^b	508	521	565	691	774	708	753	815	938	1184
	U	134	137	149	105	117	105	112	102	120	111
17. Radios (000 nos.)	C^a	280	280	332	390	390	391	492	800	799	2330
	P^b	269	326	343	418	510	606	760	925	1483	1748
	U	96	117	103	107	131	155	154	116	186	75
18. Data Processing Machines (nos.)	C^a	0	0	0					4024	4024	4024
	P^c	0	0	0	66	583	1034	2002	2230	2793	3000
	U	-	-	-					55	69	75
19. Bicycles (mil. nos.)	C^a	1.07	1.21	1.44	1.44	1.68	1.68	1.68	1.68	2.18	2.18
	P^b	1.05	1.05	1.12	1.17	1.44	1.57	1.58	1.68	1.97	1.93
	U	99	87	78	81	86	94	94	100	91	89
20. Stationary diesel engines (000 nos)	C^a	36	41	41	44	49	72	72	125	150	150
	P^b	442	45	43	56	74	93	112	114	116	143
	U	116	108	103	127	152	129	155	91	77	95
21. Automobile parts (Rs. million)	P^b	120							840	840	960
Major items[m] (Rs. million	P		97	156	234	321	402	557	551	635	

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
22. Vehicular engines (000 nos)	C[a]	6.0	6.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	P[b]	10.6	9.8	8.4	9.0	8.2	8.1	6.8	2.3	2.5	2.7
	U	176	164	93	100	91	90	76	26	28	30
Engine parts[m] (Rs.million)	P		81	104	139	176	212	261	291	327	
23. Bicycle parts (Rs.million)	P[b]	37	57	61	71	89	96	102	114	106	93
24. Electric fans (mil.nos.)	C	0.87	0.89	1.38	1.38	1.48	1.52	1.52	1.58	1.49	1.82
	P	1.01	1.07	1.13	1.14	1.27	1.36	1.36	1.38	1.49	1.55
	U	116	120	82	83	86	89	89	87	100	85
25. Builders'hardware[d] (000 tons)	C[a]	10.9							11.0	2.2	4.2
	P[c]	9.2				8.3	9.2	9.0[e]	7.0	0.8	4.7
	U	84							64	36	112
26. Tires and tubes											
Auto tires (mil. nos.)	C[c]	1.34	1.51	1.76	2.18	2.50	2.47	2.60	2.75		
	P[c]	1.37	1.56	1.72	1.93	2.09	2.35	2.35	2.47		
	U	102	103	97	88	84	95	90	90		
Bicycle tires (mil.nos.)	C[c]	14.5	16.9	13.7	14.2	14.2	16.6	19.4	20.5		
	P[c]	10.8	11.4	11.9	14.2	16.2	18.1	19.7	22.3		
	U	75	67	87	100	114	109	101	109		
Off-the-road tires (000 nos.)	C[c]	3.00	3.00	4.20	6.60	10.00	10.20	10.2	12.5		
	P[c]	3.43	6.18	6.86	8.33	9.3	7.9	8.4	7.3		
	U	114	206	163	126	93	78	83	58		

TABLE II-9 (continued)

		1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Auto tubes (mil.nos.)	C^c	1.24	1.53	1.76	1.92	2.53	2.46	2.61	2.80		
	P^c	1.28	1.49	1.64	2.03	2.21	2.36	2.21	2.76		
	U	104	99	93	106	87	96	84	99		

Notes to Table II-9

Data are for fiscal years and from sources listed below except as footnoted:

a: Calendar years through 1966-67, i.e., 1960 for 1960-61, etc; March 1967 for 1967-68; April 1968 for 1968-69; December 1969 for 1969-70.
b: Calendar years through 1963-64, i.e., 1960 for 1960-61, etc.
c: Calendar years, i.e., 1960 for 1960-61, etc.
d: Some small units covered by data up to January 1968 were dropped in January 1968.
e: Estimated by IEA.
f: Arya, 1969, pp. 4, 48.
g: GOI, MSHI, 1969.
h: 10.37 counting re-rollers.
j: IEA.
k: GOI, MCI, 1962c.
m: All India Association of Automobile and Ancillary Industries Association data, cited by Krueger, 1970, p. 63.
C: Installed capacity
P: Production
U: (P/C) x 100.
Blank: Not available. Lines for "C" and "U" have been omitted when capacity data were not available.

Sources: GOI, CSO, MSPSII, November-December 1968, and data reproduced in IEA, HS 1967, 1968-68, 1969-70. The CSO gets its data from the DGTD, except for textile machinery (Textile Commissioner), railway wagons (Railway Board), and iron and steel (Iron and Steel Controller). These government offices in turn estimate the figures for production from returns submitted voluntarily by firms. Data cover only firms in the "organized sector," i.e., units with fixed assets of more than $100,000. Small firms not covered by the data accounted for a significant minority (over 10 per cent) of production in a number of industries, e.g., iron castings, electric motors, radios, bicycles, stationary diesel engines, automobile parts, bicycle parts, electric fans, and builders' hardware.

TABLE II-9 (continued)

Sources:

The capacity and utilization data in Table II-9 have not been used in the analysis in this study, which has relied on information from interviews, company and trade association reports, and industry studies. Apart from the problem of an economic definition of capacity, there are many weaknesses in the official data: (i) there is no uniformity or consistency in the number of shifts at which capacity is measured; (ii) assumptions about the per cent of purchased parts are not explicit; (iii) there are possibilities for substitution between industries, especially in multi-industry firms; (iv) data sometimes include capacity which has been licensed but has not yet been installed, while neglecting capacity which has been installed without licenses either illegally or in the small scale sector which is exempt from licensing; (v) because maintenance import licensing sometimes depended on capacity, there was an incentive for firms to overstate capacity. For documentation of these weaknesses, see GOI, MIDITCA, 1969, Main Report, p. 37, and NCAER, 1966a, p. vi. Comparisons with information in annual reports of major firms and trade association data revealed numerous discrepancies, e.g., railway wagons, transformers.

The capacity data are based on the following numbers of shifts per day:
(i) one shift, industries 3, 4, 7 (except ingots), 8, 14, 15, 16 (dry), 17, 19, 20, 22, 24;
(ii) two shifts, 2, 5, 6, 11, 13, 16 (storage);
(iii) continuous production, 1, 7 (ingots);
(iv) not available, 9, 10, 12, 18, 25, 26. (GOI, RBI, Bulletin, April 1969, pp. 487-90.)

1968-69.[1] The major imports were mild steel flat products, alloy and special steels, non-ferrous metals, components, and capital goods of types not produced in India. In 1968-69 imported basic metals worth $234 million and engineering goods worth $704 million accounted for about 20 percent and 30-35 percent, respectively, of total supplies at international prices.[2]

2. Scale of Production

Table II-10 lists the largest manufacturers of engineering goods by sales in 1967. Excluding the four producers of aluminum (nos. 9, 12, 50, and 55), the 58 producers of engineering goods in Table II-10 accounted for $1085 million in sales in 1967 or about 50 to 60 percent of the total in the same industries for all firms covered by the *Annual Survey of Industries* (*ASI*). Virtually all pig iron and semi-finished steel and about 80 percent of finished steel was produced by three integrated producers, HSL, TISCO, and IISCO.[3] Seven firms produced motor vehicle tires.[4]

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[1]See Desai, 1969, and Ahmad, 1966, for studies of import substitution.

[2]For import data see IEA, *HS* 1967, p. 57, and *HS* 1969-70, p. 199. For details of mild steel imports, see Table II-3. According to GOI, MIDCA, 1969, p. 19, imports accounted for 21 percent of plant and machinery supplies in 1966-67 and 1967-68.

[3]Sales in 1967 were: HSL, $308.0 million; TISCO, $176.3 million; IISCO, $96.3 million.

[4]Sales in 1967 were: Dunlop India, $86.9 million; Goodyear India, $29.9 million; Ceat Tyres, $24.4 million; Madras Rubber Factory, $18.7 million; Premier Tyres, $13.5 million; Inchek Tyres, $11.3 million; Firestone, sales data not available.

TABLE II-10

Production and Exports of the 62 Largest Producers of Engineering Goods Measured by 1967 Sales, 1967-68 to 1969-70

Company Affiliation/Date Establ.	Foreign Collaboration	Products	Last Month of Company Year	Sales, Company year ending 4/67-3/68, etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
1. Tata Engineering and	Yes	Commercial vehicles, loco-	March	126.7	1.69	1.3
Locomotive (TELCO)		motives, industrial shunters,		n.a	4.17	3.3
(c) Tata 1945		excavators, machine tools		n.a	9.63	7.6
very small % W.Ger.						
2. Hindustan Motors	Yes	Passenger cars, commercial	March	56.7	n.a.	n.a.
(c) Birla 1942		vehicles, excavators		n.a.	n.a.	n.a.
very small % U.K.				n.a.	1.42	2.5.
3. Hindustan Aero-	Yes	Airplanes	March	55.2	0.08	0.1
nautics				n.a.	n.a.	n.a.
(a) government 1964				n.a.	n.a.	n.a.
4. Guest, Keen, Williams	Yes	Fasteners, railway track	Dec.	38.4	0.71	1.9
(b) 60% U.K. 1933		material, bright steel		n.a.	1.19	3.1
		bars, (also steel re-		n.a.	0.75	2.0
		rolling, alloy steels)				
5. Ashok Leyland	Yes	Commercial vehicles	Sept.	37.1	0.04	0.1
(b) 60% U.K. 1948				n.a.	0.61	1.6
				38.7	0.78	2.0
6. Premier Automobiles	Yes	Passenger cars, commercial	June	n.a.	*	0.0
(c) Walchand 1948		vehicles		35.7	0.04	0.1
very small % Italy				40.3	n.a.	n.a.
7. Union Carbide	Yes	Dry batteries, flashlights,	Dec.	35.6	0.63	1.8
(b) 60% U.S. 1926-34		(also chemicals)		45.3	1.34	3.0
				58.7	1.03	1.8

TABLE II-10 (continued)

Company Affiliation/Date Establ.		Foreign Collaboration	Products	Last Month of Company Year	Sales, Company year ending 4/67-3/68, etc.	Exports 4/67-3/68, etc.	Exports as percent of sales
8. Metal Box		Yes	Crown corks, tinplate containers, sealing machines	March	33.1	0.54	1.6
(b) 60% U.K.	1933				34.0	0.63	1.9
					36.0	0.85	2.4
9. Hindustan Aluminium		Yes	Aluminum	Dec.	32.3	0.35	1.1
(c) Birla	1958				45.7	8.23	18.0
27% U.S.					53.1	5.95	11.2
10. Philips India		Yes	Radios and components, electric lamps, electronic components	Dec.	31.2	0.02	0.1
(b) 52% Neth.	1930(?)				n.a.	0.26	0.8
					40.3	1.07	2.7
11. Indian Tube		Yes	Steel pipes and tubes	Dec.	29.2	1.13	3.9
(c) Tata					32.4	2.53	7.8
minority U.K.	1954				33.2	3.68	11.1
12. Indian Aluminium		Yes	Aluminum	Dec.	28.8	0.23	0.8
(b) 65% Canada	1938				28.1	1.90	6.8
					35.2	0.32	0.9
13. Mahindra and Mahindra		Yes	Jeeps	Oct.	28.4	0.00	0.0
(c) Mahindra					n.a.	0.03	0.1
15% U.S.	1945				35.4	1.63	4.6
14. Siemens India		Yes	Electric machinery	n.a.	26.8	0.37	1.4
(b) 51% W. Ger.	1956				n.a.	0.38	1.4
Khatau					n.a.	0.67	2.5
15. Indian Telephone Industries		Yes	Telephone equipment	Mar.	26.5	0.69	2.6
(a) Govt.	1950				n.a.	0.96	3.6
					28.0	1.34	4.8

TABLE II-10 (continued)

Company Affiliation/Date Establ.	Foreign Collaboration	Products	Last Month of Company Year	Sales, Company year ending 4/67-3/68 etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
16. Larsen and Toubro	Yes	Machinery and equipment	Mar.	24.9	0.13	0.5
(d) Independent 1938/46		for dairy, chemical, etc.		31.2	0.25	0.8
some Denmark		industries; electric machin-		31.2	0.58	1.9
		ery, petrol pumps				
17. Simpson	Yes	Vehicular diesel engines,	n.a.	23.7@	0.01	0.0
(c) Simpson 1840/1953		automobile parts, commercial		n.a.	0.06	0.3
		vehicle bodies		n.a.	0.19	0.8
18. Crompton Greaves	Yes	Electric machinery, electric		21.1	0.18	0.9
(c) Thapur 1937		fans	June	n.a.	0.21	1.0
50% U.K.				27.1	n.a.	n.a.
19. Kirloskar Oil Engines	Yes	Stationary diesel engines	Mar.	20.8	1.27	6.1
(c) Kirloskar 1946				30.0#	1.31	4.4
				31.2	1.44	4.6
20. Hindustan Machine Tools (HMT)	Yes	Machine tools, watches	Mar.	20.0	0.39	2.0
				19.6	1.21	6.2
(a) Govt. 1953				20.5	1.32	6.4
21. Bharat Electronics	Yes	Electronic equipment	Mar.	18.3	0.01	0.0
(a) Govt. 1954				27.6	0.07	0.3
				n.a.	n.a.	n.a.
22. Escorts	Yes	Pistons, motor cycles,	Dec.	17.9	0.04	0.2
(d) Independent 1944		tractors and implements,		n.a.	0.02	0.1
1% U.S.		X-ray equipment		n.a.	0.21	1.2

TABLE II-10 (continued)

Company Affiliation/Date Establ.	Foreign Collabo-ration	Products	Last Month of Company Year	Sales, Company Year ending 4/67-3/68, etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
23. Jessop (d) Independent 1788/1932 50% Govt.after 1968	Yes	Railway wagons, fabricated steel structures, road rollers	Oct.	17.2 16.3 18.7	0.32 2.98 0.96	1.9 18.3 5.1
24. Jay Engineering (c) Shri Ram 1935	Yes	Electric fans, sewing machines	Mar.	16.5 19.3 21.3	1.59 1.78 1.86	9.6 9.2 8.7
25. Indian Cable (b) 40% U.K. (control) 1920	Yes	Electric wires and cables	Mar.	15.9 n.a. n.a.	0.70 0.89 1.30	4.4 5.6 8.2
26. Heavy Electricals, Bhopal (a) Govt. 1956	Yes	Heavy electrical machinery	Mar.	14.8 32.0 n.a.	0.00 0.02 n.a.	0.0 0.1 n.a.
27. Central India Machinery Mfg. (c) Birla 1943	n.a.	Cotton textile machinery, railway wagons, fabricated steel structures	Mar.	13.9 n.a. n.a.	n.a. n.a. 0.01	n.a. n.a. 0.1
28. Textile Machinery Corp. (TEXMACO) (c) Birla 1939	Yes	Cotton textile machinery, railway wagons, machine tools	Dec.	13.6 n.a. n.a.	2.81 0.73 2.11	20.7 5.4 15.5
29. Tube Investments (b) Over 50% U.K.1949 Murugappa Chettiar	Yes	Bicycles and parts, steel tubes	July	13.3 n.a. n.a.	0.33 0.50 0.70	2.5 3.8 5.3
30. Motor Industries (MICO) (b) Over 50% W. Ger. 1951	Yes	Automobile parts	n.a.	13.3@ n.a. n.a.	0.21 0.50 0.81	1.6 3.8 6.1

TABLE II-10 (continued)

Company Affiliation/Date Establ.	Foreign Collaboration	Products	Last Month of Company Year	Sales, Company Year Ending 4/67-3/68, etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
31. Kirloskar Brothers (c) Kirloskar 1920	Yes	Agricultural machinery, pumps, machine tools	July	13.1 13.1 16.9	0.22 0.26 0.29	1.7 2.0 1.7
32. Hindustan Brown Boveri (b) over 50% Switz. 1942	Yes	Electric machinery, electric cables	April	n.a. 12.7 14.1	n.a. n.a. n.a.	n.a. n.a. n.a.
33. Braithwaite (c) Jardine Henderson 1930	Yes	Railway wagons, fabricated steel structures, road rollers	Dec.	12.4 7.2 12.0	0.05 4.22 0.67	0.4 58.6 5.6
34. Bharat Steel Tubes (d) Independent? 1962 39% U.S.	Yes	Steel pipes and tubes	Mar.	11.6 n.a. n.a.	1.49 2.61 3.17	12.8 22.5 27.3
35. Kirloskar Electric (c) Kirloskar n.a.	Yes	Electric machinery	June	n.a. 11.5 n.a.	0.10 0.19 0.63	0.9 1.7 5.5
36. Associated Electrical Industries (AEI) (b) 100% U.K. 1924	Yes	Electric machinery	Oct.	11.5 n.a. n.a.	n.a. n.a. n.a.	n.a. n.a. n.a.
37. Sen Raleigh (d) Independent 1949 17% U.K. at least, probably substantially more	Yes	Bicycles and parts	Sept.	10.4 11.2 10.8	0.25 0.28 0.24	2.4 2.5 2.2

TABLE II-10 (continued)

Company Affiliation/Date Establ.		Foreign Collabo-ration	Products	Last Month of Company Year	Sales, Company Year Ending 4/67-3/68, etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
38. Aluminium Industries		Yes	Electric cables	Mar.	10.4	0.09	0.9
(c) Seshasayee	1946				6.1	0.12	2.0
small % France					8.9	0.28	3.1
39. Tractors and Farm		Yes	Tractors	n.a.	9.7@	*	0.0
Equipment	n.a.				n.a.	0.08	0.8
(c) 51% Simpson					n.a.	n.a.	n.a.
49% Canada through U.K. sub.							
40. Bajaj Auto		Yes	Motor scooters and three-wheelers	Mar.	9.6	n.a.	n.a.
(c) Bajaj	1945				n.a.	n.a.	n.a.
					n.a.	n.a.	n.a.
41. National Engg.		Yes	Bearings, axle boxes for railway wagons	Mar.	9.1@	0.03	0.3
Industries	n.a.				n.a.	0.02	0.2
(c) Birla					n.a.	n.a.	n.a.
42. Bajaj Electricals		Yes	Electric machinery, appliances, instruments	Mar.	9.1	0.15	1.6
(c) Bajaj	1938				7.6	0.05	0.7
					8.3	n.a.	n.a.
43. Orient General Industries		Yes	Electric fans, automobile parts, electric machinery	Mar.	8.9	0.51	5.7
(c) Birla	1954				n.a.	0.64	7.2
					n.a.	0.70	7.9
44. Cooper Engineering		Yes	Stationary diesel engines, cotton textile machinery, machine tools	June	n.a.	0.17	2.0
(c) Walchand	1922/1940				8.7	0.20	2.3
					n.a.	0.41	4.7
45. Kamani Engg. Corp.	n.a.	Yes	Transmission line towers	Sept.	8.5	1.61	18.9
(c) Kamani					n.a.	1.12	13.2
					11.7	6.21	53.1

TABLE II-10 (continued)

Company Affiliation/Date Establ.		Foreign Collabo-ration	Products	Last Month of Company Year	Sales, Company Year Ending 4/67-3/68, etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
46. Hindustan Cables		Yes	Telecommunication cables	Mar.	8.4@	n.a.	n.a.
(a) Govt.	1952				12.1	n.a.	n.a.
					n.a.	n.a.	n.a.
47. Automobile Products of India		Yes	Motor scooters, automobile parts	July	8.4	n.a.	n.a.
					n.a.	0.01	0.1
(d) Independent	1949				n.a.	0.07	0.8
48. Cable Corp. of India		Yes	Electric wires and cables	Dec.	8.4	0.26	3.1
(c) Khatau	1957				n.a.	0.84	10.0
26% W. Ger.					n.a.	0.48	5.7
49. National Machinery Manufacturers		n.a.	Cotton textile machinery	Dec.	8.3	n.a.	n.a.
					7.9	n.a.	n.a.
(d) Independent	1947				8.1	0.75	9.3
50. Madras Aluminium		Yes	Aluminum	Dec.	8.1	0.14	1.7
(c) Naidu	1960				7.8	0.09	1.2
20% Italy					8.5	n.a.	n.a.
51. Electric Const. and Equip.		Yes	Electric machinery	Oct.	8.0	n.a.	n.a.
					9.2	n.a.	n.a.
(c) Birla	1945				8.4.	n.a.	n.a.
52. Atlas Cycle Industries		Yes	Bicycles and parts	Dec.	7.7	0.11	1.4
n.a.	n.a.				8.9	0.16	1.8
					9.2	0.42	4.6
53. Voltas (Thana Works)		Yes	Airconditioners, refrig., fork lift trucks, water well drills	Aug.	7.7	0.00	0.0
(c) Tata	n.a.				n.a.	0.02	0.3
12% U.K. and Sweden					n.a.	0.19	2.5

TABLE II-10 (continued)

Company Affiliation/Date Establ.		Foreign Collaboration	Products	Last Month of Company Year	Sales, Company Year Ending 4/67-3/68, etc.	Exports 4/67-3/68 etc.	Exports as percent of sales
54. International Tractor		Yes	Tractors and implements	Mar.	7.6	n.a.	n.a.
(c) Mahindra	1963				9.6	n.a.	n.a.
Tata (Voltas)					13.1	n.a.	n.a.
17% U.S. through U.K. sub.							
55. Aluminium Corp. of India		Yes	Aluminum, electric cables	Mar.	7.6	n.a.	n.a.
(c) Singhania	1937				8.1	n.a.	n.a.
					n.a.	n.a.	n.a.
56. Bharat Earth Movers		Yes	Earth-moving equipment, rail coaches	Mar.	7.5	0.0	0.0
(a) Govt.	1964				28.7	0.0	0.0
					n.a.	n.a.	n.a.
57. Kalinga Tubes		n.a.	Steel pipes and tubes	Mar.	7.3@	n.a.	n.a.
n.a.	n.a.				n.a.	n.a.	n.a.
					n.a.	0.52	7.1
58. Universal Cables		Yes	Electric wires and cables	Mar.	7.3	0.20	2.7
(c) Birla	1945-61				n.a.	0.57	7.8
some U.K.					n.a.	0.52	7.1
59. Hyderabad Allwyn Metal		Yes	Refrigerators, bus bodies, steel furniture	April	7.2	0.01	0.1
(c) Birla	1942				n.a.	0.02	0.3
					n.a.	n.a.	n.a.
60. Burn and Co.		n.a.	Railway wagons, fabricated steel structures	April	n.a.	0.00	0.0
(c) Martin Burn					7.2	0.03	0.4
some U.K.	1774-1895				n.a.	*	0.0
61. Associated Battery (ABMEL)		Yes	Storage batteries	Aug.	6.9	0.59	8.6
(b) 30%+ UK (control)	1947				7.9	0.81	10.3
					8.9	0.67	7.5
62. Zenith Steel Pipes		Yes	Steel pipes and tubes	April	n.a.	2.04	30.0
(c) Birla	1960				6.8	2.10	30.9
					9.3	2.51	27.0

NOTES TO TABLE II-10

Affiliation: (see part II.D.3 for details)
- a: government
- b: foreign majority
- c: large industrial house
- d: independent

Foreign collaboration: "Yes" means that there was over 10 per cent ownership by a foreign company or there was (or had been) a foreign technical collaboration agreement covering part of production.

Sales: sales are for the three company years ending between April and March of fiscal 1967-68, 1968-69, and 1969-70.

Exports: exports are for the three fiscal years April-March 1967-68, 1968-68, 1969-70.

Export as percent of sales: percentage calculated for exports and sales on the same line; where the value of sales for the year was not available, the last available year's sales was used. This calculation leads to a minor overestimate of the ratio of exports to sales in value terms.

*: exports less than $0.005 million.

@: 1966 or 1966-67.

?: questionable.

n.a.: not available

Sources: Sales for 1967-68: Commerce, Annual Number 1968, pp. 308-316.
Exports: Table II-18 and EEPC.
Affiliation: GOI, MIDITCA, 1969; Directory of Foreign Collaborations in India, Vols. 1 and 2, 1968 and 1969, and a large number of other sources.

An ESRF study reports that in the period 1964-65 to 1966-67 there were 166 firms in the basic metals and engineering industries with paid-up capital of $0.67 million or more each. The annual average of their total sales in the three-year period was $1723 million, or 58 percent of the total in the same industries for all firms covered by the 1965 ASI.[1]

The 1250 firms with an investment of $67,000 or more each accounted for $2361 million in production or 80 percent of the total in the basic metals and engineering industries for all firms covered by the ASI in 1965. The remaining $580 million in production or 20 percent of the total was accounted for by 10,277 small firms with an investment of less than $67,000 each.[2]

3. Ownership and Control

Indian industrial firms can be divided into four groups on the basis of ownership and control: (a) government firms; (b) foreign 'majority' subsidiaries, including firms with over 50 percent ownership by a foreign company and firms with over 25 percent foreign ownership and no single Indian investor with as large a share of the equity; (c) firms belonging to 73 large Indian industrial houses, including some foreign 'minority' firms with 50 percent or less foreign ownership;[3]

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[1] ESRF, 1967, p. 11. See also GOI, RBI, 1970.

[2] GOI, CSO, ASI (1965). Data are reproduced in IEA, HS 1969-70, p. 152. The small firms accounted for 6 percent of total fixed capital, 28 percent of total employees, and 16 percent of total value added. An exchange rate of Rs. 7.5 = $1 has been used rather than the official rate before the 1966 devaluation.

[3] Classification of large industrial houses is based on the report of the Dutt Committee, GOI, MIDITCA, 1969, Appendix 2.

(d) independent firms not falling in the above three groups, including some foreign 'minority' firms.

These forms of ownership have been distinguished for the large firms in Table II-10 and, to the extent possible, for the exporters in Table II-18. Of the 62 firms producing engineering goods with the highest sales in 1967, seven belonged to group (a), 13 to group (b), 33 to group (c), seven to group (d), and two could not be classified.[1] Eleven of the firms in groups (c) and (d) were foreign 'minority' firms with more than 10 percent foreign ownership. Thus in the case of 24 of the 60 classified firms over 10 percent of the equity was held by a foreign company. However, small amounts of foreign ownership are difficult to identify, and it is quite likely that in the case of a few other firms 10 to 25 percent of the equity was held by foreign companies.

The data in Table II-11 show that in 1963-64 production by the 64 firms in the basic metals and engineering industries with over 50 percent foreign ownership was $297 million while production by the 146 firms with 50 percent of less (but some) foreign ownership was $428 million. On the basis of data in Tables II-7 and II-8, this indicates that roughly 40 percent of production in these industries, excluding iron and steel where there was no foreign ownership, for all firms covered by the <u>ASI</u> was by firms with foreign equity participation.[2] Of the firms with over 50 percent foreign ownership, 22 were incorporated

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[1] In two cases (nos. 18 and 37), firms classified in groups (c) and (d) may have belonged to group (b).

[2] In this calculation the same exchange rate was used for 1963-64 and 1966.

TABLE II-11

Foreign Investment and Technical Collaboration in the Private Sector of the Basic Metals and Engineering Industries, 1963-1964

($ million)

	Number of Firms	Equity Capital: Total	Equity Capital: Foreign	Equity Capital: Percent Foreign	Capital Employed	Production
Firms with foreign equity	210	286	127	44	1003	726
Over 50 per cent foreign	64	107	71	66	360	297
50 per cent or less foreign	146	179	56	31	643	428
Firms with foreign technical collaboration only	285	n.a.	0	0	n.a.	540
TOTAL	495		127			1266

Coverage: "Limited" companies with foreign investment on 31 March 1964 and limited companies with foreign technical collaboration on any date between 1 April 1961 and 31 March 1964. Foreign branches (e.g. IBM) and companies whose technical collaboration agreements had expired by 1 April 1961 are excluded.

Source: GOI, RBI, 1968, pp. 12, 22, 41, 51, 116, 122, 126.

before 1948, including several of the firms in Table II-4. In spite of a general policy not to allow foreign ownership greater than 50 percent, the government approved 10 cases in 1948-1955 and 32 in 1956-1964.

Beginning in 1950 the central government became a major investor in the iron and steel and engineering industries. Central government investment at the end of 1968-69 is reported to have been $1740 million in iron and steel and $1280 million in engineering industries.[1] Table II-12 lists the 13 government firms with the largest investments. Although data on the value of capital are difficult to interpret, rough comparisons indicate that in 1969 somewhat more than half of total capital in basic metals and engineering industries in firms covered by the ASI was in the public sector, concentrated in steel and heavy capital goods. However, except in steel these investments were not fully reflected in production data: judging from the data in Table II-12, public sector plants accounted for only about 20 percent of production of engineering goods in 1968-69.

4. Foreign Technical Collaboration

Production of basic metals and engineering goods in the 1960s was heavily dependent on foreign technical collaboration. Table II-13 shows that between 1957 and 1969 the government approved 1616 foreign collaboration agreements in the basic metals and engineering industries. In 1964, in addition to the 210 firms with some foreign ownership,

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[1] IEA, HS 1969-70, p. 260. These figures may not include investments by the Ministry of Defence (see notes to Table II-7) and the Ministry of Railways (see nos. 9-11 in Table II-12.)

TABLE II-12

Investment, Employment, Sales, and Exports for Major Public Sector Iron and Steel and Engineering Firms, 1968-69

Firm	* Date Establ. ** Prod.	Capital: Investment by end of 1968-69 ($ mil.)	Capital: Cost of Project by end of 1967-68 ($ mil.)	Employment 1967-68 (000 workers)	Sales 1968-69 ($ mil.)	Exports 1968-69: Value ($ mil.)	Exports 1968-69: Percent of Sales
I. Iron and Steel							
1. Hindustan Steel	* 1954 ** 1959	1465	1491	119	427	55.40	13.0
II. Engineering Goods Total (2)-(10), (12)-(13)		1126[f]	907	n.a.	306	3.29	1.1
2. Heavy Engineering Corp.	* 1958	299	284	n.a.	20	0.0[g]	0
3. Hindustan Aeronautics	* 1964[a]	263	137	30	70	0.08[d]	0.1
4. Bharat Heavy Electricals	* 1964 ** 1965	216	190	14	47	0.0	0
5. Heavy Electricals (India)	* 1956 ** 1960	149	99	15	32	0.02	0.1
6. Mining and Allied Machinery Corp.	* 1965[c]	70	39	7	2	0.0	0
7. Hindustan Machine Tools (HMT)	* 1953 ** 1956	39	49	13	21	1.21	5.8

TABLE II-12 (continued)

Firm	* Date Establ. ** Prod.	Capital Investment by end of 1968-69 ($ mil.)	Cost of Project by end of 1967-68 ($ mil.)	Employment 1967-68 (000 workers)	Sales 1968-69 ($ mil)	Exports 1968-69 Value ($ mil)	Exports 1968-69 Percent of Sales
8. Bharat Earth Movers	* 1964[b] ** 1968	22	26	5	29	0.0	0
9. Integral Coach Factory (ICF)	** 1955	n.a.	20[e]	n.a.	9	0.95	10.6
10. Diesel Locomotive Works	** 1964	n.a.	20[e]	n.a.	20	0.0	0
11. Chittaranjan Locomotive Works	* 1950	n.a.	19[e]	n.a.	n.a.	0.0[h]	0
12. Bharat Electronics	* 1954 ** 1956	15	13	n.a.	28	0.07	0.3
13. Indian Telephone Industries (ITI)	* 1950	13	11	13	28	0.96	3.4

Notes to Table II-12:
*: date established.
**: date of initial production.
a: formed by merger of existing companies, one of which was established in 1940.
b: coach-building division was established 1948.
c: established to take over part of (2) set up earlier, about 1962.
d: 1967-68.
e: original cost of project when set up.
f: includes cost of project for (9)-(11).
g: 0.03 in 1969-70.
h: 0.06 in 1969-70.
n.a.: not available.

Source: IEA, HS, 1969-70, pp. 89-108, 264-66; GOI, EEPC; Table II-18.

TABLE II-13

Foreign Collaboration Agreements Approved, 1948-1970

Year	Number of Agreements Approved		
	All Activities	Basic Metals and Engineering Industries	
		(a)	(b)
1948-1955 (average per year)	36		
1956	82		
1957	81	26	
1958	103	27	
1959		52	
1960		201	
1961		223	
1962		135	
1963		161	
1964		197	206
1965		125	145
1966		157	147
1967			119
1968			101
1969			92
1970 (Jan.-June)			67

Notes: The reason for the difference between (a) and (b) could not be determined.
Not all agreements which were approved were implemented.
Coverage: new agreements, amendments, and renewals.

Source: All Activities: GOI, RBI, 1968, p. 4.
Basic Metals and Engineering: (a) Directory of Foreign Collaborations in India, 1968, Vol. 1, Section 2, p. 135;
(b) IEA, HS, 1969-70, p. 253.

285 private sector firms and all important government firms in these industries had foreign technical collaboration for at least part of their production.[1] Tables II-10 and II-18 indicate firms at which at least part of production was under foreign technical collaboration. While this information is incomplete, in the case of at least 58 of the 62 firms in Table II-10 and 71 of the 100 firms in Table II-18 there was over 10 percent ownership by a foreign company or a foreign technical collaboration agreement.

E. Costs and Prices of Engineering Goods

This section presents evidence on the ratio of Indian private costs and prices to international prices of engineering goods in the 1960's.[2] These comparisons are summarized in Table II-14 and are discussed below.

This evidence indicates that, at the official exchange rate and without export subsidies, export prices of many engineering goods would not have covered average costs of production, even before allowing for considerations like inefficient designs and discounts below prices charged by suppliers in advanced countries. It should be emphasized that while high ratios of domestic costs or prices to international prices may indicate the extent of nominal protection of production for the

[1]See Table II-11 for production by the private sector firms in 1963-64. For a list of foreign collaboration agreements by public sector firms, see Dagli, 1969, pp. 236-44, and see IEA, HS 1969-70, pp. 89-108.

[2]Additional data for tradable inputs are presented in Chapter IV.C.

TABLE II-14
Cost of Engineering Goods in India

Text Reference	Product	Companies	Years Produced in India	Import Content	Date	Nature of Cost Comparison: Indian	Nature of Cost Comparison: Foreign	Ratio of Indian to Foreign Cost/Price	Source
(i) DGTD	engineering goods and chemicals	products in which there was import substitution in 1960-67	2 to 9	n.a.	1969	cost	import price c.i.f.	1.30 to 1.40 (average)	GOI, DGTD, 1969
(ii) Company statements	electrical equipment	Siemens in India and West Germany	several	low exc. non-ferrous metals	1967	cost	cost, W.Ger.	1.25	*EPW*, 18 Nov.1967, p.2033
	electronic computer, ICL 1901A	Bharat Electronics & ICL, UK	1	high	1970	cost (est.)	import price c.i.f. or landed	1.40	*Industrial Times*, 15 Sept. 1969, p.12.
	tractor	HMT & Czech collaborator	4	20%	1973	cost (est.)	import price landed	1.50	*FE*, 13 Nov. 1969.
	passenger car, Fiat	Premier Automobiles & Fiat, Italy	many	15%	1966[a]	price (excl. tax)	import price, f.o.b. Italy	1.60	Baranson, 1969, pp. 33,94.
	ship ancillary equipment	unspecified	unspec.	unspec.	1969	price	import price, landed	1.35	*FE*, 29 July 1969.
(iii) Baranson	diesel engine, Cummins	Kirloskar Cummins & Cummins Engine, U.S.	1	85%	1965	cost	cost, U.S.	3.5 to 4.1 (2.8 to 3.3)	Baranson, 1967, p.82

TABLE II-14 (continued)

Text Reference	Product	Date	Nature of Cost/Price Comparison: Indian		Foreign	Ratio
			'fair ex-works price'	c.i.f. import price	supplier	
(iv) Tariff Commission	6. Electric wires and cables					
	Aluminum conductors	1960			n.a.	1.0 - 1.4*
		1966[a]			Japan	0.9 - 1.1
	Bare copper conductors	1960			n.a.	0.9 - 1.0*
	7. Hand, small, and cutting tools					
	Steel files	1963			Canada	0.8 - 1.2
	8. Aluminum ingots, sheets, and foils					
	Ingots	1960			n.a.	1.1 - 1.2*
		1968			U.S.	1.1
	Sheets and circles	1960			n.a.	0.8 - 1.0*
	12. Cotton textile machinery and parts					
	Looms (automatic)	1960			U.K.	1.3
		1966[a]			Switz.	0.8
	Ring spinning frames					
	complete	1960			Japan	1.3
	"	1966[a]			Switz.	0.4
	components					
	spindles	1966[a]			Japan	0.9
	spinning rings	1966[a]			n.a.	0.4
	fluted rollers	1960			U.K.	0.7
	"	1966[a]			U.K.	0.9

TABLE II-14 (continued)

Text Reference	Product	Date	Nature of Cost/Price Comparison: Indian 'fair ex-works price'	Foreign: c.i.f. import price	Foreign: supplier	Ratio
14.	Electric machinery					
	Transformers	1960			n.a.	0.7 - 1.3*
		1965			U.K.	0.6 - 1.5
	Electric motors	1958			n.a.	1.0 - 1.3*
		1965			n.a.	0.4 - 1.8
16.	Dry and storage batteries					
	Dry	1953			Hong Kong	1.1 - 1.2*
19.	Bicycles	1960			U.K.	1.0
		1960			Japan	1.5
21 & 22.	Automobile and vehicular engine parts					
	Auto spark plugs	1960			n.a.	1.5 - 2.0*
	" " "	1965			U.K.	1.6
	Diesel fuel injection equipment					
	Pumps	1959			n.a.	0.7 - 0.8*
	"	1963			W.Ger.	0.7 - 0.9
	Nozzle holders	1959			n.a.	1.5 - 2.0*
	"	1963			W.Ger.	0.7
	Piston Assemblies					
	Complete	1960			n.a.	1.2 - 1.3*
	"	1966[b]			n.a.	1.2 - 1.7
	Piston rings	1960			n.a.	0.8 - 0.9*
	Auto leaf springs	1959			n.a.	0.8 - 0.9*

TABLE II-14 (continued)

Text Reference	Product	Date	Nature of Cost/Price Comparison: Indian 'fair ex-works price'	Foreign: c.i.f. import price	Foreign: supplier	Ratio
	23. Bicycle parts	1960			n.a.	0.8 - 2.8
	27. Miscellaneous					
	Auto hand tire inflator	1960			n.a.	0.8 - 0.9*
	Bearings	1960			n.a.	2.0+ *
	" "	1965			n.a.	2.4
	Mild steel wood screws	1960			U.K.	0.8 - 0.9
	Mild steel machine screws	1959			Japan	0.9 - 1.6
		1959			Sweden	0.8 - 1.0
	Sewing machines	1954			n.a.	0.7 - 0.8
	Oil pressure lamps	1957			n.a.	0.7 - 0.8*
	Brass, copper, zinc sheets and tubes	1959			n.a.	0.9 - 2.0*
		1965			n.a.	1.3 - 1.5

a: post-devaluation exchange rate
b: pre-devaluation exchange rate

Source of Tariff Commission data: GOI, TC, reports listed in bibliography, and in the case of entries marked with an asterisk (*), MacDougall, 1964, pp. 210-211.

domestic market, they do not permit conclusions concerning India's comparative advantage or technical efficiency of production because the ratios reflect overvaluation.

However, the evidence in Tariff Commission reports indicates that there was a wide range in the ratios of Indian costs to international prices for different goods and that in a number of cases Indian costs were below c.i.f. import prices.

(i) DGTD: According to the DGTD, in 1969 the average cost of production in India for the engineering goods and chemicals in which there was import substitution between 1960 and 1967 was 30 to 40 percent above the c.i.f. price of imports.[1] The DGTD does not provide evidence in support of its conclusion and does not explain how it was reached. Consequently, this claim cannot be given much weight.

(ii) Company statements: Published statements by company officials suggest that costs and domestic prices of Indian engineering goods were commonly 25 to 75 percent above international levels, and even higher in the case of some components. Such statements rarely suggest that Indian costs or prices were competitive with c.i.f. import prices for any engineering products, except certain ferrous metals and aluminum. However, published statements are probably a biased sample, since there were a number of incentives against revealing competitive costs.[2] In interviews a number of firms reported that the production cost of

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[1]GOI, DGTD, 1969.

[2]Biases are discussed in the Appendix.

batch-manufactured machinery in India was less than 25 percent above the c.i.f. import price.[1]

(iii) Baranson on Diesel Engines: In his study of the problems of manufacturing Cummins diesel engines in India in 1965, Baranson calculates that "Indian costs run anywhere from 3.5 to 4.1 times U.S. costs" (revised to 2.8 to 3.3 after the 1966 devaluation).[2] This is far outside the range of other cost ratios in Table II-14 and is the result of a special situation which was misinterpreted by Baranson. Data collected in India indicate that the actual cost ratio in 1969 was about 1.5.

The basic problem is that Baranson's cost calculation is for a product with a "domestic content averaging 15 percent or less, of which about 10 percent is assembly costs," during its first year of commercial production in India, and yet Baranson concludes that the cost premium was due to inefficiencies on the part of Kirloskar Cummins and its Indian suppliers:

> (a) a much smaller scale of production relative to internationally competitive plants, and (b) high procurement costs of materials and parts also produced in small scale plants under a protectionist regime.[3]

In fact, it is clear from his data that the main reason for the higher cost in India was the high price of materials and components

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[1]These cases are discussed further in Chapter IV.E. See also Chapter IV.C.3.

[2]Baranson, 1967, pp. 82 ff; 1966, p. 262. Later, because of devaluation, Baranson revised this to 2.8 to 3.3. (Baranson, 1967, pp. 82n, 129; 1969, p. 35.)

[3]Baranson, 1969, p. 35.

imported from the U.S. collaborator before domestic production and procurement were established. Compared to a production cost of $2100 for the engine in the U.S., including assembly costs, the U.S. collaborator charged $3276 f.o.b. for the components alone. Assuming that assembly accounted for 10 percent of total U.S. costs, this means the U.S. parent charged a mark-up of 73 percent on the components. In addition, the Indian company paid $1045 in duty and $328 in freight, and hence the duty-paid price of the imported components was $4649, or 2.5 times U.S. production costs. Baranson's cost calculation is also influenced by the fact that production was at only 20 percent of capacity in the initial year and by the assumption, made without supporting evidence, that the quality and hence value of the engines produced in India were only 70 percent of the quality and value of those produced in the U.S., even though 95 percent of the parts in the Indian engines were imported from the U.S.

Under the circumstances, the data presented by Baranson do not allow any significant conclusion about the relative costs of production in India and advanced countries, apart from illustrating the high prices of imported components.

(iv) Tariff Commission: In connection with applications for tariff protection the Tariff Commission attempted to compare the "fair ex-works prices" of Indian engineering goods with c.i.f. import prices. In each case the commission calculated the fair ex-works price of a product as the average cost plus a return of 12 to 15 percent on capital employed at between one and three Indian companies.[1]

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[1]Capital employed is fixed assets, net of depreciation, plus working capital, the latter assumed equal to 4 to 6 months' cost of

Often the Indian cost including return on equity reported by these studies was higher than the price of imports. Nevertheless, there were a number of cases where the Indian cost was lower than the import price. The Commission's findings indicate that the ratio between the Indian cost of production including return on equity and the c.i.f. import price varied widely among products, with high frequency throughout the range from 0.7 to 2.0.

F. Indian Exports of Engineering Goods

Between the Korean war and 1960 total Indian export earnings stagnated while India's share of world trade declined compared to 1947-49 both in the aggregate and for most major commodities. This was explained largely by macroeconomic policies and discrimination against exports by trade and industrial policies.[1] After about 1961 discrimination against exports was reduced by export subsidies and the 1966 devaluation, and although export earnings declined during the droughts in 1965-67, they increased moderately between 1960 and 1970. (See Table II-15.)

The most striking feature of Indian exports in the 1960s was that 46 percent of the net increase in total annual export earnings between 1960 and 1969 and the entire net increase between 1963 and 1969 (or between 1964 and 1970) can be attributed to the expansion of exports of iron and steel, engineering goods, and tires.[2]

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production exclusive of depreciation.

[1] See Singh, M., 1964; Cohen, 1963 and 1964; and Bhagwati and Desai, 1970, pp. 368-95.

[2] Also, about $69 to $74 million of the increase in total exports between 1960 and 1963 was due to an increase in coverage of export data.

In the late 1960s the Indian government was counting heavily on further expansion of these non-traditional manufactured exports. According to the 1969 draft fourth plan's projection of export earnings for 1980-81:

> The growth of our major traditional exports and in particular tea, jute and cotton textiles is likely to be slow. The major directions of future diversification will lie in metals and metal manufactures, iron ore, chemicals and allied products.[1]

While this plan projected a 7 percent annual rate of growth for total export earnings between 1968-69 and 1980-81, it projected only a 2.7 percent annual rate of growth for export earnings from tea, jute manufactures, and cotton textiles, which accounted for 34 percent of export earnings in 1968-69. During 1969-70 the Planning Commission, the Ministry of Foreign Trade, and the EEPC projected increases in export earnings from iron and steel, engineering goods, and tires of 15 percent per year or more during the fourth and fifth plans.

Tables II-15 through II-18 provide export data for iron and steel, engineering goods, and tires. Table II-15 provides aggregate data for iron and steel and engineering goods for 1956-57 through 1969-70. These exports increased from $13 million to $243 million, or from 1 percent to 13 percent of total exports, during the decade 1959-60 to 1969-70.[2]

Table II-16 provides a breakdown of exports of engineering goods by destination. In the late 1960s developing countries accounted for

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See Bhagwati and Desai, 1970, pp. 396-97.

[1]GOI, PC, 1969, p. 40. Tires are included in chemicals and allied products.

[2]This does not include tires.

about 70 percent of exports, East Europe for about 10 percent, and advanced market economies for about 15 percent.

Table II-17 provides export data for each of the 26 industries examined in detail in this study for each year from 1964-65 to 1969-70. The share of total exports of engineering goods accounted for by the 24 engineering industries included in the table increased from 48 percent in 1964-65 to 76 percent in 1969-70.

Table II-18 provides a breakdown of exports of engineering goods for 1965-66 to 1969-70 for the 100 largest exporters of 1968-69. In 1968-69 ten firms accounted for 34 percent of exports, 25 for 50 percent, and 100 for 74 percent. Data for firms with lower exports, not presented here, show that 445 firms with exports of over $13,000 each (including the firms in Table II-18) accounted for 89 percent of exports.

The aggregate ratio of exports to production for iron and steel, engineering goods, and tires was about 8 percent in 1969-70. The ratio was about 15 percent for iron and steel, 6 percent for engineering goods, and 2-3 percent for tires.[1]

Data on the ratio of exports to production broken down by producer and industry are presented in Tables II-10 and II-12 and in Table III-7. The data in Table III-7 indicate that while exports were 40 percent or more of production for four industries in 1969-70, they

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[1]These ratios and those in the next paragraph were calculated in value terms, using f.o.b. prices for exports and domestic prices for domestic sales. Ratios would be about the same for iron and steel but about 9 percent for engineering goods and 4 percent for tires using domestic prices for export sales.

were less than 10 percent of production even for several of the 26 major export products examined in detail in this study. Among the 13 major public sector firms, only two (nos. 1 and 9 in Table II-12) exported 10 percent or more of production in 1968-69 and only two more exported more than 1 percent of production. Among the 62 largest engineering firms in Table II-10, exports were 10 percent or more of sales for only 8 in 1968-69 (nos. 9, 23, 33, 34, 45, 48, 61, 62).

TABLE II-15

Exports of All Products and of Iron and Steel and Engineering Goods, 1956-57 to 1969-70

Year	Total Exports, All Products[a] ($ mil.)	Iron and Steel and Engineering Goods ($ mil.)	(% of total)	Iron and Steel ($ mil.)	(% of total)	Engineering Goods ($ mil.)	(% of total)
1956-57	1300	7.2	0.6	*	*	7.2	0.6
1957-58	1379	8.3	0.6	*	*	8.3	0.6
1958-59	1221	8.2	0.7	*	*	8.2	0.7
1959-60	1304	13.4	1.0	2.8[b]	0.2	10.6	0.8
1960-61	1333	17.8	1.3	3.7	0.3	14.1	1.1
1961-62	1396	20.8	1.5	4.4	0.3	16.4	1.2
1962-63	1403	20.7	1.5	0.9	0.1	19.8	1.4
1963-64	1631	30.8	1.9	2.6	0.2	28.2	1.7
1964-65	1749	41.2	2.4	5.9	0.3	35.3	2.0
1965-66	1686	51.3	3.0	11.6	0.7	39.7	2.4
1966-67	1606	67.5	4.2	26.0	1.6	41.5	2.6
1967-68	1613	126.6	7.8	71.3	4.4	55.3	3.4
1968-69	1753	205.7	11.7	92.4	5.3	113.3	6.5
1969-70	1833	242.8	13.2	101.0	5.5	141.8	7.7
1970-71	1957	n.a.	n.a.	n.a.	n.a.	153.0	7.8

All values in current prices.
a: calendar years 1956 through 1970
b: calendar 1959
*: negligible
n.a.: not available

For export data on iron and steel, engineering goods, and tires and tubes before 1956-57 see: Iron and steel: Johnson, 1966, p. 18. (Steel peak 1949-50, 18,000 tons).
Engineering goods: Singh, R.K., 1965, p. 205. (Peak 1952, $9.3 million).
Tires and tubes: Datta et al., 1962, pp. 164-77. (Peak 1953-54, $0.3 million).

Sources: Total Exports: International Financial Statistics.
Engineering Goods: GOI, EEPC, HB, 12 September 1968, 30 July 1970.
Iron and Steel: 1959: GOI, DCIS, MSFTI, Vol. 1, Dec. 1959.
Other: IEA, HS, 1968-69, p. 73, and HS, 1969-70, p.79.

TABLE II-16

Destination of Indian Exports of Engineering Goods, 1956-57 to 1969-70 (Percent)

	1956-57	1960-61	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Developing Countries	97.2	74.7	82.8	78.4	71.5	65.7	73.1	74.4
South and east Asia except Japan	34.0	35.7	38.3	32.8	27.1	25.3	27.3	23.2
West Asia	37.9	21.9	26.1	24.2	21.6	21.2	26.2	22.2
Africa	23.0	15.0	16.5	19.3	20.1	17.4	18.9	27.8
Western hemisphere, except U.S. and Canada, plus miscellaneous islands	2.3	2.1	1.9	2.1	2.7	1.8	0.7	1.2
East Europe	0.0	0.1	3.4	7.5	9.6	15.9	10.6	10.1
Advanced Market Countries	2.9	25.1	13.9	13.9	18.9	18.3	16.1	15.7
West Europe	0.9	22.1	7.3	9.8	8.9	7.7	4.9	8.6
U.S. and Canada	0.5	1.9	3.6	3.0	7.8	7.1	5.6	4.9
Australia and New Zealand	1.5	0.6	1.2	0.9	1.5	3.4	4.0	2.1
Japan	0.0	0.5	1.8	0.2	0.7	0.1	1.6	0.1

Note: Table excludes iron and steel and tires.

Source: GOI, EEPC, HB, 1 August 1966, 25 July 1968, 12 September 1968, 30 July 1970.

TABLE II-17

Export of Iron and Steel, Engineering Goods, and Tires by Industry, 1964-65 to 1969-70

($ million)

Industry	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
I. Iron and Steel						
1. Iron and steel	5.92	11.62	26.01*	71.31*	92.39	100.95
II. Engineering Goods						
2. Steel pipes, tubes, and fittings	1.74	4.41	6.09	6.50*	14.26*	15.01
3. Bright steel bars and shaftings	-	-	- *	0.74*	0.99	2.12
4. Iron and steel castings	1.13	1.48	1.63*	2.35*	3.27*	3.92*
5. Steel wire ropes	0.03	0.21	0.89*	0.89	1.24	2.24
6. Electric wires and cables	1.22	1.56	1.60+	2.16+	10.23*	14.81*
7. Hand, small, and cutting tools	0.49	1.08	1.32+	2.86+	3.71	3.55
8. Aluminum ingots, sheets, and foils	0.46	0.13	0.11	0.89	9.82	5.43
9. Transmission line towers	0.72	0.23	0.78*	1.67*	1.38*	3.94*
10. Fabricated steel structures other than (9)	0.14	0.30	0.41*	0.54*	1.14*	2.52*
11. Railway wagons	0.09	0.02	1.24*	3.01*	11.08*	0.70*
12. Cotton textile machinery and parts	0.19	0.43	0.50*	0.88*	1.71*	8.58*
13. Machine tools	0.28	0.72	0.78	0.76*	2.09*	3.69*
14. Electric machinery	0.12	0.19	0.37	0.36+	1.55+	3.38
15. Commercial vehicles and jeeps	0.45	1.02	0.73*	1.20*	2.87*	11.01*
16. Dry and storage batteries	0.98	2.11	1.95+	1.65+	2.35	2.04
17. Radios and components	0.09	0.41	0.07	0.10	0.57	1.65
18. Data processing machines	0.75	1.00	0.57	1.87	1.85	2.57
19. Bicycles	0.57	0.87	0.70	1.46	1.85	2.13*
20. Stationary diesel engines and parts	2.64	2.65	1.74	1.63	2.43	3.04
21. Automobile parts other than engines and engine parts	0.98	1.43	1.36	1.60*	4.22	5.52
22. Vehicular engines and engine parts	-	0.01	- +	0.01+	0.21+	1.39+
23. Bicycle parts	1.00	1.55	1.17	1.45	3.19*	4.04*
24. Electric fans and parts	2.07	2.20	2.13	2.23	2.41	2.83
25. Builders' hardware including locks	0.74	0.94	0.46	0.79	1.48	1.26
III. Tires and tubes						
26. Tires and tubes	3.17	3.94	4.72+	3.97	5.42	6.07

Notes to TABLE II-17

*: production of industry below previous peak
+: production of some important products of industry below previous peak

Sources: Iron and steel: Table II-15
Engineering goods: GOI, EEPC, HB, 1 August 1966, 25 July 1968, 30 July 1970.
Tires and tubes: GOI, CAPEPC, 1970.

TABLE II-18

Exports of Engineering Goods by Firm for the 100 Largest Exporters of 1968-69
1965-66 to 1969-70

($ million)

Rank by Value of Ex-ports in 1968-69	Firm and Affiliation	Foreign Collabo-ration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
1.	Hindustan Aluminium (c) Birla 27% U.S.	Yes	Aluminum ingots, sheets and circles	n.a.	n.a.	0.35	8.23	5.95
2.	K.T. Steel Industries (d) Independent	Yes	Railway wagons	n.a.	n.a.	n.a.	4.73	n.a.
3.	Braithwaite (c) Jardine Henderson	Yes	Railway wagons, fabri-cated steel structures	n.a.	n.a.	0.05	4.22	0.67
4.	Tata Engg. and Loco Co. (TELCO) (c) Tata very small % W.Ger.	Yes	Commercial vehicles, excavators	0.94	1.75	1.69	4.17	9.63
5.	Mukand Iron and Steel (c) Bajaj	Yes	Railway wagon parts (cast steel bogies)	n.a.	n.a.	n.a.	3.98	0.66
6.	Jessop (d) Independent, became 50% Government in 1968	Yes	Railway wagons, fabri-cated steel structures	0.03	0.03	0.32	2.98	0.96
7.	Jaipur Metals and Electri-cals (c) Kamini	Yes	Electric cables	n.a.	0.02	0.05	2.69	3.61

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collaboration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
8.	Bharat Steel Tubes (d) Independent 39% U.S.	Yes	Steel pipes and tubes	n.a.	0.68	1.49	2.61	3.17
9.	Indian Tube (c) Tata Minority U.K.	Yes	Steel pipes and tubes	1.01	1.98	1.13	2.53	3.68
10.	Zenith Steel Pipes (c) Birla	Yes	Steel pipes and tubes	1.67	1.41	2.04	2.10	2.51
11.	Indian Aluminium (b) 65% Canada	Yes	Aluminum ingots, foils	n.a.	0.04	0.23	1.90	0.32
12.	Jay Engineering (c) Shri Ram	Yes	Electric fans and parts, sewing machines	1.67	1.83	1.59	1.78	1.86
13.	IBM World Trade Corp. (b) 100% U.S.	Yes	Data processing machines	1.00	0.98	1.82	1.73	2.18
14.	Hindustan Steel (a) Government	Yes	Steel pipes and tubes	n.a.	n.a.	n.a.	1.36	n.a.
15.	Union Carbide (b) 60% U.S.	Yes	Dry batteries, flashlights	1.05	0.90	0.63	1.34	1.03
16.	Kirloskar Oil Engines (c) Kirloskar	Yes	Stationary diesel engines and parts	2.42	1.96	1.27	1.31	1.44

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collaboration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
17.	Gedore Tools (b) 60% W. Ger.	Yes	Hand tools	0.17	0.67	0.52	1.31	1.69
18.	Hindustan Machine Tools (HMT) (a) Government	Yes	Machine tools	0.37	0.43	0.39	1.21	1.32
19.	Guest, Keen, Williams (b) 60% U.K.	Yes	Fasteners, railway track material, bright steel bars	0.32	0.64	0.71	1.19	0.75
20.	Kamani Engineering (c) Kamani	Yes	Transmission line towers, electric cables	0.16	0.73	1.61	1.12	6.21
21.	Gujarat Steel Tubes Indian	Yes	Steel pipes and tubes	0.27	0.40	1.24	0.98	1.47
22.	Indian Telephone Industries (ITI) (a) Government	Yes	Telephone equipment	0.20	1.15	0.69	0.96	1.34
23.	Integral Coach Factory (a) Government	Yes	Railway wagon parts (bogies)	n.a.	n.a.	0.14	0.95	n.a.
24.	Metro Exporters[e] n.a.	Yes	Bicycles and parts, steel furniture	0.52	0.63	0.59	0.94	1.29
25.	Indian Cable (b) 40% U.K. (control)	Yes	Electric cables	0.18	0.20	0.70	0.89	1.30
26.	Cable Corp. of India (c) Khatau 26% W. Ger.	Yes	Electric wires and cables	0.10	0.46	0.26	0.84	0.48

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collabo-ration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
27.	Associated Battery (ABMEL) (b) 30% UK(control)	Yes	Storage batteries	0.64	1.05	0.59	0.81	0.67
28.	Shri Ambica Tubes Indian	Yes	Steel pipes and tubes	0.48	0.61	0.70	0.74	0.97
29.	Textile Machinery Corp. (TEXMACO) (c) Birla)	Yes	Railway wagons, cotton textile machinery	n.a.	1.23	2.81	0.73	2.11
30.	Oriental Power Cables n.a.	Yes	Electric wires and cables	n.a.	n.a.	n.a.	0.64	n.a.
31.	Orient General Industries (c) Birla	Yes	Electric fans, automobile parts	0.58	0.59	0.51	0.64	0.70
32.	Metal Box (b) 60% U.K.	Yes	Crown corks, tinplate containers	0.63	0.46	0.54	0.63	0.85
33.	Ashok Leyland (b) 60% U.K.	Yes	Commercial vehicles	n.a.	n.a.	0.04	0.61	0.78
34.	Universal Cables (c) Birla, some U.K.	Yes	Electric wires and cables	n.a.	n.a.	0.20	0.57	0.52
35.	Simac Group n.a.	n.a.	Knitting machines	0.13	0.09	0.07	0.57	0.61
36.	Gramophone Co. (b) 100% U.K.	Yes	Gramophone records	0.47	0.61	0.54	0.57	0.62
37.	Easun Engineering (d) Independent	Yes	Switchgear, transformers, transmission line towers, electric cables	n.a.	n.a.	*	0.53	n.a.

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collaboration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
38.	Paunak International n.a.	n.a.	Steel pipes and tubes	n.a.	n.a.	0.37	0.53	0.50
39.	TI Cycles of India (Div. of Tube Investments) (b) over 50% U.K. Murugappa Chettiar	Yes	Bicycles and parts	0.12	0.18	0.33	0.50	0.70
40.	Motor Industries (MICO) (b) over 50% W. Ger.	Yes	Automobile parts	0.12	0.13	0.21	0.50	0.81
41.	Devidayal Cables Indian	Yes	Electric cables, winding wires	n.a.	*	0.34	0.49	n.a.
42.	Bharat Exports[e] n.a.	n.a.	Electric fans, electric cables, bicycles, buckets	0.19	0.27	0.36	0.48	n.a.
43.	Fort Gloster (c) Bangur	Yes	Electric wires and cables	n.a.	0.06	0.63	0.47	n.a.
44.	Lallubhai Amin Chand n.a.	n.a.	Aluminum utensils, stainless steel utensils	0.53	0.33	0.53	0.47	0.46
45.	Jindal n.a.	n.a.	Steel pipes and tubes	0.38	0.27	0.52	0.47	0.79
46.	Usha Martin Black (Wire Ropes) 21% U.K.	Yes	Steel wire ropes	0.14	0.67	0.45	0.46	1.06
47.	Ralliwolf (c) Rallis, 45% U.K.	Yes	Electric hand tools	0.05	0.10	0.22	0.45	n.a.

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collaboration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
48.	R.S. Iron Industries n.a.	n.a.	Iron castings	n.a.	0.02	0.13	0.42	0.49
49.	Kamani Metals and Alloys (c) Kamani	n.a.	Brass and copper semis	n.a.	n.a.	n.a.	0.40	0.45
50.	Indian Tools Manufacturers (c) Birla	Yes	Small tools (twist drills)	n.a.	0.24	0.33	0.40	0.23
51.	Hindustan Dowidat Tools (c) Birla, 22% W. Ger.	Yes	Hand tools	0.11	0.16	0.21	0.39	0.46
52.	Godrej and Boyce (d) Independent	Yes	Steel furniture	0.22	0.21	0.22	0.39	0.44
53.	India Pistons (c) 70% Simpson, 17% U.K.	Yes	Vehicular engine parts (pistons)	0.10	0.23	0.17	0.39	0.54
54.	Electrical Manufacturing Co.(EMC) n.a.	n.a.	Transmission line towers, electric cables	n.a.	0.06	0.37	0.38	n.a.
55.	Kesoram Spun Pipes (Div. Kesoram Industries) (c) Birla	Yes	Iron castings (spun pipes)	n.a.	0.11	0.17	0.38	0.50
56.	Indian Implements n.a.	n.a.	Locks, mathematical instruments	0.42	0.04	0.40	0.38	0.32

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collabo- ration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
57.	Siemens India (b) 51% W.Ger., Khatau	Yes	Electric cables, electric motors, switchgear	n.a.	0.69[f]	0.37	0.38	0.67
58.	Victory Iron Works n.a.	n.a.	Iron Castings	n.a.	0.04	0.16	0.37	n.a.
59.	Hind Cycles (c) Birla	Yes	Bicycles and parts	n.a.	0.04	0.28	0.36	0.35
60.	Jeewanlal n.a.	Yes	Aluminum utensils	0.43	0.29	0.38	0.36	0.31
61.	Kamani Tubes (c) Kamani	Yes	Brass and copper semis	n.a.	0.05	0.47	0.35	0.30
62.	Indo Engineering n.a.	n.a.	Electric cables	n.a.	n.a.	n.a.	0.35	0.27
63.	Raymond Woollen Mills (J.K.Engineers File Div.) (c) Singhania	Yes	Steel files	0.20	0.31	0.72	0.29	0.39
64.	Sen Raleigh (d) Sen and Pandit 17% U.K.	Yes	Bicycles and parts	n.a.	0.18	0.25	0.28	0.24
65.	Famatex India n.a.	n.a.	Textile machinery	n.a.	n.a.	0.07	0.28	0.52
66.	Aluminim Cables and Conductors n.a.	n.a.	Electric cables	n.a.	n.a.	n.a.	0.28	0.73

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collabo-ration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
67.	Industrial Cables India n.a.	Yes	Electric wires and cables	*	*	0.14	0.27	0.74
68.	NGEF (a) Government (State)	Yes	Transformers, electric motors, motor starters	0.0	0.0	0.0	0.27	0.34
69.	Jain Tube n.a.	n.a.	Steel pipes and tubes	n.a.	0.02	0.05	0.26	0.58
70.	Philips India (b) 52% Netherlands	Yes	Radios and components, lamps and components	n.a.	0.07	0.02	0.26	1.07
71.	Walchandnagar Industries (c) Walchand	Yes	Sugar machinery	n.a.	n.a.	n.a.	0.26	0.35
72.	Kirloskar Brothers (c) Kirloskar	Yes	Agricultural machinery, pumps	0.20	0.18	0.22	0.26	0.29
73.	Hero Cycles n.a.	n.a.	Bicycles and parts	n.a.	0.11	0.23	0.26	0.37
74.	Larsen and Toubro (d) Independent, small % Denmark	Yes	Electric switchgear, petrol pump meters	0.01	0.08	0.13	0.25	0.58
75.	Murphy India (b) majority U.K.	Yes	Radios and components	n.a.	n.a.	*	0.25	n.a.

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collaboration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
76.	Aero Engg. Works n.a.	n.a.	Bicycles and parts	0.08	0.08	0.22	0.24	0.29
77.	Teksons n.a.	n.a.	Automobile parts	n.a.	n.a.	0.11	0.24	0.47
78.	Bhagwati Steel n.a.	n.a.	Fabricated steel structures	n.a.	n.a.	0.03	0.24	0.31
79.	Shree Krishna n.a.	n.a.	Fasteners, iron castings, buckets	0.14	0.10	0.16	0.24	0.26
80.	Batliboi[e] n.a.	Yes	Electric machinery, stationary diesel engines, pumps, machine tools	0.19	0.28	0.28	0.24	0.50
81.	Groz-Beckert Saboo (b) 60% W. Ger.	Yes	Textile machinery parts (needles)	0.12	0.15	0.20	0.23	0.29
82.	Cossul and Co. n.a.	n.a.	Agricultural implements	n.a.	n.a.	0.23	0.23	0.23
83.	National Insulated Cable some U.K.	Yes	Electric cables	0.13	0.32	0.21	0.23	0.29
84.	Bharat Diamond Industries n.a.	n.a.	Cutting tools	n.a.	n.a.	0.37	0.23	n.a.
85.	Road Master Industries n.a.	n.a.	Bicycles and parts	0.17	0.19	0.15	0.22	0.35

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collaboration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
86.	Shree Laxmi Iron and Steel Works n.a.	n.a.	Railway track materials	n.a.	n.a.	0.34	0.21	0.19
87.	Crompton Greaves (c) Thapur, 50% U.K.	Yes	Electric fans, electric motors, transformers	0.10	0.09	0.18	0.21	n.a.
88.	Greaves Cotton (c) Thapur	Yes	Diamond drills	n.a.	*	0.03	0.21	0.08
89.	Andrew Yule Andrew Yule	n.a.	Tea machinery	n.a.	n.a.	0.16	0.21	0.24
90.	Ruston and Hornsby (c) 74% Thapur, 26% U.K.	Yes	Stationary diesel engines and parts	0.10	0.14	0.18	0.20	0.41
91.	Indo-Asian Traders[e] n.a.	n.a.	Transformers	n.a.	0.01	0.03	0.20	n.a.
92.	Cooper Engineering (c) Walchand	Yes	Stationary diesel engines, machine tools, cotton textile machinery	0.35	0.25	0.17	0.20	0.41
93.	Bhartia Commercial n.a.	n.a.	Bright steel bars	n.a.	n.a.	0.14	0.20	0.19
94.	Addison (c) Simpson	n.a.	Small tools	0.09	0.11	0.14	0.20	0.25
95.	Standard Batteries Indian	Yes	Storage batteries	0.51	0.07	0.48	0.20	n.a.

TABLE II-18 (continued)

Rank by Value of Exports in 1968-69	Firm and Affiliation	Foreign Collabo-ration	Product	1965-66	1966-67	1967-68	1968-69	1969-70
96.	Numex Engineers n.a.	n.a.	Stationary diesel engines, water pumps, oil mill machinery	n.a.	n.a.	0.39	0.20	n.a.
97.	Kirloskar Electric (c) Kirloskar	Yes	Electric motors, trans-formers, motor starters	n.a.	0.13	0.10	0.19	0.63
98.	Power Cables n.a.	Yes	Electric wires and cables	n.a.	n.a.	n.a.	0.19	0.62
99.	Indian Aluminium Cable 50% Japan	Yes	Electric cables	n.a.	n.a.	0.02	0.19	0.54
100.	Optimohar Industries some W. Ger.	Yes	Pressure stoves and lanterns	0.14	0.11	0.12	0.18	0.26

Notes:
Affiliation: (see part II.D.3 for details)
  a: government
  b: foreign majority
  c: large industrial house
  d: independent
e: trading company (Batliboi is also a manufacturer)
f: observation is for the period October 1965-September 1966.
*: less than $0.005 million
n.a.: not available
Foreign collaboration: "Yes" means that there was at least 10 percent ownership by a foreign company or technical collaboration for part of production.
Source: GOI, EEPC.

CHAPTER III

SUPPLY FACTORS CONTRIBUTING TO EXPORTS

The data in Table II-15 reveal that between 1959-60 and 1969-70 exports of iron and steel and engineering goods increased substantially relative both to the 1959-60 base and to total exports. Exports of engineering goods increased in every year during this period and exports of iron and steel increased in every year after 1963-64. The growth of exports was particularly great after 1966-67.

This chapter considers developments in India during the 1960s that contributed to these exports through the relation between the supply of iron and steel, engineering goods, and tires for export and the dollar prices of exports. One reason for emphasizing supply is that the expansion of exports in this period can be explained primarily by changes that occurred in India rather than in export demand, especially: (A) expansion and diversification of the production base; (B) development of capacity in excess of domestic demand in many industries; and (C) government export promotion measures, including devaluation, which reduced the gap between implicit exchange rates on production for the domestic market and for export.[1] Similar attention is not given to

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[1] The same coincidence of circumstances was important in Argentina: "In 1963, total exports of engineering products increased abruptly from less than $5 million to about $18 million (per year), partly in response to the devaluation and the introduction of a number of export promotion measures, and partly as an effect of the decline in internal demand during the 1962-63 recession." GATT, 1969, p. 69.

export demand, but a brief list of factors that affected demand is suggested in part III.E.

The analysis in this chapter was undertaken for three reasons: (i) It is important to understand the circumstances under which these exports were made to determine how a semi-industrial country like India began to move from import substitution to export. Without such an understanding it would be easy to make unwarranted inferences about "dynamic" comparative advantage from the pattern of Indian exports. (ii) In connection with the discussion in Chapter VIII.C of the cost of foreign exchange earned by exports of engineering goods, it is important to determine the incentives under which Indian firms exported. Calculation of implicit exchange rates on exports makes possible inferences about the costs of foreign exchange earned. (iii) Most important, the chapter provides the basis for a critique of Indian export promotion policies in part III.D and Chapter VIII.A. There is no doubt that efficiency criteria called for export promotion measures to reduce the gap between implicit exchange rates on import substitution and export, but it will be seen that the measures adopted encouraged an inefficient allocation of the resources devoted to exports of engineering goods.

A. The Production Base for Exports

Virtually no firm was established in India to produce iron and steel, engineering goods, or tires mainly for export. Only two export-oriented investments were discovered during this study. The first, which was described in Chapter II.B, was for production of pig iron in the early part of the present century and is no longer directly relevant. The second is described by the following 1965 report:

> In Punjab there are a number of foundries which have been established in recent years for exclusive production of pipes for export to USA....Such foundries are either extensions to existing foundries or have been set up as new units altogether. Pig iron has been made available to them from Export Quota...All such foundries have to close down if exports for any reasons come to a standstill as pig iron is not available to them (for production for the domestic market).[1]

Another report suggests that the foundries in question were actually set up to supply the domestic market, not to export, and that they exported because pig iron was allocated for export production.[2] With these exceptions, exports were dependent on firms oriented to supplying the Indian market. This is clear from the data on export-production ratios in Tables II-10, II-12, and III-7.

Because investments for production for the protected domestic market were made without consideration of comparative advantage or

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[1]GOI, MIS, 1967, p. 33. Parenthesis added. Indian exports of cast iron pipes and fittings in 1964-65 and 1965-66 were $0.80 million ($0.35 million to the US) and $0.62 million ($0.14 million to the US) compared to total exports of engineering goods excluding iron and steel of $35.3 million and $39.7 million, respectively. The highest level reached was in 1968-69, $1.77 million ($0.58 million to the US) compared to a total of $113.3 million.

[2]According to IIFT, 1966b, pp. 5, 31, foundries in the Punjab with excess capacity because of shortage of pig iron participated in a "Cast Iron Soil Pipes Export Project" initiated in 1963-64 by the Punjab Export Corporation. They accounted for 500 tons of exports in 1963-64 and 2000 tons, or a quarter of the total for India, in 1964-65.

export demand by either government planners or investors, there is little reason to expect that the expansion of the production base which occurred in the 1960s would have accounted for more than a proportional increase in exports if implicit exchange rates had remained unchanged. Even the assumption of a proportional increase in exports is tenuous since there was a shift in the industrial composition of the production base and a decline in the share of the industries which had a higher-than-average ratio of exports to production in 1959-60, especially simple metal products like those in Table III-2. Although it is sometimes argued that semi-industrial countries have a comparative advantage in production of capital goods for the home market,[1] it seems unlikely that the composition of engineering industries shifted in the direction of India's comparative advantage after 1959-60, particularly when one allows for increasing indigenous content.

Table III-1 shows that there was a substantial increase in the ratio of aggregate exports to the production base for iron and steel and engineering goods. With a constant ratio, the expansion of the production base between 1959 and 1969 would have accounted for only 11 percent of the actual increase in exports including iron and steel or 16 percent excluding iron and steel. This involves some underestimation of the effect of the increase in production given the assumption of proportionality because the production index uses constant prices while exports are measured in current prices and because the

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[1] Pack and Todaro, 1969.

TABLE III-1

Ratio of Exports to Production Base for Engineering Goods and Iron and Steel, 1959-60 to 1969-70

Year	Index Numbers of Production[1] (Base: 1960 = 100)			Index Numbers of Export/Production Ratio[2] (Base: 1969-70 = 100)		
	Basic Metals and Engineering Goods	Engineering Goods	Basic Metals	Iron and Steel and Engineering Goods	Engineering Goods	Iron and Steel
1959-60	84	87	78	16	22	8
1960-61	100	100	100	18	26	8
1961-62	117	116	119	18	26	8
1962-63	142	141	143	15	25	1
1963-64	162	157	172	19	33	3
1964-65	183	187	174	23	34	7
1965-66	213	228	180	24	32	13
1966-67	219*	232*	190	31	32	28
1967-68	222*	236*	190*	57	43	78
1968-69	229*	244*	194	90	84	99
1969-70	242*	257*	210	100	100	100

Notes:

1 The index numbers of production were derived from the official Indian data with one adjustment. In any year when the level of the production index for any of the five component industrial groups (non-electric machinery, electric machinery, transport equipment, metal products, basic metals) was below a previous value of the index, the previous peak value was used. Figures affected by this adjustment are marked with an asterisk (*).

2 The index numbers of export/production ratio are derived by dividing the export data in Table II-15 by the index numbers of production and then scaling them so that the value in 1969-70 was 100.

Sources: Index Numbers of Production: GOI, CSO, MSPSII, November and December, 1968, and IEA, HS, 1969-70, p.8.
Exports: Table II-15.

production index excludes new industries as a result of the 1960 base.[1] Moreover, the assumption of a constant ratio of exports to capacity rather than production would account for a somewhat larger share of the expansion of exports, but reliable capacity data are not available.

However, there was not a similar expansion in the ratio of exports to production for a number of the major export products of 1959-60, particularly simple metal products amenable to small scale production like utensils, trunks, buckets, and furniture. Although production data are not available for these industries, the stagnation of such exports is evident from the data in Table III-2. The total value of exports for the seven industries listed increased only from $2.9 million to $3.2 million between 1959-60 and 1969-70, while the share of these industries in total exports of engineering goods declined from 28 to 2 percent. Since Hong Kong and Taiwan has similar experience with some simple metal products, this might be explained by import substitution in the developing countries which were the major markets, i.e. demand factors. Such import substitution was reported by a number of foreign market surveys.[2] The stagnation of these exports might also reflect the high material content of these products and the material supply problems, discussed in Chapter IV, which were particularly great for small producers after 1959.

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[1] Also, this index measures gross factory output and does not record the increase in domestic value added which occured when a firm produced a component which was previously imported and incorporated the component in the same item it was previously producing. The index does count components produced by one firm for use by another.

[2] See also the discussion in Singh, M., 1964, pp. 219-21.

TABLE III-2

Exports of Simple Metal Products which were Important in 1959-60

($ Millions)

Product	Exports in 1959-60	Exports in 1969-70
Aluminum utensils, capsules, etc.	0.87	0.89
Steel trunks	0.54	0.47
Galvanized iron buckets, drums, etc.	0.44	0.18
Steel furniture	0.43	0.66
Umbrellas and fittings	0.23	0.30
Crown corks (bottle caps)	0.23	0.37
Brass and copper utensils	0.18	0.31
Total	2.92	3.18

Source: GOI, EEPC, HB, 12 September 1968, 30 July 1970.

Parts III.B and III.C discuss changes in supply factors which appear to be the major explanations of the increase in exports, at least in relation to production and capacity, namely development of underutilization of capacity because of lack of domestic demand and reduction of the gap between implicit exchange rates on production for the domestic market and for export as a result of government export promotion measures and devaluation. Three additional factors which may have affected supply for export but for which data are lacking are: (i) Because of cost reductions as a result of infant industry phenomena, achievement of economies of scale, and external economies, there could have been a shift in the export supply function. There were increases in scale of production. (ii) There was an increase in the number of products which could be exported because of expiration of the export restrictions in some foreign collaboration agreements. Because of the large number of agreements made in 1958-1962 with durations of 5 to 10 years, many agreements expired in the late 1960s. (iii) There was an increase in the share of domestic value added in production. While one would expect that (i) and (ii) would have contributed to an increase in exports, (iii) probably would have deterred exports.

B. Overexpansion of Capacity, Material Supply Constraints, and Recession

In the short run, the price at which a firm would export depends on (i) its production capacity based on fixed inputs; (ii) domestic demand; and (iii) prices and the availability of variable inputs for production for the domestic market and for export. This part considers how changes in (i) - (iii) influenced the export supply function for engineering goods during the 1960s, particularly the change which occurred in about 1966.

During the entire period after 1956-58, there was substantial underutilization of capacity in many engineering industries. Excess capacity was primarily a result of supply conditions for materials and the level of domestic demand combined with inefficient investment incentives and errors in planning.

1. 1960 to 1966

a. Shortage of Materials

In the first half of the 1960s, the binding constraint on production where there was excess capacity was almost always the supply of materials, components, and spares. These shortages and the high black market premia on materials will be discussed in Chapter IV.

Supply conditions for materials limited production in the sense that output would have been expanded given existing capacity and domestic demand if materials had been freely available at the landed cost of imports or even at the control prices of domestic materials. Licenses for maintenance imports and certain indigenously produced materials like steel were rationed bureaucratically, and there were prohibitions on their redistribution among firms. Output was sometimes constrained below capacity by the availability of rationed inputs for which additional supplies were not available at any price. In other cases, additional supplies were available in the open market, but marginal revenue was less than marginal cost using materials at high open market prices, in spite of excess capacity and domestic prices for output above international prices.

During this period excess capacity was a result of not only unexpected shortages of materials but inefficient investment incentives created by the policy of allocating maintenance import licenses on the basis of capacity. Because of the high rate of profit on sales in the domestic market and the fact that supplies of imported materials were the binding constraint on production, firms had a strong incentive to expand capacity even when there was already excess capacity.

Since virtually anything produced by the existing industries in the first half of the 1960s could have been sold domestically at higher marginal revenue than was obtained on exports before allowing for export promotion schemes, the existence of excess capacity alone did not explain exports. Exports were deterred by material supply conditions and the profitability of sales in the protected domestic market.

Nevertheless, given the export promotion schemes considered in part III.C, the existence of excess capacity reduced the price at which some firms were willing to export. Two export promotion schemes relaxed material supply constraints for exporters, namely priority in allocation of certain rationed indigenous materials and the import entitlement license scheme. Since transfer of the rationed indigenous materials to other users was prohibited, the value of the special allocations was greater for firms because they had excess capacity due to shortage of materials. The same was initially true of import entitlement licenses, but the government became increasingly liberal in allowing transfer of entitlement licenses at a premium.[1]

Lack of reliable data on capacity makes it impossible to test whether there was any relation between incidence of excess capacity and export between industries or over time in the first half of the 1960s, or even to determine the share of exports accounted for industries with excess capacity during this period. It is clear from the annual reports of a number of major exporters of engineering goods, however, that any excess capacity which existed was not a result of inadequate domestic demand but of material supply constraints and that exports depended on special provisions for supply of materials, the import entitlement scheme, and other incentives.

It can be concluded that the incentive provided by export promotion schemes which relaxed material supply constraints on production was a critical factor behind a large share of the exports made in this period. This supports the general conclusion reached in part III.D that export promotion measures played an important role in the expansion of exports.

Nevertheless, it should be noted that, because of widespread excess capacity, a significant share of the exports of engineering goods probably were made on the basis of short-run marginal costs and

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[1]The Indian Electrical Manufacturers' Association reported that the licenses were not transferable in 1960-61. (IEMA, AR 1960-61.) Jay Engineering reported selling the licenses in 1963. (EW, 30 November 1963, p. 1974.) Bhagwati and Desai, 1970, p. 327n, state that "import entitlements, under the Export Promotion Schemes, were made legally transferable, and a market developed for them around 1965."

would not have been made on the basis of long-run marginal costs even with the export promotion schemes. Consequently, the existence of excess capacity was probably also critical for some exports even prior to 1966. Thus, it is important to recall the fact, mentioned in part III.A, that with the possible exception of cast iron spun pipes no export-oriented investment was made in the engineering industries during this period.

b. Insufficient Domestic Demand

Apart from material supply problems, reports on the period mention the following as secondary causes of excess capacity in certain cases: power shortages during droughts, transportation bottlenecks, shortages of skilled labor, strikes, inadequate project planning and weaknesses in management, and inadequate demand. Only the last is considered here. Domestic demand conditions were occasionally a constraint on production in the sense that firms did not produce even at the level possible using existing capacity and supplies of imported and domestic materials available under rationing at landed or control prices.

