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Major issues arising from the transfer of technology

A case study of Ethiopia

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MAJOR ISSUES IN TRANSFER OF TECHNOLOGY TO DEVELOPING COUNTRIES:

A case study of Ethiopia

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PREFACE

1. The present study is part of UNCTAD's effort to improve the understanding of the process by which technology is transferred from the developed to the developing countries and is one of a series of related case studies on the experience of individual developing countries.1/

2. The study of Ethiopia's experience in the field of transfer of technology has been undertaken in accordance with a detailed work programme adopted unanimously by the Intergovernmental Group on the Transfer of Technology at its organizational (first) session.2/ Paragraph 11 of Conference resolution 39 (III) recommends that, in recognition of the special position of the least developed among the developing countries, special consideration should be given to the terms, conditions and costs of transfer of technology to such countries. In the light of the Conference resolution, this study analyses the terms and conditions under which contractual transfers of technology to Ethiopia have taken place. The study seeks to draw lessons from the analysis with respect to the special problems encountered by the least developed countries in the transfer process. Furthermore, the study may be of value to the developing countries as a whole since they all face complex problems arising from the purchase or lease of foreign techniques.

3. Detailed arrangements, including the preparation and distribution of a questionnaire on the transfer of technology to major manufacturing firms and the organization of interview, for the study were made by the Ethiopian authorities and the secretariat. Research was conducted by the UNCTAD secretariat both in Ethiopia and at Geneva, and the present document describes the result of that research. In carrying out the study the UNCTAD secretariat has received valuable co-operation from the Ministry of Commerce, Industry and Tourism, as well as from the Ministry of Planning and the National Bank of Ethiopia.

1/ The other three country studies undertaken by UNCTAD are those of Spain (TD/B/AC.11/17); Hungary (TD/B/AC.11/18); and Chile (TD/B/AC.11/20).

2/ See report of the Intergovernmental Group on the Transfer of Technology on its organizational (first) session, Official Records of the Trade and Development Board, Eleventh session, Annexes, agenda item 7(e), document TD/B/365, annex I, appendix.

SUMMARY AND CONCLUSIONS

4. This study examines the significance of technology as a material factor in the growth of modern manufacturing in Ethiopia, and suggests that the distribution of gains from the use of technology is at the core of capital accumulation within Ethiopia.

5. Other studies of Ethiopia's development problems have adopted one or another of three approaches. The first approach emphasizes Ethiopia's lack of domestic capital accumulation and the apparent need for large capital inflows; the second emphasizes the material requirements for production in Ethiopia, i.e. infrastructure, skilled labour, entrepreneurs and, more recently, know-how; and the third emphasizes structural imperfections in the system of exchange, both in domestic and international transactions, e.g. disguised unemployment, lack of skilled personnel, market concentration in manufacturing.

6. The study of the transfer of technology uses to some extent each of these approaches. The import of production techniques is closely related to the question of capital formation. Not only must this import be financed but also the availability of capital for future investment will depend on whether or not Ethiopia can ensure that the extra profit resulting from the application of new techniques is re-invested locally. As in the case of the "material requirements", the analysis in this study identifies improvements in labour productivity as the essence of the development process in Ethiopia. The same labour input, combined with more advanced equipment and techniques, can produce more final goods. However, given Ethiopia's position as a least developed country, it is totally dependent on the developed countries for equipment and techniques. The method of analysis adopted in this study also draws on the third consideration mentioned above - namely market structures. In this instance the relevant markets are those of the supply of foreign technology and the distribution of the gains arising from the use of the technology.

7. Chapter I considers the contemporary transfer of technology to Ethiopia against the background of the country's economic history. After a long period of relative insulation from the world economy, Ethiopia in the post-1945 period has been linked increasingly to the international market system. The present situation reflects significant changes which have occurred in the last fifteen years, among others, changes in infrastructure, modern commodity production, and the pattern of imports. This transformation has been accompanied by the import of foreign technology both in the form of machinery, intermediate goods and equipment ("embodied technology") and in the form of managerial and technical services ("disembodied technology"). Nevertheless, Ethiopia remains a least developed country whose reported annual per capita income at the end of the 1960s was almost the lowest in the world.

8. Chapter II describes and analyses Ethiopia's institutional infrastructure and shows that this infrastructure is an essential element in determining the nature and extent of the transfer of technology in modern manufacturing. The policies, institutions and legislation have placed a minimum of curbs on foreign investment and foreign technology suppliers, and have, in fact, provided them with many incentives - tax holidays, foreign exchange guarantees and tariff protection. The institutional framework is further characterized by the absence of comprehensive and effective procedures for the negotiation and screening of contracts, control of over-invoicing and under-invoicing as well as related transfer pricing practices, the monopolization of key managerial and technical positions by expatriates and the unrestricted grant to foreigners of monopoly protection of industrial property.

9. A considerable proportion of technology imports to Ethiopia has been associated with foreign investment. Chapter III points to the difficulties of assessing the real as opposed to the nominal contributions that such investments may make to the material economy. However, the main emphasis of the chapter is on the degree of foreign control of individual manufacturing firms, and (at an aggregate level) the extent of foreign penetration into manufacturing industries. In the sector as a whole foreign equity holding was the most important single element and accounted for 43 per cent of paid-up-capital in 1969/70; in the same year 23 of 34 industries, most of which were among the more dynamic and technology intensive, were dominated by foreign firms. The chapter goes on to describe some characteristics of 51 major firms which accounted for over 76 per cent of value added in the sector; as many as 38 of these major firms were effectively foreign owned and/or managed. The chapter stresses the diversity of the countries of origin of foreign technology, but points out that four sources, viz Netherlands, Japanese, Indian and Italian, together accounted for 84 per cent of the value added by the sample firms. Furthermore, the firms from the industrialized countries (excluding Italy and Japan) have tended to concentrate in primary-processing rather than import-substituting activities, whereas those from India, Israel, Italy and Japan have operated mainly in import-substituting industries, especially textiles.

10. Chapter IV analyses the terms and conditions governing contractual arrangements entered into in the period studied. Of the 51 major firms, 28 had contracts. Management contracts predominated and, unlike the situation in other developing countries, licence contracts were relatively insignificant in Ethiopia. Three main features characterized the management contracts; first, where the foreign equity holding was 50 per cent or less, management contracts were more common than when the foreign holding constituted the majority; second, most of the management contracts gave the foreign contractor extensive control over the firm's operations; third, such contracts often tied the purchase of intermediate imports to the contractor responsible for the management or to suppliers nominated by him. Licence contracts in Ethiopia exhibited most of the restrictive terms and conditions already familiar from other studies of the transfer of technology process. The third source of technology was the direct supply of machinery and equipment; it was found that virtually all firms buying such machinery made losses consistently, which may be attributable to the fact that the machinery supplied was often overpriced, sold in excessive quantities or inappropriate.

11. Chapter V looks at the relationship between concentration in the markets for the final goods and arrangements concluded between technology suppliers and the Ethiopian Government. The chapter suggests that monopoly control of the markets for the final goods is as important as, though closely linked to, equity control and the other forms of control exercised through specific clauses occurring in transfer of technology contracts. Firms starting operations in Ethiopia have often been able, either through explicit negotiations with the Government or by taking advantage of the available incentives, to obtain and maintain control of the market for the final goods. The principal ways in which this control has been ensured have been tariff protection and franchise agreements giving exclusive production rights.

12. The concluding chapter describes the main elements relevant to an assessment of the foreign exchange cost to Ethiopia of the transfer of technology. The analysis begins from declared rates of return on foreign investment in manufacturing in Ethiopia and shows how these rates systematically understate the true size of returns, because of both overvaluation of the capital and equipment initially supplied by

foreigners and undervaluation of returns through overpricing of intermediate imports and/or underpricing of intra-firm exports. An attempt is made to provide some tentative estimates, on alternative assumptions, of the foreign exchange cost. It is estimated that, on the assumption of overpricing of 50 per cent on imports by the manufacturing sector of capital goods and intermediate goods, this cost came to E$ 108 million in 1969/1970. This total was equivalent to approximately 2.8 per cent of gross domestic product (GDP), more than one-third of export proceeds, and somewhat more than one-half of the net value added in manufacturing.

13. On the basis of the analysis it would appear that the central policy issues for Ethiopia are: (i) the extent and form of foreign concentration which is consistent with Ethiopia's ability to direct its own economic development; (ii) development of its own technological capability based on domestic skills and entrepreneurship; and (iii) establishment of a comprehensive and effective institutional infrastructure for the negotiation and screening of contracts, and for dealing with the whole range of matters arising in the operation of these contracts.

CHAPTER I

FOREIGN TECHNOLOGY AND THE DEVELOPMENT OF THE ETHIOPIAN ECONOMY

A. Introduction

14. Ethiopia is recognized as one of the least developed economies in the world. In 1969 annual per capita income was E$161 (US$65). Only four countries reported lower figures. 1/ The great majority of Ethiopia's population lives in the countryside, working for the most part in subsistence agriculture and related home processing. Only about 2 per cent of the work force in 1969 was engaged in the modern agricultural and manufacturing sectors. Modern manufacturing accounted for no more than 5 per cent of the GDP. The underdevelopment of Ethiopia is reflected also in various social indicators, e.g. the literacy rate has been estimated at 5 per cent of the total population, primary and secondary school enrolment at 8 per cent of the estimated school age population, and the average life expectancy at birth is 39 years. 2/ All these figures are among the lowest in the world.

B. Historical context

15. Until the 1939-45 war, Ethiopia remained largely insulated from the influences of the world market. Italy had colonised Eritrea in 1896 and during the next forty-five years built up a network of trade and some small-scale production in the area. Yet Eritrea is only a small part of Ethiopia and remained isolated physically, politically and economically from the rest of the Ethiopian Empire. Such relations as existed with the world markets took the form of a division of labour according to which Ethiopia exported a few primary products (almost entirely coffee and animal skins) and imported some manufactures. Nevertheless, capital accumulation and participation in the international division of labour remained insignificant. As a later official document put it, "the economic structure of the country extended little beyond the requirements of administration and defence and the financial support of these essential functions." 3/

16. While Ethiopia's topographical features played an important part in the economy's historical isolation from the world market, the scarcity of raw materials, the country's inaccessibility by land, the immobility of labour for both geographical and social reasons, and the insignificance of the country either strategically or in maritime trade, were also factors explaining why colonial Powers did not expand their interests in Ethiopia. Although during the Italian occupation of Ethiopia (1936-41) there was some military expenditure and infrastructural investments, the insulation of Ethiopia did not change significantly until the 1940s. 4/ The principal reason for this change was that, owing to various mainly non-economic considerations, the United States began to take an increasing interest in Ethiopia.

1/ The four countries in question are Burundi (US$54), Malawi (US$62), Somalia (US$64) and Upper Volta (US$47). See UNCTAD, Handbook of International Trade and Development Statistics, 1972, New York, 1972, (United Nations publication, Sales Number: E/F.72.II,D.3), Table 6.1.

2/ Ibid., Table 6.8.

3/ Ministry of Commerce and Industry, Economic Progress of Ethiopia, 1955, page 15.

4/ In the three decades since the end of occupation, Italian expatriates have been an important entrepreneurial class in Ethiopia.

17. There has been a direct and continuing economic effect resulting from this change. The consequences were the following. In the first place, between 1946 and 1972 the total value of the inflow of military and non-military resources from the United States and from international organizations (mainly the World Bank Group) was approximately E$1.8 billion (US$715 million). Of this total, United States military aid, under the United States-Ethiopia military agreement of 1953, accounted for E$468 million (US$187 million). This figure was equal to nearly half of all military aid authorized by the United States to underdeveloped countries in Africa in that period. Obligations and loan authorizations by the United States Government totalled E$754 E$754 million (US$298.3 million) and loans by international organizations (mainly the World Bank Group) E$573 million (US$229.2 million). 1/

18. The foreign public loans (i.e. from governments and international institutions) up to 30 June 1970 were used for the following purposes: infrastructure 59.5 per cent; transportation 13.4 per cent; industry and mining 10.7 per cent; banking and financial institutions 9.9 per cent; agriculture 3.8 per cent; and miscellaneous purposes 2.7 per cent. 2/ It would seem, therefore, that the great majority of these loans have been used to develop the conditions for commodity production rather than to stimulate such production directly. 3/ The infrastructure for commodity production has not been the only sector for investment in Ethiopia, nor have foreign loans been the only source of capital. But in both cases these elements would seem to have been important ones in determining the pace and direction of economic growth in Ethiopia. 4/

1/ United States Agency for International Development (USAID), US Overseas Loans and Grants and Assistance from International Organizations 1964-72, May 1973, page 93.

2/ See Central Statistical Office [of Ethiopia], Statistical Abstracts, 1970, Table J.7, page 137.

3/ Investment in infrastructure was also given importance by the First Five Year Plan (1957-61), for 47 per cent of the investment was devoted to transport, communications, electricity and social services.

4/ There were six sources of capital which influenced the process of growth in Ethiopia: (i) the central Government; (ii) public financial institutions, notably the Development Bank of Ethiopia and the Ethiopian Investment Corporation; (iii) public corporations; (iv) commercial bank credit; (v) foreign direct investment, i.e. reported long-term private capital inflows plus the reported value of reinvested earnings by major foreign enterprises (the latter as so defined by the National Bank of Ethiopia); and (vi) reported reinvested earnings and reported allowances for depreciation by firms in the private sector not included in (v) above. The share of foreign funds in net monetary investment, in the Second plan period (1963-67) was expected to be 45 per cent (see Imperial Ethiopian Government, Second Five Year Development Plan, 1963-1967, Addis Ababa 1962, p. 99). This figure underestimates the effective foreign contribution because part of the foreign public funds was used to finance current expenditure by the Ethiopian Government, thereby releasing monetary resources for the Government capital account.

C. Economic developments 1954-1969

19. The present situation, although indicating that Ethiopia is a least developed country, nevertheless reflects many significant changes which have occurred in the last fifteen years. Table 1 sets out figures relating to eight aspects of economic life in Ethiopia in the years 1954 and 1969. The information given in that table shows that important changes have occurred with respect to three major areas of the Ethiopian economy.

20. First, there have been substantial changes in domestic output and employment. These changes include: a 1.8 times increase in GDP; more than a doubling of gross fixed capital formation; a six-fold rise in value added in the modern manufacturing sector; a 2.3 times rise in employment in that sector; and a rise of some 2.6 times in labour productivity in modern manufacturing.

21. Second, the infrastructure of the Ethiopian economy has altered in significant ways: there has been, for example, a tenfold increase in the use of electricity and petroleum, a rise of some 1.5 times in the mileage of all-weather roads, and a rise of about 50 per cent in the volume of freight carried by the railway system. Primary school enrolment rose some 2.3 times, and enrolment in secondary and higher education some 3 to 4 times.

22. Third, the changes in the structure of domestic output and employment on the one hand, and in the infrastructure of the economy on the other, have been reflected in the nature of Ethiopia's transactions in the international economy. On current account, the growing significance of modern manufacturing and investments in particular has generated marked changes in the composition of imports. For instance, although imports as a proportion of GDP hardly changed at all between 1954 and 1969, imports of intermediate and capital goods expressed as a proportion of total imports increased from 45 per cent to 63 per cent. On capital account, whereas in 1954 the inflows of foreign long-term capital (public and private) and outflows for the service of the foreign debt payments were neglibigle, by 1969 these elements had become significant items in the balance of payments, e.g. public foreign debt payments as a proportion of exports rose from about 5½ per cent in 1954 to about 18 per cent in 1969.

23. The figures just mentioned are evidence of the beginning of a major change in the structure of the Ethiopian economy and in the relationship of that economy with the world market. The role of foreign technology in this process of change is the subject of the present study.

D. Growth of modern manufacturing and import substitution

24. The preceding sections have drawn attention to the role of substantial infrastructural investment in Ethiopia in the period following the 1939-45 war. This investment provided the necessary pre-condition, on the supply side, for the growth of commodity production in the modern sector (i.e. mechanized agriculture and modern manufacturing).

25. The conditions for commodity production in the modern sector created by the infrastructure investment were complemented by associated changes on the demand side. The principal change was the expansion of urban demand, mainly for consumer goods.

Table 1

Selected indicators of the Ethiopian economy

	Item	Unit	1954	1969/70	Index 1969/70 (1954 a/ 100)
I.	Population	million	21	24	114
II.	Gross domestic product (at current factor cost)				
	Per capita	E$	101	161	159
	Total	E$million	2,130	3,861	181
III.	Composition of GDP				
	Agriculture	"	1,454	2,012	138
	Manufacturing (modern)	"	35	212	606
	Handicrafts and cottage industries	"	77	177	230
	Construction	"	45	214	476
	Others	"	519	1,246	240
IV.	Gross fixed capital formation (at current market prices)	"	227	500	220
V.	Estimated employment by sector				
	Traditional agri.	No.'000	...	6,238 b/	...
	Mechanized agri.	"	...	120 b/	...
	Manufacturing (modern)	"	28	65 b/	232
	Handicrafts and cottage ind.	"	186	335 b/	180
	Construction	"	63	107 b/	170
	Others	"	142	554 b/	390
	Total	"	...	7,419 b/	...
VI.	Output per employed person				
	Traditional agri.	E$	...	317	...
	Mechanized agri.	"	...	...	...
	Manufacturing (modern)	E$	1,250	3,262	261
	Handicrafts and cottage ind.	"	414	528	128
VII.	Relations with world economy				
	Exports	E$million	160	305	191
	of which coffee	"	100	181	181
	Imports	"	234	429	183
	of which consumer goods	"	128	149	116
	Intermediate goods	"	48	132	275
	Capital goods	"	59	142	241
VIII.	Financial transactions				
	Inflow of long-term public capital	"	3	55	1,833
	Foreign debt payments (public)	"	9	56	622
	Inflow of long-term private capital	"	9	24 c/	267
	Net investment income (outflow)	"	10 d/	17	170
IX.	Other indicators				
	School enrolment				
	I level	No.'000	163 e/	382	234
	II level	"	13 e/	49	377
	III level	"	8 e/	35	438
	Higher education	"	1 e/	3	300
	All-weather roads	km	4,536 f/	6,898	152
	Railway freight	1000 tons	234	356	152
	Shipping freight (turnover)	1000 tons	367	1,733	472

Sources: Figures obtained from Second Five Year Development Plan of Ethiopia, 1963-67 Outline Addis Ababa, May 1963, Central Statistical Office, Statistical Abstracts of 1963, 1969, 1970 and 1971; National Bank of Ethiopia, Quarterly Bulletin, No. 32(91), March 1972, Stanford Research Institute "Industrial Investment climate in Ethiopia" Report No. 2, July 1968. For details of the sources for figures in Table 1, see annex to this document.

a/ For certain items base years are different.

b/ Refers to 1967/68.

c/ Refers to 1971.

d/ Refers to 1962.

e/ Refers to 1959/60.

f/ Refers to 1961.