Temporary excess capacity due to inadequate domestic demand was a major factor in the export of pig iron and semi-finished steel by Hindustan Steel (HSL) in 1959-60 to 1961-62. In 1959, "availability of merchant iron...was considered in excess of the likely demand, which led to the closing down of the Kulti blast furnaces and export of surplus iron."[1] Johnson reports that:

[1]GOI, MIS, 1967, p. 8.

> Export markets have provided an outlet for surplus production of semi-finished steel (ingots, blooms, slabs, billets)...This surplus production was a normal consequence of the phased commissioning of the new units erected under the Second Plan (i.e. the lag in commissioning of the rolling mills.)[1]

The temporary nature of the exports of pig iron and semi-finished steel is evident from the data in Table III.3.

Even in this case, _ad hoc_ export incentives (import licenses for finished steel)[2] and the higher prices obtained under restricted US aid[3] also played a role. Furthermore, exports of iron and steel were subject to government controls and allowed only when the government decided that "the quantity is surplus to the requirements of the country."[4] Thus, these exports were not a simple market response to excess capacity due to lack of domestic demand.

With the exception of iron and semi-finished steel, reports on the first half of the 1960s virtually never mention lack of demand as a reason for excess capacity. The only specific cases found were: cement machinery, 1963-1965; paper machinery, 1963-1965; asbestos cement products machinery, 1965; iron castings including railway sleepers, 1965; mining and coal washing machinery, 1965; and steel pipes and

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[1]Johnson, 1966, p. 148. Parenthesis added.

[2]The arrangements under which the Ministry of Finance approved export of $10.3 million of semi-finished steel in 1960 by firms which were allowed to use the entire proceeds to import finished steel are described in GOI, LSS, 1966, pp. 51-106.

[3]Some of the exports were under US aid tied to purchases in the US and developing countries and hence presumably took place at prices higher than those available in competitive markets. (_EW_, 18 May 1963, p. 831.)

[4]The wording is from GOI, MSMM, _ISCMB_, May 1968, p. 369.

TABLE III-3

Exports of Pig Iron and Semi-Finished Steel, 1958-59 to 1964-65

	Pig Iron		Semi-Finished Steel	
	'000 tons	$ million	'000 tons	$ million
1958-59	0[a]	0[a]	0	0
1959-60	73[b]	2.8[b]	0[b]	0[b]
1960-61	101	5.1	69	5.3
1961-62	74	3.9	57	4.4
1962-63	19	1.0	0	0
1963-64	0	0	0	0
1964-65	0	0	0	0

a: Calendar 1958.
b: Calendar 1959

Source: Pig Iron: 1958-58: GOI, MIS, 1967, p. 8.
1959-60: GOI, DCIS, MSFTI, vol. 1, December 1959.
1960-61 to 1964-65: NCAER, 1968, p. 449.
Semi-Finished Steel: 1958-59: Johnson, 1966, p. 18.
1959-60 to 1964-65: same as pig iron.

tubes, 1965. Of these, only steel pipes and tubes ($4.4 million in 1965-66) were exported in a substantial quantity.[1]

It can be concluded that except in the case of iron and steel exports by HSL in 1959-60 to 1961-62, capacity in excess of domestic demand was a minor factor in exports prior to 1966.

2. 1966-1969

a. Liberalization of Import of Materials

The importance of material shortages as a cause of excess capacity reached a peak in 1965-1966 as a result of severe restrictions on imports. After the devaluation in June 1966 the government liberalized imports of materials. It announced that "for the 59 priority industries raw materials, components and spares required for production up to full capacity for six months will be provided,"[2] and in 1966-67 the foreign exchange available for maintenance imports was not fully used because of the recession.

Liberalized import licensing after mid-1966 led to a relaxation of material supply constraints on production after arrival of materials late in 1966-67. The change is evident in the annual reports of the major producer and exporter of storage batteries, which reported in 1964-65 that "insufficiency of import licenses necessitated our buying lead in the Indian market at up to three times prevailing world prices" and in 1966-67 that "with the liberalisation of import licenses,

[1]$0.8 million in steel pipes and tubes were exported already in 1963-64 when there was a domestic order backlog.

[2]Cited by Bhagwati and Desai, 1970, p. 483. See also Chapter IV.L below.

material shortages have ceased to be the limiting factor of production."[1] Similarly, the major producer and exporter of tires reported:

> The main feature of the year (1966) was devaluation...Until that happened our production had to be curtailed through lack of raw materials. The liberalisation of import licenses following devaluation enabled us to resume full production from July onwards.[2]

The major producer and exporter of electric cables stated:

> One of the greatest problems in the past few years has been the scarcity of imported metals and other raw materials. This state of affairs was reversed from 7 July 1966 by Government's announcement of its liberalised licensing policy.
>
> With liberal issues of import licenses the supply of raw material was more than adequate (in 1967-68).[3]

Other things equal, because fewer firms would have had to forego domestic sales in order to export and because the open market prices of materials were reduced, this liberalization of imports probably would have reduced the prices at which many firms would have been willing to export. However, the same liberalization of imports reduced the premium on import licenses issued against exports and hence the implicit exchange rate on exports.

b. Recession

(1) Background

The following is a brief summary of the government's explanation of the industrial recession which began late in 1965-66:

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[1] ABMEL, AR 1964-65, p. 34, and AR 1966-67, p. 37.

[2] Dunlop Rubber (India), EPW, 6 May 1967, p. 859.

[3] Indian Cable Company, AR 1966-67, AR 1967-68.

> The "recession" occurred primarily in agriculture-based industries and in equipment industries other than those catering for the requirements of agriculture. It was the result of declines in agricultural output in two successive years. On the supply side, agricultural raw materials like sugarcane, raw cotton and oilseeds were available in reduced quantities. The demand for consumer goods was affected by the reduction in farm incomes. It became necessary to adopt restrictive fiscal and monetary policies in order to hold inflation in check; and the restraint on public investment affected the demand for the output of steel and equipment industries. A slowing down in private investment also occurred, in part because of a less optimistic outlook on the part of industrialists. The ability of industry to finance new investment was also affected by the rise in cost of inputs at a time when output could not be raised in a number of industries because of slack demand conditions.[1]

Non-government sources often added another factor to the explanation of increasing excess capacity:

> The present recession can be traced to the unrealistically high demand estimates projected by the Planning Commission in the successive Plans and large capacities established to fulfil them.[2]

The level of domestic demand rather than material supply conditions explained excess capacity in a number of capital goods industries as early as the second half of fiscal 1965-66. The extent of excess capacity and the number of industries in which it occurred because of inadequate demand reached a peak in 1966-67 and 1967-68.[3]

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[1]GOI, MF, <u>ES</u> 1968-69, p. 11.

[2]Mukand Iron and Steel, AR 1966-67, p. 4.

[3]See GOI, DGTD, AR 1966-67, 1967-68. Apart from the general recession, in 1966 manufacture of PILC cables up to and including 1.1 kv for the domestic market was banned to avoid import of lead. Major export orders from Kuwait in 1967 included orders for 1.1 kv PILC cables.

Although demand for some of these products began to recover in the latter part of 1968-69 and an increasing number of companies reported that production was once again constrained by the supply of materials, particularly iron and steel, lack of domestic demand continued to be an important explanation of excess capacity in many capital goods industries through 1969-70.

There were thus important changes in domestic markets for basic metals and engineering goods which contributed substantially to the expansion of exports. The major changes were (i) overexpansion of capacity in many capital goods industries, including some which operated near capacity until about 1965;[1] (ii) a decline in domestic demand; and (iii) relaxation of material supply constraints on production as a result of import liberalization. The decline in demand was apparent in a reduction of new orders and order backlogs and in rising stocks of finished goods.

The result in many industries was a decline in production and increase in excess capacity, an increase in competition and reduction in domestic prices, and a decline in domestic profit margins (even when calculated as price less average variable cost). Data documenting the decline in production of capital goods and iron and steel are presented in Table II-9. Two surveys in 1967 revealed the domestic price reductions in Table III-4 compared to 1 to 2 years earlier. A survey by the

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[1]This was particularly true of steel tubes (Indian Tube Co.), PILC power cables (Indian Cable Co.), aluminum ingots (Hindustan Aluminium), machine tools (HMT), and generally (i.e. at least 80 percent of capacity in 1964) of iron and steel (except 1961), steel castings, railway wagons, structural steelwork, commercial vehicles.

TABLE III-4

Reductions in Domestic Prices of Engineering Goods, 1965-66 to 1967

Product	Domestic Price Reduction (per cent)
Tungsten carbide	4 - 10
Electric consumer goods	5 - 10
Boilers	5 - 25
Lifts	5 - 25
Cotter pins	7 - 13
Air conditioners	9
Water coolers	9 - 15
Platform trucks	10
Industrial fans	10 - 12
Industrial furnaces	10 - 15
Electric plant items	10 - 20
Cranes	10 - 25
Welding electrodes	15 - 30
Steel structurals and	20
structural fabrication	20 - 25
Transformers and switchgear	20 - 45
Steel castings	20 - 45
Electric cables	25
Sanitaryware	25 - 40

Sources: EE, 22 September 1967, p. 547, and Tata Quarterly, July - October, 1967, p. 64.

Indian Machine Tool Manufacturers' Association indicated that one-third of the producers reduced domestic prices of machine tools between 1967 and 1968 while the rest left prices unchanged. Company and industry reports stated that there were price reductions for railway wagons, steel bars and wire rods produced by re-rollers, and aluminum as well as for several of the same items listed in Table III-4.[1] It should be noted, however, that virtually none of the official price indices in Table III-16 record a decline in average price during these years, although price indices for machinery and transport equipment were quite stable in 1967-1969.[2]

The following generalizations about the distribution of excess capacity in 1966-67 and after are useful in evaluating the incentive to export:[3]

(i) The capital goods and basic metals industries experienced the greatest decline in demand and production and had the lowest capacity utilization, commonly estimated at 50 percent or less except for basic

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[1]For example, Jessop, AR 1966-67, railway wagons; Braithwaite, AR 1967, railway wagons; Mukand Iron and Steel, AR 1966-67, p. 14, steel castings, and AR 1967-68, p. 13, rolled steel; Batala Engineering, AR 1967, steel bars, wire rods, and machine tools; Indian Cable Company, AR 1967-68, aluminum and electric cables; EPW, 12 August 1967, p. 1424, commercial vehicles. Krueger, 1970, p. 50, reports that the ex-factory prices of commercial vehicles increased by 22 percent (for Tata-Mercedes Benz trucks and Mahindra and Mahindra Jeeps, the main exports) to 65 percent between 1965 and 1969.

[2]Whether this implies that the data in Table III-4 are unrepresentative or that the indices in Table III-16 are inaccurate is not clear.

[3]See Table II-9 for detailed production data.

metals. Excess capacity was especially high in industries which depended primarily on orders from the government and capital goods industries. Except for basic metals and commercial vehicles, excess capacity was expected to continue in most of these industries through the revised fourth plan or 1974.

(ii) There was excess capacity in a number of light engineering industries to a much lesser extent and with shorter duration.

(iii) Capacity utilization was high in engineering industries producing agricultural equipment and a number of consumer goods.

(2) Effect on Export Profit Calculations

The considerations listed below were important in the export profit calculations of many firms in 1966-67 and after because of the recession and other developments discussed above:

(i) A substantial share of the costs of value added in manufacturing were fixed, and hence the short-run marginal cost of value added was below the long-run marginal cost. Thus the realization required for export to be profitable was less than in the long-run. Capital equipment had a low opportunity cost, given constraints on diversification for the home market because of specialized equipment, lack of designs and manufacturing know-how, and licensing restrictions. Labor similarly often had a low opportunity cost because long-run labor requirements, retrenchment allowances, the danger of retaliatory strikes, and political pressures limited reductions in employment. For example, Braithwaite reported that:

> All attempts to solve the problem of 40 percent redundancy in our labour force by temporarily reducing the man hours received complete resistance and we had no option but to carry this burden.[1]

(ii) Because material and capacity constraints were not binding on production, export did not require foregoing domestic sales. In any case, it can be inferred from the increase in competition and decline in prices that the marginal revenue on any domestic sales foregone because of exports was reduced. Thus, the marginal realization required to make exports profitable was less than would have been necessary if there had been a binding supply constraint on production and a highly profitable domestic market.

(iii) Because of reduced demand, expanded production capacity, and liberalized import licensing for materials, open market prices of certain materials including steel and aluminum (although not landed prices of imports or control prices of domestic materials in most cases) declined in 1966-67 and 1967-68.[2]

(iv) Interest costs gave some industries an incentive to liquidate inventories, and because of government restrictions firms were not allowed to sell imported or certain indigenous materials without processing. For example, in 1967 cable manufacturers had large inventories of copper and aluminum, and according to the largest manufacturer and exporter:

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[1] Braithwaite, AR 1967, p. 9.

[2] In 1968 open market prices of steel bars were even below control prices. EPW, 10 August 1968, p. 1228, and ET, 17 October 1968.

> Huge quantities of expensive metals imported by the cable manufacturers blocked substantial funds, the financing of which was progressively more expensive as money became dearer. As a result, there was a scramble amongst cable manufacturers to process and dispose of as much of these metals as possible, leading to progressive lowering of prices.[1]

Several companies reported that such inventories affected their export decisions.

(v) In addition, the Indian government varied export restrictions and incentives countercyclically. Controls on exports of iron, steel, and aluminum reinforced the effects of fluctuations in domestic demand on exports.[2] The same appears to have been true in the case of enforcement of export commitments, which were relaxed for the aluminum industry in 1970 because of domestic shortages. Approval of Indian foreign investment was also related to domestic market conditions for equipment:

> Joint venture schemes...for establishment of overseas factories...were examined...with reference to the essentiality and indigenous availability of plant and equipment for export.[3]

(3) Test of the Role of Excess Capacity

The export data in Table II-17 for the 26 industries examined in detail in this study were analyzed to determine the role of excess capacity due to inadequate domestic demand in the expansion of exports

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[1] Indian Cable Company, AR 1967-68, p. 11.

[2] GOI, MSMM, ISCMB, May 1968, p. 369, states that exports of iron and steel were allowed only when "the Iron and Steel Controller is satisfied that the quantity is surplus to the requirements of the country."

[3] GOI, DGTD, AR 1967-68, p. 76.

after 1965-66. The 26 industries were classified into three groups: Group I, those with substantial excess capacity due to inadequate domestic demand (industries 1 through 15); Group II, those without excess capacity (industries 16 through 20 and 26); and Group III, those for which capacity utilization could not be determined or for which it varied significantly between products in the industry (industries 21 through 25). This classification of industries was based on information from interviews, company and trade association reports, and industry studies rather than the government data for capacity utilization in Table II-9. Official data on capacity are widely acknowledged to be grossly inaccurate and are useless for economic analysis.[1]

Only Groups I and II were analyzed. The 21 industries in Groups I and II are not representative of other engineering industries. This can be seen from the fact that their share of total exports increased from 61 to 82 percent of the total over the period from 1965-1966 to 1968-69. However, since they accounted for 82 percent of total exports of iron and steel, all engineering goods, and tires in 1968-69 and 88 percent of the increase from 1965-66 and 1968-69, they provide a basis for useful conclusions.

To emphasize the existence of excess capacity, the value of exports in Table II-17 during each year when production (including exports) was below a previous peak is marked with an asterisk (or a

[1] See notes to Table II-9.

"+" when this was true for only some of the important products of the industry.) Of the industries in Group I, only the aluminum industry did not experience an actual decline in production in spite of the increase in exports while production in many was below a previous peak in most or all of the following four years.

There are three complications in the classification of industries:

(i) Capacity temporarily exceeded domestic demand in the aluminum industry in 1968 and early 1969, but during the rest of the period there was no excess capacity. The aluminum industry is classified in Group I because excess capacity due to lack of domestic demand was the dominant factor behind the industry's exports.

(ii) The classifications for two industries are incorrect for the second half of 1969-70. In the commercial vehicle industry, which is classified in Group I, three major exporters operated near capacity (including export production) in late 1969-70. Two of the companies had order backlogs and their production was constrained by capacity, material supplies, and labor troubles. In the stationary diesel engine industry, which is classified in Group II, there was a major decline in demand and a reduction in production in the second half of 1969-70.

(iii) There were brief, mild declines in production in three other industries listed in Group II. In the case of batteries, the decline in 1967-68 was a result of a strike. The causes of the other declines could not be determined.

In the light of the first two of these complications and the discussion of 1969-71 in section III.B.3 below, the present analysis applies primarily to 1966-67 through 1968-69 and requires some qualifications for 1969-70.

Table III-5 summarizes the data in Table II-17 for industries in Groups I and II. It can be seen that 75 percent of total exports of iron and steel, all engineering goods (including those not listed in Table II-17), and tires in 1968-69, and 86 percent of the increase in exports between 1965-66 and 1968-69, was accounted for by the industries in Group I with excess capacity due to inadequate domestic demand. These percentages would obviously be higher if all engineering industries were classified in Groups I and II.

Furthermore, while exports by the industries in Group I increased by 570 percent between 1965-66 and 1968-69 (or 460 percent excluding iron and steel), exports by the industries in Group II increased by only 32 percent. There is a similar contrast between export-production ratios in the two groups. While exports were 10 to 47 percent of output for 10 of the 15 industries in Group I during 1969-70, exports were 4 to 7 percent of output for four of the six industries in Group II. (See Table III-7.) The high export-production ratio of one of the remaining industries in Group II, the data processing machine industry, is explained by the special licensing provisions described in section III.C.2.b.

These figures suggest that excess capacity was an important

TABLE III-5

Exports by Industries with and without Excess Capacity due to Insufficient Domestic Demand after 1966, 1964-65 to 1969-70

Industries	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Group I: Excess Capacity						
Industries (1) - (15)						
Value ($ million)	12.98	23.40	42.46	96.11	157.74	181.83
Per cent of total*	29	41	59	74	75	73
Industries (2) - (15)						
Value ($ million)	7.06	11.77	16.45	24.80	65.34	80.88
Per cent of total	16	21	23	19	31	32
Group II: No Excess Capacity						
Industries (16)-(20),(26)						
Value ($ million)	8.21	10.99	9.75	10.69	14.46	17.50
Per cent of total	18	20	14	8	7	7

* Total exports of iron and steel, engineering goods, and tires

Source: Table II-17.

factor contributing to the increase in exports.[1] In interviews and in their annual reports the firms involved confirmed that excess capacity played an important role in the decision to export and in determining export prices. It will be seen in part III.D.3 that even after allowing for export promotion schemes a significant share of exports of engineering goods appears to have taken place at realizations which did not cover long-run average costs (and probably did not cover long-run marginal costs) or match realizations in the domestic market, particularly (i) before preferential maintenance import licensing for exporters began in 1968-69, (ii) in the case of firms which did not export enough to qualify for these preferences, and (iii) on the margin for firms which exported beyond the level necessary to qualify for these preferences. It can be concluded that excess capacity was critical for export by a number of industries in cases (i) - (iii), given the

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[1]A number of studies indicate that the level of excess capacity or fluctuations in domestic demand have had an important influence on the volume of exports of engineering goods and metals from other semi-industrial countries. In discussing "the sudden upsurge in total exports of engineering goods...since the late 1950s or early 1960s" from semi-industrial countries which had followed inward-oriented strategies of industrialization, a GATT study notes that "significantly, exports of engineering products from several of these countries showed sharply accelerated growth at times of depressed internal demand, such as Argentina in 1963, in Brazil between 1963 and 1965, and in India in 1967 and, particularly, 1968." (GATT, 1969, p. 88). In discussing the Argentine experience, Felix states that "the fact that industrial exports reached a peak in the 1963 depression and fell off in the 1964-1965 revival of domestic activity reinforces scattered direct evidence that much of the exporting, despite the tax and (LAFTA) tariff concessions, was at less than full cost." (Felix, 1968, p. 90). Little *et al*. report that Brazilian "exports of steel were abnormally high in 1965, and fell in 1966, thus leading to a fall in total exports of manufactures in 1966. Expansion was resumed in 1967, but fell back again in 1968 with the recovery of home demand." (Little *et al*., 1970, p. 380.)

implicit exchange rate on export.

However, there are several limitations on the conclusions that can be drawn from the preceding analysis because industries which did not export were not included. Excess capacity due to lack of demand was clearly neither necessary nor sufficient for export in general. First, a small yet significant share of exports in 1968-69 (7 percent), but very little of the increase between 1965-66 and 1968-69 (2 percent), was accounted for by the industries in Group II.

Second, some major industries, notably heavy electrical generating, metallurgical, and mining equipment (i.e. the largest public sector firms other than HSL) did not export in spite of vast excess capacity due largely but not exclusively to lack of domestic demand. (See Table III-6.) Moreover, even in many industries which did export, only a small share of excess capacity was employed in export production.

Third, export, like performance in general, differed substantially among firms in the same industry, particularly in the case of non-commodity-like products. In the commercial vehicle industry, the ratio of exports to capacity was positively related to utilization of capacity for domestic production, with TELCO dominating both the domestic market and exports and Hindustan Motors and Premier Automobiles making a poor showing in both. The differences in performance in this case seem to have been related to the quality of management and of the vehicles produced.[1]

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[1]<u>EPW</u>, 17 February 1968, p. 315, reports that "it is the groups with engineering bias and tradition--Tata (TELCO), Mahindra (Mahindra and Mahindra), and Leyland (Ashok Leyland)--which give rise to the least complaints about their products. Birla (Hindustan Motors) and

TABLE III-6

Capacity Utilization in Heavy Machinery Industries, 1968-69

Industry	Capacity	Ratio of Output to Capacity	Exports
1. Heavy electrical generating equipment			
Turbines, hydro	0.5 mil. KW	0.20	0
Turbines, thermal	1.5 mil. KW	0.27	0
Power Boilers	1.5 mil. KW	0.27	0
2. Metallurgical and other heavy equipment	85,000 tons	0.29	0
3. Coal and other mining machinery	50,000 tons	0.16	0

Source: IEA, HS, 1969-70, p. 145.

3. 1969-1971: Steel Shortage

Domestic demand for a number of the engineering goods for which production declined during the recession began to recover in the second half of 1968-69. Reports of domestic price increases for engineering goods were common in late 1969-70 and are supported by the data in Table III-16. However, apart from the aluminum industry and some units in the commercial vehicle industry, capacity constraints did not limit output by these industries during 1969-70.

The important development which began in early 1969 was a partial return to the material supply conditions of the first half of the 1960s. Chapter IV will discuss the adverse impact of these material supply problems, particularly shortage of steel, on production and exports. The EEPC argued that during 1969-70 shortage of steel was the main factor limiting execution of existing export orders and booking of new ones, i.e. that exports were again deterred because production was constrained by the supply of materials and domestic sales were more profitable than exports.

C. Government Export Promotion Schemes

The rupee was overvalued at the official exchange rate, particularly between the late 1950s and devaluation in 1966. Protection afforded by tariffs and restrictive import licensing generally raised the effective exchange rate on industrial production for the domestic

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Walchand (Premier Automobiles) have still to acquire this quality consciousness. The quality of their products has gone down with every increase in indigenous content." See also EPW, 28 June 1969, p. 1024.

market considerably above the official rate but reduced the effective exchange rate on export before allowing for export subsidies below even the overvalued official rate by forcing use of expensive domestic inputs and imported inputs for which prices were increased by tariffs and scarcity premia. The resulting structure of effective exchange rates created a strong bias toward production for the domestic market rather than for export.[1]

Although export promotion measures can be traced back as far as the foreign exchange crisis of 1956-58, the government's reaction to that crisis was to restrict imports and promote import substitution rather than to encourage exports. However, after about 1959-60, and particularly after intensification of the foreign exchange shortage in 1962, the bias in effective exchange rates against exports was progressively reduced in the case of non-traditional manufactured goods by export promotion schemes and devaluation, as well as by the recession after 1966.

This part examines each of the export promotion schemes which applied to iron and steel, engineering goods, and tires during the 1960s. This discussion provides the basis for conclusions in part III.D concerning the effect of export promotion schemes on implicit exchange rates and on the volume of exports and in Chapter VIII.A concerning the efficiency of export promotion policies.

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[1]See Bhagwati and Desai, 1970, pp. 354-61, for measurements of effective protection in a number of engineering industries in 1961-62.

TABLE III-7

Summary of Export Subsidies, 1969

Product	Exports[a] 1969-70 ($ mil.)	Cash[b] Subsidy 1969-70 (% f.o.b.)	Indirect[c] Tax Rebate 1969 (% f.o.b.)	Steel[d] Subsidy mid-'69 (% f.o.b.)	Import Licenses for Exporters[e]: Entitlement 1964/66 (% f.o.b)	Import Licenses for Exporters[e]: Replenishment 1966-70 (% f.o.b.)
1. Iron and steel	101.0				0	0
Pig Iron		10/0	10	0		
Billets		10/0	26	0		
Structurals		15/0	20	0		
Bars and rods		22.5/0	18	0(6)[n]		
Rails		5	n.a.	n.a.		
2. Steel pipes, tubes, and fittings	15.0					
Pipes and tubes	14.6	46/30	19-27	14	40	
Ungalvanized						5
Galvanized						220
Fittings	0.4	20	n.a.	n.a.	n.a.	
Ungalvanized						5
Galvanized						20
3. Bright steel bars and shaftings	2.1	15	n.a.	n.a.	75	40
4. Iron and steel castings	3.9	25		n.a.	40	5
Iron	3.6		5-6			
Steel	0.4		3			
5. Steel wire ropes	2.2	20	19-20	n.a.	75	40

TABLE III-7 (continued)

	Preferential Maintenance Import Licensing for Exporters				Percent of Exports to Soft Currency Areas 1969-70[j]	Medium and Long-Term Credit[k]	Eligible under Tied Equity Investment Scheme[m]
	Obligation to Export 5% of Output[f] (Date Imposed)	Priority Status by Export[g]	Preference for Exporting 10% of Output[h]	Percent of Output Exported[i] (1969-70)			
1. Iron and Steel	No	P	Yes	15[p]		Eligibility uncertain (except rails)	No
Pig iron					0 (1968-69)		
Billets					32 (1968-69)		
Structurals							
Bars and rods							
Rails						Yes	
2. Steel pipes, tubes, and fittings					6	Yes	No
Pipes and tubes	1970-71	P	Yes	40			
Ungalvanized							
Galvanized							
Fittings							
Ungalvanized							
Galvanized							
3. Bright steel bars and shaftings	No	Yes	Yes	47	1	No	No
4. Iron and steel castings	No	P	Some[q]	n.a.	17	Eligibility uncertain	No
Iron							
Steel							
5. Steel wire ropes	1968-69	P	Yes	40	46	Eligibility uncertain	No

TABLE III-7 (continued)

Product	Exports 1969-70	Cash Subsidy 1969-70	Indirect Tax Rebate 1969	Steel Subsidy mid-'69	Import Licenses for Exporters[e] Entitlement 1964/66	Import Licenses for Exporters[e] Replenishment 1966-70
6. Electric wires and cables	14.8			0	100/75	
Bare conductors						
Aluminum	5.2	10	28			90
Copper	4.6	0	11			90
Insulated cables	5.0		n.a.			
Aluminum		10				90
Copper						
PILC 1.1 kv and over		10				70
Other		0				90
7. Hand, small and cutting tools	3.5			n.a.	75	
Hand		15(20)	2			30
Steel files	0.6	15(22.5)	n.a.			50
Twist drills	0.5	15(22.5)	n.a.			50
Other		15(22.5)	n.a.			40
8. Aluminum ingots, sheets and foils	5.4			0		
Ingots	4.8	0	28		0	0
Sheets and circles	0.3	10	31 or 49[s]		100/75	10
Foils	0.3	10	n.a.		100/75	10
9. Transmission line towers	3.9		10	8	40/60	
Ungalvanized		20				10
Galvanized		25				20
10. Fabricated steel structures other than (9)	2.5	20	9-10	8	40	
Ungalvanized						10
Galvanized						20

TABLE III-7 (continued)

Preferential Maintenance Import Licensing for Exporters

	Obligation to Export 5% of Output[f] (Date Imposed)	Priority Status by Export[g]	Preference for Exporting 10% of Output[h]	Percent of Output Exported[i] (1969-70)	Percent of Exports to Soft Currency Areas 1969-70[j]	Medium and Long-Term Credit[k]	Eligible under Tied Equity Investment Scheme[m]
6. Electric wires and cables	No	P	Yes		27	Yes	No
Bare conductors							
Aluminum				13	60	Yes	
Copper				90-100	2	Yes	
Insulated cables				39[r]	16	Yes	
Aluminum							
Copper							
PILC 1.1 kv and above							
Other							
7. Hand, small, and cutting tools	1968-69	P	Yes		36	No	No
Hand				25[v]			
Steel files				25[w]			
Twist drills				see note x	18		
Other					1		
8. Aluminum ingots, sheets, and foils	see note y	P	No (1969-70) Yes (1968-69)		72	Eligibility uncertain	No
Ingots				7	79		
Sheets and circles				1	9		
Foils				7	15		
9. Transmission line towers	1970-71	P	Yes	18	21	Yes	No
Ungalvanized							
Galvanized							
10. Fabricated steel structures other than (9)	No	P	Yes	18	23	Eligible	Yes (minor)
Ungalvanized							
Galvanized							

TABLE III-7 (continued)

Product	Exports 1969-70	Cash Subsidy 1969-70	Indirect Tax Re-bate 1969	Steel Subsidy mid-'69	Import Licenses for Exporters[e] Entitle-ment 1964/66	Replen-ishment 1966-70
11. Railway wagons	0.7	20	n.a.	n.a.	40	20
12. Cotton textile machinery and parts	8.6	10-12.5[u]	n.a.	n.a.	40 (75 parts)	20
13. Machine tools	3.7	25	3-5	1	40	20
14. Electric machinery	3.4		n.a.	n.a.	40	
Transformers	1.5	25				40
Motors	0.7	15				40
Motor starters	0.1	25				20
Other switchgear	0.7	25				40
15. Commercial vehicles and jeeps	11.0	20	n.a.	n.a.	75	20
16. Dry and storage batteries	2.0	10	n.a.	n.a.	60	
Dry	1.0					30
Storage	1.0					50
17. Radios and components	1.6	10	n.a.	n.a.	60-75	30
18. Data processing machines*	2.6	0	n.a.	n.a.	100	100
19. Bicycles	2.1		15	n.a.	38	
Sports light roadsters		25				47
Other		30				20

TABLE III-7 (continued)

	Obligation to Export 5% of Output[f] (Date Imposed)	Priority Status by Export[g]	Preference for Exporting 10% of Output[h]	Percent of Output Exported[i] (1969-70)	Percent of Exports to Soft Currency Areas 1969-70[j]	Medium and Long-Term Credit[k]	Eligible under Tied Equity Investment Scheme[m]
11. Railway wagons	No	P	No (1969-70) Yes (1968-69)	0 (1969-70) 11 (1968-69)	44 (1969-70) 3 (1968-69)	Yes	No
12. Cotton textile machinery and parts	No	P	Yes	20	91	Yes	Yes
13. Machine tools	No	P	Yes	10[z]	31	Eligible	Yes
14. Electric machinery	No	P	No	n.a.	22	Eligible	Yes (minor)
Transformers					18		
Motors					23		
Motor starters					60		
Other switchgear					27		
15. Commercial vehicles and jeeps	No	P	No	8	93	Yes	No
16. Dry and storage batteries	1968-69	P			65	No	No
Dry			n.a.	n.a.	51		
Storage			No	5[iii]	77		
17. Radios and components	No	NP	n.a.	n.a.	84	No	No
18. Data processing machines	not applicable (see note*)			50	0	No	No
19. Bicycles	1968-69	P	No	7	9	No	No
Sports light roadsters							
Other							

TABLE III-7 (continued)

Product	Exports 1969-70	Cash Subsidy 1969-70	Indirect Tax Rebate 1969	Steel Subsidy mid-'69	Import Licenses for Exporters[e] Entitlement 1964/66	Replenishment 1966-70
20. Stationary diesel engines and parts	3.0	20		n.a.		20
Engines			n.a.		40	
Parts			5		75	
21. Automobile parts	5.5	10	10	n.a.	75	20[ii]
22. Vehicular engines and engine parts	1.4	20	n.a.	n.a.	75	20
Engines						
Parts						
23. Bicycle parts	4.0	30	n.a.	n.a.	20-75	30
24. Electric fans and parts	2.8	20	n.a.	n.a.	40	20
25. Builders' hardware including locks	1.3		n.a.			
Ferrous		20		n.a.	40	5
Aluminum		10		0	100/75	10
Other nonferrous		10		0	100/75	60
26. Tires and tubes	6.1		n.a.	0	75	
Bicycle	0.6	10				30
Other than bicycle	5.5					
Butyl tubes		10				30
Nylon tires		20				50
Other		25				30

TABLE III-7 (continued)

	Obligation to Export 5% of Output[f] (Date Imposed)	Priority Status by Export[g]	Preference for Exporting 10% of Output[h]	Percent of Output Exported[i] (1969-70)	Percent of Exports to Soft Currency Areas 1969-70[j]	Medium and Long Term Credit[k]	Eligible Under Tied Equity Investment Scheme[m]
20. Stationary diesel engines and parts		P			50	Eligible	No
Engines	1968-69		No	4	53		
Parts	1968-69& 1969-70		n.a.	n.a.	38		
21. Automobile parts	1968-69 & 1969-70	P	No	4	52	No	No
22. Vehicular engines and engine parts		P	n.a.	n.a.[iv]	75	Eligibility uncertain	No
Engines	No						
Parts	1968-69 & 1969-70						
23. Bicycle parts	1968-69 & 1969-70	P	n.a.	n.a.	12	No	No
24. Electric fans and parts	No	Yes	Yes	13	14	No	No
25. Builders' hardware including locks	No	NP	n.a.	n.a.	20	No	No
Ferrous							
Aluminum							
Other nonferrous							
26. Tires and tubes	see note vi	P			74	No	No
Bicycle			n.a.	n.a.	18		
Other than bicycle			No	3-4	80		
Butyl tubes							
Nylon tires							
Other							

Notes to Table III-7

Where two numbers in a column are separated by a hyphen, they represent the range of rates for different items. Where they are separated by a slash (/), the left-hand number refers to the beginning of the period and the right-hand number to the end. When the second number is enclosed in a parenthesis, they have the same meanings as in Table III-9, note b.

n.a.: not available

a: Export data are from Table II-17.

b: See part III.C.1.b. Subsidy rates are from Table III-9.

c: See part III.C.1.e. Rates on items (1) to (10) and (19) were derived from specific rates and average values of exports. Rates on (20) and (21) were specified in ad valorem terms. The rate for (13) was set for exports of two firms on the basis of actual taxes paid.
Sources: All except (13): GOI, MC, 1968b, and amendments to November 1969.
Item (13): Two Indian manufacturers.

d: See Chapter IV.M.1. Rates were derived from subsidy rates in Table IV-19 and average values of exports.

e: See part III.C.2.a. Rates of import licenses are the percentages of f.o.b. value of exports given in import licenses. For market values see text and Table III-12. Sources are:
1964: Bhagwati and Desai, 1970, pp. 439-44.
1966: MCIEC, July 1966, p. v.
1966-70: GOI, EEPC, 1967a, and GOI, MFTS, 1969, Vol. II, Section II.

f: See part III.C.3.b. "No" means the scheme did not apply. Dates are the initial years in which the scheme applied. Once imposed, all obligations continued through 1970-71.

g: See part III.C.3.a. All industries were classified by the government as priority or non-priority for maintenance import licensing. Beginning in 1968-69 a firm in a non-priority industry could earn priority status if it exported 10 percent of output. "P" signifies the industry was originally classified as priority so this scheme did not apply. "NP" means the industry was classified as non-priority but it could not be determined whether firms earned priority status by export. "Yes" means non-priority firms earned priority status by export.

h: See part III.C.3.a. "Yes" means total exports were 10 percent of output or more and hence at least the major exporters qualified for preferences in maintenance import licensing. "No" means this was not the case. "Some" means that "Yes" and "No" applied to different products in the industry.

Notes to Table III-7 (continued)

i: Average ratio of export to output for the industry as a whole. Production data are only for the organized sector, and hence the ratio is biased upward.

j: See Chapter VI. Soft currency areas: Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania, USSR, Yugoslavia; Sudan, UAR; Afghanistan; and Ceylon.

k: See Chapter VI. "Yes" means that credit was approved during 1968-70; "eligible" that the industry was eligible to export on credit but did not; "no" that the industry was not allowed to export on credit over 18 months.

m: See part III.C.5.

n: Beginning in February 1968 re-rollers received a subsidy of 6 percent of the f.o.b. value of exports of bars and rods because the freight equalization levy was refunded. (Mukand Iron and Steel, AR 1967-68, p.14).

p: Percent of output exported was 36 for pig iron for sale (excluding pig iron used in steel-making) and 13 for finished steel.

q: Kesoram Spun Pipes exported 35 percent of output in 1969-70.

r: Figure of 39 percent is for all paper insulated cables.

s: Rate of 31 applied to sheets manufactured from indigenous aluminum, rate of 49 to sheets manufactured from imported aluminum.

t: Rate of 20 applied in 1968-69. Rate was set on a case-by-case basis in 1969-70.

u: Basic rate was 10 percent but an ad hoc increase to 12.5 applied to sales to the UAR which accounted for the bulk of exports.

v: Gedore Tools exported 40 percent of output in 1968-69.

w: Raymond Woollen Mills (J.K. Engineers File Div.) exported 34 percent of output in 1969 and 53 percent of output in 1970.

x: Indian Tool Manufacturers exported 4 percent of output in 1969-70.

y: An obligation to export 10 percent of output was imposed in all industrial or capital goods import licenses for expansion in the aluminum industry in the latter 1960s. See part III.C.4.c.

z: Traub India exported 25 percent of output in 1970, but the majority of exports were by firms which exported less than 10 percent of output.

Notes to Table III-7 (continued)

*: Nominally there was a cash subsidy of 10 percent of f.o.b. value and an import replenishment license of 30 percent of f.o.b. value on exports of data processing machines, but instead of receiving these subsidies the data processing machine industry was allowed to use all export earnings to import inputs. Regular maintenance import licensing did not apply to data processing machines. See part III.C.2.b.

ii: The rate on oil seals and laminated springs was 40 percent and on radiators was 50 percent.

iii: ABMEL exported 19 percent of output of automobile batteries (not of entire production) in 1968-69.

iv: Kirloskar Cummins exported 20 percent of output in 1969-70.

vi: An obligation to export 10 percent of output was imposed in all industrial licenses for expansion in the tire industry in the latter 1960s. See part III.C.4.o.

Table III-7 provides a breakdown of the subsidy rates and other incentives under a number of these schemes for the 26 industries considered in detail in this study.

1. Fiscal Subsidies for Export and Levies and Price Controls on Domestic Sales

a. Income Tax Concessions

From 1962-63 until devaluation in mid-1966, the tax rate on profits earned on exports was 45 percent rather than the normal 50 percent. For purposes of calculating the tax, it was assumed that the proportion of total profits that was earned on exports was equal to that of exports in total sales. This implied a subsidy of about 1 percent (taxable) on the f.o.b. value of exports for each 10 percent of average sales value represented by profits. In addition, from 1963-64 until devaluation the income tax liability of a company was reduced by the average rate of tax times 2 percent of the f.o.b. value of exports. This implied an additional subsidy of 2 percent (taxable) on the f.o.b. value of exports. Consequently, in the three years preceding devaluation, exports received a tax concession approximately equivalent to a taxable cash subsidy of 3 percent of f.o.b. value, although the rate varied among firms depending on the ratio of profits to sales and the tax rate. An additional tax credit scheme announced in 1965 did not apply to iron and steel, engineering goods, or tires. These tax concessions were abolished at devaluation, and no such concession in income tax was given for exports between devaluation and 1970.

b. Direct Cash Subsidy

For a short period prior to the 1966 devaluation,[1] 39 percent of exports of iron and steel and engineering goods received direct cash subsidies of 4 to 39 percent of f.o.b. value. (See Table III-8.) Other engineering goods did not receive such cash subsidies. This scheme was ended at devaluation.

In August 1966 the government initiated a new scheme of direct cash subsidies of up to 20 percent of f.o.b. value for exports of iron and steel, engineering goods, and tires. The government subsequently increased the rates of subsidy using four techniques discussed below. The only rate reductions occurred when export prices for iron and steel rose relative to domestic control prices and when a special scheme for steel pipes and tubes broke down. The resulting rates of cash subsidy in five periods between August 1966 and March 1971 for the 26 industries considered in detail are listed in Table III-9.

The first step taken by the government to increase cash subsidies was to raise the rate for 13 of these 26 industries by 5 to 10 percent of f.o.b. value in June or September 1967.

Second, in 1968-69 the government announced that the rate of subsidy would be increased by 2.5 to 10 percent of f.o.b. value for individual firms in 11 of these 26 industries provided their exports in 1968-69 exceeded those in 1967-68 by 10 percent. This was renewed in 1969-70 with the condition that exports in 1969-70 had to exceed

[1]The subsidies were evidently given for about a year, during 1965-66 and until devaluation.

TABLE III-8

Rates of Cash Subsidy on Exports, 1965-66

Product	Subsidy (% f.o.b.)	Value of Exports ($ mil.)
1. Steel	5	11.62
2. Steel pipes and tubes	20	4.41
4. Iron castings	4	1.48
19. Bicycles	39	0.87
23. Bicycle parts	30	1.55
Wire nails and screws	4	0.23
Total of above		20.2
All other engineering goods	0	31.1

Source: Iron and steel: GOI, RBI, Bulletin, October 1970, p. 1715.

Engineering goods: GOI, EEPC, Letter Ref. EPC:WO: 301, dated 22 June 1971.

TABLE III-9

Rates of Cash Subsidy on Exports, 1966-67 to 1970-71

(per cent of f.o.b. value)

Product	Excluding ad hoc subsidies					Additional ad hoc subsidies
	8/66 to 5-8/67	6-9/67 to 2/68	3/68 to 3/69	4/69 to 3/70	4/70 to 3/71	
1. Iron and steel[c]	10-20[d]	20-25[e]				
Pig iron			10	0[f]	n.a.	
Billets			10	0		
Structurals			10	0		
Bars and rods			22.5[a]	0		
Rails			5	5		
2. Steel pipes, tubes, and fittings						
Pipes and tubes	20	25	46[ag]	30[a]	30	
Ungalvanized	20	25	46[ag]	30[a]	25	
Galvanized	20	20	20	20	20	
Fittings						
3. Bright steel bars and shaftings	10	15[h]	15[h]	15[h]	15[h]	
4. Iron and steel castings						
Iron	20	20	25[a]	25[a]	25	
Steel	20	25	25	25	25	
5. Steel wire ropes	20	20	20	20	20	
6. Electric wires and cables						
Bare conductors						
Aluminum	10	10	10	10	15	
Copper	0	0	0	0	0	
Insulated cables						
Aluminum	10	10	10	10	15	
Copper						
PILC 1.1 kv and over	0	10[i]	10[i]	10[i]	10[i]	5(1967)
Other	0	0	0	0	0	
7. Hand, small, and cutting tools						
Hand	15	15	15	15(20)[b]	20a	
Others	10	15	15	15(22.5)[b]	22.5[a]	
8. Aluminum ingots, sheets, and foils						
Ingots	0	0	0	0	0	
Sheets and circles	10	10	10	10	10	
Foils	10	10	10	10	10	

TABLE III-9 (continued)

Product	Excluding ad hoc subsidies 8/66 to 5-8/67	6-9/67 to 2/68	3/68 to 3/69	4/69 to 3/70	4/70 to 3/71	Additional ad hoc subsidies
9. Transmission line towers						some (1968)
Ungalvanized	20	20	20	20	25	
Galvanized	20	20	20(25)[b]	25[a]	25	
10. Fabricated steel structures other than (9)	20	20	20	20	20	
11. Railway wagons	case by case		20	20	20	5(1967)
12. Cotton textile machinery and parts	10	10	10	10	10	2.5(1969)
13. Machine tools	10	20	25[a]	25[a]	25	
14. Electric machinery						
Transformers	15	15	25[a]	25[a]	25	
Motors	15	15	15	15	15	
Motor starters	15	15	25[a]	25[a]	25	
Other switchgear	15	15	25[a]	25[a]	25	
15. Commercial vehicles and jeeps	10	10	17.5[a]	20[a]	20[a]	
16. Dry and storage batteries	10	10	10	10	10	
17. Radios and components	10	10	10	10	20	
18. Data processing machines[j]	0	0	0	0	0	
19. Bicycles						
Sports light roadsters	20	25	30[a]	25[a]	25	
other	20	25	30[a]	30[a]	30	
20. Stationary diesel engines and parts	10	15	20[a]	20[a]	20	
21. Automobile parts	10	10	10	10	10	
22. Vehicular engines and parts	10	15	20[a]	20[a]	20	

TABIE III-9 (continued)

Product	8-66 to 5-8/67	6-9/67 to 2/68	3/68 to 3/69	4/69 to 3/70	4/70 to 3/71	Additional ad hoc subsidies
23. Bicycle parts	20	25	30[a]	30[a]	30	
24. Electric fans and parts	10	15	15(20)[b]	20[a]	20	
25. Builders' hardware including locks						
Ferrous	20	20	20	20	20	
Nonferrous	10	10	10	10	10	
26. Tires and tubes						
Bicycle	10	10	10	10	10	
Other than bicycle						
Butyl tubes	10	10	10	10	20	
Nylon tires	10	10	10	20	20	
Other	10	10	10	25	25	

Notes:
n.a.: not available.
a: Includes additional subsidy conditional on increase in exports by individual firms. In these cases the total exports of the product increased by the required percentage, and it can be assumed that most of the exports received the additional subsidy.
b: Figure in parentheses includes additional subsidy conditional on increase in exports by individual firms. In these cases the total exports of the product did not increase by the required percentage, and it is likely that most of the exports did not receive the additional subsidy.
c: According to the report of the Steering Group on Iron and Steel, the cash subsidies paid on exports of iron and steel amount to 44 per cent of f.o.b. value in 1965-66, 24 per cent in 1966-67, and 13 per cent in 1967-68. The report states that the following rates of cash subsidy were claimed by the Steel Exporters Association in 1968-69: pig iron, 43 per cent; billets, 34 per cent; structurals, 21 per cent; bars and rods, 31 per cent; and rails, 9 per cent. (GOI, MSHI, 1969, p. 36.) This report could not be verified.
d: The rate was between 10 and 20 per cent, but the exact rate or range of rates could not be determined. (GOI, MF, ES 1967-68, p. 32.)
e: It could not be determined whether all or only some of the rates were 20 to 25 per cent. (FE, 10 January, 1968, p. 8.)
f: The subsidy on iron and steel except rails was eliminated in October 1969.
g: Between January 1968 and June 1969 there was a special subsidy for steel pipes and tubes equivalent to 16 per cent of f.o.b. value.
h: The subsidy was to be reduced by 5 per cent if the f.o.b. value of exports was not at least 133 per cent of the value of imported and indigenous steel used as raw material.
i: Subsidy was given only on orders against cash payment and worth $240,000 or more. It applied to most exports.

Notes to Table III-9 (continued)

j: There was a nominal cash subsidy of 10 per cent of f.o.b. value for data processing machines, but it was not given to firms receiving licenses under the special scheme described in part III.C.2.b.

Sources: 1966-67 and 1967-68: GOI, EEPC, 1967a.
1968-69 and 1969-70: GOI, EEPC, 1968a; GOI, Ministry of Foreign Trade, Letter to EEPC, Ref. No. 12(2)/69, EAC, dated 21 March, 1969; GOI, EEPC, Circular No. EPC/REG/1/69-70, dated 3 April, 1969.
1970-71: Worksheets on "Import Replenishment Rate and Cash Subsidy", compiled from Ministry of Foreign Trade publications by J.N. Bhagwati.
Ad hoc subsidies: Table III-10.

those in 1968-69 by 5 percent or those in 1967-68 by 12.5 percent. The dominant share of exports in nine of these eleven industries in 1968-69, and in all of them in 1969-70, was by firms which increased their exports enough to quality for the additional subsidy. In 1969-70 two more industries were included in the scheme with the rate of subsidy to be increased by 5 to 10 percent of f.o.b. value if exports in 1969-70 exceeded those in 1968-69 by 25 percent.[1] Few if any of the important exporters in one of the industries increased their exports enough to quality, but exporters in the other industry qualified.

There were also a number of _ad hoc_ variants of this scheme which made a higher average rate of subsidy contingent on a specified level of exports. The government announced that the "rate of cash assistance on steel forgings will be increased from 15 percent to 20 percent subject to the condition that the total exports of steel forgings from 1.9.67 to 31.3.69 reach a f.o.b. value of Rs. 1 crore ($1.33 million)."[2] This was repeated in 1969-70 with a target of $1.0 million per year. Unlike the schemes discussed above, which related the rate of subsidy to export performance for the _individual firm_, this scheme related the rate to the export performance of the _entire industry_. In 1970 the government announced that the subsidy on motor cycles would be increased by 10 percent of f.o.b. value for firms which exported over $67,000 per year.[3]

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[1] _FE_, 4 December 1969.

[2] GOI, EEPC, 1968a, p. 20.

[3] _FE_, 4 June 1970, p. 8.

Third, on one product which was subject to price controls in the domestic market, steel pipes and tubes, the government gave an *ad hoc* cash subsidy on exports between January 1968 and June 1969 by allowing producers to increase prices in the home market to create a pool from which they drew funds on the basis of exports, at the equivalent of 16 percent of f.o.b. value. Government approval of the scheme depended on the assurance of the manufacturers that they would export at least one-third of their production, which they did. A similar scheme operated for bicycles and parts in 1959-1965, with a subsidy of 20 percent of the domestic wholesale value of exports.[2]

Fourth, at least as early as 1967 the government operated an *ad hoc* scheme according to which:

> Government consider extending additional (cash) assistance needed for exporters to bid for and secure contracts for export, for high value, not less than Rs 50 lakhs ($0.67 million). Each case is considered on merits.[1]

While the government has not made available a list of cases where such subsidies were given, interviews revealed four cases involving exports of $31 million in which additional subsidies of 2.5 to 5 percent of f.o.b. value were given. (See Table III-10.) In the case of the railway wagons, the additional subsidy was given to offset the freight disadvantage compared to Japan. For the transmission line towers it was

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[1]GOI, EEPC, 1969b, p. 110. This is mentioned in IIFT, 1967b, p. 44, was announced by the Deputy Minister of Commerce in the Lok Sabha on 17 December 1968, and was repeated by the Ministry of Foreign Trade's letter No. 15/52/69-EP(Engg) dated 30 December 1969, cited in *FE*, 16 January 1971, p. 10.

[2]This was before the direct cash subsidy in Table III-8 was initiated.

TABLE III-10

Ad Hoc Cash Subsidies Given on Large Export Orders, 1967-1969

Product	Value of Order ($ million)	Additional Subsidy (per cent f.o.b.)	Date
6. PILC power cables	3.5	5	1967
9. Transmission line towers	1.3	some	1968-1969
11. Railway wagons	10.	5	1967
12. Cotton textile machinery	16.0	2.5	1968

Source: 6-11: Interviews with exporters and EEPC.
12: FE, 22 November 1969, p. 8.

given to overcome the high freight costs on the finished product as well as on the imported steel used in production.[1] In the case of PILC power cables, the government also raised the regular rate in 1967 from zero to 10 percent of f.o.b. value for orders worth over $240,000, but not for smaller orders.

Toward the end of 1969-70 and again toward the end of 1970-71, the Ministry of Foreign Trade announced a crash program which may have involved additional *ad hoc* subsidies to achieve the year's export targets. At the end of December 1970, it was announced that there would be

> a major effort to retrieve the lost ground and push up overseas sales as much as possible. The program envisages special and additional assistance (the government's official term for cash subsidies) to selected products and markets.[2]

Table III-9 shows that between devaluation and 1970 exports of iron and steel, engineering goods, and tires received cash subsidies of zero to 30 (and in one case 46) percent of f.o.b. value. Examination of these schemes reveals the following points of significance for an evaluation of the scheme:

(1) With the exception of three products which did not receive cash subsidies--bare copper conductors, aluminum ingots, and data processing machines--the cash subsidy was a high enough percentage of f.o.b. value to have had an important effect on the profitability of export compared to production costs or to the profitability of domestic

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[1] See also the discussion of subsidies of ocean freight costs in Chapter VII.B.4.

[2] *FE*, 29 December 1970, p. 5.

sales.

(2) The cash subsidy was increased by 5 to 10 percent of f.o.b. value on a large share of exports between 1966-67 and 1969-70, implying a _de facto_ devaluation.

(3) The rate of cash subsidy varied substantially among engineering goods. Since this was also true of the rate of cash subsidy on net earnings of foreign exchange and since this was not offset by other schemes, there were incentives for inefficient allocation among industries of resources devoted to export.

(4) Increases in rates of subsidy were selective and _ad hoc_, not uniform.

(5) Where the average rate of subsidy depended on an increase in the level of exports, the marginal rate of subsidy was sometimes much higher than the average. For example, the increase of 10 percent in the cash subsidy of 15 percent for transformers contingent on a 5 percent increase in the value of exports over the previous year implied a subsidy of 225 percent of f.o.b. value on a five percent increase in exports, assuming that the previous level of exports would otherwise have been maintained. Assuming that in the absence of the increase in subsidy the level of exports would have been 20 percent below the level of the previous year, the subsidy on the difference between this and a 5 percent increase was 57 percent. A major exporter reported in an interview that it cut its export prices in certain markets in 1968-69 specifically to achieve a 10 percent

increase in exports in order to qualify for the higher rate of subsidy.

(6) Rates of cash subsidy appear to have been set at different levels and subsequently adjusted for a number of reasons, but efficiency was not among them. The rate of cash subsidy on f.o.b. value was not inversely related to import content, much less set in a way that equalized the implicit exchange rate on net foreign exchange earned by different engineering goods. However, the structure of multiple exchange rates was not random. Discussions with government officials and examination of the structure of and changes in rates suggest that several considerations, sometimes conflicting in their requirements, affected the pattern of subsidy:

(a) The government explicitly accepted the principle that rates should be fixed at the levels necessary to offset, at least in part, higher costs and prices in India. Government publications commonly include statements like the following:

> It was decided by the government to introduce a restricted export assistance scheme on engineering goods. The main features...are...the grant of cash assistance...with a view to offsetting the disabilities of exporters of engineering goods, arising out of non-refund of state and municipal levies, higher indigenous cost of raw materials, and lack of economies of scale in manufacture.[1]

In its 1970 export policy resolution the government stated that

> To increase competitive ability of Indian industry....the government will...endeavour to compensate exports for the

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[1]GOI, DGTD, AR 1966-67, pp. 79-80. See also GOI, MC, 1967a, p. 4, and GOI, DGTD, AR 1967-68, p. 74.

> temporary handicaps that stem from transitional difficulties inherent in a developing economy and to alleviate the disadvantages arising from...tariff barriers in importing countries.[1]

In interviews government officials explained the purpose of the cash subsidy not in terms of offsetting overvaluation but as a scheme for overcoming the specific factors which raised the costs of producing and exporting engineering goods. This suggests that the cash subsidy tended to be set at a higher rate where the ratio of the cost of production or the domestic price to the f.o.b. export price was higher, or at least where exporters were able to convince the government that this was the case.

The examples in Table III-10 indicate that this was the basis on which *ad hoc* subsidies were given on large export orders. A 1968 government report states that

> Due to the comparatively high price of indigenous bearings it has been found difficult to build up any sizable export market...To encourage the manufacturers to enter into the export market, the government is considering sanction of special incentives to offset the disadvantage resulting from the high cost....Caustic soda is also under consideration of the Ministry of Commerce for granting adequate assistance for promoting its exports.[2]

In September 1969 the government increased the cash subsidy on exports of tires by 10 to 15 percent of f.o.b. value after the industry argued that exports could not be maintained because the realization from exports did not cover costs let alone match the profits available

[1] *FE*, 31 July 1970, p. 8.

[2] GOI, DGTD, AR 1967-68, pp. 17, 77.

in the domestic market. The government first increased the cash subsidy on exports of steel in mid-1967 to offset an increase in control prices for domestic sales and then eliminated the subsidy in October 1969 after f.o.b. export prices rose above control prices for domestic sales. The rates of cash subsidy were reduced in the case of sales under tied Indian aid to Ceylon (e.g. by 5 percent of f.o.b. value for machine tools) because it was assumed that exporters would be able to charge higher prices on such sales. When the government increased the cash subsidy on vehicles by 10 percent of f.o.b. value in 1969, it specified that in the event of an increase in f.o.b. realization per vehicle the additional subsidy might be reduced or abolished.

Little if any attention was given to the fact that to the extent subsidies were set in relation to Indian cost disadvantages or profitability, incentives to export were equalized regardless of the cost of foreign exchange earned, and thus comparative advantage or efficiency was ruled out as a basis for export. Also, the attempt of the bureaucracy to base subsidies on the exporters' own reports concerning losses on exports without the power to verify their claims probably led to "unnecessary" subsidies in some cases.

(b) Since export demand was not perfectly elastic with respect to price, the criterion of offsetting losses was incomplete without an export target for each industry. Government officials had two general targets in mind: firms should export 10 percent of output and should earn their own requirements of foreign exchange, in both cases without concern for costs. It is not clear whether these targets affected the structure of cash subsidies, although they were the basis for some other export promotion schemes discussed below.

The EEPC and the government also set export targets over a 5-year period for engineering industries which were already important exporters. These targets were set without reference to the cost of foreign exchange and, where they had any basis at all, seem to have been projections of past exports and orders received or under negotiation, or to have been based on the level of production and excess capacity in the industry. Again, it is not clear whether these targets affected the structure of cash subsidies, but the heavy emphasis on _ad hoc_ measures to achieve physical targets which characterized other planning efforts suggests that such targets may have played a role.

(c) An attempt was made to minimize the _budgetary_ rather than the domestic resource cost of foreign exchange. This was the basis for the schemes which made a higher average rate of subsidy contingent on an increase in the value of exports.

(d) The government discriminated in favor of large orders in giving _ad hoc_ subsidies and in favor of industries whose total exports were over $1 million. This is evident from the fact that of the hundreds of separate products listed in the schedule of cash subsidies in 1966-67, the rate was increased on only a few other than those listed in Table III-9 by any of the schemes considered above. Such discrimination was an inefficient but perhaps natural result of ad hoc incentives and rewards given to industries with the greatest visibility and bargaining power in the relevant ministries.

c. Losses of the State Trading Corporation

An important and increasing share of Indian imports and exports was handled through state agencies, particularly the State Trading Corporation (STC), the Minerals and Metals Trading Corporation (MMTC), and HSL.[1]

At the direction of the Ministry of Foreign Trade, which is responsible for the STC, the STC used profits earned on imports to subsidize exports. Bhagwati and Desai report that in the early 1960s it exported a number of non-engineering commodities at a loss.[2] It was reported that in 1967

> Export of this item (cement) has been channelised through the STC and adequate cash assistance and other provisions to make good the losses have been granted.[3]

In 1970 the STC exported sugar, jute manufactures, and art-silk fabtics at a loss, which amounted to 117 percent of the f.o.b. value of exports in the case of sugar.[4] For 1970-71 it reported losses

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[1]For a list of commodities imported and exported by state trading agencies, see Capital, 12 March 1970, p. 442, and 9 April 1970, p. 621.

[2]Bhagwati and Desai, 1970, pp. 403-04.

[3]GOI, DGTD, AR 1967-68, p. 77.

[4]FE, 9 May 1970, 23 May 1970, p. 1.

on exports of $7.3 million or 8 percent of the total value of its exports.[1]

The Ministry of Foreign Trade allocated enough import licenses for items carrying high premia in the domestic market to the STC to compensate for such losses:

> This Corporation has to export certain commodities even at a loss with a view to earning the much needed foreign exchange ...The government have from time to time entrusted the import and distribution of...commodities to the Corporation with directions to mop up a portion of the high profits.[2]

When the Ministry of Foreign Trade announced a crash program to increase exports in the first three months of 1971, it was reported that:

> The STC has drawn up an 'instant drive' for exporting an additional Rs. 15 crores to 20 crores ($20-27 million) worth of jute goods...STC will be permitted to offset the possible losses they may incur...through the import of certain sensitive items, up to a value of 20 to 25 percent of the value of the proposed exports.[3]

Assuming the licenses were for import of stainless steel, the announced measure could have involved a subsidy as high as 25 percent of f.o.b. value of exports of jute manufactures. To cover its loss on sugar exports in 1970-71, the STC was allocated licenses to import polyster filament yarn and stainless steel sheets for sale at a profit.[4]

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[1] FE, 1 April 1971, p. 3.

[2] GOI, STC, 1966, p. 20.

[3] FE, 12 February 1971, p. 1.

[4] FE, 28 February 1971, p. 1.

None of the cases in which the STC is known to have exported at a loss involved iron and steel, engineering goods, or tires. However, the STC exported $12 million of such goods in 1970-71, and the chairman of the STC stated that "the STC would subsidize exports in the case of items having long-term export possibilities."[1]

Unlike cash subsidies and preferences in industrial licensing, which depended on the cooperation of ministries which did not have a direct interest in exports, export subsidies through the STC could be implemented by the Ministry of Foreign Trade alone. It is not surprising that the latter ministry resorted to such subsidies, particularly toward the end of the fiscal year when export targets had not been met.

In addition to the above losses on exports, in 1962 the STC began a scheme under which it subsidized exports from small firms. Between 1962 and March 1968 about $2 million worth of exports were made under this scheme.

d. Subsidy of Specific Costs

Apart from adjusting export incentives under other schemes to offset noncompetitive Indain costs, the government explicitly subsidized five costs involved in export:

(1) Marketing

The government subsidized participation in foreign exhibitions, advertising in foreign publications, and foreign market sales-cum-study

[1] Engineering Times, 26 February 1970, p. 1.

tours throughout the 1960s. As of 1967 it paid the entire round-trip transport costs for goods exhibited abroad, one-third of the cost of foreign advertising, and half the cost of foreign travel and market studies. In 1968 it announced a program of subsidies of 50 to 75 percent of many of the expenses connected with export marketing, e.g. exhibitions, advertising, overseas showrooms, and delegations of foreign distributors to India and of Indian manufacturers abroad. Subsidies were to be given on an ad hoc basis and to depend on the value of a firm's past exports.

There were many complaints that the government seldom gave such subidies. However, in 1969 the government paid half the costs of a tour of Indian factories by five foreign distributors who were handling Indian machine tools and were interested in finding other companies to represent. In 1970 it paid a subsidy of $87,000 covering half the costs of exhibiting machine tools of eleven manufacturers in West Germany. In addition, in 1968 USAID financed an export market survey for Indian machine tools at a cost of $40,000 and in 1970 it financed a tour of the U.S. for Indian machine tool manufacturers interested in export. The total value of these subsidies from the Indian and US governments amounted to about 10 percent of the f.o.b. value of machine tool exports in 1969-70 to the markets covered by the subsidized expenditures.

In 1968 the government began a tax concession scheme under which firms could deduct from taxable income 33 percent more than their actual expenditures abroad on export marketing, including market research, advertising, distribution, overseas offices, business trips abroad, etc. Except for firms without taxable income, this was equivalent to a subsidy of 33 percent of such expenditures.

(2) Rail Freight

Although even regular rail freight rates probably involved subsidization, beginning in 1958 the Ministry of Railways gave concessions of 25 to 50 percent on the cost of rail transport for exports from factory to port and in some cases for materials used in export production. In the late 1960s the concessional rates applied to all important engineering goods on trips over 200 miles.

In 1965 the rebate on the cost of rail freight for cast iron pipes manufactured in the Punjab, 1120 miles from the Calcutta port, amounted to 13 percent of f.o.b. value.[1] In 1969 rail freight to the port was 4 to 5 percent of f.o.b. value for a machine tool company in Bangalore and 7 to 8 percent for a machine tool company in Batala, implying freight subsidies of 2 to 4 percent of f.o.b. value for machine tools. However, machine tool producers often sent machines to ports by road because the latter was faster.

(3) Ocean Freight

Ad hoc subsidies of ocean freight costs are discussed in Chapter VII.B.4.

(4) Materials

Subsidized prices and priority allocations of iron, steel, tinplate, aluminum, and PVC resin used in export production are

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[1] IIFT, 1966b, pp. vii-2 and 55.

discussed in Chapter IV.M.

(5) Credit

Subsidized credit for exporters on the basis of working capital requirements of export production and credit extended to foreign buyers is discussed in Chapter VI.C.

e. Refund of Indirect Taxes on Inputs

In 1954-1956 the government began to refund import duties and central excise taxes on inputs used in export production by certain engineering industries. This scheme was progressively extended to additional products and covered all engineering goods and tires after 1960. The refund rates in 1969 are listed in Table III-7 for products for which data are available.

Indirect taxes which applied to inputs used in production for the domestic market but not export were important in reducing the gap between effective exchange rates for production for the domestic market and export. Because of high import duties and excise taxes on steel and aluminum, the refund was substantial (e.g. 10 to 30 percent of f.o.b. value) for products with a high ratio of direct imports or materials to f.o.b. value. Moreover, since the average level of import duties was positively related to the extent of overvaluation of the rupee during the 1960s, increasing refund rates partially offset the disincentive effect on exports of domestic inflation until 1966 and a reduction in refund rates partially offset the devaluation.

In some cases the scheme involved a net subsidy beyond refund of taxes actually paid. For a few nonhomogenous product groups (e.g. automobile parts, diesel engine parts) the refund was set on an equal *ad valorem* basis for all products in the group. For some of these products the refund was greater than the indirect taxes paid, and hence involved a net subsidy (up to about 5 percent of f.o.b. value), while products on which taxes were higher than the group rate were given full refunds on the basis of special application. In the case of steel wire ropes, the refund rate of 19-20 percent of f.o.b. value, which was based on the tariff on imported high carbon steel wire rods, involved a net subsidy of 14 percent of f.o.b. value when indigenous high carbon steel wire rods were used.[1]

f. Price Controls and Excise Taxes on Domestic Sales

Production for the domestic market was protected by the licensing system. The resulting level of protection and discrimination against exports were significantly reduced for a number of industries by price controls and excise taxes imposed on sales in the domestic market but not on exports.

Among important exports, there were controls on the domestic prices of iron and steel, aluminum, commercial vehicles, batteries, bicycles, and tires. In the case of iron and steel, ex-works control prices for domestic sales were below f.o.b. prices on exports in 1969-70 and 1970-71, and the same was true of aluminum ingots in 1969. Calculations in part III.D. indicate that after December 1969

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[1] *ET*, 18 April 1971, p. 4. The refund rate was cut to 5-6 percent of f.o.b. value in 1971 to eliminate this additional subsidy.

the realization including subsidies on export of commercial vehicles, at least to rupee payment countries, was equal to or greater than on domestic sales at control prices.

Apart from such price controls, there was a general directive that in industries where public sector firms had monopoly power they should limit domestic prices to the landed prices of imports. Also, although discussions of Indian industrial structure emphasize the monopoly power of producers, in a number of engineering industries the government was the sole or major buyer while there were many producers and, after 1966, there was substantial excess capacity because of inadequate demand. Government purchase rules emphasized price, and procurement was under "rate contracts" which sometimes involved discounts below (list) prices for sales to non-government buyers. Thus:

> (Cast iron) spun pipes are mostly consumed by government and semi-government departments and, therefore, bulk of the production is sold on rate contracts. Therefore, in spite of the short supply, prices have largely remained highly competitive.[1]

In addition, by 1957 exports of engineering goods and metals were exempt from all central and state indirect taxes on the final (export) transaction.

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[1]GOI, MIS, 1967, p. 24. See also FE, 30 January 1970.

2. Foreign Exchange Retention

a. Import Entitlement and Replenishment Licenses

In the 1950s the government began issuing licenses for import of inputs based on the value of exports. The first significant scheme was initiated in 1957, but it was after Manubhai Shah became the minister in charge of exports in 1962 that the import entitlement scheme became the government's major export subsidization program, allowing exporters to expand production for the domestic market or providing them with licenses which could be sold at a premium.[1] Through progressive liberalization of the scheme and the increasing scarcity value of imported materials, the subsidy value of the scheme increased steadily between 1962 and 1966. Between 1964 and 1966, exporters of all engineering goods except basic metals were given licenses to import inputs worth 40 to 100 percent of the f.o.b. value of exports.[2] Within these limits, exporters received import licenses for a minimum of twice the current import content of exports. The rates of entitlement for 1964-1966 are listed in Table III-7. The scheme was ended at devaluation but was soon replaced by the replenishment scheme described next.

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[1]"Manubhai Shah became Commerce Minister in 1962. He strongly believed in export subsidies; and he found that the only subsidies that he could give without having to persuade the recalcitrant Finance Ministry were those embodied in import entitlements. So he extended import entitlements." (EPW, Special Number, July 1970, pp. 1275-76.)

[2]A few bicycle parts received entitlement licenses for only 20 percent of f.o.b. value, and the maximum rate was reduced to 75 percent in 1965.

In August 1966 the government introduced the _import replenishment scheme_ under which exporters of engineering goods except basic metals were given licenses to import current inputs worth 5 to 90 percent of the f.o.b. value of exports. The rates in 1969-70, which were virtually the same as those originally set in 1966, are shown in Table III-7.

It is important to add that the government sometimes increased these rates on an _ad hoc_ basis on individual orders or under other special circumstances. The Ministry of Foreign Trade was authorized to "allow an increase in import replenishment for exporters by five percent of f.o.b. value in individual cases without further clearance from the Finance Ministry."[1] In an interview in 1968 a DGTD officer stated that higher rates would be considered if an exporter would guarantee a large increase in exports, and the DGTD reported that:

> To arrest the fall of the export of plastics fabricated articles...import replenishments...have been raised with regard to PVC foam sheets and moulded and fabricated goods.[2]

The import replenishment policy statement for 1968-69 stated that:

> In cases where the quantum of replenishment..is inadequate to accommodate some essential raw material or component which needs to be imported on the ground that the indigenous substitute is not good enough in quality for maintaining the competitive strength of the export products, requests for exceeding the prescribed replenishment will be considered on merits.[3]

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[1] _FE_, 13 April 1969.

[2] GOI, DGTD, AR 1967-68, p. 66.

[3] GOI, MC, 1968a, Vol. II, p. 5.

Under this last provision, the replenishment rate was increased by 10 percent of f.o.b. value for sports light roadster bicycles and by 20 percent of f.o.b. value for nylon tires in 1969-70.

Import replenishment licenses subsidized exports for a number of reasons:

(i) Import licenses for inputs were rationed, and sometimes either there was no way for a firm to obtain additional imports or supplies were available only at open market prices above the landed costs. Because of liberalization of maintenance imports in mid-1966, firms in industries with priority in import licensing--including basic metals, most engineering products other than consumer goods, and tires--had access to permissible imports on the basis of replacement of inputs used, without fixed quotas based on capacity as was previously the case. Nevertheless, three categories of users were unable to secure as many regular licenses as they desired: (a) firms in non-priority industries, including many consumer goods; (b) firms which wanted to increase their production at a rapid rate, including some producers of automobile parts and stationary diesel engines; and (c) small firms with fixed investment below $100,000, which were discriminated against by import licensing procedures. Consequently even if their terms had been identical to those of regular licenses, import replenishment licenses would have been valuable to these three groups of firms. In fact, the terms of import replenishment licenses were more favorable in a number of respects discussed below.

(ii) Licenses granted against exports were general currency licenses which could be used to import from the cheapest source of supply. Regular licenses were often restricted to tied-aid or bilateral-payment sources, and it will be shown in Chapter IV.F that the price of materials was commonly up to 40 percent higher from such sources. (iii) Licenses issued against exports could be used to import materials and parts for which import was otherwise prohibited. In principle there was a ceiling of 10 percent of the license or $1,333, whichever was less, on such imports. However, judging from interviews it seems doubtful that this ceiling was strictly applied, since a number of companies attached importance to being able to procure materials and parts which they would not otherwise have been allowed to import. Import was allowed for certain items which were not produced in India, for which the quality of indigenous supplies was inferior, or for which the government decided to supplement limited Indian production by imports. It was reported in the press that:

> A large quantum of banned chemicals is imported under several export promotion schemes...Of the 22 items banned for import this year on the recommendation of the (Indian Chemical Manufacturers') Association, 10 were allowed under various export promotion schemes.[1]

Some of these arrangements were standardized and published in the import trade control policy; Table III-11 lists items allowed for import only under replenishment licenses in 1968-69. In other cases such imports were permitted on an _ad hoc_ basis. According to the DGTD,

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[1] _Commerce_, 27 Dcember 1969, p. 1239.

TABLE III-11

Items Licensed for Import in 1968-69 only under Replenishment Licenses Issued Against Exports

Bifurcated rivets
Trunk nails and washers
White metal
Antimony
Dry battery wax
Steel balls of 1 mm and below
Abrasive coated copper foils
Superenamel copper wire
Solid tinned copper wire
Hook up wire
Haps and staples, clips and brass round bars (extruded quality)
Iridium alloy pen points
Gun metal
Needle bearings
Valve grinding pastes
Diesel engine parts:
Crankshaft unmachined,
Diesel injector tubing,
Valve springs,
Connecting rods,
Helli-coils,
Elements for fuel pumps,
Delivery valves,
Silicon 'O' rings,
Seals,
Cylinder heads,
Silicon bushes,
Inlet and exhaust valves,
Nozzles and nozzle holders,
Valve seals,
Piston assembly 6" and below,
Camshaft,
Cylinder liners,
Power factor capacitors
Centrifugal switches for single phase motors
Components for centrifugal switches
Armoured cables
Insulated cables
Calcined petroleum coke
Refractory material
Hardware, ironmongery, and tools
Components for record players
Sulphur powder
Natural dense soda ash
Suitcase locks and hinges
Spares for refrigeration machinery and compressors
Industrial knives
Automatic electrical control switches
Polyvinyl chloride resin powders
PVC composition including moulding powder
Urea-formaldehyde moulding powder
Dioctylphalate

Source: GOI, MC, 1968a, Volume 1, Section II.

which was in charge of ad hoc approvals, in 1967:

> 3600 applications from exporters-manufacturers for import of specialised raw materials and components for export production were processed and import allowed in deserving cases. Approximately 75 applications for import of capital goods by exporting units...were also scrutinized and recommendations made.[1]

Also, each exporter was allowed to import two electric typewriters, two electric calculating machines, and (if exports were over $133,000 per year) one photocopying machine. The licenses could also be used to import tooling, testing instruments, and packing equipment up to a limit fo 20 percent of the value of the license or $13,000, whichever was less, and to import capital goods up to 50 percent of the value of the license or $27,000, whichever was less and not more than twice per year.

(iv) Regular import licenses specified in minute detail what could be imported. Although there were some restrictions on what could be imported under replenishment licenses, manufacturers did not have to import inputs in the proportions they were used in the items exported and were not even restricted to import only items used in their production. According to the import policy for 1968-69:

> A manufacturer-exporter...may...ask for any or all of the items figuring in their latest, preferably valid, actual user licence for raw materials, components and spares... The items of import asked for as above on the strength of an actual user licence will be generally allowed provided they are permissible to actual users according to the current import policy...The licensing authority will also consider on merits requests for import of any other items

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[1]GOI, DGTD, AR 1967-68, p. 75. In 1966, 200 applications for materials and 16 for capital goods were processed. (GOI, DGTD, AR 1966-67, p. 81.)

...permissible to actual users.[1]

As a result, exporters were allowed to import inputs for their other products, including ones with non-priority status under the regular licensing policy. Most important, exporters could use the licenses to import the materials for which the markups in the domestic market over the landed prices of imports were highest or ones for which supply was constraining production while importing the actual import content of the exported product under regular import licenses or buying it in the open market. Thus, it was reported that electric cable exporters did not use licenses to import copper or high carbon steel wire rods but rather materials with a higher markup.

(v) The licenses issued against exports, unlike other licenses, could be sold, although sales were restricted to other companies in the same "industry" or to companies producing components used in the exported product. While there were complaints about these restrictions on sales,[2] the government took an increasingly flexible approach to transfers in order to increase the subsidy value of the licenses. The DGTD reported that in 1966-67:

> Exporters were experiencing difficulties for transferring import replenishment licenses due to the narrow range available for such endorsement...In order to enable the exporters to get more facilities for endorsement of their import licenses, grouping of items which are generally manufactured together was done (in 1967-68).[3]

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[1] GOI, MC, 1968a, Vol. II, pp. 6-7.

[2] FE, 9 November 1968, p. 7, and 20 December 1968, p. 8.

[2] GOI, DGTD, AR 1967-68, p. 77.

In 1969 and again in 1970 transfer was liberalized by substantial reductions in the number of groups into which the engineering industries were compartmentalized for purpose of transfer.

When combined with provision (iv) according to which a firm could use the licenses to import inputs for any of its products, this allowed substantial flexibility in imports because there was considerable overlap of industries in multi-product firms; nevertheless, compartmentalization and other restrictions on licenses were sufficient to create substantial differences in the premia at which licenses issued against exports of different products could be sold in the market.

In 1969 the market value of import replenishment licenses was generally between 35 and 65 percent of the c.i.f. value of imports for different export products, depending on what could be imported. Many companies reported buying and selling licenses. The three examples of the subsidy value of these licenses during 1969 presented in Table III-12 illustrate the wide range of subsidization, in these cases 8 to 45 percent of f.o.b. value.

It seems likely that the major flow of import replenishment licenses both within and between firms was from products with priority status under the regular import licensing policy and a stable level of production, i.e. products for which access to imports under the regular licensing procedure was liberal and adequate, to products without priority status or a rapidly rising level of production. While direct evidence on such flows is not available, a number of non-priority

TABLE III-12

Subsidy Value of the Import Replenishment Scheme, 1969

	Simple Machine Tools	Low Tension Switchgear	Insulated Cables with Copper Conductors
Import Replenishment Rate (% f.o.b.)	20	40	90
Premium on Licenses (% c.i.f. value of licensed imports)	40	65	50
Subsidy Value of Licenses			
i. % f.o.b.	8	26	45
ii. % foreign exchange earned, net of current import content[1]	9	33	225

[1] Current import content was: simple machine tools, 10 per cent of f.o.b. value; low tension switchgear, 20 per cent; insulated cables with copper conductors, 80 per cent.

Source: Indian manufacturers of these products.

industries were able to increase production substantially in the post-devaluation period. In a few of these--data processing machines, electric fans, and bright steel bars--exports of the product involved were sufficient to earn the import licenses necessary for production, but for others this was not the case.

The pre-devaluation import entitlement scheme, which was "by far the most important of the export incentive schemes in operation during the Third Plan,"[1] was widely cited at the time by firms in the engineering industries as a major factor in their decisions to export even at a loss before allowing for the value of import licenses. Many firms would not have exported without the subsidy provided by the scheme. The licenses were used to import materials and sometimes capital goods not available in India in order to increase production for the domestic market or were sold to other manufacturers. It was reported in a later review of the scheme that "in some cases, exports were undertaken at practically throw-away prices just because the imports under the entitlements commanded very high premia."[2]

The following statements by Kirloskar Oil Engines and Jay Engineering, the two largest exporters of engineering goods of the period, are representative in the importance attached to the scheme in explanations of exports between 1960 and 1966:

> Export has not yet been a profitable proposition to engineering industry. Then why export? We need machinery and many critical items, which are not available in the country,

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[1]GOI, LSS, 1968, p. 181.

[2]EPW, 7 December 1968, p. 1862. See also MCIEC, July 1966, p. xiii.

> without which we can neither maintain our present production nor undertake any expansion. Import needs foreign exchange and the government is not in a position to give us any foreign exchange unless we earn foreign exchange by exports. Even the production we made during the year would not have been possible if we had not exported. Whether there is a profit or not, under existing conditions, we have to export a portion of our products to keep our factories working.[1]
>
> The loss suffered in exports was partly covered by the company by selling part of its import entitlements.[2]

The firms involved did not have excess capacity due to inadequate domestic demand; production typically was constrained by supply conditions for materials. In fact, Little _et al_. report that in the hand tool industry a "firm had been exporting (to the extent of Rs 1.4 million--$0.3 million--in 1965/6), in order to obtain entitlements for its import requirements...The domestic market was unsatisfied, and these tools were being imported."[3]

Similarly, in 1967-1969 most exporters reported that the subsidy given by the import replenishment scheme was an important factor contributing to their exports. A number of firms which did not have a shortage of domestic orders at prices covering average costs reported that they exported because of the import licenses. HMT reported that it exported wrist watches in spite of a waiting list in India to

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[1] Kirloskar Oil Engines, _EW_, 11 September 1965, p. 1427. Similar statements are common, for example: Ashok Leyland, _EW_, 24 June 1961, p. 956; National Rubber Manufacturers, _Commerce_, 3 July 1965, p. 17; Philips India, AR 1965, p. 5, and 1966, p. 3; Sen Raleigh, _EW_, 22 April 1961, p. 654, _Capital_, 31 March 1966, p. 454.

[2] Jay Engineering Works, _EW_, 30 November 1963, p. 1974. Philips India, AR 1966, p. 3, reported buying licenses.