The rise in labour productivity in mechanized agriculture, coupled with the creation of employment opportunities in modern manufacturing, together encouraged a migration from the countryside to the towns. Thus the total population living in 165 municipalities grew from about 1.4 million in 1962 to 2.3 million in 1970. 1/

26. The movement from countryside to town was not only a movement from agriculture to industry - it was also a movement from a subsistence sector to a monetized one. These conditions provided the foundation for the growth of an effective money demand directed towards the purchase of consumer goods, both agricultural and manufactured. The urban demand, therefore, acted as a stimulus to the supply of consumer goods and thereby to the process of import substitution.

27. In addition to the factors described above, tariff protection influenced the pattern of import substitution and, to some degree, its extent. Significantly higher tariff protection, on the average, was granted to firms producing consumer goods than to those producing intermediate and capital goods. 2/

28. Table 2 summarizes the changes from 1954 to 1970 in imports as a proportion of total domestic supply in individual industries in the consumer goods, intermediate goods and capital goods sectors. Though the figures should be regarded as broad orders of magnitude only they do indicate that substantial import substitution has occurred in the consumer goods sector where imports fell from 73 per cent to 30 per cent of total domestic supply over the period; in the case of intermediate goods the proportion fell from 72 per cent to 50 per cent, while in the case of capital goods imports still accounted for 83 per cent of total supply in 1970.

E. Import substitution and the transfer of technology

29. Import substitution in modern manufacturing has depended on the application of technology new to Ethiopia. 3/ This technology both in its embodied form in intermediate and capital goods, and in its disembodied form, has been imported from abroad.

30. The dependence on foreign technology is most evident in the import of machinery and equipment for all sectors; the total imports of machinery and transport equipment in the period 1966-1969 were equal to 91 per cent of total investment in machinery and equipment. 4/

1/ See Statistical Abstract, Central Statistical Office, Addis Ababa, issues from 1963 to 1970.

2/ See Chapter II, paras. 68-72.

3/ Investment in infrastructure and the mechanization of agriculture have also utilized new technology.

4/ Figure calculated from data given in Tables H-2 and I-1 of Central Statistical Office, Statistical Abstract 1970, Addis Ababa.

TABLE 2

The pattern of import substitution in manufacturing in Ethiopia

Industry	Total domestic supply a/		Imports including taxes on imports		Share of imports in domestic supply	
	1954 b/	1970	1954 c/	1970	1954	1970
	Ethiopian $ million				Per cent	
I. Consumer goods						
Meat products	...	8.5	...	1.5	...	17
Sugar and confectionery	8.2	54.1	7.1	2.9	86	5
Soft Drinks	1.1	12.8	0.2	1.2	18	9
Alcoholic Drinks	4.1	60.4 d/	1.2	11.6	29	19
Flour milling	5.4	42.7 d/	-	9.0	0	20
Manufactured food products n e s.	...	11.5	...	2.2	...	75
Tobacco	2.5	22.3	0.6	4.1	24	18
Textiles e/	64.1	203.7	54.0	66.8	84	32
Leather footwear	3.4	10.5	1.9	1.5	55	14
Printing and publishing	1.7	12.4	0.6	3.1	35	25
Dairy Products	...	12.4	...	6.5	...	52
Paints, varnishes, plastics, soap products etc.	...	29.5		18.8		63
Pharmaceuticals	2.5	24.7	2.5	21.1	100	87
Wood and furniture	...	5.3 f/	...	2.4	...	44
Others	...	2.3 f/	...	2.3	...	100
Total above	(93.0)	513.0	(68.1)	155.1	(73)	30
II. Intermediate goods						
Leather tanning and finishing	...	10.9	...	1.9	...	23
Saw mill and woodwork	2.4	13.0	0.9	1.5	37	11
Petroleum products	14.6	38.4	14.6	17.8	100	46
Glass products	...	7.2	...	3.0	...	42
Basic industrial chemicals, fertilizers, synthetic resins and plastics	...	30.4 g/	...	28.7	...	94
Others	7.7	81.5 g/	2.5	37.4	32	44
Total above	(24.7)	181.4	(18.0)	90.3	(72)	50
III. Capital goods						
Cement and lime	1.3	15.0	0.3	0.2	23	1
Structural clay products	0.2	3.3	-	0.6	0	18
Other non-metallic minerals	...	5.2	...	1.4	...	26
Iron and steel products	...	61.0	...	32.6	...	53
Metal products	...	31.8 h/	...	30.0	...	94
Tyres, tubes and rubber products	...	22.9	...	19.5	...	85
Electrical and non-electrical machinery	...	110.8	...	110.5	...	99
Transport equipment	...	70.9	...	70.9	...	100
Others	...	8.7	...	8.7	...	100
Total above	(1.5)	329.6	(0.3)	274.4	(...)	83
I - III GRAND TOTAL	(119.2)	1,024.0	(86.4)	519.8 i/	(72)	50

Sources: Figures for 1954 obtained or estimated from Central Statistical Office; Statistical Abstracts Addis Ababa; Economic Progress of Ethiopia and company records. Figures for 1970 from Stephen Guisinger "Tariffs and Trade Policies in the Ethiopian manufacturing", August 1972 (mimeograph), Ministry of Commerce, Industry and Tourism, Table 1, page 48.

a/ Total domestic supply is equal to gross value of production plus imports including taxes minus exports.

b/ 1954 figures include gross value of production and imports only. Data do not cover Eritrea.

c/ Figures do not include taxes on imports.

d/ Includes flour milling and bakery.

e/ Includes spinning, weaving and finishing of textiles; knitting; wearing apparel and other textile goods.

f/ Includes pottery, china and earthenware.

g/ Includes paper and paper products; animal and vegetable oils and fats; made-up textile bags, cordage, rope and twine; animal food; fibre for spinning; wooden and cane containers; miscellaneous petroleum and coal products; and non-ferrous based metal products.

h/ Includes structural and fabricated metal products and cutlery, tools and hardware.

i/ The discrepancy between this figure and the figure for imports in Table 1 above is due to the inclusion of taxes on imports in the former.

31. The imports of technology in the form of know-how have mainly come under the rubric of technical assistance. Between 1964/1965 and 1968/1969 total technical assistance to Ethiopia amounted to E$421 million, 1/ that is to say to 56 per cent of the value of imported capital goods over the same period. To this should be added payments for foreign personnel made in the agricultural and industrial sectors, both as salaries and management fees. These averaged E$20 million per annum in 1970 and 1971.

F. Transfer of technology and economic transformation in Ethiopia

32. This chapter has attempted to describe the contemporary transfer of technology to Ethiopia against the background of that country's economic history. After a long period of insulation from the world economy, Ethiopia has been incorporated into the international market system by means of a process of capitalist transition within its own boundaries, and an increasing participation in the international division of labour.

33. It is not merely technology but foreign technology which has led to improvements in productivity, both in the modern manufacturing and in the mechanized agricultural sector, and to a transformation of the Ethiopian economy. In other words, foreign technology, whether embodied or disembodied, has been used in both infrastructure and in modern commodity production in order to raise the productivity of labour in Ethiopia.

34. Yet the process of economic transformation cannot be ascribed to mere technical factors. Changes in productivity take place within and react upon a system of socio-economic relations. The importance of the system of social relations is that it determines how increases in productivity are distributed between foreign 2/ and Ethiopian 3/ economic agents; the proportion of those increases which is invested in Ethiopia and the proportion which is directly or indirectly transferred abroad; 4/ and the ways in which, through factor prices and the terms and conditions of technology contracts, the factors of production, both Ethiopian and foreign, are combined.

1/ Figure calculated from Table L.1 of Central Statistical Office, Statistical Abstract 1966, Addis Ababa, and from Table L.1 of the Statistical Abstract 1970.

2/ Foreign economic agents may be regarded as including transnational firms and other types of foreign technology suppliers operating in Ethiopia; expatriate groups resident in Ethiopia; and foreign governments and international financial agencies to the extent that they give loans to Ethiopia.

3/ Ethiopian economic agents may be regarded as including the Ethiopian Government; Ethiopian capitalists and Ethiopian labour.

4/ See Guidelines for the study of the transfer of technology to developing countries, United Nations publication, Sales No. E.72.II.D.19 (TD/B/AC.11/9), paragraphs 125-147.

35. In Ethiopia these issues take on a special character as they arise in a "least developed" economy whose transformation has been accomplished through the importation of foreign technology controlled by foreign capital. The purpose of this study is to examine: (i) the institutions and policies which have provided the broad framework for the import of technology (chapter II); (ii) the organizational forms in which technology has been imported and the ways in which foreign technology suppliers have attempted to maintain control of that technology (chapters III, IV and V); and (iii) the distribution of gains from the transfer (chapter VI).

46. The central purpose of the Notice was to encourage the absorption of capital and technology through foreign investment. It was designed exclusively for the benefit of foreign investors, to whom it accorded special facilities and incentives in the form of exemptions from profits tax for five years, guarantees regarding the remittance of a fixed proportion of earned profits, and duty-free importation of necessary machinery. Moreoever, foreign technology suppliers were given complete freedom with respect to the acquisition of equity holdings in firms, and where local participation was considered necessary it was understood that such participation in equity and management would in most instances take the form of only a minority interest. 1/

47. The Notice had two significant shortcomings. First, no institutional framework for implementation of the Notice was formally provided although until the early 1960s it was de facto implemented mainly by the Ministry of Finance. Second, though the Notice provided incentives and guarantees for foreign investors, similar incentives were not available either to existing or potential domestic investors. It was not until the Industrial Decree of 1963 was enacted that domestic enterprises were given equal opportunities, at least in a formal sense, with foreign ones.