[3] Little, _et al_., 1970, p. 174.

obtain foreign exchange for expansion of capacity. Dunlop India (tires) and Sen Raleigh (bicycles) had sufficient domestic orders to operate at capacity but exported to earn import licenses for materials required for their own production.[1] The same was true of light electricals in general.[2]

b. Import Licensing for the Data Processing Machinery Industry

Exports of punched card data processing machines were nominally covered by the direct cash subsidy and import replenishment schemes; in fact exports by the two firms in the industry--IBM and International Computers Indian Manufacture--did not receive these subsidies. According to a government report:

> An important feature in the development of these machines is that the manufacturing units are to be self-sufficient in their foreign exchange needs in as much as they are to earn the necessary foreign exchange through export of their products.[3]

In effect, therefore, there was a 100 percent import entitlement and replenishment rate for the data processing machinery industry, except that these licenses were not transferable. This scheme was approved in 1962-1964.

To support a current import content of about 50 percent of the

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[1]HMT: Machine Tool Engineer, April-June 1967, p. 15. Exports of wrist watches were minor, a few $1000 per year.
Dunlop India: Letter to author, and FE, 14 April 1970, p. 7.
Sen Raleigh: EPW, 22 March 1969, p. 562.

[2]ET, 21 December 1969.

[3]GOI, DGTD, AR 1967-68, p. 18.

value of production, IBM exported $1.7 million or about half its output in 1968-69. International Computers began production in 1964 using import licenses issued on condition that the foreign exchange used be "repaid" by export. In 1966-67 its exports were $0.3 million or 18 percent of output.[1]

The level of export subsidy implicit in this scheme is indicated by the fact that India was primarily a market for used and otherwise obsolete machines. It was reported that:

> I.B.M. has been licensed for building 68 computers (1401s) during 1968-1970. I.B.M. will bring in used machines and recondition and modernise them in India by using indigenous and imported components. The Indian and foreign contents of these 68 computers are expected to be Rs 134 lakhs ($1.8 million) and Rs 122 lakhs ($1.6 million). The required foreign exchange will be invested by their parent company in the U.S.A. and this will be earned by the exports of other machines (keypunches) manufactured by them in India.[2]

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[1]Similarly, in 1967 exports of office machines, mostly I.B.M. statistical and data processing machines and their components, amounted to $12.8 million for Argentina and $13.2 million for Brazil. (GATT, 1969, pp. 69-71.) In connection with I.B.M.'s Latin American exports, it was reported that "exporting has several advantages to the firm. It makes it an earner of foreign exchange, which, through a special governmental agreement, it can then use to import additional, different machines for other customers." (Business International, 1969, p. 27. See also BI, BLA, 21 May 1970, pp. 163-64.)

[2]Industrial Times, 15 September 1969, p. 16. See also Commerce, 10 January 1970, p. 16.

3. Preferential Import Licensing

a. Preferences for Firms Exporting a Specified Percent of Output

Shortly after devaluation in 1966 the government decided to give

> ....high priority to allotment of (imported) capital goods... to the exporting units and exporting industries...'A special allocation of foreign exchange will be made for this purpose.'[1]

> Capital goods, equipment, dies, jigs and tools required by exporting units will be provided under a special allocation of foreign exchange and an inter-Ministerial Committee will consider applications from exporting units for such imports of capital goods.[2]

This scheme was evidently administered on an *ad hoc* basis without explicit guidelines until 1968-69.

Beginning in 1968-69 the Ministry of Foreign Trade announced that if a firm exported 10 percent of its output it would receive preferences in import licensing for capital goods and in regular maintenance import licensing, in addition to receiving licenses under the import replenishment scheme. Such firms were eligible for additional licenses in the case of capital goods and for licenses to import from the cheapest sources of supply rather than under tied aid or rupee payment. Since maintenance import licenses were given by value rather than physical quantity of imports, permission to import from the cheapest source not only reduced the unit cost of materials but increased the quantity that could be imported. Manufacture exporting less than 10 percent of output were eligible for these benefits on condition

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[1]GOI, LSS, 1968, p. 95.

[2]GOI, MC, 1967a, p. 5. This statement was repeated annually in the import trade control policy through 1971.

they would commit themselves to achieve the 10 percent target within about three years. Firms in industries not given priority status under the liberalized import policy announced in 1966 were to be given priority status if they exported 10 percent of output and would therefore receive larger import quotas for materials in addition to the above benefits.

Although only a small proportion of firms qualified for these preferences by exporting 10 percent of output, these firms accounted for a substantial share of exports of iron and steel and engineering goods (virtually all iron and steel and perhaps half of engineering goods). The percentage of output that was exported is listed by firm and industry in Tables II-10, II-12, and III-7. Firms in at least two non-priority industries, bright steel bars and electric fans, qualified for priority status by exporting 10 percent of output.

In 1969 the government allowed firms which had exported at least 10 percent of output in 1968 to import part of their materials from the cheapest sources and to import additional capital goods. In August 1968 the government stated that it had issued licenses for import of $2.7 million of machinery by 46 exporters, approximately $1.2 million of which was under free foreign exchange. In 1970 the import licensing authority announced that each textile producer which exported more than 10 percent of output in 1969 would be eligible for import licenses for capital goods worth up to $27,000. Chase Bright Steel, which was in a non-priority industry, was put on the priority list for maintenance import licensing on the basis of its exports (60 percent of output) in 1969-70.

In 1970 the Ministry of Foreign Trade further announced that firms which exported 25 percent of output would get free foreign exchange for at least one-third of their regular maintenance import licenses up to a maximum of $133,000 per year. In fact, shortly afterward the government announced that during 1970-71 firms which had exported over 25 percent of output in the previous year would receive licenses to import all maintenance imports with untied funds, firms which exported 10 to 25 percent would be allowed to import two-thirds with untied funds, and firms in priority industries which exported less than 10 percent would be allowed to import only half with untied funds.[1]

Thus, the preferences announced in 1968-1970 with respect to import licensing were implemented. For a firm which exported 25 percent of its output of steel wire ropes and thus qualified to receive half of its regular imports of materials against free foreign exchange rather than tied aid, the subsidy value of these preferences was 25 percent of the f.o.b. value of exports. This reveals that introduction of such preferences implied a substantial increase in export subsidies in 1968-69 and thereafter. However, the rate of subsidy varied considerably among products. There was a large subsidy for products with a high direct current import content but no subsidy where there was no

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[1] FE, 30 May 1970, p. 1.

import content. The rates of subsidy also differed among products depending on the differences in prices for import from tied and the cheapest sources. Moreover, since preferences depended on whether a firm exported 10 or 25 percent of output while no additional preferences were received by a firm exporting over 25 percent of output, for each firm the implicit exchange on exports was a complicated function of the export-production ratio.

b. Discrimination against Firms Exporting under Five Percent of Output

In 1968-69 the government announced that firms in certain industries, except units which had been in production less than five years or with a fixed investment under $100,000, which did not export 5 percent of output would be liable to cuts in regular maintenance import licenses for import against free foreign exchange. The following engineering industries were covered by this policy (See also Table III-7):

Announced 1968-69

5. Steel wire ropes
7. Hand, small, and cutting tools[1]
16. Dry and storage batteries
20. Stationary diesel engines
20-22. Stationary diesel engine, automobile, and vehicular engine parts[2]
23. Bicycle parts[3]
Coated and bonded abrasives

Added 1969-70

20-22. Stationary diesel engine, automobile, and vehicular engine parts[4]
23. Bicycle parts[5]
Winding wires

Added 1970-71

2. Steel pipes and tubes
9. Transmission line towers
Weighing machines

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[1]Hand tools (spanners, pliers, wrenches), steel files, twist drills, hacksaw blades, diamond tools. These accounted for the majority of exports of hand, small, and cutting tools.

[2]The following automobile and engine parts: pistons, piston rings, gudgeon pins, crankshafts, connecting rods, radiators, car wheels, gaskets, electrical equipment, brake and clutch lining, shock absorbers, leaf springs. These items accounted for $47 million in production in 1968, or 41 percent of the total of automobile ancillaries.

[3]Free wheels, hubs, chains.

[4]Engine valves, fuel injection equipment, filters.

[5]All bicycle parts.

In early 1969 the Ministry of Foreign Trade stated that import licenses of firms in these industries which did not export 5 percent of output in 1968 would be cut in 1969-70. According to press reports, licenses were cut by 5 percent in 1969-70 for 250 firms in engineering and non-engineering industries and licenses were to be reduced by 20 percent in 1970-71.[1] Another press report stated that licenses were cut by 20 percent in the drug industry in 1970-71.[2] However, Krueger reports that in late 1969-70:

> Government officials with whom I talked stated that, to date, no sanctions of this nature have been applied. Among firms (in the automobile ancillary industry) interviewed, none reported being subject to either sanction, although most were meeting their obligation and seemed to believe that they had no alternative. Many executives did mention discussions with government officials about their export performance at the time of import license application....Because all firms feel obliged to export, they sell their products internationally at whatever price these products will bring. In some instances, the firm's proceeds--even including cash subsidy and duty drawback--do not cover the firm's direct material cost per unit of output....Only three firms (out of 55) reported that, including cash subsidy, import entitlement, and duty drawback they could earn as much in exporting as they could in the domestic O.E. (original equipment) market. Of the remainder, half covered materials and other direct costs, once the export incentives were taken into account. Even of this group of firms, most exported only enough to meet their obligation, because they were pressed to meet their domestic orders.[3]

From these reports one can conclude that this policy increased the incentive to export beginning in 1968-69.

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[1] FE, 1 April 1970, p. 5.

[2] Commerce, 24 October 1970, p. 901.

[3] Krueger, 1970, pp. 22n, 106, 88. Parentheses added.

4. Ad Hoc Licensing

After 1959 the government used licensing in a number of ways to subsidize exports on an *ad hoc* basis without any statement of the basis on which such licenses were issued.

a. Licenses for Import of Scarce Items for Sale in the Indian Market

Between 1959 and 1965 the government gave licenses to exporters on an *ad* hoc basis for imports of scarce commodities carrying high premia in the Indian market over their landed costs. The licenses were given for the entire f.o.b. value of exports, and the imported goods were not inputs for production of the exported items but were sold in the domestic market at a profit.

The most important of these schemes involved "link" deals, which were administered through the STC although transactions were carried out and the profits were earned by private firms. According to the STC:

> The link deals provided a supplementary instrument of great significance among the various measures for promotion of exports...Under these arrangements, the imports of essential items...are linked with the exports of a packet of equivalent value consisting of traditional and non-traditional items.[1]

The value of exports under these arrangements between 1960-61 and 1964-65 was $357 million or 5 percent of total exports. Exports were principally ores, sugar, and jute manufactures while imports included included finished steel and a large number of other items. The STC

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[1]GOI, STC, 1966, pp. 10-11.

reported that "these arrangements have resulted in introducing... sewing machines in France and West Germany." Exports of sewing machines and parts to these two countries in 1960-61 to 1965-66 were $0.54 million.[1] In addition, $0.08 million of textile machinery was exported under the arrangements in 1961-62, but evidently no other exports of iron and steel, engineering goods, or tires were made under this scheme.[2]

In 1960-61 and 1961-62 exporters of semi-finished steel were allowed to use the entire proceeds of their exports to import finished steel. Exports under this arrangement amounted to $5 to $10 million. An interesting feature of this scheme was that the government allowed exporters to import the finished steel before they exported the semi-finished steel, and the firms involved defaulted on half the export commitments.[3]

A third scheme of *ad hoc* licensing is reported by Bhagwati and Desai for the period around 1964-65:

> The operation of supplementary entitlements, where the formal entitlements were inadequate as export incentives, was also practised. Several interviewees admitted the existence...of a clandestine, unlisted scheme...which consisted of entitlements for high-premium dry-fruit given to exporters...on an *ad hoc* basis.[4]

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[1] It could not be determined whether all of these exports were under these arrangements.

[2] For details of the deals, see GOI, LSS, 1966, pp. 196-230.

[3] GOI, LSS, 1966, pp. 51-106, and GOI, MSMM, 1968.

[4] Bhagwati and Desai, 1970, p. 412. See also GOI, MC, 1966, Pt. II, p. 29.

This scheme was applied to exports of some engineering goods.

Evidently no schemes of comparable scale operated after devaluation, but the government accepted the principle of giving such subsidies. In 1971 the government announced that imported polyster filament yarn would be allocated to exporters of art silk and rayon and synthetic textiles, even though such yarn was not used as an input in export production and would obviously be sold in the domestic market. This implied a subsidy of 42 to 59 percent of the f.o.b. value of exports.[1]

In two related cases the government permitted similar imports for the firm's own use. A textile machinery manufacturer reported in 1969 that the government allowed it to exchange certain components with its foreign collaborator on a barter basis.[2] In 1970 it was reported that NOCIL was exporting under an import licensing obligation:

> NOCIL expects to undertake bulk exports of chemicals worth nearly Rs. 70 lakhs ($0.9 million) during the current year in addition to packed export of PVC resins to repay product loan obligations.[3]

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[1] FE, 28 February 1971. p. 1. At that time the premium on "licenses for import of this (polyester) fibre available against export of woollen goods are said to fetch fancy premium of about 300 to 400 per cent." FE, 12 January 1971, p. 8.

[2] See also ABP, 27 April 1969.

[3] FE, 28 March 1970, p. 5.

b. Capital Goods Import Licenses

Beginning in 1961, on an *ad hoc* basis the government allowed import of capital goods for a firm's own use against commitments to export. Both before and after devaluation export regulations contained the following statement:

> In certain cases, import of capital goods is permitted with export guarantees. The Chief Controller of Imports and Exports issues such import licences subject to certain conditions, including conditions regarding bond, bank guarantee and quantum of exports...The licensing authority can enforce the bond and cut further import entitlement, etc., as soon as the time schedule for export has expired without export materialising.[1]

While some of these commitments involved exports equal to the value of imports, an item in the press in 1965 indicates that in some cases the government set "the export obligation at twice the value of machinery imported."[2]

Table III-13 presents data on the value of capital goods imports falling under the Capital Goods Committee's jurisdiction between 1961-1962 and 1965-66 and details of those which were permitted against export commitments and under the STC export-import link deals discussed above. These data indicate that firms in the basic metals and engineering industries made commitments to export about $0.5 million per year in the first half of the 1960s in order to secure import licenses for capital goods, exclusive of licensing under the STC link scheme. A few

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[1]GOI, MC, 1965a, p. 31, and 1967d, p. 33.

[2]*Commerce*, 30 January 1965, p. 170.

TABLE III-13

Capital Goods Committee Releases for Import of Capital Goods Against Exports, 1961-1966

	4/61 - 3/66				4/61 - 9/64			
	Approved		Licensed		Approved		Licensed	
	$ mil.	%	$ mil.	%	$ mil.	%	$ mil.	%
Total Releases	1445.0	100.0	831.2	100.0	1175.3	100.0	678.4	100.0
Releases financed by:								
Export earnings	7.7	0.5	2.9	0.4				
STC link deals	7.6	0.5	5.8	0.7				
Sub-total	15.3	1.1	8.7	1.1	14.1	1.2	8.7	1.3
Breakdown of sub-total by user industry:								
Iron and steel					2.2			
Electricals					0.9			
Automobiles					0.6			
Bicycles					0.1			
Other metals					2.4			
Other engineering					2.6			
					8.8			

Source: GOI, PC(Hazari), 1967b, p. 55.

TABLE III-14

Capital Goods Import Licenses Issued Against Export Commitments, 1963-1970

Company	Date Authorized	Value of Imports ($ mil.)	Value of Exports ($ mil.)	Export Product
Napco Bevel Gear[1]	1963	2.3	3.6	Industrial gears
India Pistons[2]	1964	1.3	1.3	Automobile parts
Kirloskar Oil Engines	mid-1960s	0.3	0.35	Stationary diesel engines
Atlas Cycle	1970	0.2	n.a.	Motorized cycles

1 Directory of Foreign Collaborations in India, Vol. 2, 1969, p. 57. "Napco Industries Inc. USA agreed to purchase ... the products of the company to a minimum guaranteed amount of U.S. $100,000 per month non-accumulative for a period of three years." EEPC data do not record any exports by Napco Bevel Gears in the period from 1965-66.

2 GOI, TC, 1968, pp. 12, 44. Exports were to be executed over a period of seven years by shipment of piston castings to the U.K. collaborator.

specific cases are listed in Table III-14; these cases suggest a higher level of commitments than do the data in Table III-13.

c. Industrial Licenses

Kust reports that

> As the pressure on foreign exchange resources by the maintenance imports reached crisis proportions in the second year of the third plan (1962-63), the (industrial) licensing policy had to be tightened. License applications for projects dependent on imports and raw materials were either rejected or conditioned on exports by the new enterprise that would offset imports. The latter involved a serious undertaking by the foreign collaborator to assist with such exports and/or reasonable satisfaction by the Ministry of Industry that the new enterprise could successfully export to the required extent....During the April to September, 1962, licensing period, twelve of sixteen applications involving heavy recurring foreign exchange expenditures on imports of components and raw materials were rejected while the other four received letters of intent stipulating the licensees will have to earn the foreign exchange for the required imports ...A project for the manufacture of...rilsan polymide fiber... was conditioned as follows: (1) the cost of plant and machinery should be financed through foreign investment and guaranteed exports; (2) the annual requirement of imported raw materials should be financed through exports; and (3) the repayment of borrowed funds, if any, together with interest thereon would be only permitted to the extent of foreign exchange earned prior thereto by exports...This letter of intent even conditioned repatriation of capital investment upon export earnings...It should not be concluded that all projects are being conditioned on export earnings, but it is becoming more the order of the day with new industrial undertakings with low or lower priority under the plan.[1]

Hazari states that in industrial licensing during the third plan

> There has been a tendency to rely upon various *ad hoc* criteria. One of these has been the policy of licensing projects, the foreign exchange costs of which on capital and/or maintenance account are covered by available credits and/or foreign (equity)

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[1]Kust, 1964, pp. 136-37. See also GOI, MCI, 1962a, p. 24, and *EW*, 29 June 1963, p. 1023.

collaboration and/or export obligations.[1]

Kidron reports that "the government...has shown great latitude in allowing investments in low priority spheres, or even banned ones, on receipt of promises to export a proportion of the product."[2] In its critical report on licensing policy, the Dutt Committee stated:

> A practice has developed under which licenses are issued subject to various conditions...No attempt is made, however, to ensure that Government has either the machinery or even the legal authority to enforce such conditions. One of the major objections to many proposals is regarding the possible heavy drain on foreign exchange especially if the item is considered to be of low priority. One method of meeting this objection that seems to be quite common is to attach an export condition to the licenses, i.e., a condition to the effect that a certain specified proportion of the product would be exported. Such conditions have been attached to the licenses granted, among others,...for aluminium, twist drills, particle boards, transformers, beer, automobile batteries, thermoplastics, closures and A.C. (asbestos cement) pressure pipes...There is no specific agency to look after the fulfilment of these export conditions. Initially, it was proposed that bank guarantees to the extent of the export value should be obtained from the licensees. As this was found to be costly, it was whittled down to a point where the the forfeiture of the bond does not impose much of a strain on the licensee. Thus, the inclusion of export conditions in licenses has in practice proved merely a way of getting round objections to the grant of licences.
>
> When Hindustan Aluminium...was given an expansion license in 1963, a...condition was that import of alumina if not procured indigenously should be arranged through export of products. This...did not happen.
>
> Philips...applied in May, 1960, for substantial expansion from 12,000 to 48,000 radio sets per annum. Radio manufacture was on the banned list (for further licensing), but the application was recommended by the Licensing Comittee subject to the expansion of capacity being linked with an undertaking of export.

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[1] GOI, PC (Hazari), 1967b, p. 19.

[2] Kidron, 1965, p. 303.

> However, on an informal undertaking that the company would make every effort to promote exports, a licence was issued without imposing any export condition.
>
> Indian Tool Manufacturers...was granted a substantial expansion licence in 1962 subject to an export condition and it was also laid down that the company should execute a bond for the purpose with a bank guarantee. But this last part was overlooked when issuing the license and the company pointed this out when reminded about it in July, 1964. The matter was therefore dropped.
>
> Pure Drinks Private Limited...was granted a substantial expansion licence in 1961 with an export condition relating to fruit juices. As the production of these juices was found to be inadequate and the company expressed its helplessness to increase it, the matter was dropped.[1]

Industrial licenses or capital goods import licenses for all investments in the aluminum industry in the latter 1960s were conditional on commitments to export 10 percent of the output made possible by the investment, and beginning in 1969 the same condition was imposed on all licenses in the tire industry. An export obligation was imposed on two producers of PVC resin and one producer of gamma globulin and albumen. In 1968 Dunlop India was licensed to produce tennis balls, a non-priority product for which no foreign exchange would normally have been released, on the condition that "expenditure incurred for import of raw materials should match with export."[2]

According to the EEPC, in 1969 to secure government approval for expansion in some engineering industries a firm had to agree to export

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[1] GOI, MIDITCA, 1969, Main Report, pp. 72-73. Hindustan Aluminium imported alumina in 1964-1967.

[2] <u>FE</u>, 14 November 1968.

20 to 25 percent of the production made possible by the expansion, and the Ministry of Foreign Trade stated that "when we grant facilities to produce for export, the entrepreneurs give an undertaking to export 30 percent of production."[1]

In 1970 it was reported that

> A major factor responsible for...new-found enthusiasm (of radio producers) for exports is the competition for licenses for manufacture of television sets. Every one of the big radio-makers is anxious to establish its _bona fides_ with government and run up impressive figures of export earnings so as to strengthen its case for TV manufacture and for expansion of radio capacity.[2]

In 1970 the government announced that firms with investments below $6.7 million which belonged to large industrial houses or were foreign subsidiaries, for which expansion licenses were severely restricted because of concern over concentration of economic power, would be given expansion licenses only if they agreed to export 60 percent of the production made possible by the expansion or if expansion was necessary to achieve economies of scale. Similarly, the large industrial houses and foreign subsidiaries would be allowed to set up new units with investments below $6.7 million only if they agreed to export 75 percent of output.[3]

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[1] _Times of India_, 9 June 1969.

[2] _EPW_, 29 August 1970, p. 1440.

[3] Export Policy Resolution, 1970, reproduced in _FE_, 31 July 1970, p. 1. For the industrial licensing policy, see _Commerce_, 28 February 1970, p. 410.

d. Foreign Investment and Collaboration

Kust reports that in the early 1960s restrictions on the share of foreign ownership of Indian companies were sometimes relaxed if the foreign collaborator agreed to export. He states that only if

> ...the foreign collaborator agrees or offers to export a substantial part of the production of the new enterprise...can there be any hope of obtaining 100 per cent, or near full ownership...The government...was convinced IBM intended to make its Indian factory the production center for its markets in the surrounding Asian area...American Flange and Manufacturing...was licensed in 1960 to manufacture...with a wholly-owned Indian subsidiary...The main reason for the favorable approval was an agreement by the American company to export half the product which would earn about $200,000 per year.[1]

However, as in the case of industrial licensing, the government did not take export commitments seriously at the time. Kust writes:

> How binding must the export commitment be? To date the government...has not insisted on a firm agreement by the foreign collaborator to take a fixed percentage of the production for export.[2]

Foreign investment and technical collaboration were banned in a number of low-priority and technically simple industries in the late 1960s, but it was reported that

> The government has recently decided to allow foreign collaboration in low-priority and non-essential fields of industry where foreign collaborators agree to underwrite a substantial part of the production for export.[3]

According to the Ministry of Industrial Development, to be eligible for such preferences a firm had to agree to export 75 percent of

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[1] Kust, 1964, pp. 144-45, 149.

[2] *Ibid.*, p. 145.

[3] *Engineering Times*, 1 May 1969. See also *ABP*, 6 June 1969. See, for example, *FE*, 22 December 1968, 13 April, 1969.

output.[3] There is virtually no evidence that this policy was implemented in the late 1960s, perhaps simply because firms were not interested in exporting 75 percent of output. Coca-Cola reportedly was permitted to enter the Indian market after accepting an export commitment.[1]

e. Government Finance for Investments

It was reported in 1966 that the government Industrial Finance Corporation had revised its loan policy to give high priority to industrial projects which would make a significant contribution to exports.[4] In 1970 the government announced that firms exporting over 10 percent of output would be given preferences in access to finance. No information is available on the implementation of these policies.

f. Enforcement of Commitments

As the report by the Dutt Committee makes clear, for several years the government did not enforce export commitments in licenses. In 1963 it was reported that "export...quotas have remained conspicuously unfulfilled...without exposing the units concerned to any penalties."[2]

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[1] EPW, 24 May 1969, p. 864.

[2] EW, 18 May 1963, p. 821.

[3] Directory of Foreign Collaborations in India, Vol. 1, 1968, Section 1, p. 76.

[4] IIC, 1966, pp. 11-12.

Such defaults were common under several schemes during the period because the only penalty was forfeiture of a bond which was sometimes less than the loss on exports, and often there was no penalty at all. In the case of export commitments made to secure import entitlement licenses, prior to export,

> The amounts of bank guarantee were fixed on the basis of approximately 30 percent of the total value of exports. The Secretary, Ministry of Commerce conceded that in some cases the holder of a license might prefer to pay the guarantee amount rather than fulfil the export obligation.[1]

Only 70 to 80 percent of the export commitments made to secure import licenses prior to export in 1957 to 1965 were fulfilled and on the average the firms forfeited only 5 to 10 percent of the value of unfulfilled export obligations.[2]

However in 1968 the government announced that commitments made in the past would be enforced. In 1969 three of the concerned firms in the machine tool, diesel engine, and cast iron spun pipe industries reported in interviews that the government was enforcing commitments made in 1961 to 1963 by reducing regular maintenance import licenses and denying foreign exchange to expand capacity. All three reported that this was a powerful incentive to export, and all increased their exports. In 1970 it was reported that

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[1]GOI, LSS, 1966, p. 199.

[2]*Ibid.*, pp. 131, 133.

[3]*FE*, 6 October 1968, 29 September 1970, p. 3.

> So far as the (steel) tube industry was concerned...certain parties (like Amin Chand Pyarelal) were facing court cases for failure to honour their export commitments.[1]

In 1970 the government announced that an

> Export Obligation Cell had...been set up to watch...the follow-up action...of all concerns to which (industrial) licenses ...or approvals to foreign collaboration agreements or capital goods licenses were issued against an undertaking to export.[2]

However, in the case of the aluminum industry, the government indicated in 1970 that it would not enforce export commitments because of the shortage of aluminum in the domestic market.

All the ad hoc licenses considered in this section were potentially very large subsidies for export of the amount necessary to secure the licenses. The policies discussed under (b) - (d) made exploitation of the domestic market contingent on export and hence created an implicit subsidy on exports, within the quota specified by the license, which could have been several times that on import substitution. However, failure to enforce the commitments or even to make them enforceable eliminated most of the export incentive. In practice, except for the schemes described under (a), these schemes do not seem to have had much importance until 1969; they were mainly a method of justifying approval of projects which had low priority or high foreign exchange inputs.

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[1] FE, 9 December 1970, p. 8.

[2] FE, 14 December 1970.

5. Investment Abroad by Indian Firms

The government encouraged exports of engineering goods by linking investment abroad to exports of capital goods after 1959.[1] Indians could not legally buy foreign exchange for purchase of foreign assets. However, Indian firms could acquire equity shares in manufacturing firms abroad in exchange for Indian capital goods, including building materials and steel structurals, and technical know-how for the foreign plant's own use. This allowed Indian firms to use the entire f.o.b. value of such exports for purchase of foreign assets.

The fact that the benefits of foreign investment were contingent on export of capital goods created a subsidy for export to the extent the present value of benefits to the Indian investor exceeded the world market value of the exports or investment. Several considerations suggest that such subsidies may have been large:

(i) Investments in the protected markets of certain developing countries presumably had a high profit rate, particularly allowing for investment incentives.

(ii) Indian companies had management control of most of their overseas investments, and some of these operations may have enabled them to earn unrecorded foreign exchange. In any event, they made it possible to accumulate capital outside India, since profits could be reinvested in the foreign firm although dividends had to be repatriated to India.

(iii) In addition to certain subsidies on the capital goods exported,

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[1] See ET, 11 August 1964, for an early statement of the policy.

in 1967 the government granted an income tax exemption for 60 percent of dividend income, royalties, and fees received for technical know-how and services from foreign companies. In 1968 the exemption was increased to 100 percent.

Furthermore, the situation in India encouraged firms to invest abroad. Licensing limited expansion in India of large industrial houses, and these, particularly the Birla group which accounted for one-fifth by number and one-third by value of the approved foreign investments, were responsible for the major investments abroad. The recession also encouraged firms to invest abroad.

Between 1959 and 1963 the government approved only five cases of foreign investment. However, by 1968 the government declared a policy of promoting foreign investment, primarily to increase exports. By the end of 1970 the government had approved 105 foreign manufacturing projects with a total Indian investment of $20.7 million. It was reported that 27 had been abandoned and 22 had gone into production.[1] (See Table VI-11.) Actual investment abroad by export of capital goods appears to have been about $1.5 to $2.0 million per year. For 1968-69 the Ministry of Finance fixed a ceiling of $4 million on the total value of exports that would be allowed against equity shares for all companies.

In addition to this scheme, on two occasions the government

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[1]FE, 13 January 1971, p. 1.

allowed Kirloskar Oil Engines to use export earnings from other types of engineering goods to buy foreign equity shares. In 1966 the company was permitted to use $0.46 million earned by export of stationary diesel engines and parts to purchase 75 percent of the equity of an established West German company. In 1970 it was permitted to use $0.10 million earned by export of diesel pumpsets to purchase equity shares in a company to be set up in the Philippines.[1]

6. Direct Government Pressure

The Ministry of Foreign Trade used direct pressure on important firms to get them to export. This went beyond general exhortation and involved direct communications to individual firms. Because firms depended on the government for a vast number of decisions affecting profits, they were sometimes willing to cooperate.[2] The fact that other ministries seldom shared the Ministry of Foreign Trade's priorities limited the range of pressures that were brought to bear, however.

TISCO was reported to have begun exporting steel at a loss compared to sales in the domestic market, where there was an order backlog, only because of government pressure, and to have exported as little as possible. At the same time, TISCO issued public statements arguing that it was a mistake for India to export steel. Under government pressure TELCO began exporting commercial vehicles in the

[1] FE, 5 May 1970, p. 1.

[2] Islam, 1968, p. 589, reports a similar situation with respect to exports in Pakistan.

early 1960s with the reluctant assistance of Daimler Benz, which had included a clause in the original collaboration agreement restricting exports to Burma, Ceylon, Pakistan, and Nepal and would have preferred not to export from India. In 1966 Tomlinson reported that:

> Recently, in its search for foreign exchange, the Indian government has insisted that Goodyear should export 10 percent of its Indian production. This has meant that markets had to be found for these exports in some cases at the expense of other subsidiaries...in spite of the high cost of indigenous Indian materials.[1]

It was reported in 1967 that

> Siemens India has entered the export market under pressure from government and the no less pressing exigencies of recession.[2]

7. Government Ownership

Chapter II.D notes that the government owned a substantial share of capacity in the steel and engineering industries. Public sector firms were sensitive to bureaucratic and political intervention in the interest of goals other than profit maximization, and the government could have issued and enforced a directive to public sector firms requiring a certain level of exports.

There was no lack of export targets for public sector firms. In 1965,

> Prime Minister Shastri asked them to sell a portion of their production abroad in order to earn at least the foreign exchange required for their own maintenance and development needs. H.S.L. will have to make more vigorous efforts if

[1] Tomlinson, 1966, p. 187.

[2] EPW, 18 November 1967, p. 2033.

> it is to achieve Mr. Shastri's target by selling at least 10 percent of its output abroad.[1]

In April 1966 the government Board of Trade set annual export targets of $63 million for Hindustan Steel and $105 million for public sector firms in engineering industries other than steel to be achieved by 1971-72. Similarly, when the Ministry of Foreign Trade announced a crash export drive for the first three months of 1970, representatives of a dozen public sector engineering companies were called to a meeting and asked to pledge exports of $6.7 million for the drive.[2]

The managing director of a public sector firm, which was subjected to other direct pressures by the Ministry of Foreign Trade to increase its exports even though it was already one of the leading public sector exporters, stated that while private companies had to be induced to export by profit considerations, "being public sector I will be forced to export."

The Ministry of Foreign Trade did not find public sector firms responsive to its targets or pressures. The Minister is reported to have

> ...bluntly told the meeting (mentioned above) that the public sector undertakings, barring a very few, had not made any significant export effort despite the recent decision by the government that they should export at least 10 percent of their production.[3]

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[1] Capital, 21 July 1966, p. 113.

[2] FE, 9 January 1970.

[3] Ibid.

While Hindustan Steel exported $41-60 million of iron and steel, amounting to over 10 percent of output, in each year between 1967-68 and 1969-70, exports from public sector firms in engineering industries were negligible compared to their output or investment or to exports of firms in the private sector. (See Table II-12.) The exports of public sector firms in engineering industries totalled approximately $4 million in 1968-69, or 4 percent of total exports of engineering goods excluding steel, in spite of a public sector investment of over $1000 million and vast excess capacity. No public sector firm except Hindustan Steel and the Integral Coach Factory exported 10 percent of output. Only two more, HMT and Indian Telephone Industries, exported over 1 percent of output. No others exported $0.1 million in 1968-69, and by 1970-71 annual exports exceeded $0.1 million in the case of only two other public sector companies, Hindustan Teleprinters and the Surgical Instrument Factory of Indian Drugs and Pharmaceuticals, which exported about $0.3 million each. Bharat Heavy Electricals was the first public sector firm in the heavy capital goods industries to recieve a significant export order. It was to export power-station boilers worth $3 million in 1971-72.

It is clear that exports of engineering goods other than steel were almost entirely from private firms and that directives to public sector firms to increase exports had little if any effect. There is no evidence that public sector firms exported more than they would have had they been private companies. The explanation is partly that outside the Ministry of Foreign Trade, which had no special powers over public sector firms, the public sector export targets were not of much interest to the bureaucracy or politicians.

8. Government Purchases

The government was the largest buyer of basic metals and engineering goods, and for a number of products it was the only domestic buyer. In 1969-70 government purchases of basic metals and engineering goods from indigenous sources totalled (at least) $495 million; "the actual volume of purchases was probably still higher since the above figures do not include complete information on purchases made directly by Central/State governments, public sector undertakings, quasi-public bodies, etc."[1] The DGS&D, the government procurement agency, purchased 146 items only from small firms to encourage development of the latter. There were some suggestions that the government might give preferences in purchasing to exporters, but this was not done by 1970.

It was mentioned in 1967 that as an incentive to export the government might allocate part of its railway wagon orders to firms that had secured export orders, and the Minister of Foreign Trade suggested that small units which benefitted from preferences in government purchasing should export 10 percent of production. In 1969 it was reported that

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[1] IEA, HS 1969-70, p. 138.

> Export oriented industries (sic: firms) submitting quotations against government tenders through DGS&D are likely to be given preferential treatment henceforth in placement of orders. The DGS&D, which handles all government orders beyond Rs 10,000 ($1,333) mooted the proposal to boost export promotion efforts. The same scheme may also be adopted by all the ministries.[1]

9. Bilateral and Barter Trade and Tied Aid

Bilateral and barter trade arrangements and tied aid involving export subsidization were important in government export promotion measures in the 1960s. These are discussed in Chapter VI.B.2-3 and VI.C.4.

10. Export Licensing

Government restrictions on export of iron and steel and aluminum are discussed in Chapter IV.

There was a rule that products with a hard currency import content greater than 30 percent of f.o.b. value could not be exported to rupee payment areas. However, this was not applied consistently, e.g. copper winding wires were exported under rupee payment arrangements.

11. Limitations on Export Subsidization

Several factors offset part of the subsidy value of the export promotion schemes discussed above.

a. Administration of Export Promotion Schemes

All exporters complained about the procedures involved in the export promotion schemes, including the direct cash subsidies,

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[1] Engineering Times, 1 August 1969, p. 13.

subsidies on iron and steel, refunds of indirect taxes, and import replenishment licenses.

One complaint concerned the substantial amount of paperwork required to apply for each subsidy. In addition to initial applications, exporters were frequently required to submit further details and verification and forced to make personal visits to the authorities to keep papers moving. The efforts required were multiplied by the fact that applications for different subsidies and different products had to be made to different government offices through different sponsoring agencies.

A related complaint concerned delays, which were commonly a year and sometimes longer between export and receipt of subsidies.[1] These delays alone often reduced the discounted value of total subsidies by 1 to 5 percent of the f.o.b. value of exports.

Complaints like the following were routine in interviews and the press:

> At present not even a single exporter is able to obtain cash assistance without a lapse of six months and that too after the exporter concerned has met the officials of the department concerned a number of times.[2]

Such complaints were common even in the case of the scheme for refund of indirect taxes, which had been in operation for over a decade, in

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[1] See, for example, the statement by R. L. Kirloskar in FE, 10 January 1971, p. 9.

[2] Association of Merchants and Manufacturers of Textile Stores and Machinery, Commerce, 5 December 1970, p. v.

spite of numerous announcements by the government that procedures were being streamlined to eliminate delays. A 1967 IIFT study of exports by small units reported:

> Generally exporting units do not take into account customs drawback and excise rebate, as these are not claimed by the units owing to procedural difficulties and delays.[1]

A representative of Perfect Machine Tools noted that "this incidentally also becomes the breeding ground for bribery and corruption."[2]

b. Uncertainty Concerning Value of Subsidies

The government relied heavily on *ad hoc* measures and never guaranteed continuation of export promotion schemes. Consequently, especially in the case of industries with rates of subsidy above the average, firms were uncertain about the future profitability of export. Apart from changes in schemes, rates of subsidy were uncertain at the time orders were booked in four cases: (i) Firms were often uncertain whether their exports in a given year would exceed those in the previous year by enough to qualify for a higher rate of cash subsidy given on this basis. (ii) For many non-standardized products the rate of refund of indirect taxes was set after exports were shipped. (iii) The market value of import replenishment licenses fluctuated. (iv) The steel subsidy was given on the basis of prices prevailing on the date of export.

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[1] IIFT, 1967c, p. 33.

[2] *Commerce*, 6 February 1971, p. vi.

c. Reduced Rates of Cash Subsidy and Import Replenishment

The major export subsidies discussed above applied simultaneously in most cases, but there were a number of circumstances under which rates of cash subsidy or import replenishment were reduced to limit the total subsidy.

The direct cash subsidy was reduced or eliminated in the following cases: (i) The rate was reduced on exports under (subsidized) tied aid to Ceylon, e.g. by 5 percent of f.o.b. value in the case of machine tools. (ii) The subsidy of 10 percent of f.o.b. value on PILC power cables was eliminated on exports on (subsidized) credit. (iii) Initially the cash subsidy was not given on exports of capital goods made to acquire foreign equity shares, but in 1969 the subsidy was given at the rate of 10 percent of f.o.b. value and in 1971 the subsidy was increased to the regular rate. (iv) Exporters of data processing machines that were allowed to use their entire export earnings to import inputs did not receive the cash subsidy. (v) There was a provision that if the import replenishment rate on railway wagons was increased above the normal 20 percent to provide for a higher import content, the rate of cash subsidy would be reduced.

Import replenishment licenses were reduced or eliminated in the following cases: (i) Exporters of data processing machines that were allowed to use their entire export earnings to import inputs did not receive import replenishment licenses. (ii) When a capital goods import license was given against an export commitment, the exports made in fulfillment of the obligation did not receive import replenishment licenses, at least in cases where the obligation was enforced. (iii) In return for supplies of PVC resin at international prices, exporters of electric cables transferred part of their import replenishment licenses to the suppliers of PVC resin. (iv) When indigenous aluminum was allocated to exporters of electric cables on a priority basis, the rate of import replenishment licenses was reduced.

D. Export Promotion Schemes and the Incentive to Export

1. The Extent of Nominal Devaluation for Export

This section considers the extent of nominal devaluation of the implicit exchange rate for exports of engineering goods between 1964-1965 and 1969 resulting from the change in the official parity value of the rupee in 1966 and the income tax concession, direct cash subsidy, and import entitlement and replenishment schemes. The next section considers changes in domestic sales prices in India and dollar export prices and draws conclusions about the extent to which the gap between implicit exchange rates for production for the domestic market and export was reduced.

The important changes during this period which are considered here were: (i) In June 1966 the rupee was devalued from Rs. 4.76 to Rs. 7.50 to a dollar, implying a 58 percent increase in the rupee equivalent of a dollar. (ii) At the same time, the import entitlement, income tax concession, and limited pre-devaluation cash subsidy schemes were replaced by the import replenishment and general post-devaluation cash subsidy schemes. (iii) There was a sharp rise in premia on import entitlement licenses in the year immediately preceding devaluation, and there was an increase in cash subsidies and in premia on import replenishment licenses between late 1966 and 1969.

Table III-15 was constructed using data for electric fans, which are representative of engineering goods with a low current import content (10 percent of f.o.b. value). The realization from export was calculated for four dates: 1964-1965, 1966 before devaluation, 1966 after devaluation and initiation of the new schemes, and 1969.

The data in Table III-15 indicate that there was a nominal devaluation of 56 percent in the implicit exchange rate for exports of electric fans between 1964-1965 and 1969. Between 1959, when there was little subsidization of exports at the official exchange rate, and 1969 there was a nominal devaluation of about 100 percent in the implicit exchange rate for exports of engineering goods. In addition, several changes in export promotion schemes not included in Table III-15 substantially increased the extent of subsidization of exports of engineering goods in 1968-1969. Subsidization of export credit and tied aid was considerably increased, exporters were given preferences in maintenance import licensing, and enforcement of export obligations became more strict.

The data in Table III-15, which indicate subsidization of exports equal to 68 percent of f.o.b. value in 1966 prior to devaluation, are consistent with observations made in other sources

TABLE III-15

Realization on Exports of Electric Fans, 1964-65 to 1969
(per cent of rupee f.o.b. price at pre-devaluation exchange rate)

	1964-65	1966 before Devaluation	1966 after Devaluation	1969
F.o.b. export price	100	100	158	158
Income tax concession	3	3	0	0
Cash subsidy	0	0	16	32
Market value of import entitlement/replenishment licenses	30	65	6	19
Realization on exports	133	168	180	208
Change in realization from previous period		35	12	28

Notes:
The following premia on import entitlement/replenishment licenses were used in the calculations:

1964-65: 75 per cent, based on a report by Bhagwati and Desai that the average premium on licenses issued against exports of engineering goods was 70-80 per cent. (Bhagwati and Desai, 1970, pp. 418, 421.)

1966 before devaluation: 162.5 per cent, based on a report that the premium on licenses issued against exports of electric fans was 150 to 175 per cent (IIFT, 1967a, p. 78).

1966 after devaluation: 20 per cent, based on a report by da Costa that in 1966 there was a "fall in market values of import entitlements (issued against exports of engineering goods) from nearly 300 per cent to about 20 per cent after the liberalization of imports to priority industries." At another point da Costa uses a premium of 200 per cent in calculating the value of export

Notes to Table III-15 (continued)

subsidies in 1966 before devaluation. (da Costa, 1968, p. 28.) Bhagwati and Desai report that after devaluation import replenishment licenses were "hardly a matter of significance ... in view of import liberalization which gave almost total access to imports to the fifty-nine priority industries." (Bhagwati and Desai, 1970, p. 490.)

1969: 60 per cent, based on a report by an exporter of electric fans during an interview.

The rate of import licenses given was 40 per cent of the f.o.b. value of exports until devaluation and 20 per cent after devaluation.

concerning the extent of de facto devaluation that existed immediately prior to the change in parity and the net effect of the changes in 1966. According to the Ministry of Finance, immediately prior to devaluation:

> The premium on import entitlements...implied an effective rate of exchange varying from Rs 6.5 to a dollar to about Rs 8 to a dollar depending on the rate of entitlement and the extent of the premium.[1]

This estimate, which is not limited to engineering goods, implies de facto devaluation of the implicit exchange rate on exports of 40 to 71 percent allowing for the 3 percent income tax concession. Since subsidization from the entitlement scheme was generally higher for non-traditional manufactures than for traditional exports, this indicates a subsidy of about 70 percent for engineering goods. Similarly, Bhagwati and Desai estimate that immediately prior to devaluation:

> The average degree of such de facto lowering of the exchange rate...could be put at around 80-100 percent subsidization on many new manufactures (e.g. chemicals, engineering products...)[2]

Finally, it was reported that "before devaluation...some exports were subsidised to the extent of 90 per cent and more."[3]

It is important to note that only a very small share of the devaluation in the implicit exchange rate occurred when the official parity value of the rupee was changed in 1966 because the change in

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[1]Supplement to the Economic Survey, July 1966, cited by GOI, LSS, 1968, p. 82.

[2]Bhagwati and Desai, 1970, p. 474.

[3]EPW, 16 September 1967, p. 1679.

parity was almost entirely offset by changes in export promotion schemes. Nominal devaluation of the implicit exchange rate in Table III-15 for exports of electric fans between June and August 1966 was only 7 percent.

For a number of engineering goods there was a decline in the implicit exchange rate on exports at the time of the official devaluation. Assuming the same premia used in Table III-15, the realization on products with an import entitlement rate of 60-75 percent would have declined at the time of devaluation even if they received the maximum rate of cash subsidy. Consequently, the *de facto* exchange rate very likely declined on hand tools, transistor radios, commercial vehicles, vehicular engines, and automobile parts. The implicit exchange rate on exports also declined for a few products like bicycles and parts which received large cash subsidies prior to devaluation (See Table III-8).

This conclusion is supported by a report that while the changes in 1966

> Helped that section of the industry which was receiving incentives (entitlements) of 50 per cent or less, it adversely affected the interest of the units which were receiving incentives of more than 50 per cent.[1]

It is also supported by a number of complaints found in annual reports and other company statements.[2] Although the calculations above indicate that there was a small increase in the exchange rate for electric fans at the time of devaluation, the major exporter of electric fans

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[1] *EPW*, 4 July 1970, p. 1053.

[2] See also Krueger, 1970, p. 21n, for support in the case of automobile parts.

reported that

> The devaluation and changes in the export promotion scheme have further tilted the balance against Indian manufacturers in regard to (profitability of) export of fans.[1]

On the other hand, since the import entitlement scheme did not apply to iron and steel or aluminum ingots, the changes in 1966 appear to have lead to a substantial increase in the implicit exchange rate on their exports.[2]

2. Reduction in Discrimination between Production for the Domestic Market and Export

The preceding section dealt with nominal devaluation of the implicit exchange rate for exports, i.e. the increase in the rupee realization per dollar of exports. This section considers changes in domestic sales prices in India, dollar export prices, and the prices of Indian inputs and draws conclusions about the reduction in the gap between implicit exchange rates for production for the domestic market and export during the 1960s.

It is clear from the data in Table III-15 and the domestic price indices for engineering goods in Table III-16 that even if dollar export prices had remained constant, there would have been a substantial increase in the ratio of the rupee realization on exports to the realization on domestic sales between either 1961-62 or 1964-1965 and 1969. For example, while the

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[1]Jay Engineering, Industrial Times, 15 September 1968, p. 43. Parenthesis added.

[2]However, see note (c) to Table III-9.

realization on exports of electric fans increased by 56 percent between 1964-1965 and 1969 even before allowing for schemes not included in Table III-15, the domestic price index for electric machinery (including electric fans) increased by only 16 percent.

In addition, there was an increase in nominal international prices of engineering goods during the 1960s, and hence at a given quantity of exports the rupee realization on exports would have increased even more compared to that on domestic sales.

The prices of Indian industrial inputs generally rose more than the domestic prices of finished engineering goods between 1964-1965 and 1969. Apart from the data presented here, this was a universal complaint in the annual reports of Indian companies. It was true of wages which were linked to the consumer price index (See Table III-17) through dearness allowances,[1] the control prices of domestic materials including iron and steel (See Table III-18), the landed prices of imported materials, and the prices of materials like alloy steel and steel forgings for which import substitution took place in this period. It was not true of open market prices of some materials like steel in 1966-1968 but was true of these as well for the period through 1969-70 (See Table III-19). Consequently, the increase in the realization on export compared to the cost of production was less than that compared to the realization on domestic sales.

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[1]The increase in wages could have been partly offset by an increase in productivity, but this probably did not occur since there was an increase in labor problems in the late 1960s.

TABLE III-16

Domestic Price Indices (Base: 1961-62 = 100)

Item	1962	1963	1964	1965	1966	1967	1968	1969	Oct.1970
Machinery and transport equipment	104	107	111	116	124	131	132	135	149
Non-electric machinery	105	107	111	116	122	129	132	136	156
Electric machinery	103	107	113	119	130	136	135	134	149
Tranport equipment	102	107	111	113	122	130	130	133	137
Vehicles	102	107	111	114	124	131	132	135	n.a.
Tools and implements	103	106	106	117	126	131	131	140	n.a.
Cutlery and hardware	110	118	125	130	138	141	142	147	n.a.
Lamps and lanterns	101	107	106	112	118	131	134	141	n.a.
Clocks and watches	101	104	105	106	122	133	131	130	n.a.
Aluminum products	105	109	106	118	130	134	134	134	n.a.
Rubber tires and tubes	100	105	115	122	148	151	152	161	n.a.
Metal products	106	108	112	119	126	135	142	149	166
Iron and steel manufactures	105	107	111	118	125	134	142	149	n.a.
Metals	103	110	120	142	157	167	170	180	n.a.
Pig iron	104	104	119	125	149	155	165	175	n.a.
Aluminum	104	101	101	114	121	123	119	123	n.a.
Copper	106	113	135	209	250	270	285	336	n.a.
Brass	103	109	137	196	252	294	286	294	n.a.
Zinc	90	91	114	168	165	135	113	130	n.a.
Tin	141	215	205	213	258	303	247	258	n.a.
Lead	106	146	219	377	392	264	229	250	n.a.

n.a: not available
In these indices the term "machinery" applies to consumer goods as well as capital goods.

Source: EE, R & S, February 1970, pp. 118-20, and GOI, RBI, *Bulletin*, November 1970, p. 1883. For details see IEA, HS, 1969-70, pp. 223-25.

TABLE III-17

Cost of Living Index (Base: 1960 = 100)

Consumer Price Index	1961	1962	1963	1964	1965	1966	1967	1968	1969	July 1970
Industrial Workers	n.a.	n.a.	n.a.	n.a.	139	157	175	174	177	189
Urban Non-manual Employees	n.a.	n.a.	n.a.	n.a.	132	146	159	161	167	n.a.
Industrial Workers in Calcutta	101	107	112	121	128	144	159	171	171	184

n.a.: not available
Base of index was 1949 until 1968 and was then changed to 1960. Index for period to 1968 is simply scaled to 1960-base index for 1967-1968.

Source: EE, 6 November 1970, p. 834, and IEA, HS, 1969-70, p. 226.

TABLE III-18

Control Prices of Steel for the Domestic Market (Rs. per ton)

Category	6/59	4/63	3/64	4/65	4/66	5/67	7/68	1/70
Billets	n.a.	n.a.	505	535	550	630	649	711
Bars	600	626(70)	630	663	685(125)	760	780(125)	847
Structurals	610	645(70)	660	693	715(125)	790	849(125)	896
Plates	685	742(92)	767	777	797(135)	890	979(135)	1082
Hot rolled sheets	630	813(97)	832	872	902(175)	985	1059(175)	1162
Galvanized sheets	n.a.	925	940	1130	1160	1545	1784(325)	1846
Charges included in control prices								
Freight, surcharge, cess	n.a.	66	62	65	67	75	n.a.	n.a.
Average excise duty	n.a.	n.a.	75+	n.a.	n.a.	n.a.	146	165

n.a.: not available

Prices are base prices for untested quality and include all levies on domestic sales, including excise tax and freight equalization levy. Numbers in parenthesis are excise taxes included in the prices.

Sources: EW, 8 August 1964, p. 1366; GOI, MSHI, 1963, pp. 9, 102; GOI, MSM, 1966, p. 6; IEA, HS 1967, p. 66, 1968-69, p. 162, and 1969-70, p. 174.

TABLE III-19

Open Market Prices of Steel, 1963-1970. (Rs. per ton)

Category	3-8/1963	4/64-2/65	9/1969	6/1970
Wire and wire rods				
Wire rods		860-880	1200	1306-1640
H.B. wire	950-1050	1100-1500		
Galvanized wire	1150-1310	1600-2500		
Rounds				
Rounds (3/4")	600-810		950-1000	
Bars and rods				1175-1640
Structurals			950-1000	
Angles	640-750			
Channels				1238-1800
Joists	670-700			1400-2000
Plates	850-1000		1600-2500	3000-3475
Sheets				
Hot rolled				
10-14 guage	980-1400			1888-2350
16 and over			1500-2700	
Cold rolled				
16 and over			2250-2600	
Galvanized				
16-20				1800-2700
22-26	1550-2200			
Stainless steel	17800-22600		38500-41000	48000-52000

Sources: See Table IV-5.

3. Profitability of Export and the Role of Excess Capacity and Export Subsidies

This section compares the realization from export with the cost of production and the realization in the domestic market in 1969. The section does not consider the entire realization from export but rather the f.o.b. price plus the cash subsidy, the refund of indirect taxes on inputs, the steel subsidy, and the market value of import replenishment licenses. No allowance is made for the value of preferences in licensing or *ad hoc* subsidies.

It was typical for firms to report in interviews that after allowing for the four export subsidies considered here the realization from export covered short-run marginal cost but not average total cost even if the latter was defined to exclude all return on equity.[1] Detailed data supplied by two major machine tool producers and exporters indicated that the realization from export, after allowing 10 percent of the f.o.b. value for costs of export marketing, was 90 percent of average total cost excluding all return on equity. The latter figure was confirmed by the firms in subsequent communication and by a

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[1]Published statements claiming that exports involved losses were very common. In 1967 Dunlop India reported that "our export business in unprofitable even after taking into account duty drawback and the current cash subsidy of 10 per cent," and in 1969 it reported that "due to the high cost of raw materials, this level of exports could only be achieved at a substantial loss." (*EPW*, 6 May 1967, p. 859, and *EE*, 25 April 1969, p. 902.) Jessop reported that "our cost of production did not leave a margin of profit despite financial assistance afforded by government...We took on the orders to fill a part of our idle capacity." (Jessop, AR 1967-68, pp. 5-6.) Philips India reported that "whatever exports were effected had to be undertaken at a loss." (Philips India, AR 1966.)

third major machine tool producer. One would expect that for many non-exporters profitability of export was even lower and that this was why many firms did not export in spite of excess capacity or did not use all excess capacity for export production. In the case of firms in the automobile parts industry, which were required to export 5 percent of output or suffer adverse discrimination in import licensing, Krueger reports that in late 1969-70:

> Because all firms feel obliged to export, they sell their products internationally at whatever price these products will bring. In some instances, the firm's proceeds--even including cash subsidy and duty drawback--do not cover the firm's direct material cost per unit of output. In other cases, the export price does not cover material cost but the cash subsidy and the duty drawback make up the difference. In a few cases, the firm's total recovery (f.o.b. price plus cash subsidy and duty drawback) is equal to, or almost equal to, the O.E. (original equipment) price received from domestic sale.[1]

On the other hand, a few companies reported that realizations from export covered long-run average costs and allowed some return on equity, e.g. one producer of cast iron spun pipes and one producer of hand tools, and an UNCTAD-GATT study states that "the confidential data examined in connexion with this survey suggest that some segments of the (automobile parts) industry engaged in the forging and machining of parts do very well on exports."[2]

One can conclude that while some firms covered long-run average costs on exports and earned a return on equity, a large share of Indian

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[1] Krueger, 1970, p. 106.

[2] UNCTAD-GATT, 1969, Vol. C, p. 47.

exports of engineering goods in the late 1960s were made at realizations, allowing for the four export subsidies listed above, which did not cover long-run average cost. This confirms the conclusion reached in part III.B.2.b that excess capacity was probably critical for export by a number of industries, given the implicit exchange rate on export. It also indicates the importance of the schemes for preferential import licensing for exporters, particularly discrimination against firms in certain industries like automobile parts which exported under five percent of production.

Interviews indicated that the f.o.b. price received on exports of a number of engineering goods excluding metals in 1969 was between 50 and 75 percent of the price for domestic sales (ex-works exclusive of taxes on the final sale). This is consistent with the replies to a 1967 ESRF questionnaire: 21 companies in the basic metals and engineering industries reported that export prices were 40 to 90 percent of domestic prices and two companies in the rubber products industries reported that export prices were 50 percent of domestic prices.[1]

With f.o.b. export prices 50 to 75 percent of domestic prices and the four export subsidies considered in this section totalling 25 to 50 percent of the f.o.b. export price, realizations from export were concentrated between 65 and 100 percent of the realization in the domestic market after allowing for the additional costs involved

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[1] ESRF, 1967, p. 17.

in exporting.[1] There were probably many engineering goods on which the realization on export would have been even less than 65 percent of that in the domestic market, since non-exporters were under-represented in the interviews. A few exporters, on the other hand, reported higher realizations on exports to certain markets than in the domestic market, e.g. one producer of automobile parts for exports to East Europe under bilateral trade agreements. Such reports may also have been under-represented since exporters would have been reluctant to invite reductions in their export subsidies.

For three products, iron and steel, aluminum ingots, and commercial vehicles, the realization from export in 1969-70 was higher than on domestic sales. In each case this was in part because of domestic price controls.

For iron and steel the f.o.b. price of exports rose above the ex-works control price for domestic sales during 1969, and this situation continued in 1970. One of the major exporters of steel reported that in late 1969 the f.o.b. export price on categories like bars and structurals, which accounted for the bulk of exports, averaged 12 percent more than the control prices for domestic sales.

In the case of aluminum ingots, a press report on the 1968 annual meeting of Hindustan Aluminium, which had exported 12,000 tons of aluminum, stated that "there is no loss on export."[2] It was also

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[1]Krueger, 1970, pp. 127-28, states that in the automobile parts industry, "it is highly unprofitable to enter the export market relative to domestic market profitability even given the subsidies available."

[2]_EE_, 13 December 1968, p. 1119.

reported in May 1969 that "prices (for aluminum ingots) in the international market are rising. The supply position has become somewhat tight. There has been a rise in the international price from 24 to 26 cents a pound. This is higher than the prevailing price in India."[1]

In the case of both iron and steel and aluminum ingots, international prices fluctuate substantially, and the above situation was temporary. By late 1970 the international price of aluminum ingots had fallen to 22 cents per pound, which was below the Indian ex-works control price for domestic sales.

Krueger presents data for five producers of motor vehicles which reveal that the f.o.b. prices of exports were 85, 80, 73, 72, and 51 percent of the ex-factory control prices for domestic sales in 1968-1969.[2] With a total subsidy of 35 to 40 percent of f.o.b. value, the realization on export was equal to or greater than on domestic sales for the first four producers during 1968-1969. Krueger indicates that in the second case, and perhaps in some of the others, the f.o.b. price is that for sales against non-convertible currency.[3] Assuming all prices applied to exports for non-convertible currency and that sales for hard currency were made at 10 percent less, only the first two would have had a realization on exports for hard currency equal to that in the domestic market.

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[1]Capital, 8 May 1969, p. 909.

[2]Krueger, 1970, p. 106.

[3]Table III-7 shows that 93 percent of exports of commercial vehicles and jeeps in 1969-70 were to soft currency areas.

4. <u>The Response of Exports to Subsidies</u>

a. <u>1959-60 to 1969-70</u>

Export subsidization programs were an important factor in the expansion of exports of engineering goods between 1959-60 and 1969-70. No attempt has been made to verify this statistically on the basis of differences in implicit exchange rates among products or changes over time. The data for a reasonable model to explain the level of exports on a disaggregated basis are not available, and on an aggregate basis there is little but trend. However, the conclusion is supported by the following considerations:

(i) Parts III.D.1 and III.D.2 show that the export subsidization schemes considered in part III.C progressively increased the implicit exchange rate on exports and reduced the gap between the implicit exchange rates on import substitution and export. Simultaneously, there was a large increase in exports and in the ratio of exports to domestic sales.

(ii) Until 1965-66 engineering goods were exported primarily by firms whose production was constrained by the supply conditions for materials, not by firms with excess capacity due to insufficient domestic demand. Most of these exports clearly would not have been made without the subsidy provided by the import entitlement scheme since marginal revenue in the protected domestic market was higher than on exports before allowing for export subsidies in cases where production was constrained by supply factors. Similarly, in the late 1960s, while engineering goods were exported primarily by firms with excess capacity due to insufficient domestic demand, some firms without excess capacity also exported, evidently because of the subsidy provided by import licensing preferences for exporters as well as other schemes.

(iii) Only a small amount of the excess capacity in the engineering industries where production was limited by inadequate domestic demand after 1966 was employed in production for export, even where collaboration agreements did not impose restrictions on export. It can therefore be concluded that marginal cost considerations alone did not make exports universally profitable; this was confirmed by producers. This suggests that export subsidies were not redundant and influenced the volume of exports by such firms.

(iv) There are a number of cases where exports of specific products or to particular destinations were clearly influenced by export subsidies, e.g. data processing machines, which were exported to secure import licenses but not for cash; exports under tied aid to Ceylon and rupee payment to the UAR; and exports of capital goods exactly equal in value to Indian investments abroad.

(v) Apart from such inferences, in interviews and annual reports engineering firms attributed considerable importance to export subsidies as influences on their decisions to export, their export targets, and their export pricing. For example, it was common in 1969 for firms to report that they had set export targets of 5 or 10 percent of output because of penalties in licensing for firms exporting under 5 percent and preferences for firms exporting 10 percent, but few engineering firms without excess capacity due to insufficient domestic demand planned to export over 10 percent of output.

b. Impact of Devaluation in 1966

It is popularly believed that the devaluation in 1966 failed to stimulate exports. The data in Table II-15 show that exports of engineering goods increased only slightly in 1966-67, moderately in 1967-68, and then very rapidly in 1968-69 and 1969-70. Exports of iron and steel increased rapidly immediately following devaluation.

The preceding discussion of the limited extent of devaluation of the implicit exchange rate on exports during 1966 helps to explain why there was little increase in exports of engineering goods in 1966-67 in spite of a substantial change in the official parity value of the rupee. A number of other factors also explain the limited short-run response of exports:

(i) Export promotion schemes were temporarily suspended. There was a two-month delay between devaluation and termination of the income tax concession and import entitlement schemes and announcement of the new cash subsidy and import replenishment schemes. The scheme for supply of iron and steel at concessional prices for export production was suspended between June 1966 and May 1967, and the provision for allocation of one-third more iron and steel than was actually required for production of exports was eliminated. Also, since devaluation was accompanied by a reduction in import duties, the scheme for refund of indirect taxes on inputs was disrupted and refund rates were reduced. Moreover, the official devaluation did not apply directly to exports under non-convertible currency arrangements because contracts were in rupees, and exports and new contracts under these arrangements were disrupted for a few months until the prices on existing contracts could be renegotiated. The DGTD reported that:

> The immediate impact of devaluation on exports in this sector (engineering goods) was the dislocation, for a few months, of the even flow of export contracting and negotiations consequent on the uncertainties created by the event and the withdrawal of the erstwhile export promotion scheme, price concessions on indigenous iron and steel for export fabrication and import entitlements (between June and August, when the new schemes were announced).[1]

(ii) There was probably a reduction in overinvoicing.[2]

(iii) Time was required to establish marketing facilities.

5. Export Targets

Given the level of export subsidies, the profit calculations made in the preceding sections depend on domestic market conditions and reflect the effect of the recession on input and domestic output prices. The revival of domestic demand in 1969-71 probably reduced

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[1]GOI, DGTD, AR 1966-67, p. 78. Before announcement of the cash subsidy, it was reported that "abolition of the special export promotion measures will undoubtedly hit hard the engineering industry as the extent of the benefits, in most cases, was higher than the present rupee devaluation of 57.5 per cent." MCIEC, July 1966, p. xiii.

[2]For evidence of overinvoicing before devaluation, see Bhagwati and Desai, 1970, pp. 454-55, 488. They found that between 1961-62 and devaluation there was an incentive to overinvoice exports of certain engineering goods and their interviews revealed that such overinvoicing took place. They estimate overinvoicing at an average of 10-20 percent of the value of exports covered by the import entitlement scheme. Overinvoicing in the case of stainless steel products is re-reported in GOI, LSS, 1966, pp. 23, 165, 167, and for textiles in GOI, MC, 1966, Pt. II, p. 153.

the ratio of the realization on export to costs and to the realization on domestic sales for some products.

Furthermore, the long-run outlook for profitability of export of engineering goods was at no time in the 1960s high enough to induce investment for export production, although the question of investing for export production was not relevant for many industries because of excess capacity. Rather than investing specifically for export, it was typical in 1969 for firms to report an export target of 5 to 10 percent of production set on the basis of government licensing preferences for exporters.

These observations raise doubts about the official projections for exports of engineering goods cited in Chapter II.F. It seems unlikely that the long-run targets will be achieved unless there is a further increase in the ratio of the realization on exports to that on domestic sales.

E. Demand Factors Affecting Exports

Although changes in supply factors appear to have played the primary role in the expansion of Indian exports of engineering goods and metals in the 1960s, the following changes in export demand seem to have played a role:

(i) The closing of the Suez canal reduced competition in west Asia and east Africa, although it also increased freight costs and shipping times from India to West and East Europe and to the east coast of North America.

(ii) There was a sharp rise in the international price of steel and products like steel pipes and tubes in 1969 and 1970.

(iii) Although bilateral trade agreements have been listed in part III.C as export promotion measures because exports appear to have been subsidized by higher prices for imports, these agreements led to an increase in export demand and prices.

(iv) The economic development of surrounding countries increased the demand for capital goods, but import substitution abroad was probably a factor in the stagnation of Indian exports of simple metal products.

(v) Exports to Pakistan ceased in 1965 and exports to South Vietnam under US aid ceased when procurement was tied to the US in the mid-1960s. Both countries were major markets in the first half of the 1960s.

CHAPTER IV

TRADABLE INPUTS AND NEGATIVE PROTECTION

This chapter considers the influence of government policies on supply conditions for tradable inputs used in production of engineering goods and tires. The purpose is to determine the extent to which negative protection of value added for export and related difficulties resulted from restrictions on imports, controls on domestically produced materials, and similar policies. The chapter considers not only higher unit prices of materials but other aspects of supply conditions which affected the cost of value added, quality, design, or output of engineering goods.

The chapter first discusses the conditions under which tradable inputs were available for production for the domestic market and then considers the special provisions which were made for supply of materials for export production.

A. Government Policies Affecting the Supply of Tradable Inputs

Among government policies which directly influenced supply conditions for tradable inputs were (1) import licensing, (2) price and distribution controls on domestically produced materials, (3) export licensing, and (4) indirect taxation.

1. Import Licensing[1]

The following features of import licensing affected the supply conditions for tradable inputs throughout the 1960s:

(a) All inputs required licenses, which were allocated bureaucratically rather than by a price mechanism in the presence of excess demand at landed prices.

(b) A large majority of licenses for inputs were allocated directly to manufacturing firms which used the inputs in their own production. During the 1960s the share of licenses for inputs issued to independent private import houses declined and the share issued to state trading agencies increased.

(c) Except for import licenses issued against exports, the quantity of maintenance import licenses allocated to a firm depended on (i) the total availability of foreign exchange for maintenance imports, (ii) the priority status of the industry under the import policy, and (iii) the firm's capacity, recent production, and/or recent use of import licenses.

(d) For each assembled product, the government imposed a schedule for increasing domestic content and progressively reduced the ratio of licenses for components to output so that after 5 to 10 years firms typically were required to produce or procure 75 to 95 percent (by value) of parts in India.

(e) The validity of licenses was restricted in minute detail so that the importer often had little discretion in their use: (i) Items and

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[1]See Bhagwati and Desai, 1970, Chapters 15 and 16, for a detailed discussion of import licensing in 1956-1966.

amounts of each were specified. (ii) Licenses were often valid for import only from a specific country under tied aid or rupee payment. (iii) Licenses were valid for only a limited period, e.g. six months or a year including the time required for delivery of goods, and policies making issuance of licenses contingent on use of past licenses further discouraged delay in import.

(f) In the case of licenses issued to manufacturers, with the exception of licenses issued against exports, neither the licenses nor the imported inputs were legally transferable to other firms.

(g) Import of many tradable inputs was banned. The basic rule was that import was prohibited if an item was manufactured in India, regardless of the Indian price, except in certain cases when the government decided that domestic production was insufficient (e.g. when supply constrained production in a user industry). Import of some other items was banned because the end-product was considered non-essential or to force use of domestically available substitutes.

(h) Licensing policy changed frequently, both between semi-annual licensing periods and on an _ad hoc_ basis. The ratio of licenses to capacity, the banned list, the extent of imports permitted to supplement domestic production, source-tying, etc., all changed, often with little warning.

(i) The _minimum formal_ requirements of licensing entailed considerable paperwork and included a cumbersome procedure for proving that the desired imports could not be procured in India. Before they could obtain import licenses for capital goods, castings and forgings, and mild, alloy, and special steels, firms were required to advertise their requirements or notify domestic producers and obtain "non-availability" certificates from all producers stating that they could not supply the requirement. For alloy steels this involved securing certificates from as many as seven producers stating that they could not supply the material within six months. This requirement for clearance led to numerous problems:

> There have been instances when indigenous manufacturers had been hesitant to supply such certificates even though they were not in a position to make supplies.[1]

> Soon after the introduction of this new procedure, several evils have cropped up. There are reports that some manufacturers of machinery have started demanding illegal consideration for issuing letters of regret. Besides there are reports that some companies, which have already entered certain industry, are trying to delay the projects of others coming into the same field with the help of this procedure.[2]

Even without such deliberate efforts, this procedure and others led to delays.

Apart from such formal requirements, manufacturers devoted a large amount of resources even at the top management level to securing licenses to import materials and capital goods. This cost of licensing is considered in part IV.K.

2. Price and Distribution Controls

The prices of domestically produced iron and steel and distribution among users were controlled by the government throughout the 1960s. Other materials and ancillary items under controls during part or all

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[1] FE, 5 October 1968.

[2] FE, 29 January 1969.

of this time were ferrous scrap, aluminum, coal, caustic soda, synthetic rubber, and tires and tubes. The price of natural rubber was supported to subsidize production.

3. Export Licensing

At certain times the government restricted exports in the case of iron and steel, ferrous scrap, and aluminum in order to hold domestic ex-works prices below f.o.b. export prices.

4. Indirect Taxation

Tariffs on imports and central excise taxes on a number of domestically produced materials and components were a significant factor in the structure of effective protection. Tariffs on imports in 1969 were 15 to 27.5 percent *ad valorem* for basic metals and raw rubber, 27.5 percent for spare parts and machine tools, 27.5 to 50 percent for a wide range of components (and higher in some cases), and 60 percent for synthetic resins and plastic materials. There were additional countervailing duties on imports where there were domestic excise taxes. The central exise tax was 10 percent on pig iron, 17 to 33 percent on steel, 27 percent on aluminum, and 5 percent on caustic soda, and it applied to certain components, including electric motors (5 to 15 percent), storage batteries (15 percent), and motor vehicle tires (40 percent).

Since tariffs and central excise taxes on current inputs used directly by the final manufacturer were refunded on exports (see Chapter III.C.2.e), these are omitted from calculations in the present chapter.

However, other indirect taxes were not refunded and hence contributed to negative protection for export. There was no refund of the same tariffs and central excise taxes on machinery or on indirect inputs, of state and local sales taxes (e.g. a 2 percent sales tax in West Bengal) or other levies (e.g. a 1 percent octroi tax in Bombay) on inputs, or of the 3 percent central sales tax on interstate movements of certain inputs including steel. The effect of these non-refunded indirect taxes is included in the calculations in this chapter, but it was not possible to separate their effect from other factors responsible for negative protection.

B. Dependence on Imports

For perspective in the following discussion a few generalizations about the relative roles of import and domestic production in supply of tradable inputs to the engineering industries are useful.

1. Materials

Virtually all pig iron and the large majority of mild steel and aluminum used at the end of the 1960s were produced domestically, and their production in turn used Indian materials with the exception of part of the cryolite and aluminum fluoride for aluminum and some minor items. Imports accounted for 15 percent of mild steel flat products, 25 percent of tool, alloy, and special steels, a great majority of non-ferrous metals other than aluminum, and a large number of non-metallic materials.

2. Components

In the case of assembled goods, although production sometimes began with import of all components in completely-knocked-down (c.k.d.) condition, imports rarely accounted for more than 25 to 40 percent (by value) of the c.k.d. pack five years after production began. Direct imports accounted for less than 10 percent of the components (by value) in most of the assembled products exported at the end of the 1960s, e.g. cotton textile machinery, machine tools, commercial vehicles and jeeps, stationary diesel engines, and electric fans. The range from 2 to 16 percent for commercial vehicles, jeeps, and passenger cars listed in Table IV-1 was representative for such products.[1]

Table IV-2 provides data on current import content including materials and components for a number of the industries examined in detail in this study.

3. Machinery

At the end of the 1960s, one-quarter to three-quarters (by value) of the machinery and equipment for new investments in the engineering industries was imported, with the higher fraction applying to industries requiring special purpose, automated, high precision, and large machines. Sixty percent of the total supply of machine tools by value and 20 percent by number were imported.

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[1]These figures do not include imported materials used in production of components in India.

TABLE IV-1

Domestic Production and Procurement of Automobile Components, 1959-60 and 1967-68

Vehicle	Indigenous Content (per cent) 1959-60	1967-68
Ashok Leyland truck	38.5	89.0
Hindustan Bedford truck	46.0	84.0
Premier Dodge truck	68.0	98.0
TELCO Mercedes-Benz truck	64.0	95.0
Mahindra and Mahindra Jeep	65.0	96.5
Hindustan Oxford Morris car	70.5	97.5
Premier Fiat car	47.0	98.3
Standard Herald car	32.5	89.8

Indigenous content = 100 minus import content; import content = foreign ex-factory price of components still imported (excluding raw materials) as per cent of foreign ex-factory price of complete vehicle.

Sources: 1959-60: GOI, MCI, 1960, p. 11.
1967-68: GOI, MIDCA, 1969, pp. 61-62.

TABLE IV-2

Production and Direct Import Content of Engineering Goods, 1960 and 1967.

Product	1960 Production ($ mil.)	1960 Direct Import Content (per cent)	1967 Production ($ mil.)	1967 Direct Import Content (per cent)
2. Steel pipes and tubes	30	10	54	9
3. Bright steel bars	2	20	8	13
4. Iron and steel castings				
Cast iron/alloy	*	*	35	*
Malleable iron	1	6	6	2
Steel	11	6	21	2
5. Steel wire ropes	2	50	5	40
6. Electric wires and cables				
Aluminum conductors	18	65	57	45
Power cables	4	75	27	49
Rubber and plastic insulated cables	16	65	25	40
8. Aluminum ingots, sheets, and foils				
Ingots	12	7	51	3
Foils	5	39	7	4
11. Railway wagons	77	20	61	1[a]
14. Electric machinery				
Transformers	9	59	44	30
Electric motors	14	35	35	12
Switchgear	8	50	43	20
15. Commercial vehicles, jeeps, passenger cars, and motor cycles	316	22	262	15
16. Dry and storage batteries				
Dry	16	30	16	20
Storage	11	40	14	20
18. Data processing machines and calculating machines	1[b]	27	4	22
19.& 23. Bicycles and parts	39	20	51	12
20. Stationary diesel engines	11	40	31	5
21. Automobile parts	25	27	87	25
24. Electric fans	33	19	27	10
26. Tires and tubes				
Automobile	82	26	144	9
Bicycle	15	26	22	6
TOTAL OF ABOVE	758	25	1139	16

Notes to Table IV-2

*: less than 0.5.
a: this is so low that there is clearly an error
b: only calculating machines were produced in 1960

Value of production is converted at the official exchange rate. Direct import content is derived by comparing the value of production converted at the official exchange rate with the value of imports. Because of overvaluation of the rupee, the direct import content would be higher if production were valued at international prices. Because the degree of overvaluation can not be assumed equal in 1960 and 1967, it is difficult to compare production or direct import content in the two years.

Source: EE, 26 December 1969, pp. 1356-57.

C. Prices of Domestically Produced Tradable Inputs

The prices of domestically produced tradable inputs for the engineering industries were generally higher than the c.i.f. prices of imports from the cheapest sources, even after the 1966 devaluation. This was generally a reflection of overvaluation; there were also specific cases of comparative disadvantage, inefficient production, and monopoly pricing.

In certain cases however (particularly iron, steel, ferrous scrap, and aluminum), Indian prices were sometimes lower than not only c.i.f. prices of imports but (with the exception of aluminum) even f.o.b. prices of exports, largely as a result of government controls over prices and exports. Hence, for users of these metals during certain periods there was subsidization of value added for export as well as for the domestic market.[1]

In addition to the excess of domestic over c.i.f. import prices for tradable inputs purchased in India, an important source of negative protection was the excess of in-plant production costs over c.i.f. import prices for tradable inputs produced by vertically integrated firms. These inputs are not considered in this section but are discussed below in part IV.I.

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[1]The question whether India had a comparative advantage in production of pig iron, mild steel, and aluminum for the domestic market is not examined here. Other studies have suggested that Indian production costs for these metals were lower than the c.i.f. prices of imports or would have been lower if certain conditions had been fulfilled. See Liedholm, 1965, on steel and Manne, 1967, on aluminum.

1. Materials

Comparison of Indian and c.i.f. import prices for materials used by the engineering industry is complicated by the fact that world prices of metals fluctuate substantially. During 1969 when most of the data presented here were collected, international prices of metals were rising sharply. In the case of mild steel and aluminum, data are presented for before and after the rise in international prices.

a. Iron and Mild Steel

(1) Control Prices

Prices of pig iron and mild steel produced in India by the integrated steel mills were controlled by the government. The extent of government control over production schedules and distribution to users varied during the 1960s and differed among categories of steel; but generally it included at least ranking of users by priority for distribution and reservation of quotas for certain uses, and in some cases it involved much more detailed control.

Johnson reports that in spite of an overvalued exchange rate:

> In 1962 the weighted average import price for steel, c.i.f., ...was roughly 10 percent greater than the weighted average selling price for comparable combinations of (domestic) steel output. This difference was far greater a decade earlier.[1]

Johnson further reports that

> Perhaps the most serious defect of steel price control was the distortion of both retention and selling prices relative to the prices of other commodities and the real costs of producing steel in India. Although operating or out-of-pocket costs were as a rule fully covered by retention

[1] Johnson, 1966, p. 97, and for details, p. 98.

prices, overheads were not.[1]

Until 1964 the government subsidized imports of steel when import prices exceeded domestic control prices.[2] Moreover, because the same domestic freight "equalization levy" was imposed on all sales, the control price throughout the 1960s was the same everywhere in India on a delivered basis regardless of the true freight cost.

In support of demands for an increase in control prices, TISCO claimed that in 1968-1969 Indian ex-works control prices exclusive of excise taxes and the freight equalization levy were lower than ex-works prices in most advanced countries. TISCO supported this claim with the data in Table IV-3 on the average ex-works prices of what it said was a representative bundle of structurals, bars, plates, and black sheets.

While this claim may generally have been correct, it was not correct compared to Japan in 1968 or to the EEC in 1967[4] or for certain flat products.[3] In any case, the comparison relevant to negative protection is between the price paid for steel by Indian users and the lowest c.i.f. price at which it could have been imported or the f.o.b. price

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[1] _Ibid_., p. 91. The retention price was the ex-works price received by the manufacturer. Excise taxes and levies were imposed on this to reach the selling price paid by the customer.

[2] GOI, MSM, 1966, p. 5.

[3] See Table IV-2. Also, the Indian price excluding excise taxes for steel sheets for passenger cars was about 1.3 times the U.K. price. (Standard Motor Products of India, _ABP_, 30 April 1969, p. 875. See also Hindustan Motors, _FE_, 25 July 1969, p. 10.)

[4] _FE_, 7 January 1968, p. 4.

TABLE IV-3

Comparison of Average Ex-Works Prices of Steel in India and Advanced Countries, 1968-69

Foreign Country	Ratio of Indian to Foreign Price, Ex-Works	
	1968	1969
U.K.	0.78	0.78
EEC	0.85	0.82
Australia	0.77	0.83
Japan	1.01	0.83

Source: TISCO, EE, 2 August, 1968, p. 303, and Indian Express, 28 July 1969, p. 11. See also ET, 31 December 1969, p. 1.

of Indian exports. Table IV-4 shows the ratio of Indian control prices excluding excise taxes to the London Metal Exchange (LME) f.o.b. price in January-March 1969 and July-September 1969, before and during the sharp rise in international steel prices which occurred in that year. These data show that the ratio ranged between 1.01 and 1.30 in early 1969 but fell to 0.74 - 1.15 (1.01 excluding galvanized sheets) later in the year.[2]

These ratios should be reduced to allow for the difference between the f.o.b. and c.i.f. (or even f.o.r. railhead station) prices of imports. However, it seems likely that imports could have been obtained from Japan below the LME f.o.b. prices which would require an increase in the ratios.[1]

Subject to these qualifications, it appears that the Indian control prices for steel excluding excise taxes were equal to or greater than the c.i.f. prices of imports early in 1969 but were below the c.i.f. prices of imports later in 1969 because of the temporary rise in international prices.[3]

The same conclusion holds for control prices relative to the f.o.b. prices of Indian exports. Until the latter part of 1969, exports

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[1]GOI, EEPC, 1969a, p. 7.

[2]Indian import data are not sufficiently detailed to permit direct comparisons of c.i.f. import and domestic prices of steel.

[3]Complaints that the duty-paid prices of imports were higher than domestic control prices were common in the latter part of 1969-70. See TELCO's annual statement, EPW, Special Number July 1970, p. 1310.