48. A second piece of legislation, which supplemented the 1950 Notice, was the 1954 "Agricultural and Industrial Expansion Proclamation". 2/ The Proclamation was not concerned with the full range of issues normally dealt with in an investment law. Its principal purpose was to permit duty-free importation of certain types of agricultural and industrial machinery. The provisions of the Proclamation were applicable to domestically controlled and foreign-controlled enterprises in Ethiopia, although foreign-controlled enterprises were, and have continued to be, the enterprises able to derive most benefit, owing to their predominance in the industrial sector.

1/ This treatment was reflected in an important contract that was signed between a Netherlands sugar processing firm and the Ministry of Finance at about the time when the Notice was issued by that same Ministry. Furthermore, an earlier draft of the Notice had contained the following clause: "The Government will not, as a general rule, impose participation of Ethiopian capital investment on new enterprises established with foreign capital investment according to the nature of the enterprise and the extent of foreign capital. Nevertheless, it will be the policy of the Government to require participation of Ethiopian capital in suitable industries, usefully employing the capital of the country. However, such local investment shall, in most instances, represent a minority interest." Quoted in Krishna Ahooja, Ethiopia Observer, Vol. X, No. 5, 1966, op. cit. page 254. The author implies that the subsequent deletion of this clause from the final text of the Notice was the result of a difference of approach between the Ministry of Finance, which was responsible for issuing the Foreign Investment Notice, and the Ministry of Commerce and Industry, which was responsible for industrial policy as a whole.

2/ The 1954 Proclamation also had a higher legislative status than the Notice of 1950. The Notice was in the nature of delegated legislation, whereas the Proclamation was a form of primary legislation, enacted by the legislative bodies after a due processing and deliberation of bills by the Chamber of Deputies and the Senate.

1960-71 period

49. The difference between legislation in this period as compared with the preceding one is that foreign investment legislation in the 1960s was associated with the introduction of development plans. 1/ Although in certain respects the more recent legislation broadened its scope, foreign investment legislation remained by and large within the frame of reference set by the 1950 Notice, i.e. it formalized policies and practices that had been operative since the 1950 Notice was issued.

50. Four main legislative instruments affecting the transfer of technology were introduced in the post-1960 period: (i) in 1960, the Commercial Code of Ethiopia; (ii) in 1963, a Decree to provide for the encouragement of capital investment in Ethiopia; (iii) in 1966 a further investment decree; and (iv) in 1971 the Industrial Licensing Proclamation.

51. In 1960 the Commercial Code of Ethiopia was issued with the object of consolidating company law and practice in the country. It provided the framework for regulating the structure, rights and duties of companies and specified several areas, such as industrial property rights, unfair trade practices and licensing of industrial enterprises, on which special laws or regulations were needed. The only legislation of this kind enacted so far is the Industrial Licensing Proclamation of 1971, which made the registration of all enterprises in Ethiopia compulsory.

52. The Investment Decree of 1963 was issued against the background of the Second Development Plan. That Plan, unlike its predecessor, 2/ gave a high priority to the expansion and diversification of the country's industrial base, and its long-term objectives were clearly technological in content. They may be summarized as follows: (i) to change the structure of the economy from a predominantly agricultural to an agro-industrial one; (ii) to change the pattern of production by introducing new processes and methods; and (iii) to increase the production capacity of the economy with a view to diversifying production and increasing the rate of growth. 3/ The attainment of these objectives necessitated an integration of law with planning.

53. The Investment Decree of 1963 consolidated under one heading, without any substantive alterations, all the relevant earlier legislative instruments in operation at the time, i.e. the Notice of 1950, the Agricultural and Industrial Expansion Proclamation of 1954 and the existing Foreign Exchange and Fiscal Regulations. In this sense, it did not depart from the existing emphasis on the exclusive role of foreign investment as the channel for the transfer of capital and technology. However it generalized the system of incentives to cover both domestic and foreign investment, and created an institutional machinery, i.e. the Investment Committee, for implementing the provisions of the Decree. The 1963 Decree was subsequently superseded and

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1/ The Investment Decrees of 1963 and 1966 coincided with the introduction of the Second (1963-67) and Third (1967-72) Five-Year Development Plans, respectively.

2/ In the First Plan, the pattern of investment was clearly concentrated upon infrastructural development and little emphasis was placed on modern manufacturing and agriculture.

3/ The Imperial Ethiopian Government, Second Five-Year Development Plan, 1963-67.

replaced by the Investment Decree of 1966 introduced at the same time as the Third Plan. The 1966 Decree was very similar to that of 1963, except that it liberalized tax provisions to encourage the expansion of existing enterprises.

54. The following sub-sections examine some of the detailed provisions of the post-1960 legislation.

2. Aims and scope of operation of policies towards foreign investment and transfer of technology

55. The main concern of the 1966 Investment Proclamation was to provide domestic investors with opportunities similar to those which foreign investors had enjoyed since 1950. The decree was not accompanied, however, by any measures for enhancing the capacity of domestic investors in the private sector to take advantage of the opportunities offered to them; it did not, for example, promote explicitly greater domestic participation in equity and management or promote the use of alternative channels for the transfer of technology.

56. The approach towards the improvement of opportunities for domestic investors was reflected in what the decree did not say as well as in what it did say. The decree did not incorporate any obligations to be fulfilled by foreign technology suppliers, although the process of bargaining led in specific cases to the acceptance of some obligations on the part of foreign technology suppliers. The decree provided rights, privileges and benefits for those foreign and domestic investors who were covered by the decree (i.e. the larger firms).

57. The decree covered a wide range of sectors which included agriculture, industry, mining, transport and tourism, i.e. virtually every sector of the economy. Only those activities in which the Ethiopian Government plays an active role, which are either public utilities or other State enterprises, in particular the tobacco monopoly, banking, electricity, and transport and communications, are in principle closed to foreign investment. 1/ However, even in these activities there have been exceptions. For example the railways were still 50 per cent foreign owned and air transport was foreign-managed under a service agreement.

58. The relative freedom of operation for foreign enterprise was not confined to sectors of investment only. There was no limit on foreign equity holdings in firms, which means that, by fixing their share in the equity, the technology suppliers could determine the number of foreign directors elected to the board 2/ of a company or indeed foreign participation in management through an appropriate contract to that effect. Apparently, no legislative provisions have been enacted to regulate the terms of such contracts, which were determined through bargaining at the firm or Government level. In recent years, however, the Government has either participated directly

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1/ In the Ethiopian Economic Review, February 1962, page 25, issued by the Ministry of Commerce and Industry, it was stated that "no law or regulation exists that restricts the fields of investment, be it foreign or Ethiopian, and both foreign and domestic capital may be invested in any kind of economic activity the investors see fit to engage in".

2/ See ibid. "Laws and Practices Concerning Private Investment in Ethiopia".

with foreign firms in joint-venture arrangements or has insisted on local participation; but in most cases this participation has taken the form of a minority equity holding in firms; majority control of the equity and management have often been allowed to remain with foreign technology suppliers.1/

3. Foreign exchange guarantees and regulations

59. Foreign exchange guarantees designed to encourage the inflow of capital and technology covered three main subjects. First, investors were given freedom to remit abroad all of their share of profits, dividends, interest repayments, management fees and royalties. Second, they were entitled to repatriate the net proceeds belonging to them upon the partial or total sale or liquidation of their investment. Third, foreign personnel employed in Ethiopia were allowed to remit 35 per cent of their earnings per annum for the first six years, although in subsequent years this ratio was progressively diminished. The National Bank's permission was essential before such remittances could take place, but this permission has always been granted.

60. The liberal nature of these guarantees in Ethiopia was underlined by the fact that no other restrictions, apart from an upper limit on remittances of earnings of expatriates, were prescribed in the law.

61. The only other condition (rather than a limitation) laid down was that the amount of profits or dividends that could be repatriated abroad in any one year could not exceed the foreign share in the equity. This limit appears to have been formal rather than effective. In the first place, the fact that foreign technology suppliers were free to determine the extent of their equity participation implied their effective freedom to determine their share of profits and, hence, the size of remittances.2/ Moreover, even when constraints were placed on profit remittances, a wide range of possibilities existed for transferring funds in other forms, such as interest repayments, management fees and royalties, which were not subject to any legal upper limits.

62. Besides the direct transfer mechanisms just discussed, various indirect transfer methods involving underpricing of intra-firm exports and overpricing of capital and intermediate goods imports are known to have been used. Although firms were obliged to submit original invoices of their transactions to both the Ethiopian Customs and the National Bank, in practice it was found to be difficult to ascertain whether the invoices submitted were actually the original ones or whether the prices quoted therein were "fair". The Ethiopian Government did not possess the administrative machinery capable of dealing with the "transfer pricing" problem.3/

1/ See chapter III below.

2/ This freedom was reinforced by the absence of any effective measures preventing foreign technology suppliers from increasing their shareholding through the purchase of local equity holding.

3/ For a brief discussion of transfer pricing see Guidelines for the study of the transfer of technology to developing countries (TD/B/AC.11/9), op cit., paragraphs 137-146. See also chapter VI below.

4. Fiscal incentives

63. A variety of fiscal incentives have been introduced by the Ethiopian Government to encourage the inflow of foreign technology, and their value to foreign suppliers is enhanced by the completely free system of repatriation of foreign exchange and high rates of effective tariff protection subsequent upon an investment (see paragraphs 68-72).

64. Tax rates in Ethiopia have in general been lower than in other African countries. For instance, while in Kenya the average corporate income tax rate was 40 per cent,1/ the highest Ethiopian rate did not exceed 36 per cent. Moreover, capital gains in Ethiopia have not been taxed.