TABLE IV-4

Comparison of Indian and London Metal Exchange Prices of Steel, 1969

Category of Steel	Ratio of Indian Price Excluding Excise Tax to London Metal Exchange Price	
	1-3/1969	7-9/1969
Bars	102.9	75.0
Structurals	114.2	81.6
Wire rods	100.8	74.2
Plates	101.8	73.5
Hot rolled sheets	114.7	90.0
Cold rolled sheets	121.3	100.9
Galvanized sheets	130.0	114.7
Skelp	114.5	84.6

Source: GOI, JPC; EEPC.

of steel were given a 10 to 25 percent cash subsidy on f.o.b. value to offset the difference between domestic and export prices, but in the second half of 1969 f.o.b. export prices rose above domestic control prices excluding excise taxes, by 12 percent in the case of TISCO's exports of bars and structurals, and export subsidies were abolished.[2]

The export promotion program notwithstanding, beginning in the first half of 1969-70 the government imposed quantitative restrictions on export of basic grade pig iron and mild steel billets and wire rods. Export of certain categories of steel was banned and by the end of 1970 the government announced export ceilings on all categories of iron and steel. HSL reported that

> In the international market...prices now are much higher than the domestic market...We have completely stopped booking fresh orders for the export of billets, wire rods, INP joists, pipes, round bars, etc....In March (1970) the world market for pig iron was at its highest and we had firm offers for purchasing a very large tonnage at very attractive prices. HSL did not book this order to help the indigenous and export-oriented industries and thereby making a big sacrifice of losing the extra realization of about Rs 125 per tonne (about 30 percent of the f.o.b. export prices, of which 10 percent was a cash subsidy).[1]

It follows from this that while control prices for steel, particularly flat products, probably led to negative protection of value added in steel-using industries until mid-1969, at least temporarily after mid-1969 they led to subsidization of value added except in the case of certain flat products.

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[1]FE, 4 March 1971, p. 4. Parentheses added.

[2]Even government price floors for exports were above domestic control prices excluding excise taxes in December 1969.

The data in Tables IV-3 and IV-4 are for base prices. Size and quality extras, which often amounted to 5 to 15 percent of the base prices, were higher in India. Users claimed that:

> The high section extras on 5.5 and six mm. wire rods (20 percent of the base price) put the steel wire industry to a disadvantage not only in the home market but also in export.[1]

It was reported that

> The price of mild steel core wire used in the manufacture of arc welding electrodes continues to be high in comparison with prices prevailing in other countries because of the substantial quality and size extras in India.[2]

One explanation for high extras in India was that the small scale of demand for many sections made rolling inefficient.[3]

Excise taxes raised Indian prices of steel for production for the domestic market. IISCO reported that in 1967-68 excise taxes on steel averaged 24 percent of the ex-works price.[4] However, the excise tax was refunded on steel used in export production.

(2) Open Market Prices

The most important qualification to the above description is that the open market prices of steel were substantially higher than control prices. Table IV-5 provides comparisons for 1962 to 1970. Although a large proportion of iron and steel was supplied directly

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[1] *FE*, 14 December 1970, p. 8.

[2] *Capital*, Supplement, 10 July 1969, p. 47.

[3] GOI, MSM, 1968.

[4] *EE*, 9 August 1968, p. 338.

TABLE IV-5

Comparison of Open Market and Control Prices of Steel, 1962 - 1970

	Ratio of Open Market to Control Price			
Category	1962-8/1963	4/1964-2/1965	9/1969	6/1970
Wire and wire rods				
Wire rods		1.25 - 1.28	1.53	1.53 - 1.92
H.B. wire	1.14 - 1.26	1.13 - 1.46		
Galvanized wire	1.20 - 1.38	1.47 - 2.17		
Bars and rods	0.96 - 1.29		1.22 - 1.28	1.39 - 1.93
Structurals			1.12 - 1.18	
Angles	0.99 - 1.16			
Channels				1.38 - 2.01
Joists	1.04 - 1.09			1.45 - 2.07
Plates	1.15 - 1.35		1.63 - 2.55	2.77 - 3.21
Sheets				
Hot rolled	1.00 - 1.72		1.25 - 2.16	1.62 - 2.02
Cold rolled	1.17		1.53 - 1.73	1.57 - 1.81
Galvanized	1.66 - 2.38			0.98 - 1.46
Unspecified	1.42		1.40 - 2.16	

Notes:
Control prices are base prices for commercial IS-1977 ST-42/ST-32 or untested grade, f.o.r. railhead station, and include excise duty.

Sources: 1962 - 1963: Ford Foundation, 1963, p. 37, and GOI, MSHI, 1963, p. 102.
1964 - 1965: GOI, MISa, 1966, p. 12.
1969: Letter from Joint Plant Committee, Ref. No. ES-6/Y7113, dated September 10, 1969; *FE*, 21 May 1969, 31 December 1969; *EPW*, 6 December 1969; *ET*, 30 December 1969; interviews; IEA, *HS*, 1968-69, p. 162.
1970: IEA, *HS*, 1969-70, pp. 174-75.

to users at controlled prices, there was a considerable amount of open market activity, much but not all of it illegal. HSL stated that

> In a shortage situation criticism is rightly levelled against open market activity and the speculative prices demanded by those who are engaged in resale of steel. The magnitude of this is no higher than above five percent of the production ...Complaints are made that this is due to steel being given to traders and not to the actual consumers...The trade received only...eight percent and seven percent of Hindustan Steel's sales (in 1968-69 and 1969-70), respectively. On the other hand, traders have claimed that the actual consumers do re-sell part of their quota in the open market.[1]

One source of supply to the black market was fake small units not engaged in production which were set up to secure supplies at control prices by fraudulent orders. According to a 1963 Ford Foundation study dealing with allocations to small firms in one state:

> Firms not in operation but getting allocations plague every area. In this state 26 percent of all allocations went to non-operating or "bogus" firms obviously for resale in the black market.[2]

Another source of supply to the open market for bars, rods, and light structurals was re-rollers. It was reported that:

> Mr. Sidhu (the Iron and Steel Controller) said that bars and rods produced indigenously were now available from two main sources, the main producers who sell their products at a fixed price and the re-rollers who were free to choose their buyers and sell products at open market prices...Mr. Sidhu said that end-products from billet re-rollers were selling at a price ranging between Rs. 1600 and Rs. 1700 a tonne (compared to a control price of Rs. 847 for supplies from main producers.)[3]

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[1] FE, 7 August 1970, p. 9.

[2] Ford Foundation, 1963, p. 38. See also FE, 7 August 1970, p. 9.

[3] ET, 17 April 1971, p. 1.

Billet re-rollers accounted for 11 percent of the output of finished steel by tonnage in 1969-70.

Yet another source of supply to the open market was "rejects, which are presently distributed by the main producers according to their convenience."[1] During 1967, 6 percent of total production of finished steel was classified as defective.[3] In the case of HSL-Rourkela's production of steel sheets for stampings used in electrical equipment, a spokesman of the Indian Electrical Manufacturers' Association reported that:

> Only about 40 percent of the production of this unit is being supplied for electric motor and fan manufacturers and the remaining part of the production, which is termed as 'rejects,' sold to dealers. This material is now being sold in the market at very high prices.[2]

There were three important situations where firms were forced to rely on the open market for supplies of steel because of limited availability of steel at control prices:

(i) Supplies of steel were subject to long delays, sometimes a year, and were very uncertain even for users with priority under the government distribution policy. According to HSL:

> Our production cycle is such that a consumer may not get steel always at the anticipated time and therefore he is forced to obtain his urgent requirement from the open

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[1] FE, 1 October 1968, p. 10.

[2] R. L. Kirloskar, "Chairman's Address," IEMA, Bombay, 23 January 1970, pp. 5-6. See also FE, 10 January 1971. According to another report, most of the domestic production of soda ash was supplied to the open market where it was sold at 2.5 times the manufacturers' fixed price. FE, 15 January 1971.

[3] GOI, MSMM, ISCMB, May 1968, p. 425.

market.[1]

(ii) Some users had low priority in allocation of steel under the distribution system and were forced to rely on the open market.

(iii) Small firms, particularly those with fixed investment under $100,000, were discriminated against by the official system of distribution at control prices and were forced to rely heavily on the open market. The Ford Foundation study cited above reported the following:

> Small factories...are presently seriously handicapped in comparison with larger units by an inequitable allocation system for scarce raw materials and imported components...Allocations to small units are generally lower in relation to total capacity than allocations to larger firms producing the same product...As a consequence, small units have to buy a larger share of their requirements at high prices on the black market than do larger units...Our studies indicate that 90 percent of the modern-type small factories analyzed in the industrial state purchased some materials or components in the black market. Approximately 46 percent of their total material and component purchases were at premium prices. If the firms had not had to buy materials and components in the black market their profit rates on investment would have ranged from 30 to 50 percent higher...Inequities in the distribution of raw materials and imports are so severe that they tend to override all other types of assistance offered to small firms by the government.[2]

The situation in 1969-70 appeared to be similar.[3]

In addition to discrimination for other reasons, the size of their orders often made it impossible for small firms to secure supplies at control prices:

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[1] FE, 7 August 1970, p. 9. Examples of firms that were forced to purchase steel in the open market for export production are given in part IV.M.2.

[2] Ford Foundation, 1963, pp. 2, 39, 40.

[3] See, for example, Engineering Times, 12 March 1970, p. 12, and Commerce, 20 February 1971, p. 325.

> According to rules for placing indents for indigenous iron and steel materials, the minimum quantity that can be indented is 24 tonnes, that is, one wagon load...Most of the units of textile engineering industry belong to the small scale sector...(and) are not in a position to get indigenous material at the price fixed by the producers...They have been getting their material from the open market at exorbitant prices.[1]

It can be concluded on the basis of the data in Table IV-5 that as far as supply conditions for steel were concerned, there was substantial negative protection of value added for small firms and at the margin beyond allocations at control prices for other firms as well.

b. Steel Scrap

Steel scrap was an important input in production of steel by re-rollers and of steel castings. In early 1970, the domestic price of steel scrap was 45 percent of the f.o.b. price on Indian exports[2] because of government restriction of exports to "quantities (which) are surplus to the requirements of the country."[3]

The government set ceiling prices for steel scrap,[4] and at least as early as 1967 it restricted export of scrap to hold prices to domestic users below the f.o.b. prices of exports. To get export licenses "exporters were required to secure certificates from the

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[1] Association of Merchants and Manufacturers of Textile Stores and Machinery, Commerce, 5 December 1970, p. v.

[2] ET, 6 January 1970, p. 4

[3] GOI, MSMM, ISCMB, May 1968, p. 389.

[4] Commerce, Annual Number 1968, p. 88.

domestic furnace owners" to the effect the latter did not want to buy scrap.[1] In 1970 export of a number of categories of scrap was banned:

> ...to regulate equitable distribution between users and exporters. The indigenous demand for scrap by the furnace industry will get preference over export. The (Metal Scrap Trading) Corporation will allow only surplus scrap to be exported.[2]

> Grades of scrap that could be utilized as a raw material for indigenous production of iron and steel cannot be exported.[3]

As a result of these restrictions, value added in industries using steel scrap was subsidized. Since the government also banned export of rolled steel made from scrap, steel castings were the only products where value added for export was subsidized. Steel castings accounted for a large share of the value of railway wagon exports.[4]

c. Aluminum

Table IV-6 shows the range of the ratio of the Indian ex-works price excluding excise tax to the c.i.f. import price of aluminum ingots during 1966-1967 and 1969-1970. Excluding the period of high international prices in fiscal 1969-70, the ratio was generally about 1.0 to 1.1 after August 1966. During fiscal 1969-70, the ratio was

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[1] FE, 20 June 1967, p. 6.

[2] ET, 22 April 1970, p. 1.

[3] FE, 24 July 1970.

[4] Cast steel bogies and couplers produced by Mukand Iron and Steel accounted for $4 million, or 44 percent, of the railway wagon order from South Korea executed in 1968-69. (Mukand Iron and Steel, AR 1967-68, p. 14.)

TABLE IV-6

Comparison of Indian and International Prices of Aluminum Ingots

Period		Ratio of Indian Ex-works Price excluding Excise Tax to c.i.f. Import Price
1966* - 1967	Low (July 1966)	0.92 - 1.01
	High (post-April 1967)	1.09 - 1.19
1969-1970	Low (April 1970)	0.77 - 0.85
	High (December 1970)	0.99 - 1.09

* Post-devaluation

At each date, the lower ratio applied to Indian Aluminium Company and the higher ratio to Hindustan Aluminium Company.

Sources: EPW, 25 November 1967, p. 2042; FE, 20 November 1970, p. 1, and 20 December 1970, p. 5; Commerce, 12 December 1970, p. 1233.

less than 1.0; in mid-1969 it was about 0.90 - 0.95. Thus, the price of aluminum was at most a minor source of negative protection after devaluation.

In early 1970 the government banned export of aluminum ingots in 1970-71, except against previous commitments. Nevertheless, since domestic prices evidently were above not only f.o.b. export prices but c.i.f. import prices in 1970-71, except briefly at the beginning of the year, this did not lead to subsidization of value added in aluminum-using industries.[1]

d. Alloy and Special Steels

Table IV-7 provides comparisons of Indian producer and open market prices and c.i.f. import prices for alloy and special steels. These indicate that in 1969 Indian producer prices for such steels were typically 1.3 to 2.3 times the c.i.f. prices of imports. There was thus substantial negative protection of value added in user industries.

However, imports of such steels were allowed for certain users, subject to the other usual restrictions, if domestic producers were unable to supply them within six months. Because of this provision, 25 percent of total supplies of tool, alloy, and special steels by weight were imported in 1968-69; imports accounted for 50 percent of

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[1]The measure was intended to subsidize use of aluminum in India; it was only because of a decline in international prices that this was not significant.

TABLE IV-7

Prices of Alloy and Special Steels in India Compared to Import Prices, 1969

Material	User	Ratio of Indian Price* to c.i.f. Price of Imports: *Price from Indian Producers	*Indian Open Market Price of Imports
High carbon steel wire rods, wires, tapes,	cables, wire ropes, tires	1.3 - 1.5	
Chrome steel wire, cold drawn, annealed	bearings	1.8	
Medium carbon steel alloy, Cl	machine tools	1.8	
Carbon steel alloy, C2	machine tools	2.3	
Alloy steel, EN 16, 24, 34	machine tools		2.3 - 2.5
High speed steel, 18% tungsten 4% molybdenum	small tools	1.9	
Tinplate	containers, processed food	1.2 - 2.0[a]	
Stainless steel sheets	textile machinery	3.0 - 3.3	4.7 - 5.4[b]

Notes:
a: Comparison is to the price of tinplate in the U.K. Ratio was 1.2 in 1968 and 2.0 in 1965-1967. In 1970 it was reported that the Indian price of tinplate was "nearly 200 per cent higher" than the international

Notes to Table IV-7 (continued)

price. (FE, 15 April 1970, p. 4). In 1965 part of the difference was excise: "In Bombay local tinplate costs precisely twice as much as it costs ... in England. Of this a quarter is due entirely to excise." (EW, 3 July 1965, p. 1077.)

b: Comparison is to the price f.o.b. Japan.

Sources: Interviews in 1969 except:
Tinplate: Metal Box, EW, 3 July 1965, p. 1077, Capital, 30 June 1966, p. 917, EE, 5 July 1968; Poysha Industries, EPW, 7 October 1967, p. 1834.
Stainless Steel Sheets: FE, 30 January 1969; Textile Machinery Manufacturers' Association, FE, 16 January 1971, p.10; FE, 22 August 1969; Capital, 18 September 1969, p. 511.

high carbon steel wire rods for steel wire ropes and 40 percent of tinplate. On the other hand, import was banned in certain cases, e.g. wire rods for cables and stainless steel sheets thinner than 1.25 mm for all users.[1]

2. Components

This section examines the prices of components and parts in India. Apart from comparing Indian and import or foreign prices, it considers two hypotheses which are relevant to negative protection and the cost of foreign exchange and which seem to be supported by the available evidence:

(i) The ratio of Indian to c.i.f. import or foreign prices varies substantially among components. This hypothesis suggests neglect of comparative advantage in policies relating to investment and also lack of competition for many items. It suggests the inefficiency of import restrictions and domestic content requirements to the extent that Indian prices are related to social costs.

(ii) The price or cost of production, deflated for general prices increases, declines over time after production is established. This hypothesis is based on considerations of learning and achievement of economies of scale.

The available evidence supports these hypotheses, subject to the serious reservations stated in the Appendix about all such comparisons. The ratios of Indian to c.i.f. import or foreign prices

[1]GOI, MSMM, ISCMB, May 1968, Schedules B and C.

appear to differ widely for the components of assembled products. Typically, the range of ratios is from less than 1.0 to over 2.0.[1]

a. Automobile Components

Virtually without exception, the comparisons of automobile component prices in public statements by Indian companies indicate that Indian prices averaged about twice those abroad. Table IV-8 presents the relative prices in India and the UK in 1969 for 12 components. The price ratios varied from 1.6 to 3.0.[2]

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[1]A study by Krueger of the domestic resource cost (with a shadow rate of return on capital) of value added at international prices in the automobile ancillary industry supports the first hypothesis but not the second. For 28 ancillary items, she found a range from Rs. 8.7 per dollar to negative value added at international prices and an interquartile range from Rs. 14.6 to Rs. 33.8 per dollar. Krueger's test of the second hypothesis is based on cross sectional data. (Krueger, 1970.)

[2]Also, according to Hindustan Motors, before the 1966 devaluation "components and parts bought indigenously cost the automobile manufacturers 50 to 200 percent more than what is paid by manufacturers in foreign markets. Car wheels are sold to manufacturers abroad at less than 40 per cent of the price which the Indian manufacturers have to pay." (Iron and Steel Review, June 1967, pp. 41-45.) Other early sources that state that the prices of Indian ancillary items were higher than the c.i.f. duty-paid prices of imported ones are Premier Automobiles, EW, 11 January 1964, p. 66, and TELCO, EW, Special Number July 1964, 1321. According to an Indian government report, "our study gives us reason to believe that in general the cost of production of components of passenger cars in Indian factories is at least twice as high as the price at which they can be purchased abroad. In the case of commercial vehicles, the ratio is less unfavourable and Indian costs appear to be something like 40 per cent above the overseas prices...Very often the price of the components purchased from the ancillary industry costs a great deal more than the landed cost of the imported product." (GOI, MCI, 1960, pp. 22, 30. Based mainly on deletion allowances.)

Table IV-8 should be compared to the similar list presented by Baranson for Argentina and the US in 1965. For 17 parts costing $585 at US purchase prices, the total Argentine purchase price at the

TABLE IV-8

Relative Prices of Automobile Components in India and the U.K. 1969

Component	Ratio of Price in India to Price in the U.K.
Tires and tubes	1.64[a]
Battery	1.67[a]
Distributor	1.68
Clutch assembly	1.72
Propeller shaft	1.75
Radiator assembly	1.80
Engine block casting	1.83
Starter	2.18
Dynamo	2.20
Backlight glass	2.35
Brakes	2.39
Steering wheel	3.03
TOTAL OF ABOVE	2.11

Prices are for original equipment.

[a] Excise taxes of 40 percent on tires and tubes and 15 percent on batteries have been excluded from Indian prices.

Source: Standard Motor Products of India, ABP, 30 April 1969, and Hindustan Motors, FE, 25 July 1969, p. 10.

The sample is probably biased upward, since price controls gave an incentive to manufacturers to emphasize their cost disadvantages.[1] Even the individual comparisons may not be accurate; the claim that the Indian price for engine block castings is 1.8 times the UK price is not consistent with other evidence collected on the relative prices

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official exchange rate was 2.02 times that in the US, while for the individual items the ratio varied from 1.28 to 4.44. (Baranson, 1969, p. 99.)

In his study of procurement of automobile parts in Mexico, Edelberg found that "whenever a Mexican supplier manufactured a part, his proposed sales price was usually higher than the omission allowance the Mexican automobile firm got if the importation of the United States counterpart was discontinued." He states that "executives at the international division of Mexmotor's parent corporation applied a rule-of-thumb estimation according to which any purchase of a component in Mexico cost 1.5 - 2 times as much as the related omission allowance for the equivalent imported component." Edelberg presents data which show that procurement costs from Mexican suppliers ranged from 0.1 to 5.6 times the omission allowance f.o.b. US. Edelberg warns that the relation of the omission allowance to US production or procurement costs is unclear. (Edelberg, 1963, pp. 96-97, 155-57. Edelberg's findings are misinterpreted by Baranson, 1966, p. 262.)

Baranson presents unusually complete data supplied by one U.S. manufacturer on costs of production of passenger cars and light trucks at its factory in the U.S. and its subsidiaries in Argentina, Brazil, and Mexico. These show Latin American ex-factory costs in 1967, at an annual production rate of 20,000-30,000 units, or 5 to 10 percent of US volume, for local content were 1.72 times US costs for Brazil at 99 percent local content; 1.92, Mexico, 63 percent; and 2.72, Argentina, 83 percent. For individual operations and components, however, comparisons were 1.30 to 2.70 for Brazil, 1.06 (1.80 omitting assembly) to 2.50 for Mexico, and 1.15 (1.90) to 4.30 for Argentina. The higher costs in Argentina were evidently explained at least in part by the extent of overvaluation; shortly after the comparison, Argentina devalued. (Baranson, 1969, p. 36.)

[1]However, Krueger presents 12 ratios for Indian to UK ex-factory prices ranging from 1.7 to 2.9, with no indication that the sample was biased. (Krueger, 1970.)

of ferrous castings, although this might be explained by the fact that engine block castings were produced by automated foundries in the UK.

b. Diesel Engine Components

Table IV-9 compares the f.o.b. prices of components for a diesel engine imported from West Europe during 1961-62, when the Indian company concerned began production of the model in question, with the initial prices at which the components were purchased in India in 1961-64 and the prices in India in 1969. The data support the two hypotheses above:

(i) The ratios of the 1969 Indian prices to the 1961-62 import prices vary considerably among items. The ratio is less than 1.0 for iron and aluminum castings unique to the model but 2.0 to 2.5 for pistons and fuel pumps.

(ii) In the case of all but one of the components listed, the initial Indian price was higher than the f.o.b. price of imports. According to the company in 1969, the prices at which components initially were purchased in India were almost invariably higher than the import prices during the 1960s. The company attributed this to the fact that initially batch sizes were small, rejection rates were high, and tooling costs were amortized at an accelerated rate. However, when scale was increased, rejection rates were reduced with experience, and tooling had been amortized, component prices in India were often reduced significantly. This was true of eight of the thirteen components in

TABLE IV-9

Comparison of Prices of Indian and Imported Components for Diesel Engines

Components	Ratio of Price of Indian Component* to Price of Imported Component, f.o.b., 1961-62		
	*Initial Indian Price, 1961-64	*1969 Indian Price	
	Pre-devaluation Exchange Rate	Pre-devaluation Exchange Rate	Post-devaluation Exchange Rate
Unique to Model			
Crankcase, iron casting	0.9	0.8	0.5
Gear case, " "	1.3	1.1	0.7
Liner, " "	1.4	0.9	0.6
Cylinder head, aluminum casting	2.5	0.9	0.6
Fan body, " "	1.6	1.2	0.8
Crankshaft, steel forging	1.4	1.4	0.9
Connecting rod, " "	1.6	1.7	1.1
Camshaft, " "	1.2	1.2	0.8
Not Unique to Model (Proprietary)			
Piston	2.5	2.5	1.6
Fuel pump	2.0	1.8	1.1
Nozzle	1.7	1.5	1.0
Air filter	1.4	n.a.	n.a.
Gear ring	2.9	2.0	1.3

*Note: Scale of Production in India in 1969 was 600 engines per month. In 1969 expenditure on these components accounted for about 20-25 percent of the Indian sales price for the engine.

Source: An Indian manufacturer.

Table IV-9. Moreover, the reason the prices of three other components (steel forgings) did not fall was that the price of special steel increased. At unchanged material prices, the prices of these components would have declined. The fact that component prices actually fell or remained unchanged during the period 1964-1969 is striking, since at the same time there was a decline in the real value of the rupee[1] and the unit rupee costs of both domestic and imported inputs increased.

c. Office Machine Components

A firm which had manufactured an office machine for three years and produced or procured about 60 percent of the components (by value) in India in 1969 reported that its experience supported both hypotheses (i) and (ii), and data provided by the company supported the hypothesis that the comparative cost of production or procurement between India and advanced countries differed among components. Production and procurement of components in India began with those with the most favorable cost ratio and progressed to those with increasingly unfavorable ratios. For the first 20 percent of the components, the ratio of Indian to foreign costs averaged 0.89; for the next 15 percent, 1.05; and for the next 25 percent, 1.30. For individual components the ratios differed even more: 0.5 for a manually assembled item but 2.5 for fractional horsepower electric motors.

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[1]See Table III-16.

d. Machine Tool Components

A major machine tool producer with its own foundry provided the comparisons in Table IV-10 for components used at the end of 1968. These comparisons indicate that iron castings were slightly cheaper in India than abroad and significantly cheaper than the c.i.f. prices of imports while Indian electricals cost about 1.5 to 1.9 and fasteners 2.0 to 3.0 times the c.i.f. price of imports.

e. Electric Fan Components

Jay Engineering reported that the prices of many materials and components for electric fans with existing designs were about twice the prices in advanced countries. (See Table IV-11). The ratio was more unfavorable for materials like plastics and gadgets that would have been required for models like those exported by Japan.

3. Capital Goods

Government import licensing and tariffs restricted access to capital goods as well as current inputs and raised the prices of capital goods used in production of engineering goods above the c.i.f. prices of imports.

Table IV-12 presents comparisons between Indian and international prices for standard, general-purpose machine tools manufactured under foreign collaboration in India by nine companies which provide a fairly representative sample of the Indian industry. In all cases, except the last two HMT machines, the machines compared are identical or virtually identical in design. Interviews with users in India

TABLE IV-10

Ratio of Indian to International Prices of Components for Machine Tools, 1968

Component	Ratio of Price from Indian Source to c.i.f. Price of Imports
Fasteners, clips, etc.	2.0 - 3.0
Electro-magnetic clutch	1.9
Electric motor	1.5 - 1.8
Grey iron castings	0.8 - 1.0[a]

[a] Comparison is to the price in West Germany.

Source: An Indian manufacturer of machine tools

TABLE IV-11

Ratio of Indian to International Prices for Material Inputs for Electric Fans, 1968

Input	Ratio of Indian to International Price
Ball bearings	2.
Condensers	2.
Insulating material	2.
Zamac	2.
Super-enamelled copper wire	1.5

Source: Jay Engineering, Industrial Times, 15 September 1968, p. 43. The ratio for ferrous metals was reported to be 1.1.

TABLE IV-12

Comparison of Indian and International Prices of Machine Tools, 1969

Machine Type	Indian Model	Foreign Model	Design Comparison	Ratio of Indian to International Price
tool and cutter grinder	Praga 310	Jones & Shipman 310 (U.K.)	identical	1.0[a] 0.9[b]
surface grinder	Praga 540	Jones & Shipman 540 (U.K.)	identical	1.4[a] 1.3[b]
guillotine shear	Scottish Indian 3200 x 12 hydr.	Scottish (U.K.) same	identical	1.1[c]
plate-bending roll	Scottish Indian	Scottish (U.K.)	identical	
	2000x10	same		1.3[c]
	2500x12	same		0.9[c]
	3200x10	same		1.0[c]
hydraulic press brake	Scottish Indian	Scottish (U.K.)	identical	
	120 ton 25H20	same		1.2[c]
	120 ton 32H25	same		1.3[c]
	150 ton 25H20	same		1.3[c]
	150 ton 32H25	same		1.3[c]
capstan/turret lathes	Mysore Kirloskar Herbert	Herbert (U.K.)	identical	
	No. 1	same		1.0[d]
	No. 2D	same		1.0[d]
	No. 4	same		0.8[d]
	No. 7B	same		0.8[d]
	No. 9C-3C	same		0.9[d]
automatic lathe	Mysore Kirloskar Herbert 3A-1	Herbert (U.K.) same	identical	1.3[d]

TABLE IV-12 (continued)

Machine Type	Indian Model	Foreign Model	Design Comparison	Ratio of Indian to International Price
surface grinder	Harig India HM1530 HA1530 HM1545 HA1545	Harig (U.S.) Super 612 Hand Super 612 Hydr Super 618 Hand Super 618 Hydr	virtually identical (Indian machine heavier and lower r.p.m.)	0.9[e] 1.0[e] 0.8[e] 0.9[e]
milling mach. ram turret	Ex-Cell-O India 602	Ex-Cell-O (Canada) 602	virtually identical	1.7[f]
capstan lathe	Gedee Weiler RDU 260	Weiler (W.Ger.) RDU 260	identical[f]	1.1[f]
center lathe	Beco Graziano SAG 180	Graziano (Italy) SAG 14	identical	0.9[f]
turret lathe	Texmaco-Ward 3C	Ward (U.K.) 3CA	U.K.machine is modified version; same specifications and very close	1.0[f]
electrically controlled milling machine	HMT Fritz Werner FV2D FV2D	Fritz Werner (W.Germany) FV2D	identical	0.8[f]
radial drilling machine	HMT Kolb RM61/62	Morey-Hercules-Sass (Italy) TRL1000/1300	similar machines but not the same design	0.9[f]
cylindrical grinding machine	HMT Olivetti G13-5000	Morey-Hercules F2B600	similar specifications but comparability not verified	0.7[f]

Notes to Table IV-12

	Indian Price	International Price
a.	Ex-works for domestic sale, exclusive of distributor commission	Ex-works for domestic sale, exclusive of distributor commission, plus 10 percent for transport cost to India.
b.	Same as (a).	U.S. customer selling price, less 40 percent for distributor commission and tariff.
c.	Same as (a).	f.o.b. export price of foreign producer, plus 10 percent for transport cost to India.
d.	Indian customer selling price, less 10 percent for distributor commission	Same as (c)
e.	Same as (d).	U.S. customer selling price, less 30 percent for distributor commission.
f.	Same as (d).	Same as (b).

confirmed that the quality of the Indian machines was comparable to foreign machines, apart from details of finish which did not affect performance. The major problem faced in making the comparisons was to secure comparable prices for Indian and imported machines, e.g. converting the US customer selling price of a UK machine to the c.i.f. Indian price and the Indian customer selling price to the ex-works price. This required adjustments to allow for distributors' margins, tariffs, and freight.

Table IV-12 indicates that, on a comparable basis, Indian prices for this range of machines were 0.8 to 1.3 times the c.i.f. prices of imports. This supports HMT's long-standing claim that the prices of its machines were less than the landed (27.5 percent duty-paid) prices of imports[1] and indicates that negative protection due to higher Indian prices of domestically produced general-purpose machine tools was moderate, on the average less than the 27.5 percent duty on imported machines.

However, the foreign prices used probably are not the lowest c.i.f. prices at which imports were available. For this range of machines, the lowest prices in the US market were on machines from Japan, Italy, Spain, and Czechoslovakia, not the US, UK, West Germany, and Canada.

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[1]HMT reported that its "ex-works selling prices...were uniformly 15 per cent below the landed cost of European machines throughout the year 1963-64. These European prices are for machines of the same type and quality manufactured by our collaborators." (HMT, AR 1963-64, p. 12.)

While price comparisons have not been made for other machines used by the engineering industry, Indian prices were relatively higher for specialized machinery and electrical equipment than for general-purpose machine tools, or so it was alleged by some users in India. It was not unusual to hear claims that Indian prices were twice the c.i.f. prices of imports, but such cases have not been verified.

D. Effect of Higher Domestic Material Prices on Cost

This section examines the extent of negative protection of value added which resulted from higher prices of current tradable inputs in several Indian industries. The effect of higher domestic output prices and export subsidies is not considered in these calculations.

Although only a few industries are considered, the analysis suggests a wide range of rates of negative protection and very high rates in certain industries, indicating that such price differentials for inputs were an important factor in the structure of effective exchange rates on value added.

1. Tires

The data in Table IV-13 indicate that the cost of production of tires in India would have been 24 to 28 percent lower if the three major materials, each of which was produced in India, had been available at the c.i.f. import price. Since domestic supplies of natural rubber were sometimes supplemented with imports, this probably should

TABLE IV-13

Effect of Higher Material Prices on Cost of Production of Tires, 1967 and 1969.

Material	Ratio of Expenditure on Material to Total 1967 Production Cost at Indian Prices		Ratio of Indian to International Price*		Reduction in Production Cost if Materials were Available at International Price, as Ratio of Total 1967 Production Cost	
	1967	1969	*World Price 1967	*c.i.f. Import Price 1969	1967	1969
Rayon tire cord[1]	.36	.33	1.88	2.00	.167	.167
Natural rubber[2]	.17	.23	1.35	1.50	.044	.076
Synthetic rubber	.08	.10	1.51	2.06	.027	.032
TOTAL	.61	.66			.24	.28

Notes:

1 Indian price omits excise of 12.5 percent.

2 Indian price omits cess of 7.1 percent.

The situation was generally similar for c.i.f. import prices in 1965. See Commerce, January 30 1965, p. 169, 19 June 1965, p. 1088, and 3 July 1965, p. 16. These reports indicate that domestic prices of carbon black, antioxidants, and accelerators used in production of tires were also substantially above c.i.f. import prices.

Sources: Dunlop India, EPW, 6 May 1967, p. 859, EE, 25 April 1969, p. 902.

be reduced by 2 to 4 percent.

The government set a floor price on natural rubber above the c.i.f. price of imports to subsidize domestic production, but at the time these calculations were made the Indian price exceeded the floor price.

Raw materials were reported to have accounted for 78 percent of the production cost, and negative protection of value added at international prices would probably have been on the order of 100 percent. Goodyear India reported that

> The cost of most of the indigenous raw materials are far in excess of international prices with the result that our prices are not competitive in international markets.[1]

Madras Rubber Factory made the following interesting statement indicating how negative protection resulting from import substitution could adversely affect exports of a competitive product:

> If all raw materials are made available at international prices, Indian tyre manufacturers will definitely have an edge over their foreign competitors owing to the comparatively cheaper labour available locally. On the subject of raw material, I wish to focus the attention of the Government to a problem I foresee. Nylon cord is at present permitted to be imported as there is no indigenous production. Nylon tyres now form the bulk of India's exports, as tyres made with imported nylon naturally work out to be more competitive in export market. Experimental indigenous production of nylon has now commenced and the quality of the Indian product is yet to be approved. While this is a welcome development, the price quoted at present for the indigenous nylon is about 168% more than the international delivery price. This could lead to a very serious problem (for exports) unless sufficient planning is done in advance to make this item available at international price.[2]

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[1] FE, 8 May 1969.

[2] Madras Rubber Factory, Chairman's Annual Address for 1968-69.

2. Aluminum Ingots

The data in Table IV-14 indicate that in 1968-69 there was negative protection for export of aluminum ingot equal to 11 percent of the f.o.b. value because of higher prices of the six tradable inputs listed. Refundable excise taxes have been eliminated from input prices, and aluminum ingot in 1968-69 did not receive either cash subsidies or import replenishment licenses as export incentives. Thus, effective protection for export was negative.

These figures overstate negative protection because they assume that the materials listed were procured entirely in India. Part of the cryolite and perhaps part of the aluminum fluoride were still imported.[1] Nevertheless, the calculations suggest the level negative protection will reach when import substitution in aluminum fluoride and cryolite are completed, unless domestic prices of these materials decline.

3. Ship Ancillary Equipment

It was reported that the difference in material prices in India and abroad raised Indian production costs for ship ancillary equipment by 10 to 12 percent:

> Basic materials...are 80 to 100 per cent more expensive than in other countries. Indigenous rubber items are more than 100 per cent higher. Copper, brass, bronze, tin, zinc, nickel, stainless steel, EN steel...are either not available or are available at high prices....Due to higher cost of materials, finished goods tend to be 10 to 12 per cent more expensive.[2]

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[1]Import of aluminum fluoride was on the banned list in 1968-69, however. GOI, MC, 1968a, Vol. 1, p. 262.

[2]FE, 29 July 1969.

TABLE IV-14

Effect of Higher Material Prices on Cost of Production of Aluminum Ingots, 1968-69

Material	Ratio of Indian Price to c.i.f. Import Price	Increase in Cost of Aluminum Resulting from Excess of Indian Price over c.i.f. Import Price of Material	
		US $ per metric ton of aluminum ingot	Percent of Indian export price of aluminum#
Aluminum fluoride	2.79	16.8	3.36
Cryolite	2.75	16.9	3.38
Caustic soda	1.92*	15.2	3.04
Fuel oil	1.58*	3.0	0.60
Anthracite coal	2.02*	1.5	0.30
Calcined petroleum coke	1.03	0.8	0.16
TOTAL		54.2	10.84

Notes: *c.i.f. import price assumed to be 120 percent of the price abroad.
#: Export price of $500 per metric ton was average for 1968-69.

Sources: Hindustan Aluminium, Industrial Times, 15 March 1969; Indian Aluminium, Commerce, Annual Number 1968, p. 82; ABP, 19 June 1969.

4. Transistor Radios

According to a press report on the cost of producing transistor radios in India:

> It is estimated that the costs of production of Indian components are higher than their counterparts in Japan or Europe by about 150 per cent for coils, 300 per cent in the case of resistors, 400 per cent in the case of transistors and 100 per cent in the case of circuit components and switches and plastic parts. All these result in an increase in the cost of production of complete radios to the extent of 220 per cent as compared to Japan.[1]

5. Motor Vehicles and Ancillaries

Krueger presents data which indicate that for four producers of motor vehicles, negative protection of value added for export on account of higher prices for current inputs was about 60 to 100 percent.[2] This includes the effect of import tariffs and excise taxes which were refunded on export but was due mainly to the excess cost of domestic inputs.

E. Negative Protection as an Explanation of Uncompetitive Costs

In the discussion of material prices it was noted that under certain circumstances the Indian prices of iron, mild steel, ferrous scrap, and aluminum were lower than the c.i.f. prices of imports. In

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[1] FE, 19 May 1970, p. 4.

[2] Based on data for assemblers 1, 2, 3, and 6 in Krueger's Table IV-1, assuming value added by assemblers was 40 percent of the export price. For assembler 4 the rate would be over 100 percent on the same assumption. (Krueger, 1970, pp. 110, 127-28.)

addition, there were certain parts and discrete operations which manufacturers frequently reported cost less in India than the c.i.f. prices of imports, at least provided output was not limited below the minimum long-run average cost level of existing plants with Indian supply conditions for management and labor and non-tradable inputs. Most important were: (i) rough ferrous and aluminum castings, provided foundry-grade pig-iron was available; (ii) patterns and tooling unique to individual models, provided tool steels were available at c.i.f. import prices; (iii) machining and forging of parts unique to individual models (e.g. machining of castings for batch-produced machinery), provided materials were available at c.i.f. import prices; and (iv) assembly of components and complete products, provided parts were available at c.i.f. import prices.

Even in these cases there were undoubtedly many exceptions where there was automation abroad (e.g. mass production of castings for passenger cars), where supplier problems led the Indian company to establish captive facilities which were underutilized because of limited requirements (e.g. heavy equipment and tooling shops), where management was deficient, or where there were labor disputes. In most cases these parts or operations were made or carried out by the main producer in India rather than purchased or sub-contracted.

It was not uncommon for manufacturers to state that because of the above advantages, the private cost of value added in production of an engineering good was competitive with value added at c.i.f. import prices but to report that the total cost of production was uncompetitive because of the higher prices of some materials and purchased components. In interviews a number of senior managers in machinery industries claimed that provided (i) production was not constrained below installed capacity by shortage of materials and (ii) materials and purchased components were available at the c.i.f. import prices, costs of production with a significant percentage of indigenous value added would have been equal to or even below the c.i.f. prices of imports. Such claims were made in companies producing non-electric machinery like machine tools, diesel engines, pumps, cotton textile machines, and commercial vehicles, and some items of electric machinery, including switchgear and transformers.

It was possible to check these reports against data only for machine tools, where the reports appeared accurate for the established products of the largest companies. In spite of the lack of data, the other reports should not be dismissed altogether. The firms involved usually stated that there was a significant range in their competitiveness and that they were not competitive for other products, and typically some plausible basis was suggested for the differences in cost ratios, e.g. scale, experience, etc.

These reports should be qualified because they refer to private rather than social costs and presumably involve substantial underestimation of real capital costs. In any case, since the comparisons were made at the official exchange rate, the scaling is arbitrary. The most important inference from the reports is not that the Indian costs of value added were competitive at the official exchange rate but that there was a substantial difference in the ratio between

Indian costs and c.i.f. import prices of a significant share of the value added by the main producers (roughly 40 to 50 percent of the value of output at international prices) and the ratio for the rest of the materials and components. This indicates how import restrictions and domestic content requirements deterred exports of assembly-type products and increased the average cost of foreign exchange earned.

This conclusion concerning negative protection for assembly-type products is supported by Krueger's calculations of the domestic resource cost of value added at international prices for motor vehicles and ancillaries.[2] In the case of private costs, Krueger found that there was negative protection of value added in production for the domestic market for three of six vehicles; yet at least TELCO, Ashok Leyland, and Mahindra and Mahindra earned a profit when they operated near capacity.[1] Assuming operation at capacity and a shadow rate of return on capital of 20 percent per annum, she found that the domestic resource cost of value added by four vehicle producers, covering about 40 percent of the value of output at international prices, was Rs. 7.20 to Rs. 8.85 per dollar while for ancillary producers the domestic resource cost ranged from Rs. 4.51 per dollar to negative value added at international prices, with only two of 28 below Rs. 8.85 per dollar and a median of Rs. 17 per dollar.

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[1]These companies claimed the return on equity was inadequate, but all wanted to expand. However, private profits reflected in part subsidized loan capital, low depreciation costs because of accelerated write-offs in earlier years, etc.

[2]Krueger, 1970.

Because of the wide range of comparative costs for individual parts and operations, the marginal rupee cost of value added increased significantly with the percentage of indigenous content. According to Mahindra and Mahindra, which produces Jeeps:

> Development of indigenous manufacture means significantly higher costs than imported costs. It is our experience that as the vehicles pass beyond the 60 per cent indigenous state, costs of further components for indigenous manufacture increase relatively in greater proportion than in the pre-60 per cent phases. The reason is the low volume.[1]

Other examples illustrate the problem faced by industries forced to use domestically produced tradable inputs at prices above their c.i.f.

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[1]Mahindra and Mahindra, AR 1959-60, p. 10. As an illustration of the problem of low volume, in the case of tractors: "To increase local content beyond about 40 per cent requires large expenditures in tooling ...The high unit overheads arising from such capital expenditures in low-volume projects (in developing countries)...make it inevitable that the production of tractors...requires protection." (Neufeld, 1969, p. 331.) While Ford and Massey-Ferguson each had integrated component manufacturing for over 100,000 tractors annually in advanced countries and Massey-Ferguson's subsidiary Perkins had a capacity of 400,000 diesel engines annually in the U.K., total production of tractors in India in 1968-69 was 15,500 fragmented among five independent plants, and by 1970 the government had divided licensed capacity for 98,000 tractors per year among 12 firms with capacities ranging from 2,000 to 13,000 tractors per year. (IEA, HS 1969-70, p. 178.) Perkins engines were produced in India on a scale of less than 10,000 per year. Nevertheless, India applied the usual indigenous content requirements. HMT planned to reach 90-100 per cent domestic content after six years with an output of 12,000 tractors per year. (Commerce, 30 January 1971, p. 199.)

Cilingiroglu reports that for heavy electrical equipment in developing countries "competitiveness will depend very much upon the size of the domestic content (beyond 50 per cent, for instance, prices for generators are likely to rise rapidly.)" (Cilingiroglu, 1969, p. 49.) De Vries similarly reports that in production of capital goods in developing countries "material cost will go up as domestic producers switch to domestic supplies. In some industries the cost differential rises sharply as the domestic content begins to include the more complex components." (de Vries, 1968, p. 232.)
See also Krueger, 1970, pp. 95-96.

import prices and, more important, for which the ratio of domestic cost to import price was greater than for a significant share of value added by the main producer, so that the average cost of domestic value added increased.

De Vries and Cilingiroglu provide data indicating that in 1965-1966 there was negative effective protection of value added in production for the domestic market for transformers in Brazil and Mexico, generators in Brazil, and small trucks in Argentina, Brazil, and Mexico, "suggesting that the industry can be competitive on export markets," given access to tradable inputs at international prices. The domestic value added to which this finding applied accounted for about 50 percent of the international price of final output. However, in six of the seven cases where production occurred with negative protection of value added there was positive protection of domestic content as a whole, i.e., the excess cost of certain domestic tradable inputs more than offset whatever cost advantage the main producer may have had.[1]

For Mexico, King reports that:

> An electronics firm, for example, would be much more profitable if it were able to import materials and parts at world prices, even if its own output received no protection (i.e., there was negative effective protection of value added). There is every indication that this firm could export very profitably in these circumstances, and electronics manufacturers certainly believe that the industry has considerable export potential if the government pursued a more liberal policy towards component imports. Similar conclusions apply to a proposed machine-tool plant.[2]

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[1] de Vries, 1968, and Cilingiroglu, 1969, pp. 67-71.

[2] King, 1970, p. 149.

On the proposed machine tool plant, Little et al. report:

> A machine tool project in Mexico promised a social return of 36 per cent...This project promised a market rate of return of 18 per cent (for the domestic market), the difference being due to quite heavy protection of its inputs and no protection of the output....(Negative effective protection) must almost certainly have retarded the development of what appears to be an excellent industry for the country.[1]

Little et al. also report finding a company in an unidentified labor-intensive industry and semi-industrial country which

> ...had a market yield (for domestic sales) of around 10 per cent, but a social yield of 57 per cent. This was a case of heavy negative protection; and, without the protection afforded to its inputs, the company reckoned it could have exported very successfully.[2]

F. Import Licensing and Higher Costs of Imports

The c.i.f. prices at which tradable inputs were imported were sometimes above the minimum prices at which they were available, and imports were not always available to producers at their c.i.f. prices (even assuming refund of tariffs).

1. Tied Licensing

A large share of imports of certain materials and of capital goods was against tied aid or rupee payment, sometimes from countries whose prices were not competitive or from suppliers that discriminated in pricing against orders financed by tied aid or soft currency. Prices of imports under tied licenses were up to 40 percent above those under free foreign exchange licenses. Table IV-15 lists examples from

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[1] Little et al., 1970, p. 194.

[2] Ibid., pp. 193, 196. This may be the same case reported by King above.

TABLE IV-15

Examples of Higher Prices for Materials Imported under Tied Aid and Rupee Payment, 1960-1970

Material	User	Tied source	Price Premium	Date	Reference
Steel					
Steel	automobiles	U.S.	67 percent higher	c.1965	Hindustan Motors, Iron and Steel Review, June 1967, p. 42.
Steel	unspecified	Rupee payment	"price 40 percent higher than in Belgium or England"	1965	Capital, 16 June 1966, p. 841.
Special Steel					
Tinplate	containers	U.S., U.S.S.R.	U.S. prices higher than Japan or U.K., and U.S.S.R. prices higher than U.S.	1961-62	Metal Box, EW, 30 June 1962, p. 1019.
Electrical steel sheets	electrical equipment	U.S.	"comparatively expensive"	1960-61	I.E.M.A., AR 1960-61, p.20.
Silicon steel sheets	electric fans	U.S.	"very much higher price"	1962-63	Jay Engineering, EW, 6 October 1962, p.1589.
CRGO electrical steel sheets	electrical equipment	U.S., U.K.	U.S. price $1200 and U.K. price $1300 compared to Japanese price of $1000 per ton. U.K. charged as much as $1450 for purchases on tied aid	1969	I.E.M.A., Interview; I.E.M.A., AR, 1968-69, p.49.
High carbon steel wire rods	Steel wire ropes	U.S. and rupee payment	"costlier" than from Europe or Japan	1965-1966	J.K. Steel, AR, 1965-66.

TABLE IV-15 (continued)

Material	User	Tied source	Price Premium	Date	Reference
High carbon steel wire rods	cables	U.S.	"cost approximately 46 percent more than from West Germany or Japan"	1966-67	I.E.M.A., AR, 1966-67, p.53.
High carbon steel wire rods	steel wire ropes	U.S., U.S.S.R.	40 percent higher than West Europe	1969	J.K. Steel, interview
High carbon and special steel wire rods	steel wire	Rupee payment, U.S., U.K.	"high prices and long deliveries" compared to West Germany and Japan	1970	Steel Wire Manufacturers' Assoc., FE, 15 December, 1970, p.3.
Non-Ferrous Metals					
Lead	storage batteries	Rupee payment	"15 to 20 percent above the world price"	1960-61	ABMEL, AR 1960-61, p. 37.
Unspecified	unspecified	Rupee payment	higher price		GOI, Ministry of Foreign Trade, FE, 22 January 1970, p.1.
Non-Metallic Materials					
Transformer oil	transformers	Rumania	c.i.f. price 35 percent above that from Western countries	1969	IEMA, interview
Chemicals	unspecified	U.S.	often 30-50 percent higher in price, including higher dollar costs of freight, than West or East Europe	1965	EW, 21 August 1965, p.1291.
Chemicals and drugs	unspecified	U.S., U.K.	"quotations under credits are at least five to ten percent higher than previous quotations for import from free foreign exchange	1966	EW, 10 September 1966, p. 156.

TABLE IV-15 (continued)

Material	User	Tied source	Price Premium	Date	Reference
Unspecified					
"	rubber products	U.S.	higher prices	1962	Dunlop India, EW, 28 April 1962, p.714.
"	tires	tied sources	higher prices	1965	Inchek Tyres, Commerce, 18 December 1965, p. 1108.
"	bicycles	U.S., rupee payment	higher prices than West Europe	1961-62	Sen Raleigh, EW, 31 March 1962, p. 560.
"	PILC power cables	U.S.	average 30 percent above West Europe or Japan	1969	Indian Cable Company, interview
"	electrical equipment	U.S.	"abnormally high"	1962-63	IEMA, AR, 1962-63, p.18.
"	cryolite and aluminum fluoride	U.S.	higher price	1969	Indian Aluminium, ABP, 19 June 1969.
Staple fibre	textiles	U.S.	30 percent higher	1971	FE, 12 January 1971, p. 1.

throughout the 1960s.[1]

Even after excluding food, 40 percent of total imports during the third plan (1961-62 to 1965-66) were financed by aid, most of which was tied.[2] Between October 1961 and March 1965 only 26 percent of

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[1]According to Kidron, who bases his account on 1961 data, "estimates vary, but suggest that India might normally be paying anything between 6 and 15 percent, sometimes as much as 20-30 per cent, above ruling prices for aid-supported imports." (Kidron, 1965, p. 123.) According to Lal, the prices of chemicals imported by India under U.S. aid and rupee payment loans were 15 and 24 per cent respectively above world prices. (Lal, 1968.) Bhagwati and Desai report that in India "Soviet bloc licences to import dyes and chemicals have been sold at a discount, in relation to convertible-currency-area licences, indicating a margin of loss around 30-40 per cent." (Bhagwati and Desai, 1970, p. 204.) Cilingiroglu reports that tied aid played a role in raising prices of imported materials to developing countries in 1966: Pakistan, copper wire bars, 1.50 times the price in advanced countries; Pakistan, transformer-grade grain-oriented steel sheets, 1.14; Brazil, transformer-grade grain-oriented steel sheets from U.S., 1.31. (Cilingiroglu, 1969, pp. 59-61.) Haq reports: Pakistan, 10 categories of mild steel from the U.S., 1.30 to 1.87 (and 2.57 in one case). For equipment under tied project loans, Haq estimates the average excess cost for Pakistan to have been 51 per cent. (Haq, 1967.) On 92 contracts financed by IBRD and IDA funds in 1960-1966, Bhagwati reports that the average ratio of the difference between the highest bids and successful bids to successful bids was 49 per cent. Bhagwati suggests that this is indicative of the potential excess cost of imports under tied aid. (Bhagwati, 1967, p. 33.) Narain reports that "according to ...the opinion in knowledgeable business circles (in India)...the prices of machinery supplied by the socialist countries are generally higher, in some cases up to 25 per cent higher than international prices." (Narain, 1968, pp. 18-19). However, Narain reports that for metals, chemicals, petroleum, and paper items accounting for 19 to 47 percent of India's imports of industrial materials from East Europe, the weighted average of unit values of Indian imports was 7 to 11 per cent lower in 1961-1965 and 1 per cent higher in 1965-66 for imports from East Europe than from other countries. (Narain, 1968.) The last finding is complicated by the fact that some of the imports from other countries were also under tied licenses.

[2]GOI, MF, <u>ES</u> 1967-68, p. 29.

Indian steel imports were against free foreign exchange.[1] During the third plan,

> Due to foreign exchange difficulties it has been possible to allow import of capital goods only (a) to the extent assistance (aid) is available from friendly countries and (b) where the import of capital equipment is covered by foreign equity capital or long-term loans. Release of foreign exchange from 'cash' resources for import of capital equipment was only marginal.[2]

In the case of tied aid, some excess in prices paid was beyond the control of the Indian government, since major donors were not the cheapest suppliers of industrial materials. However, import licensing procedures did not minimize this excess. First, it appears that allocation of rupee payment, tied aid, or free exchange licenses was based on such things as availability of the items from a particular source and perhaps priority of the end user but not relative prices from different sources. In 1969 importers reported that if a machine could be secured from a rupee payment country, only a rupee payment license was given. Otherwise, a tied hard currency license was given.

Second, prohibitions on transfer or exchange of licenses among importers and specification of items to be imported under each license as well as tying of source left importers no discretion in procurement

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[1] GOI, MIS, 1966a, pp. 23-24.

[2] GOI, PC, 1963b, p. 94. See also the statement by Hazari in Chapter III.C.4.c. During the third plan, of the capital goods import licenses issued by the Capital Goods Committee, at least 34 per cent were restricted to imports from a single country or rupee payment areas under official credits or trade agreements; 27 per cent were against foreign equity shares or supplier credits; only 1 per cent was against Indian free foreign exchange reserves. (GOI, PC(Hazari), 1967b, p. 55.)

based on price and enabled suppliers to discriminate in export pricing against sales on tied licenses. As an example of such price discrimination, two Indian import houses reported that at official exchange rates the prices of machinery sold by East European countries under rupee payment to India were 20 percent above the prices at which these machines were exported against hard currency. Two other examples are given in Table IV-15.

Furthermore, the higher prices of imports under bilateral trade agreements were a result of the Indian government policy of trading bilaterally to promote exports.

Tying of licenses led to other procurement problems in addition to higher prices. Users commonly complained that, with some exceptions like "TOS" machine tools from Czechoslovakia, machinery imported from East European countries was inferior in design or quality and that after-sales service and availability of spare parts were very poor. Imports of defective tractors from East Germany led to organized protests by farmers in 1970, and it was reported that a third of the East European tractors in the Punjab were idle because of lack of spare parts.

There were also complaints that licenses were issued for import from countries where the delivery period was long, which could not supply materials or machines with the desired specifications, or even which had not authorized import of the item in question under tied licenses. According to the Indian Electrical Manufacturers' Association:

> During 1960 the consumers of electrical steel sheets were granted licenses for import of material from rupee payment agreement countries. Electrical steel sheets were not available in these countries.[1]

A former president of the Association of Merchants and Manufacturers of Textile Stores and Machinery stated that:

> Proper assessment of availability of raw materials from the countries from which imports were permitted should be made before licenses were finally issued. Often the licenses issued were of no use to the holders as the items specified were not available in the country.[2]

As a result, firms were forced to use materials with different and/or non-optimal specifications. They were also forced to use machinery from different countries with different specifications so that tooling and spare parts inventory costs were increased.[3] Although licenses were re-validated for import from other countries in some cases when imports were not available, this required efforts by the license holder and involved delays.

A related complaint was that the government changed the countries from which imports were permitted when the foreign exchange situation changed, and consequently firms were forced to procure from unknown suppliers. This led to problems concerning information on sources of supply, reliability of delivery dates, quality control, etc. Sen Raleigh reported that production was adversely affected because:

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[1] IEMA, AR 1960-61.

[2] FE, 9 December 1969. Similarly, see Engineering Times, 26 November 1970, p. 4, for a complaint by Permanent Magnets, and FE, 2 November 1968, for a complaint by the plastics industry.

[3] Bhagwati and Desai, 1970, p. 204, and Krueger, 1970, p. 84.

> In many cases as a result of changing import policies (including tying of licenses), materials had to be obtained from unknown and untested suppliers both within the country or abroad.[1]

Yet another complaint was that tied licenses forced manufacturers to import materials from as many as four different countries.[2]

2. Restrictions on Timing of Procurement

A number of important metals are sold internationally both under long-term contracts at producer prices and on the London Metal Exchange or other open markets for spot and future transactions. Producer prices are substantially more stable than LME prices, which commonly fluctuate by 50 percent, and at the end of the 1960s were much lower.

Licensing prevented Indian importers from entering long-term or speculative contracts for materials and from stockpiling materials on a speculative basis. Although firms were sometimes able to build up inventories of imported materials, because of restrictions on licenses and incentives to use them as soon as they were issued, imports were made at the LME price prevailing for spot transactions whenever licenses were issued.

According to an Indian government report:

> In the case of items like steel, the manufacturers overseas have long-term arrangements with domestic producers of steel which ensure them a steady supply at specially favourable price while Indian producers have to pay such prices as are in force for spot transactions.[3]

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[1]EW, 31 March 1962, p. 560. See also Krueger, 1970, p. 14.

[2]FE, 2 November 1968.

[3]GOI, MCI, 1960, p. 22.

Hindustan Motors reported a similar situation for special steels,[1] but the main complaints concerned non-ferrous metals, particularly copper used in production of electrical equipment, nickel, and lead. It was reported that:

> Practically the entire requirement of copper is imported from London Metal Exchange sources, the price of which is 1.5 to 2 times that of direct purchase from the mines. The mines require a long-term contract such as for three years...Due to this,the country loses about 30 to 50 per cent of copper for the foreign exchange spent.[2]

Cilingiroglu reports that because of the difference between LME and producer prices, in 1965 Argentine and Brazilian imports of copper cost 68 percent and 39 to 46 percent more than the producer price. Their collaborators and competitors in advanced countries purchased copper at producer prices.[3]

Delays in issuing licenses also increased the costs of imports. According to Dunlop India:

> Considerable problems were raised by the delay in the issue of import licenses. When licenses are not issued promptly, it leaves us little time to negotiate prices and we are often compelled to pay higher prices in order to obtain prompt shipment. This is the case where natural rubber is concerned.[4]

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[1] Iron and Steel Review, June 1967, p. 42.

[2] FE, 10 January 1971, p. 11.

[3] Cilingiroglu, 1969, pp. 60, 69, 71.

[4] EW, 1 May 1965, p. 763.

3. Premia on Imported Materials

Because the rupee was overvalued at the import exchange rate including tariffs and because the supply of imported materials was often the binding constraint on production for the protected domestic market, open market prices of imported materials were above landed prices during the 1960s. Since the large majority of import licenses were issued directly to users, firms (other than small ones which were discriminated against by licensing) secured the bulk of their imports at the landed prices. However, firms paid more than the landed prices in a number of circumstances which can be traced to government policies.

In order to qualify for larger allocations of maintenance import licenses issued on the basis of capacity, there was an incentive for firms to expand even though this involved creation of excess capacity. Investment behavior in the first half of the 1960s suggests that this may have been a factor in the creation of excess capacity. From the point of view of the firm, such investments were a cost of licenses. Also, import licenses were issued to exporters under STC "link" arrangements and the import replenishment scheme, which are discussed in Chapter III.C. It was often necessary to export at a loss to secure such licenses, and this loss was a cost of licenses.[1]

While these cases involved use of real resources, in several others the excess cost of imported materials to the users were transfer payments:

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[1]See for example NCAER, 1967a, p. 36, and Philips India, AR 1966, p. 3.

(i) A limited and declining share of imports was licensed to independent import houses which sold the imports at prices above landed cost. By the late 1960s this channel accounted for only a very small share of imports of inputs.

(ii) An increasing share of imports, amounting to over $400 million in 1970-71, was channelled through state agencies. The STC earned a profit, after operating expenses but before losses on exports and taxes, of 8.2 percent of its imports in 1970-71.[1] This supports the frequent complaint that the STC sold imported materials at prices above landed cost. It was reported that in 1970-1971 the STC and MMTC sold imported materials at the following markups over landed costs: aluminum, 14 to 20 percent; titanium dioxide, 18 percent; hydrosulphite of soda, 75 percent; and stainless steel, 150 percent.[2] There were a number of revealing statements by the STC itself:

> Mr. P. J. Fernandes, Acting Chairman of STC,..added...the Corporation charged five to 5.5 per cent over the landed cost of imported materials to its consumers. Prices of imported items were fixed slightly lower than the ex-factory prices of domestic manufacture ...with a view to protecting the interests of the local industry.[3]

Earlier the STC reported that

> The Corporation's margin (on sale of imported items) is, barring a few exceptions of special character, within 10 per cent...In the case of a small number of commodities...there is a wide difference between the domestic and international prices because of

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[1] EE, 2 April 1971, p. 626.

[2] FE, 22 April 1970, p. 5; 22 July 1970, p. 8; 5 January 1971, p. 1; 19 February 1971, p. 4; 17 March 1971, p. 8.

[3] FE, 7 December 1970, p. 8.

> restricted imports...and the high indigenous cost of production or because the product is not available at all...The government have from time to time entrusted the import and distribution of such commodities to the Corporation with directions to mop up a portion of the high profits.[1]

(iii) There were black market sales of imported materials. Table IV-16 shows the ratio of Indian open market prices to LME f.o.b. prices in December 1969 for several non-ferrous metals for which India was primarily dependent on imports purchased at the LME prices. Markets in these metals were active. According to a representative of small firms:

> For want of raw materials in time we have to close our industry or to procure the imported raw materials at the Bombay market at exorbitant black market prices.[2]

In addition, there were legal open market sales of imports made under the STC "link" arrangements and of licenses issued under the import replenishment scheme.

G. Supply Bottlenecks and Lack of Domestic Substitutes

If the government restricted imports only when a perfect substitute was available domestically with the same delivery period as imports, negative protection would have been limited to higher prices of tradable inputs. However, in a number of situations there were quantitative restrictions or prohibitions on imports even though a close substitute was not available domestically or delivery periods were long and unreliable. As a result, government policies affected a number of aspects

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[1]GOI, STC, 1966, pp. 19-20.

[2]FE, 22 April 1971, p. iv.

TABLE IV-16

Indian Open Market Prices for Imported Non-Ferrous Metals, December 1969

Metal	Ratio of Indian Open Market Price to L.M.E. price (f.o.b.)
Zinc	2.4 - 2.6
Tin	2.3
Lead	1.9
Copper	1.2 - 1.6
Nickel	1.1 - 1.3[a]

[a] Ratio is for August 1969 when the LME price was unusually high because of a strike at the two major Canadian producers.

of input supply, including quantity, delivery period, specification, and quality.

This led to a number of problems: interruptions in production and lower average utilization of capacity, use of machines and current inputs which led to higher overhead and operating costs and lower quality products, higher inventories, and allocation of resources to procurement of licenses and inputs. The excess costs resulting from such problems were sometimes high compared to the values of the specific items involved, since inadequate supplies or inferior quality of one critical input sometimes stopped production even though the input accounted for a small share of costs, and the effects were passed on to firms using those products as inputs.

1. Shortages which Constrained Production

A large share of foreign exchange available for maintenance imports and of domestically produced iron and steel was allocated bureaucratically to individual firms at the official exchange rate and control prices. Often the amount allocated to a firm was less than was desired, there were delays in licensing imports, delivery periods for domestic inputs were long and unreliable or supplies were irregular, and the inflexibility of bureaucratic allocations made it difficult to respond to unforeseen events. Only a limited amount of reallocation among firms was possible in the open market, and supplies were available there only at high premia if at all.

As a result, production of engineering goods was often constrained or interrupted by shortage of materials, and delivery dates were uncertain. This was especially common until 1966 and, in the case of steel supplies, again in 1969-1971.

a. <u>1960 to 1966</u>

Chapter III.B referred to the fact that in the first half of the 1960s there was substantial excess capacity in many engineering industries. The binding constraint on production where there was excess capacity was almost always the supply of materials, components, and spares. According to a study made in that period:

> Shortage of raw materials is at present seriously holding up production and preventing anything like the full use of the nation's industrial capacity...The shortage is both of imported and indigenous raw materials...The position in regard to some basic raw materials like iron and steel, copper, aluminium, zinc and lead, is particularly bad. In spite of the development of iron and steel industry, the country has not been able to meet the demand for various special types of steels. Thus there is an acute shortage of alloy and tool steels, spring steels, stainless steel and specially shaped steels, particularly of the imported nature...The engineering industry and the foundry industry appear to be affected most by the persistent shortage of pig iron and coke. Since the import of pig iron has been totally stopped and indigenous production has failed to come up to the expectations there does not seem to be an early end to this difficulty in sight...There are quite a number of important industries which are not utilizing their full capacity due to non-availability of non-ferrous metals.[1]

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[1]NCAER, 1966 a, pp. 45-49. This study applies mainly to 1962-1965. The shortage of foundry pig iron occurred primarily in 1962-63 and 1963-64. In 1960-61 and 1961-62 pig iron was exported because of excess capacity. In late 1964-65, 150,000 tons was imported from the USSR. See GOI, MIS, 1967a, pp. 50, 62.

This study further reports that of 46 engineering firms which replied to a questionnaire concerning operations in 1962, 38 stated that difficulties in procurement of materials were one of the major bottlenecks in production, with a breakdown as follows:[1]

	Number of Firms
Import restrictions:	31
Problems with procurement of indigenous materials:	
Items not available	4
Inadequate supply	16
Uncertain delivery	25
Poor quality	10
Variation in quality	12
High cost	16

The following report was made by the Indian Engineering Association on the problems of the structural fabrication industries:

> In December 1962 it was found that shortage of matching steel was one of the main causes of idle capacity: four member firms alone had lost production during 1962 of at least Rs 6-1/2 crores ($13.7 million) worth of railway wagons for lack of matching sections. Early in 1963 the position became still more acute. Certain major fabricators in the country were working at only 50 per cent capacity on a single shift.[2]

According to a Ford Foundation report in 1963 on the operations of small firms:

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[1]NCAER, 1966a, p. 93.

[2]GOI, MSM, 1968, p. 47. This is confirmed in annual reports for Jessop and Braithwaite.

> Nearly 60 per cent of the firms analyzed provided evidence that critical shortages of materials and components that could only be purchased at higher black market prices made it unprofitable for them to expand their production to fuller utilization of capacity. Another 18 per cent of the firms stated that they could not get additional supplies at any price.[1]

b. 1969-71

During 1966-1968 imports were liberalized and all categories of domestically produced mild steel except flat products were readily available near or, in the case of rolled products like bars and wire rods, even below control prices. However, beginning in early 1969 a growing number of engineering industries reported that production was constrained below capacity by the supply of imported materials, foundry-grade pig iron, and mild steel billets, sheets, plates, and skelp. In 1969-71 shortage of steel and high open market prices were the major complaint of a number of engineering industries dependent on these categories.[2]

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[1] Ford Foundation, 1963, p. 39. For other reports, see: GOI, MCI, 1962 a, pp. 9-10, 27; GOI, PC, 1963a, pp. 4, 9, 43, 120; GOI, PC, 1967a, pp. 97, 109; GOI, DGTD, AR 1965-66; GOI, DGTD, 1965, pp. 30-31; GOI, MIS, 1967, pp. 10, 62; GOI, MIS, 1966a; IIFT, 1966b, p. 29.

[2] The large exports of iron and steel in this period were mainly categories which were easily available, namely basic pig iron and mild steel bars, structurals, and rails, or were against past commitments.

2. Banning of Imports on Grounds of Indigenous Availability

Indian firms frequently reported that the government banned imports of tradable inputs on the grounds that they were produced in India when the items actually were not available. This occurred for a number of reasons. First, the government banned import when domestic production was scheduled to begin, but commonly the local producer did not meet its schedule or its initial products were inferior in quality to imports. Local production of alloy steels led to such problems in the late 1960s. According to the Indian Electrical Manufacturers' Association:

> At times sudden changes are brought about in the import licensing policy. As soon as indigenous production is claimed to have started, the import is banned without ascertaining the quantum and quality of indigenous production. A glaring example in this regard is the production of dynamo grade steel sheets by... Hindustran Steel Ltd. The targeted production during the year was 22,500 tonnes. As soon as the production commenced, the imports were banned; meanwhile there were teething troubles in the plant and the total production including off-grade quality was limited to about 9,500 tonnes per annum of which the prime quality was only 5,000 tonnes or so. Such over-zealous steps were responsible for cutting down the production of electric motors, fans and other rotating machinery.[1]

The same was true during 1969-70 in the case of high carbon steel wire rods required for steel wire ropes.[3] The Textile Machinery Manufacturers' Association reported that in 1969:

> The ban on import of needle roller bearings to actual users... caused a lot of anxiety to manufacturers of textile machinery since the only licensed manufacturer had not gone into production.[2]

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[1] FE, 10 January 1971.

[2] FE, 22 November 1969, p. 9.

[3] Commerce, 6 February 1971.

Second, the government used prohibitions on imports to force manufacturers to develop domestic sources. For example, it was reported that:

> DGTD has,..been asked not to clear import applications for such items as can be made available from indigenous sources with a little extra effort.[1]

Third, it was common for the government to ban import even though domestic production covered only a limited range of specifications, leaving firms less choice of inputs than would have been available by import. Often the items produced domestically did not have the specifications which were necessary or optimal for particular users. In these cases, costs were increased in a number of ways.

The government banned import of machine tools when there was a machine available locally which could do the job, based on workpiece size, without much concern for power, tolerances, and other characteristics which influenced productivity. Equipment selection was constrained so that both initial and operating costs were increased, e.g. machines used were not optimal for the length of production runs and tolerances required. For example, Krueger found:

> Domestically available machinery very frequently was of the wrong capacity for the firm's purpose. That is, domestically-produced machinery is available in a smaller range of capacities than imported machinery. In some cases, firms were persuaded to accept several smaller capacity machines in lieu of a single, larger, imported machine. It was alleged, in several instances, that higher domestic prices and inappropriate sizes resulted not only in increasing the initial machinery cost threefold but also led to higher operating costs than would have been obtained with appropriate machine size. In two

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[1]<u>FE</u>, 8 November 1970.

> cases, the author was shown a machine, domestically produced, whose capacity was ten times or more that required by the firm's operations. In both cases, an imported machine of the appropriate capacity would have cost the firm less than 7 per cent the price paid for the domestic machine.[1]

Manufacturers of electric fans and twist drills reported that they were not permitted to import automatic machines which would have led to a reduction in costs. The designs of some machines produced in India were outdated and inefficient under any conditions.[2]

In the case of materials, when firms could not get the metal sections they wanted because the sections were not manufactured or delivery periods were long, they used heavier or more expensive ones or machined larger ones to the size required, wasting materials and machining time. Kamani Engineering reported that:

> In the field of export, the company has suffered from several handicaps. Only a limited range of steel sections is rolled in India as compared to a much larger range produced in other countries. As the Indian tower designer has to limit his designs to the available sections, he is compelled to make use of heavier sections, unnecessarily adding to the weight of the towers. Any undue increase in weight will inflate the cost of Indian-made structures.[3]

> The availability of only a limited range of steel sections within the country and the difficulty in getting matching sections of steel have considerably impeded our efforts in (export).[4]

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[1]Krueger, 1970, pp. 83-84

[2]See Chapter V.B.

[3]<u>EW</u>, 3 April 1965, p. 612.

[4]<u>Capital</u>, 31 March 1966, p. 445.

Basu et al. report that for a company manufacturing tea machinery:

> High speed steel of 7/64" dia. is generally required but the available section is 1/4", and considerable wastage and increased unit cost result from the use of available section.[1]

It was reported that in 1970 galvanized sheets were used in place of non-galvanized sheets because of shortage of the latter.[2]

Designs and material specificiations were adapted to use what was available although this adversely affected the performance of the products. Import restrictions on CRGO steel sheets forced manufacturers of distribution transformers to rely on hot rolled sheets in many cases. A government report on the industry stated that "the resultant energy losses must be considerable."[3] According to Cilingiroglu, the use of CRGO sheets rather than hot rolled sheets would result in a 10 percent reduction in energy losses and a 10 to 25 percent saving in steel and copper,[4] or a 5 to 10 percent reduction in material costs. The IEMA stated that:

> It was reported that at times, transformers supplied by some manufacturers exceed the losses guaranteed by them by an amount beyond the permissible tolerance limits as given in the Indian Standards Institution specifications.[5]

Use of hot rolled sheets may have been a contributing factor.

Baranson reports that a tire manufacturer "had to revert to

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[1] Basu et al., 1965, p. 147.

[2] FE, 22 February 1971, p. 6.

[3] GOI, MIDCA, 1969, p. 49.

[4] Cilingiroglu, 1969, pp. 33-34.

[5] IEMA, AR 1968-69, p. 46.

cotton cord construction due to a shortage of rayon and nylon" cord in India.[3]

Much of what passed for R & D in India was actually adaptation of specifications to substitute locally available inputs for those specified by the foreign collaborator but unavailable because of import restrictions.

Jessop reported that restrictions on import of automatic welding equipment delayed conversion of railway wagons from riveted to welded construction, which would have allowed a reduction in both steel and labor costs as well as better performance.[1] The electric fan industry was reported to have been unable to import machinery required to manufacture fans like those produced in Japan:

> The industry has been making intensive efforts to modernise its machinery...The manufacturers expressed that the machinery is required by the fans industry urgently as they want to switch over to new processes and materials to catch up with the latest trends abroad in the design and manufacture of electric fans...For instance, the industry is trying to introduce aluminium die-cast rotors and replace aluminium canopies by plastic ones. These processes will result in improved performance of fans and also add to their style and streamlined appearance. The industry has not been able to secure adequate licences for the import of machinery. In order to effect the improvements mentioned above, the industry requires die-casting machines, optical profile grinders, plastic injection moulding machines, and automatic coil winding machines.[2]

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[1] Jessop and Company, AR 1963-64, 1964-65, 1966-67.

[2] IIFT, 1967a, pp. 9, 54. In 1969 the Indian Electrical Manufacturers' Association reported that the government allowed manufacturers exporting electric fans to import machinery required for modernization. (IEMA, AR 1968-69, p. 82.)

[3] Baranson, 1971, p. 60.

Restrictions on import of electrolytic tinplate when only hot-dipped tinplate was produced in India prevented use of automatic machines in manufacture of tinplate products, because the thickness of hot-dipped tinplate was too variable for use of automatic machines.

3. Non-Availability of Items Banned for Import

Import of some materials was banned even though they were not available in India or domestic supplies were very limited because the end-products were considered non-essential (e.g. import of components for certain consumer goods was banned) or to force reliance on domestically available substitutes (e.g. import of copper and stainless steel was banned in certain cases where aluminum could be used.) In a number of cases such import restrictions made it impossible for Indian firms to produce goods to the specifications used in foreign markets. While only rayon tire cord and one type of synthetic rubber were produced in India, import of nylon tire cord and other synthetics was not allowed.[1] Import of gadgets for production of electric table fans of the type exported by Japan was not allowed even though the gadgets were not available in India.[2]

H. Quality Problems and Ancillary Development

One of the basic difficulties of producing complicated engineering goods in a semi-industrial country is the limited network of ancillary suppliers and subcontracting shops. Although the situation

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[1] Goodyear India, FE, 8 May 1969.

[2] Jay Engineering, Industrial Times, 15 March 1969, p. 28.

in India improved during the 1960s, firms frequently found that specialized suppliers did not exist, that there were problems with the quality of what could be procured, and that supplies were irregular. This was a common experience of international companies with subsidiaries in developing countries which limited import of inputs.[1]

Import restrictions encouraged or forced manufacturers in India to rely heavily on domestic sources for tradable inputs in spite of the limited capacity of ancillary suppliers. The banned list required firms to procure locally any tradable input manufactured in India. Beyond this, the prospect that import might be banned before a satisfactory substitute was available locally, domestic content requirements, limited allocations of licenses and the danger of a cut in the event of a foreign exchange crisis, the burden of procedures and delays involved in licensing, and the excess cost of imports because of licensing restrictions and tariffs created a strong incentive for firms to develop local sources, especially for current inputs, even at supply conditions not competitive with free imports.

The effect of this on prices of purchased inputs has already been considered. The following sections consider the role of the import control regime in forcing manufactures to use inputs of lower or more variable quality than those that could have been imported, to establish their own facilities for production of ancillary items, and to devote resources to procurement and to development of ancillary

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[1]Baranson, 1967; Edelberg, 1963; Kleu, 1967; Neufeld, 1969, pp. 330ff, esp. p. 336.

suppliers.

1. Quality Problems

Ancillary suppliers producing items suitable for large manufacturers were most developed for industries with a large demand for parts for production of new equipment and for replacement, especially where these requirements had existed for some time. Thus, ancillaries were most extensively developed for railway rolling stock, motor vehicles, and cotton textile machinery.

The fact that the last two industries complained about quality of ancillary supplies at the end of the 1960s indicates that low and variable quality of purchased components remained an obstacle to production of complicated engineering goods to international quality standards. A working group of the Planning Commission for the textile machinery industry reported:

> Some of the components available from indigenous sources may be suitable for domestic consumption, but when the machinery is to be exported it may not be possible to depend on such components, especially when they are of intricate nature. The Group recommends that for the purpose of maintaining the competitive strength of the export products, import of banned items may be considered liberally for export orders...With such relaxation the prospects of improving export would brighten.[1]

According to TELCO, which produced Mercedes-Benz trucks:

> Despite intensive development assistance and liberal financial support we have given to the various component suppliers, we are still unable to secure regular supplies of consistently

[1]GOI, MIDCA (Textile Machinery), 1968b, p. 18.

> high quality automotive components, castings, and forgings. This is a clear indication that our country's industrial base is still somewhat immature and uneven in its development.[1]

Table IV-17 lists a number of complaints about the quality of domestic materials and parts which firms were forced to use because of import restrictions. Baranson reports in the case of diesel engines produced by Kirloskar Cummins:

> Absolute restrictions on the import of engine parts that are currently manufactured in India adversely affect the quality...A license to import oil filters was refused on the ground that "oil filters" were produced in India, even though Cummins had tested the Indian product and found it well below its standards.[2]

Quality problems were especailly great when firms were forced to purchase inputs on the open market.[3]

Although one can infer from such complaints that there was sometimes negative protection related to the quality of inputs, there were no complaints about the quality of many other parts. For example, most of the complaints by vehicle assemblers recorded by the Pande Committee during its investigation of the quality of passenger cars concerned incidental items produced by small firms. There were no complaints about the quality of most proprietary items like pistons,

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[1]TELCO, ABP, 25 July 1969. See also EE, 22 November 1968, p. 987, and Krueger, 1970, p. 80.

[2]Baranson, 1967, p. 76. See also pp. 71-73 for additional examples of quality problems faced in procurement of materials and parts.

[3]FE, 19 September 1970, p. 4.

TABLE IV-17

Complaints Concerning Quality of Indian Materials

Material	User	Quality Problem	Consequence of Lower Quality	Source
alloy steel	motor vehicles	poor quality		TELCO, EPW, 27 July 1968, p.1190.
alloy steel	steel forgings	poor quality	high percentage of rejections of forgings	FE, 26 June 1969
alloy steel	steel forgings	poor quality	"the quality of available domestic steels did not meet specifications, and their use resulted in a poor finished product and in a high degree of wear and tear on the capital equipment"	UNIDO, 1970a, p. 50.
special steels	piston assemblies	quality problems		Indian manufacturer
cold rolled steel sheets	switchgear	"indifferent" quality		FE, 21 July 1969, p.8.
steel wire	welding electrodes	variable quality	"a high percentage of rejections... Considerable quantities of the steel supply and, on occasion, even the finished product had to be scrapped."	UNIDO, 1970b, p.66.
tinplate	containers	"quality is probably the poorest in the world"	-	Metal Box, EW, 3 July 1965, p. 1077.
steel strips	cycle rims	poor quality	8-20 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.

TABLE IV-17 (continued)

Material	User	Quality Problem	Consequence of Lower Quality	Source
steel	containers	overguage, offsize, holes	1 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.
mild steel	machinery	poor quality	5-75 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.
wire, tin	hurricane lanterns	poor quality	2-4 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.
steel sections	fabricated structurals	twisted and bent)	25 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.
pig iron	" "	poor quality)		
pig iron	iron castings for power-driven pumps	poor quality	20 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.
pig iron	iron castings for pumps	incorrect grade		*FE*, 26 March 1970, p.8.
pig iron	iron castings for machinery and cast iron pipes	off-grade, mixed grade	higher rejection rate for castings, lost machining time	NCAER, 1966a, pp. 46-47; IIFT, 1966b, p.33; and Indian manufacturers
pig iron	piston assemblies	incorrect metal-lurgical composition, mixed grade		Indian manufacturer

TABLE IV-17 (continued)

Material	User	Quality Problem	Consequence of Lower Quality	Source
iron castings	machine tools	blow-holes, dimensional inaccuracy, hardness not to specifications of order and variable, castings sometimes too hard to be machined or so hard cutting tools break	30-90 percent rejection rates for castings, wasted machining hours, longer machining time	Three Indian manufacturers of machine tools without captive foundries
iron castings	machine tools, flour mills	blow-holes	25 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.
mild steel plates	metal-forming machine tools	low tensile strength	increase input of steel to compensate for lower strength	Indian manufacturer
alloy steels, laminations, steel pressings, bearings	electrical equipment	variable quality	higher rejection rate	Indian manufacturer
bearings	electric fans	variable quality	higher rejection rate, noisier fans	Indian manufacturer
bearings	machine tools	variable quality	increase in assembly and testing time	Indian manufacturer
fasteners	machine tools	variable quality		Indian manufacturer
enamelled copper wires	electrical equipment	improper enamelling	high percentage of wires rejected	Indian Express, 13 December 1969.
components	radios	low quality	5-10 percent reduction in production due to defective material	NCAER, 1966a, pp. 46-47.