65. The general incentive to business enterprise provided by the relatively low corporate income tax rates and the absence of capital gains taxes has been supplemented by specific fiscal incentives established in the Decree to encourage the transfer of technology. First, imports of machinery, spare parts, implements and appliances have been admitted duty free, provided that similar goods were not being produced in the country. Second, exports of manufactured products have been allowed exemptions from export duties.2/ These exemptions have been based on the assumption that they constituted an essential condition for increased exports. However, the strength of such an assumption rests, to a large extent, on the nature of the export trade itself. In Ethiopia, since the majority of manufacturing firms which had stood to benefit most from such provisions have been foreign subsidiaries with intra-firm trade links, it has not always been obvious whether such incentives led to increased exports as intended or instead contributed simply to the profits of the companies in question, most of which were probably expatriate.

66. New investments involving a transfer of technology or extensions to existing enterprises have benefited from additional incentives. The former were given tax relief (i.e. exemption from payment of taxes) for five years, and extensions to existing enterprises were given such relief for three years provided that the amount invested in each case was not less than E$200,000 and that satisfactory proof was given by the investor with respect to the amount invested.

67. The minimum investment of E$200,000 necessary for a firm to qualify for tax relief excluded most of the domestic manufacturing firms (other than some Government ones), because virtually all of them were small or very small. In contrast, since the majority of foreign firms tend to be large, they have benefited from these provisions, with the result that to their comparative technical advantage has been added the further benefit of a fiscal advantage over domestic firms. Furthermore, the grant of tax relief for a fixed five-year period takes no account of the "infant" nature of local firms using Ethiopian management and labour.3/ These firms may well require a longer

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1/ Institute of Development Studies, Technical Paper 16, 1972, University of Sussex.

2/ In cases where this exemption has not been allowed, a transaction tax of 2 per cent was levied on the value of all exports.

3/ This does not, however, preclude the possibility that the Investment Committee may, when examining individual contracts, take into consideration the "infant" nature of local firms.

"learning period" than a foreign subsidiary already possessing experienced management, marketing and technical expertise in the field. A still more serious problem with such a system of fiscal incentives is that the only criterion for tax relief is the "size" of an enterprise, to the exclusion of other factors such as the differential effects of different types of investment and technology transfer channels on employment, skill formation, local participation in equity and management, domestic research and development (R and D) or the sectors in which technology was transferred. In short, the role of fiscal incentives has essentially been one of raising the "across the board" profitability of larger investments, mainly foreign, rather than of affecting the structure and quality of investment and transfer of technology.

C. Tariff protection

68. Since the early 19th century, a tariff policy has been regarded as providing, at one and the same time, protection to domestic producers through raising the domestic price of protected products in relation to the foreign price, and an incentive to encourage foreign exporters of these products to locate their productive facilities inside the country. In the Ethiopian case there are two reasons why this view of tariffs is inapplicable. First, few domestic enterprises have been established in the manufacturing sectors in Ethiopia. Second, the notion of tariffs acting as an incentive assumes that the foreign investor faces a given, predetermined tariff structure. In Ethiopia, however, this is not the case; tariffs are a variable rather than a datum for the individual foreign investor. Tariff rates are mostly determined in the course of bargaining by foreign enterprises over the terms and conditions on which they may establish production facilities in Ethiopia. The tariffs determined in the course of these negotiations are granted to the individual foreign enterprise and only consequentially to the products of specific interest to that enterprise.

69. Available evidence suggests that the initial demand for tariff protection seemed to have come mainly from the technology suppliers (or investors) before any investment had been undertaken. In fact tariff guarantees constituted an integral part of the majority of agreements involving direct foreign investment; in some cases the investment and the technology transfer were made conditional upon such guarantees. Moreover, in the determination of tariff rates the Government has tended to rely heavily on data provided by the foreign firm itself. Owing to this dependence on just one source of information the decision-making process was influenced by the degree of accuracy of the quotations prepared by the technology supplier.

70. A recent analysis 1/ of the tariff structure in Ethiopia has indicated that, while there were wide variations from one specific case to another, nominal tariff rates - on average 70 per cent - were the highest on consumer non-durables; semi-finished goods paid a moderate rate of 21 per cent, while capital goods were taxed at only 7 per cent. Nominal tariffs, however, are not an accurate measure of the protection afforded by the tariff structure to the value added of individual firms; to analyse the latter, estimates of effective rates of protection are needed. Calculations have been made for 17 products, of which 11 were found to be receiving effective protection ranging from 100 per cent to a little over 500 per cent (see paragraphs 147-150).

1/ Stephen Guisinger: "Tariffs and Trade Policies in the Ethiopian Manufacturing", August 1972, Ministry of Commerce, Industry and Tourism.

71. An important aspect of protection in Ethiopia was that, unlike the situation in other developing countries where such protection followed a cascaded pattern and where consumer goods industries were protected at higher rates than either intermediate or capital goods, in Ethiopia such cascading was found to be of little significance; in fact highly protected industries appeared in all sectors of industry.1/ Furthermore, there appeared to be a strong correlation between high effective protection and the distribution of foreign investment according to product group.

72. These results, as well as the procedure for granting protection described earlier, suggest that individual foreign firms wishing to invest in Ethiopia have been able to negotiate, in the context of their overall bargaining over terms and conditions for the transfer of capital and technology, special tariff privileges for their particular investments.

D. Regulation of employment of foreign personnel

1. Scale of foreign employment

73. In Ethiopia in the 1950s, nearly all key positions in industry were held by expatriates.2/ The situation does not appear to have changed much over the years. A recent ILO study 3/ indicated that the number of foreign personnel employed in both the public and private sectors around 1970/71 totalled 10,000. Nearly half of these were employed in the private sector. Although the number of work permits issued to foreign employees in the latter sector fell from about 7,000 in 1968/9 to about 5,000 in 1970/71, i.e. a decline of approximately 25 per cent, this decrease was almost entirely concentrated in the unskilled categories.

74. Nearly half of those holding key positions in firms had only secondary or vocational education; their skills were essentially acquired through "on the job" training and were easily transmissible to local personnel. Of the total of foreign employees 2 per cent were "illiterate" and 15 per cent had only primary education. Additional evidence obtained on the basis of replies to a questionnaire and survey data further suggested that in most of the foreign-owned firms in Ethiopia over 50 per cent of skilled occupations were monopolized by headquarters personnel. In the largest single firm in Ethiopian manufacturing - a subsidiary of a foreign firm - 75 per cent of the professional staff in 1965 were foreign and only after considerable pressure from the Government was this ratio reduced to about 60 per cent. In fact, these ratios over-estimate Ethiopian participation, since evidence suggested that Ethiopians were usually given a lesser role in decision-making than was indicated by their formal positions in the firms' hierarchy. In contrast, wholly Ethiopian-owned firms were found to employ only a very small number of foreign personnel in skilled occupations.

1/ Ibid.

2/ See Krishna Ahooja, Ethiopia Observer, op cit., Vol. X, No. 5, 1966, Chapter I.

3/ See ILO, "Report of the Exploratory Employment Policy Mission to Ethiopia - by Mark Blaug" (mimeograph), pages 78-80.

2. Policy framework for the regulation of foreign employment

75. In Ethiopia both the law and the institution concerned with the regulation of foreign employment were separate from those concerned with the transfer of technology. The main legislative instrument for the encouragement of private investment and transfer of technology, i.e. the Investment Proclamation of 1966, had not concerned itself with the employment of nationals.1/

76. In Ethiopia, the principal regulatory instrument has been the Foreign Nationals Employment Regulation issued in 1964.2/ Its status in the Ethiopian hierarchy of laws was that of a Notice or delegated, rather than principal, legislation. It had two main elements. First, it provided that foreigners seeking employment could only acquire work permits, issued by the Ministry of Community Development and Social Affairs, if satisfactory evidence was produced to prove that Ethiopian nationals with similar skills were not available. Second, it prescribed that employers recruiting foreigners might be required to take Ethiopians as counterparts to their foreign employees.

77. The law has been difficult to implement and in certain areas has allowed the technology suppliers a high degree of freedom. The provisions in the law relating to the employment of Ethiopian counterpart staff have been conditional rather than compulsory. Employers have been required to train Ethiopian counterpart staff if it was considered necessary, and even then it was difficult to determine whether such "on the job" training was in fact being provided; the rate of turnover of dissatisfied Ethiopian staff has been known to be high.3/ There is some information to indicate that foreign controlled firms engaged in restrictive practices. One of these was to exaggerate qualification or experience requirements for specific jobs in order to block the employment of Ethiopians.

78. At the administrative level a major source of difficulty was the lack of co-ordination between agencies responsible for implementing the law and those concerned with negotiating transfer of technology contracts. The agency (Ministry of Community Development and Social Affairs) mainly responsible for carrying out the 1964 Regulation was usually not represented in the Investments Committee concerned with approving contracts. Thus, once a particular foreign investment, management, or

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1/ In contrast, by 1965 about half the countries in Africa (14 out of 31) had developed a relatively more integrated approach by enacting, in their investment laws, specific provisions which regulated foreign employment in managerial and technical positions. Some of them obliged nationals to be employed and trained for such positions; others set upper limits for foreign employment in specific skills; and certain others were voluntaristic in nature. For details, see Krishna Ahooja, "Investment Legislation in Africa", Journal of World Trade Law, Vol. 2, No. 5, Sept:Oct 1968.

2/ Legal Notice No. 295 of 1964.

3/ Based on interview evidence. This fact is also mentioned in IBRD: Economic Growth and Prospects in Ethiopia, Volume II, 22 September 1970.