TABLE IV-17 (continued)

Material	User	Quality Problem	Consequence of Lower Quality	Source
aluminum and plastic foils, insulating cloth, ceramic tubes, steel sheets, brass and aluminum sheets and rods and wires	electronic products	low quality		National Productivity Council, 1965, p.38.
graphite electrodes	steel castings	low quality		Capital, Supplement, 10 July 1969, p.103.
rayon cord	tires	"poor quality"		EPW, 15 July 1967, p.1243.
paint	machine tools, vehicles, bicycles	poor quality	affects appearançe of products; discoloration, cracking, chipping; poor finish	Indian manufacturers
paint	electric fans	poor quality	"fans, even with the best type of paints available in India, do not get such smooth and clear surfaces as the fans from Japan or other foreign countries. This difference in finish places Indian fans, particularly table fans, at a considerable disadvantage in foreign countries."	Jay Engineering, Industrial Times, 15 March 1969, p.25.
glass	vehicles	inferior quality		Krueger, 1970, p.51; FE, 3 June 1970, p. 9.

TABLE IV-17 (continued)

Material	User	Quality Problem	Consequence of Lower Quality	Source
paper, wood, packing and packaging materials, rust preventives	machine tools, etc.	poor quality, wrong specifications	affects appearance; damage to transit; heavier wood increases freight costs.	Indian manufacturers and Metal Box, EW, 3 July 1965, p.1077.
electrical ancillaries including instruments, switches, wiring, horns, wipers; rubber parts including seals, hoses, weather strips, wiper blades; window and door regulators, handles, buttons, locks, clips; plastic parts; leaf springs	passenger cars	low quality		GOI, MIDCA, 1968a, p.45; Assoc. of Automobile Manufacturers, ET, 13 Sept. 1969, p.9.
small grinding wheels	bearings	quality problems		Indian manufacturer
spindle inserts, drafting materials	cotton textile machines	low quality		Commerce, 23 January 1971, p. 150.

fuel injection equipment, engine valves, spark plugs, radiators, brakes, wheels, tire and tubes, and batteries, all of which were produced by large firms with foreign collaboration.[1]

Often the complaint was not that inputs comparable in quality to imports could not be obtained but that to achieve such standards firms were forced to reject a large percentage of purchased supplies or take steps to improve their quality. This involved expenditures on inspection, an increase in processing costs when parts were rejected after being machined, and costs of rectification. Quality problems also interrupted production and forced firms to hold larger inventories.

According to an NCAER study of capacity utilization in manufacturing in 1962, among 46 engineering firms which answered a questionnaire, 10 and 12 reported that poor quality of materials and variation in quality of materials, respectively, reduced their rate of production. The complaints for which details are available are reproduced in Table IV-17. The study states:

> The non-standard quality of materials gives poor results... The end-products also suffer...defects or the cost of production is increased. The non-standard quality of material requires additional operations involved in rectifying or salvaging the quality of materials to achieve acceptable quality end-products and these additional processings result in an increase of cost of production as well as in reduction in production.[2]

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[1] GOI, MIDCA, 1968a.

[2] NCAER, 1966a, pp. 45, 93.

Rejection rates were often very high and consequently were an important factor in costs. For example, when it began production IBM had an average rejection rate of 70 percent for locally procured parts. After three years this was reduced to an average of 32 percent, with a rate of 15 percent for supplies from large manufacturers and 40 percent for small firms. Even the 15 percent rate was considerably higher than the average at IBM's Japanese plant.[1] Cummins Engine's experience in India was similar.[2] Machine tool producers commonly reported rejection rates of 30-60 percent on purchased castings even after they had been in production for several years, with a large share of rejections occurring after some machining.

Because import of certain types of high precision bearings was banned even though they were not available in India, some machine tool producers were forced to make repeated trial assemblies of machines with bearings of ordinary tolerances until they found bearings which gave the required accuracy to alignment of the spindle. Considerable labor was wasted in this trial and error process.

Under these circumstances, particularly where material supplies were the binding constraint on production, manufacturers sometimes

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[1] IBM World Trade Corp., "Development Activities Report," New Delhi, 6 November 1969; C. G. Ravi (Manager, IBM India), "Scarcity of Professional Grade Components," Commerce, 1 August 1970, pp. xviii, xx; P.K. Biswas (Export Manager, IBM India), "Prospects and Problems of Manufacturing Computers in India," ET, 11 December 1969, p. 6.

[2] Baranson, 1967, pp. 71-72.

reduced their acceptance standards below the quality that could have been procured by imports, e.g. castings for machine tools and bearings for fans. In production for export, firms in the machine tool industry reported following stricter quality standards than for production for the domestic market, typically by using the best items in a batch of inputs like castings for export production. However, the very high rejection rates required to meet export quality standards were a deterrent to production of special export models, since rejected inputs unique to the models could not have been salvaged for production for the domestic market.

2. <u>Investment in Development of Suppliers</u>

Where they could not buy items of satisfactory quality, Indian manufacturers, at least large companies with the necessary know-how, commonly invested technical and managerial resources helping suppliers to produce the materials and components they required and to achieve the desired quality. Engineers spent a substantial amount of time at suppliers' factories giving technical assistance in production of items, e.g. castings, alloy steels.

Given the number of items that had to be secured in the case of complex assembly-type engineering goods, the resources devoted to developing suppliers and the time required were sometimes considerable. However, surveys of ancillary suppliers in India have indicated that vertical integration was a more common feature of domestic procurement than was assistance to independent ancillaries.[1] Consequently, the following examples should not be regarded as typical. Nevertheless, most large firms reported undertaking such activities, and whether or not firms offered technical assistance to suppliers they did devote resources to procurement.

Because of difficulties purchasing items of acceptable quality, plus the government policy of encouraging small industry, at the beginning of the 1960s HMT constructed an industrial estate for 50 small units producing simple components, sheet-metal work, and accessories. HMT provided drawings, tested prototypes, and tooling, trained workers, provided technical assistance in production and quality control, and assisted in financing and procurement of materials. In order to build this group of ancillaries, HMT reported that it purchased from them at prices higher than those charged by other suppliers and that it continued to buy from them when it had excess capacity and could have produced the items itself.

A different approach was followed by IBM. Rather than setting up its own industrial estate, IBM tried to secure parts from existing independent suppliers who also did work for other manufacturers. It experienced difficulties because large manufacturers of electronic components were not interested in IBM's small orders, and rejection rates from small firms were high. It tried to solve these problems

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[1]Basu *et al.*, 1965, p. 93, and Rosen, 1958, p. 115.

by giving technical assistance to the suppliers.[1]

I. Vertical Integration

Often Indian producers make a substantial number of items themselves while producers in the same industry in advanced countries buy them from specialized firms which supply many manufacturers. A number of studies of manufacturing subsidiaries of international corporations in semi-industrial countries which restricted imports of inputs have noted a high degree of vertical integration, even self-sufficiency, when compared to the operations of the parent company in the advanced country, in spite of smaller scale and costs above the prices of imports.[2] Table IV-18 provides a list of examples which illustrate this structure. The main explanation given by Indian firms in interviews was the limited ancillary supplier network and the problem of assuring satisfactory quality and regular supplies of parts from the ancillaries that did exist, combined with import restrictions.

However, vertical integration was not explained simply by underdevelopment and import restrictions. Contrary to the stated objective of encouraging small firms, including ancillaries, government policy created a strong bias toward vertical integration in two ways. First, allocation of maintenance import licenses and domestic materials which were subject to distribution controls discriminated heavily against

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[1] IBM World Trade Corp., "Development Activities Report," New Delhi, 6 November 1969.

[2] See the first footnote in section IV.H and Rosen, 1958, p. 148.

TABLE IV-18

Outside Procurement by Engineering Industries in Semi-Industrial and Advanced Countries

Product (Manufacturer)	Semi-industrial Country	Outside Procurement	Advanced Country	Outside Procurement	Date
1. Diesel engine (Cummins)	India	40% of parts by value	U.S.	60% of parts by value	1962-1965
2. Automobiles (Kaiser-Willys)	Argentina, Brazil, India	36-40%	U.S.	60-63%	1965-1968
3. Automobiles (Ford)	Brazil	far less than in advanced country	W.Ger., France, U.S.		1964 in Brazil compared to initial years of production in advanced countries
4. Heavy electrical equipment	Pakistan and others	less than in advanced countries			1968
5. Air-conditioners	India	20%	U.K.	40%	1959
6. Bicycles (T.I.)	India	5-10%	U.K.	15-20%	1961
7. Sewing machines (Jay Engineering)	India	a) only needles b) very little	Japan	almost everything	a) 1953 b) 1967-1969
8. Cotton textile machines	India	few parts	unspec.	many parts	1953
9. Storage batteries (ABMEL)	India	far less than in advanced countries	U.S., Europe Japan		1962
10. Unspecified	India	2%	U.K.	40%	c.1960

Notes to Table IV-18

For data on Japanese subcontracting, see Boon, 1964, p. 47.

Sources:

1. Baranson, 1967, pp. 35, 59, 91. This was the basis on which the factory was set up, not what was achieved in 1962-65.
2. Baranson, 1969, p. 26, and GOI, MIDCA, 1968. Outside procurement was 39 percent for Hindustan Motors passenger cars and 45 percent for TELCO trucks, ET, 22 January 1970, p. 11.
3. Wilkins and Hill, 1964, p. 416; Mahindra and Mahindra, AR 1964-65; and interviews. The percentage of bought-out parts for GM and Ford in the U.S. and Fiat in Italy is low, but the percent is high for others in West Europe, especially where scale is low. See Economist, 23 October 1965, p. vii.
4. Cilingiroglu, 1969, p. 9.
5. Kidron, 1965, p. 250.
6. Kidron, 1965, pp. 249-50.
7. GOI, PC, 1953, p. 75; Jay Engineering interview; and Bank of Japan, 1967, p. 72. See also Garratt, 1967, Part 7, p. 797, for similar comments on Jay Engineering's self-contained electric fan factory.
8. GOI, PC, 1953, p. 65.
9. ABMEL, AR 1961-62, p. 38. The Indian company reported "our factory is a battery, rubber, plastics and metal recovery factory all on one site."
10. Kidron, 1965, pp. 249-50.

small firms.[1] The control system enabled vertically integrated firms to procure the materials required to produce ancillary items at lower prices and in larger quantities than small, independent firms could procure them.

Second, under Indian conditions there was excess demand for industrial licenses because those able to secure licenses were able to earn monopoly returns. Vertical integration was therefore partly a result of licensing which allowed assemblers to manufacture their own inputs rather than real economies in production and reflected the general bias in industrial licensing toward concentration reported by Hazari and the Dutt Committee.[2]

Such biases toward vertical integration limited the interest of some firms in developing independent ancillaries, which they could have facilitated by accepting standardized component specifications. In some cases main assemblers continued to produce items after ancillary units producing satisfactory components were established. This was true of pistons at Hindustan Motors and radiators at Premier Automobile.

Basu et al. reported that in the machine tool industry

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[1]See Ford Foundation, 1963, and GOI, MIS, 1966a.

[2]GOI, PC(Hazari), 1967b, and GOI, MIDITCA, 1969a. However, the government reserved certain automobile components for ancillary suppliers, instructed public sector companies to rely on small firms for parts, and announced in 1970 that as a condition for granting industrial licenses it would require large firms to procure a certain percentage of parts from ancillary suppliers. (Engineering Times, 8 October 1970, p. 8)

> All the operations starting from manufacturing to assembly of machine tool components are done at one place....Units engaged in machine-tool manufacturing are in most cases their own ancillaries.[1]

Although HMT did a substantial amount to develop ancillary suppliers, it bought only 10 percent of the parts, components, and services for one of its standard machine tools, or one fourth of what its collaborator purchased in West Europe. Apart from supplies from its own industrial estate, HMT bought only items like bearings, fasteners, non-ferrous castings, and electricals in India. In advanced countries machine tool producers also bought iron castings and tooling and relied more on sub-contractors for machining of parts and for subassemblies.

All Indian machine tool producers interviewed reported difficulty in buying ferrous castings, accessories like chucks and collets, and tooling of satisfactory quality. A number of producers concluded that they had to have their own foundries to control quality because of the low quality and high machining rejection rates on purchased castings. HMT originally planned to buy castings but set up its own foundry in 1961 because of difficulties with quality of purchases. The four leading machine tool producers all had their own foundries, as did many smaller firms. Similarly, automobile manufacturers produced many of their own castings and forgings.

Complaints about the quality of accessories, including those produced by Praga Tools, were common. One machine tool manufacturer

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[1] Basu _et al_., 1965, p. 15.

was considering producing chucks to secure ones satisfactory for use on its lathes for export.

While manufacturers of machinery in advanced countries buy much of their tooling from tool and die shops, Indian manufacturers were often forced to produce their own. This was particularly true in the automobile and diesel engine industries.[1]

It was common for engineering companies in India to undertake extensive modifications or complete building of machine tools for their own use because of inability to buy custom-made special-purpose machines as a result of import restrictions, e.g. in the automobile ancillary and sewing machine industries.[2] Most companies produced some spare parts themselves because it was difficult and time consuming to secure licenses to import spares for foreign machines. At times prior to the recession manufacturers even produced their own cutting tools because of long and uncertain delivery periods from local suppliers.

J. Inventory Investment

Inventory costs were a prominent item in capital costs. The import control regime and controls over distribution of domestically produced steel were an important cause of the high average inventory-sales ratios which were characteristic of Indian manufacturing.

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[1]See Tandon, 1965, pp. 27-31; Baranson, 1967, pp. 59, 62; and ABP, 1 November 1969, p. i.

[2]Garratt, 1967, Part 6, pp. 684-91, reports examples for Jay Engineering.

Because production was often constrained or interrupted by shortage of imported inputs, the import control regime created an incentive to hoard import licenses to guarantee continued production; restrictions on the period of validity of the licenses transformed this into an incentive to hold inventories of imported inputs, including materials, components, and spare parts for imported equipment. Many of the features of the licensing system, including specification of items to be imported, source-tying, and prohibitions on sale of licenses or materials in India probably increased inventory holdings by reducing flexibility in procurement. Controls over distribution of domestic iron and steel and import prohibitions which forced reliance on domestic suppliers with unreliable quality and delivery dates were similar in effect. The high profit on domestic sales, the speculative effect of overvaluation until 1966, the price differential between imported and domestic supplies when the latter became available, and the subsidized rate of interest, all results of government policy, increased the private benefit-cost ratio of holding inventories given the licensing restrictions.

It should be added that there are other hypotheses to explain high inventories: supply problems due to factors other than government import restrictions, e.g. distance from foreign suppliers, and poor management.

Inquiries into the operation of Indian companies, particularly in the public sector, report high inventory-sales ratios. According to government surveys in 1965, the ratio of inventories to annual sales for private sector basic metals and engineering companies was 0.37 and 34 public sector companies was 0.49 (0.33 for purchased inputs only), compared to 0.20 which the surveys report for advanced countries. For 10 of the public sector companies, the ratio was over 1.0, for five over 2.0.[1] In 1969-70 the inventory-sales ratio for the eight major Indian private motor vehicle manufacturers with $308 million in sales was 0.44 in spite of excess demand for the output of several.[2] Krueger reports that for automobile ancillaries ex-ante or "desired inventory levels are typically six to nine months' needs for imports and three to four months for domestically-produced goods."[3]

Islam reports a similar 1966 World Bank finding on Pakistan:

> A disability that affects most industries relying heavily on imports for critical inputs is the need to hold large inventories because of the uncertainty of such things as foreign exchange availability and administrative delays in obtaining permits. This raises current costs. In the electrical-equipment industry, the ratio of inventories to total sales is 100 per cent to 120 per cent -- compared to 10 per cent in West Germany.[4]

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[1]GOI, RBI data reported in Commerce, Annual Number 1968, p. 286, and GOI, ARC, 1967, pp. 176-178, 183. GOI, LSS, 1969, p. 3, reports that in 1965 the value of average inventories at 21 public sector firms was equal to that of 12 to 15 months' production and criticizes inventory management techniques. See also Bhagwati and Desai, 1970, pp. 165n, 167, and Boon, 1964, p. 33.

[2]ET, 7 February 1971, p. 6.

[3]Krueger, 1970, p. 93.

[4]Islam, 1969, p. 84.

K. Resources Devoted to Procurement

Indian firms devoted substantial resources to overcoming problems of procurement and to government liaison activities which would not have arisen under a liberal economic regime in which import of inputs was not restricted and tradable inputs were allocated by the price mechanism. Activities oriented to procurement overshadowed the problems which concern management in advanced countries, since the former were the key variables under management control which influenced profits under Indian conditions.

One side of this was the resources devoted to domestic procurement as a result of restrictions on imports. The other was the resources devoted to dealing with the government. Corresponding to the minute detail in which government controls were often exercised, firms were required to make detailed and repeated applications. The routine paperwork by successful applicants was only one aspect of this. Because of the scarcity value of resources allocated by government decisions, there was substantial excess demand. The number of applications for every scarce resource was increased, and in order to secure faster and more favorable decisions firms devoted considerable resources beyond the requirements of routine compliance, e.g. firms maintained government liaison staffs in New Delhi and managers frequently went to New Delhi to meet with officials. Such liaison was also one of the major activities of trade associations.[1] Government inquiries have suggested

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[1]See, for example, the report of the Textile Machinery Manufacturers' Association, FE, 22 November 1969, p. 9.

that firms were successful in influencing industrial licensing and thus have indicated the importance of such liaison activities in the profitability of Indian business.[1]

This involved an increase in costs of procurement and a waste of resources, particularly entrepreneurship. It also created a bias in resource allocation toward large firms and industrial houses. Complaints by smaller firms, like the following for automobile ancillaries, were common:

> Another major difficulty facing the small-scale industry is the procurement of raw materials, both imported and indigenous. The big industries having resources to maintain special staff for liaison with the various government agencies are able to use their influence to expedite their applications and obtain raw materials on priority. In this respect, though small-scale industries get some government help, the small-medium scale industries with no special staff to liaise with the government agencies are left with inadequate supplies and often they have to resort to open market purchases at very high prices.[2]

All of the problems concerning supply conditions for tradable inputs were more serious for small firms, since it was less efficient for them to devote resources to securing favorable bureaucratic action.

L. Import Liberalization after Devaluation

Devaluation in 1966 was followed by an announcement that maintenance imports would be liberalized for firms producing basic metals, most engineering goods with the exception of a number of consumer

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[1] GOI, PC(Hazari), 1967b, and GOI, MIDITCA, 1969.

[2] FE, 19 March 1971, p. 8. See also Krueger, 1970.

products, and tires. For a short period procedures and criteria for screening imports appear to have been liberalized, and licenses were given for a variety of inputs which competed with products of domestic firms. However, this liberalization was quite limited compared to the number of items on the banned list, and by 1968 whatever liberalization had occurred in restrictions based on indigenous availability and in domestic content requirements had been withdrawn. There was thus no important change in the import control regime underlying the discussion in the preceding sections. In fact, because of continued import substitution, the number of inputs on the banned list and domestic content requirements increased.

In any case, the main liberalization was not in these regulations but simply in the quantity of imports allowed for items not on the banned list. Even in this respect, by 1969 there were many complaints about shortages of maintenance imports by firms in industries with priority under import policies, especially ones which were trying to expand production.

M. Special Provisions for Supply of Tradable Inputs for Export Production

The discussion in this chapter indicates that in the absence of special provisions for exporters or offsetting subsidies, there would have been substantial negative protection of value added for export in many Indian engineering industries because of supply conditions for tradable inputs. Apart from providing general export subsidies, which were discussed in Chapter III.C, the government took a number of measures to reduce the cost or increase the availability of tradable inputs for export production. These subsidies and their shortcomings from the point of view of eliminating or offsetting negative protection are discussed here. Criticisms of the measures from the point of view of efficiency are considered in Chapter VIII.A.

1. Concessional Prices of Domestic Materials for Export Production

Because of government action, several indigenously produced materials were supplied at concessional or even international prices for export production. There were schemes for pig iron and mild steel, aluminum, and PVC resin.

a. Iron and Steel

Pig iron, mild steel, and tinplate produced in India were supplied at concessional prices for export production from December 1958 to devaluation. That scheme was suspended at devaluation.

Beginning in May 1967 exporters of engineering goods (excluding primary iron and steel) received a subsidy equal to the difference in cost at Indian and international prices of pig iron, mild steel, and tinplate manufactured in India by the integrated steel producers and used in export production. Indian prices were taken as the control prices and extras. The international price of pig iron was taken as the f.o.b. price of Indian exports and that of mild steel was taken as the London Metal Bulletin price minus 2.5 percent, minus an additional $4 per ton for untested quality, with Benelux extras.

Until the relevant international prices rose above Indian control prices in October 1969, eliminating the subsidy except on cold rolled and galvanized sheets, this export subsidy was important for products for which mild steel was a major input. The data in Table IV-19 indicate that subsidies were 8 to 35 percent of the international prices (6 to 22 percent of the Indian control prices) for different categories of steel in mid-1969. For engineering goods excluding iron and steel, the subsidy averaged about 3 percent of the f.o.b. value of exports. For certain products with relatively low value added, the subsidy was 8 to 14 percent of the f.o.b. value of exports. (See Table III-7.)

This scheme did not enable exporters to get the entire iron and mild steel content of their exports at international prices, and consequently did not eliminate negative protection. First, the subsidy was paid only if the exporter could prove that the iron and steel was manufactured by the main steel mills. Exporters generally could not collect in the case of steel which they purchased in the open market or from re-rollers (other than ones approved under the scheme) when they could not wait for supplies from the main producers or because the main producers did not manufacture the item, e.g. wire. Even when they could collect for open market purchases, they were not reimbursed for the difference between open market and control prices. Because of problems in proving its origin, generally they could not collect for steel used by suppliers of components.

Second, the subsidy covered the difference between Indian control and LMB prices, but according to the EEPC:

TABLE IV-19

Subsidy of Domestic Steel Price for Exporters of Engineering Goods, April - September 1969

Category of steel	Subsidy as Percent of London Metal Bulletin Price
Wire rods	7.9
Bars and rods	10.0
Structurals	21.4
Plates	8.0
Sheets	
Hot rolled	20.6
Cold rolled	26.0
Galvanized	35.2
Skelp	21.5

Source: Data from GOI, JPC.

> LMB quotations are not representative of world prices of steel as Japan is reported to be selling steel in the international market at much lower rates than LMB (London Metal Bulletin) price.[1]

Third, interviews revealed that because of the paperwork and liaison involved in applying for this subsidy, often producers of items with a low iron and steel content or a low export volume did not bother to apply. Finally, the subsidy was paid only after exports were made and often was delayed several months.

In spite of these reservations, the subsidy reduced the negative protection of value added for export resulting from higher Indian prices of iron and steel to a relatively minor level in 1967-1969. Particularly in 1969-1970, the major difficulty related to supply conditions for steel was not price but availability, except to the extent firms were able to resort to the open market for limited additional supplies. In fact, the scheme tended to reduce the effective price of steel _below_ the c.i.f. import price. The government intended the scheme as a means of providing steel to Indian exporters at the prices at which their competitors abroad could buy it, and hence the international price used was f.o.b. Europe rather than c.i.f. India.

After October 1969 the above scheme was no longer important because international prices rose above Indian control prices. However, in 1970 it was reported that $8 million of _imported_ steel would

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[1] GOI, EEPC, 1969a, p. 7.

be supplied to exporters of engineering goods "at JPC (control) prices irrespective of the landed cost, which is generally higher than home prices at present."[1]

Thus, in 1970 both Indian and imported mild steel were supplied to exporters of engineering goods at subsidized prices below the relevant international f.o.b. or c.i.f. prices. As noted below, however, exporters often faced considerable difficulties and delays in securing supplies.

b. Aluminum

In 1969 there were discussions between the government and producers to arrange for supply of aluminum at international prices for production of electric cables for export. Apparently this was put into operation on a limited scale late in 1969. During 1969 Madras Aluminium supplied $0.4 million of aluminum rods at concessional prices for production of ACSR conductors for export.

c. PVC Resin

In 1967 the Ministry of Commerce announced that indigenously produced PVC resin, PVC sheets, and polyethylene moulding powder would be supplied to exporters at international prices. In 1969 manufacturers of insulated cables reported that they were able to obtain PVC resin under this scheme, and NOCIL reported supplying $70,000 worth of PVC resin on these terms.

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[1] FE, 10 May 1970, p. 8.

d. Winding Wires

In 1967 manufacturers of winding wires agreed to give a price concession to manufacturers of electric equipment like fans, motors, and transformers for export. However, in 1969 a number of winding wire manufacturers were not giving the concession.

2. Priority Access to Rationed Domestic Materials for Export Production

Distribution of a number of domestically produced materials was subject to government controls, and the government set priorities and minimum quotas for allocation of such materials at control prices for export production. Because of excess demand for materials at control prices and high open market prices, to the extent that they were implemented these schemes were important export subsidies.

Prior to devaluation the government allocated 133 percent of the actual input of iron, mild steel, and tinplate for export production on a priority basis. In March 1966 the government announced that the following materials were to be supplied on a priority basis for export production: iron and steel, aluminum, cycle tires, tubes, and rims, natural and synthetic rubber, rayon tire cord, PVC and PVC resins, and polyethylene and polyethylene moulding powder. After devaluation in 1966 the government specified that iron and steel would be allocated for export production with priority second only to military requirements. It also specified minimum quotas of certain categories of steel that would be reserved exclusively for export production. The additional 33 percent allocation was eliminated at devaluation, however.

HSL reported that it supplied the following quantities of iron and steel against export priorities:[1]

Year	Pig Iron	Steel	('000 tons)
1967-68	2.4	20.3	
1968-69	5.6	62.4	
1969-70	27.7	93.9	
1970-71 (9 mo.)	15.6	118.0	

The figures for 1970-71 include imported steel allocated, evidently at Indian control prices and not requiring replenishment licenses, through HSL.

Comparison of the figures for 1969-70 to the EEPC's estimate that 75,000 tons of pig iron and 310,000 tons of mild steel were required for production of engineering goods for export in 1969-70[2] indicates that as much as one-third of the iron and steel used was obtained under the priority scheme from HSL, or perhaps half allowing for supplies from TISCO and IISCO.[3] Important exporters of cast iron spun pipes and steel tubes reported in 1969 that because of the scheme they secured larger allocations, faster deliveries, and in the case of pig iron, higher quality materials than were available for production for the domestic market.

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[1] FE, 4 March 1971, p. 4.

[2] GOI, EEPC, 1969 a, p. 1.

[3] This may be an overestimate, since the tonnage figures for HSL may include billets supplied to re-rollers for production of steel bars and rods for export. The latter exports are not included in the EEPC figures.

In 1967 the government allocated tires, tubes, and rims to bicycle exporters. In 1970 it reserved 11,000 tons of aluminum, about 7 percent of total output, for production of electric cables for export.

Given material supply constraints on production and high open market premia above control prices (see Table IV-5), such discrimination in favor of exports was an important export subsidy. It was probably a significant factor in shifting the allocation of resources from production of engineering goods for the domestic market to production for export, at least beginning in 1969-70.

However, while this priority scheme relaxed steel supply constraints for export production, iron and steel were not always available at control prices for export production. The EEPC and a number of producers reported that frequently iron and mild steel were not supplied on the basis of requirements for export production and that exporters were forced to buy steel in the open market and to reject orders, particularly between early 1969 and late 1970.

In 1968 a government report found that:

> The scheme for the allotment of indigenous raw materials and intermediates to export units on a priority basis has not been working satisfactorily. Many exporting units are stated to have complained that they were not getting timely supply of indigenous raw materials to execute export orders on schedule.[1]

One limit on the priority allocations of iron and steel was that they

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[1] GOI, LSS, 1968, p. 194. See also Iron and Steel Review, August 1967, p. 7, for a similar report.

applied only to so-called "scarce" categories, mainly flat products, and not to "non-scarce" categories, while in fact there were shortages of the latter as well. In addition, according to the EEPC, in the case of scarce categories:

> Although export orders are enjoying priority, the present system of allocating is defective. Orders are to be reported (to the Steel Priority Committee, which assigns priorities) at least two and a half months before the start of the half-yearly period for which priority is accorded. After getting priority, supplies are supposed to be available within six months. However, supplies have never been made in full during (the) six months for which the priority is given (i.e. 8 1/2 to 14 1/2 months after the original order)...There is always a heavy backlog before the supplies against new priority are taken up. There is no machinery to take care of urgent orders...Furthermore...while priority is given in...allotment, there is no priority...to...production...with the result that even the common categories are not available for export fabrication in time.[1]

In 1969 a manufacturer of transformers reported that although it received some supplies of steel plates at control prices, these were not supplied on the basis of exports and were not adequate to cover requirements for export. Consequently, it was forced to purchase steel in the open market for export production. Similarly, it was reported that:

> Although, in theory, there are provisions for the supply to wagon manufacturers of steel for execution of overseas orders, in many cases in practice punctual supplies are not

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[1]Capital, 15 January 1970, p. 86. Parentheses added. See also GOI, EEPC, HB, 1 May 1969, pp. 123-24. In 1970 the government announced some changes in the priority allocation system which may have improved supply conditions. The distinction between scarce and non-scarce categories was abolished and priority was to be assigned to all, priority was to be assigned every 3 instead of every 6 months, and priority was to apply to production as well as distribution. GOI, JPC, Bulletin, May-June 1970.

made, thus making it necessary for the manufacturers to purchase steel at a high price.[1]

According to the EEPC, exports of engineering goods would have been greater in 1969-70 and 1970-71 if steel had been readily available to exporters at the control prices or if imports had been allowed freely for export production. The EEPC stated that because of the delays in supply of steel and uncertainty about the future supply, execution of existing contracts was delayed and acceptance of new contracts was deterred. In fact, the EEPC argued that shortage of steel after early 1969 was the major explanation of the slow-down in the growth of exports of engineering goods in 1969-70.[2]

It was reported that:

> Shipments against the Burma orders of Rs. 80 lakhs ($1.07 million) should have started in June (1969). These orders were not executed in June because of the non-availability of fish-plate-quality billets. The Kuwait government's huge orders for transmission line towers remain unimplemented because of the steel famine. Some export contract holders cannot supply railway track materials owing to the critical shortage of billets. The execution of many other orders has been delayed for the same reason.[3]

Similarly, it was reported in April 1969 that "an engineering unit in Poona with a captive foundry has had to defer its exports owing to non-receipt of pig iron since December (1968),"[4] and it was reported that

[1]Engineering Times, 18 June 1970, p. 5.

[2]FE, 8 January 1971, p. 8.

[3]ABP, 10 July 1969, p. 1.

[4]FE, 16 April 1969.

in 1969-70 execution of TEXMACO's \$7.7 million contract for supply of railway wagons to Hungary was delayed by non-availability of steel.[1] It was reported that the cement machinery industry "is not able to export aggressively, despite some success in winning export orders, because of government's tardiness in making imports of, for example, boiler-quality plates available."[2]

Bharat Steel Tubes stated in 1970 that:

> Forty per cent of our capacity is lying idle...A good deal of this could go abroad...Selling in overseas markets has never been a major problem for us...It may sound odd that while we can sell more abroad we are not able to do so. Reason? Shortage of raw materials, (mild steel) strip and skelp.[3]

In the government distribution policy for hot rolled strips and skelp for 1970-71, 50,000 tons was allocated for production of tubes for export (compared to 100,000 tons used for export production in 1969-1970), to be "distributed to all exporters on the basis of their best average monthly exports over a continuous period of 12 months during the calendar years 1968 and 1969." There was no way to get additional domestic supplies of strips and skelp for export production, since the rest was allocated by end-use with prohibitions on redistribution, e.g. supplies allocated for production of tubes for the domestic market could not be shifted to production for export even by the same firm.[4]

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[1] Engineering Times, 8 October 1970, p. 5.

[2] EPW, 6 March 1971, p. 557. See also Commerce, 13 March 1971.

[3] FE, 5 April 1970, p. 7. See also ABP, 1 May 1969, and FE, 19 May 1970, p. 1, and 13 September 1970.

[4] GOI, JPC, Bulletin, May-June 1970, p. 9.

In spite of the shortage of domestically produced steel, import restrictions were not liberalized and no special provisions were made to allow import of mild steel for export production until 1970-71. Import of some categories of mild steel sheets and strips was allowed using import replenishment licenses, but for products for which supplies of steel were an important constraint on production, the replenishment rates were much lower than the actual steel requirement at c.i.f. prices, e.g. the replenishment rate was 5 percent of f.o.b. value on non-galvanized steel pipes, for which the c.i.f. import price of steel content was about two-thirds of the f.o.b. price of exports. In other cases import of the material was not even allowed under the replenishment licenses which were issued, e.g. pig iron in the case of exports of iron castings.

During 1970, $8 million of mild steel flat products was imported through HSL for production of engineering goods for export and in an important step in September 1970 the government announced that exporters could import the entire requirement of mild steel for production against confirmed export orders or half the mild steel requirements of exports made in 1969-70, whichever was greater. Evidently these imports were allowed without use of import replenishment licenses. If the EEPC's analysis of the role of steel shortages in 1969-70 was correct, this measure should have led to an expansion of engineering exports in 1971; at the time of writing, export data were not available. Imports were also liberalized for production for the domestic market, but to a lesser extent.

3. Import Replenishment Licenses

Licenses for maintenance imports were issued against exports of engineering goods under the import replenishment scheme, which was discussed in Chapter III.C.2. These licenses gave preferential access to tradable inputs for export production and hence reduced or eliminated several aspects of negative protection for export.

a. Free Foreign Exchange

Replenishment licenses allowed import of the direct current import content of exports in addition to imports allowed under other licenses, and these additional imports were allowed against free foreign exchange. This eliminated the supply constraint on direct current imported inputs and their excess cost under source-tied licenses.

b. Higher Import of Non-Banned Items

When an input was produced in India but import was not yet banned because of the limited domestic supply, the import replenishment scheme sometimes allowed import of the entire input requirement for export production while local procurement of some or all of the input was required for production for the domestic market.

This provision was most important for alloy and special steels. For example, while manufacturers of steel wire ropes were required to procure locally half the high carbon steel wire rods used for production for the domestic market, they could import the entire requirement for export production under the replenishment scheme. The situation was similar for bright steel bars and shaftings, steel-reinforced aluminum conductors, and hand, small, and cutting tools.

c. Permission to Import Banned Items

Exporters were permitted to import items which were banned for production for the domestic market in four situations.[1] First, the Ministry of Foreign Trade announced that:

> A component, which might be produced indigenously but was of substandard quality would be allowed to be imported if it went into the manufacture of a finished product meant for export.[2]

A manufacturer of bearings reported that under the replenishment scheme it was permitted to import small grinding wheels, which were ordinarily banned in spite of low quality of local supplies.

Second, import was allowed for export production when import was otherwise banned in spite of lack of domestic production in order to encourage use of a substitute available domestically or because the end-use was considered non-essential. Tire manufacturers were permitted to import nylon tire cord for export production while they were forced to use locally produced rayon tire cord for the domestic market, cable manufacturers were permitted to import copper and lead for use in place of indigenous aluminum and PVC, electric fan manufacturers

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[1]For announcements to this effect, see ABP, 24 December 1968; and GOI, EEPC, HB, 23 January 1969, p. 979, and 10 April 1969, p. 31.

[2]FE, 22 December 1968.

were permitted to import gadgets like time/speed switches not allowed for the domestic market, and a machinery manufacturer was permitted to import a particular type of temperature control because the foreign buyer insisted on it.

Third, without explaining the basis for doing so, the government permitted import of a number of inputs only under replenishment licenses issued against exports. (See Table III-10.)

Fourth, the government permitted import of machines in certain cases when they were necessary to produce goods to the specifications required in export markets. This was true of machinery for manufacture of certain parts for electric fans.

d. Residual Negative Protection

The import replenishment scheme reduced or eliminated certain important aspects of negative protection for export. It gave some industries virtually free access to imports of current tradable inputs for export production. However, for several reasons the schemes did not allow exporters to obtain all tradable inputs at the supply conditions in international markets.

First, the criterion of indigenous availability applied to clearances of imports for export production. Imports were permitted only when an item was not produced locally, when the quantity of local production was inadquate to meet the requirements of export production as well as production for the domestic market, or when local supplies were inferior in quality. Price differences were not a basis for permitting imports.[1] Furthermore, export products were not exempted from domestic content requirements or other regulations which encouraged or forced firms to develop local sources or their own captive facilities for virtually all components. As a result, apart from being allowed to import at most a relatively small number of parts for which local supplies were of low quality, exporters of assembled products were still required to make or procure components in India, regardless of price differentials. The percentage of items on the banned list whose import was allowed for export production was miniscule.

Second, imports of some important materials, including iron and steel, were restricted in spite of domestic shortages, and no special provisions were made to allow imports for export production (until 1970-71 in the case of steel) even though production and export evidently were constrained by their supply conditions.

Third, quality problems were not eliminated. Imports were not allowed in the case of some inputs for which complaints about quality were universal, e.g. foundry pig iron and grey iron castings. Although machine tool producers complained that the accessories made in India for their machines were low in quality and reported that "complaints have been received from our agents and customers abroad that the quality of accessories is not up to the quality of machines,"[2]

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[1]For the first time, the import trade control policy for 1971-72 explicitly contemplated licensing of imports when "the price (of the indigenous substitute) is too high to maintain the competitive strength of the export product." FE, 1 May 1971, p. 1.

[2]HMT, "Comments," August 1969, p. 5.

accessories were on the banned list during 1969 even for export production on the grounds of indigenous availability. Similarly, exporters of machine tools and bicycles received complaints from foreign customers about discoloration, cracking, and chipping of paint, which was also on the banned list. Steelsworth complained that import of vital stainless steel parts for tea-processing machines was banned in 1969-70 even for export production, although deliveries from the only local manufacturer were irregular and supplies were of undependable quality. Manufacturers of fans had similar complaints concerning bearings.

Fourth, the import replenishment licenses were generally given only after exports were shipped, and sometimes only after additional delays. There was a provision for issuing import licenses before production was undertaken in the case of firm export orders, but exporters reported difficulty in securing such advance licenses. Because of these problems of timing, imported materials had to be purchased at a premium in the open market, sales in the domestic market had to be deferred to produce for export, and firms declined export orders.

According to a press report, Zenith Steel Pipes

> ....is entitled to import zinc from preferential sources (i.e. from whatever source it prefers, against replenishment licenses) but the import licenses for zinc and spare parts have been unduly delayed with the result that the company has had to make purchases from indigenous sources at a very high cost.[1]

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[1] Capital, 24 July 1969, p. 149. Parenthesis added. See also Capital, 31 March 1966, p. 445.

The Textile Machinery Manufacturers' Association reported that after they booked an order from the UAR in 1969 for $6.3 million of textile machinery, its members applied for but did not receive licenses to import materials and components prior to export. To meet the contractual delivery date,

> ...the members used up their actual user licenses to meet export orders...Due to this, the home market was being starved as the necessary raw materials and components to meet the local demand were utilized for exports.[1]

Moreover, it reported that some members "had to refuse export orders due to uncertainty with regard to import of raw materials and components to meet contractual delivery periods."[2] Because materials could not be ordered at the time export contracts were made, exporters were forced to bear unnecessary risks with regard to their costs because of fluctuations in material prices in the world market. When international prices of materials were rising, as they were in 1969-70, materials could be replaced only at much higher prices than if licenses had been given at the time of production.

Fifth, permission to import banned items for export production was granted only after delays and liaison efforts by manufacturers.

Sixth, there were many individual cases where a restriction in licensing made it impossible to use replenishment licenses to secure a particular tradable input at the c.i.f. import price even though

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[1] FE, 16 January 1971, p. 10.

[2] Ibid., p. 8.

import was not banned. The tire industry complained that replenishment licenses for materials whose import was monopolized by the STC were valid only for purchase from the STC at prices above the minimum import price.[1] An exporter reported that when there was excess supply of indigenous zinc import was temporarily restricted even under the replenishment scheme for exporters to force firms to buy indigenous zinc at a price above that of imports. Manufacturers reported that, although stainless steel was not on the banned list and there was a domestic shortage:

> The present import policy...does not permit import of stainless steel against export of textile machinery, parts of which are manufactured out of stainless steel.[2]

Finally, there were no _general_ provisions for supply of capital goods for export production at the terms at which imports would have been available or for discrimination in supply conditiions for capital goods between export production and production for the domestic market. There was no relaxation in indigenous non-availability requirements, no refund of the 27.5 percent import tariff, and no relaxation of source-tying of licenses. Import licenses for capital goods were sometimes used as _ad hoc_ export incentives, and a limited share of replenishment licenses could be used to import capital goods, including ones required to produce parts to specifications for export. However, these special

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[1] _FE_, 6 October 1970, p. 8.

[2] Association of Merchants and Manufacturers of Textile Stores and Machinery, _Commerce_, 5 December 1970, p. vii. See also _FE_, 17 January 1971.

provisions for exporters were limited and *ad hoc* and bore no rational or consistent relation to the capital goods requirements of export production.

4. Effective Protection of Value Added for Export

The rate of effective protection of value added for export depends on the extent of negative protection discussed in the present chapter and the extent of subsidization discussed in Chapter III.C. The usual formula for the rate of effective protection has limited usefulness since the only aspect of material supply conditions which enters the calculation is the difference between costs at which tradable inputs are procured or produced indigenously and their c.i.f. import prices. In fact, indirect effects of material supply problems on costs, especially because of lower utilization of capacity and higher inventories, may be greater than the direct effect of higher prices of materials. Moreover, while calculations of effective protection emphasize current inputs, many of the problems faced by Indian firms relate to capital goods. If the purpose of the calculations is to determine the effect of government policies influencing supply conditions for tradable inputs on the allocation of resources and on the real cost of foreign exchange earned by export, such problems are as relevant as higher prices of current inputs.

A further difficulty arises because it has not been possible to quantify the subsidy value of all the preferences given to exporters. Preferences given to firms exporting a small share of output could have a greater subsidy value than cash subsidies and import replenishment licenses. However, since all preferences given were available to firms exporting 10-25 percent of output, it is possible to avoid this problem by confining the discussion to the rate of effective protection which would apply at the margin for firms exporting over 25 percent of output.

In order to calculate the higher cost of tradable inputs in India, inputs can be divided into three groups: imported inputs, indigenously produced inputs purchased in India, and value added in India by vertically integrated firms producing their own tradable inputs. Considering only current inputs used directly by the firm, imported inputs and certain indigenously produced purchased materials including iron and mild steel were available to exporters at international prices, with the reservations noted above. As a result, it can be concluded that after allowing for cash subsidies and the "net" subsidy value of the import replenishment scheme (e.g. the value of licenses permitting imports beyond the actual import content of exports) there was positive effective protection of value added for export in the first eleven industries listed in Table II-1 with the exception of aluminum ingots. The calculation for these industries is simple because they were able to secure their main inputs either by import or in India at international prices and because they do not depend on ancillary suppliers for parts.

The situation is much more complex for the remaining items, which include a number of assembled products. Many of these relied on parts purchased in India or produced the parts themselves at costs above the c.i.f. price of imports. The motor vehicle industry provides a useful example because of its heavy dependence on ancillary suppliers and also on many alloy steels which were not supplied to exporters at international prices. Krueger presents data on the ratio between the domestic ex-factory price and Indian f.o.b. export price and on the rate of effective protection for the domestic market for five motor vehicle producers.[1] Assuming that at international prices value added was half of the f.o.b. value of exports, from this data it can be inferred that the excess of procurement costs over the c.i.f. import prices for current tradable inputs for five producers was 25, 28, 38, 40, and 60 percent of the f.o.b. value of exports respectively.

In the period 1968-1969 to which these data apply, exporters of motor vehicles received a cash subsidy of 17.5 percent of the f.o.b. value of exports, an import replenishment license with a cash value of about 10 percent of f.o.b. value, and a subsidy of steel costs and refund of indirect taxes which together were probably about 10 percent of f.o.b. value. The value of export subsidies therefore was between 35 and 40 percent of f.o.b. value.

It can be concluded that for the first four producers the rate of effective protection of value added for export was between zero and

[1]Krueger, 1970, p. 110.

10 percent of f.o.b. value or roughly zero to 20 percent of value added. For the last producer, the rate of effective protection was negative.

These calculations do not allow for cases where the producers of motor vehicles manufactured tradable inputs themselves at a cost greater than the c.i.f. price of imports as a result of the government's import licensing policy. Moreover, none of these calculations allow for factors other than higher prices of current inputs, e.g. quality problems, underutilized capacity because of material shortages, high inventory requirements, or problems associated with the supply of capital goods, or for problems collecting export subsidies. It seems quite likely that if effective protection is defined to include all these, the rate of effective protection of value added for export was negative for motor vehicles and a significant number of other industries in the case of exports beyond 10-25 percent of output if not for the first 10-25 percent as well.

CHAPTER V

DESIGN PROBLEMS

This chapter examines the following questions concerning the designs of engineering goods produced in India in the 1960s: (i) whether the designs were the most efficient ones available for the industries concerned from the point of view of minimizing the domestic resource cost of foreign exchange earned by export; (ii) whether the designs were more efficient for export to developing countries than those of products manufactured by competitors in developed countries; (iii) whether the designs were modified to increase the profitability of export; and (iv) whether government policies reduced the incentive or ability of firms to secure the best available foreign designs, to adopt subsequent design improvements made abroad, to adapt designs to local conditions and undertake other indigenous designing activities, or to modify designs for export. The chapter begins with a review of the sources of Indian designs.

Since problems of design do not arise for commodity-like products, the chapter is restricted to machinery, including capital and consumer goods. Special emphasis is given to machine tools. The industries considered in detail were almost all among India's major exporters of engineering goods at the end of the 1960s (see Table II-17), and the firms were among the largest producers and exporters in these industries (see Table II-18).

A. Sources of Designs

This section reviews the roles of indigenous designing and foreign technical collaboration as sources of designs. Background data on foreign investment and technical collaboration were presented in Chapter II.D.

1. Indigenous Designing

A 1967 government-sponsored report states:

> The twin aspects of research and development and of design and engineering underscore an important deficiency in our industrial development plans. We have till now placed emphasis on the physical appurtenances of the productive apparatus such as factory building, civil works, plant and machinery, operating personnel, raw materials, components, etc. But we have not paid adequate attention to the 'back room' personnel--in the laboratories and in the drawing and design offices.[1]

Although Indian companies produced a wide range of machinery with little direct import of components, their involvement with not only basic research but applied designing was very limited. Moreover, while there were two government institutes concerned with research in mechanical engineering, they were allocated few resources and their impact on commercial production was very small.

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[1] GOI, MIDCA, 1967, pp. 12-13.

a. Designing Activity of Manufacturing Firms

Kidron reports that:

> While there are some firms which find it necessary to adapt their products or methods to local needs, and so undertake a modicum of development research, this is usually done on a modest scale if at all and for strictly limited ends. Fundamental research and major developments in the private sector are, with perhaps the sole exception of Tata, a foreign responsibility.[1]

With few exceptions, at the end of the 1960s Indian companies producing mechanical, electrical, and transport equipment did virtually no original designing, and even imitative designing was limited in scope. Apart from simple products, they depended almost entirely on foreign collaboration for initial designs and subsequent improvements. There was not only little effort to develop indigenous designs rather than rely on foreign collaboration but little adaptation and improvement of the foreign designs which were used. This was true even for large firms with more than a decade of production experience and in major industries such as stationary diesel engines and cotton textile machinery.[2] Many large firms had what they called a development department, but their activities were typically limited to the following:[3]

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[1]Kidron, 1965, p. 287. At the end of the 1960s, TELCO, which was the largest producer of engineering goods, probably had the largest program for research and development.

[2]See, for example, GOI, MIDCA, 1969, p. 21 (cement machinery) and p. 64; GOI, MIDCA, 1968b, Textile Machinery, p. 19; Metallurgical Equipment, p. 38; Electric Power Equipment, p. 27; Agricultural Machinery, Diesel Engines, p. 5.

[3]See also the discussion of Baranson's 1970 survey of design modifications in part V.C.

(i) Because of the import restrictions discussed in Chapter IV, they did what was necessary to increase the indigenous content of products manufactured under foreign collaboration. The departments concentrated on finding, and if necessary developing, local suppliers of materials and components to replace imports, testing local supplies, and investigating the use of indigenous substitutes for imported materials with different specifications. These activities were aimed not at design improvement but at procurement problems created by government import restrictions, although changes in designs or material specifications were sometimes required to overcome these procurement problems.

(ii) They designed fittings and other secondary items required for specific applications of products manufactured to designs secured under foreign collaboration, largely as a matter of customer service.

(iii) In industries which manufactured products against individual orders, including structural engineering and heavy equipment and special-purpose machine tools, there was local designing and engineering, although foreign engineering consulting firms were often used.

Both (ii) and (iii) were necessary to sell machinery involving unique individual applications.[1] For general-purpose equipment there was no comparable designing activity.

Nevertheless, a significant minority of Indian output of machinery was manufactured without foreign collaboration. Although there

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[1]For a related account of project engineering in Brazil which notes that "imported and domestic know-how have been complementary rather than competitive," see Leff, 1968, pp. 91-92.

were exceptions, one can make the following generalizations about these "indigenously designed" products:

(a) They were generally close if not identical copies of products which were previously imported. Designing involved imitation, not innovation or adaptation to local conditions.

(b) They were relatively simple products which did not require advanced manufacturing techniques. They were used mainly by consumers, farmers, workshops and small producers, or technical schools and seldom included items like production machinery used by large firms, motor vehicles and ancillary items used as original equipment, or electronics. They were limited to items like sewing machines and fans, small stationary diesel engines, small machine tools like lathes and drilling machines, and items simpler than these.

(c) Because of (a) and (b), there were few engineering products manufactured in India without foreign collaboration which were not produced in advanced countries a decade or two earlier. With regard to the machine tools produced in the early 1950s, a chief engineer of HMT reported that "among machine tool builders, none had any design office worth the name in the post-Independence period. Most of them had pre-war designs of machines, mostly of English origin."[1] It was reported by the Central Mechanical Engineering Research Institute that prior to its own work, most efforts to produce cable-making machinery without foreign collaboration "have been in the way of copying existing

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[1] Machine Tool Engineer, April-June 1968, p. 20.

machines. These local efforts have suffered from the fact that only simpler and older types of machines have been manufactured."[1] There were a large number of small workshops, particularly in the Punjab, which manufactured engineering goods of the type described without foreign collaboration and with a total annual turnover of $100,000 or considerably less. According to the chairman of the Indian Machine Tools Development Council:

> Whilst the larger machine tool units in the industry can afford to buy sophisticated designs and technical know-how from foreign countries, the small units, with their limited resources, have restricted their production activity to copying of imported machines. Some of these are old in design, and...their productivity is poor.[2]

In the organized sector, production without foreign licenses was most common in firms which began production of engineering goods prior to the first plan without foreign equity participation. It was common for large firms manufacturing such products to manufacture other more complicated goods with foreign collaboration.

There was little evidence that development of production was accompanied by an increase in designing. Much of the imitative design activity occurred in the early phase of import substitution before the second plan. As import substitution moved to more complicated products in the second plan, firms no longer copied imported goods on their own. Indigenous designing played a negligible role in the diversification of

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[1] India in Industries, March 1967, pp. 29-30.

[2] Central Machine Tool Institute, 1966, p. 7.

Indian engineering industries after the mid-1950's, even at firms which started by imitating foreign products.[1] Furthermore, foreign collaboration agreements seldom included provisions for assistance in establishing design facilities at Indian firms. Typically when foreign collaboration agreements expired, firms applied for renewal or for collaboration with another firm on the grounds that they wanted to extent their product range, and such applications were generally approved.

Even at firms which engaged in designing, products manufactured without foreign collaboration accounted for a relatively small share of output. In 1968-69, less than 10 percent of output at HMT and 6 percent of output at Bharat Electronics was accounted for by indigenously designed products.[2]

Not all Indian companies engaged in even the limited design activity described above; many did no designing. In the machine tool industry, this seems to have been particularly true of firms set up during the third plan to manufacture a limited range of products with substantial foreign equity participation and production capacity under $1.5 million per year.

The available data confirm that expenditures on research and development, including a number of activities besides designing, by Indian manufacturing firms were very low. A 1964 study reported that about 50 percent of the chemical and metalworking firms in India spent

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[1]Compare the situation in Brazil described in Leff, 1968, pp. 19, 90-91, 97-99.

[2]<u>EE</u>, 16 January 1970, p. 117. The situation at HMT is discussed below.

nothing on research, about 25 percent spent less than 0.1 percent of turnover, and the remaining 25 percent spent an average of 0.25 percent of turnover. The study concluded that the average R & D expenditure of Indian industry did not exceed 0.1 percent of turnover.[1] According to a 1970 report by the Committee on Science and Technology, "the private contribution to R & D is small and is estimated at about 0.2 percent of the turnover of industry."[2] In the case of firms with foreign licenses, Kapoor reports the findings of a 1965 survey:

> There is hardly any R & D activity by Indian licensees. Less than 5 per cent of the respondents (licensees) claimed to be engaged in any development activity while not even 2 per cent were engaged in research....The 5 per cent of the respondents engaged in some form of R & D activity are the large companies with an industrial background...Though 5 per cent of the respondents are engaged in some sort of R & D, even these licensees became nearly completely dependent on the licensors' R & D in the licensed area.[3]

D. Designing Activity at HMT

HMT was one of the relatively few Indian manufacturers of engineering goods, and the only machine tool company, which had a significant design program for general-purpose equipment. In 1968, HMT reported that about 250 engineers and draughtsmen were engaged in

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[1] ESRF, 1964.

[2] Reported in Commerce, 19 December 1970, p. 1272, which states that the amount spent by industry on R & D was $17 million excluding capital expenditures in 1969-70. According to the head of the Council of Scientific and Industrial Research, R & D expenditures by industry in 1967 were $3.3 million. (FE, 16 December 1970, p. 7.) Apparently these reports cover all manufacturing.

[3] Kapoor, 1968, pp. 30-31, based on results of a Council of Scientific and Industrial Research survey of Indian industrial establishments reported in ET, 30 June 1965, p. 10, and 1 August 1965.

designing new machines, improving existing ones, and converting and following up license designs. About 100 of these were working on special-purpose machines and related problems at the Hyderabad unit while 105 were at the Bangalore design center for general-purpose machines. HMT reported an annual budget for current expenditures on development activities of about $135,000, or somewhat less than 1 percent of its turnover.

Initially in the 1950s HMT's design activities were limited to follow-up work connected with machines produced under collaboration. After establishing production of three machine families (H22 lathes, M milling machines, and RM radial drills) under foreign collaboration in 1956-58, a simpler lathe with many components in common with the H22 lathe was designed at HMT. Another simplified lathe was designed at HMT by an engineer sent by a foreign collaborator. However, instead of using these designs, HMT entered a new foreign collaboration for LB lathes, which were produced in 1959.

In 1959-60 an engineer from a foreign collaborator designed a pre-selection turret lathe (L22TP). The first product designed at HMT which was put into commercial production, it was initially marketed in 1962-63, subsequently withdrawn because of defects, redesigned, and finally marketed successfully.

The technical staff in design and development increased from 20 in 1960 to 100 in 1962, and HMT organized a training program for designers and sent a number of engineers abroad to collaborators' factories for training in designing. During 1961-65, HMT designed standardized drives for its machine tools and designed 13 machines.[1]

However, a number of these designs (the last six) were dropped before prototypes were built, and HMT later entered a foreign collaboration for horizontal boring machines. Progress from the design stage to commercial production on the others was slow. It was only in 1965-1966 that HMT set up a separate workshop for manufacture of prototypes. By 1968, only three (E2, Z35, and FB) had been produced commercially. By 1969, two more (a redesigned GT20 and Z14) were marketed. As of 1969, the two others (R78 and VTM) were still in the prototype stage.

In addition to these early designs, after 1965 HMT designed a heavy-duty lathe (L45), a small cylindrical grinding machine (G9), and a ram-turret milling machine (M1TR), all of which were scheduled to go into commercial production in 1969-70.

Apart from developing its own designs, HMT expanded on the range of machines produced under collaboration, including the H26 lathe in 1968 (a larger version of the H22) and the M2P and M2EP milling machines in 1968 (simplified versions of the M2). HMT also redesigned a few of its older machines, the M, G, and L22 series, to improve their export potential. Finally, HMT was developing a horizontal boring machine (AZ9) jointly with Pegard of Belgium.

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[1]The machines designed were: carbide tool grinding and lapping machine (GT20), fine boring machine (FB), short-piece turning machine (Z14), heavy duty radial drill (R78), multi-spindle drilling machine (Z35), electrically controlled knee-type milling machine (E2), vertical copying machine (VTM), bed-type milling machine, duplex milling machine, plano-milling machine, facing and centering machine, horizontal boring machine (Z41), and center lathe.

In spite of its designing efforts, at the end of the 1960s production to its own designs (excluding the improved M and G machines originally produced under foreign collaboration) accounted for less than 10 percent of HMT's output, which was heavily concentrated in the products licensed in the 1950s. Between 1957 and 1968, HMT made 19 foreign collaboration agreements for machine tools. (See Table VII-5.) In most cases, the machine tools designed at HMT belonged to categories already produced by it under collaboration. While a number of the machines designed at HMT were not simple compared to the machine tools produced by other Indian firms, they were all relatively simple by international standards and did not exceed in complexity the machines already produced at HMT under collaboration. Moreover, they involved no innovations or design features not found on machines produced in advanced countries.

Thus, in 1966 HMT noted that "notwithstanding our efforts to develop indigenous designs, there is still a vast area in which we have to depend on foreign know-how,"[1] and at the end of 1968 HMT reported that it did not have the know-how to develop its own designs for machine tools of types it had not produced, at least within a reasonable period of time. It almost invariably secured designs of different categories and more sophisticated machine tools by collaboration, e.g. presses, automatic lathes, and broaching machines, and it relied exclusively on collaboration to diversify into production of

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[1]HMT, AR 1965-66, p. 12.

wrist watches, tractors, printing presses, and die-casting machines.

C. Government-Sponsored Designing Activity

Little scientific research was done at Indian universities, and very little of this was applied or technological.[1] Rather than support university research, the Indian government supported a very limited program of industrial research and development by a system of national laboratories. There was a great deal of criticism of this research on the grounds that there was little contact between the laboratories and industrial firms, that the laboratories did little applied research, that there were almost no government facilities for proceding from laboratory research to commercial production, and that the results of research in the laboratories were seldom put into commercial production.

An ESRF study estimated that the total value of industrial production in 1963-64 based on know-how and designs provided by the national laboratories in over a decade was about $11 million, or about 0.1-0.2 percent of the total.[2] In 1968-69, 47 products with a total value of slightly under $1 million were manufactured on the basis of know-how from the National Chemical Laboratory, the oldest of the laboratories.[3]

According to the director of CMERI, the national laboratory concerned with mechanical engineering, government expenditure for

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[1] See Shils, 1970, pp. 186-92.

[2] ESRF, 1964.

[3] ET, 22 December 1969, p. 4.

research on mechanical engineering during the third plan totalled less than $6 million.[1] He stated:

> Far too little research and development expenditure is allocated in India's planned economy, the result is our near total dependence on foreign technical know-how and collaborations....The Planning Commission has pointed out that Rs 250 crores were actually spent on research during the Third Plan period...Then why no measurable contribution to the Indian economy?...Out of a total spending of Rs 250 crores on research during the Third Plan, the mechanical engineering research and developments received a mere 1.6 per cent allocation...We can, therefore, readily see why Indian process know-how and scientific innovations are not utilised by Indian industry.[2]

(1) Central Machine Tool Institute

The CMTI was set up by the government in 1962 with financial and technical assistance from Czechoslovakia and moved into its own buildings in 1965. It was set up with a $1 million grant from Czechoslovakia, and the Indian government allocated $3 million to expand it in the fourth plan.

The CMTI designed a number of relatively simple machine tools, attachments, and components, built and tested prototypes, and licensed their commercial production at manufacturing firms. Except for two items licensed to HMT, none of these were licensed to the top half dozen Indian machine tool manufacturers, and at the end of the 1960s the value of output produced under license from CMTI was a negligible fraction (certainly less than 1 percent) of the output of the industry.

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[1]Apparently this figure refers to the budget of CMERI.

[2]India in Industries, March 1967, pp. 26-27.

The CMTI tested existing machines and prototypes of new ones for a few firms and suggested modifications, and it redesigned the drive of a planing machine and the rocker arm of a shaping machine. It developed the prototype of a simple tape-input, 3-axis program-control unit which could be fitted to milling machines, and it was developing a simple digital readout system to permit accurate measurement of machine movements.

In 1969 the CMTI's design and testing facilities were utilized to only 30 percent of capacity by the machine tool industry. Many firms in each size group did not use the facilities, even though they did not have comparable facilities of their own and even though charges were nominal. The payments made for licenses of CMTI designs covered only 30 percent of the costs of developing the designs and building a prototype. CMTI thus had little success in associating manufacturers with its designing activities or getting them to use its designs. By late 1969 CMTI had decided that to prove the feasibility of using its designs it would undertake small-scale commercial production of the items it designed in the hope that regular manufacturers would eventually decide to license production, and that the CMTI would produce some of the difficult parts until the manufacturer could produce them itself.

(2) Central Mechanical Engineering Research Institute

The CMERI was established in 1958 as the main national laboratory concerned with research in mechanical engineering other than machine tools, and its first laboratory buildings were completed in 1963. With a staff of 600 in 1966-67 and a budget on the order of $1 million per year, it was a good deal larger than the CMTI, but it had a number of the same problems.

It successfully collaborated with a few Indian machinery manufacturers for development of machines. Its major project was design of several cable-making machines in collaboration with machinery manufacturers and Hindustan Cables, a public sector cable manufacturer which agreed to buy the first machines. However, only one cable producer collaborated on this project, and in general the CMERI did not find firms interested in its design activities even though it did not charge the entire development costs on its projects. In 1969 HMT rejected CMERI's design and prototype for a 20 h.p. tractor in favor of Czech collaboration. The major interest which firms had in CMERI was not in designing but in solving the problems of local procurement involved in reducing import content of machines produced under foreign collaboration.

2. <u>Foreign Collaboration</u>

The preceding review of indigenous design activity showed that, from the second plan, indigenous designing played a negligible role in the diversification of production of engineering goods, which was heavily dependent on foreign technical collaboration. This is supported by the data in Table II-13 on the number of foreign collaboration agreements approved by the government. This situation reflected, on the supply side, a permissive government attitude toward foreign technical collaboration until the late 1960s. According to the report of the Dutt Committee, during the period 1956-1965:

> In many cases collaborations have been permitted without adequate justification. Because of the advantage that the foreign brand names provide...many firms have been interested in obtaining collaborations even in areas of production where no great advantage by way of obtaining technical know-how was to be gained...These include loud-speakers, toys, sports goods, spectacle hinges, snap fasterners, ball point pens, vacuum flasks, crockery, lipsticks and other cosmetics, toothpaste and ready-made garments...Even repetitive collaborations are allowed...They are also permitted to be renewed.
>
> To give a few examples about repetitive collaborations in terms of numbers, we find that 56 collaborations were approved in the field of textile finishing, printing and dyeing, 23 for cranes, 18 for electric motors and capacitors, 17 for transformers and house service meters, 16 for foundries and 15 each for transistors and cement mill machinery....The examples given by us are adequate to indicate the prevalence of repetitive collaborations in a number of products, some of them entered into at different points of time and even years after the industry was first established in the country....We are not certain that the differences in the technologies imported are so important as to justify the high cost involved in repetitive collaborations.
>
> A list of approximately similar products in which production seems to be carried on both by firms who have foreign collaborations and by those who have not suggests that foreign collaborations are permitted in areas where it is not always necessary for developing the particular line of production. (The report lists 73 such items produced in 1966 including bicycles, electric fans, electric motors, radios, domestic refrigerators, steel furniture, razor blades, vacuum flasks, umbrella ribs, zip fasteners, etc.)[1]

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[1]GOI, MIDITCA, 1969, Main Report, pp. 125, 130-32.

3. Origin of Machine Tool Designs

Table V-1 shows the sources of designs of machine tools produced in India in 1969 broken down by company and machine type. All companies which had foreign technical collaboration or output of $0.25 million per year are listed separately while the rest are grouped together as "miscellaneous small companies without collaboration." The latter accounted for on the order of 15 percent of the output of the industry.[1]

4. Preferences for Foreign Collaboration

Firms reported several reasons that they found it profitable to rely on foreign collaboration rather than indigenous designing:

(i) Time: Foreign collaboration eliminated the lead-time for designing and testing and made it possible to start production using imported components before domestic suppliers were established. In machinery industries the lead-time required for domestic designing often would have been at least three years.

(ii) Risk: Indigenous designing expenditures might not have led to a commercially acceptable product, but the foreign designs had been commercially tested abroad and in India through imports.

(iii) Marketing: Because foreign designs and brand names were known in India and there was allegedly a general customer preference for

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[1]In 1969 an industry spokesman estimated that output of small machine tool units was $4 to $5 million per year. See IEA, HS 1969-1970, p. 64.

TABLE V -1

Sources of Designs of Machine Tools Produced in 1968

	Column Σ	Miscellaneous small companies without collaboration	Batala Engineering (c) Bajaj n.a.	Batliboi n.a. n.a.
Company scale		small	medium	medium
Row Σ	I F	I	I F	I F
I. Metalcutting				
A. Lathes				
engine	I F	I	I F(1961,It)	
capstan, turret	I F	I		
automatic				
single-spindle	I F			
multi-spindle	F			
copying	F			
roll-turning	F			
B. Drilling				
Bench, pillar	I F	I		
column	I F			
radial	I F	I		F(Cz)
multi-spindle	F			
tapping	I	I		
C. Grinding				
double-ended, tool-cutter	I F	I		
surface	I F	I		
cylindrical	I F	I		
crankshaft	F			
lapping	F			
polishing	I	I		
D. Milling				
ram-turret	I F			
knee (mech)	I F	I		I
knee (elect)	I F			F(Cz)
simplex, duplex	F			
E. Reciprocating				
shaping	I F	I		I
slotting	I F	I		
planing	I F	I	I F(1961,It)	
F. Boring				
horizontal boring/milling	F			
fine boring	I F			
G. Other				
hacksaw	I	I		
threading	I F	I		
vertical turret lathe	F			
gear-cutting	F			
broaching	F			
facing and centering	F			

TABLE V -1 (continued)

Company scale	Row Σ	Bharat Fritz Werner (c) Birla 45% W.Ger n.a. large F	B.S.Machine Tools n.a. n.a. medium F	Cooper Engg. (c) Walchand 1935 large ** I F	Ex-Cell-O India (b) 80% US 1958 medium F
I. Metalcutting					
A. Lathes					
engine					
capstan, turret					
automatic					
single-spindle					
multi-spindle					
copying					
roll-turning					
B. Drilling					
bench, pillar					
column					
radial					
multi-spindle					F
tapping					
C. Grinding					
double-ended, tool-cutter					F (1959, US)
surface					F (1960, US)
cylindrical					
crankshaft					
lapping					F (1960, US)
polishing					
D. Milling					
ram-turret					F (1960, US)
knee (mech)		F (1961, WG)	F (Dk)		
knee (elect)					
simplex, duplex					F
E. Reciprocating					
shaping				I (1966)	
slotting				F (1959, Cz)	
planing				F (1958, UK)	
F. Boring					
horizontal boring/milling					F (1959, US)
fine boring					
G. Other					
hacksaw					
threading					F
vertical turret lathe				F (1961, WG)	
gear-cutting				F (1966, WG)	
broaching					
facing and centering					

TABLE V-1 (continued)

	Gedee Weiler some W.Ger. n.a.	Harig Malik some US n.a.	Heavy Engg. Corp. (a) Govt. 1966	Hindustan Machine Tools (a) Government 1956	
Company scale	small	small	very large	very large	
Row Σ	F	F	F	I	F
I. Metalcutting					
A. Lathes					
engine	F* (WG)		F (Cz)	I	F (1957,Sz;1959,Fr)
capstan, turret	F (WG)			I	F* (1966,WG)
automatic					
single-spindle					F* (1964,Fr;1966,Fr)
multi-spindle					F* (1966,WG)
copying					F (1966,Fr)
roll-turning			F* (Cz)		
B. Drilling					
bench, pillar					
column					
radial			F (Cz)	I*	F (1958,WG)
multi-spindle				X	
tapping					
C. Grinding					
double-ended, tool-cutter				I	
surface		F (US)			F* (1961,EG)
cylindrical				I	F (1959,It)
crankshaft					
lapping					
polishing					
D. Milling					
ram-turret				I	
knee (mech)	F* (WG)			I	F (1957,WG)
knee (elect)				I	F (1963,WG)
simplex, duplex					
E. Reciprocating					
shaping					
slotting					
planing			F (Cz)		
F. Boring					
horizontal boring/milling			F* (Cz)		F* (1967,Belg)
fine boring				I	
G. Other					
hacksaw					
threading					
vertical turret lathe					
gear-cutting					F (1963,UK;1964,WG)
broaching					F* (1967,WG]
facing and centering					

TABLE V'-1 (continued)

	Industrial Plants n.a. 1962	Kerry Jost Tools 30% UK 1962	Kirloskar Brothers (c) Kirloskar 1935	Machine Tool Corporation (a) Govt 1970
Company scale	medium-large	small	medium**	very large
Row Σ	F	F	I F	F
I. Metalcutting				
A. Lathes				
engine				
capstan, turret	F (1962, J)			
automatic				
single-spindle				
multi-spindle				
copying				
roll-turning				
B. Drilling				
bench, pillar		F (1962, UK)	I	
column				
radial				
multi-spindle		F (1962, UK)		
tapping				
C. Grinding				
double-ended, tool-cutter				F* (1969, Cz)
surface				F* (1969, Cz)
cylindrical				
crankshaft				F* (1969, Cz)
lapping				
polishing				
D. Milling				
ram-turret				
knee (mech)				
knee (elect)				
simplex, duplex				
E. Reciprocating				
shaping			F (1963, UK)	
slotting				
planing			F (1963, UK)	
F. Boring				
horizontal boring/milling				
fine boring				
G. Other				
hacksaw		F (UK)		
threading				
vertical turret lathe			F (1959, US)	
gear-cutting				
broaching				
facing and centering				

TABLE V -1 (continued)

	Machine Tools Prototype Factory (a)Govt 1952	Madras Mach. Tool Manuf. n.a. 1957	Mapa n.a. n.a.	Mysore Kirloskar (c)Kirloskar 1935/1940
Company scale	medium-large	small	small	very large
Row Σ	I	X	F	I F
I. Metalcutting				
A. Lathes				
engine	I(1952)	X(1957-61)		I
capstan,turret	I(1952)			F(1955-60,UK)
automatic				
single-spindle	I			F(1960-63,UK)
multi-spindle				
copying				F(US)
roll-turning				
B. Drilling				
bench,pillar				
column				
radial				
multi-spindle				
tapping				
C. Grinding				
double-ended, tool-cutter	I(1952)		F	
surface	I(1952)			
cylindrical				F
crankshaft				
lapping				
polishing				
D. Milling				
ram-turret				
knee (mech)				
knee (elect)				
simplex,duplex				
E. Reciprocating				
shaping				
slotting				
planing				
F. Boring				
horizontal boring/milling				
fine boring				
G. Other				
hacksaw				I
threading				F*
vertical turret lathe				
gear-cutting				
broaching				
facing and centering				

TABLE V -1 (continued)

	Naokhali Mach.Tools n.a. n.a.	NSIC Indo-Ger. Prototype Prod.& Training Centre (a) Govt. 1963	New Stand. Engg. n.a. n.a.		Oriental Elect. n.a. n.a.
Company scale	small	small	medium**		small
Row Σ	F	F	I	F	F
I. Metalcutting					
A. Lathes					
engine	F(1960)	F(WG)			
capstan,turret					
automatic					
single-spindle					
multi-spindle					
copying					
roll-turning					
B. Drilling					
bench,pillar			I(1957)		
column					
radial					F(1961,UK)
multi-spindle					
tapping					
C. Grinding					
double-ended tool-cutter		F(WG)			
surface					
cylindrical					
crankshaft					
lapping					
polishing					
D. Milling					
ram-turret					
knee (mech)		F(WG)			
knee (elect)					
simplex,duplex					
E. Reciprocating					
shaping					
slotting					
planing					
F. Boring					
horizontal boring/milling					
fine boring					
G. Other					
hacksaw			I(1959)		
threading				F(1962,UK)	
vertical turret lathe					
gear-cutting					
broaching					
facing and centering					

TABLE V -1 (continued)

Company scale / Row Σ	Praga Tools (a) Govt 1942 medium-large I F	P.S.G.Ind. Institute n.a. n.a. small X	Sant Engg. Works n.a. n.a. small F	TELCO (c) Tata 1940s medium** I
I. Metalcutting				
A. Lathes				
engine	I(1952)	X(1956)		
capstan, turret				
automatic				
single-spindle				
multi-spindle				
copying	F*			
roll-turning				
B. Drilling				
bench, pillar	I(1952)			
column	F(UK)			I(1968)
radial		X(1956)		
multi-spindle				
tapping				
C. Grinding				
double-ended, tool-cutter	F(1962,UK)			
surface	F(UK)			
cylindrical				
crankshaft				
lapping				
polishing				
D. Milling				
ram-turret				
knee (mech)				
knee (elect)	F			
simplex, duplex				
E. Reciprocating				
shaping				
slotting				
planing			F	
F. Boring				
horizontal boring/milling				
fine boring				
G. Other				
hacksaw				
threading				
vertical turret lathe				
gear-cutting				
broaching				
facing and centering				

TABLE V -1 (continued)

Company scale Row Σ	TEXMACO (c) Birla n.a. medium** F	Traub India (b) 60% WGer 1960/64 medium-large F
I. Metalcutting		
A. Lathes		
engine		
capstan,turret	F(1959,UK)	
automatic		
single-spindle		F(1960,WG)
multi-spindle		
copying		
roll-turning		
B. Drilling		
bench,pillar		
column		
radial		
multi-spindle		
tapping		
C. Grinding		
double-ended tool-cutter		
surface		
cylindrical		
crankshaft		
lapping		
polishing		
D. Milling		
ram-turret		
knee (mech)		
knee (elect)		
simplex,duplex		
E. Reciprocating		
shaping		
slotting		
planing		
F. Boring		
horizontal		
boring/milling		
fine boring		
G. Other		
hacksaw		
threading		
vertical turret lathe		
gear-cutting		
broaching		
facing and centering		

TABLE V -1 (continued)

	Column Σ	Miscell. small cos. without collab.	Ameteep n.a. n.a.	Godrej & Boyce (d) Ind. n.a.	Heavy Eng.Corp. (c) Govt. 1966	Hindustan Mach. Tools (a) Govt 1956	KCP n.a. 1960	New Bemco n.a. n.a.	New Standard Engineering n.a. n.a.
Company scale			medium	medium**	very large	very large	small**	small	medium**
Row Σ		I	F	I	F	F	F	F	I F
II. Metalforming									
power presses	I F	I	F(J)	I(1956)		F(1967,US)	F	F(1960,WG)	
press brakes	I F	I	F(EG)	I(1956)		F(1967,US)	F		
bending and straightening rolls	I F	I					F		I(1958)
guillotine shearing	I F	I	F(EG)	I(1956/61)		F*(1967,US)	F		
nibbling	I	I							I
punching, splitting, shearing	F								
plate-edge planing	F	I			F(Cz)				
forging hammer	I F								F(1959-60,UK)
III. Special-purpose, custom-made									
lathes	I								
fine boring	F								
presses	F							F	
multi-operation	F					F(1961,Fr)			
transfer line	F					F(1961,Fr)			

TABLE V -1 (continued)

	Scottish Indian Mach. Tool (c) Tata/40%UK 1964	Tak Machinery (Indian) n.a.	Ex-Cell-O India (b) 80% US 1958	Mysore Kirloskar (c) Kirloskar 1958	TELCO (c) Tata 1940s
Company scale	medium	small	medium	very large	medium **
Row Σ	F	F	F	I	F
II. Metalforming					
power presses	F(1964,UK)	F(1963)			
press brakes					
bending and straightening rolls	F(1964,UK)				
guillotine shearing	F(1964,UK)	F(1963)			
nibbling					
punching, splitting, shearing	F(1964,UK)	F(1963)			
plate-edge planing					
forging hammer					
III. Special-purpose, custom-made					
lathes				I	
fine boring			F(US)		
presses					
multi-operation			F(US)		
transfer line					F*(WG)

Notes to Table V-1

Matrix Elements:

I: machine produced without foreign collaboration
F: machine produced with foreign collaboration
X: source of design could not be determined
*: licensed or at prototype stage but not in commercial production
(year, country): year is date of industrial license or collaboration agreement for machine; country is that of the foreign collaborator, if any.

abbreviations for countries:
Belg: Belgium
Cz: Czechoslovakia
Dk: Denmark
EG: East Germany
Fr: France
It: Italy
J : Japan
Sz: Switzerland
WG: West Germany

Column Headings: name of company; affiliation; date of initial production of machine tools; company scale

Affiliation of company: (for details see Chapter II.D.3)
(a): government
(b): foreign majority
(c): large industrial house
(d): independent

Company scale (annual production of machine tools):
small: less than $0.25 million
medium: $0.25 to $0.5 million
medium-large: $0.5 to $1.0 million
large: $1.0 to $2.0 million
very large: $5.0 million or more
**: total production of company, including products other than machine tools, exceeded $5.0 million
n.a.: not available

imports and products made under collaboration, foreign collaboration had marketing advantages.

(iv) Complementary services: Collaborators frequently provided other things desired by the Indian company:

(a). patents;

(b). design and engineering of the plant, selection of equipment, supply of tooling, erection and commissioning;

(c). product engineering and manufacturing know-how, including process sheets;

(d). technical and managerial personnel to operate the plant and train Indian replacements, training of Indian personnel in their factories abroad;

(e). equity capital, foreign exchange, loans, access to subsidized credit (e.g. loans from PL480 funds).

(v) Cost: While firms often indicated that they did not have the personnel and facilities to undertake indigenous designing, this supply constraint could have been relaxed by investment. It was also argued that collaboration was a cheaper way to secure designs; unfortunately, the available evidence does not permit comparisons of costs.[1] Given high fixed costs of R & D relative to the real costs of transferring the results between companies, it would presumably have been more efficient from a global point of view for India to borrow technology than undertake independent development in the cases where technology already existed. On the other hand, markets for technology are not

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[1]Apart from royalties and fees, foreign collaborators earned considerable profits on the sale of components and hence it is impossible to make an estimate of the cost of collaboration from published data.

perfectly competitive, and Indian companies had little bargaining power. Kust reports that "the foremost reality, perhaps, in the (collaboration) negotiations is that the Indian entrepreneur is in a weak bargaining position. He finds himself the wooer. In most cases the foreign collaborator is not anxious to go to India."[1] The Dutt Committee reported that:

> The competition for collaborations that sometimes arises among Indian parties because of Government's readiness to accept foreign collaboration results in different Indian firms wooing the same foreign firm, even at the same time, and therefore getting the worse of the bargain.[2]

The available evidence, which is very impressionistic, suggests that payments to foreign collaborators involved monopoly returns.

While the above list of factors may explain the preference of individual firms for foreign designs, they ignore the potential advantage of indigenous designing in terms of arriving at products more suitable to local conditions.

Moreover, there were several respects in which government licensing policies increased the incentive to rely on foreign collaboration:

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[1] Directory of Foreign Collaborations in India, 1968, Vol. 1, Section 3, p. 52.

[2] GOI, MIDITCA, 1969, Main Report, p. 125.

(i) Capital Goods Imports:

Kust states that:

> After 1958, Indian entrepreneurs were given provisional (industrial) licenses that required them to secure part or all of the foreign exchange (for import of capital goods) by way of foreign investment. Hence, Indian entrepreneurs had to negotiate more broadly for foreign collaboration.[1]

In the third plan, the government made industrial and capital goods import licenses contingent on foreign investment or foreign long-term credit to finance all imports of capital goods. Apart from the direct role of foreign investment, Kidron states that foreign equity gave "access to special loan funds set up or supported by (foreign collaborators') home governments to encourage exports."[2] Kidron reports that:

> These and other factors have so affected official thinking that it is now virtually impossible for an Indian firm to start up or expand without presenting a scheme for foreign collaboration. As one journal put it, 'it has become difficult to get a manufacturing license without prior arrangements for foreign technical collaboration...whether (an industry) really needs technical know-how and foreign capital or not.'[3]

(ii) Time: Government licensing contributed to the incentive to rely on foreign collaboration to save time. There was a substantial risk that firms would not be licensed to manufacture products even if they developed designs, and hence there was little incentive to develop designs in advance.

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[1] Kust, 1964, p. 66.

[2] Kidron, 1965, p. 231.

[3] _Ibid._, p. 262. See also GOI, MIDITCA, 1969a, Main Report, p. 303, and GOI, RBI, 1967, p. 5.

(iii) Brand Names: The passages from the report of the Dutt Committee quoted in part V.A.2 make clear that the government approved foreign collaboration, including foreign investment, in a number of industries where technology was relatively simple. This may have increased the incentive of local competitors to make foreign collaboration agreements; Kidron reports:

> On two occasions...important well-entrenched Indian firms were forced into unwanted, technologically-superfluous foreign collaborations in order to secure the use of foreign brand-names. Without them they would almost certainly have lost out in competition with new entrants to the industry who had that foreign distinction.[1]

However, since government industrial and import licensing and controls over allocation of domestic materials severely limited competition among firms, it is clear that Kidron exaggerated this argument. The argument probably was not important for the period to 1966.