4/ Interview evidence.

licence contract which reserved certain key positions for expatriates was approved, there was little more that could be done at the implementation stage. This difficulty was compounded by the fact that the initial negotiations of contracts were usually conducted by several Government and semi-public agencies, and for approving projects each of them usually applied diverse criteria.

E. The industrial property system in Ethiopia[1/]

79. The returns derived from the transfer of technology and the distribution of those returns among the various parties affected by the transfer process, i.e. Ethiopian-based firms using foreign technology, Ethiopian consumers, the Ethiopian Government and foreign suppliers of technology, are influenced by, among other things, the extent and nature of the protection which technology owners can obtain in Ethiopia for the industrial property they possess.[2/]

80. When, in 1960, the Commercial Code of Ethiopia was enacted, it was stipulated that "patents shall be subject to the protection of special laws".[3/] Although Ethiopia has not enacted a formal patent law, it does operate a system of registration.[4/] Under this system monopoly protection has been granted to patents and trademarks once they have been registered with the Registration Department in the Ministry of Commerce and Industry. This protection has the same legal validity as that which is normally accorded to industrial property rights under a formal industrial property legislation. It would appear, therefore, that despite the absence of a formal legal instrument, the owners of patents and trademarks obtain full protection under the Ethiopian law: moreover most of these owners seem to be foreign. Available evidence, summarized in the appendix to this chapter, on 29 patents registered in Ethiopia indicates that no fewer than 26 of these were foreign-owned. Similarly, 97 per cent of a sample of 760 trademarks were foreign-owned.

81. The absence of formal machinery for the regulation and screening of patents has, by contrast, tended to create more freedom for patent owners than they would have obtained under a patent law formulated in the light of national development objectives and consciously used as a deliberate instrument of economic policy. The principal areas in which critical examination of the grant of monopoly rights through patents has been absent seem to be the following. First, protection has been granted to virtually every item irrespective of whether the patent was sought for a product or for a process. Second, the acceptability of an item for patenting did not appear to be influenced by the novelty of the item or by its likely contribution to furthering

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1/ The industrial property system covers patents, trademarks, industrial designs, and utility models.

2/ See "The role of the patent system in the transfer of technology to developing countries", (TD/B/AC.11/19).

3/ See Commercial Code of the Empire of Ethiopia, 1960, Article 148(2).

4/ A patent law is in the process of being drafted. However, it has not been possible to obtain information on the contents of the draft law or about the approach that is being followed.

national development objectives. Objects which had been patented abroad were easily patentable in Ethiopia - indeed this was reflected in the large majority of foreign patents held in the country. Third, in countries where a formal patent law exists protection is accorded to patented inventions for a specified duration; in Ethiopia, however, such protection appeared to have been granted for an indefinite duration. Fourth, there has been no provision for determining whether the registered patent has been utilized in the country or for preventing patents from remaining unutilized for long periods.

82. Patent protection, it would seem, has not ensured the application of patented know-how in the productive system either by the owners themselves or through licensing to others. What has happened under existing practices is that inventions have been granted automatic protection one month after the initial application for the registration of patent without evaluation of the implications of such action. 1/

1/ The only reason which could have prevented a particular invention from obtaining protection was that an objection raised by the competitor with respect to the uniqueness of the invention might be upheld by the Ethiopian Supreme Court; this had not happened so far.

APPENDIX TO CHAPTER II

Main characteristics of patents and trademarks

Only a few patents and trademarks have been registered in Ethiopia. According to information made available by the Registration Office (Addis Ababa) their total stock around mid-1972 did not exceed 1,600, of which only about 30, or nearly 2 per cent of the total stock, were patients and the rest trademarks. A few more patents were believed to have been registered in the Asmara branch of the registration office.

On the basis of records kept at the Addis Ababa Registration Office 1/, a detailed examination was undertaken of 29 of the 30 existing patents and a sample of 760 trademarks; Table 3 summarizes the available information. The 29 registered patents showed the following ownership characteristics:

(i) Only three patents were owned by Ethiopians;

(ii) Nearly all the registered patents were foreign held. Economic units located in the United States and Italy owned 15 patents, more than half the total;

(iii) Of the 26 foreign patents, 23 were owned by a small number of transnational companies, including Union Carbide Corporation, the American Cyanamid Company, British Petroleum and the Stá Stabilimento Alimentare, SPA. Evidence also suggested that most of the patents registered in Ethiopia related to chemicals and food products and processes. 2/

1/ One shortcoming of the registration procedure is that both patents and trademarks were usually lumped together, which made the task of collecting data on the two individually very cumbersome.

2/ These are products groups in which restrictive business practices have been found to be common. See document TD/B.AC/11/19, Part Two, Chapter VI, especially paragraphs 372-377. See also Constantine Vaitsos, "Patents Revisited: Their Function in Developing Countries", The Journal of Development Studies, October 1972.

Table 3

Ownership structure of a sample of patents and trade-marks

Country of origin	Sample of		Percentage share	
	Patents	Trademarks	Patents	Trademarks
	(Number)		(Per cent)	
United States	9	188	31	25
Italy	6	..	21	..
Germany, Fed. Rep.	3	214	10	28
United Kingdom	2	88	7	12
Switzerland	–	50	–	7
Others	6	199	21	25
Foreign	26	739	90	97
Ethiopian	3	21	10	3
Total	29	760	100	100

Source: Registration Department, Ministry of Commerce and Industry.

With respect to trademarks the pattern was found to be similar, except that foreign ownership was even larger and accounted for 97 per cent of the sample total (see Table 3). International corporations from three countries, namely the United States, Federal Republic of Germany and the United Kingdom, accounted for about 65 per cent of the sample of trademarks examined. Furthermore, as shown in Table 4, nearly 60 per cent of the trademarks applied to chemical products, pharmaceuticals and electrical and non-electrical machinery.

Table 4

Concentration of trademarks by product groups

Product group	No. of trademarks (sample)	Percentage share
Pharmaceuticals	251	33
Chemicals	122	16
Electrical and non-electrical machinery	76	10
Tobacco	46	6
Beverages	44	6
Textiles	41	5
Food Products	34	4
Vehicles	30	4
Miscellaneous	116	15
Sample total	760	100

Source: Registration Department, Ministry of Commerce and Industry.

It is against this background that the assumptions guiding the current practice of patent and trademark registration in Ethiopia may be assessed. The philosophy regarding patents seems to be based on the traditional assumptions governing the legal creation of a monopoly 1/, i.e. (a) that the monopoly right granted by a patent is a necessary condition for economic agents per se, and (b) that it is a sufficient condition for the utilization of the results of inventive activity. The implications of these assumptions may be examined with regard to the economic agents whose inventive activity is actually protected by the existing system. The evidence suggests that, if anything, the system has so far protected mainly "non-national" inventive activity. Furthermore, the negligible share of Ethiopian-owned patents in the total would seem to imply that, at any rate until now, there is little correlation between domestic inventiveness on the one hand and the grant of monopoly rights under the system on the other. Moreover, the large majority of foreign-held patents and trademarks registered in Ethiopia have apparently not been utilized either by their owners or licensed to domestic enterprises for the setting up of production facilities in the country. For instance, of the 50 major manufacturing firms in Ethiopia, 2/ only a few were known to have utilized foreign trademarks registered in the country. 3/ Most of these firms were subsidiaries or affiliates of foreign firms, and only two were domestic firms which had obtained rights under franchise agreements. In the case of these two agreements the actual technology transferred was negligible 4/ and, as mentioned in chapter IV below, the agreements involved restrictive conditions and strict quality control by the owners (transnational corporations).

With respect to patents, none of the 50 firms had licensed foreign patents registered in Ethiopia. Nevertheless, a few patents that were licensed by these firms had not been registered at all in the country, in other words they did not enjoy any legal protection in Ethiopia. This indicates that (a) the grant of a legal protection to holders of patents and trademarks under the existing system did not constitute a sufficient condition for the transfer of technology, and (b) the absence of legal protection in certain cases had not prevented the licensing of patents to Ethiopian firms provided that the owners of patents were able to negotiate favourable terms for themselves, i.e. bargaining rather than monopoly protection accorded to patents seemed to have been the main determinant of the transfer of technology.

1/ See document TD/B/AC.11/19, especially Part Two, Chapter V.

2/ It should be mentioned that the 50 firms referred to accounted for over 70 per cent of manufacturing value added (see Chapter III).

3/ Quite possibly, the number was somewhat larger.

4/ See Chapter IV.

CHAPTER III

EQUITY OWNERSHIP AND TRANSFER OF TECHNOLOGY IN THE MANUFACTURING SECTOR

A. Introduction

83. Ethiopia has been an economy in which the preconditions for the establishment and growth of modern commodity production, of which modern manufacturing is a part, have been created by investments in infrastructure, financed directly and indirectly through foreign public loans, and by the growth of urban centres. The development of modern manufacturing, however, should be seen in the context of the institutional, legal and administrative conditions in Ethiopia; in practice, these conditions have proved favourable to foreign enterprises wishing either to set up production facilities in Ethiopia or to lease technology under contract to domestic firms. A considerable proportion of technology imports was in fact associated with foreign investment. There were two inter-related reasons for this; first, there were, in the modern sector, few domestic firms in a position to negotiate suitable terms and conditions for utilizing foreign technology under licence; and second, the desire of technology suppliers, in several cases, to acquire equity holdings either as a complement to, or in lieu of, other forms of control exercised directly or indirectly through contractual arrangements.

84. The chapter has three main sections. The first of these examines the gross inflows of foreign investment into Ethiopia during the period 1950-1969. In the next section the branch distribution of foreign and Ethiopian capital and the ownership pattern of 51 major firms in the manufacturing sector in Ethiopia are analysed. In the last section, some of the major characteristics of these 51 firms are discussed.

B. Direct foreign investment 1950-69

85. Table 5 gives data concerning the gross inflow of foreign private long-term capital, almost all of which was in the form of direct foreign investment, for the period 1950-1969. On average, direct foreign investment was quite small during the 1950s; heavy inflows occurred, however, in the period 1960-1966 when the gross inflow varied between 35 per cent and 69 per cent of gross fixed capital formation in mining and manufacturing (see column 5 of Table 1).1/ The period of rapid inflows seemed to correspond closely with the phase of the rapid establishment of import-substituting industries in Ethiopia and, in particular, with import substitution in the consumer goods sector and, to a lesser extent, in the intermediate and capital goods industries.2/ By the later 1960s substantial import substitution in the consumer goods sector had already taken place, and this is reflected in a falling-off in direct foreign investment.

1/ Since a large part of gross investment inflows was known to have been concentrated in manufacturing and mining activities, the percentages given in the text would seem to provide an appropriate basis for assessing the possible significance of these investments.

2/ See Stephen Guisinger, op.cit., and also Chapter I of the present study.

86. The figures for gross direct foreign investment in Ethiopia do not reflect, however, the actual net transfer of foreign resources, including capital and technology. There are three reasons why this is so.1/ First, a proportion of the reported figure for gross direct foreign investment consisted of reinvested earnings, and these simply represented foreign claims on investible surplus generated within Ethiopia rather than any transfer of real resources from abroad. Second, a proportion of the reported figure is accounted for by the capitalized value of equipment and know-how supplied from abroad. The reported value of these productive factors often bears but a tenuous relationship with their true value because of the possibility of over-invoicing. Third, the figures show gross inflows, i.e. they do not allow for the outflow of resources from Ethiopia through remittances, both direct and indirect.

C. Foreign control of manufacturing firms and foreign penetration of manufacturing industries in Ethiopia

87. The preceding section discussed foreign investment from the point of view of the net contribution it may make to the availability of resources (capital and technology) in Ethiopia.2/ However, direct foreign investment has another and equally important aspect. That aspect is the degree of control over individual firms, and (at an aggregate level) over individual industries, which is established through the equity ownership obtained on the basis of the declared value of the original foreign investment.

1. Foreign control over manufacturing industries in Ethiopia

88. The annual flows of reported foreign investment during the period 1950-1969 in part gave rise, in each year, to foreign claims on the ownership of equity in manufacturing industries in Ethiopia. By the year 1969/70, as shown in Table 6, the stock of paid-up-capital in the manufacturing sector in Ethiopia amounted to E $ 323 million. Of this the most important single element was the foreign holding, which accounted for 43 per cent of the total, followed by Ethiopian Government holding of 38 per cent. Moreover, the figures for foreign equity holding underestimated the effective foreign share in equity since in certain cases equity holding classified as "Ethiopian private", in fact represented holding by foreign-controlled firms registered in Ethiopia and treated for statistical purposes as "Ethiopian private".

89. The aggregate figures given above for foreign equity ownership in the manufacturing sector are a poor indicator of the true extent of foreign control in the sector. A proper assessment of this control requires, as a minimum, consideration of the number of sectors where foreign equity is dominant, the character of the industries in which foreign equity holding predominates (i.e. whether these sectors tend to be "traditional" or "modern"), the extent of foreign equity holding at the individual firm level ("majority" or "minority"), and the degree of diversity in the origin, both by foreign country and foreign firm, of capital and technology. The relevant information on the first two of these points is given in Table 7 - the third point is examined later in this section and the fourth in a subsequent section of this chapter.

1/ For a detailed discussion see Chapter VI of the present study.

2/ Some of these claims had their origin in years prior to 1950.

Table 5

Share of private long-term capital (foreign) in manufacturing and mining sectors

Year	Inflow of private long-term capital (foreign)			Gross fixed capital formation in manufacturing and mining	(3) as per cent of (4)
	Direct foreign investment	Loans	Total		
	(1)	(2)	(3)	(4)	(5)
	Eth. $ millions				Per cent
1950	..	..	4.4	..	..
1951	..	..	4.6	..	..
1952	..	..	19.3	..	..
1953	..	..	15.5	..	..
1954	..	..	9.1	..	..
1955	..	..	17.1	..	..
1956	..	..	13.6	..	..
1957	..	..	4.2	..	..
1958	..	..	13.1	..	..
1959	..	..	8.6	..	..
1960	..	..	19.9	..	..
1961	..	..	22.4	39.0	57
1962	..	..	29.9	42.0	69
1963	29.4	2.3	31.7	46.1	69
1964	30.5	-	30.5	55.8	55
1965	27.4	-	27.4	80.5	34
1966	27.4	1.1	28.5	77.1	37
1967	7.8	4.9	12.7	95.4	13
1968	14.8	8.8	23.6	113.6	21
1969	6.7	7.3	14.0	106.5	13

Sources: Inflow of foreign capital from 1950-62 from Stanford Research Institute, "Industrial Investment Climate in Ethiopia", Report No. 2. July 1968, page 90. Data on inflows from 1963-69 from Quarterly Bulletin, National Bank of Ethiopia, No. 32 (91), March 1972, page 59. Data on gross fixed capital formation in manufacturing and mining from National Bank, Ethiopia.

Table 6

Foreign and Ethiopian shares in paid-up-capital in all firms in the manufacturing sector, 1969/1970

Ownership	Value of paid-up capital (1)	Percentage share (2)
	E$ million	Per cent
Ethiopian:	184.3	57
Public	124.5	38
Private	59.9	19
Foreign	138.3	43
Total	322.6	100

Source: Table 7.

90. Table 7 shows that foreign equity holding has a dominant position (i.e. more than 50 per cent equity holding) in as many as 23 of the 34 branches. In fact, in ten manufacturing branches the foreign participation accounted for as much as 80 - 100 per cent; in nine it was between 60 and 79 per cent; and in four it ranged between 50 and 59 per cent.

91. With regard to the second of the characteristics of foreign control mentioned above the table shows, as might be expected in view of the evidence in other countries, 1/ that foreign capital and technology seemed to have concentrated mainly in modern manufacturing, particularly in those branches which were among the more dynamic and technology-intensive in the sector. Branches such as fabricated metal products; basic metal industries; textiles (the largest single branch in manufacturing in Ethiopia); food products; and several branches of the chemicals industry, were dominated by foreign firms. By contrast the majority of branches where Ethiopian capital was dominant were among the more "traditional" ones in the sector. At least six of the eleven branches were of this kind - tobacco, beverages, paper products, printing, cement, and grain milling. Of the remaining five, which corresponded to "modern" manufacturing, Ethiopians had a marginal majority in three and a significant majority in only two branches. 2/

1/ See Constantine Vaitsos, "Foreign investment policies and development in Latin America", Journal of World Trade Law, vol. 7, No. 6, Nov.:Dec. 1973, op.cit.

2/ Ethiopians also had significant capital committed in sugar processing and a branch of textiles, although in both these branches foreign capital still retained a majority.

Table 7: Distribution of foreign and Ethiopian capital by manufacturing branch, 1969/1970

	Manufacturing branch	No. of establishments	Value of paid-up capital					Foreign share in paid-up capital (4) ÷ (5)
			Ethiopian			Foreign	Total	
			Private (1)	Public (2)	Sub-Total (3)	(4)	(5)	(6)
			E $ thousand					Per cent
	Fabricated metal products							
1	Electrical machinery	2	-	-	-	700	700	100
2	Structural metal products	4	35	-	35	720	755	96
3	Fabricated metal products	3	211	-	211	2,930	3,141	93
4	Cutlery, hand tools, etc.	4	660	-	660	1,430	2,090	68
5	Basic metal industries	3	1,173	419	2,150	4,450	6,600	67
	Leather and shoe							
6	Tanneries and leather	7	160	-	160	2,240	2,400	93
7	Footwear	6	595	-	595	2,352	2,947	80
	Wood products							
8	Sawmills, etc.	18	1,897	-	1,897	1,968	3,864	51
9	Furniture and fixtures	7	89	-	89	1,388	1,477	94
	Textiles							
10	Knitting mills	11	1,112	-	1,112	3,737	4,848	77
11	Furnished textile goods	3	1,319	-	1,319	3,231	4,550	71
12	Wearing apparel	4	520	-	520	1,021	1,541	66
13	Spinning and weaving textiles	15	10,807	18,134	28,941	37,658	66,600	57
	Food products							
14	Dairy products	2	162	-	162	2,105	2,266	93
15	Miscell. food products	4	806	-	806	7,958	8,764	91
16	Sugar processing	4	11,905	7,269	19,174	30,368	49,542	61
17	Meat canning	13	1,450	1,000	2,450	3,377	5,827	58
18	Vegetable and animal oils	19	2,144	-	2,144	2,014	4,158	48
19	Grain milling and bakery	30	5,506	200	5,706	3,136	8,842	35
	Chemicals							
20	Plastic products	6	362	-	362	2,628	2,990	88
21	Paints and varnishes	3	382	-	382	568	950	60
22	Soaps, cosmetics, perfumes	4	749	-	749	1,301	2,050	63
23	Other chemical products	2	-	450	450	650	1,100	59
24	Pharmaceuticals	1	..	..	..	..	..	49
25	Basic industrial chemicals	4	570	-	570	505	1,075	47
26	Rubber products	5	343	3,957	4,300	615	4,915	13
27	Petroleum refining	1	-	54,642	54,642	-	54,642	-
	Non-metallic products							
28	Glass and glass products	4	300	-	300	2,700	3,001	90
29	Structure, clay products	6	382	-	382	738	1,120	66
30	Cement lime and plastic	7	2,560	14,100	16,600	5,142	21,802	24
31	Other non-metallic products	11	589	4,943	5,532	1,976	7,507	26
32	Beverage	28	9,546	5,445	14,991	4,505	19,497	23
33	Printing and paper products	20	2,980	9,603	12,582	4,183	16,766	25
34	Tobacco	2	-	4,311	4,311	-	4,311	-
	Total manufacturing	263	59,872	124,473	184,345	138,293	322,639	43

Source: Annual Survey of Manufacturing Industry for 1969/70, Ministry of Commerce, Industry and Tourism.