(iv) Rupee Finance: Firms with US equity collaboration were eligible to borrow rupee PL 480 funds from USAID on favorable terms, subject to approval of the Indian government. Based largely on Rosen's study, Kidron reports that:

> Foreign firms are also privileged, by and large, in gaining access to cheap (rupee) finance. They naturally benefit from the bias shown by almost all Indian lending institutions (the most important of which had government support) toward big, established borrowers.[2]

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[1]Kidron, 1967, p. 266.

[2]Kidron, 1965, p. 231. There is no evidence that foreign firms had more access to rupee finance from Indian institutions than did large Indian firms, however; the argument would apply mainly to cases where the Indian partner did not belong to a large industrial house.

Kidron has emphasized that foreign companies with equity participation in Indian firms are strongly motivated by the desire to exercise control, even where they have a minority of the equity. He argues that as a result foreign collaborators did not want an independent R & D capacity at their Indian subsidiaries because the continued technological dependence of the subsidiary facilitated control by the collaborator. He states:

> Beyond the cost advantage of concentrating fundamental research and development at home lies a further, real advantage in the continued dependence of local affiliates on their parent firms over the long term...While cost is certainly a factor...there is little doubt that such reservation is often resorted to intentionally in order to limit the operational independence of local affiliates.[1]

Similarly, Dericks reports

> ...a remark, a single remark and undoubtedly very much exaggerated made by a firm which has a collaboration. According to it, all foreign collaborators try to kill the initiative for research in order to keep the Indians dependent and to be able to sell more knowledge and technical know-how.[2]

B. Inefficient Designs

This section reviews the design problems of engineering goods produced in India in the 1960s. The main problem was that even for developing countries designs of many Indian products were obsolete or inferior to those of products sold by competitors from advanced countries and therefore were inefficient from the point of view of

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[1] Kidron, 1967, p. 160.

[2] Dericks, 1969, p. 56.

minimizing the domestic resource cost of foreign exchange earned by export. Moreover, where designs were not obsolete, the models produced in India sometimes accounted for a small and declining volume of sales abroad, even in developing countries, while the models which accounted for an increasing share of sales abroad were not produced in India. Because of economies of scale in export marketing and the gestation period required for development of markets, it is often inefficient to export a narrow range of models which will not have long term markets.

It is important to emphasize that the problem discussed here is not that Indian companies did not produce the most "modern" machinery available in advanced countries, e.g. automated, capital-using machinery efficient only for use in high volume production or where there is a high labor-capital factor price ratio.

1. Problems of Individual Industries

a. Cotton Textile Machinery (12)[1]

Throughout the 1960s there were criticisms that Indian manufacturers of cotton textile machinery did not keep up with technical developments in machine designs abroad, even when the developments were suitable for Indian conditions. According to a report of the Tariff Commission in 1960:

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[1]Number in parenthesis is rank of industry in Table II-1.

> Representatives of the cotton textile industry have emphasized...that the Indian mills being obliged to use indigenous machinery should not be deprived of the benefits of technical developments that are rapidly taking place among their competitors abroad. The Indian Mills' Federation has stated that the developments in textile machinery have been taking place at a much faster rate in the last 6 or 7 years than during the last 50 years; more automation, streamlining of processes and higher speeds mark the new machines; and the Indian textile machinery manufacturers should adopt these modernised concepts.[1]

The Economic Weekly was critical of failure to produce modern machines:

> The textile machinery industry has failed to keep pace with technological developments in other countries so that modernisation carried out with indigenous machinery is often very soon outdated.[2]
>
> Textile machinery remains extremely unsatisfactory. The mills complain of obsolete models....The machinery manufacturers are tied down to obsolete models under their collaboration agreements.[3]

According to the report of the Tariff Commission's 1966 enquiry into the textile machinery industry, the Textile Commissioner stated that "modern machines are being manufactured in the country."[4] However, the report further states:

> According to the (Indian Cotton Mills') Federation, as compared to the indigenous products, some of the imported machines maintain quality even at higher speeds, thus resulting in substantial saving in cost of manufacture, e.g., English and Continental ring frames have incorporated several technical improvements like positive helical gear, improved-type ballon control devices, etc. These permit

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[1]GOI, TC, 1961a, p. 21.

[2]EW, 17 August 1963, p. 1389.

[3]EW, 7 August 1965, p. 1218.

[4]GOI, TC, 1967a, p. 28.

> the ring frames to be run at speeds up to 16,000 r.p.m. without mechanical trouble. On the other hand, it is considered inadvisable to operate indigenous ring frames in excess of 12,000 r.p.m.--in fact, even at lower speeds the yarn breakages are sometimes heavy with consequent deterioration in the quality and evenness of yarn. Imported looms can weave cloth of greater width at higher speed resulting in substantial savings in the manufacturing cost. The Ahmedabad Millowners' Association has stated that there has been improvement in quality of indigenous cotton textile machinery after 1963, but that the domestic products still lack proper designing, casting, standardisation and finishing....In the opinion of the Bengal Millowners' Association...the techniques also lag far behind the international standard.[1]

A study of the cotton textile machinery industry in India by the NCAER reports:

> The complaint of the consumers of indigenous textile machinery that it lacks the latest innovations available in imported machinery is valid....Modernisation in the textile industry involves more and more automation in all the processes of manufacture, thus, making conventional machinery obsolete at an alarming rate....In India, conditions are not conducive to such rapid technological changes, because of the lack of know-how about the latest inventions (since this has to be obtained mostly from abroad) and the lack of finance to effect changes rapidly.[2]

b. <u>Machine Tools</u> (13)

The report on a 1959 exhibition of Indian engineering goods in Singapore stated:

> The general reaction about our machine tools (including a shaping machine and a lathe) was that they are 20 years old in design and construction and they can not stand competition against the latest designs of U.K. and Germany. If export market for lathes is to be developed, it would be

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[1] GOI, TC, 1967a, p. 29.

[2] NCAER, 1967c, pp. 24, 31, 4. See also NCAER, 1967a, pp. 35, 83, and <u>FE</u>, 30 January 1971, p. 4.

> necessary to catch up with the latest designs such as that of 'Colchester' England and introduce new features annually.[1]

Similarly, at an exhibition in West Germany in 1963:

> The Indian machine tools, a lathe by Kirloskar, drilling machines of HMT, and so on were examined by German machine experts...They stated that these machines could not easily be sold here as they were 10 to 15 years back in technical design and outfit. There is only a limited market in the small workshops which use such machines. At present these shops use old (second-hand) machine tools from the bigger engineering concerns.[2]

Virtually identical comments on the designs of Indian machine tools were made in 1966 by the joint director of the CMTI ("need redesigning"), in 1967 by the IIFT, in 1968 by a working group of the Planning Commission ("out-moded"), in 1969 by an Italian trade delegation which visited an industrial exhibition in India ("discarded by Italy ten years ago"), and in a 1970 NCAER report on the market for Indian machine tools in the Indian Ocean basin ("obsolete").[3] Similar comments were also made by North American machine tool distributors in interviews for the present study.

Even for the Indian market it was stated that:

> The demand for increased productivity in industry has necessitated a close look into machine tools...with a view to ascertain whether their quality and performance can be raised to higher levels....Several types of machine tools are being produced in India for quite some time, and in the early stages, many of them were copied from imported machines. The production of such machine tools has continued, even enlarged... The designs might have been excellent at the time of their

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[1] GOI, EEPC, HB, 15 June 1959, p. 30.

[2] GOI, EEPC, HB, 1 December 1963, p. 6.

[3] Central Machine Tool Institute, 1966, p. 13; IIFT, 1967b, p. 10; GOI, MIDCA, 1968b (Machine Tools), p. 21; GOI, EEPC, HB, 17 July 1969, p. 53; and NCAER, 1970, Vol. 1, p. 89.

> introduction, but today they are at least 10-15 years old, and require to be redesigned in the light of advances in technology. The needs of industry have greatly changed since their introduction....Machine tools need to be redesigned so that they may be capable of exploiting new tools and new materials to the fullest extent; they should be robust and rigid enough to withstand high cutting forces and should incorporate features which will lead to lower idle time. Redesigning should also take into account the requirements of maintenance, the working convenience and safety of operators, and the appearance of the finished machine tool.[1]

In 1969, R. G. Gardner, HMT's agent for Canada and the eastern U.S., stated that the "products of HMT, though A-1 under international quality standards, found it difficult to compete in America because of poor finish."[2]

Design problems of machine tools are discussed further below in connection with design changes for the North American market.

c. Electric Motors (14)

In a report on the electric motor industry, the Tariff Commission criticized "the long and extensive time lag between the established use of improved design and materials in overseas countries and their acceptance in India."[3] Later it argued that:

> The high price of raw materials in India is not the only factor responsible for the inability of the Indian manufacturers to compete in the overseas markets. Technological improvements and better designs should help considerably in the establishment of competitive capacity.[4]

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[1] Sathe, 1966, p. 21.

[2] ABP, 16 April 1969.

[3] GOI, TC, 1963a, cited by Cilingiroglu, 1969, p. 34.

[4] GOI, TC, 1966a, p. 25.

The latter report noted that changes in design and materials had reduced both the weight-to-power ratio and the cost of motors produced abroad. It stated that Indian motors were larger and much heavier than motors of the same horsepower manufactured abroad, and that the excess weight was considered undesirable by users. It also estimated that adoption of the foreign specifications would result in a reduction of 20 to 33 percent in raw material costs. The following differences in design and material specifications abroad were noted: (i) foreign motors used aluminum die-cast rotors instead of rotors with copper strips; (ii) foreign motors used aluminum die-cast bodies instead of cast iron bodies, which resulted in a reduction of weight; (iii) foreign motors had class 'E' insulation, which resulted in lower inputs of copper and electrical steel stampings than were required with class 'A' insulation.[1] In addition, class 'E' insulation was almost universally used abroad because it enabled motors to withstand higher temperatures.

In the second half of the 1960s a number of Indian manufacturers adopted these design changes for part of their production. Nevertheless, a trade association report in 1968 refers to the

> ....modernisation required to export electric motors. Our products can become competitive only if modern techniques are used for improving castings operations, design styling, etc.[2]

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[1] Ibid., p. 24.

[2] IEMA, 1968, p. 15.

In 1970 the trade association reported that of 32 manufacturers in the organized sector and 170 in the small scale sector, 12 produced motors with class 'E' insulation.[1]

In the case of electric motors used in electric fans, it was reported:

> The industry is at present using the conventional hot rolled dynamo-grade steel sheets for the rotor and stator cores of fan motors. The dynamo-grade electrical silicon sheets now produced in India are becoming obsolete in rotating machine applications. The steel industries in the West have been changing over to low carbon, cold reduced electrical steels ....The uniformity of thickness, magnetic and electrical properties and surface finish are accurately controlled by continuous cold rolling process. The magnetic permeability and punching properties of cold rolled steel being better, the quality of the assembled stator core of this steel is superior to that produced by hot rolling process.[2]

Related problems in the case of transformers are discussed in Chapter IV.G.2.

d. Motor Vehicles and Vehicular Diesel Engines (15 and 22)

It was reported in 1970 in connection with the Lambretta and Vespa motor scooters produced in India that:

> The government felt that the models being manufactured were already obsolete abroad.[3]

> The scooters now made in India are about 15-year-old models. In the case of cars, the models are older still.[4]

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[1]IEMA, FE, 13 July 1970, p. 7.

[2]IIFT, 1967a, pp. 7, 45.

[3]FE, 18 August 1970, p. 1.

[4]FE, 26 August 1970, p. 1.

Already in 1960 a government report stated that in the case of its passenger cars, Hindustan Motors "has not always introduced the changes from time to time in the Morris Oxford. We cannot keep modifying vehicles as often as in countries like the U.K."[1] In 1969 the chairman of Standard Motor Products of India stated:

> In Western countries rapid changes and improvements have taken place in the concept of the automobile, but we have not been able to effect any improvement or modification in our vehicles since 1960 in view of the extra cost involved.[2]

An official of one of the largest Indian producers and exporters of commercial vehicles stated in an interview that the truck produced by the company in 1969 was a 15-year-old model which was outdated both in appearance and in mechanical design, even for Indian conditions, and yet it was generally considered better than the other trucks produced in India.

The Premier-Dodge truck produced in India used a Perkins P6 diesel engine. According to Neufeld, the P6 engine was introduced in the UK before the second world war and the P6V was licensed for production in India in 1953. However,

> In the early 1950s the company (Perkins, U.K.) discovered that vehicle manufacturers (in advanced countries)...were no longer entirely content with the P6, and that competitors were rapidly catching up, even in some instances overtaking Perkins, in developing improved light-weight diesel engines.[3]

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[1]GOI, MCI, 1960, p. 18.

[2]EE, 25 April 1969, p. 873.

[3]Neufeld, 1969, p. 325.

In 1960 an Indian government report noted complaints that "the Perkins engine does not have sufficient reserve of power to cope with Indian conditions of road and habitual overloading,"[1] and recently it was reported that one reason for general customer preference for TELCO over Premier trucks was that the latter had a Perkins engine, even though after 1966 a newer P6/354V engine with more power and better torque characteristics was produced under a 1962 license.

e. Bicycles (19)

Until 1967-1970 Indian manufacturers produced only standard roadster bicycles designed for carrying heavy loads. As early as 1961 reports on the market for bicycles in other developing countries like Iran noted a preference for sports light roadsters, and in 1966 a report stated that 85 percent of the bicycle market in developing countries in southeast Asia was accounted for by sports light roadsters.[2] In 1967 TI Cycles introduced a 3-speed sports light roadster for export and in 1970 Sen Raleigh did the same. Nevertheless, the new Sen Raleigh was reported to be a bicycle produced by Raleigh in the 1950s, and a 1970 IIFT study stated that:

> In design...and colour, our bicycles have yet to rival those of Japan or UK. The old look of our bicycles is largely the result of the absence of any sustained product development... A heavy machine of solid steel parts is unlikely to appeal to European buyers.[3]

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[1]GOI, MCI, 1960, p. 46.

[2]GOI, EEPC, 1961, p. 53, and GOI, EEPC, 1966a, pp. 8, 10, 14.

[3]Cited in FE, 25 August 1970, 26 August 1970.

The report recommended production of lighter bicycles, including use of plastic parts, and improvement of styling and finish.

Furthermore, Indian manufacturers did not produce models like 10-speed racing bicycles or high-rise bicycles with small wheels and high handlebars. The latter, which were produced in the US in 1964, accounted for 61 percent of the US new bicycle market in 1967.[1]

Finally, there were criticisms of the quality of finish, particularly paint, on Indian bicycles.[2]

f. Stationary Diesel Engines (20)

The main types of stationary diesel engines manufactured in India, particularly low-speed, water-cooled, horizontal ones were being replaced abroad by more efficient high-speed, air-cooled, vertical engines, even in developing countries. This was not a new development. The report on the 1959 exhibition in Singapore, cited above, stated:

> There have not been many enquiries for the type of diesel engines that were on display. The horizontal engines attracted the least attention as the preference of the dealers and importers is for high-speed vertical engines.[3]

Cooper Engineering produced horizontal diesel engines ranging from 5 to 40 h.p. They sold well in India but Cooper found that there was no export market. It also produced 10 to 15 h.p. vertical engines

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[1]Bicycle Manufacturers' Association of America, US Congress, 1970, Part 14, p. 3852.

[2]This was a complaint of an East African importer and is also reported in NCAER, 1970, Vol. 2, pp. 33, 80.

[3]GOI, EEPC, HB, p. 30.

to an old design, for which there was little demand in export markets because suppliers from advanced countries like the U.K. were offering newer, more efficient engines with a higher power-to-weight ratio. Finally, in 1962 Cooper began production of a 5 h.p. vertical engine to a modern design with a high power-to-weight ratio, and this was doing reasonably well in export.

Kirloskar Oil Engines built its export market chiefly on lower speed 5 and 10 h.p. horizontal and vertical engines, based on designs of a UK firm which has since discontinued their production. In commenting on the stagnation of these exports in the latter 1960s, Kirloskar Oil Engines noted that "the trend in export market demands a change in product design and this is engaging our active attention."[1]

The industrial engines produced by Kirloskar Oil Engines were made to old, inefficient designs. Industrial engines produced in advanced countries operated at a higher speed (2 to 4 times the r.p.m.) than all but one engine produced by Kirloskar and had a higher power-to-weight ratio and lower noise level.

Ruston and Hornsby, a U.K. subsidiary which was the third major producer and exporter of stationary diesel engines, began export in 1962 with horizontal engines for agricultural use. At the end of the 1960s it produced a variety of slow-speed horizontal engines, one simple vertical engine for agriculture, and air-cooled diesels for industrial and marine purposes. These had many of the same design problems as the engines produced by Cooper and Kirloskar Oil Engines.

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[1] Kirloskar Oil Engines, <u>ABP</u>, 25 August 1969.

In addition to the above problems of design, the export of diesel engines was reported to have suffered because "in finish and appearance they are poor."[1]

g. Electric Fans (24)

The report on the 1959 exhibition in Singapore, cited above, stated:

> Our (Indian) 'Usha' and 'Orient' table fans lacked the lustrous finish which was eye-catching in the case of (Japanese and Hong Kong) 'Hulda' and KDK fans. If the revolving device and the finish of our table fans are improved, I see no reason why the sales should not improve. In the export market, it is imperative that we should catch up with the latest design and construction of the Japanese fans.[2]

A decade later Indian table fans were still out-dated and inferior in design, styling, and finish to fans exported by Japan and Hong Kong to developing countries. Japanese and Hong Kong fans had smoothly finished and bright colored stands and plastic casings in modern shapes, nickel-chromium-plated fittings and protective mesh, and gadgets like time switches, variable oscillation-angle controls, and plastic piano-style keys for different speeds. The exteriors of Indian table fans were made of painted cast iron and steel, the fans were heavy, the styling, surface finish, and colors were not attractive, and there were no controls other than choice of speeds. Late in the 1960s, Jay Engineering introduced one model with variable oscillation control and

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[1]NCAER, 1967b, p. 27.

[2]GOI, EEPC, HB, 15 June 1959, p. 30. 'Usha' is the trademark of Jay Engineering.

piano-style keys but none of the other styling and features. Indian fans were also noisier than Japanese ones.[1]

Both manufacturers and foreign importers reported that for ceiling fans there was no comparable problem because the basic designs of competitors had not changed in decades, there were no special gadgets or features, and changes in styling were limited to blade shapes and color. The only styling problem apparent in 1969 was that some competitors had changed from cast iron and aluminum to plastic for covers and canopies. According to the IIFT, Indian "ceiling fans...are at par with the latest models perfected abroad."[2]

An additional problem of design of electric fans concerned motors, which were discussed above.

Design and styling were important in explaining why Indian exports of table fans, which were produced in large volume in India, were stagnant at a low percentage of output even though they were priced (c.i.f.) at 25 to 45 percent below Japanese fans of the same size while exports of ceiling fans by the same companies were a higher percentage of output and increased at a moderate rate.[3]

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[1]These observations, which are based on information gathered in Africa and India in 1969, are similar to ones reported in IIFT, 1967a, pp. 68-70, and NCAER, 1970, Vol. 1, p. 89.

[2]IIFT, 1967a, p. 29.

[3]Exports of table fans peaked prior to the 1966 devaluation, as did exports of sewing machines discussed in the next section.

h. Sewing Machines

In the case of sewing machines, there were problems of styling and lack of features similar to those of table fans. Although Jay Engineering made limited changes in the styling of its straight-stitch machine for export, a market report on the US stated:

> The design of the Indian machines does not stand very well as compared to the design of the Japanese machines. Some of the points on design mentioned were: (a) The balance wheel in the Indian machine was too large; (b) The light attachment in the Indian machine is not very convenient; (c) Absence of 'Push-button' controls which go with the present vogue; (d) Unattractive colour combination. The above points indicate only some of the areas of complaint. It is considered that from the long range point of view it would be necessary to come up with a completely new and better design after a detailed study.[1]

Apart from the difficulties faced because of competition with other straight-stitch sewing machines, Indian manufacturers did not produce the types of sewing machines which were becoming more popular. In 1969 Japan exported three times as many zig-zag sewing machines as straight-stitch units.[2] Indian manufacturers did not produce automatic zig-zag machines and Jay Engineering's semi-automatic zig-zag machine, which was first produced in India in 1962 under Italian collaboration, was an old design.

i. Other Industries

References to out-dated designs of engineering goods produced in India were common in other industries as well. A number of additional examples are listed below:

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[1] GOI, MC, 1967b, p. 9.

[2] Oriental Economist, April 1970, p. 36.

(1) **Radios (17):**

> So far as speakers are concerned we are still backward. The indigenous radio manufacturer still uses the tyconal magnet speakers whereas throughout the world the radio industry has switched over to ferrite magnet speakers.[1]

(2) **Tires and tubes (26):**

> The basic complaint against India (in export markets)...was... that tubes were not light-weight...Japan supplies light tyres compared to India. In addition, some countries have a preference for seamless tubes which India does not export. Japan and Malaysia are the suppliers of seamless tubes...Tubes are heavier for Iranian taste.[2]

(3) **Refrigeration equipment:** Indian industrial refrigeration equipment used reciprocating compressors while centrifugal compressors, which operate at much higher speeds, were reported to be more efficient. As of 1970 two companies had been licensed to manufacture centrifugal refrigeration systems.[3]

(4) **Razor blades:** Carbon steel (blue) blades accounted for over 90 percent of Indian production of safety razor blades, and at least three of the six major producers manufactured only carbon steel blades, even though developments in stainless steel blades abroad had made carbon steel blades virtually obsolete.[4]

(5) **Pulp and paper machinery:**

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[1] ET, 10 May 1971, p. 5.

[2] NCAER, 1970, Vol. 1, pp. 181-82.

[3] ET, 25 April 1970, p. 4.

[4] Commerce, 12 September 1970, pp. 556i-ii.

> In the pulp and paper industry, the indigenous pulping machinery offered in our country is for full-chemical pulp in batch plants, and the paper machines are slow-speed, small capacity units. As against this, the world over semi-chemical pulping methods have been introduced that give higher yields for the same weight of raw materials, and continuous pulping and high speed paper machines are offered that reduce the cost of making paper.[1]

2. Inefficient Designs and Exports

One inference which can be made from the preceding discussion of design problems is that there was often a considerable lag in the application of technological changes made abroad and that machinery was often produced to designs which were inefficient even for developing countries. It has not been possible to quantify this conclusion in either of two dimensions, however.

First, one would like to know what percentage of Indian output of machinery was produced to inefficient designs. Unfortunately, it is clear only that an important share of production was to inefficient designs and that an important share was not. The conclusion that an important share suffered from such problems is supported by the preceding descriptions. The conclusion that other products did not is supported by the fact that many products manufactured in India were still manufactured by the foreign collaborators and sold in advanced and developing countries,[2] by the fact that Indian firms continually

[1] FE, 10 October 1968.

[2] For examples of such machines, see the list in Table IV-12.

made new collaboration agreements in the process of diversification, and by direct reports by Indian manufacturers.

Second, one would like to know how much the cost of foreign exchange earned by export could have been reduced by production to efficient designs. It proved impossible to make any useful estimates of this, but the export managers of companies exporting commercial vehicles, cotton textile machinery, and machine tools all confirmed that if they produced the machines manufactured by their foreign competitors rather than the ones they did, their exports would have been more profitable (relative to the long-run average cost of the model). Part V.D.1.g discusses the design modifications made by machine tool producers to increase the profitability of export.

Another conclusion is that many Indian companies exported even though their designs were inefficient. Apart from direct evidence that such exports took place, the fact that products can be exported even though their designs are inefficient from the point of view of minimizing the domestic resource cost of foreign exchange is supported by the widespread use of old machinery in advanced countries and the large market for used and rebuilt machinery. In 1968, 64 percent (by number) of the machine tools installed in U.S. metalworking plants were over 10 years old and 23 percent were over 20 years old.[1] The market for used machine tools in the U.S. was well organized, and according to the trade association of used machine tool dealers, "approximate sales of used machinery (metalworking machine tools to

[1]American Machinist, 1968, pp. 1-2.

ultimate users) in the U.S. is in the range from \$350 - \$400 million" per year,[1] or about 20 percent (by value) of sales of new machine tools. A significant amount of second-hand U.S. equipment was also exported to Latin America.[2] The fact that a machine tool was produced to an old design therefore did not mean it was worthless, even in the U.S. It is significant that some of the dealers handling Indian machine tools specialized in used machinery and Indian machine tools competed directly with used equipment. A delegation of Indian machine tool manufacturers which visited the US in 1970 reported finding "competition from Europe, Japan, Spain and Brazil and, more important, used machine tools worth a few hundred million dollars placed in the market by the Defense Department."[3] It was also reported that:

> The Bowers Division, Norris Industries, Inc., Los Angeles, purchased an HMT radial drill. Bowers shopped around before buying the HMT drill and... considered a used Cincinatti machine. But it was 12 years old, and didn't have a warranty...The old machine sold for \$8,000 and the new Indian drill for \$8,300 with a tilting table.[4]

In some cases, such exports of products with inefficient designs were made for hard currency, presumably at "discount" prices. However, a striking fact which is evident from the data in Table III-7 is that exports of some of the most important of these products were almost

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[1] Machinery Dealers National Association, Letter to author, 1969; see also Machinery Dealers National Association, 1967.

[2] Little _et al._, 1970, p. 59.

[3] _FE_, 6 December 1970, p. 4.

[4] _Metalworking News_, 19 November 1968.

exclusively to soft-currency areas under bilateral trade or tied aid, especially to the UAR and Ceylon. This was true of 93 percent of commercial vehicles and jeeps, 91 percent of cotton textile machinery, and 75 percent of vehicular engines and engine parts.

The export manager of an Indian textile machinery manufacturing company stated in an interview that with present designs, there was little prospect of selling Indian cotton textile mills to countries which could finance purchases from elsewhere, e.g. against hard currency. However, by providing 10-year credits at 3 percent annual interest repayable in non-convertible currency, in 1969 Indian companies sold $16 million of textile machinery for three complete mills to the UAR, which had serious foreign exchange problems and therefore gave considerable preference to supplies on credit and with payment in non-convertible currency. There were similar reports for trucks and vehicular engines. An exporter of machine tools wrote that:

> Only because of the credit given by our government (to Ceylon) and because of earmarking certain portion of it for purchase of Indian machine tools, could our company succeed in selling equipment worth about Rs. 15 lakhs ($0.2 million).[1]

These were not minor examples. Commercial vehicles and cotton textile machinery ranked first and second by value of exports among machinery industries in 1969-70. Chapter VI.B notes that half of Indian exports of non-commodity-like products for which design was a potential problem were to soft currency areas in 1969-70.

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[1]Letter, 1968.

3. Production to Inefficient Designs

The discussion of design problems raises the question why machines were produced in India using inefficient designs. In considering this question, emphasis is placed on government policies which created a bias against use of the best designs available when production was initially established and against subsequent improvements in designs.

a. Lack of Competition

Government policies which restricted foreign and domestic competition and tolerated losses by public sector firms made it possible for firms not only to earn a profit in spite of high costs or low quality of output and to survive losses but to manufacture goods with inefficient designs without being forced out of business. The system permitted inefficiency.

b. Price Controls

The system also limited the rewards to efficiency. Government price controls which allowed a predetermined rate of profit on investments reduced the incentive to improve designs and eliminated that incentive altogether where turnover was constrained by supply factors beyond the control of the company, e.g. in the case of passenger cars or motor scooters.

c. Industrial Licensing: The Banned List

Industrial licensing often would have prevented existing firms from expanding and new firms from entering even if they used superior designs. At any given time, licensing of expansion and/or new units in many industries was formally banned because there was excess capacity at some units or installed or simply licensed capacity was sufficient to meet plan targets. Among the industries considered above, during at least part of the period between 1960 and 1966, electric fans, sewing machines, and bicycles were all on the list of industries for which further industrial licensing was banned. In addition, both expansion and new investment licenses were systematically denied to certain units: to private sector firms if items were reserved for the public sector, to large industrial houses, to foreign-controlled units, to units with fixed investment over $100,000, etc.

d. Industrial Licensing: Criteria

There was excess demand for licenses, and efficiency of the design of the product was not one of the criteria used by the government in giving licenses. According to a government-sponsored report:

> No consideration is ordinarily given (by the government) to whether the particular technology sought to be imported is the most suitable to our requirements, having regard to the scale of production, raw material availability, etc.[1]

Consequently, there was no assurance that the best design was licensed.

Moreover, the government gave preferential access to licenses to units which did not require imported capital goods, imported materials, or foreign collaboration, at least at the end of the 1960s. It was reported that

[1] GOI, MIDCA, 1967, p. 6.

> Mr. Dinesh Singh has told Parliament that in order to encourage the growth of indigenous talent and resources, the government had decided to issue letters of intent to parties in the private sector who are prepared to take up the manufacture of cars based completely on indigenous designs requiring no foreign exchange.[1]

Two such licenses were given in 1970. A similar policy was followed for television sets at the end of the 1960s. Such discrimination could easily lead to production of goods to inefficient designs when efficient designs were not available in India or required import inputs. The same was true of provisions for exemption of certain units from licensing as long as they did not use foreign exchange or foreign collaboration.

e. Import Restrictions

Chapter IV.G.2 notes that restrictions on import of current inputs and capital goods sometimes prevented Indian firms from producing goods to the designs and specifications used abroad. Reference is made there to problems faced in production of distribution transformers, nylon tires, and Japanese-style table fans. Similarly, one of the obstacles to production of sports light roadster bicycles was their higher import content. Even after the government allowed import of special inputs for production of these bicycles for export, they could not be produced for the Indian market because of import licensing restrictions. Metal Box reported:

> The introduction of the latest developments in packaging is subject to import limitations. For example, while we are ready to introduce containers made from 2CR tinplate, we

[1] *Commerce*, 15 August 1970, p. 349.

> cannot consider their marketing until Hindustan Steel are equipped to make such plate or, alternatively, Government can assure continuing imports. In the development of new products such as improved crown corks and other sophisticated closures, beer cans, easy opening ends, tinplate aerosol cans, aerosol valves, we have continuous access to the most advanced technology in the United States and Europe through our technical associates. We can over a reasonably short period equip ourselves to manufacture all these products, but we need to be certain that raw material of the right quality and specifications will be available to develop the market.[1]

f. <u>Higher Prices of Tradable Inputs</u>

Differences in relative costs of tradable inputs at Indian and c.i.f. import prices because of quantitative import restrictions and indirect taxation created a heavy bias against use of certain materials in India, e.g. plastics. In some cases the excess cost at Indian prices of materials required for a model which was more efficient at international prices, i.e. negative protection, was reported to be so great that production of the model in India not only would have been less profitable but would have involved losses. In the case of table fans, a major Indian producer indicated that if it overcame the other obstacles to producing Japanese-style fans, the cost would be so high that it probably would not have been able to sell them at a profit if it had to buy inputs like plastics, chromium, and gadgets at Indian prices.

g. <u>Fragmentation and Vertical Integration of Production</u>

Government licensing encouraged fragmentation of production and loss of economies of scale. This was true of the policy of licensing

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[1] <u>EPW</u>, 11 July 1970, p. 1102.

several small units in an industry, each with a fraction of the efficient scale of production, and of licensing policies which allowed and encouraged vertical integration and consequent loss of economies of scale in production of components. The result of such fragmentation of production was to increase or even multiply by several times the average cost of designing and/or foreign collaboration and tooling involved in introduction of a new model. Discrimination in implicit exchange rates between production for the domestic market and export which limited production to the scale of the domestic market had a similar effect. Thus, a number of firms explained their failure to modify designs on the basis of the very high average tooling costs involved where the scale of production of not only the finished product but all the components was very small. Firms producing table fans, sewing machines, and bicycles argued that foreign companies could afford to change designs because parts were produced by specialized ancillaries with a high volume of output while in India each final assembler produced its own parts on a small scale and hence would have to incur very high tooling costs if it changed designs.

h. Foreign Collaboration

Although there were restrictions on foreign equity investment, until the late 1960s the Indian government was liberal in approval of foreign technical collaboration. There is no evidence that restrictions on the terms of technical collaboration prior to 1967-68 were a significant limit on access to efficient designs. However, certain policies made factors other than efficiency of design of primary importance in choice of foreign collaboration in that period. Restrictions on import of capital goods made the willingness of the foreign company to finance capital goods imports by equity investment the first consideration in selection of collaboration. Closely related to this was preference to aid donors as sources of collaboration, e.g. in the case of East European collaboration for public sector firms.

In the latter 1960s the government changed its policy toward foreign collaboration and in 1968 it issued a series of guidelines on terms of collaboration which would no longer be approved. These indicated a significant restriction on acceptable terms compared to those prevailing during the previous decade in matters including industries in which technical and financial collaboration would be allowed, number of times the same technology would be licensed to different firms, maximum duration and renewal, maximum royalty rates, clauses restricting exports and re-sale of licensed technology, and recognition of foreign patent rights.[1] The basic changes were:

(i) The government announced it would no longer approve foreign collaboration in a list of industries which it considered had been adequately developed in India, including many industries in which collaboration had been approved in the previous decade. Included in the list of industries in which neither technical nor financial collaboration were

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[1]A bill passed by the Lok Sabha in 1970 reduced the life of a drug, medicine, or food product patent. BI, _BI_, 4 September 1970, p. 282.

to be approved were electric fans, domestic sewing machines, bicycles and parts, railway wagons, transmission line towers, grey iron and steel castings, and "general purpose machine tools (simple types)." There was also a large group of industries in which financial collaboration would not be approved but technical collaboration was still permitted.[1]

(ii) The government specified maximum rates of royalty for technical collaboration, generally 3 to 5 percent of sales (subject to a 50 percent tax), which were lower than rates approved earlier.[2]

(iii) The government specified a maximum duration of collaboration (i.e. royalty payments), generally five years, compared to the 10-year duration typically approved earlier. The Minister of Industrial Development announced that he was "against allowing any extension of foreign collaboration agreements beyond the normally permitted period of five to seven years."[3]

(iv) The government announced that it would no longer approve new collaboration agreements or renewal of existing ones which restricted exports to areas other than the country of the foreign collaborator or countries where the foreign collaborator had other investments.

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[1] IIC, 1968.

[2] _Ibid_. Data on royalty rates and duration of agreements made through 1964 is available in GOI, RBI, 1968.

[3] _ABP_, 17 September 1969.

(v) The government indicated that it might not approve foreign collaboration agreements with secrecy clauses which prevented Indian firms from selling the know-how obtained and that it might require that Indian firms be allowed to pass on know-how on the basis of substantially reduced royalties to the foreign collaborator.[1]

According to businessmen and a leading Indian law firm which took part in negotiation of collaboration agreements, in 1969 the government was following the new guidelines, at least on points (i) - (iv). However, some more radical statements of the Ministry of Industrial Development concerning such things as centralization of import of technology were not implemented. Moreover, in 1968-1970 the government licensed several independent foreign collaborations for small tractors, even though one of the government's own research institutes, CMERI, had developed an indigenous design and prototype.[2] By March 1970, 12 companies had been licensed to manufacture 14 to 75 h.p. tractors, each with a different foreign collaborator.[3] Thus, it appears that even at the end of the 1960s the government was neither implementing restrictions on repetitive import of technology nor banning import of technology when a domestic substitute was available.

Indian firms were overwhelmingly critical of the government's

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[1]FE, 8 February 1969; Times of India, 30 May 1969.

[2]For critical comments on the government's approval of HMT's application for Czech collaboration for production of small tractors, see EPW, 13 September 1969, p. 1465, 20 September 1969, pp. 1500-01.

[3]For a list, see IEA, HS 1969-70, p. 178.

restrictions on the terms of technical collaboration. They claimed the guidelines limited their access to the most efficient foreign designs.[1] There was also a conflict between the Ministry of Industrial Development, which initiated the restrictions, and the Ministry of Foreign Trade, which was concerned about their possible adverse effect on exports.[2]

According to the chairman of Mysore Kirloskar, India's largest private machine tool firm:

> If we are to enter the foreign markets, it is necessary for us not only to manufacture conventional machine tools but also to take up the manufacture of more sophisticated machine tools. When reputed manufacturers are requested to come for the manufacture of sophisticated machine tools, generally they are not willing to come to India on account of the various restrictions imposed by the government in regard to collaboration agreements, such as:
> (1) Limiting the period of agreement to 5 years: The foreign collaborators expect the collaboration agreements to run over a period of at least 10 years and if we wish to derive maximum benefits out of collaborations, the agreements should be for a period of 15 years.
> (2) Government's insistence on Indian manufacturers having a right to sub-licence: The foreign collaborators do not desire to allow the Indian parties to sub-licence the manufacturing technique, as every collaborator feels that his product has specialities, the know-how for which should not be passed on to others, as they are afraid that the information may fall in the hands of their competitors.
> (3) Government's insistance on Indian manufacturers having a wide export franchise: The reputed foreign collaborators have licensing arrangements in a number of countries and they are

[1] For a discussion of Brazilian restrictions on technical collaboration, see Leff, 1968, pp. 89, 100n. For evidence that these had an adverse effect on transfer of new technology to Brazil, see BI, BLA, 17 September 1970, pp. 298-99.

[2] ABP, 27 September 1968.

> reluctant to allow export franchise for such countries. Apart from this, they are generally against giving export franchise because to that extent they lose their market. Collaborators do not like to give export franchise unless the machine is outdated and is not presently being manufactured by them.... For some time to come, we should not enforce these conditions. Our first objective should be to get the knowledge at a reasonable cost without scaring them away by insisting on unacceptable terms.[1]

i. Approval of Restrictions in Collaboration Agreements

The government approved restrictions in foreign collaboration agreements which prevented Indian companies from modifying the designs of products manufactured under active collaboration agreements or producing similar, and hence competitive, products under collaboration with other companies.[2] Such restrictions could have prevented companies from making changes in designs to adapt them to local conditions or to increase export potential and from producing special export models.

Under the terms of a 12-year collaboration agreement for textile machinery made in 1963 with Rieter of Switzerland, which had only a 12 percent share in its equity, Lakshmi Machine Works agreed:

> To place at the disposal of Rieter all information relating to its own inventions and improvements and obtain Rieter's prior approval before adopting them. The company has agreed not to manufacture any items of machinery other than those specified herein without the consent of Rieter, for the first twelve years or during the period the collaboration agreement is in force, that is up to 31-3-1975.[3]

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[1] N. W. Gurjar, Mysore Kirloskar, Letter, August 1969, pp. 5-6.

[2] See also Kidron, 1965, p. 282, and Behrman, 1969, pp. 74-75.

[3] Directory of Foreign Collaborations in India, Vol. 2, 1969, p. II-752.

Until its expiration in 1969, TELCO's 15-year technical collaboration agreement with Daimler-Benz, which also had a very small minority equity share in the Indian company, prevented TELCO from adapting the Mercedes-Benz commercial vehicle designs to make them more suitable for India or other developing countries. Upon termination of these restrictions, TELCO immediately stated that it would modify the designs. In 1969 it was making changes in the steering assembly and the gear box, including addition of synchromesh, and it changed the driver's seat.

j. Difficulties in Securing Information on Required Design Changes

Even if they wanted to redesign their products for export, many companies would not have known what changes to make because they were not familiar with demand in foreign markets or the designs of competitors. This could have been overcome by market research, but government policies presented two obstacles.

First, when an industry was developed in India, imports of the product were banned, and it was easy for the Indian industry to lose touch with further design developments abroad. It was even difficult for manufacturers to get licenses to import samples of foreign products in order to imitate them. According to Mysore Kirloskar:

> It will be necessary to see that firms who cater for the export markets are allowed to import samples of latest machines without any difficulty as we find that it takes a long time for the government to sanction purchases of latest models for development from the foreign countries.[1]

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[1] Mysore Kirloskar, "Foreign Tour Report of Shri N. W. Gurjar," 1968, typed, p. 8.

The electronics and textile machinery industry also complained about difficulties in importing foreign machines for development purposes,[1] and Krueger states that in the automobile ancillary industry:

> One case was reported of a prototype being sent by a foreign customer to the Indian firm; it was not allowed through customs, since it was on the banned list.[2]

Second, it is pointed out in Chapter VI.A.4.a that companies had trouble getting foreign exchange for market research abroad, particularly if they had not yet exported.

k. Government Restrictions on Demand for Efficient Machinery

To protect cottage industry in cotton spinning and weaving, processing of oil seeds, and rice milling, the Indian government limited expansion and modernization of the large scale sectors, e.g. by restrictions on expansion of the cotton textile mill sector and on installation of automatic looms. These policies created a domestic market for otherwise obsolete machinery and limited the market for up-to-date machinery. According to a 1953 report:

> The restrictions on future expansion of the textile industry, particularly the weaving section, have contributed to the difficulties of the (cotton textile machinery) industry by reducing the level of demand.[3]

Although relaxed, restrictions were still in force in 1969.[4]

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[1] IIFT, 1967c, p. 34, and Commerce, 5 December 1970, p. iv.

[2] Krueger, 1970, p. 88.

[3] GOI, PC, 1953. See also Singh, M., 1964, pp. 91-92, 108-09.

[4] FE, 22 November 1969, p. 10.

Apart from cotton textile machinery, which was discussed above, these restrictions probably delayed development of modern rice-milling machinery, which was not produced in India until 1968:

> Till recently, rice was milled through conventional rice-milling machinery, and the total requirements of these machines were met by indigenous manufacturers. It was, however, found that with modern industrial type rice-milling machines, wastage could be considerably reduced and the yield increased.[1]

> Milling machinery manufactured in India was designed 30 to 50 years ago...Millers get an average estimated out-turn of 580 kg. of rice per tonne of marketable surplus paddy. In addition, by-products are not usable for human consumption. Modern milling equipment and procedures used on paddy that has been properly produced and harvested and safely stored may be expected to yield 670 to 720 kg. of rice per tonne of marketable surplus paddy...These mills work at low operating costs also.[2]

1. Supply of Inefficient Designs

On the supply side, a major source of inefficient designs was the passing of time. However, there were important potential sources of designs which may have been inefficient when production in India began.

As products become obsolete in advanced countries, a large amount of specialized tooling and similar assets become worthless there. Although in some cases the product might be efficient for developing countries, at least if the tooling and know-how were cheap

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[1]IEA, HS 1969-70, p. 45.

[2]FE, 6 March 1971, p. 4.

enough, even when this was not the case it might have been possible for the foreign company to sell these assets to an Indian company or exchange them for equity shares because of limited competition in India, imperfections in international markets for technology and equity capital, and irrational licensing. There were many complaints in India about unsuitable capital goods and high prices of equipment supplied by foreign collaborators, e.g. in the case of Napco Bevel Gear,[1] but no systematic confirmation of such practices was available.

Whatever the reason, some of the designs selected by Indian manufacturers probably were not the best available in advanced countries at the time. A U.S. importer, who was the first distributor of Indian machine tools, stated that the Oerlikon H22 lathe and the Fritz Werner M milling machines produced by HMT were not a good choice. A government report on the construction equipment industry suggests that there were collaborations with relatively unknown firms for machines whose designs were not internationally acceptable:

> For some items, the makes covered (by collaboration agreements) may not find favour with international markets until, through continued development in the country, the product is at par with other makes better known in the market... Research and development has to make the machine a better product or give it a modern shape.[2]

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[1] Napco Bevel Gears purchased the entire machinery and tooling of Detroit Bevel Gears Division of Napco Industries (US) in 1963 for $2.8 million.

[2] GOI, MIDCA, 1968b (Construction Equipment), pp. 35, 91.

C. Exports Based on Monopoly of Design

A number of recent studies have emphasized the role of R & D, innovations, and temporary monopolies based on technological superiority in explaining manufactured exports and direct foreign investment of advanced countries, particularly the US. It has been argued that the US has a comparative advantage not only in R & D but, temporarily, in production and export of new high-income or labor-saving products because the large home market provides a base for innovation given the importance of communication between manufacturers and customers during product development. Similarly, one might think that India would have an advantage in products based on indigenous developments in "intermediate technology," for which there would presumably be a large home market. This would give India monopoly power in exporting to developing countries and an entry to East European markets, which are more accessible on the basis of technical monopolies than low price given their autarchic bias.

One implication of the small amount of designing in India is that there were only very limited areas in which Indian firms had design advantages over competitors in advanced countries, even in supplying products to developing countries where economic conditions are similar to those in India. What design advantages there were depended chiefly on manufacture of products which had been discontinued in advanced countries rather than on ability to offer original designs, designs adapted to conditions in developing countries, or other forms of product differentiation.

With relatively few exceptions, no important changes were made in designs by either the foreign collaborator or the Indian licensee when products were manufactured in India under collaboration or by imitation of foreign designs, in spite of differences in conditions of production and use. The main exceptions occurred when materials specified by the collaborator could not be procured in India. A 1967 IEA survey of 12 Indian companies producing engineering goods reported:

> Few deviations from the designs of the (foreign) principals are envisaged if materials are available. Substitution (of materials) is not dictated by economic considerations but by non-availability of materials...Four of the firms indicated that studies are not conducted or are conducted only in a limited way on re-designing of components to make them more economical to manufacture.[1]

In his study of Kirloskar Cummins, Baranson states:

> Most of the...product innovations (by Cummins Engine Co.) have been made in response to changing demands in the American market. Product applications to overseas markets, especially for nonindustrialized areas, have been on a pragmatic basis. In most cases, design features meticulously adjusted to... the U.S. are poor fits for an underdeveloped area.[2]

Similarly:

> In transferring automotive production to developing countries, international firms have kept adjustments in product design... to a minimum. This is because such adjustments are costly and disrupt the industrial transplant process....The size of markets is often too small to warrant the additional expenditure to adapt product designs.[3]

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[1] IEA, 1967, p. 9.

[2] Baranson, 1967, p. 27. Baranson lists the "minor changes" made in the Cummins engine for India, pp. 63-66.

[3] Baranson, 1969, pp. 24, 14. Baranson reports that "Renault has designed a completely new car for manufacture in Brazil and export within and outside Latin America. It is adapted to the rough roads and poorer servicing facilities that characterize hinterland areas." (p. 78)

> An automobile manufacturer in India sells cars made to foreign designs which are now years old. There has been no attempt at qualitative improvement of the models and design of components on the basis of local conditions.[1]

In a survey of 100 international firms involved in manufacture of automobile parts in developing countries (primarily India and Latin America) in 1970, Baranson found that only "minor changes have been made in product design." His tabulation of the responses of 50 companies, some with affiliates in several developing countries, shows that 25 made no design changes while 25 made minor changes of the following types: 10 modified designs because of non-availability of materials to specifications used in advanced countries and related material-supply problems of the types discussed in Chapter IV; 8 modified designs to suit local demand, including safety regulations, load requirements, road conditions, and climate; 8 modified designs to suit measurement requirements of the assembled product; 3 modified designs to reduce manufacturing costs related to scale economies and relative factor prices; one produced custom-made items; and 3 modified designs for unspecified reasons.[2]

Tomlinson further indicates that adaptation to local conditions is not one of the common features of transfer of technology to developing countries:

> Many of the UK firms in the present study...had been interested in extending the profitable life of patents, processes, and equipment which were well-established or even semi-obsolescent in developed countries...Countries of this type (India and Pakistan) are markets for established formulations, processes, equipment, and techniques. Many of these corporate assets are constantly being forced into quasi-obsolescence by the pressures of a rapid rate of competitive technological development

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[1]EPW, 12 August 1967, pp. 1426-27.

[2]Baranson, 1971, pp. 54, 57-60. The examples of design changes

> in the industrially advanced nations themselves. Markets in the less-developed countries provide a longer potentially productive life for such assets. In many cases, it may be a quieter and more profitable life as the foreign investment sinks peacefully to rest behind a host nation's protective tariff barrier.[1]

The ability to offer designs not available from advanced countries was a negligible factor in Indian exports. A possible exception was railway wagons. It was reported in connection with the abortive railway wagon deal which was being negotiated with the USSR in 1968-1969:

> The railway wagons are required in connection with industrialization of the Siberian region. The Japanese have agreed to take care of most of the requirements of sophisticated equipment. Japan is vacating unsophisticated fields like wagon building. This process will receive a setback if she undertakes the manufacture of wagons on the scale needed by the Soviet Union. At best Japan can meet only a small part of the Soviet Union's requirement of wagons with the help of capacity which has not yet been oriented to sophisticated production. The only other source from which the Soviet Union can purchase wagons are the Western countries, but in their case also the problem of reverting to unsophisticated items will arise. Unless the Russians themselves wish to build the wagons, which seems improbable, India can hope to secure the contract eventually.[2]

There were, nevertheless, products manufactured in India which were smaller in size and simpler in design than competing West European products distributed in Africa. Local distributors in West Africa reported that since rural customers often did not know how to use or

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total more than twenty-five because some firms made more than one type of change.

[1]Tomlinson, 1970, pp. 41, 2.

[2]Commerce, 10 May 1969, p. 909.

maintain equipment, simplicity was an important advantage in agricultural machinery. Kirloskar Oil Engines' products were reported to have some advantages in this respect.

A small producer of Indian origin in Ghana bought an Indian barbed-wire-making machine from Escorts International because the smallest available European machines had output rates considerably greater than his potential market and their automation was considered a handicap. The Indian machine was simpler, could produce as much barbed wire as he could profitably sell, and cost only 10 percent as much as the European machines.

For similar reasons, the same producer bought several very simple Indian machine tools produced by small firms for use in manufacture of buckets and simple agricultural implements. The West German machines that were available were technically more advanced, but the simpler Indian machines were more suited to his needs and cost less than 25 percent as much as a set of West German machines capable of the same (and other) operations.[1]

In 1969, ASCU Hickson, a small Calcutta firm, received an order from Ceylon for a small mobile plant for weather-preservation treatment

[1]This apparent advantage on designs may simply reflect the limited number of suppliers operating in Ghana. Because the market was very small and suffered from foreign exchange problems, West European suppliers were represented only by branches of a few large trading companies and Japanese suppliers did not take a serious interest in the market. As a result, the choice of products available in Ghana was limited. On the other hand, as an Indian who visited India periodically, this customer was able to choose among all available Indian machines.

of wooden electricity-transmission poles. The manufacturer, which designed the plant itself, claimed it was the only one in the world designed for developing countries where it was difficult to take timber to a central processing plant. Competing firms from the US and West Europe reportedly did not produce comparable plants.[1]

It has been argued that India is likely to be most competitive in export of engineering goods for which there is a large market in India but for which demand in advanced countries is low and shrinking. The argument is based on scale economies in production rather than design monopolies, however. It has been applied to conventional railway wagons,[2] hydroelectric power-generation equipment,[3] steam locomotives and spares,[4] spare parts for older models of vehicles and other machinery,[5] ordinary manganese dioxide dry batteries,[6] conventional machine tools, and grey iron castings, and it was often used by Indian manufacturers themselves in interviews. In the short-run, however, India faced competition from suppliers in advanced countries exporting on the basis of short-run marginal cost because of excess capacity, e.g. in hydroelectric power equipment. There was also competition from other semi-industrial countries.

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[1] Engineering Times, 1 June 1969, p. 9.

[2] Commerce, 10 May 1969, p. 909.

[3] Cilingiroglu, 1969, pp. 10, 30.

[4] UNCTAD-GATT, 1969, Vol. A, pp. 34-35, 185, 241.

[5] Kleu, 1967.

[6] Japan Economic Journal, 3 June 1969, p. 10.

D. Export Models

With the exception of large orders for commodity-like products and structural fabrication, virtually all engineering goods exported from India in the 1960s were produced to designs adopted when manufacturers were concerned with supplying only the Indian market. Few companies producing general-purpose machinery, including consumer and capital goods, or their parts made any significant design changes or produced special models for export. This was true even in the case of companies which exported products with inefficient designs.

In the case of commodity-like products (e.g. steel rails and deformed and ribbed reinforcing bars) and structural fabrication (e.g. transmission line towers and railway wagons) which were sold in individual orders typically valued at $1 million or more, production was commonly to foreign specifications differing from those used in India and in some cases requiring different materials and manufacturing techniques. Manufacturers of transmission line towers exported specially designed equipment for voltages higher than those used in India in a $1.9 million order to Nigeria in 1966-68 and a $1.3 million order to the US in 1969. In 1969-70 the Integral Coach Factory exported $0.3 million of specially designed railway coach bogies to Taiwan.

1. Design Changes for Export

A few exceptions to the generalization about absence of design modifications on general-purpose machinery, most of which involved only minor changes, are described below. Since one question of interest is whether exporting provided an inducement to improve designs of products sold also in the domestic market, it is relevant to point out that at least in the case of bicycles, tires, and teleprinters the export models were not sold in India, because of government restrictions in the case of sports light roadster bicycles and nylon tires. However, in the case of machine tools the designs modified for export were also produced for the domestic market, and one can conclude that considerations of export did contribute to design improvements for the domestic market.

a. Electric Motors (14)

It was reported in 1965, when Indian electric motor manufacturers were using class 'A' insulation for the domestic market, that "Kirloskar Electric has manufactured a few batches of motors with class 'E' insulation particularly for export purposes."[1] Since then, class 'E' insulation has been used regularly by a number of manufacturers for motors produced for the domestic market as well.

b. Bicycles (19)

In 1967 TI Cycles began to export a 3-speed sports light roadster bicycle designed to North American specifications, and in 1970 Sen Raleigh did the same.

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[1] GOI, TC, 1966a, p. 19.

c. Tires (26)

Dunlop India announced that it was "exporting sizes of bicycle tyres and tubes not used in India which are being made specifically for the American market."[1] Also, while manufacturers used rayon cord for tires produced for the Indian market, they used nylon cord for tires produced for export.

d. Sewing Machines

When Jay Engineering exported its standard sewing machine to the US in 1958 the response to the design was unfavorable. In 1959 it remodelled its machines for export to the advanced countries. However, these export models differed from the domestic ones only in minor ways like the shape of the casting, which was streamlined for export, and color. Even in 1969 the firm had not otherwise changed its designs in order to increase export potential or introduced special models for export.

e. Teleprinters

Hindustan Teleprinters produced an Arabic model for export. Apart from a change in type-face this involved a reversal of the direction of printing. In 1969 HTL received an export order from Kuwait for $0.3 million worth of Arabic teleprinters.

f. Water Coolers

American Refrigerator produced special water coolers designed

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[1] EPW, 6 May 1967, p. 859.

for export. In 1969 it received an order for $267,000 worth of water coolers from Kuwait.

g. Machine Tools (13)

The major Indian machine tool companies, including HMT and Mysore Kirloskar, concluded by the mid-1960s that the market for their range of machine tools in developing countries, except a half dozen of the more industrialized ones and ones receiving Indian tied aid, was too small to justify sales promotion efforts. They concluded that the most profitable export markets for machine tools were North America and Western Europe, where there was a market for conventional general-purpose machine tools like lathes, milling machines, and drilling machines for use in repair and maintenance, training, and low-volume production. At the end of the 1960s, HMT, Mysore Kirloskar, Bharat Fritz Werner, and PSG Industrial Institute had North American distributors while HMT and Harig Malik were supplying machines to two collaborators, Verson Allsteel Press and Harig, for sale in the US. Indian exports of machine tools to advanced Western countries including Australia and New Zealand in 1969-70 were $2.1 million.

This section examines the efficiency of the designs used by HMT and Mysore Kirloskar for export to these markets and the design modifications made to improve the profitability of export.

In part because of restrictions on export of newer machines produced under active collaboration agreements (see Tables VII-5 and VII-6), HMT was mainly interested in exporting machines produced under expired collaboration agreements made during 1957-1959 with West European manufacturers,[1] and Mysore Kirloskar was interested in exporting machines copied from West European designs during the 1950s. Since the 1950s there had been design changes in advanced countries, largely because of the increasing cost of labor relative to capital and the development of carbide cutting tools. These developments included increased rate of metal removal or increased cutting speed and greater accuracy. This involved increased use of alloy steels, heavy-duty castings and more robust structures, more rigid supports for the spindles and anti-friction bearings, better lubrication and cooling systems, inclusion of a range of finer feeds to allow finishing without separate grinding, etc. Also, as noted above, HMT's H lathes and M milling machines may not have been the best available designs even in the 1950s, and an Indian machine tool distributor claimed that Mysore Kirloskar copied second-rate lathes from the U.K. Finally, there were design differences between West Europe and North America, and changes in styling made the Indian machines look old-fashioned.

Distributors in advanced countries recommended that HMT and Mysore Kirloskar change some of the basic performance characteristics of their machines, including rate of metal removal and tolerances.

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[1] H, LB, M, and RM series machines, plus the L22TP and E2 designed in India.

The first North American distributor of Indian machine tools, who had been dealing with HMT and Mysore Kirloskar since about 1962, had long recommended that these companies design machine tools specifically for the North American market rather than selling existing machines or trying to modify them. However, neither HMT or Mysore Kirloskar designed a machine from the ground up for the North American market.[1] Instead they tried to modify the machines they were already producing. This left many of the foreign distributors dissatisfied.

HMT redesigned the M2 milling machine produced under a 1957 West German collaboration to increase its rate of metal removal. The alternative spindle speed ranges of 34 to 635 r.p.m. and 68 to 1270 r.p.m. were replaced by a wider range of 30 to 1500 r.p.m., and the 7.4 h.p. main motor was replaced by a 9.65 h.p. motor. To accommodate these changes, HMT redesigned the spindle bearing arrangement, replaced bush bearings with anti-friction bearings, and redesigned the feed-gear box and milling heads. However, no change was made in the design or weight of the main structural parts of the machine. On its G cylindrical grinding machines produced under a 1959 Italian collaboration, spindles were redesigned to increase accuracy. On its L22TP turret lathe, produced to HMT's own design developed in 1961-63, the saddle, apron, and turret head were redesigned to make the machine more versatile.

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[1]HMT's new MITR ram-turret milling machine was a possible exception.

Even after making these changes, HMT reported that in 1969 its North American distributors "wanted us to make various design changes, in some cases major changes, in order to improve the prospects of selling HMT machines in large quantities in North America."[1]

An announcement in 1970 indicated that HMT had finally decided to produce machines to new designs for export rather than simple re-designing its existing machines. There was an announcement of an "agreement between HMT and American Tool under which HMT will produce for export a wide range of tools using American Tool's technology... Mr. Frank S. Wyle, Chairman of Wyle Laboratories, which owns American Tool,...is eager to help HMT develop products suited to the US market."[2]

Mysore Kirloskar redesigned its GD/Western/Westturn lathe on two occasions and added a higher spindle-speed range and a more powerful motor, but it did not increase the rigidity of the machine. North American distributors reported that the lathe began to chatter at high speeds and feeds, and an Australian distributor said the bed was too narrow. According to the distributors, although the Westturn had a market in North America, the market would have been much larger for a sturdier machine capable of faster metal removal.

Similarly, according to North American distributors, Mysore Kirloskar would have to make major changes, including redesign of the

[1]HMT, "Comments," 1969, p. 3.

[2]FE, 26 November 1970, p. 4.

spindle, bearing arrangement, tailstock, and structure, before the Rigiturn lathe could be sold in North America because of the limited rate of metal removal possible with the existing design. Although no major innovations were involved, this amounted to design of an entirely new lathe. Mysore Kirloskar increased the power of the drive motor from 5 to 7.5 h.p. but did not change the machine design. Because of their extremely slow spindle speeds, all of Mysore Kirloskar's other engine lathes, including the Shimoga 25 and RL-R3, were considered obsolete in advanced countries.

An example of the minimal redesigning required for a machine tool to make it acceptable for export to the US is provided by the changes made by Mysore Kirloskar in a lathe which it was producing without collaboration. Mysore Kirloskar initially exported its Harihar MBD cone-pulley lathe to the U.S. and Canada, sending 40 in 1963-64, 57 in 1964-65, and 18 in 1965-66. However, on the basis of the requirements of the US market, the GD all-geared-head lathe with the same swing was redesigned according to specifications suggested by the US distributor, and in 1965-66 the first shipment of eight Kirloskar Western Type 'E' lathes was made. The US distributor subsequently placed an order for 600 Kirloskar Western machines and 120 Harihar MBD lathes to be shipped during 1967-68.[1] Nevertheless, further modifications on the all-geared-head lathe were considered

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[1]The order was evidently cancelled after the first shipment arrived in badly damaged condition.

necessary and in mid-1968 Mysore Kirloskar sent the first shipments of this third model, the Westturn. These were favorably received by the US distributor. However, as noted above, North American and Australian distributors said there would be a larger market for a sturdier machine.

With this background, it is instructive to consider the design changes that were made during the evolution from GD to Western to Westturn. Relevant specifications are listed in Table V-2.

2. Why Did Not More Firms Produce Special Export Models?

One naturally wonders why firms which exported machines with inefficient designs did not introduce efficient designs at least for export. Apart from the matters already discussed in part V.B.3, the failure of many to do so appears to be explained mainly by the nature of the incentives under which they exported, which was discussed in Chapter III.

Exports depended heavily on short-run marginal cost calculations in the presence of excess capacity and on the high implicit exchange rate on the first 5 to 10 percent of production which was exported. For the long-run, on the basis of the relative profitability of and risk involved in production for the domestic market and export or of long-run costs, few firms were interested in exporting over 10 percent of production. Consequently, their investment and design decisions were not very responsive to export considerations. This was largely a result of government discrimination in favor of import substitution

TABLE V-2

Design Modifications in Mysore Kirloskar Lathe for Export to U.S.

Item	Madras-GD (Pre- 1965/66)	Western Type 'E'(1965/66)	Westturn (1968)
1. Headstock	all geared	all geared	all geared
2. Swing over bed, mm	330	330	330
3. Bed gap	Optional	Not provided	Optional
4. Admit between centres, mm	(600 (1000	(600 (1000	n.a.
5. Net weight, Kg			
600 mm	637	615*	n.a.
1000 mm	680	640*	n.a.
6. Horsepower	1	1.5*	2
7. Electrical equipment	Provided	Not provided	Provided
8. Speed range, rpm	48-1000	48-1000	54-1200
9. Feed range per spindle revolution			
Longitudinal	.028-1.596	.028-1.596	n.a.
Transverse	.015-0.857	.01-0.543	n.a.
10. Bedways	Not hardened	Hardened	Hardened
11. Cross-slide screw and guideways	Not hardened	Hardened	n.a.
12. Spindle nose	Threaded	Threaded	Cam-lock
13. Diameter of hole through spindle, mm	41	41	38
14. Tailstock scale	No	No	Yes
15. Tailstock cross-section	Rounded Rounded	Squared Off	Squared Off
16. Handwheel rim cross-sections	Round	Square	n.a.
17. Location of apron hand-wheel for longitudinal movement	Right	Left	Left
18. Location of feed, reversing on headstock	Outside	Outside	Inside
19. Location of electric switch	On headstock	Separate bracket	On headstock
20. Toolpost type (and tool size)	Square (12.5 mm sq.)	American (5/8")	n.a.
21. Change gears			
Provided to cut	Metric threads	Inch threads	n.a.
Optional to cut	Inch threads	Metric threads	n.a.

*:Electrical equipment not provided with machine, and H.P. not specified in export brochure. 1 H.P. motor supplied for use in India.

n.a.: not available.

and against exports.

Moreover, where there was no domestic market for a product for which the design was efficient for export, either because of lack of domestic demand or government restrictions, the alternative to export of products with inefficient designs would have been production of special export models. The latter was not an attractive alternative in general. To justify production of a special export model, it would have been necessary to recover on export all the overhead costs of production including costs of designing or technical collaboration, special equipment and tooling, and development of ancillaries. In the case of firms exporting 5 to 10 percent of production, it might have been more profitable to continue to export products manufactured to inefficient designs. Moreover, there were a number of risks faced in production of a special export model without a domestic market, especially given a gestation period of about two to three years.

Finally, there were some specific government obstacles to production of special export models, in spite of the fact that the government often indicated that industrial licensing, import licensing, and approval of foreign collaboration would be relaxed for projects exporting over 75 percent of output. According to Mysore Kirloskar in 1969:

> With excess capacity, many a time machine tool manufacturers are in a position to manufacture other machines which dealers in foreign countries desire, but the manufacturers are unable to undertake the job as they are not licensed to manufacture such machines.[1]

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[1] Letter, 1969, p. 5.

Kirloskar Oil Engines claimed that in denying its application in 1969 for foreign collaboration for production of a sophisticated engine which initially would have been primarily for export, one of the government's explanations for not approving production was that such an engine would not have been justified by domestic demand for another decade. A similar argument seems to have been used in a press conference by the Minister of Foreign Trade:

> Question: Is it practical to think in terms of an export-oriented economy (i.e., export-oriented industries) like Japan's?
> Answer: An economy like ours with a very large domestic market and low per capita income cannot. If, however, proposals for economic cooperation or expansion of trade among the developing countries on a preferential basis succeed, we can have the assurance of a large export market which will permit us to plan exclusively export-oriented production. Meanwhile, we must develop production where the large domestic market permits reaping of economies of scale and cushioning off of the external changes.[1]

In 1969-70 Philips India reported that it was unable to secure government approval for a project even though the entire output would have been exported.

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[1] Times of India, 9 June 1969, p. 9.

CHAPTER VI

EXPORT MARKETING, PRICING, AND SPECIAL TRADING ARRANGEMENTS

This chapter examines marketing problems and practices involved in export of Indian engineering goods. The importance of marketing as a distinct problem is revealed by the fact that the demand for exports of Indian engineering goods is not perfectly elastic at the landed prices obtained for the same products by competitors from advanced countries even though India is a marginal supplier.[1] The result is export prices lower than those received by competitors and hence presumably a lower export volume than would be predicted on the basis of costs of production and export incentives alone.

The discussion indicates that, apart from problems beyond India's control, even among Indian engineering firms engaged in export most have allocated few resources to marketing activities as a way of increasing export demand at a given price and possibly reducing the cost of foreign exchange earned and that the contribution of the Indian government in this area has been small. Like the East European countries, India has relied heavily on price concessions and to a significant extent on bilateral arrangements and tied financing to secure orders for goods facing marketing problems.

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[1] Evidence for this is discussed in part VI.B.1.a.

A. Export Marketing Problems

For a number of reasons both beyond and within their control Indian exporters are not able to secure orders at the prices received by competitors from advanced countries:

(1) India does not have a reputation for industrial production.

(2) Established suppliers have advantages over new suppliers.

(3) Performance by many Indian exporters has been poor.

(4) Few resources have been allocated to export marketing for Indian goods. These are discussed below on the basis of information collected for this study in India and in a number of its foreign markets, supplemented by published foreign market surveys.[1]

1. Reputation for Industrial Production

Demand in one country for the engineering products of a foreign firm depends on the reputation of the supplier's home country for production of industrial goods. This can be explained largely by difficulties in determining quality in specific cases. There is a preference in foreign markets for engineering goods from advanced countries because Indian industry is less developed and because few people outside India are informed about its development.[2] Export market surveys

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[1] Among the latter, the three most recent and comprehensive are: NCAER, 1970; IIMC, 1969; and UNCTAD-GATT, 1969.

[2] Damrong Machine Tool Co., Bangkok, has marketed Indian R.K. drilling machines as "Made in England." According to two other Indian companies it is likely that some of the machine tools marketed abroad by India's collaborators also have been sold without informing the customers that the products were from India. The value of such exports is not significant, but this practice is indicative of the disadvantage faced by Indian exporters.

for Indian industrial products invariably report that even in neighboring countries and markets with the greatest potential demand importers and users do not know that India manufactures and could export many of the goods which are in its present range and that they underestimate the quality of goods available from many major Indian manufacturers.[1] Cultural and other traditional associations provide another basis for a general preference for goods from advanced countries.[2]

2. Advantages of Established Suppliers

Indian exports compete with goods from firms which are established suppliers. Importers and users know that established suppliers and their agents, products, and brand names are reliable on matters of quality, delivery, and after-sales service, their designs and specifications are often accepted as standard, and their products are sometimes status symbols. Indian companies, products, specifications, and national standards are generally unknown and untested, although when they produce in collaboration with international companies this may reduce, but does not eliminate, marketing disadvantages.[3]

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[1] A report on the Australian market for diesel engines states: "Only two of all the companies contacted conceded any awareness at all of an Indian diesel engine industry. Others, when the question was posed, responded with expressions ranging from mild surprise to outright disbelief." GOI, MC, 1967c, p. 14.

[2] See, for example, the report on the role of France in its former African colonies in NYT, 8 February 1971, p. 12.

[3] "The situation is little better when items are produced in India under internationally known brand names. Even here because of the old prejudice we encounter a purchaser reaction that the goods coming from India are not as good qualitatively as those from other

A number of related advantages are enjoyed by established suppliers. Major import houses handling engineering goods in developing countries are commonly owned by interests in developed countries and are reported to have a bias in favor of handling their products. It is difficult for a new supplier to find a local agent with comparable scale, financial and technical resources, reputation for service, or contacts. Availability of shipping, banking, government representation, and related commercial services often link developing countries to former imperial countries, reducing the cost to the importer of trade in traditional channels.[1] Tenders are frequently restricted to known suppliers[2] and sometimes specifications are written in a way that favors the traditional supplier, e.g. incidental details eliminate other designs or there are requirements for proprietary items.[3] Indian exporters claim that procurement by certain ex-British colonies through Crown Agents in London favors British sources[4] and that

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sources though under the same brand name." NCAER, 1970, Vol. 1, pp. 44, 164.

[1]Established suppliers also have direct cost advantages, e.g. lower ocean freight and trade preferences. However, these would not explain a differential in landed prices that could be obtained by established suppliers and India as a marginal supplier.

[2]See, for example, UNCTAD-GATT, 1969, Vol. A, p. 14.

[3]NCAER, 1970, Vol. 1, p. 49; UNCTAD-GATT, 1969, Vol. A, pp. 53-54, 56.

[4]However, large orders have been secured by Indian firms through Crown Agents, e.g. railway wagons to East Africa. See also Commerce, 21 February 1970, p. 326, for the complaint and another order secured through Crown Agents.

reliance of the governments of some developing countries on expatriate technical personnel biases them toward products with which the advisers are familiar, i.e. from their home countries.[1] Samples from a new supplier may have to be certified by a foreign testing agency on the basis of laboratory and in-use testing, sometimes requiring a number of years, before regular orders can be made.[2]

3. Performance of Indian Exporters

Foreign agents, importers, and users in neighboring countries have had very poor experience with Indian exporters and government commercial agencies. They have found that Indian suppliers frequently do not fulfill the terms of contracts and that many other other problems arise in dealing with them. The problems encountered with Indian exporters are reported to be more common and serious than those with suppliers from any competing country. In contrast, the small east Asian countries and Mainland China have good reputations in most respects.

These problems have caused a reduction in demand for Indian exports involving not only the importers and exporters directly concerned but, as an external effect, other importers and exporters. Many importers state that they have switched procurement to other

[1] NCAER, 1970, Vol. 2, p. 31.

[2] According to UNCTAD-GATT, 1969, Vol. B, pp. 25-26, 37, it could take years to obtain mandatory approval from the Association of American Railraods for sale of Indian railway equipment in the U.S.

countries and refuse to handle Indian goods. This, rather than ties between distributors and established suppliers and similar problems discussed above, explains much of the difficulty that Indian exporters have experienced in finding good distributors.[1]

Among the common complaints against Indian exporters and government agencies are:

(a) Goods are not supplied according to specifications and samples. Quality is often below that specified and rates of initial rejection and subsequent failure in use are high and unpredictable.

(b) Goods are not supplied by the date specified. This leads to interruption of operations or higher inventory requirements on the part of the buyer; service and interest costs on letters of credit and prior deposits are increased, and the realization of import markups is delayed; import licenses have to be revalidated or are lost, etc. Supply of spare parts is slow.

(c) Goods are damaged or unattractive because packing and packaging are poor.

(d) Agency commissions are not paid in time. It is common for commissions to be more than a year overdue.

(e) In the case of exports to nearby countries including East Africa and Burma, documents necessary to clear shipments at the port of entry

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[1]This is not new nor confined to engineering exports. A 1961 study reported that "Indian exporters have a bad reputation in world markets for unreliability, poor quality, late delivery." (Economist Intelligence Unit, 1961, p. 54.) NCAER, 1970, reports the same problems for textiles, etc.

arrive after the goods. This leads to demurrage charges.

(f) There are cases where exporters have charged higher prices than those originally quoted, where they have refused to bear losses arising out of devaluations, and where they have bypassed their agents or importers and supplied goods directly at a lower stage in the distribution chain, etc.

(g) Exporters do not settle claims arising from the above practices and Indian government representatives (commercial attaches, the EEPC, the STC) provide no assistance in settling the claims.

(h) Exporters and government agencies do not answer correspondence involving trade inquiries or complaints.

(i) Government agencies do not help in determining the competence or reliability of an Indian supplier. In the absence of such information, foreign importers are reluctant to deal with any new Indian party because of risk of encountering the above problems.

Complaint (a) was heard mainly in interviews at businesses importing from small Indian firms[1] and was not based on experience with India's major export orders or with the exports of large firms producing with foreign collaboration. There do not appear to have

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[1]Such complaints are particularly common for automobile and bicycle parts. For example, I was shown a consignment of truck leaf springs in which a large number were so brittle they snapped under a man's weight while others soon flattened. Tests by the Kenya government laboratories showed that the metal used did not meet the specifications and that the heat treatment had not been done correctly. Nevertheless, the Indian supplier refused to accept the test results or settle the complaint.

been complaints about quality in connection with India's large orders of railway and power distribution equipment.[1] TELCO, India's largest engineering firm, is known in a number of foreign markets for its high standard of quality control in Mercedes-Benz commercial vehicles.[2] There are few if any complaints about steel tubes, which rank first by value among Indian exports of engineering goods.[3] Nevertheless, market reports commonly note complaints of high rejection rates on individual

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[1]In connection with the supply of 727 railway wagons by TEXMACO and Jessop, it was reported that "the East African Community are satisfied with the performance of Indian wagons but are not happy with their finish." (NCAER, 1970, Vol. 1, p. 171.) Another report on the same orders states that "in the railway sphere there does not appear to be the slightest antipathy to products received from India as compared with specified types previously purchased from other countries...Inspection of a batch of the Jessop supply showed that the workmanship was of commendable standard." (UNCTAD-GATT, 1969, Vol. A, pp. 65, 242.) In connection with electric transmission projects it was reported that in Ethiopia "recently one Indian company had obtained a tender for a turn-key job, providing transmission lines. Its work was appreciated." It was also reported that "The Philippines Electricity Corporation has been importing transmission towers and aluminium conductors from India and is satisfied with the quality." (NCAER, 1970, Vol. 1, pp. 146, 147.)

[2]UNCTAD-GATT, 1969, Vol. C, p. 181. According to another report, "the quality of Mahindra and Mahindra jeeps and Mercedes-Benz trucks of TELCO is rated high all over." (NCAER, 1970, Vol. 1, pp. 172, 175.)

[3]This is based on interviews in East Africa. According to another survey of the Indian Ocean basin, in the case of steel and steel tubes, "there is practically no complaint on the quality of the Indian products." An exception was reported in the case of Iran, where the "general impression is that the quality of Indian pipes and tubes was not up to expectations...Indian exporters fail to stick to specifications. They do not protect the pipe ends. Tubes often get rusty." Another exception was that "the New Zealand Railway...is not very happy with Indian performance in the recent past. Indian rails had manufacturing defects." (NCAER, 1970, Vol. 1, pp. 137, 138, 170.)

orders in the case of products which are exported by both small and large Indian manufacturers, e.g. electric fans, bicycles, small tools and hand tools, and some of these might involve the large companies.[1]

However, the rest of the complaints apply to many large Indian companies as well.[2] A letter exemplifying these problems is reproduced below by permission of the Nairobi firm involved.

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[1]In the case of electric fans exported to Australia, it was reported that "Indian consignments are defective and the rejections are often 10 to 15 percent. This is because of poor packing." "Importers in Tanzania and Uganda complain that frames and tubes of Indian bicycles crack even within the guarantee period of one year." "Quality of Indian tools has been accepted in the region except in Burma and Singapore...Singapore's complaint was that the tools cracked during operation." (NCAER, 1970, Vol. 1, pp. 150, 177, 183.) In East Africa, "a supply of track fittings from one of the iron and steel works in Calcutta...was virtually completely rejected by the Railway's civil engineering authorities after receipt." (UNCTAD-GATT, 1969, Vol. A, p. 66.) In Libya, "even goods sent by reputed Indian firms have turned out to be shoddy. There appears to be no control on quality at manufacturing stage." (NCAER, 1970, Vol. 2, p. 58.) In New Zealand, HMT's distributor complained that machines were sent with defects that could easily have been avoided. In about 1966 Mysore Kirloskar lathes cracked during shipment to the US, with the result that an order for about $0.5 million was cancelled.

[2]For example, in the case of machine tools, in 1968 HMT's New Zealand distributor complained about a number of such problems. See also NCAER, 1970, for numerous examples.

EXHIBIT VI-1

Letter of Complaint from Importer of Indian Engineering Goods

R E G I S T E R E D

8th July, 1968

Auto Dept.

The Engineering Export Promotion Council,
Post Bag No: 7907,
Bombay 34,
India

Attention: Mr. V. Kumar

Dear Sirs,

Re: Messrs. Fitwell Auto Corporation

We have received a copy of your letter Reference: COMPLAINT/ 2885 dated 3rd of June, 1968, addressed to Messrs. Fitwell Auto Corporation and we must say that the contents of your letter are indeed very surprising.

If you look up the correspondence that we have exchanged with Messrs. Fitwell Auto Corporation, you will observe that there was no complaint made against Messrs. Fitwell Auto Corporation.

The fact is that Messrs. Fitwell Auto Corporation approached us with a view of pointing us the Representatives for the three East African countries which we refused due to the very unsatisfactory results from our past association with a number of manufacturers/ exporters from India.

You will remember that at one time we had to request your intervention in the case of Messrs. Transworld Agencies for the non-payment of commission. This claim was settled after a delay of over three years.

Again in 1965 we had to approach you once again for your assistance and finalising the question of non-payment from Messrs. G. K. Industries. Although a number of letters have been exchanged from 1965,

EXHIBIT VI-1 (Continued)

The Engineering Export Promotion Council.

no positive results have been achieved so far.

The writer during his visit to India in November 1967 personally approached Messrs. G.K. Industries and was surprised to see copies of correspondence wherein Messrs. G.K. Industries had requested The State Bank of India, Ghatkopar, to transfer us the necessary commission. It appears that The State Bank of India took no action in this respect and this matter was brought to your notice. When the writer called at your office in Bombay during November 1967, at that time every assurance was given to him that this matter will receive immediate attention but on his return to Nairobi, the writer was surprised to see that there was no action what-so-ever from your side in this respect and he wrote to you again on the 17th of January, 1968 and 19th of March, 1968. Much to our regret both our letters todate remain even without the courtesy of an acknowledgment.

Copies of our above two letters were sent to The Engineering Export Promotion Council of India, Nairobi, and here again we have not received even an acknowledgment. Since all the letters were sent under Registered post, it certainly cannot be the case of your not receiving the letters in question which can only mean that both our letters have been ignored. You will appreciate when an organisation like yours simply does not bother to acknowledge business letters, there is hardly any sense in doing business with manufacturers/exporters from India.

In view of the present circumstances, we do sincerely hope that this letter will be acknowledged by you and we will also appreciate your comments as to whether we may or not look forward to your assistance in settling the unfortunate affair with Messrs. G.K. Industries.

Yours faithfully,
ACHELIS MOTOREX (KENYA) LIMITED.

SADRUDEEN B. MOHAMED.
Manager,
AUTOMOTIVE DEPARTMENT.

SD/PA

c.c. The High Commission for India, Nairobi

c.c. M/S. Fitwell Auto Corporation.

4. Indian Export Marketing Input

The problems considered above under (1) to (3) reflect in part the fact that most Indian engineering firms, even those that are exporting, have allocated few resources to marketing activities as a way of increasing export demand and that the contribution of the Indian government in this area has been small. This is a contrast to the pattern followed by Japan, which invested heavily in marketing to expand exports against established competition. This section describes Indian marketing activities, considers their relation to the pattern of Indian exports, and then discusses several factors which have limited the willingness and ability of Indian suppliers to make the more extensive marketing expenditures which many market surveys suggest.[1] It also discusses the role of government commercial services, export regulations, and control of foreign exchange for marketing expenditures.

a. Reasons Allocated to Marketing by Exporters

Measured in terms such as amount of publicity and qualifications of distributors, the marketing efforts of Indian exporters rank below those of most of their competitors. After several years of increasing exports of engineering goods, few Indian companies had by 1969 made expenditures to develop a steady foreign market even for products for

[1]For examples of proposed marketing plans, see T. Griffiths and A. Hone, "Marketing Hand Tools in North America," EPW, 6 December 1969, pp. 1877-78, and IDMC, 1969, pp. 66-108.

which competitors devote significant resources to marketing or enjoy price advantages because of their established positions. Jay Engineering (electric fans and sewing machines), Kirloskar Oil Engines (stationary diesel engines), HMT (machine tools), Tata Exports (TISCO steel and TELCO commercial vehicles, etc.), and the public sector STC were among the few that had gone to the extent of setting up foreign offices and warehouses. Several other companies exported through their foreign collaborators and hence did not have to make independent marketing efforts.[1]

The typical marketing activities and arrangements of companies which exported were quite different. Through a combination of short trips abroad by Indian officials, manufacturers, and traders, government-sponsored participation in foreign exhibitions, and visits to India by foreign purchasing officials and traders, Indian companies made direct sales and appointed foreign agents and importers to handle sales and service. However, there was little market research, publicity, selectivity in appointment of foreign representatives, or technical or financial support for representatives to improve distribution and service. Apart from these cases, there was no Indian export marketing effort whatsoever for many companies and most countries, e.g. no service facilities, nor were there exports.

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[1]IBM, Siemens India, Dunlop India, Atlas Copco, Ralliwolf, and SKF are examples. Dunlop India also made some marketing efforts, e.g. trips and exhibitions abroad.

b. Government Commercial Services

The government has set up a number of organizations in India and abroad to provide services to exporters and foreign customers. There are commercial sections of the Indian embassies, overseas trade centers, the STC, the EEPC, the Indian Institute of Foreign Trade, the Department of Commercial Intelligence and Statistics, the Indian Council of Trade Fairs and Exhibitions, the Ministry of Foreign Trade's Export Promotion Service, and the Ministry of Industrial Development's cell to promote exports of small scale manufacturers. These do not provide the types of assistance to exporters and foreign importers which are provided by government organizations of competing suppliers. This weakness can evidently be explained partly by the limited resources allocated to those organizations, by the absence of coordination among them, and by the fact that their personnel often do not have commercial or technical training. The commercial posts in Indian embassies are normally filled with civil servants.[1]

Little information on overseas markets is made available to exporters either on a regular basis or by special request. The government does pay for *ad hoc* commodity and country studies, but as a rule these have little value for commercial purposes. Exporters are forced

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[1]See also the 1961 criticism of the organization of STC as a government department and its staffing with civil servants ignorant of trading methods. (Economist Intelligence Unit, 1961, p. 55.) Personnel changes were made in 1968 with appointment of P.L. Tandon, former head of Hindustan Lever, as Chairman.

to do virtually all their own market research, not only on technical matters like design but even to secure basic data about foreign economies. Complaints about lack of commercial services are common:

> The government now attaches great importance to promotion of trade. But our missions are not well equipped for this work ...In many countries of Latin America and Southeast Asia our missions do not have economic sections. As a result we have very little information about the commercial conditions in these countries. Even where we have commercial sections,... their slovenliness is clearly visible in the reports and survey they submit. Indian businessmen visiting foreign countries often find our commercial secretaries neither well informed nor helpful...They do not even have basic information on such matters as tariffs, shipping freight, prices at which goods are imported from the competing countries, etc.[1]

These problems are illustrated by the difficulties encountered by TELCO in carrying out a foreign market survey for excavators in 1964. TELCO reported that "the EEPC could not assist us in the market survey as they are familiar with traditional light engineering goods and manufactured consumer goods only." TELCO sent a questionnaire to Indian embassies and concluded:

> It is evident from the replies received from these offices that they are not adequately equipped with staff and lack commercial background. When requested repeatedly,...only some appear to have made genuine efforts to contact the concerned sources.[2]

Similarly, the government organizations do little to pursue export opportunities. It was reported that in East Africa

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[1] ABP, 3 July 1969. See also NCAER, 1970, Vol. 1, pp. 56-57; Vol. 2, pp. 5, 15, 61, 199; and Textile Machinery Manufacturers' Association, FE, 9 November 1968, p. 7.

[2] TELCO, "Report on Market Survey for the Export of Excavators and Vehicles," 1964, typed, pp. 1-2.

> The trade representatives of several countries, especially of UK, West Germany, and the East European countries, are active in canvassing for bulk orders. Relatively, the Indian embassies are inactive.[1]

Exporters commonly complain that Indian exhibitions in foreign trade fairs are badly organized so that much of the commercial value of participation is lost.[2]

There are also many complaints from importers. In particular, the local offices of the government commercial organizations provide no assistance on such matters as judging the technical competence of potential Indian suppliers and settling disputes. A report on India's railway equipment exports states that "India's representative in Nairobi (High Commissioner's office and STC) being non-technical were in no position to answer any queries raised by the (East African) Railway authorities" concerning the technical competence of a particular Indian supplier who submitted the lowest bid in an important tender.[3] Another survey reported that "in very many places our teams were told that enquiries to the relevant ministries, export promotion councils, STC, etc., often remained unattended," and that "unfavourable reactions even applied to government organisations such as STC, which often failed to abide by commitments."[4]

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[1]NCAER, 1970, Vol. 2, p. 27.

[2]IIMC, 1969, pp. 89-91; NCAER, 1970, Vol. 1, p. 54.

[3]UNCTAD-GATT, 1969, Vol. A, pp. 66, 21, 80. See also NCAER, 1970, Vol. 1, p. 56; Vol. 2, p. 44.

[4]NCAER, 1970, Vol. 1, pp. 56, 50. See also the letter reproduced in Exhibit VI-1.

c. Lack of Controls over Export Performance

There are virtually no effective controls over Indian export activities. The discussion above notes that there has been a considerable amount of activity, especially by small firms on matters of quality, which has damaged the reputation of Indian suppliers in neighboring markets and reduced the demand for Indian exports. The lack of effective controls over exports in India contrasts with the situation in Japan, where the government has long imposed compulsory quality standards and inspection procedures as well as price floors, quotas, and other regulations on exports of a wide range of products both to assure satisfactory performance by exporters and to reduce competition among them.

India has an Export Inspection Council and since 1965 has made quality control in manufacture and/or preshipment inspection compulsory for steel and for a large number of light engineering goods, e.g. utensils, cutlery, hand tools and small tools, automotive parts, electric fans, bicycles and parts, etc. There is a provision for inspection and certification of the export worthiness of manufacturing units in certain industries, including automobile parts, based on their production and quality control facilities, and there is a provision for disqualifying units for export subsidies if they have "indulged in any form of unfair, corrupt or fraudulent practice, or failed to fulfill any export obligation." However, based on the experience of importers with Indian products and information supplied by Indian officials familiar with these provisions, it is evident that as of 1968-69 these measures were largely ineffective or even unimplemented. There were many complaints about high rejection rates to meet contract specifications, no list of export-worthy firms was available to foreign importers, and evidently no exporters were disqualified for subsidies for failing to fulfill contracts. Based on its survey of 26 foreign markets during 1968-70, the NCAER reported that

> Judging from this study, a great deal remains to be done to make the Export (Quality Control and Inspection) Act, 1963 effective...This is supported by innumerable instances in which Indian exporters do not ship goods in accordance with samples.[1]

Japanese industrial production and export of many goods have been based heavily on small manufacturers. For example, in 1967 only 40 percent of the 2.6 million household sewing machines exported by Japan were manufactured by the top eleven companies; the rest were from small firms. Although Japan differs from India in the level and control of quality in many areas of production and small firms in Japan are generally more competent technically than small firms in India, the Japanese government has imposed a number of regulations, often administered by industrial export associations, to control the quality of exports. Since the early 1950s, the government has imposed several restrictions on sewing machine exports, including compulsory registration by exporters with the government, use of designated parts, quality standards and

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[1]NCAER, 1970, Vol. 1, p. 58. It also reports that "Thai importers have no faith in the Export Inspection Agency set up by the Government of India." (Vol. 2, p. 152.) See also Engineering Times, 21 May 1970, p. 9, for a report by an Indian exporter of automobile parts that government quality controls over export are weak.

inspection, and qualifications for foreign distributors.[1] Similarly, binoculars and cameras can be exported only if they have been inspected and approved.[2] In addition, both the Japanese government and export houses have provided technical assistance to small firms to improve designs and quality, and the government has been selective in providing assistance in export marketing.

Exporters in Hong Kong and Taiwan are known for adherence to specifications.[3] No evidence could be found on existence of export controls in Hong Kong. Taiwan has provisions for compulsory export inspection for a number of products and for suspension of export licenses for "breach of contractual obligations or commitment of malpractices that defames foreign trade or international reputation" or "involvement in disputes with foreign customers for reasons attributable to the traders themselves."[4] Even in the absence of export controls, one might expect a high level of quality control by firms in

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[1]Oriental Economist, March 1969, p. 46; Research Monthly, July-August 1958, p. 725.

[2]Research Monthly, January-February 1957, pp. 612-16; Japan Trade Monthly, June 1963, p. 31. In 1958 the government of Japan decided that only cotton cloth of washable color or better could be exported. (Bhagwati and Desai, 1970, p. 388.)

[3]See, for example, the survey of US importers reported in FE, 29 November 1969, and NCAER, 1970, Vol. 1, p. 58.

[4]There is compulsory inspection for aluminum, wires and cables, electrical appliances, bicycle chains, and a number of major non-engineering products, e.g. textiles, plywood, and canned foods. (Foreign Trade Quarterly, December 1967, pp. 41-42.)

Hong Kong and in the Taiwan export processing zones since they have no protected domestic market. Also, production at firms involved in export from Hong Kong and Taiwan is often highly export-oriented; by contrast, exports are a small part of production for most Indian engineering firms involved in export.

d. Organizational Weaknesses of Indian Marketing

This section discusses weaknesses in the organization of Indian engineering exports, some of which can be traced to the limited expenditures already discussed.

(i) Fragmentation of Export

Most Indian manufacturers of engineering goods handle their own exports on an independent basis and deal directly with foreign agents, importers and even customers.[1] This contrasts with the organization of exports by many of India's competitors, particularly those which have increased their market shares recently, e.g. Japan and the East European countries. A major share of Japanese exports is handled by giant trading companies. The governmental Japan External Trade Organization and

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[1]The small volume of exports by the leading exporters Indian engineering goods in 1968-69 is indicated by the following data:

Value of Exports (US$000)	Number of Firms
Over 1,000	16
500 to 1,000	15
100 to 500	71
20 to 100	149

Source: EEPC

This includes firms which exported through collective channels.

Japanese trade associations organize collective export marketing efforts. Italy has export houses specializing in product groups, e.g. automobile parts, and carrying the complementary products of a large number of manufacturers. The same is true of the U.S., e.g. for export of machine tools to Latin America. The East European countries export through state trading agencies.

There are a number of advantages to marketing through an organization handling the products of a number of companies and dealing with a larger turnover and range of products, particularly in the case of complementary goods. Export houses can take advantage of economies of scale, develop expertise, and hence can offer more economical and better service to the manufacturer and customer. A 1969 study of automobile parts exports to east Africa and west Asia reports:

> The most successful parts exporters of the post-war years were those countries which were able to rationalize their automotive parts export marketing and sell ranges of products. This rationalization went furthest in Japan and Italy...Importers and distributors of parts are interested in wide product ranges, not single products. They need one supplier able to offer many parts for many vehicle makes. Small ranges or single products are purchased at a discounted price...Individual export marketing efforts through small agents are unlikely to be desirable from India's point of view.[1]

There are, however, some significant exceptions to the general pattern of individual exporting. First, some companies with large foreign equity participation export through the collaborator's organization. Second, manufacturers of a few products have formed export

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[1] UNCTAD-GATT, 1969, Vol. C, pp. 31, 19, 25.

consortia to bid for major export contracts, successfully in the case of transmission line towers, PILC power cables, textile machinery, and railway wagons, in the latter two cases through the STC. However, exporting is still handled on an individual basis for these products in spite of ad hoc cooperation on large bids and turnkey projects. Five public sector companies set up a consortium to undertake power generation and transmission projects in India and abroad, but so far it has received no export orders. Third, the companies in the Tata group export through their export house, Tata Exports, and offices in the US, UK, West Germany, and Switzerland. Tata Exports also handles products of some non-Tata companies. Some of the trading companies which originally handled imports and later diversified into distribution of indigenous products and manufacturing have diversified into export on an agency basis, but none has an overseas organization. Fourth, there are a number of trading companies handling exports of small engineering companies, light engineering goods, and non-engineering products imported by small importers in developing industries.

Indian manufacturers of engineering goods have handled their own exports in part because there are no established Indian trading houses with expertise in this area. However, Tata Exports has found that Indian manufacturers are rarely interested in having an independent export house handle their exports.[1] The main explanation seems to be

[1] B. S. Bhatnagar (Tata Exports), "The Strategy for Export Marketing Organisation," ET, 17 December 1969, p. 5; interview.

that most companies are not interested in investing in the development of export markets and therefore are not interested in the services that an export house could provide. They handle their own exports to avoid paying an export commission.[1] Even when manufacturers export through Tata Exports, they will not give a commission large enough to finance the sales promotion and other aspects of export marketing that the export house considers necessary. Also, it is not surprising that non-Tata companies are reluctant to market through a Tata company, and it is possible that some firms handle their own exports because this provides an opportunity for the management to travel and allows more discretion in the accuracy of invoicing.

(2) Small Foreign Agents

It is common for Indian engineering goods to be handled abroad by relatively small distributors with more limited experience, technical and financial resources, and service facilities than those of distributors handling competing products from advanced countries. According to a report on railway equipment exports to East Africa and West Asia:

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[1] In the case of Indian export merchants that handle automobile parts, it is reported that "agents are usually small, handling only a limited range of automotive parts, and their small turnover forces them to charge relatively high commission rates (up to 10 per cent.)" "For servicing smaller firms in the railway goods and automotive parts fields charges are said to be 10 per cent or more. In comparison, Japanese companies charge 2-4 per cent in similar circumstances and European trading firms 2 1/2 - 5 per cent." (UNCTAD-GATT, 1969, Vol. C, p. 48; Vol. A, p. 220.)

> There is a tendency for Indian firms to appoint small agents ...Having non-technically trained small agents has serious disadvantages in a technical field like railway goods. Not only do they fail to get any business but they create a bad impression regarding Indian railway goods generally.[1]

Often in the developing countries in the Indian Ocean basin, representatives for Indian engineering goods belong to the group of local merchants of Indian origin while major competitors often sell through European trading houses. There are, of course, many exceptions, e.g. where imports are nationalized. Foreign market surveys often express doubts about the qualifications of distributors handling Indian goods.[2] HMT concluded that many of its first group of distributors were not competent and has replaced them. These difficulties of even major Indian firms in finding established distributors appear to be related to all the points discussed in parts V.A.1-4.

e. Reasons for Limited Input and Weakness of Marketing

(1) Limited Return Expected on Marketing Inputs

Returns on export marketing expenditures are realized as higher export prices on subsequent sales. The shorter the time horizon, the lower is the expected return. Chapter III discussed the fact that, based on profit considerations, many engineering firms have been interested in export because of excess capacity and *ad hoc* export incentives and not as a long-term activity, although export promotion

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[1] UNCTAD-GATT, 1969, Vol. A, p. 201.

[2] See NCAER, 1970, Vol. 1, p. 90; Vol. 2, p. 4.

policies have led a number of firms to report in interviews that they plan to export 5 to 10 percent of production even in the absence of excess capacity.[1] It is not surprising that firms without a long-term interest in export have not invested much in the development of foreign markets.

Similarly, there are significant economies of scale in export marketing. The large trading companies which handle products from advanced countries in developing countries achieve economies of scale and reduction of risk in marketing both because of their established market shares and by handling a wide range of products and operating in a number of countries. The expected return on Indian marketing expenditures in developing countries in competition with established suppliers may be low where the markets are small and variable and long-term prospects are limited by import substitution, particularly if Indian companies handle a limited product range. In other cases, especially in developed countries, while markets are large, Indian export targets--or supply elasticities in the relevant range--are

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[1]In 1968 foreign importers frequently expressed the opinion that the behavior of Indian firms reflected the fact that they had only a short-term interest in export. There is also evidence of a certain amount of exporting done with the intention of defrauding the buyer or the Indian government and without any intention of securing repeat orders or developing a market, e.g. to take advantage of profitable opportunities for overinvoicing under the import entitlement scheme. This has contributed to the reputation of Indian exporters for poor performance. (See Bhagwati and Desai, 1970, p. 457.)

"By granting export incentives indiscriminately we have entered the export market with a number of products that are not truly competitive. The result has been to get a microscopic share in market which is not adequate to build either good long-term distribution or brand name promotion." (NCAER, 1970, Vol. 1, p. 44.)

often so low (e.g. 5 to 10 percent of production) that the expected return on marketing expenditures directed at the entire market may be small.

(2) Lack of Marketing Experience and Expertise

The fact that marketing is much more important for sale of many engineering goods in world markets than for either sale of the same goods in the Indian market or traditional exports appears to explain some of the weaknesses in Indian marketing of engineering goods abroad. This fact suggests why most Indian firms have little appreciation of the role of market research, design adaptation, or after-sales service as variables to be adjusted to maximize profits and why they have little in the way of personnel, organization, or expertise in such areas.[1] It also helps to explain the weakness of the Indian infrastructure for export marketing, including export houses and government commercial services.[2]

(a) Domestic Marketing

In the noncompetitive Indian "sellers' market" which prevailed for most engineering goods until 1966 because of protection from imports and limitations on domestic production imposed by licensing, firms often had advance orders for whatever they could produce and

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[1]A related factor which seems to play a role here is what Bhagwati and Desai describe, in lamenting the general paucity of analytical-empirical economic research in India, as "a certain lack of empiricism in the Indian make-up." (Bhagwati and Desai, 1970, pp. 5-6, p. xiii.)

[2]Lack of foreign languages is another problem.

typically ignored market research, sales promotion, provision of service, and adaptation and improvement of designs as means of increasing profits. Controls on ex-factory prices and dealers' margins on some products like vehicles further reduced the incentive to allocate resources to marketing. In 1966 a report stated:

> Indian industries generally do not find marketing a serious problem these days in view of the wide gap between demand and supply. Most of the small scale units are also in this fortunate position and their marketing problems are not perceptible.[1]

Complaints about service were common even in 1968-69. According to a report on the construction equipment industry:

> It is the consensus of an average user of equipment in the country that apt attention is not paid by manufacturers and dealers of construction equipment to rectify faults in the performance of indigenously manufactured machines in proper time. This results in prolonged idleness of equipment.[2]

Interviews with Indian machine tool producers and users revealed that virtually no producers had market research departments[3] or devoted resources to determining what users wanted or to forecasting demand, relying instead on government targets;[4] there was little effort to

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[1] GOI, MIS, 1966b, p. 217.

[2] GOI, MIDCA, 1968b (Construction Equipment), p. xix. For a complaint by the Indian Cotton Mills Federation about lack of after-sales service for domestic textile machinery, see Capital, 12 August 1965, p. 219. For a statement about shortage of vehicle spare parts and resulting idleness of trucks, see EW, 2 January 1965, pp. 33-34.

[3] HMT set up a unit in about 1968.

[4] See also GOI, MIDITCA, 1969, p. 39, and IEMA, FE, 13 July 1970, p. 7.

promote sales; and users often found pre-sales engineering service, after-sales service, and availability of spare parts inadequate. In the case of the major Indian machine tool producers, users were more critical of lack of service than of machine quality.

A report on the railway equipment industry states that "in a protected home market...selling did not require efforts. This seems to have created a situation in which many capable manufacturing companies are simply not geared for even simple export administration."[1]

(b) Traditional Exports

The important role of marketing in export of many engineering goods distinguishes these products from many of India's traditional exports.[2] Export of standardized commodities like tea involves little marketing input because international markets are well organized, goods are sold in bulk on the basis of price and delivery, and often the foreign purchaser handles all activities related to export, including financing, transport, and subsequent distribution. By contrast, for many engineering goods markets are imperfect and quality characteristics which are not easily verified and overseas sales and service facilities are important determinants of export demand. In addition, while competition in the former products is largely from other developing countries, in the latter it is from developed countries.

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[1] UNCTAD-GATT, 1969, Vol. A, p. 209.

[2] This does not apply to the "commodity-like" engineering products discussed in part VI.B.

(3) Availability of Foreign Exchange for Export Promotion

Access to foreign exchange for export promotion is under the jurisdiction of the governmental Reserve Bank of India, although policy decisions are also made in the Ministries of Finance and Foreign Trade. The RBI sanctions blanket releases of foreign exchange to "export houses" recognized by the Ministry of Foreign Trade and to firms with non-traditional exports of $67,000 or more in the previous year. The blanket release covers expenditures for business visits, market studies, advertising, participation in exhibitions, and samples. The RBI determines the release largely on the basis of past export performance. One major machine tool manufacturer was sanctioned 5 percent of the value of exports of the previous year, although more had been requested. Sanctions for use of foreign exchange for export promotion by firms with exports of less than $67,000 in the previous year are made on a case-by-case basis and only for a specific use, such as a particular business trip.

In practice, Indian firms have sometimes found that foreign exchange releases based on past exports were too small to permit the expenditures they considered necessary or optimal to build a market abroad. For a company just entering export, little or no foreign exchange was available for market development. In the case of a company which began trying to export machine tools in 1967 and had not yet reached $67,000 of exports in 1967-68, in 1968 the RBI denied a request to release foreign exchange for publicity in Ceylon with the explanation that such a request could be entertained only after the company had made "sizable exports."[1] This is a long-standing complaint. In 1965, the EEPC reported that "the government was not releasing sufficient foreign exchange to undertake publicity work on an extensive and long-term basis,"[2] and in 1966 it was reported that "Hindustan Steel faces several difficulties in trying to increase exports. It does not have enough foreign exchange for carrying out market surveys to assess the demand abroad for steel."[3]

Apart from the overall allocation of foreign exchange for export promotion, there are many complaints about limitations on per diem expenditures during business trips connected with export, for example:

> The Reserve Bank and the Government would appear to have little idea of what export promotion involves. This particular industrialist, who is connected with an export promotion council, was given a daily allowance of only $24. In Jakarta there is only one hotel in which a businessman who wants to build contacts can stay, and this hotel charges $20 per day for room alone. How can one make an impression on Indonesian businessmen with a daily allowance of $24 unless he is expected to raise resources in Indonesia for his own food, taxi fare and entertaining local businessmen.[4]

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[1]GOI, RBI, Letter to manufacturer, 1968.

[2]Commerce, 13 November 1965, p. 872.

[3]Capital, 21 July 1966, p. 113.

[4]Commerce, 12 July 1969, p. 90.

B. Adjustment in Terms of Sale to Compensate for Marketing Problems

That Indian engineering exports were as high as they were in spite of the marketing problems and limited marketing expenditures discussed above appears to be explained by three facts:

(i) Commodity-like products for which marketing problems are minimal accounted for about 65 percent of total exports of engineering goods and steel or 40 percent of exports excluding steel.[1]

(ii) Excluding these commodity-like products, 50 percent of the remaining exports were made under bilateral trade agreements, barter deals, tied Indian aid, and tied Indian equity financing. On such sales competition and marketing problems were generally limited by the nature of the transaction.

(iii) This leaves 20 percent of the total exports of engineering goods and steel or 30 percent excluding steel as non-commodity-like products exported for hard currency. These exports were typically made at

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[1]Percentages are for 1969-70. All products listed by the EEPC as "miscellaneous manufactured articles," "non-electric machinery," "electrical apparatus and appliances," and "transportation equipment," except bearings, dry batteries, and electric cables and wires have been treated as non-commodity-like products. All products listed as manufactures of metals have been treated as commodity-like products except agricultural implements, malleable iron castings, forgings, steel castings, steel furniture, fabricated steel structurals, and transmission line towers. The main commodity-like products were iron and steel, aluminum ingots, bright steel bars and shaftings, cast iron pipes and fittings, hand, small, and cutting tools, steel pipes, tubes, and fittings, steel wire ropes, dry batteries, and electric cables and wires. Because the division of exports into two groups is necessarily arbitrary to some extent, the percentages should be regarded as indicative only.

discounts of 20 percent or more below the prices received for the same products by suppliers from advanced countries.[1]

The extensive reliance of Indian exporters on price concessions and special trading arrangements rather than marketing expenditures to compensate for problems faced in marketing non-commodity-like goods has been pointed out in foreign market survey reports. The contrast between the Indian approach to securing export orders and the typical marketing practices of competitors from advanced Western countries and new suppliers that have successfully expanded sales against established suppliers is significant.[2] A study of railway equipment exports to East Africa and West Asia compared sales promotion techniques of suppliers from different countries:

> (i) The "established suppliers" (from West Europe and the U.S.), with long traditions in the markets, operate chiefly through their well-established agency houses and rely largely on the reputation of their products, the reliability of their replacement services, the experience of their technical sales representatives, and their longstanding personal contacts with senior railway officials...
>
> (ii) The "successful new marketers of the post-war years" (from Japan and Italy) are the keenest organizers of trade shows and the most generous providers of teaching materials for

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[1] There were also price discounts on some commodity-like products, but to a lesser degree. In addition, India provided subsidized medium- and long-term credit on some exports. However, often this probably only matched credit available from competitors and did not offset other marketing problems.

[2] Nevertheless, tied aid and preferential trading arrangements were also used by these countries, and Japanese firms exported at significant price discounts to win a substantial share of a market.

> schools...They rely heavily on brochures and catalogues, often emphasizing brand names but more frequently informing buyers of the range of products available. The Japanese are regarded as outstanding in zeal to keep railway authorities up-to-date on new products...Their specialized technical salesmen and railway engineers canvass the markets intensively...They are known for the excellence of their shipping arrangements and the promptness of their correspondence...They tend to quote competitive prices and offer the best credit terms...
>
> (iii) The "new suppliers of the last decade," with India (and East Europe) among them, are best known for low prices or for government negotiated business arrangements.[1]

A study of Indian exports to countries in the Indian Ocean basin found:

> Too many of our manufacturers...resort to selling their goods through price factor rather than concentrating on the problems of quality, design, packaging, sales promotion. This is true even of the big Indian export houses.[2]

Export pricing, bilateral agreements, barter deals, and other topics such as credit which are related to export marketing are discussed in detail below because they bear directly on the incentive to export and the cost of foreign exchange. In explaining the increase in exports in the late 1960s, in projecting future exports, and in making inferences about gains from exports it is important to recognize that price concessions, special trading arrangements, and in certain cases non-commercial factors played a role in exports.

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[1]UNCTAD-GATT, 1969, Vol. A, pp. 17-18, 223-25.

[2]NCAER, 1970, Vol. 1, p. 27. See also FE, 29 November 1969.

1. Export Pricing

a. Price Discounts

This section compares the landed export prices of Indian engineering goods with those received for the same products and markets by competitors from advanced countries. The purpose of the comparisons is to determine the price discount, if any, required to sell Indian goods. The comparisons are confined to prices at which exports actually occurred and do not include list prices set too high to compete. The landed prices asked by Indian manufacturers were often reported to be higher than those from other countries. However, since no sales were made at such prices, they are not included here. Comparisons are restricted to hard currency exports and cases when medium- and long-term export credit was not involved in the sale. Comparisons are made in third markets, not in the home country of the competing supplier.

Table VI-1 presents the price comparisons; detailed explanatory notes follow the table. The comparisons appear to justify two conclusions: (i) Indian engineering goods other than commodity-like products were exported for hard currency only at prices below those received by competitors from advanced countries, and (ii) the price discounts necessary to sell Indian goods were positively related to the marketing requirements of the products. Our explanation for these discounts and their pattern was discussed in part V.A. However, while an attempt was made to hold quality constant in comparisons, some of the discounts

TABLE VI-1

Discounts Below Competitors' Landed Prices for Indian Exports of Engineering Goods for Hard Currency

Product	West European Competitor: Competitor	West European Competitor: Indian discount	Semi-Industrial Competitor: Competitor	Semi-Industrial Competitor: Indian discount	Market	Source
I. Commodity-like Products						
a. Steel bars and structurals(1)	unspecified	0 to negligible			unspecified	Indian exporter
b. Steel tubes(2)	W.Europe	7 to 10	Poland	-2.5	Kenya	Importers
c. Steel wire ropes(5)	unspecified	0 to negligible			unspecified	Indian exporters
d. Power cables(6)	W.Germany	0 to 2.5			Ghana	Indian trade representative
					unspecified	Indian exporters
Aluminum conductors(6)			Japan	4	Thailand	NCAER,1970,Vol.1 pp.148-49.
			Taiwan	8	" "	
Insulated wires (6)	U.K.	33	Japan	17	Singapore	NCAER,1970,Vol.1 pp.148-49.
II. Simple Products						
e. Hand tools(7)	W.Germany	15 to 20			unspecified	Indian exporters
	unspecified	12			unspecified	Little et al., 1970,p.194.
Twist drills(7)	U.K. and W.Germany	61	Czech	22	Denmark	GOI,EEPC,1968b, pp.98-99.

TABLE VI-1 (continued)

Product	West European Competitor: Competitor	West European Competitor: Indian discount	Semi-Industrial Competitor: Competitor	Semi-Industrial Competitor: Indian discount	Market	Source
f. Dry batteries (16)	U.K.	3	Hong Kong Singapore	negative negative	Ghana	Importer for Union Carbide
g. Light electricals, e.g. bulbs and their components	Netherlands	10 to 20			unspecified	Indian exporter
h. Tires (26)	U.K.	43 to 50	East Europe Singapore	0 to 25 40 to 50	Iran	NCAER, 1970, Vol.1, p.182.
Tubes (26)	U.K.	50	Japan	40 to 50		
III. Machinery Products						
i. Automobile parts (21)	unspecified (perhaps U.S.)	15 to 20			Indonesia	Importer for Jeeps in EE, 3 April 1970, p.655
j. Sewing machines	France and Italy	25 to 40	East Germany China	0 7	Ghana and Nigeria	Importers for Singer, Usha, etc.
k. Electric fans (24)	U.K.	5 to 36	Hong Kong	5 to 48	Australia, Kuwait, Iraq	NCAER, 1970, Vol.1, pp.150-51.
	U.K.	50 to 62			Iraq	IIFT, 1967, pp.73-75.
			Hong Kong	14	Ghana	Importers for Usha, etc.
			Japan	25	East Africa	NCAER, 1970, Vol.1, pp.150-51.
l. Bicycles (19)	U.K.	31			Kenya	Importer for Raleigh
	U.K.	18 to 21	Japan	18 to 21	Canada	Sarangan, 1967, p.93.

TABLE VI-1 (continued)

Product	West European Competitor: Competitor	West European Competitor: Indian discount	Semi-Industrial Competitor: Competitor	Semi-Industrial Competitor: Indian discount	Market	Source
m. Stationary diesel engines (20)	U.K.	18 to 20			Libya, Iraq	NCAER, 1970, Vol.1,
			Japan	-30	Thailand	pp.165-66.
	U.K.	10	Japan	-15 to -20	Thailand	NCAER, 1967b, pp. 27-28.
n. Machine tools (13)	West Europe	20 to 30			U.S, Canada W.Germany	Indian exporters and their importers, and GOI, EEPC, 1968c, p.7 on HMT
o. Unspecified machinery	West Europe	20 to 25			unspecified	NCAER, 1970, Vol.1, p.54; Vol.2, p.30.

Notes:
Numbers in parentheses following product names are ranks of products in Table II-1.
Indian price discounts are expressed as a percentage of the competitor's price. A negative discount means the Indian price was higher.

a. Steel bars and structurals:
The observation in the table is based on an interview with a major exporter. However, according to a press report, "structural steel...is currently being exported from the country at prices appreciably lower than the world market rates. A large firm is reported to have recently struck an export deal for a sizable quantity of structural steel at around 140 dollars f.o.b., against 160 dollars prevailing in leading world markets." (*ET*, 20 December 1969, p. 1). Perhaps this is partly explained by freight costs.

Steel exports were subject to floor prices set by the government. In the event that these floor prices were set below international prices, competition among Indian exporters may have reduced the Indian price to the floor. In the case of steel there were in fact "reports of *inter se* competition among Indian exporters. For instance, "from Saudi Arabia it is reported that such competition has on occasion brought down the prices 6 to 10 percent below the international price." (NCAER, 1970, Vol. I, p. 137.)

Notes to Table VI-1 (continued)

b. Steel tubes:
There was also a compulsory floor price on exports for steel tubes to limit price competition among Indian suppliers. The price was set so that Indian suppliers could still deliver tubes at a landed price lower than virtually any competitor. Because of competition among Indian suppliers, the price charged was equal to the floor price in the case of the observation cited.

Also, because of the Indian price discount and advantages on delivery time, India supplied a large share of the market. The European price may therefore have been redundant.

Because of uncertainty of delivery schedules from Poland, India was preferred as a source in spite of the slightly higher price.

e. Hand tools:
Little et al. report "f.o.b. prices (of Indian exports) being about 17 percent below c.i.f. prices (of Indian imports)" in the case of forged hand tools. (Little et al. 1970, p. 194.) Since freight and insurance were about 5 percent of value on hand tools, this would suggest that the c.i.f. prices of Indian hand tools were about 12 percent below those of advanced countries in third markets.

Twist drills:
This comparison is based on the customer selling price. According to a report on the Danish market for Indian twist drills:

> The (Indian) drills have been tested by several Danish industrial firms, and they are all really impressed by the extremely high quality...Interchangeable tools from India will first of all meet competition from the cheap East European manufacturers. As an example the prices for high speed twist drills (as a percent of the price for a drill from the U.K. or West Germany) are:

Czechoslovakian twist drills, 50 percent; Indian, 39 percent.
(GOI, EEPC, 1968b, pp.98-99)

According to a report on the U.S. market for Indian twist drills:

> All importers were satisfied with the quality of drills received from India to date...Nevertheless, we were told over and over again that due to the necessity of 'India' mark on the tool it was not possible to obtain more than 50 percent of the price for a U.S. drill, even if the quality was as good, from the American user. Once the tool was classified as non-U.S. it made little difference which country it came from.
> (GOI, MC, 1968c, p. 20.)

f. Dry batteries:
The importer from whom this observation was obtained noted that prices had been changing and the Indian batteries were being sold to customers at a loss to the importer. Consequently, the discounted listed is probably an underestimate of the equilibrium value.

Notes to TABLE VI-1 (continued)

i. Automobile parts:
An UNCTAD-GATT study of Indian exports of automobile parts reports the following:

> (In Iraq) Indian manufacturers have to meet the quality and delivery standards of traditional suppliers and in the early stages of market entry prices must be at least 15 percent lower than prices of original parts...In the East African markets ...Indian manufacturers and agents call on the same members of the Asian trader community and frequently undercut each other. Equally frequently the 'lowest quotes' are not able to deliver the goods. Partly for this reason and partly because of the widespread prejudice against the quality of Indian goods, the latter are generally expected to sell at 10 to 15 percent less than other motor vehicle parts and accessories...At this early stage of market penetration, Indian goods (leaf-springs) would appear to have to be between 10 and 20 percent cheaper than those of their competitors from Europe or Japan.
> (UNCTAD-GATT, 1969, Vol. C, pp. 294, 89, 95.)

k. Electric fans:
The NCAER report is for 56" ceiling fans. The discounts below prices of U.K. fans were 5 percent in Australia, 10 to 22 percent in Kuwait, and 33 to 36 percent in Iraq. It is important to note that Australia accounted for only 1 percent of Indian exports of electric fans in 1969-70 while Iraq and Kuwait were the top two markets, accounting for 44 and 13 percent of exports respectively. Moreover, while India presumably accounted for only a small share of the Australian market, it supplied 50 percent of the Iraq market and "dominates the (Kuwait) market."

The IIFT report is for landed prices of 56", 5-speed ceiling fans from 4 major Indian manufacturers (Usha, Calcutta, Orient and Crompton,) and fans from Holland (Indola, 50 percent) and U.K. (GEC and Crompton, 62 percent) in Iraq (which then accounted for 33 percent of Indian fan exports) in 1966. In terms of retail prices, the discounts were 21 to 51 percent. Fans from Pakistan and China were priced at 9 percent below the Indian fans on a landed basis, but the report states that "their quality is not considered up to the mark."

Since India was the dominant supplier to Iraq and Kuwait at these prices, the comparison may be misleading; the West European prices could be considered uncompetitive.

m. Stationary diesel engines:
The 1970 NCAER report states:

> In a few cases it was found that established brands could enjoy a premium over even comparable Indian goods; diesel engines in Iraq is a case...In Iraq for diesel engines, U.K., for similar machines, enjoys a 20-25 percent premium over the Indian engines in the sense that they are preferred notwithstanding that they are 25 percent costlier.
> (NCAER, 1970, Vol. I, pp. 87, 165.)

Notes to Table VI-1 (continued)

The 1967 NCAER report on Thailand states with reference to Cooper and Kirloskar engines that "according to prominent local dealers in the line, the quality and performance of Indian engines are good, but in finish and appearance they are poor. The price, though roughly 10 percent lower than those of the British and German engines, is about 15 to 20 percent higher than those of Japan, and since Japan is the main competing exporter of low-powered engines, the competition for India with Japanese engines is intense." It should be noted that the report indicates that, compared to most Indian exports, India's marketing effort here was significant. Kirloskar was a pioneer exporter of engineering goods, Kirloskar had its own office/showroom in Bangkok, and both Cooper and Kirloskar were reported to have been well known in Thailand and to have had prominent local distributors with satisfactory after-sales service, although they did not have well-organized publicity campaigns.
(NCAER, 1967b, pp. 27-28.)

n. Machine tools:
Discussions with importers and distributors of machine tools in areas like Thailand, Australia, and North America in 1968 invariably suggested that in order to "make a break-through" in these markets against established suppliers, Indian machines would have to be supplied at about 20 percent below the prices, on a c.i.f. basis, of existing suppliers of machines of comparable design and quality from countries like Japan.

According to the Indian ambassador, in West Germany "Indian (machine tool) prices were between 15 and 20 percent below those of European firms." (FE, 12 September 1970) According to an EEPC report, "An official of HMT pointed out that the prices of HMT machine tools are lower by 20 to 30 percent as compared with competitors' prices in West Germany.
(GOI, EEPC, 1968c, p. 7.)

The f.o.b. export price on Indian Praga-Jones & Shipman 310 tool and cutter grinders was 20 percent below the export price f.o.b. U.K. According to Praga's export agent, even at this lower price and with the additional advantage of lower freight to some areas, distributors of the U.K. Jones & Shipman machines were reluctant to handle the Indian machines because of buyer preferences. Praga had sold one machine to each of several distributors in trial orders.

o. Unspecified machinery:
The NCAER report stated:

> In general, Indian machinery is 5 to 15 percent cheaper than most of its competitors. But...importers feel that Indian prices should be lower by 20 to 25 percent than those of the West European suppliers...Indian machinery is often not acceptable unless prices were 20 to 25 percent cheaper than those of our competitors.

(NCAER, Vol. 1, p. 154; Vol. 2, p. 30.)

may reflect lower or more variable quality of Indian goods, particularly in regard to appearance. Furthermore, in cases where comparisons were taken from published sources rather than interviews, it was not possible to confirm that the specifications and designs of the products compared were identical. However, data from published sources were used only in cases where the source itself made an explicit price comparison. Because of the difficulty of assuring the accuracy of published reports, Table VI-1 lists the source of each comparison to distinguish those which were based on interviews.

The first conclusion is straight-forward. Not a single case was found where Indian goods were exported at prices higher than those from West Europe, and not a single case was found in which a non-commodity-like product was exported without a price discount. The only product for which Indian prices were reported to have been higher than those of any supplier other than a developing or East European country was stationary diesel engines, which were reported in published sources to have been priced at 15 to 30 percent more than ones from Japan.

To test the hypothesis underlying the second concluson, the products were divided into three categories on the basis of their marketing characteristics: Group I, pure commodity-like products, which are standardized, bulk products for which marketing factors like brand names and service play a negligible role; Group II, simple products, which do not require service but which are sold in smaller lots and are subject to brand considerations; and Group III, machinery for which brand and after-sales service considerations are important.

While the difference between the means of the price discounts for Groups I and III is statistically significant at the 0.05 level, the differences for Groups I and II and Groups II and III are not. However, most of the observations where the actual value is far from the group mean come from published sources (insulated wires, twist drills, tires and tubes), which are less reliable *a priori*. Using only data collected in interviews for the present study, all observations but one (dry batteries) conform to the following pattern: Group I, zero to 10 percent; Group II, 10 to 20 percent; and Group III, 20 to 40 percent.

Moreover, if *ad hoc* explanations are admitted, not only is the one nonconforming observation eliminated but the generalization can be tightened so that the range for Group I is zero to 2.5 percent. In the case of dry batteries, the importer stated that prices had been changing and that the Indian batteries were being sold at a loss to the importer. In the case of steel tubes, the only product in Group I with a discount over 2.5 percent, the Indian price was equal to the government floor price for export because of competition among Indian suppliers and at this price India supplied a large share of the market. The relatively low discount on dry batteries and high discount on steel tubes compared to other products in the same groups may be explained by these situations.

However, this pattern of price discounts should be considered only an approximation in any case. _A priori_ there is no reason to expect discounts to have such a consistent pattern, since the discounts presumably vary with marketing input of the Indian exporter, degree of competition from suppliers from developing and East European countries, the market share of the Indian exporter, etc.

Similar price discounts are found on exports from East European and other semi-industrial countries. East European suppliers are notorious for poor marketing, particularly lack of after-sales service and failure to supply spare parts. East European exports of consumer durables and machinery for hard currency were often sold at landed prices 20 percent or more below landed prices of goods from advanced Western countries. These data are summarized in Table VI-2 and discussed in the notes to the table. Price discounts were also found for Latin American exports. It was reported that the Volkswagen subsidiary in Mexico planned "to reduce the export price below that of German-produced models for sale in the American (US) southwest."[1] Discounts of 20-30 percent were also reported for exports of Argentine bagging machinery and Brazilian paper-making equipment.[2]

Two observations should be added concerning the price discounts discussed in this section. First, no attempt has been made to determine the efficiency of price concessions relative to marketing

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[1]Reynolds, 1970, p. 15.

[2]BI, _BLA_, 17 July 1969, p. 230, and Business International, 1965, p. 30.

TABLE VI-2

Discounts below Competitors' Landed Prices for East European Exports of Engineering Goods for Hard Currency

Product	East European Supplier	Market	Discount (% of World Price)
1. High speed steel cutting tools	Czech.	Denmark	50
2. Parts for consumer goods	Poland	U.K.	over 50
3. Sewing machines	E. Germany	Ghana	27
4. Bicycles	Czech., Hungary, Poland	Australia	up to 40
5. Machine tools			
a.	unspec'ed	unspec'ed	20
b.	Czech.	Denmark	significant
6. Tractors	USSR	Malaysia	20 to 25

Note: All comparisons except the last are to prices from West European suppliers. The last is to prices from U.S. and Japanese suppliers.

1. High speed steel cutting tools: GOI, EEPC, 1968b, p. 98.

2. Parts for consumer goods:
According to the study which reported this discount, it "is clearly the result of insufficient knowledge of the British market." "The PEP survey showed that, although the bulk of trade seems to take place at world market prices, there are some items that are sold by the East Europeans for prices far below those levels." "There is little doubt that there are numerous similar cases...The formula used in the latest British trade agreements, which require goods to be sold at 'reasonable prices' and so as not to cause 'material injury' is wide enough to prevent serious market disruption. On the other hand, British producers appear to have some justification for feeling that they are exposed to 'unfair competition' even when East European prices are near enough to their own to conform to the trade agreements' requirements." (Political and Economic Planning, 1965, pp. 144, 165, 143.)

Notes to Table VI-2 (continued)

3. Sewing machines: Information supplied by importer in Ghana.

4. Bicycles: The Australian Tariff Board established a violation of Australian anti-dumping legislation in the case of A$175,000 worth of bicycles supplied by Czechoslovakia, Hungary, and Poland in 1961-64 at prices up to 40 percent below the 'normal value' established on the basis of prices of bicycles in Italy. (Australian Tariff Board, Report on Bicycles, Canberra, 25 May 1965, pp. 3-6, cited by Wilczynski, 1966, pp. 217, 219-20).

5. Machine tools:
   a. According to Indian import houses, East European countries which supply machinery to India at prices that are competitive or even low compared to world prices sell the same machinery to Western buyers for hard currency at prices that are 15 to 20 percent below the prices charged to India, at official exchange rates.
   b. GOI, EEPC, 1968b, pp. 74-76.

6. Tractors: A report on a 1969 Soviet trade fair in Malaysia states with respect to tractors: "The Soviets sold only about $80,000 worth of them, even though the salesmen quoted prices 20 to 25 percent lower than those of Japan or US models and offered two-year credits." At least part of the problem here was apparently quality (or design). The article reports that "tractors brought in for demonstrations had the embarrassing habit of breaking down." (Time, 17 October 1969, p. 104).

expenditures as an export strategy for Indian firms. Second, it could be hypothesized that as foreign importers and users gain experience with Indian suppliers price discounts will be reduced. According to North American and Australian importers that did occur for Japanese machine tools during the 1960s. It is too early for evidence on this for India.

b. Limited Input of Indian Firms on Export Marketing

One of the explanations for price discounts on Indian exports was the limited input of most Indian firms on export marketing. A case reported by one exporter explicitly supported this connection between price discounts and marketing input by the Indian firm. A major Indian firm reported that it exported light electrical products to the UAR, under bilateral agreements, without any discount below the international price[1] but that another Indian company quoted in tenders there at 15 to 20 percent below the international price. According to the first company, this was an avoidable price concession made because the second had made no investment in export marketing and had no export organization. It was said to have simply cut its prices as much as was necessary to win orders because earlier it had made a commitment to export 15 percent of its output to get licenses.

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[1]India had a rupee payment agreement with the UAR, and this enabled it to get higher prices than elsewhere because the UAR gave preferences to Indian sources. See Table VI-4.

c. Weak Bargaining Position and Lack of Information

In addition to the marketing problems discussed above, one factor which may have led to acceptance of export orders at prices below international levels for non-commodity-like products was the poor bargaining position of Indian exporters in markets which were not perfectly competitive, based partly on their ignorance of market conditions abroad.

With excess capacity, export subsidies, and export obligations, many Indian companies were willing to undercut world prices in order to secure an export sale (at least until they had exported 5 to 10 percent of output), and the Indian government increased subsidies on an *ad hoc* basis rather than lose large orders. It was obvious during interviews in East Africa that foreign customers, particularly traders of Indian origin, were well informed on the export incentives operating in India and knew that many firms would sell below world prices rather than lose a sale.[1] Since they could always buy elsewhere at the world price while Indian suppliers were having trouble securing orders, the foreign buyers were in a monopsonistic position to bargain for discounts below world prices.

The foreign buyers' position was further strengthened by the fact that often Indian companies did not know the prices at which

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[1]Similarly, it was reported that at a conference on Indian exports "some of the participants complained...many...Indian exporters had struck poor bargains in the export market as importers abroad cashed on their knowledge about assistance being offered here." (*FE*, 2 October 1970, p. 8.)

competitors were supplying the same product abroad, and hence did not know the maximum price at which the products might actually be acceptable to the foreign importer. Sometimes the importer quoted prices at which it claimed to buy from others, but the Indian firm had no check on the figures.[1]

d. Competition among Indian Exporters

A large number of products were manufactured in India by several firms, and competition among Indian exporters appears to have reduced export prices on certain products to important neighboring markets.

There were many reports of price competition among Indian exporters below the lowest price of non-Indian supplies.[2] An exporter reported that Indian firms had submitted the two and three lowest bids on foreign tenders for transformers. In Iraq, "in a recent tender for supply of electric motors, four Indian firms competed under-cutting each other."[3] A study of Indian railway materials exports reports cases of three Indian firms bidding 10 to 43 percent below the next lowest bids for supply of automatic couplers and states:

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[1]Pryor notes that in negotiation of prices for trade among East European countries, "market information seems to have been scarce and a source of some power." (Pryor, 1963, p. 137.) Examples of bluffing on prices of supplies from other sources are common in accounts of East-West trade negotiations.

[2]See also the reports for steel and steel tubes in the notes to Table VI-1.

[3]NCAER, 1970, Vol. 2, p. 77.

> Indian firms often compete very hard against each other. Cases were reported of price-differentials of 40 per cent between Indian firms quoting for the same business.[1]

In the case of railway wagons, it was reported that "very often manufacturers had been submitting differing quotations undercutting each other."[2] In the case of orders involving less than $0.5 million of PILC power cables, Indian exporters competed with each other and in some cases, including a Kuwait tender, submitted the two lowest bids. An exporter reported that Indian diesel engine firms were competing in some foreign markets by undercutting each other on export prices. According to a report on the UAR market:

> There is competition in prices from (i.e., between) Indian exporters. There is a well known Indian ceiling fan that was selling in Egypt for Rs 92 for quite some years. Another (Indian) manufacturer appeared on the scene recently and offered his product for Rs 80. The purchasing authority referred this to the first supplier who decided to retain his market and immediately knocked down his price to Rs 79.[3]

Interviews with a number of importers in Kenya indicated that such competition was common where the same product was offered by several Indian suppliers, particularly in the case of export merchants handling products of small Indian firms. The importers reported frequent visits by Indian exporters offering to supply almost anything at a lower price than alternative Indian sources.[4] Competition among

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[1]UNCTAD-GATT, 1969, Vol. A, pp. 95-96.

[2]FE, 27 October 1970.

[3]GOI, EEPC, 1964, p. 19. Parentheses added.

[4]The importers reported that this led not only to a decline in price but to a deterioration in quality and to many complaints as suppliers tried to make a profit by using inferior materials. According

Indian exporters was also common in Ceylon, which attracted attention because of its proximity and because it received tied loans to import Indian engineering goods.

In a few cases, particularly for commodity-like products, the Indian government and exporters agreed to floor prices on export to limit price compeition and possible losses in joint export earnings. Floor prices operated for steel, steel pipes and tubes, cast iron pipes, cast iron manhole covers to the UK, steel wire ropes and ACSR conductors to certain markets, steel furniture, and bicycles.[1] In

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to an UNCTAD-GATT report, "automotive parts have no fixed prices in East Africa. Neither are there any Indian standard export or floor prices. The result is that traders are secretive and play one Indian supplier against the other...Indian manufacturers and agents call on the same members of the Asian trader community and frequently undercut each other. Equally frequently the 'lowest quoters' are not able to deliver the goods...The small general export merchants and agents... often quote low prices on single shipments but are unable to provide either continuous supplies or regular prices...There is considerable competition among Indian exporters." (UNCTAD-GATT, 1969, Vol. A, pp. 89, 25, 59.)

[1]This list was provided by a government official. For steel the floor prices are published in GOI, MSMM, ISCMB, for each export license issued. Interviews in Kenya confirmed that steel tubes were being sold at export floor prices by all Indian manufacturers.

A report on Taiwan exports states: "Many industries in Taiwan are operated by small and medium size firms. Unorganized production and export often led to excessive production and cut-throat competition in foreign markets, which inevitably cause a sharp decline in price, deterioration in quality, and finally loss of the export market. To combat these shortcomings, the government has encouraged unified and joint marketing of exports in foreign markets through limitation of production by means of export quotas, improvement of quality and unified quotation of export prices." (Economic Review, Jan.-Feb. 1968, p. 23.) There were floor prices for canned pineapples and canned mushrooms. Japanese manufacturers imposed floor export prices by mutual agreement under the Export and Import Trading Law, e.g. on TV sets.

several cases Indian firms also collaborated on bids in international tenders, but generally this was done not to avoid competition but to allow them to bid for larger orders and faster delivery times than any one of them could handle.

2. Bilateral Trade

Bilateral trade implemented by reciprocal source-tying in import licensing or preferences in procurement by government agencies was used largely to simulate selective devaluation. Countries with overvalued currencies or other disincentives to export and budgetary constraints are sometimes interested in increasing the incentive to export without devaluing or increasing cash subsidies. This applies particularly to manufactured goods in which the country is less competitive than it is in traditional exports. The incentive to export can be increased by bilateral arrangements which give exporters a sheltered foreign market and consequently higher f.o.b. export (accounting) prices. While this increases the private rupee realization on soft currency exports, there is also an increase in c.i.f. import (accounting) prices.[1] Consequently, one important aspect of bilateral agreements is selective export subsidization involving a transfer from importers to exporters and implicit multiple exchange rates discriminating between exports to different destinations.

Table VI-3 provides data for 1964-65 to 1969-70 on exports of engineering goods and steel to countries with which India had bilateral trade agreements. In 1968-69, 20 percent of exports of engineering goods and steel (19 percent excluding steel) were to these eleven countries; in 1969-70 the percentage was higher (30 percent excluding steel).

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[1]See Table IV-15.

TABLE VI-3

Exports of Engineering Goods and Steel under Bilateral Trade Agreements, 1964-65 to 1969-70

$ millions
(% of exports to all countries)

Year	Total for 11 Countries			8 East European Countries			U.A.R., Sudan and Afghanistan		
	Engg.Goods and Steel	Engg. Goods	Steel	Engg.Goods and Steel	Engg. Goods	Steel	Engg. Goods and Steel	Engg. Goods	Steel
1964-65	3.3 (8.0)	2.9 (8.2)	0.4 (6.8)	1.2 (2.9)	1.2 (3.4)	0.0 (0.0)	2.1 (5.1)	1.7 (4.8)	0.4 (6.8)
1965-66	7.0 (13.6)	5.2 (13.2)	1.8 (15.5)	3.2 (6.2)	3.0 (7.6)	0.2 (1.7)	3.8 (7.4)	2.2 (5.6)	1.6 (13.8)
1966-67	8.8 (13.0)	6.4 (15.4)	2.4 (9.2)	5.2 (7.7)	4.3 (10.3)	1.0 (3.8)	3.6 (5.3)	2.2 (5.2)	1.4 (5.4)
1967-68	24.4 (19.3)	11.7 (21.2)	12.8 (18.0)	18.3 (14.5)	8.8 (15.9)	9.5 (13.4)	6.1 (4.8)	2.9 (5.2)	3.2 (4.5)
1968-69	36.3 (19.7)	21.3 (18.8)	15.0 (21.0)	25.4 (13.8)	12.0 (10.6)	13.4 (18.7)	10.9 (5.9)	9.4 (8.3)	1.6 (2.2)
1969-70	n.a.	42.2 (29.8)	n.a.	n.a.	14.2 (10.0)	n.a.	n.a.	28.0 (19.8)	n.a.

Source: GOI, EEPC, *HB*.

India's bilateral agreements were of two types, those with eight East European countries on the one hand and those with the UAR, the Sudan, and Afghanistan on the other. All trade with East European countries after 1959-1961 was in non-convertible currency, with trade balanced bilaterally except where credit was extended by the East European countries or serviced by India. Debt servicing by India was in non-convertible currency, i.e. exports. Bilateral trade with the UAR, the Sudan, and Afghanistan was on a more limited basis, with some items excluded and trade therefore not completely balanced. Its main feature was balancing of part of India's imports of cotton from the UAR and the Sudan and fruit from Afghanistan with restricted categories of exports including most but not all engineering goods.[1]

The operation of these bilateral agreements in the late 1960s was confirmed by statements in the press announcing that source-tied licenses had been issued by the Indian government for import from the UAR, the Sudan, and Afghanistan as well as East Europe.[2] Furthermore,

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[1]There was an agreement that at least 15 percent of Afghanistan's imports from India under bilateral trade would be non-traditional goods. India's bilateral trade arrangements with Afghanistan are described in GOI, MC, 1966, Pt. II, pp. 29-31. Not all Indian engineering goods were eligible for export to the UAR under bilateral arrangements, e.g. in 1970-71 the Indian government banned export of nylon tires under the arrangements and in 1971 it was reported that exporters of PILC aluminum conductor power cables were having difficulty securing government approval for exports under the arrangements. Presumably this was because both had a large hard currency import content. (FE, 20 April 1971, p. 5, and Commerce, 15 May 1971.)

[2]FE, 6 September 1970, reports that tied licenses were issued for import of raw cotton from the UAR.

it was reported that:

> The value of import licenses issued (by the Import and Export Trade Control Organisation) under special trade agreements with Afghanistan, Iraq, Iran, etc., for the years 1967-68, 1968-69, and 1969-70 up to February 28, 1970 were Rs. 10.7 crores ($14.3 million), Rs. 16.9 crores ($22.1 million) and Rs. 18.28 crores ($24.4 million) respectively.[1]

No other information on bilateral agreements with Iraq and Iran is available. The preceding statement may refer to ad hoc barter deals like those discussed in the next section. However, by confining discussion to East Europe, the UAR, the Sudan, and Afghanistan, the present analysis may understate the role of bilateralism.

Bilateral trade with countries outside East Europe was not a recent development. India made bilateral, non-convertible currency agreements with Burma, Egypt, and Pakistan by 1953, each specifying export of Indian iron and steel and engineering goods as well as traditional products.[2] These three countries accounted for 24 percent of Indian exports of steel and engineering goods in the period 1956-57 through 1962-63; on an annual basis they accounted for between 14 and 31 percent, the amount varying without a trend. This suggests that bilateralism was a significant factor in early Indian exports of steel and engineering goods.[3] In 1959-61 India was importing rice from

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[1] FE, 1 April 1970, p. 8.

[2] For details of India's bilateral trade agreements in the early- and mid-1950s, see Srivastava, 1956, pp. 181-199. Singh, M., 1964, p. 249, reports that by 1959 there were also bilateral arrangements with Afghanistan. GOI, RBI, 1961, p. 117, refers to India's bilateral non-convertible payments arrangements with Burma, Egypt, and Pakistan in 1960-61.

[3] Until 1959 there were also preferences implemented by licensing

Burma under rupee payment arrangements which involved export of engineering goods. Between 1959 and the early 1960s, the proceeds of Egyptian rock phosphate and rice imported by India were used to import non-traditional Indian products including engineering goods. Reports in 1961 and 1963 attributed Indian exports of engineering goods to the UAR, including stationary diesel engines, electric fans, sewing machines, dry batteries, and electric lamp bulbs, to the bilateral arrangements.[1]

In addition to general bilateral agreements, India exported some engineering goods to Nepal under a form of bilateralism involving supply of Indian goods under tied credit with amortization and interest in non-convertible rupees, i.e. exports from Nepal.[2]

It appears that these bilateral agreements enabled India to export engineering goods at higher prices and with lower inputs on marketing than would have been possible in hard currency markets. Because of their own balance of payments and export marketing problems and India's commitment to balance trade, because they were able to get higher prices and perhaps more favorable terms of trade (net of

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within the sterling area, of which India was a member, and with the OEEC.

[1]GOI, EEPC, 1961, pp. 30-31; GOI, EEPC, HB, 1 July and 15 August 1959; S. L. Kirloskar, Chairman's Speech, GOI, EEPC, HB, 1963.

[2]It is quite likely that the tied aid to Ceylon and Indonesia discussed in part VI.C.4 was also repayable in non-convertible currency, but the form of repayment could not be determined. There was an announcement of source-tied import licenses for rubber and an agreement to buy tires from Ceylon, suggesting bilateralism, (FE, 6 February 1971, p. 8; 3 September 1970, p. 3.)

aid) for their own goods in India than in hard currency markets, and because some East European countries had accumulated undesired rupee balances,[1] the East European countries allocated non-convertible rupees at a discount,[2] i.e. they imported goods from India at prices higher than India obtained in hard currency markets.

Table VI-4 lists price differences reported by Indian firms for exports made to East Europe under bilateral agreements and exports sold for hard currency. These confirm Narain's report that:

> According to...knowledgeable business circles...prices paid by some of the socialist countries for India's internationally traded commodities have been 5 to 10 percent higher than those prevailing in the rest of the world.[3]

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[1] Apart from current export earnings, there was a tendency to accumulate rupee balances unless imports were expanded because of service on previous credits to India. Bhagwati and Desai report that during the third plan amortization and interest payments were 9.6 percent of Indian exports to East Europe. (Bhagwati and Desai, 1970, p. 430.)

[2] This discount is also evident in East European price discrimination on exports to different markets (though this might be explained by source-tying of licenses by its partners) and in switch-trade at a discount. According to the export agent for TISCO, there was quite a bit of switch-trading in steel, e.g. Yugoslavia was reported to have sold Indian steel in the Middle East for dollars, at prices 5 percent below the dollar equivalent of the rupee prices at which purchases were made from India. According to a press report, "there have been complaints that switch deals take place in non-traditional items like rolled steel," (FE, 5 May 1970, p. 10), and an importer in Kenya reported that the USSR was selling Indian steel in East Africa. To reduce the incentive for East European countries to engage in switch trade, the Indian steel exporters' association set the price floor for exports under rupee payment about $10 per ton higher than that for sales under hard currency. The discounts from the official exchange rate for converting clearing rupees held by East European countries into freely convertible currencies was reported in 1970 to be 7 to 9 percent. (BI, BI, 15 May 1970, p. 156.)

[3] Narain, 1968, p. 15.

TABLE VI-4

Difference Between Price Received on Hard Currency and Bilateral Exports of Indian Engineering Goods, 1969

	Product	Excess Received on Exports to East Europe as per cent of Hard Currency Price
1.	Steel	6
5.	Steel wire ropes	0
7.	Hand tools	5 to 10
21.	Automobile parts	Positive
	Light electricals	10
	Unspecified engineering goods exported by large trading house	15

Source: Major Indian exporters of the products listed.

Moreover, in a detailed analysis of primary and traditional manufactured products accounting for 68 to 81 percent of India's exports to East Europe, Narain finds that a weighted average of annual unit values of Indian exports was 4 to 20 percent higher for exports to East Europe than other countries in 1957 to 1966.[1]

In addition to the advantage given to Indian exporters because rupees were allocated at a discount, India's competitive position for engineering goods relative to other foreign suppliers was probably better in East Europe than in hard currency areas because marketing was less important. Few resources were devoted to marketing domestically in East Europe, Western suppliers were not well established, and (except in Yugoslavia) imports were monopolized by state agencies.

Yugoslavia's non-convertible rupee balances reached $40 million in 1967-68. To use these and prevent further accumulation, the Yugoslav government required its exporters to import from India 120 percent of the value of their exports to India and provided a subsidy of 20 percent of shipping costs and special credit facilities for import from India.[2] This attempt to reduce rupee balances coincided with an increase in Yugoslav imports of Indian engineering goods from $0.7 million in 1967-68 to $5.6 million in 1969-70.

According to Indian exporters, the UAR discriminated in favor of

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[1] Ibid. Before 1959 there were bilateral agreements but balances were convertible to sterling.

[2] FE, 2 May 1969, p. 923.

Indian sources in import licensing and import of engineering goods by nationalized trading agencies. Kirloskar Cummins, Siemens India, Philips India, and India Pistons all reported that UAR procurement of finished products, components for original equipment, and spares was switched to Indian subsidiaries because of the bilateral agreements. A recent study reports:

> In the UAR and the Sudan, economic policy favours India.... As far as (automobile) spare parts are concerned, there are separate import quotas for parts from hard-currency sources and from countries which have bilateral payments agreements with the UAR as, for example, India. Imports from the latter sources are encouraged.[1]

The study also states that while India had to offer discounts of 10 to 20 percent below prices of West European suppliers in markets where there was no official discrimination, "because of the UAR's balance of payments situation, the price of Indian parts does not need to be lower than the price of competing goods."[2]

In addition to such discrimination in licensing, under a reciprocal tripartite agreement Indian exports received concessions of half the tariffs applied to certain engineering goods by Yugoslavia and the UAR starting in 1968.[3] Furthermore, by the end of 1970-71, the UAR had accumulated a rupee debt to India of $30 million because of a cumulative

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[1] UNCTAD-GATT, 1969, Vol. C, pp. 26, 172.

[2] _Ibid_., p. 176.

[3] India also received preferential tariff treatment under the British Commonwealth scheme. However, Indian engineering exports were not based on _tariff_ preferences to the extent that LAFTA trade apparently was.

excess of its imports over exports of goods traded under the bilateral payments arrangements, i.e. there was "indirect aid to the UAR...built into the trade between the two countries."[1]

3. Barter Deals

In addition to bilateral trade agreements, the Indian government used ad hoc barter deals implemented through import licensing and state trading to promote exports of engineering as well as other goods. Table VI-5 provides details of deals announced in 1969-1970. Several of these involved trade handled by the STC, and judging from the number of announcements this was an increasingly important aspect of the STC's operations. While such deals were initially made with foreign state trading agencies, in 1970 they were extended to include trade with private firms in West Europe and Japan.

Although data on terms of trade are not available, the existence of such barter deals suggests additional subsidization of exports through the STC beyond the explicit losses described in Chapter III.C.1, and together these two aspects of the STC's operations suggest that the rapidly increasing value of state trading in 1969-1971 was accompanied by a significant increase in hidden export subsidization. The government evidently accepted such subsidization in principle. The Ministry of Foreign Trade defended the government policy of monopolizing import of industrial materials through state agencies on the grounds the state agencies had used the bargaining strength in exporting non-traditional

[1]ET, 11 May 1971, p. 1.

TABLE VI-5

Barter Deals for Export of Engineering Goods Announced in 1968-1971

Country	Indian Export	Indian Import	Value of Export ($ million)	Date	Reference
New Zealand#[1]	Steel pipes (13,500 tons) and rails (5,700 tons)	Milk powder (4,000 tons)	2.3	1968-70	Journal of Industry and Trade, March 1969, p.354.
Greece#	Engineering goods including drill steel, compressors, rock drills, and spare parts	Fertilizer (25,000 tons)	1.7	1969-71	FE, 30 August 1969, 25 February 1971
Tunisia*	Engineering goods	Rock phosphate (200,000 tons)	4.0	1970	FE, 28 October 1969.
Syria*	Railway wagons and track material	Rock phosphate	10-16	1970	FE, 7 October 1969.
Iran*[2]	Alumina, steel structurals, and equipment for railway, power and water development	Sulphur, liquid ammonia phosphoric acid	Average 17 per annum	1970-78	Commerce, 31 May 1969, p.1061; 7 March 1970, p.448; FE, 2 June 1969, 2 January 1970.
Burma*[3]	Manufactured goods, including engineering goods, which are not part of normal exports to Burma	Rice (100,000 tons per annum)	n.a.	1970-72	Times of India, 18 October 1969, ET, 6 February 1970; FE, 29 May 1970.
Jordan*[4]	Non-traditional goods, including iron and steel, and tea	Rock phosphate (300,000 tons)	3.3	1971	ET, 2 February 1971, p.5.

TABLE VI-5 (continued)

Country	Indian Export	Indian Import	Value of Export ($ million)	Date	Reference
Western European Private Firms (Total deals to end-1970)	Non-traditional exports including aluminum conductors, steel pipes, PVC resin, rayon tire cord, yarn, ethyl alcohol	Industrial materials, mainly special, alloy, and stainless steel	16	1970	FE, 1 December 1970, p.8.
1. Austrian Firm	Aluminum extrusions, all aluminum conductors, ACSR conductors, aluminum chairs, rayon tire cord, PVC resin, human hair products, leather	Tool and alloy steel, machinery spares	1.75	1970	FE, 21 April 1970, p.8; Engineering Times, 18 June 1970, p.6.
2. Swedish Firm	Non-traditional items not previously exported to Sweden	Unspecified	3.0	1970-72	FE, 27 October 1970.
Italy (Private Firm)	Steel pipes and tubes	Automobile accessories	1.2 - 2.4	1971	FE, 21 February 1971, p.1.
Japan (Private Firms)	Pig iron (100,000 tons)	Steel flat products	6.6	1970-71	FE, 1 October 1970, p.8; 19 December 1970, p.8.
Thailand[5]	Industrial machinery	rice (100,000 tons annually)	n.a.	1971-1973	Commerce, 29 August 1970, p. 437.

Notes to Table VI-5

Export statistics or reports confirmed that the exports took place.
* Based on preliminary announcements.
n.a.: not available.

[1] Imports and exports under the deal did not balance.

[2] The main part of this deal fell through. However, it was reported that "it has ... been stipulated in the agreement that the foreign exchange accruing to Iran from sale of these items (sulphur, 170,000 to 240,000 tons) during 1970 and 1971 will be utilised by that country for the purchase from India of wagons, billets, railroad equipment, machinery and capital goods." (*Commerce*, 7 March 1970, p. 448.)

[3] The announcement of the final agreement suggests that there was no binding agreement by Burma to import Indian manufactures. The preliminary announcement states that it was a barter deal.

[4] It was reported that "under these arrangements, India imports mainly rock phosphate and exports a variety of goods on a balanced trade basis, the main items being tea and iron and steel."

[5] It was reported that "the Indian exporter will not have to go through the usual procedure of competing against global tenders."

goods.[1] Moreover, there was reported to have been pressure to cancel the preliminary agreement to buy liquid ammonia from Iran, which was to use the proceeds to buy engineering goods from India, because:

> When it came to actual signing of the contract, it was found that Iranian prices for liquid ammonia were 50 US cents higher than those offered by Kuwait (for hard currency). The (Indian) External Affairs Ministry is, however, insisting that the agreement should be honoured. It has pointed out that the ammonia deal with Iran is part of a bigger package which will enable India to balance the import of liquid ammonia with the export of its goods.[2]

In addition to these cases based on official announcements there were several rumors of attempts to link specific items of import and export, even within general bilateral trade agreements. It was generally believed in 1969 that:

> The mammoth (railway) wagon deal which we have been negotiating with the USSR for over a year and a half hinges on our purchasing Soviet planes, however much we and the Russians may (officially) deny any link.[3]

Both deals failed. In 1970 India negotiated with East Germany for export of Indian railway wagons, sale of which was reported to be contingent on Indian imports of East German tractors. The deal ran into trouble when East German tractors were found to be defective. It was alleged in interviews in 1968 that Honeywell (US) bought $0.25 million of HMT machine tools as part of an arrangement under which the

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[1] ABP, 29 September 1969.

[2] FE, 22 June 1970, p. 1.

[3] Commerce, 6 September 1969, p. 437. See also Jessop and Co., AR 1966-67, p. 8.

Indian government was to license import of Honeywell computers, and perhaps manufacturing in India.[1] In view of these alleged deals with the USSR and Honeywell involving airplanes and machine tools, it may not be a coincidence that within weeks after the Indian government decided to purchase $40 million worth of aircraft from Boeing (US) against competition from the USSR, the chairman of HMT visited Boeing to discuss the possibility that Boeing might purchase HMT machine tools.[2]

C. Export Credit

The discussion of marketing problems and practices above did not consider the fact that foreign demand for engineering goods depends on the supply conditions for "complementary" credit offered by the exporter. This aspect of export marketing, and particularly government subsidization of export credit, is considered in this section.

1. Credit and Trade in Capital Goods

Tied credit over six months and aid extended by exporters and their governments finance an important share of international trade in capital goods. "Commercial" supplier credits over one year, and typically 5 to 10 years, are common on orders of capital goods larger

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[1] In 1969 Honeywell was given a license to set up a wholly-owned subsidiary in India "to facilitate exports of machine tools produced by HMT." (EE, 24 April 1970, p. 820). For reports of Honeywell's interest in selling used computers in India, see EPW, 18 November 1967, pp. 2005-06, and 23 December 1967, p. 2188.

[2] Engineering Times, 26 February 1970, p. 41.

than $0.25 million, not only to developing but to East European and developed Western countries. Intergovernmental tied aid, particularly East European state credit, has been concentrated on financing capital goods but also finances industrial inputs like steel. However, apart from orders for capital goods involving $0.25 million or more and imports of some countries with balance of trade problems, "commercial" credits are usually for 180 days or less after delivery.[1] The "problem" of export credit therefore arises mainly for capital goods in large orders.

Both export credit and aid are subsidized by the governments of advanced countries. In 1969 typical terms for supplier credits on large export sales of capital goods from Western countries were 10 years with 6 to 6.5 percent annual interest. Western aid terms varied considerably on the liberal side of these. The standard terms on aid from the East European countries were 12 years with 2.5 to 3 percent annual interest and all payments in non-convertible currency. East European credits were also given at terms between these and the terms on Western supplier credits.

Export finance affected Indian exporters of capital goods because exporters from advanced countries and East Europe were able to supply tied credit at terms more favorable than those at which the individual importer could obtain either local or untied foreign capital, or at which the importing country could obtain untied foreign capital. There

[1] Mohammed, 1970.

were two reasons that the exporter could provide funds on such terms. First, there were special government institutions, guarantees and insurance, and interest subsidies for tied export credit, and governments gave tied aid. Second, where the scarcity value of capital or liquidity preference was greater in the importing country or where the domestic capital market in the latter was imperfect, capital could have been cheaper abroad than from local sources; however, international capital markets were imperfect and the exporter (e.g. an international corporation) may have had some real cost or risk advantage over other foreign sources in supplying capital. Since the cost of capital supplied as tied export credits was less than that available independently, one can assume that there was a price preference for goods from exporters supplying such credit. A number of developing countries with balance of payments problems reinforced this with preferences or even restricted imports to sources which provided credit (or equity capital, or which traded bilaterally), regardless of the trade-off between lower cost of credit and higher prices of goods. In India itself, a "significant aspect of the import policy of the second plan was that imports of capital goods for new projects were allowed only under deferred payment arrangements."[1] According to Leff:

> Most Brazilian capital goods imports have been financed by foreign resources. Indeed, more than 80 percent of the... equipment imported by Brazil during the period 1957-1963 was financed by...either suppliers' credits or direct foreign investment...By a government decision, foreign

[1]GOI, LSS, 1968, p. 45.

> suppliers' credits were reserved almost exclusively for capital goods imports...The government suspended import restrictions for equipment supplied with foreign credits.[1]

This situation increased the Indian resource cost of the present value of foreign exchange earned by export of the capital goods involved and would have biased India's comparative advantage away from capital goods. In India, however, the "problem" was perceived in different terms: as the lack of financial institutions providing export credit on the same terms that it was available in advanced countries. The government directed its programs not to supplying capital at the Indian scarcity value but to matching the subsidized terms at which credit was available to exporters from competing countries. The result was a significant but selective increase in the implicit exchange rate on export earnings, or on their present value at a given discount rate. Thus, especially after 1967-68, export credit facilities became an important channel for export subsidies, limited mainly to large orders of capital goods.

2. <u>Subsidization of Export Credit</u>

Programs to subsidize credit, especially medium- and long-term,[2] for export were developed during the 1960s as part of the government's increasing emphasis on export promotion. Measures taken in 1967-68 in particular led to a significant increase in subsidization.

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[1] Leff, 1968, pp. 33-34, 140.

[2] Short-term refers to credit up to six months; medium, six months to five years; long, over five years.

Initially the government emphasized insurance for exporters extending credit to foreign buyers (1957)[1] and guarantees for banks extending credit to exporters (c. 1960). It then set up refinance facilities for short (1958), medium (1963), and long (1967) term export credit extended by banks; provided refinance at a concessional interest rate of 4.5 percent (or 5 percent if the bank charged more than 6 percent on the loan) per year, compared to 5.5 to 6.5 percent for other industrial refinancing (1963); excluded export credit from calculation of bank liquidity for regulatory purposes (1967); and introduced interest subsidies of 1.5 percent per year for bank credit which was not refinanced (1968). It set an interest rate ceiling of 6 percent per year on export credit extended by banks (1967-1968), compared to the prevailing rate of about 9.0-9.5 percent prevailing on domestic credit.[2] Finally and most important, it began direct government financing of medium- and long-term export credit at an interest rate of 4.5 percent per year (1968) for up to 70 percent of the value of an order, so that credit was supplied at an average interest rate of about 5.0-5.5 percent, including bank financing of the residual, compared to the Industrial Development Bank of India's

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[1]Commercial and political risks were covered but there was no insurance for changes in exchange rates. Exporters could cover exchange risks for up to six months.

[2]Whether or not the government realized it, such an interest rate ceiling is a restriction on supply. However, to the extent that availability of export credit was determined by government policies through government financial institutions, particularly after bank nationalization, the ceiling implied further subsidization.

interest rate of 8 percent per year on direct loans to industrial concerns for purposes other than exports.

Simultaneously, there was an extension of the maximum period of credit allowed by the foreign exchange control authorities. Each scheme was liberalized a number of times, and by 1968-69 credit was extended for a number of important export orders for capital goods at 5 to 6 percent annual interest for periods up to 10 years. Subsidized credit was available to cover working capital costs during manufacturing, credit extended to foreign buyers, and delayed receipt of government export subsidies.

A one percent interest rate subsidy on export credit extended for 10 years, with interest and 10 percent of the principal paid at the end of each year, has a present discounted value of 3.6 percent of the initial value of the order, assuming a discount rate of 12 percent.[1] Thus, the government's explicit interest rate subsidy of 1.5 percent on export credit was worth 5.4 percent of the f.o.b. value of exports. The 3.5 percent difference between the private cost of export credit and credit for domestic industrial investment was worth 12.7 percent of the initial loan value, while the 6 percent difference between the private cost of export credit and an assumed social discount rate of 12 percent was 21.7 percent of the initial loan value. Clearly these were important subsidies.

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[1]The rate of 12 percent was taken as a rough estimate of the social discount rate. Assuming a private discount rate of 9 percent, the present value of subsidies would be higher.

Subsidized credit was neither automatically nor equally available to exporters, however, and thus contributed to implicit multiple exchange rates. First, apart from capital goods and certain consumer durables, exporters were not only ineligible for subsidized post-shipment credit for a period longer than six months but were required to repatriate earnings within six months after exports were shipped. Certain consumer durables and capital goods normally sold in small orders were eligible for subsidized post-shipment credit up to 18 months. Thus, only certain capital goods were eligible for subsidized export credit up to 7-10 years. Second, only large orders for capital goods were eligible for direct government finance. Third, direct government finance and some of its terms (e.g. the share of the order financed by the government) depended on ad hoc approvals by the government IDBI.

Moreover, there were complaints that export credit was not readily available from the commercial banks[1] and that banks charged over 6 percent annual interest.[2] One explanation was that export credit at 6 percent plus a subsidy of 1.5 percent was less profitable for banks than domestic credit at 8.5 percent.[3] Toda reports that

> Exporters...face difficulties in obtaining the necessary credit from their banks...In spite of the refinance facilities..., the commercial banks hesitate to extend medium-term export credit... First of all,...at present there is no sufficient inducement for banks to provide finance to such exporters...Second,...this kind

[1] FE, 1 February 1969, p. 1.

[2] FE, 6 February 1969, p. 1.

[3] Commerce, 27 September 1969, p. 587.

> of credit is quite unfamiliar with them and (they) are afraid of the large risk.[1]

The dubious credit-worthiness of some companies, particularly after a period of recession and labor troubles which led to closure of some major firms, was also a deterrent to extension of credit.[2]

3. Utilization of Medium and Long-Term Indian Export Credit

Table VI-6 provides an incomplete list of export contracts involving medium and long-term credit. Table VI-7 summarizes the medium and long-term export credit operations for engineering goods in 1964-1970 of the government Industrial Development Bank of India, which was in charge of (i) refinancing medium and long-term export credit extended by commercial banks and (ii) direct government financing of medium and long-term export credit. The $38.9 million sanctioned by the IDBI is less than total export credit committed since the program for direct government financing was operated in cooperation with commercial banks, whose share of these credits was not eligible for refinance. Including the share of commercial banks in the program for direct financing, the total was $52.8 million for sanctions and $24.5 million for disbursals.[3] This credit was heavily concentrated in the late part of the period, i.e. 1968-1970.

This amount is consistent with the following information on the

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[1]Toda, 1969, p. 12.

[2]FE, 15 December 1970, p. 7.

[3]Based on data in ET, 17 April 1971, p. 5.

TABLE VI-6

Exports Financed by Medium- and Long-Term Credit from Indian Source Other than Tied Aid

Product	Importing Country	Value ($ mil.)	Duration of Credit (Years)	Source
1. Steel rails	Iran	3.5	n.a.	EE, 24 January 1969, p. 163.
1. Steel rails, track materials, and girders	Burma	9.1	4.5	EE, 5 September 1969, p. 449.
2. Steel pipes	New Zealand	1.7	5	EE, 24 January 1969, p. 163.
6. Electric cables	Iran	3.9	5	EE, 24 January 1969, p. 163.
6, 9. Electric cables, and transmission line towers[a]	Iran	20.0	7-10	
9. Transmission line towers[d]	Nigeria	2.5	n.a.	EE, 24 January 1969, p. 163.
11. Railway wagons[a,b]	Yugoslavia	50.0	10	FE, 9 October 1970, p. 1.
12. Cotton textile machinery[a,c]	UAR	16.0	10	FE, 22 November 1969, p. 8.
15. Commercial vehicles	Indonesia	0.4	3	
Sugar machinery	Uganda	0.5	8	EE, 24 January 1969, p. 163.
Coach screws, etc.	n.a.	0.4	5	EE, 24 January 1969, p. 163.

a: IDBI provided direct financing.
b: Announced in the press late in 1970 but not covered by data in Table VI-7.
c: Interest rate of 3 percent per year, repayment in rupees.
d: May have been financed by a World Bank loan rather than Indian credit. See Table VI-9.
n.a.: Not available.

TABLE VI-7

Medium- and Long-Term Export Credit Operations of the IDBI, 1964-1970

Program	Dates	Amount of Credit ($ million) Sanctioned	Disbursed
Refinance of medium- and long-term export credits granted by banks	Sept. 1964- June 1970	13.7[a]	8.9
	July - December 1970	0.2	1.8
Direct government loans to exporters	December 1968- June 1970	23.7	3.9
	July - December 1970	1.3	6.1
Total	Sept. 1964 - December 1970	38.9	20.7

a: 28 cases

Sources: FE, 15 December 1970, p. 4; 6 February 1971, p. 8.

government Export Credit and Guarantee Corporation which insured export credit:

> One of the major developments in the Corporation's functioning during 1968 has been risk insurance on account of large export orders involving deferred payment terms (over 180 days) extending up to ten years. Such export orders totalling about Rs 7.96 crores ($10.6 million) have been underwritten by the Corporation during the year (for copper conductors, steel pipes, sugar machinery, and railway wagons.)[1]

In 1969 the EGGC underwrote medium and long-term export credits on $34.1 million of large orders for transmission line towers, commercial vehicles, cotton textile, sugar, and fertilizer machinery, railway wagons, steel rails and railway accessories.[2]

4. Indian Aid

Apart from subsidizing export credit, the Indian government extended about $30 to $35 million in subsidized long-term tied aid (very likely repayable in Indian rupees, i.e. exports) to Ceylon and Indonesia between 1966 and 1969, about $15 to $20 million of it for engineering goods and steel.

In this period India made a series of tied loans to Ceylon totalling about $20 million.[3] The loans were to be repaid over 10 years beginning two years after exports were made and the interest rate was

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[1]EGGC, AR 1968, p. 3. See also FE, 15 March 1969. The EGGC insured export credits for engineering goods and steel totalling $8.0 million in 1966; $15.6 million, 1967; $22.7 million, 1968; and $53 million, 1969. These data include short-term credits.

[2]EGGC, AR 1969, p. 5, and FE, 29 October 1969.

[3]Utilization was 1966-67, $2.9 million; 1967-68, $4.1 million; 1968-69 (8 months), $3.3 million.

5 percent per year. The first $6.7 million credit was good for a wide range of products, including non-engineering consumer goods, but subsequent credits were restricted to capital goods. It was reported that "the second credit of Rs. 50 million ($6.7 million) has been almost completely allocated for the import of commercial vehicles, electrical equipment, industrial machinery, telephone equipment, and railway coaches and wagons."[1] Moreover, specific allocations of the tied aid were made for each industry, e.g. $1.1 million was earmarked for machine tools.

In late 1966 India was made a $13.3 million tied loan to Indonesia. This was not restricted to engineering goods and steel, and by mid-1969 Indonesia had used the entire loan to import $9.8 million of cotton and jute manufactures, $2.6 million of metals and engineering goods consisting of steel ($1.2 million) and bicycle and other parts ($1.4 million),[2] and $0.9 million of paper, drugs, etc.

In addition, India gave a number of grants and credits to Nepal. In the 5-year period 1966-1970 Indian aid to Nepal was $116 million,[3] chiefly for social overhead projects. It was not possible to determine whether this aid financed exports of engineering goods to Nepal; judging from the composition of those exports at least half were not for

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[1] ABP, 6 August 1968.

[2] Bicycle parts, $1.21 million; oil mill parts, $0.13 million; automobile parts, $0.06 million.

[3] FE, 3 May 1971, p. 8.

aid-financed projects. However, in 1964 India made a $2.1 million tied loan to Nepal for imports of Indian capital goods, repayable over 15 years in Indian rupees at 3 percent interest.[1]

Table VI-8 shows the value of exports of engineering goods and steel to these three countries in 1964-65 to 1969-70.

5. Third-Party Financing

Indian exports of engineering goods benefitted from eligibility in tenders financed by the World Bank and, during the first half of the 1960s, by US aid to southeast Asia.[2] The World Bank requires that projects it finances be awarded on the basis of the lowest bid in competitive tenders open to all members, with the exception that developing countries are permitted to give a 15 percent price preference to local suppliers.[3] An important feature of World Bank financing is that, because tenders must be awarded to the lowest bid from countries which are bank members, Indian suppliers probably can obtain higher prices than on ordinary hard currency sales, since they do not need to set

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[1]Bhasin, ed., 1970, p. 150. Under a trade agreement with Nepal, there were no tariffs or quantitative restrictions on trade with Nepal, except for revenue duties imposed by Nepal.

[2]Although the Asian Development Bank has not done so, the Inter-American Development Bank refinances export credits extended by member countries for intra-regional trade in capital goods. In 1964-1967 it provided refinance for $27 million of exports. (International Trade Forum, April 1968, pp. 4-7, and UNCTAD Document TD/7/Supp. 16, 1968.) India has been pressing the ADB for similar facilities. (FE, 27 March 1971, p. 8.)

[3]Because of the preference for local suppliers, Indian bidders lost a tender in Latin America even though their bid was lowest. When the US replenished IDA funds for soft loans in 1967-68 it made dollar releases conditional on purchases in the US though tenders against loans remained global. (EPW, 15 April 1967, p. 700, and 30 November 1968, p. 1841.)

TABLE VI-8

Exports of Engineering Goods and Steel to Countries Receiving Tied Indian Aid 1964-65 to 1969-70

$millions (% of exports to all countries)

Year	Ceylon			Indonesia			Nepal		
	Engg. Goods and Steel	Engg. Goods	Steel	Engg.Goods and Steel	Engineering Goods	Steel	Engg.Goods and Steel	Engg.[1] Goods	Steel
1964-65	1.2 (2.9)	1.2 (3.4)	0.0 (0.0)	0.3 (0.7)	0.1 (0.3)	0.2 (3.4)	1.0 (2.4)	1.0 (2.8)	0.0 (0.0)
1965-66	1.5 (2.9)	1.5 (3.8)	0.0 (0.0)	0.4 (0.8)	0.2 (0.5)	0.2 (1.7)	2.3 (4.5)	2.1 (5.3)	0.2 (1.7)
1966-67	1.9 (2.8)	1.7 (4.1)	0.2 (0.8)	0.1 (0.1)	0.1 (0.2)	0.0 (0.0)	2.2 (3.3)	2.1 (5.1)	0.1 (0.4)
1967-68	3.6 (2.9)	1.8 (3.3)	1.8 (2.5)	1.2 (1.0)	1.0 (1.8)	0.2 (0.3)	2.2 (1.7)	2.2 (4.0)	0.0 (0.0)
1968-69	8.5 (4.6)	5.4 (4.8)	3.1 (4.3)	2.4 (1.3)	1.2 (1.1)	1.2 (1.7)	3.8 (2.1)	3.8 (3.4)	0.0 (0.0)
1969-70	n.a.	9.3 (6.6)	n.a.	n.a.	2.2 (1.6)	n.a.	n.a.	3.9 (2.8)	n.a.

[1]Indian exports of engineering goods to Nepal did not exceed $0.3 million until 1964-65.

Sources: GOI, EEPC, HB.

prices at a discount below bids from advanced Western countries and East European countries can not bid. However, competition among Indian firms led to a loss of this advantage in some tenders for railway equipment.

Indian engineering firms received several export orders for electric cables, transmission line towers, railway wagons, and electric machinery financed by World Bank loans.[1] See Table VI-9 for an incomplete list.

From the initiation of US aid-tying in 1959 until 1966, Indian exporters of steel and engineering goods benefitted from restrictions on procurement against US aid to South Vietnam to suppliers in the US and certain developing countries.[2] Table VI-10 indicates the heavy

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[1]It is reported that "World Bank projects gave the country its first chance to get into the East African markets;" that financing from "the IBRD...has governed India's ability to secure wagon orders" in East Africa (UNCTAD-GATT, 1969, Vol. A, pp. 11, 41); that "the IBRD's dictum that purchases made from funds made available by it be governed by acceptance of the lowest-to-specification-tendered-offer from the widest possible range of countries, has governed India's ability to secure wagon orders;" and that "India has been a major supplier in the recent past because the credit was from the World Bank...In future, the prospects for India will depend upon further availability of World Bank credit." (NCAER, 1970, Vol. 1, pp. 41, 171.)

[2]Since the export earnings were evidently tied US funds, which India had to spend in the US, the gains to India were less than to exporters, i.e. this involved export subsidization. (See Bhagwati and Desai, 1970, p. 199.)

See GOI, EEPC, 1963, pp. 4, 11. Indian exporters benefitted from preferences on US aid to Pakistan in the early 1960s. Since exports to Pakistan dropped when aid was tied to the U.S., it was suggested that perhaps Indian firms were interested in export earlier only at higher than world prices at which procurements were made under the DLF aid programme. Pakistan, for instance, was buying some steel from us with US funds which carried the stipulation that purchases be made from developing countries if prices did not exceed the world level by more than 10 percent. With U.S. aid linked more firmly to dollar

TABLE VI-9

Exports Financed by World Bank Loans to the Importing Countries, 1965-1971

Product	Importing Country	Value ($ mil.)	Date of Order	Source
6. PILC power cables	Singapore	0.2		Indian manufacturer
6, 9. Electric cables and transmission line towers	Sudan	8.0		EEPC, IEE, May 1968, p. 205.
9. Transmission line towers	Nigeria	1.9	1966	EEPC
9. Transmission line towers	Thailand	4.0	1971	ET, 18 April 1971.
11. Railway wagons	East Africa	2.9	1965	NCAER, 1970, vol. 1, p. 171.
11. Railway wagons	South Korea	10.0	1967	GOI, MF, ES 1967-68, p. 31.
11. Railway wagons	Sudan	1.3	1969	EEPC
14. Electric machinery, including power transformers	Malawi	n.a.	1971	FE, 27 March 1971, p. 3.
Earth movers[a]	Nepal	0.1	1971	Commerce, 6 February 1971, p. 250.

Note: In several cases the value of the order has been estimated from Indian export statistics.

a: Asian Development Bank loan.

dependence of Indian exports to South Vietnam between 1963-64 and 1966-67 on the terms of this aid.

These procurement restrictions played an important role in Kirloskar Oil Engines' early exports of stationary diesel engines.[1] South Vietnam imported $1.0 million or 43 percent of Indian exports of diesel engines in 1964-65. Baranson reports that exports of TELCO Mercedes-Benz commercial vehicles to South Vietnam

> were conditioned by US AID procurement policies which require 90 per cent American content. Special exemptions are granted to industrial goods manufactured in developing countries. Thus, Daimler-Benz can sell its Indian truck in Vietnam, but not one manufactured in Germany.[2]

With the tying of US aid to US sources, Indian exports of engineering goods to South Vietnam declined from an average of $4.3 million in 1963-64 to 1966-67 to an average of $0.8 million per year in 1967-68 and 1968-69. Thus, the growth of total Indian exports of engineering goods and steel between 1966-67 and 1968-69 took place in spite of the loss of a sheltered market for 10 percent of these exports. In December 1970 it was reported that the US partially untied some loans given through USAID, permitting use of funds for purchases in developing countries provided import content from advanced countries other than

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purchases, this sheltered market has dried up and exports brought to a standstill." (EW, 18 May 1963, p. 831.) This decline in exports of steel could be explained by supply factors, however. See Chapter III.B.1.b.

[1]Other important exports were steel, steel tubes, brass sheets and circles, and electric wires and cables.

[2]Baranson, 1969, p. 77.

TABLE VI-10

Exports of Steel and Engineering Goods to South Vietnam, 1960-61 to 1969-70

Year	Value ($ mil.)	Percent of total Indian exports of steel and engineering goods
1960-61	0.0	0.0
1961-62	0.6	2.7
1962-63	0.6	2.9
1963-64	2.4	7.9
1964-65	3.7	8.9
1965-66	5.1	10.0
1966-67	5.9	9.6
1967-68	1.2	0.8
1968-69	0.4	0.2
1969-70	0.5[a]	0.4[a]

a: Excludes steel

Source: GOI, EEPC, HB.

the US was not more than 50 percent.[1]

6. Tied Equity Capital

Chapter III.C.5 discussed the scheme under which, between 1959 and the end of 1970, the government approved export of $21 million in capital goods to finance Indian equity investment in 105 manufacturing projects abroad. (See Table VI-11.) It appears that exports averaging $1.5 to $2.0 million per year were made in 1965-66 to 1969-70 to finance these investments.

D. Implications for Export Subsidization

The preceding sections have described several schemes which subsidized exports of engineering goods. These can be grouped in three categories: (i) soft currency schemes, i.e. bilateral trade agreements, *ad hoc* barter deals, and tied aid;[2] (ii) medium and long-term export credit; and (iii) tied equity financing. This section considers the development of these schemes over time and the industry breakdown of exports covered by these measures in 1969-70.

Not only the absolute amount but the share of total exports accounted for by each of these categories increased between 1964-65 and 1969-70, indicating increasing subsidization of exports. This is evident in the export data for bilateral trade areas (Table VI-3);

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[1] *FE*, 25 December 1970, p. 1. In early 1971 an Indian company exported ultramarine blue under US aid to South Vietnam. (*FE*, 4 March 1971, p. 5.)

[2] Tied aid is included with soft currency rather than credit exports because this is more convenient for the presentation in Table III-7 and tied aid may have been repayable in rupees.

TABLE VI-11

Indian Manufacturing Investments Abroad Approved by June 1970

Project	Indian Investment ($ mil.)	Indian Company	Date Approved	Status
Ethiopia				
Textiles	0.12	Birla Brothers	1959	Operating
Soap	0.21	Bombay Soap	1965	"
Woollen textiles	0.18	Duncan Brothers	1965	"
Textiles	0.12	Birla Brothers	1967	"
Malt	n.a.	Mohan Meakin Breweries		
Aluminum sheets	n.a.	Hooseini Metal Rolling		
Ghana				
Small tractors	0.07	Escorts International	1967	
Kenya				
Textiles	0.35	R.M. Goculdas	1964	Operating
Gripe water	0.02	K.T. Dongre	1966	"
Light engineering goods	0.28	H.L. Malhotra	1966	"
Corks	0.10	Indian Cork Mills	1967	"
Woollen textiles	0.44	Raymond Woollen Mills	1966	"
Printing inks	0.11	Rainbow Ink	1966	
Paper and pulp	1.80	Birla Brothers	1968	
Libya				
Pipes	0.17	Indian Hume Pipe	1963	Operating
Mauritius				
Mosaic tiles, rolling shutters	n.a.	Sidharth Jasubhai		Operating
Rubber products	n.a.	Swastic Rubber Products		
Canning	n.a.	Ayurved Sevashram		
Morocco				
Corks	0.01	Indian Cork Mills		
Nigeria				
Engineering goods	0.34	Birla Brothers	1963	Operating
Solvent extraction	0.05	Birla Brothers	1964	"
Textiles	0.85	Birla Brothers	1963	
Palm kernel crushing	0.14	Birla Brothers	1964	
Razor blades	0.34	H.L. Malhotra	1965	Operating
Textiles	n.a.	T. Maneklal Mfg.		
Air-coolers	n.a.	Turner Hoare		
Tanzania				
Pharmaceuticals	0.04	Mrs. Sarla Somani	1965	
Togo				
Radios	n.a.	Semiconductors		

TABLE VI-11 (continued)

Project	Indian Investment ($ mil.)	Indian Company	Date Approved	Status
Uganda				
Sugar refining	11.40	Consortium	1964	Cancelled by host
Jute manufactures	n.a.	Birla Brothers		
Ceylon				
Sewing machines	0.11	Jay Engineering	1961	Operating
Glass	0.03	Swastic Glass	1967	Operating
Tea-processing machines	n.a.	General Industries	1965	
PVC leather cloth	0.05	Bhor Industries	1967	Operating
Trucks	0.72	Ashok Leyland	1967	
Mica mining	n.a.	Krishna Mining		
Air-coolers	n.a.	Electronics Ltd.		
Pharmaceuticals	n.a.	Themis Pharmaceuticals		
Filters	n.a.	Fritz & Singh		
Textiles	n.a.	Birla Brothers		
Textile machine parts	n.a.	Metro Wood Engineering		
Electric motors, pumps	n.a.	Kirloskar Electric		
Iran				
Automobile parts	0.07	Mahindra and Mahindra	1966	Operating
Electric motors and transformers	0.16	Electric Const. & Equipment	1965	
Lebanon				
Pesticides	0.06	Pest Control	1967	
Saudi Arabia				
Asbestos cement products	0.53	Birla Brothers	1965	
Vanaspati	0.31	Ahmed Oomerbhoy	1965	
Transistors	n.a.	United Agency		
Afghanistan				
Sewing thread balls	0.02	Darbar and Co.	1968	
Malaysia				
Steel furniture	0.35	Godrej and Boyce	1965	Operating
Cotton textiles	1.29	Birla Brothers	1964	Operating
Glass bottles	0.15	Jog Glass Industries	1968	
Electric cables	0.12	Indian Aluminium Cables	1968	
Small tools	0.08	Gupta Mechanical Tools	1968	
Electric fans, sewing machines	n.a.	Jay Engineering		
Confectionary	n.a.	Parry's Confectionery		
Cosmetics	n.a.	Dabur		
Electric motors, pumps, diesel engines	n.a.	Kirloskar Electric		

TABLE VI-11 (continued)

Project	Indian Investment ($ mil.)	Indian Company	Date Approved	Status
Pharmaceuticals, cosmetics	n.a.	G.C. Narang Industries		
Enamelled wires	n.a.	Ajit Industries		
Speedometer cables	n.a.	Southern Industrial Corporation		
Singapore				
Welding electrodes	n.a.	M.S. Alloy Electrodes		
Electric fans, sewing machines	n.a.	Jay Engineering		
Automobile parts	n.a.	Teksons		
Thailand				
Steel re-rolling	0.04	Sacha Exporters	1968	
Synthetic fibre	n.a.	Birla Brothers		
Newsprint mill	n.a.	Kuljian Corpn.		
Philippines				
Diesel engines	n.a.	Kirloskar Oil Engines		
Ireland				
Nylon bristles	0.05	Garware Plastics	1966	
Tufted carpen yarn	0.34	Mafatlal Gagalbhai	1968	
West Germany				
Hose clips	n.a.	N. Krishnan		
Diesel engines	n.a.	Kirloskar Oil Engines	1966	Operating
U.K.				
Asbestos cement products	0.44	Birla Brothers	1965	
Canada				
Hardboard	0.79	Anil Hardboards	1965	Operating
Textiles	n.a.	T. Maneklal Mfg.		
U.S.				
Hardboard	n.a.	Anil Hardboards		
Colombia				
Twist drills	0.11	Indian Tool Manufacturers	1965	

Source: IEA, HS, 1969-70, pp. 256-59.

announcements of _ad hoc_ barter deals were found mainly after mid-1969, although the same sources were examined for earlier periods; with the exception of Nepal, tied aid was given starting in 1966; apart from concessional rates for refinance, explicit subsidization and direct government financing of export credit began in 1968; of the 105 Indian foreign investments approved, all but 10 were in 1965 or after.

Details of the industrial coverage of the schemes are provided in Table III-7. Significantly, each breakdown reveals a substantial range in the subsidization of exports for different industries and a bias toward subsidization of exports of capital goods.

(i) Soft currency: All exports to the eight East European countries, the UAR, the Sudan, Afthanistan, and Ceylon are considered soft currency exports, in the first eleven cases because of bilateral agreements and in the last because of tied aid. In 1969-70, 36 percent of total exports of engineering goods were sold for soft currency. A country breakdown of these exports is provided in Tables VI-4 and VI-8 while an industrial breakdown is provided in Table III-7. For the 24 engineering industries in Table III-7, the share of exports for soft currency varied from zero to 93 percent. This indicates that soft currency arrangements were important in the average level and industrial structure of export subsidies.[1] The figures involve some underestimation, since they do not include exports covered by the _ad hoc_ barter deals

[1]Because consumer goods were not eligible for export under the second and subsequent tied credits to Ceylon, the industry breakdown of exports somewhat overstates the percentages of consumer goods exported under soft currency.

in Table VI-5.

(ii) Medium and long-term export credit: On the basis of the data presented in Tables VI-6 and VI-7, it appears that at least $10 million of exports[1] during 1969-70 were financed by subsidized medium and long-term export credit at interest rates of 5-6 percent, accounting for about 4 percent of exports of engineering goods including steel. Table III-7 provides an industrial breakdown of sanctions made in 1968-70. As a matter of government policy, such credits were restricted to capital goods, and in the case of direct government financing, to large orders.

(iii) Tied equity financing: About $1.5 to $2.0 million in exports appear to have been made in connection with tied equity financing during 1969-70. As a matter of government policy, these exports were restricted almost entirely to industrial machinery. Among the industries listed in Table III-7, only cotton textile machinery and machine tools were affected to a significant extent, while fabricated steel structures and electric machinery were affected to a lesser degree.

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[1]Exports of cotton textile machinery to the UAR alone accounted for over $6 million in 1969-70.

CHAPTER VII

BARRIERS TO EXPORT

This chapter examines briefly factors other than government policies which limited the transition from import substitution to export, particularly as a short-run response to excess capacity and government export promotion schemes. The factors considered here are (A) discrimination against exports by foreign collaborators, (B) transport costs, and (C) trade barriers abroad. A fourth factor which could be considered in this context has already been discussed in Chapter VI.B.1: the necessity of large discounts below the prices of goods exported from advanced countries.

A. Discrimination against Exports by Foreign Collaborators

Chapters II.B and V.A discussed the extent of foreign ownership, control, and technical collaboration in the engineering and tire industries. Heavy reliance on foreign collaboration suggests a question which has been raised in other semi-industrial countries and Australia, Canada, and Japan: do foreign investors and licensors discriminate between domestic sales and exports by their Indian subsidiaries and licensees?

1. Formal Discrimination in Collaboration Agreements

A review of written foreign collaboration agreements in India revealed the seven conditions listed below which discriminated between domestic sales and exports by licensees while the agreements were in force, which was typically 5 to 10 years from the start of commercial production. It should be emphasized that all these conditions were approved by the government.

(a) Total prohibitions of exports and requirements for prior approval of all exports by the foreign collaborator;

(b) restrictions on countries to which licensees could export;

(c) higher royalty rates on exports;

(d) restrictions on export marketing channels, mainly requirements to sell through the collaborator or its agents;

(e) restrictions on use of the collaborators' trademarks in export;

(f) restrictions on export pricing;

(g) limitations on the volume of exports.

The findings with respect to export restrictions of an RBI survey of the terms of all written foreign collaboration agreements in 1961-1964 are presented in Tables VII-1 and VII-2. The survey questionnaire asked explicitly only about restrictions of types (a), (b), and (e), but the RBI also received and tabulated some answers concerning restrictions of types (d) and (g).[1] Table VII-1 reveals that

[1]The survey asked firms to "indicate if there are any clauses in your agreement which prevent exports as such or exports to a specified area. Also indicate whether trademarks, if obtained under the agreement, can be used for purposes of export." GOI, RBI, 1968, p. 137.

TABLE VII-1

Export Restrictions in Foreign Collaboration Agreements in Force in 1961-65

(Number of Agreements)

	Basic Metals and Engineering Industries	All Manu-facturing	Total @
Private Sector, Total			
Export Restrictions*	329	441	455
Total	634	1026	1051
Percent	52	43	43
Firms with over 50 percent foreign ownership			
Export Restrictions	32	52	56
Total	80	132	144
Percent	40	39	39
Firms with 50 percent or less (but some) foreign ownership			
Export Restrictions	154	220	230
Total	245	442	445
Percent	63	50	52
Firms with Technical Collabo-ration without foreign equity			
Export Restrictions	143	169	169
Total	309	452	462
Percent	46	37	37
Government Firms			
Export Restrictions	n.a.	n.a.	35
Total	n.a.	n.a.	70
Percent	n.a.	n.a.	50

n.a.: not available
*: number of agreements with export restrictions
@: includes 14 agreements in private sector non-manufacturing activities.
coverage: same as Table II-11.

Source: GOI, RBI, 1968, pp. 35, 62, 84, 97.

TABLE VII-2

Export Restrictions in Foreign Collaboration Agreements in Force in 1961-65, by Type of Export Restriction

(Number of Agreements)

Type of Restriction	Private Firms: Over 50 percent foreign ownership	Private Firms: 50 percent or less (but some) foreign ownership	Private Firms: Technical collaboration without foreign equity	Government Firms	Total
a. Export prohibited	36	97	56	8	197
For all products	35	95	55	8	193
Explicit prohibition	3	15	18	5	41
Permission of collaborator required for export	32	80	37	3	152
For some products only	1	2	1	0	4
b. Export allowed to some but not all countries	19	118	102	22	261
Countries listed where export is allowed	16	101	80	20	217
Countries listed where export is prohibited	3	17	22	2	44
d. Restriction on export marketing channel	1	13	6	5	25
e. Restriction on use of trademark in export	0@	0#	10	0	10
g. Restriction on volume of exports	0	2	0	0	2
TOTAL	56	230	169*	35	490

*: 5 agreements with restriction on use of trademark have one other restriction each, and therefore the column adds to 174.

@: The RBI report refers to two agreements in this category (pp.36-37) but does not include them in the tables on which this table is based.

#: The RBI report refers to one agreement in this category (p.64).

coverage: Same as Table VII-1, including agreements not in engineering and basic metals industries.

Source: GOI, RBI, 1968, pp. 34, 61, 83, 96.

export restrictions, mainly of types (a) and (b), existed in about half the agreements in the basic metals and engineering industries. The percentage of agreements with export restrictions differed between ownership categories but without a consistent relationship to the share of foreign ownership. In addition to the data presented in tabular form, the text of the RBI study refers to at least 10 replies reporting restrictions of type (c) and one reporting a restriction of type (f).[1]

The findings of the Dutt Committee with respect to export restrictions in 270 written foreign collaboration agreements approved by the government in 1956-1965 are presented in Tables VII-3 and VII-4. Just over 60 percent of the agreements contained export restrictions, and the share of foreign ownership appears to have had little effect on this percentage. Unlike the RBI study, this report recorded data on restrictions of type (c), which were found in 21 percent of agreements in the engineering industries. Table VII-4 shows that export restrictions existed in 14 of the 15 industries selected for detailed examination in the present study which were represented in the sample of agreements covered.

The following sections discuss the various types of export restrictions on the basis of information gathered in India.

a. - b. Total Prohibitions and Territorial Restrictions

Total export prohibitions of type (a) were unusual among firms interviewed, although they were reported in a few cases, for a simple

[1]*Ibid.*, pp. 36, 64, 65, 87, 98.

TABLE VII-3

Export Restrictions in Foreign Collaboration Agreements Approved in 1956-1965

(Number of agreements)

	Type of Export Restriction						Percent of Agreements with Export Restrictions
	(a)[@]	(b)	(c)	(g)	(a,d)[#]	None	
All Manufacturing Industries	6	76	72	12	9	95	65
Firms with over 50 percent foreign ownership	3	34	44	5	4	38	70
Firms with less than 50 percent foreign ownership, private sector	3	41	27	7	5	56	60
Government firms	0	1	1	0	0	1	67
Engineering Industries	6	69	45	7	8	84	62

@: Only agreements with total prohibitions on exports.
#: Includes agreements which require approval of collaborator for all exports, agreements with restrictions on export marketing channels, etc.

coverage: approximately 11 percent of the collaboration agreements approved during 1956-1965.

Source: GOI, MIDITCA, 1969, Main Report, p. 134, and Appendix V-C.

TABLE VII-4

Export Restrictions in Foreign Collaboration Agreements Approved in 1956-1965 in Fifteen Selected Industries

(Number of Agreements)

	Type of Restriction					
	(a)[@]	(b)	(c)	(g)	(a,d)#	none
4. Iron and steel castings						
Iron			1			2
6. Electric wires and cables		4				
Aluminum conductors		1				
Plastic insulated		1				
Paper insulated						1
Unspecified		2				1
7. Hand, small, and cutting tools			3			
Twist drills			1			
Tungsten carbide tipped tools			1			
Small tools			1			
10. Fabricated steel structures	2	7				2
12. Cotton textile machinery and parts		4	1			3
13. Machine tools (and accessories)	3	1				
14. Electric machinery	5	1				3
Transformers	1	1				
Motors	3					1
Motor starters						1
Other switchgear	1					1

TABLE VII-4 (continued)

	Type of Restriction					
	(a)[@]	(b)	(c)	(g)	(a,d)[#]	none
15. Commercial vehicles and jeeps						
Jeeps						2
16. Dry and storage batteries		2				
Dry		1				
Storage		1				
17. Radios and components		1	3			1
19. Bicycles				1		
20. Stationary and other diesel engines & 22.			1		1	4
21. Automobile parts other than (22)		3	4	1	1	9
22. Vehicular engine parts			1			
23. Bicycle parts			1			1
TOTAL	2	29	17	2	2	29

Notes and source: same as Table VII-3.

reason: Indian firms typically were allowed to export to Ceylon. Consequently, the fact that exports were not totally prohibited did not mean that export territories were liberally defined. Kidron has noted:

> Where an export territory is permitted, it is usually confined to the narrow regional market: Pakistan, Burma, Ceylon, Nepal, Afghanistan. In the few cases in which the export territory is more liberally defined, it is usually in need of development from scratch, e.g. developing countries or East Europe, where the parent has not established a market.[1]

While this overstates the relative frequency of such restrictions, it correctly points out that many of the restrictions of type (b) were severe. It is relevant that most of the restrictions of type (b) in Table VII-2 list countries where exports were allowed rather than where they were prohibited, the former involving the smaller number of countries. The same point is apparent in Table VII-5, which lists the export restrictions in HMT's 13 collaboration agreements for machine tools in force in 1967. All 13 permitted exports to Ceylon, and hence there were no restrictions of type (a), but restrictions of type (b) occurred in nine, and all of these excluded the markets which HMT considered to have the greatest potential.

As this suggests, the range of machine tools which Indian licensees could export freely to all markets, or to advanced Western countries, was narrowly limited by territorial restrictions in 1968. Table VII-6 provides an incomplete list of active collaboration agreements for machine tools with prohibitions on export to all areas of North America and West Europe; generally they prohibited exports to

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[1]Kidron, 1965, pp. 283-84.

TABLE VII-5

Export Restrictions in Hindustan Machine Tools' Foreign Collaboration Agreements in Force in 1967

	Foreign Collaborator	Period of Agreement	Machine Licensed	Export Conditions	Type of Export Restriction
1.	Limex, East Germany	1961-1971	Surface grinding machines, SWF	Non-exclusive right to sell in all countries.	None
2.	Regie Nationale des Usines Renault, France	1961-1968	Special purpose machines, transfer lines	Non-exclusive right to sell in Burma, Ceylon, Pakistan, Nepal, and Indonesia; permission of collaborator required for other countries	b
3.	Drummond Brothers, U.K.	1963-1970	Gear shapers, 2A and 3A	Exclusive right to sell in Burma and Ceylon; non-exclusive right to sell in other countries subject to payment of 10 percent commission and through collaborator's agents only.	c,d
4.	Fritz Werner, West Germany	1963-1970	Electrically controlled milling machines, D	Exclusive right to sell in Ceylon; non-exclusive right to sell in other countries subject to the restriction that sales to such countries not exceed 25 percent of production in any year.	g
5.	Manufacture de Machine du Haut-Rhin, France	1964-1971/1974	Single spindle automatic lathes, TR	Exclusive right to sell in Ceylon; non-exclusive right to export to 28 other countries through collaborator's agents on commission basis. The 28 countries were: Afghanistan, Albania, Burma, Mainland China, Ghana, Indonesia, Kenya, Laos, Malaya, Nigeria, Niger, North and South Korea, North and South Vietnam, Pakistan, Sudan, Tanganyika, UAR, and (at 10 percent commission): Bulgaria, Czechoslovakia, Hungary, East Germany, Poland, Rumania, USSR, Finland, and Israel.	b,c,d

TABLE VII-5 (continued)

Foreign Collaborator	Period of Agreement	Machine Licensed	Export Conditions	Type of Export Restriction
6. Effehag Effekten-Handels und Lizenz-verwertungs Switzerland, and Hans Liebherr Maschinenfabrik, West Germany	1964-1971	Gear hobbing machines, L	Non-exclusive right to sell in all countries. Sales to USA and West Europe were restricted to collaborator's agents on payment of commission of 15 percent.	c,d
7. Gildemeister, West Germany	1966 - 8 years from date of first purchase order	Multi-spindle automatic lathes	Exclusive right to sell in Burma and Ceylon; non-exclusive right to sell without outright competition with collaborator in USA, Canada, Latin America, Australia, New Zealand, Japan and other Asian countries	b
8. Manufacture de Machine du Haut-Rhin France	1966 - 8 years from date of first purchase order	Single spindle automatic lathes, PF	Exclusive right to sell in Burma and Ceylon; non-exclusive right to sell as under agreement #5.	b,c,d
9. H. Ernault-Somua, France	1966 - 10 years from date of first purchase order	Copying lathes, Pilote	Exclusive right to sell in Burma and Ceylon; non-exclusive right to sell without outright competition with collaborator in all Asian countries except Japan and Mainland China.	b
10. Jones and Lamson, U.S.A.	1966 - 5 years from date of first purchase order	Automatic lathes, Fay	Exclusive right to sell in Burma, Ceylon, and Pakistan; non-exclusive right to sell without outright competition with the collaborator in all other Asian countries, Australia, New Zealand, and Africa excluding South Africa; sales in Japan, Australia, Tasmania, and New Zealand only through collaborator's agents.	b,d

TABLE VII-5 (continued

Foreign Collaborator	Period of Agreement	Machine Licensed	Export Conditions	Type of Export Restriction
11. Gildemeister, West Germany	1966-1971 and thereafter until terminated by one party	Drum-type turret lathes, RTV	Exclusive right to sell in Burma and Ceylon; non-exclusive right to sell without outright competition with collaborator in Australia, New Zealand, Japan, Thailand, North and South Vietnam, Laos, Iran, Iraq, and Afghanistan; permission of collaborator required for other countries.	b
12. Pegard, Belgium	1967-1972 and thereafter until terminated by one party	Horizontal boring machines, AF, FA, U	Exclusive right to sell in Burma and Ceylon.	b
		Horizontal boring machines to be designed jointly by Pegard and HMT	Exclusive right to sell in: Asia excluding USSR; Australia; New Zealand; Polynesia; African countries belonging to British Commonwealth except South Africa; UAR; Sudan; Ethiopia; Somalia; Libya. Export to other countries by permission of Pegard only.	
13. Osward Forst, West Germany	1967-1977 and thereafter until terminated by one party	Broaching machines	Exclusive right to sell in Burma and Ceylon; non-exclusive right to sell in 22 other countries without outright competition with the collaborator: North Vietnam, South Vietnam; Laos, Thailand, Malaysia, Indonesia, Iran, Iraq, Afghanistan, Syria, Jordan, Saudi Arabia, Yemen, UAR, Tanzania, Uganda, Kenya, Nepal, Pakistan, North and South Korea, USSR; collaborator to give non-exclusive right to export to Australia, New Zealand, and USA at an unspecified later date; permission of collaborator required to export to other countries.	b

Notes to Table VII-5

Five other agreements had expired by 1967 so that HMT was free to export the machines:

(a) Oerlikon, Switzerland (1957-1966), lathes - H22
(b) Fritz Werner, West Germany (1957-1963), milling machines - M2 and M3
(c) Hermann Kolb, West Germany (1958-1965), radial drilling machines - RM
(d) H. Ernault Batingnolles, France (1959-1966), lathes - LB
(e) Olivetti, Italy (1959-1966), cylindrical grinding machines - G

It could not be determined what export rights HMT had while these agreements were in force.

In 1967 and 1969 HMT made collaboration agreements with Verson Allsteel Press, USA, for presses, press brakes, and other metal-forming machines. According to the collaborator, there were restrictions on HMT's export rights.

TABLE VII-6

Foreign Collaboration Agreements in the Machine Tool Industry with Territorial Restrictions on Exports, 1968

Indian Company	Machine Type	Percent Foreign Equity
HMT	Special purpose machines, transfer lines	0
	Single-spindle automatic lathes, TR and PF	0
	Multi-spindle automatic lathes	0
	Copying lathes, Pilote	0
	Automatic lathes, Fay	0
	Drum-type turret lathes	0
	Horizontal boring machines	0
	Broaching machines	0
	Metal-forming machines	0
Mysore Kirloskar	Capstan, turret, and single-spindle automatic lathes	0
	Copying lathes	0
	Cylindrical grinding machines	0
Cooper Engineering	Vertical turret lathes	0
	Gear hobbing machines	0
Traub India	Single-spindle automatic lathes	60
Scottish Indian	Metal-forming machines	40
Ex-Cell-O	Fine boring machines, special purpose machines, and many other types	80
New Standard Engineering	Forging hammers	0
Batliboi	Milling machines, radial drilling machines	0
Praga Tools	Copying lathes*	0

*: Agreement made after 1968.

TABLE VII-7

Foreign Collaboration Agreements in the Machine Tool Industry with No Territorial Restrictions on Exports, 1968

Indian Company	Machine Type	Percent Foreign Equity	Other Restrictions on Exports
HMT	Surface grinding machines	0	None
Bharat Fritz Werner	Knee-type milling machines, mechanical	45	None
Praga Tools	Tool and cutter and surface grinding machines	0	Type d
Batala Engineering	Center lathes	0	Type c
	Planing machines	0	Type c

TABLE VII-8

Territorial Restrictions Imposed on Exports by Collaborators with Equity in the Indian Licensees

Product	Indian Company	Percent Foreign Equity
5. Steel wire ropes	Usha Martin Black[a]	21
7. Hand tools	Gedore Tools	60
13. Machine tools	Ex-Cell-O India	80
	Scottish Indian	40
	Traub India	60
19. Bicycles	Sen Raleigh[b]	17[c]
26. Tires and tubes	Dunlop India[d]	51
27. Miscellaneous		
Bearings	SKF/Associated Bearing	60

a: Exports permitted to all countries except U.K., Canada, and U.S.A.
b: Agreement and export restrictions expired in about 1968
c: Foreign ownership is probably much more than 17 percent
d: Important export markets were allocated to the Indian company although exports were not permitted to other areas.

Note: In spite of export restrictions, Usha Martin Black, Gedore Tools, and Sen Raleigh were among the top 100 exporters listed in Table II-18, and Dunlop India was the largest exporter of tires and tubes.

some or virtually all other countries as well. Table VII-7 provides a list of active collaboration agreements with no territorial restrictions on export.

The most striking feature of Tables VII-5 through VII-7 is that virtually all of the more sophisticated machine tools produced with foreign technical collaboration by the three largest Indian companies -- HMT, Mysore Kirloskar, and Cooper Engineering, which together accounted for about 60 percent of Indian production of machine tools -- are in Table VII-6 and could not be exported, except to developing countries where demand was negligible.

Also of interest is the fact that only one of the four machine tool companies with foreign equity participation for which information is available had unrestricted export rights. Table VII-8 lists eight Indian companies with export restrictions of type (b) imposed by foreign collaborators holding 17 to 80 percent of the equity, including three machine tool companies.

c. Royalty Rates

According to the Dutt Committee, which studied the terms of 270 agreements:

> Where export of commodities is permitted, the royalty rates on the exported part of output are usually high...The extra royalty on exports is usually at 2 to 3 percent (of sales value) above the royalty permitted for internal sales. Such extra royalty might be justified if special services for export purposes are made available by the collaborating firm. This does not seem to be always the case. The extra royalty is apparently asked mainly as a compensation because of the fear of the loss of export market by the collaborating

firm.[1]

Table VII-3 indicates that higher royalty rates on exports were specified in 21 percent of a sample of 219 collaboration agreements approved in the engineering industries in 1956-1965.

Table VII-9 lists details of 13 agreements approved in 1960-1965 which specified a higher royalty rate on exports. In eight cases the excess was 1 to 2 percent of the value of sales, but in four cases it was 3 to 5 percent.

Among HMT's 13 collaboration agreements, four specified a commission of 10 to 12 percent on exports, but this would not necessarily restrict exports since a commission would have to be paid to a distributor in any case, except possibly in East Europe.

d. <u>Export Marketing Channels</u>

Foreign collaborators often permitted Indian licensees to export only through the collaborator's agents and distributors in any market which was already served by the collaborator. In the case of machine tools, such restrictions applied to five of HMT's collaborations and to Praga Tool's collaboration with Jones and Shipman.

According to the company in charge of Praga's exports, some foreign agents which were handling Jones and Shipman products from the UK were unwilling to take the Indian machines even at a 20 percent discount below the UK price because of anticipation that their customers might not accept machines from India. Under these circumstances, the

[1]GOI, MIDITCA, 1969, Main Report, pp. 133, 135.

TABLE VII-9

Foreign Collaboration Agreements Specifying a Higher Royalty Rate on Exports Approved in 1960-1965

Product	Indian Company	Licensor's Share of Equity	Royalty as Percent of Sales: Domestic Sales	Exports	Difference
7. Hand, small and cutting tools					
Hard metals for small tools	Widia India	60	5	10	5
12. Cotton textile machinery and parts					
Parts	Suessen Textile Bearings	26	5	8	3
13. Machine tools	Batala Engineering (two agreements)	0	3,2,1[a]	6	3,4,5
21. Automobile parts					
Dump truck tipping gears	Usha Telehoist	31	3	4	1
Brake linings	Rane Brake Linings	some	4	5	1
27. Miscellaneous					
Bearings	Precision Bearings	29	4[b]	6	2
Welding electrodes	Asiatic Oxygen	16	5	6	1
"	Power Cables	0	3	4	1
"	Ahura Welding Electrode Manufacturing	9	3	4	1
Auto-cycles	Mopeds India	6	$1.22[c] ea.	$1.83 ea.	$0.61 ea.
Graphic art machines	Indian Graphic Arts Equipment	50	3	5	2
Unspecified	Usha Refrigeration	0	4	5	1

Notes to Table VII-9

a: Sliding scale royalty rate on domestic sales
b: rate converted from tax-free rate specified in agreement
c: specific rate could not be converted to *ad valorem* basis

Source: *Directory of Foreign Collaborations in India*, Vols. 1 and 2, 1968 and 1969, and GOI, MIDITCA, 1969, Main Report, p. 125.

restriction to sell through the collaborator's agents meant that the Indian company could not appoint a competing agent and hence could not export to the country. This would probably be a common experience for machine tool exports to the US where there was a strong tendency, reinforced by a difference in trade associations, toward specialization in distribution not only by type of machine but source. Machines from countries like Spain, Yugoslavia, and India were usually distributed by special importers or used machine tool dealers, not by the distributors of US and northwest European machines. In any event, since machine tools were distributed through independent dealers, distribution through the parent's network required agreement of both the parent and each individual distributor (e.g. one for each section of the US), and collaboration agreements gave no assurance that such agreement would be forthcoming on the part of distributors.

Beyond this, it might be inefficient for a multi-product firm like HMT to export a particular machine through its collaborator's agents because HMT was already setting up overseas offices, appointing agents, and participating in exhibitions for its other machines. The requirement to use the collaborator's agents would lead to duplication of effort and limit economies of scale in marketing. A similar problem was faced by a producer of diesel engines, a 50-50 joint venture, which was allowed to export only through the foreign collaborator's agents. The Indian management of the subsidiary would have preferred to export through the Indian parent company.

In some cases not only was the Indian company required to use the collaborator's overseas agents but all export orders went through the collaborator's head office. Indian firms sometimes complained that this arrangement restricted Indian exports because the collaborator preferred to supply orders from its home plant.

e. Trademarks

It was common for foreign collaborators to prohibit use of their trademarks in export by their Indian subsidiaries and licensees if there were no restrictions of type (d). Philips India (radios and components and light electricals, 52 percent foreign equity), ABMEL (storage batteries, 30 percent), Usha Martin Black (steel wire ropes, 21 percent), and India Pistons (automobile parts, 17 percent) were not allowed to use their collaborators' trademarks in export although they used them in India. Since the Indian company names gave away the collaboration in the case of Philips and Martin Black, the Indian companies were forced to export under assumed names. Philips India used the alias Pex India to export "Osler" equipment, "Exide" batteries were exported under the name "Index," and Usha Martin Black shortened the company and brand name to "Usha".

f. Export Pricing

Collaboration agreements sometimes restricted the export prices charged by subsidiaries and licensees, mainly to prevent them from cutting prices. When export marketing of the Indian subsidiary was highly integrated with the parent's, as in the case of Dunlop India (tires and tubes, 51 percent foreign equity), export prices were set by the parent. Mysore Kirloskar (machine tools, no foreign equity) could export its turret lathes only at prices approved by the collaborator and therefore its ability to cut prices to penetrate foreign markets was limited. Since the restriction prevented Mysore Kirloskar from undercutting its collaborator by more than about 5 percent, while the evidence presented in Chapter VI.B.1 suggests that Indian companies were able to export machinery only when prices were 20 percent or more below those of competitors from advanced countries, this would have been an effective restriction on exports.[1]

2. Effective vs. Formal Restrictions

The formal restrictions reviewed above, which were contained in written agreements approved by the government, could have been supplemented by informal restrictions or direct discriminatory behavior by the foreign collaborator in cases where the latter controlled the Indian company. Kidron and Dericks report such informal restrictions on exports from India, and Brash and Hughes and Seng report them for Australia and Singapore.[2]

On the other hand, it was not unusual for foreign collaborators to permit exports to countries where sales were not allowed under the

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[1]For additional examples and for restrictions on non-price competition, see Brash, 1966, pp. 229-30.

[2]Kidron, 1965, p. 311; Wim Dericks in conversation; Brash, 1966, p. 266; and Hughes and Seng, eds., 1969, p. 197.

original written agreement, particularly to areas where Indian suppliers received preferences because of bilateral trade agreements or tied aid, e.g. Ceylon, the UAR, and East Europe.

Consequently, the terms of written agreements do not provide an exact measure of effective discrimination by foreign collaborators. However, from the point of view of the data in Tables VII-1 to VII-7, the main effect of the latter relaxations was only to convert written restrictions of type (a) to effective restrictions of type (b). With one exception, the changes reported in interviews and in the press involved permission to export to developing countries, East Europe, or Australia and New Zealand. Only one firm reported that the collaborator eliminated territorial restrictions, and this was for a machine no longer produced by the collaborator only a year before the collaboration agreement was due to expire.

3. Export Assistance by Foreign Collaborators

Foreign collaborators that had substantial investment in Indian companies appear to have been the most liberal in relaxing territorial export restrictions and even assisting exports from India when the incentive to export increased because of government export promotion schemes and the recession. This process of relaxation of restrictions and increasing assistance is illustrated by the experience of Traub India:

> Apart from West Germany, Traub Co. have their factories in Brazil and Switzerland with cent per cent German capital ...In view of their worldwide activities, the Indian enterprise with only 60 percent German investment has been

> subjected to severe restrictions in matter of export. Last year (1967) this restriction was relaxed by Traub Co. in view of the boom in the domestic demand in Germany. This year (1968) export rights to the Indian enterprise have been conceded with little reluctance.[1]

In 1970 Traub of West Germany helped its Indian subsidiary to export 25 percent of its output.

By 1969 many foreign investors with a majority of the equity of an Indian company had decided to help the Indian subsidiary achieve an export target of 5 to 10 percent of production. The following companies received large export orders from or through their foreign parents by 1970: Ashok Leyland (60 percent foreign equity), Atlas Copco (100 percent), Dunlop India (51 percent), Hindustan Brown Boveri (slightly over 50 percent), IBM (100 percent), Ralliwolf (45 percent), Siemens India (51 percent), Traub India (60 percent).

In these cases the foreign majority investors were responding to the same incentives that led Indian companies to export. Foreign collaborators without a substantial investment in the Indian company did not provide similar assistance in export.

4. Effect of Restrictions on Export

It has not been possible to test statistically the hypothesis that foreign collaborators discriminated against exports as opposed to domestic sales. There are several reasons why this could not be done. It is difficult to find firms in the organized sector without foreign collaboration and even harder to find comparable firms within an

[1] Interview at Perfect Machine Tool, 14 November 1968.

industry operating with and without collaboration. Among firms with collaboration, published information does not permit determination of whether collaboration agreements have expired, and in the case of firms producing goods both with and without collaboration, published information often does not permit determination of which were exported.

Use of systematic data permits only one conclusion. Firms with foreign technical collaboration accounted for the majority of engineering exports, and of the top 100 exporters of engineering goods listed in Table II-18, 16 had 50 percent or more foreign ownership. This proves that foreign collaboration did not prevent export. However, it cannot be inferred that the written restrictions discussed above were not effective, much less that there was no discrimination by any foreign collaborators.

Beyond this, one is forced to rely on information gathered in interviews.

(i) In two cases territorial restrictions were reported on products similar or identical to ones being exported by the same Indian company to other countries and by other Indian companies to the restricted territories.

Mysore Kirloskar (no foreign equity), which exported $0.3 of machine tools in 1969-70, was not allowed to export Herbert turret lathes to advanced Western countries. It was exporting engine lathes produced without collaboration to these countries, and its distributors were interested in handling the turret lathes. HMT, which exported \$1.3 million of machine tools in 1969-70, was exporting similar turret lathes produced without collaboration to advanced countries. Mysore Kirloskar's application for export rights was rejected except for sales to Australia. The foreign collaborator was exporting the turret lathes from its UK plant.

Geddre Tools (60 percent foreign) exported \$1.3 million worth of hand tools in 1968-69, 10 percent of them to North America, but was not permitted to export to West Europe, which was supplied from the parent's plant in West Germany.

(ii) Several machine tool distributors from advanced countries who were visiting India in search of distributorships in 1969 stated that Indian companies were not allowed to export a number of machines in which they were interested. HMT's export manager and agent for Australia stated that sales to Australia would have been greater in the absence of export restrictions.

(iii) Cooper Engineering (no foreign equity), which exported \$0.4 million of other engineering goods in 1969-70, was unable to secure additional rights to export vertical turret lathes and gear hobbing machines to advanced countries. It did obtain rights to East Europe.

(iv) New Standard Engineering (no foreign equity), which exported \$0.3 million of engineering goods in 1969-70, received a protest from its West German collaborator when it exported textile machinery to Poland, and it therefore decided to observe the export restriction in the future.[1]

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[1]Similarly, when its Yugoslav licensee tried to export tractors

(v) Kirloskar Pneumatic (no foreign equity), which exported $0.3 million of engineering goods in 1969-70, reported to its shareholders:

> Your company has been endeavouring to develop export trade in its products in territories which for export are severely restricted by the licence agreements with its foreign collaborators.[1]

(vi) In addition to the above cases, there were a number of cases where a company was exporting in spite of some written or formal restrictions on export, e.g. Dunlop India ($4 million in 1970), Usha Martin Black ($1.1 million in 1969-70), TELCO ($1.7 million in 1967-68, prior to expiration of the collaboration agreement and export restrictions), Sen Raleigh ($0.3 million in 1967-68, prior to expiration of the collaboration agreement and export restrictions). This suggests strongly that at least <u>written</u> export restrictions were not redundant at existing implicit exchange rates on exports.

On the basis of systematic evidence concerning written export restrictions and the preceding examples of enforcement of such restrictions, it can be concluded that discrimination against exports by foreign collaborators was a significant export barrier. At a minimum export restrictions were sometimes a binding constraint on the ability of Indian firms with excess capacity to export in the short-run and at least in the short-run on the ability of the Indian government to expand

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to India, Massey-Ferguson "succeeded in halting that export activity because it was in contravention of the licensing agreement." (Neufeld, 1969, p. 335.) Massey-Ferguson's 49 percent Indian subsidiary "is precluded, except by agreement, from competing with...other supply sources in export markets." (Powell, 1966, p. 15.)

[1] <u>EPW</u>, 11 October 1969, pp. 1651-52.

exports by increasing incentives. The barrier appears to have been greatest for exports to advanced Western countries and where foreign collaborators did not have a substantial investment in the Indian company. It has not been possible to make any further quantitative estimate of the effect of such discrimination.

5. Government Policy on Limitation of Export Rights

The written export restrictions discussed above were approved by the Indian government prior to 1968. In 1968 the government announced that it would not approve or renew collaboration agreements with export restrictions of types (a) and (b) which prevented exports to any areas other than the country of the foreign collaborator or countries where the collaborator had manufacturing affiliates.[1]

Prohibition of such export restrictions faced two problems. First, although the government had the power to prohibit written restrictions, the foreign collaborator could still discriminate against exports if it had a substantial equity investment in the Indian company or if it enjoyed a significant measure of control for other reasons, e.g. continuing technical dependence of the Indian company. Second, depending on the bargaining situation, gaining export rights might involve a cost in terms of the other conditions of the collaboration agreement or even the technologies which could be licensed.[2]

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[1] Directory of Foreign Collaborations in India, Vol. 2, 1969, Special Supplement, p. xiii.

[2] For examples of foreign firms unwilling to license technology or to invest where export was likely or compulsory, see Brash, 1966, p. 222n; Kidron, 1965, p. 280; and Powell, 1966, pp. 15-16.

6. Export Restrictions in Other Countries

Available evidence on export restrictions in collaboration agreements in other countries indicates that the incidence of written restrictions of types (a) and (b) was broadly similar to that in India. Systematic data comparable to those in Table VII-1 are available for Australia and Japan. In both countries there were restrictions of types (a) and (b) in at least 60 percent of all cases.[1] Less systematic or small sample data which do not permit reliable inferences about relative frequency of written restrictions are available for Brazil, Trinidad and Tobago, South Africa, and Canada.[2]

With the exception of Brash's study for Australia, these studies do not cover other types of export restrictions or the difference between written and effective restrictions. Brash collected data on the territorial export restrictions in 1963 on 80 Australian companies with 25 percent or more U.S. equity. He reports that among the 19 companies which reported that they were free to export to all countries, "exports

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[1]On Australia see Arndt and Sherk, 1959, pp. 239-42; Australia, Committee of Economic Enquiry, 1965, p. 286; Roderick Campbell, "An Investigation of Various Aspects of United States Corporate Investment in Australia," MBA Thesis, Ohio State University, 1965, cited by Midleton, 1969; and Brash, 1966, pp. 224-39. On Japan see Tsurumi, 1968, pp. 286-89, 302.

[2]On Brazil see Leff, 1968, pp. 94, 108n; Trinidad, McIntyre and Watson, 1970, p. 48; South Africa, Kleu, 1967, p. 65; Canada, Safarian, 1966, pp. 142-43. Safarian identifies some form of restriction or adverse effect of collaboration on exports for 15 percent of the firms in his sample. However, since he did not secure information on this from a majority of the firms in his sample, his conclusion that "the total number of situations where actual or potential restrictions might exist" is about 15 percent almost certainly involves substantial underestimation.

of the majority were restricted in some way despite the absence of any overt restriction on markets," including restrictions of types (d), (e), and (f). He reports both that there were informal restrictions in addition to those in the written agreements and that "many export franchise restrictions have undoubtedly been relaxed in recent years." Finally, he reports that "eight of the twenty-six companies not exporting in 1962 gave parental restriction as the main reason for this 'failure'," and that "in the absence of such restrictions there are a number of companies which could have exported a very much larger fraction of their total output than they did."[1]

B. Transport Costs

This section makes a simple point which was important in the transition from import substitution to export: the incidence of ocean freight costs on the f.o.b. value of Indian exports of engineering goods was high. It follows from this that there was a significant gap between production costs at which firms could have competed with imports and those at which they could have exported to most markets (i.e., markets where c.i.f. prices from advanced countries were not significantly higher than in India) at the same implicit exchange rate.

1. Incidence of Freight Costs

Tables VII-10 and VII-11 provide data on the incidence of freight costs on exports of engineering goods as a percent of f.o.b. value. The data in Table VII-10 are of greatest interest because they

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[1] Brash, 1966, pp. 224-39.

TABLE VII-10

Incidence of Ocean Freight Cost on Exports of Steel and Engineering Goods, 1965

(freight cost as percent of f.o.b. value)

	Destination			
	Developing countries in Asia and Africa	U.K.	U.S. & Canada	Weighted Average[a]
1. Iron and steel				
Steel bars	13-26	14	n.a.	17
2. Steel pipes and tubes	10-15	n.a.	19-20	17
4. Iron and steel castings				
Cast iron pipes and fittings	15-28	n.a.	25	21
19. Bicycles[b]	16-48	n.a.	n.a.	38
20. Stationary diesel engines[c]	3-9	6	n.a.	7
24. Electric fans	15-32	13	n.a.	24
27. Miscellaneous				
Sewing machines	11-27	36	76-90	35

n.a.: not available (not a major market)
a: average for major markets weighted by exports to each market in 1964-65
b: judging from other information presented by Sarangan (p.93), incidence may have been half that listed here.
c: judging from other information presented by Sarangan (p.92), incidence may have been twice that listed here
coverage: Products accounting for 36 percent of exports of steel and engineering goods in 1964-65, and 6 to 11 markets for each.
Sarangan's calculation for centrifugal pumps has been omitted because it is inconsistent with data he presents at another point (p.91) and with EEPC data.
Source: Sarangan, 1967, pp.77-83.

TABLE VII-11

Incidence of Ocean Freight Cost on Exports of Engineering Goods to Developing Countries in Asia and Africa, 1966-67

Product	Freight Cost as Percent of f.o.b.Value
21. Automobile parts	4[a], 40-50
26. Bicycle tires	26
27. Miscellaneous	
Steel furniture and safes	16-36
Buckets, drums	40
Enamelware	43-50
Electric lamps	11-47
Concrete mixers	13-56
Trailers	26-39

coverage: one to three miscellaneous countries for each product, often ones where no exports were sold

source: a: UNCTAD-GATT, 1969, Vol. c, p. 249.
others: IIFT, 1967d, pp. 110-120.

apply to major export products and markets and thus reflect the incidence of freight costs on actual exports. They show that the average incidence of freight for each of several products ranged between 17 and 35 percent of f.o.b. value.[1]

The miscellaneous data in Table VII-11 indicate an even higher incidence of freight costs for a number of products and markets which were of less importance in total exports.

The incidence of freight costs was substantially lower on products with a high value-to-weight or measurement ratio. However, in the case of machine tools, while the incidence of freight costs to North America on HMT's medium-heavy machines was about 10-13 percent, it was twice this on Mysore Kirloskar's small lathes because of their lower value-to-measurement ratio.

Apart from freight costs, there were many complaints in the late 1960s concerning the frequency of shipping services to important markets, and in any case voyages to destinations outside the Indian Ocean basin took several months. Consequently, it was difficult for Indian firms to match delivery terms of competitors in many areas, and interest costs on goods in transit amounted to as much as 3 percent of the realization from export (including subsidies) beyond the incidence of freight costs.

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[1]This excludes the incidence of freight costs for bicycles and stationary diesel engines for reasons stated in the notes to Table VII-10.

2. Exports Subject to Unusually High Freight Rates

The data in Table VII-10 do not reflect unusually high freight rates per mile which applied in two cases: (a) on minor export products and (b) to markets where there were no direct shipping services.

a. General Cargo Rates on Minor Exports

Freight rate schedules typically list specific rates for important export products and a higher general cargo rate for other products which are not listed individually. As an illustration, Table VII-12 lists freight rates per cubic meter which applied to Indian exports of electric fans, machinery not elsewhere specified including machine tools, and general cargo to eleven destinations in 1968. For nine of the eleven destinations there were specific rates on electric fans which were lower than the general cargo rates, by amounts up to 48 percent. However, for machine tools there were specific rates below the general cargo rate on only five of the eleven routes listed in Table VII-12 and on only 24 of the 45 routes examined.

Because electric fans had been an important export product since the 1950s, specific rates were set for electric fans on almost all routes by 1968. By contrast, only about half the routes had specific rates for machine tools, a more recent export product, and the same was true for many other items. Although specific rates were gradually set on the basis of applications by exporters during the 1960s, there were time lags in the process. Consequently, because of the absence of specific rates on numerous engineering goods, there was discrimination

TABLE VII-12

Freight Rates on General Cargo, Machine Tools, and Electric Fans, 1968

Destinations	Percent of Rate on General Cargo, Per Cubic Meter Machinery not elsewhere specified including machine tools	Electric fans
Aden	100	77
Kuwait	100	93
U.A.R.	72	63
Kenya	100	79
Nigeria	100	100
Brazil	100	100
Singapore	86	77
Japan	86	91
Australia	100	65
U.K., north Europe	72	52
U.S.A. east coast	74	54

against new exports in the short run.[1] This is not reflected in Table VII-10, which is based mainly on products and destinations for which specific rates had already been set.

b. Transshipment

Because of the limited volume of trade between India and a number of developing countries, there were no direct shipping services. Exports therefore required transshipment and sometimes went by circuitous routes. There were no direct shipping services to West Africa, Thailand, Indonesia, the Philippines, or New Zealand.[2] Transshipment increased freight costs per mile above those on other routes, and in the case of West Africa freight rates were higher than to West Europe when transshipment took place in Europe.

3. Discrimination in Freight Rates

It was frequently alleged in India that freight rates discriminated against Indian exports compared to those from advanced countries. Although comparative data are difficult to obtain since rate schedules generally are unpublished, the limited data available do not support this allegation.[3] After eliminating the influence of the two factors discussed under (2) above, the data presented by Sarangan do not indicate any systematic excess of the relation between freight rate and

[1] See Sarangan, 1967, p. 128.

[2] There was direct service every three months to New Zealand.

[3] Little *et al.*, 1970, p. 309, reached the same conclusion on the basis of much of the same evidence.

distance for a given product for exports from India over that from Japan. Freight rates on Indian exports to the UK and USSR appear low compared to what would be predicted on the basis of the length of the routes.

There were a number of cases where the freight rate on Indian exports was higher than on Indian imports of the same product on the same route, e.g. in trade with Japan and the west coast of North America, but the reverse was true in trade with the UK. There were also cases where the freight rate from India to a particular market was higher than that from an advanced country much farther from the market, e.g. compared to Japan on exports of automobile parts to Turkey or to the UK on steel rails to New Zealand. However, there is no evidence that such freight rate differences existed for more than a minute share of Indian exports.

4. Subsidies of Ocean Freight Costs

The government did not explicitly subsidize ocean freight costs on a regular basis but it did give *ad hoc* subsidies in certain cases where freight costs to a market were higher from India than from a competing country. As of 1967 the Ministry of Commerce was authorized to grant *ad hoc* cash subsidies up to 5 percent of f.o.b. value to overcome freight cost differences on exports of railway wagons,[1] and in Chapter III.C.1.b. two cases are reported where such subsidies were given on railway wagons and transmission line towers. There was also a provision

[1] *EE*, 15 September 1967, p. 495.

in the published rates for an extra cash subsidy of 5 percent of f.o.b. value on transmission line towers exported to South America and South Vietnam in 1969-70 and steel wire ropes exported to the European or American continents in 1970-71, obviously to subsidize freight costs on longer routes. Finally, according to an EEPC circular in 1968, the Ministry of Commerce was considering subsidizing ocean freight costs where Indian goods were competitive on an f.o.b. basis but not on a c.i.f. basis.[1]

C. Trade Barriers Abroad

Import barriers imposed by foreign governments were a relatively minor although not insignificant obstacle to the transition from import substitution to export for the Indian engineering industries for two reasons. First, on the whole the main competition with Indian exports was from suppliers in West and East Europe and Japan, and these suppliers faced the same trade barriers in most of India's export markets. Second, trade barriers in engineering goods were relatively low.

There were three main exceptions to these generalizations: (1) exports to East Europe faced high implicit barriers and were largely conditional on temporary shortages in East Europe; (2) exports of simple consumer goods faced prohibitive barriers in some developing countries undergoing import substitution; and (3) exports of capital goods to some developing countries were conditional on supply of credit or acceptance of payment in kind under bilateral arrangements.

[1]EEPC Circular No. OS/166/68-69, dated 3 September 1968.

CHAPTER VIII

EVALUATION OF EXPORT POLICY

The fundamental weakness of the Indian approach to export was that comparative advantage and export potential were disregarded by the government in planning and in virtually all important policies affecting industrial development, including the structure of effective protection, public sector investment, and licensing of industrial capacity, foreign collaboration, and import of inputs. In spite of increasing emphasis on exports, there was no change during the 1960s in the inward-oriented approach to industrialization aimed at self-sufficiency in the domestic market. No attempt was made to base investment on comparative advantage, even for a special export sector or zone. Export was regarded not as a matter related to industrial strategy or structure but as a problem to be dealt with by the Ministry of Foreign Trade, committees, and concessions.

Although many other economic policies affected the incentive to export and the domestic resource cost of foreign exchange earned, the following sections are confined to a discussion of policies directly concerned with promoting exports. Chapters IV and V discuss other major areas of policy which influenced exports.

A. <u>Inefficiencies in Export Promotion</u>

This section discusses incentives created by export promotion policies for inefficient allocation of the resources devoted to exports of iron and steel, engineering goods, and tires.[1] Emphasis is placed on the effect of export subsidization on the implicit exchange rate on net earnings of foreign exchange. The major shortcoming of the policies was that no attempt was made to set implicit exchange rates at a uniform level to equalize the domestic resource cost of net earnings of foreign exchange for exports of different engineering goods.

Because of the large number of export promotion schemes, lack of uniformity in treatment of different products under each, the importance of *ad hoc* incentives, and the lack of published details and other data, it was impossible to calculate the implicit exchange rates resulting from the combination of all the schemes. Examination of individual schemes (e.g. the data in Table III-7) reveals large ranges in the effect of each on implicit exchange rates for different industries, firms, products, and destinations, and hence an irrational pattern of multiple exchange rates.

Some of these differences in subsidy value were due to incomplete coverage of schemes, large differences in rates, and *ad hoc* subsidies. Others were a result of unequal dependence on subsidized inputs like iron and steel, rail transport, and export marketing, on subsidized credit, or on inputs which were allocated to exporters on

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[1]See also Bhagwati, 1968, and Bhagwati and Desai, 1970, Chapter 20, for discussions of inefficiencies in export promotion.

a preferential basis, including imported materials and capital goods. Still others were due to differences in what could be imported under replenishment licenses and in resulting premia, in excess prices paid on inputs from tied sources, in priority under regular allocation policies, or in excess capacity and profit rates in the domestic market. For example, policies which relaxed constraints on production for the domestic market or gave access to imports from the cheapest source of supply on the basis of exports provided a very high implicit subsidy of exports for firms facing such constraints or with a large import content and no subsidy for firms not facing such constraints or with no import content.

Not only were the schemes individually irrational but there is no grounds for believing that the schemes were coordinated in such a way that their total subsidy was proportional to net earnings of foreign exchange on different products.

This pattern of subsidies reveals a complete neglect of the domestic resource cost of foreign exchange earned. Export promotion like import substitution was indiscriminate. Not only was there a wide range of subsidies but there was no effort to set an upper limit on subsidization or even to assure that export did not involve a loss of foreign exchange. Data in the next section illustrate the wide range that existed in the cost of foreign exchange earned. The loss resulting from such an inefficient structure of incentives is emphasized by, although not confined to, cases where the schemes made it privately profitable for a firm to export when there was negative value added at international prices. A number of cases which involved a loss of foreign exchange are identified in the following section.

The major conclusion to be drawn is not that it was a mistake to promote exports of engineering goods, except in cases where there was a net loss of foreign exchange, but that greater export earnings could have been secured at the same cost by policies providing incentives for a more efficient allocation of resources. This would have been achieved by a uniform exchange rate for imports and exports.[1]

The structure of multiple exchange rates created by the export incentive schemes was not random. Systematic biases are considered below:

1. Rejection of Comparative Advantage

A wide range of subsidy rates was not accidental. Schemes designed to encourage all firms to export a certain fraction of output or to earn their own foreign exchange requirements regardless of cost ruled out uniform subsidies since investments aimed at import substitution were not made on the basis of cost of foreign exchange saved.

More perverse were measures which related the subsidy to Indian cost disadvantages in an attempt to equalize the profitability of export regardless of the cost of foreign exchange earned. The "export

[1]For economic justifications for departures from unified exchange rates see Bhagwati, 1968. The present chapter does not consider efficient departures from unified rates since actual discrimination among engineering industries had little if any relation to these.

problem" was often viewed as a matter of removing obstacles to export, particularly if they were beyond the control of the exporter. The fact that often such "obstacles" reflected real costs was neglected. Even subsidies which simply eliminated negative protection by enabling exporters to procure tradable inputs at international prices encouraged inefficient allocation if the real costs of the inputs to the economy were higher than their international prices because of import substitution policies.

2. Inverse Relation of Subsidy to Share of Output Exported

The rate of subsidy on exports was a declining function of the percentage of output exported by a firm. Firms exporting 5, 10, or 25 percent of output were given preferences in licensing, but there were no additional preferences for firms exporting more than 25 percent of output.

Moreover, a number of export promotion schemes were designed to give exporters preferences in exploitation of the Indian market. This was true of ad hoc licensing involving export commitments, preferences for exporters in licensing of maintenance imports for production for the domestic market, and the scheme under which the data processing machine industry was allowed to use all the foreign exchange earned by exports to import inputs for the domestic market. As a result, there was substantial discrimination in export subsidization against firms producing entirely for export.

Finally, although transfer of import replenishment licenses became increasingly liberal, to the extent that there were restrictions on transfer the subsidy given by the import replenishment scheme would have declined as the share of output exported by a firm increased, since the marginal value of the licenses for the firm's own use and premia in a thin market would have declined.

3. Low Priority Industries

By classifying industries into priority and non-priority groups for purposes of licensing and then relaxing restrictions on firms in non-priority industries on the basis of exports, the government gave a higher export subsidy to non-priority industries. Apart from efficiency losses arising from multiple exchange rates, these policies and the use of import replenishment licenses (including ones purchased in the market) by non-priority industries involved an additional cost in terms of sacrifice of plan priorities since they permitted expansion of non-priority production for the domestic market.[1] This was one reason for the conflicts discussed in Chapter III between the Ministry of Foreign Trade and other ministries over preferences to exporters and one explanation of why preferences were concentrated in decisions within the control of the Ministry of Foreign Trade.

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[1]See also Bhagwati and Desai, 1970, pp. 458-61.

4. Exports for Non-Convertible Currency

In spite of other departures from uniform exchange rates, in one case where efficiency considerations called for discrimination the government gave equal subsidies. After devaluation the same incentives were given on exports that earned one dollar of hard currency and 7.5 accounting rupees of non-convertible currency even though the government clearly placed a premium on hard currency at official exchange rates in its import policy and relative import and export prices suggest that it was correct for it to have done so. The only discrimination in export policy was a general ban, subject to *ad hoc* exceptions, on export for soft currency of products with a direct current hard currency import content greater than 30 percent f.o.b. value.[1]

B. Bureaucratic Decision Making

Examination of bureaucratic decision making in export promotion leads to the conclusion that an outcome involving inefficient allocation was predictable. First, among the personnel concerned, the concept of real resources was not universally understood. Second, the ministries involved operated under incentives which conflicted with an efficient allocation of resources. The success of export policies, and of the Ministry of Foreign Trade in particular, was judged by

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[1]GOI, EEPC, *HB*, 17 April 1969, p. 68. Prior to devaluation, entitlement licenses issued against exports to rupee payment countries were restricted to imports from rupee payment areas, although by 1964 part of the licenses (e.g. 40 percent for chemicals) could be used for hard currency imports.

whether export targets were achieved, without reference to net foreign exchange earned or its cost. The Ministry of Foreign Trade appeared willing to use the powers of government to increase exports on as wide a base as possible, and the natural result was that directives to the STC and preferences in licensing under the ministry's control were important export incentives. Other ministries and state and local governments were mainly concerned with the direct budgetary costs of export incentives or with the costs in terms of politically sensitive issues like concentration of economic power. While sacrifices of efficiency may have been justified where there was conflict with other goals, incentives for incorrect measurement of benefits and costs almost certainly led to unnecessary sacrifices.

C. Cost of Foreign Exchange Earned

1. Range of Domestic Resource Cost of Foreign Exchange

Because of policies designed to make all industries export regardless of costs and because of the wide range of implicit exchange rates resulting from export subsidization, one would expect a wide dispersion of the private and social costs of foreign exchange earned by different engineering products. The available evidence confirms this expectation. Krueger found that in the automobile and automobile parts industries, for 20 products the domestic resource cost per dollar of foreign exchange earned by export had a median of Rs 17.7, a range from Rs 7.9 to negative value added at international prices, and an inter-quartile range from Rs 12.1 to Rs 27.8.[1]

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[1] Krueger, 1970, p. 110. Calculations are for average cost and

This wide range of costs indicates the inefficiency of export promotion. The same net foreign exchange could have been earned at a lower cost by setting a uniform implicit exchange rate on net foreign exchange at a level high enough to induce a larger volume of exports by firms with relatively low costs without inducing exports by firms with relatively high costs.

2. Negative Value Added at International Prices[1]

Other studies have indicated that import substitution policies in developing countries, including India, led to investment in industries operating with negative value added when all tradables were valued at international prices.[2] With one exception noted below, any process which yields negative value added at international prices for the domestic market would do so for export. In addition, factors discussed in previous chapters make negative value added more common among industries for export.

Two issues arise in connection with negative value added at international prices: (a) how could it be profitable for a firm to export? (b) how could international prices be compatible with this?

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are made with a shadow rate of return on capital of 20 percent.

[1]See also Bhagwati and Desai, 1970, pp. 363-67.

[2]For examples of negative value added at international prices in engineering industries in India, see Bhagwati, 1968, p. 53; Cilingiroglu, 1969, p. 78; Bhagwati and Desai, 1970, p. 353; Little *et al.*, 1970, pp. 58, 64, 180, 184, 186, 193-95. For other countries see Soligo and Stern, 1965; Lewis and Guisinger, 1968; and King, 1970, p. 148.

a. <u>Private Profitability</u>.

The private incentive to produce goods in spite of negative value added at international prices depends on the existence of implicit multiple exchange rates, e.g. a higher implicit exchange rate on the f.o.b. value of exports than on the c.i.f. value of imported inputs. This situation sometimes occurred in India as a result of export subsidization schemes, particularly those which made exploitation of the domestic market contingent on a relatively small volume of exports. Another factor reported to have contributed to the incentive to export despite negative value added prior to devaluation was overinvoicing, which increased the incidence of incentives based on reported f.o.b. value. According to Bhagwati,

> Since, in India, overinvoicing has been a widespread phenomenon, the incidence of negative value added arising is not to be discounted and instances have been readily found.[1]

b. <u>Compatibility with International Prices</u>

There are five possible explanations of negative value added at international prices in production for the domestic market:

(1) Inefficient production, or anything which raises input-output ratios (for tradable inputs) above the international level, e.g. small scale, low utilization of equipment, process wastage or high rejection rates, failure to recover by-products, or inefficient technology. Two related explanations are production of low quality goods and production of goods to inferior designs. All of these problems are found in Indian manufacturing and a number are illustrated in Chapters IV and V. Little *et al.*

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[1] Bhagwati, 1968, p. 54.

report a case in which an Indian chemical plant had negative value added because of lack of demand for a by-product with a positive value abroad.[1]

(2) Excess prices of inputs imported under tied licenses or purchased at London Metal Exchange rather than producer prices.[2] Examples of such imports are given in Chapter IV.F.

(3) Repatriation by foreign collaborators of high profits earned in the Indian market, whether as fees, royalties, dividends, or transfer prices on imported inputs.[3] Evidently because of transfer pricing, it was reported that when production of the Cummins engine began in India there was negative value added at international prices:

> It may actually have cost the Indian economy more for components and parts than it would have cost to import an assembled engine.[4]

(4) Marginal cost pricing of output for export by foreign competitors could result in import price levels below the average foreign exchange cost of production in India allowing for the foreign exchange costs of know-how, equipment, and tooling, which are fixed costs for the foreign company and might not be recovered on their exports. Little et al.

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[1] Little et al., 1970, p. 193.

[2] In the case of purchases under tied licenses, higher prices of imported inputs might be matched by higher prices of imported final products, but this would not apply to exports.

[3] Where repatriation was based on dividends, negative value added would have been less likely for exports than for domestic sales assuming the profit rate was lower on exports.

[4] Baranson, 1967, p. 82.

report that a planned Indian ball bearing project would have had negative value added at international prices because the average export prices of ball bearings from developed countries were 40 percent below internal prices.[1]

(5) Freight costs for imported inputs higher than for the final product, e.g. in an assembly industry where the import component is high and requires more expensive packing and handling and higher shipping cost. Cases of negative value added in automobile assembly have been reported in other countries.[2]

There are three additional explanations for negative value added for export:

(6) Transport costs and foreign tariffs on exports, discussed in Chapter VII.

(7) Discounts on a c.i.f. basis below the prices of the same goods from an advanced country required to induce distributors or customers to buy Indian goods. Such discounts are discussed in Chapter VI.B.1.

(8) More generally, because the export demand for Indian goods was less than perfectly elastic, it is possible that a product could have been produced at a cost below the scarcity value of the foreign exchange saved on import substitution or earned on initial exports and yet for excessive export subsidization to have led to a reduction in export

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[1] Little _et_ _al_., 1970, p. 194. See also Cilingiroglu, 1969, for a discussion of dumping in the case of heavy electrical equipment.

[2] See Bhagwati and Desai, 1970, p. 366.

prices to the point where there was negative value added for export.

In addition to the cases noted above where there was negative value added at international prices in production for the Indian market, several cases were found where goods were exported in spite of negative value added and a loss of foreign exchange:

(i) The most important case was transformers. According to the development council for heavy electrical industries, "selling transformers outside the country resulted in losing foreign exchange rather than earning it."[1] Commenting on exports of transformers, the Indian Electrical Manufacturers' Association stated that "the foreign exchange expended on the import of raw materials which go into the manufacture of these transformers is hardly covered by the earnings made from the export of the finished product," even before allowing for overhead costs.[2]

(ii) The IEMA protested against the imposition in 1969-70 of an obligation to export 5 percent of output of electrical winding wires, arguing that "exports of copper winding wires actually result in a drain on foreign exchange instead of earning any."[3]

(iii) Krueger cites an IIFT study which reported that the current direct import content was greater than the f.o.b. export price in the

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[1] GOI, DGTD, AR 1966-67, p. 56.

[2] IEMA, 1968, p. 13.

[3] IEMA, AR 1968-69, p. 65. See also Engineering Times, 16 April 1970.

case of automobile radiators.[1]

(iv) In Krueger's study of the automobile and automobile parts industries, one of 20 products had negative value added at international prices for export.[2]

(v) Bhagwati and Desai state:

> Value subtraction, in a different sense, could arise under the Indian trade regime in yet another way, with identical items being exported and imported -- the loss then being proportional to the excess of the unit import price over the unit export price. This phenomenon could, and in fact did, arise in India occasionally (e.g. with PVC exports).[3]

(vi) Similarly, in a case cited in Chapter III, Little et al. report that in the hand tool industry, a "firm had been exporting (to the extent of Rs 1.4 million -- $0.3 million -- in 1965/6), in order to obtain entitlements for its import requirements...The domestic market was unsatisfied, and these tools were being imported."[4]

D. Conclusion

This study supports the conclusions reached by Bhagwati and Desai, by Little, Scitovsky and Scott, and others who have analyzed Indian industrial and trade policies. Higher levels of economic growth, industrialization, employment, and exports of non-traditional manufactures could have been achieved under a more efficient set of

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[1] Krueger, 1970.

[2] Ibid., p. 110.

[3] Bhagwati and Desai, 1970, p. 464.

[4] Little et al., 1970, p. 174.

policies including a realistic exchange rate and import liberalization, greater reliance on market mechanisms for the allocation of resources, use of benefit-cost criteria in bureaucratic decision making, and rational incentives for decentralized decision making.

I do not, however, view with optimism the prospect for bringing about a major change in the regime of industrial and trade policies by demonstrating its inefficiency. This regime has worked to the advantage of the politically powerful class of industrial capitalists, and it is this distributional consequence which explains its persistence. Since the existing capitalist system cannot be defended even on the grounds of efficiency in production of goods, a strong case can be made for fundamental changes in the economic system which would permit both greater equality in the distribution of gains from economic development and greater efficiency in the production of goods.

APPENDIX

PROBLEMS IN COST CALCULATIONS

Attempts to compare production and procurement costs in India with the c.i.f. prices of imports face serious difficulties which make such data both expensive and unreliable. The following are major problems:

(i) Indian firms are often reluctant to disclose their costs, partly because of competitors but chiefly because government control prices, prices paid for government purchases, and export subsidies all depend on what the government believes to be their costs.

(ii) Cost accounting at Indian companies is typically oriented to the demands of tax laws rather than management control and hence is economically irrational, e.g. depreciation follows tax laws and allocation of overheads (the majority of the cost of value added) is arbitrary. Since overheads are often allocated in proportion to direct labor costs, there is a bias against discovering comparative cost advantages for labor-intensive products, parts, or operations.

(iii) Even worse, one often hears that fake cost records are used to cover black market transactions and to reduce tax liabilities.

(iv) Excess capacity is common because of material shortages and insufficient demand. Calculations of average costs under these circumstances are useful in measuring the actual costs of import substitution, but they do not provide reliable estimates of what costs or their ranking by industry would be under different circumstances, e.g. under a more liberal economic regime.

(v) Since public statements by companies about their costs are usually made to justify increases in prices or subsidies, there is a bias in the sample collected from such sources: companies talk only about their disadvantages.

(vi) In the case of components for assembled products, there are a number of problems in interpreting the c.i.f. prices of imports. First, because of the policy of banning imports when production begins in India, often Indian companies do not know the current c.i.f. import prices for components which they produce or procure in India. Second, the sources of imported components are largely foreign parent corporations and technical collaborators, and import prices are often arbitrary transfer prices or deletion allowances. Transfer prices involving over-invoicing are used by international corporations where joint ownership, tax advantages, or public relations considerations make it preferable to realize profits in the home country or where the host government restricts payments in the form of royalties or taxes them at a rate higher than the duty on imported components. The deletion allowance, or reduction in the total price of the remaining items in the completely-knocked-down pack of components when one item is no longer imported, is typically less than the proportional share of the item in the original price of the complete c.k.d. pack.

(vii) There are serious problems valuing the stock of capital used by a company. Apart from the usual problems of price level changes and the cumulative effect of arbitrary depreciation rates, the price paid for a particular machine depends on the exchange rate at which it was imported, the source to which the import license was tied, whether it was imported or procured in India, etc.

(viii) In addition, to arrive at social costs, there are the usual problems of shadow pricing. The most important distortion is underpricing of capital, particularly to public sector firms.

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Annual Reports

Annual Reports (AR) are listed in footnotes with the name of the company, trade association, or government agency and its financial year, e.g. HMT, AR 1967-68.

Periodicals

Abbreviation used in footnotes:	
ABP:	Amrita Bazar Patrika, Calcutta, daily.
BI, BI:	Business International, Business International, New York, weekly.
BI, BLA:	Business International, Business Latin America, New York, weekly.
	Capital, Calcutta, weekly.
	Commerce, Bombay, weekly.
EE:	Eastern Economist, New Delhi, weekly.
EE, R&S:	Eastern Economist, Records and Statistics, New Delhi, quarterly.
EPW:	Economic and Political Weekly, Bombay, weekly; formerly EW.
	Economic Review, Bank of China, Taipei, bi-monthly.
ET:	Economic Times, Bombay, daily.
EW:	Economic Weekly, Bombay, weekly.
	Engineering Times, Calcutta, weekly.
FE:	Financial Express, Bombay, daily.

GOI, CSO, *MSPSII*: Central Statistical Organisation, *Monthly Statistics of the Production of Selected Industries of India*, Calcutta, bi-monthly.

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