2. Foreign control of manufacturing firms

92. The preceding sub-section provided information on the degree of foreign control in 34 branches of manufacturing industry in Ethiopia. However, since negotiations and bargaining about foreign technology are conducted at the level of industrial firms, it is essential to examine the structure of ownership of these firms, determined through bargaining with the Ethiopian Government or with Ethiopian entrepreneurs. The significance of analysis at the firm level was especially pronounced in the Ethiopian context because the manufacturing sector was dominated by rather a small number of firms. In fact, there were only 37 firms in the sector which, in 1969/70, recorded value added of E $1 million or more.1/ About 14 other firms either were subsidiaries of foreign firms or had contractual arrangements with such firms. These 51 firms constituted the "hard core" of manufacturing in Ethiopia and, as shown in Table 8, they alone, although constituting only 11 per cent of the total number of firms in the sector, accounted for 80 per cent of paid-up-capital, over 76 per cent of value added and 69 per cent of employment in the sector as a whole. Consequently, it was the ownership structure of these few firms that was of critical importance for the evaluation of foreign control.2/

93. The characteristics of ownership of 51 major firms as shown in Table 8 may be summarized as follows. First, in as many as 29 firms foreigners had an outright majority of the equity (i.e. 51 per cent or more), in another four they had 50 per cent,

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1/ This information was obtained from the Annual Survey of Manufacturing Industry 1969/70, Ministry of Commerce, Industry and Tourism.

2/ In Ethiopia the corporate manufacturing sector (which is the subject of analysis in this study) and small-scale industries accounted for 5 per cent of GDP each in 1969/70. However, little was known of the state and composition of small-scale industries. The latter were usually located in households and small workshops employing fewer than five persons and depending mostly on own or family labour. Manual skills rather than machines seemed to have played the predominant role in these establishments. Almost in their totality they have remained isolated from foreign technology or capital. With respect to the corporate manufacturing sector, the Annual Survey of Manufacturing Industry, 1969/70, covered 479 establishments. Like the small-scale industries, most of these enterprises were also small or very small in size, and employed simple technology which in most cases did not necessitate any formal contractual arrangements with technology suppliers. Furthermore, most of them were known to have been owned and operated by the foreign residents in Ethiopia.

Table 8

Ownership pattern of a sample of 51 major firms in the manufacturing sector 1969/1970

Forms of Ownership	No. of firms	Paid-up capital[a] (1)	Value added (2)	Employment (3)	Per cent share: Paid-up capital (4)	Per cent share: Value added (5)	Per cent share: Employment (6)
		E $ million		No.'000	Per cent		
A. 51 per cent and over foreign:	29	122.7[b]	97.3[c]	18.1	38	41	37
B. 50 per cent foreign:	4	36.3	32.7	7.4	11	14	14
C. Minority foreign:	5	3.9[d]	2.7[e]	1.1	1	2	2
D. Wholly Ethiopian:	10	97.0	33.8	5.9	30	15	12
Private	2	2.3	3.0	0.5	1	2	2
Public	8	94.7	30.8	5.4	29	13	10
E. Unspecified	3	..	11.2	1.0	..	5	2
Sample total	51	259.9	177.7	33.6	80	76	69
Total manufacturing sector	479[f]	322.6[g]	234.9	49.4	100	100	100

Source: Annual Survey of Manufacturing Industry 1969/70: Ministry of Commerce, Industry and Tourism.

a/ This refers to the total of both foreign and Ethiopian capital.

b/ Data on three firms not available

c/ " " eight " " "

d/ " " one firm " "

e/ " " two firms " "

f/ Refers to number of establishments.

g/ Refers to paid-up capital in 263 establishments.

and in five firms foreign participation was below 50 per cent.1/ Even in those cases where foreign equity holding was less than 50 per cent, there may still have been effective control by foreigners because, foreign equity represented a single block vote and because, as shown in Chapter IV below, such shareholding was always combined with management contracts. In brief, 38 of the 51 major firms in manufacturing in Ethiopia were either foreign-owned, or foreign-managed, or both; these firms, moreover, accounted for 75 per cent of the value added by the sample firms and for 57 per cent of the value added in the whole of manufacturing in Ethiopia.

94. Second, only ten of the 51 firms were wholly Ethiopian and of these eight were in the public sector. In view of the particular manufacturing branches in which they operated these firms had substantially lower ratios of value added to paid-up-capital than firms with foreign participation. When these Ethiopian firms were weighted in terms of their share in paid-up-capital they accounted for 30 per cent, although their share in value added was only 15 per cent. Thus, measures of foreign control based on paid-up-capital alone tended to exaggerate the importance of wholly Ethiopian enterprises in the sector.

95. The analysis suggests that the manufacturing sector in Ethiopia displays several of the characteristics of an enclave within the Ethiopian economy as a whole.2/ To begin with, foreign ownership of technology and management have led to foreign-controlled firms securing a dominant position in the sector. Domestic enterprises have, therefore, been confined to a relatively minor role in the sector, and their growth, both in terms of numbers of firms and in terms of share of output, has

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1/ The detailed frequency distribution of foreign equity holding was as follows:

Per cent of foreign equity	Number of firms
100	9
80 - 99	9
51 - 79	10
Not available but known to be 51 per cent or more	1
50	4
40 - 49	3
30 - 39	2
Total	38

2/ An enclave economy, as generally understood, is one in which an important sector of the economy has only a tenuous link with the rest. The reasons for the lack of integration are: (i) foreign control of the sector in question; (ii) expatriation of the surplus generated within the domestic economy; (iii) export of most of the output of the sectors; (iv) use of low-wage domestic labour and land obtained at very low cost. It is this concept which has been extensively employed in the analysis of plantation economies and of economies where extractive industries were important. (See H. Myint "The gains from trade and the backward countries", Review of Economic Studies, vol. 22, June 1955, pages 129-142). The sense in which the term is used in the present study differs from the above in that here it refers to the manufacturing sector, and, in Ethiopia little of the manufacturing output is exported.

been inhibited. A related characteristic of the enclave structure was that both the size and the distribution of the investible surplus generated within the sector was determined, for the most part, by the foreign-controlled firms (this point will be discussed in detail in Chapter VI).1/ In addition, not only was the relationship between the foreign enclave and the remainder of the sector marked by the characteristics described, but the enclave itself had some significant features which are discussed in the following section.

D. Characteristics of the foreign enclave

96. Owing to Ethiopia's position as a least developed country the types of technology transferred have had two principal features. First, such technology was already widely dispersed in the world economy before its introduction into Ethiopia; and secondly, such technology had a long history (i.e. had been in use for several years) and, therefore, tended to be non-proprietary and easily transmissible. Because these processes were old, widely known and widely dispersed in the world economy, other countries whose productive forces developed more rapidly than Ethiopia's have been in a position to provide the necessary technology and managerial skills.2/ Thus the technology and managerial skill imported in Ethiopia have an intermediate character not only with regard to the type of technology but also in the sense that a number of the countries of origin of the skill and technology are intermediate.3/

97. Table 9 shows, in striking fashion, how diverse are the countries of origin of those firms which have supplied capital, technology and management to Ethiopia, or through which these elements have been transmitted. However, of the eleven sources of technology and management, four (Netherlands, Japanese, Indian and Italian)

1/ See Hans W. Singer, "The distribution of gains between investing and borrowing countries", American Economic Review, Papers and Proceedings, Vol. 40, 1950, and Sven Lindqvist, The Shadow: Latin America Faces the Seventies, Penguin Books, London 1972.

2/ One of the points brought out by a "product cycle" approach is that older processes are more easily decentralized and it is products produced by older processes which are commonly those consumed by Ethiopians. For a discussion of a "produce cycle" view of international trade and investment, see Raymond Vernon, "International investments and international trade in the product cycle", Quarterly Journal of Economics, Vol. 80. 1966 pages 190-207, and R. Stobaugh, The International Transfer of Technology in the Establishment of the Petrochemical Industry in Developing Countries. (United Nations Institute for Training and Research (UNITAR) research report, No. 12).

3/ In terms of the absolute size of the manufacturing sector.

Table 9

Ownership of equity, by origin of equity holder, in a sample of firms, 1969/1970

Origin of equity holder	Per cent of equity holding		Total	Value Added	Per cent share in value added
	51% or over (1)	50% or less (2)	(3)	(4)	(5)
	Number of firms			E$'000	Per cent
United States	2	-	2	..	
United Kingdom	2	-	2	2,054	2
Netherlands	2	-	2	37,406[a/]	28
French	2	-	2	4,625	3
Scandinavian	2	-	2	564	
Israeli	1	1	2	755[a/]	1
Japanese	1	3	4	25,515[a/]	19
Indian (Asian-African)	2	2	4	11,996[b/]	9
Italian	8[c/]	3[d/]	11	36,823	28
Greek	2[d/]	-	2	4,408	3
Lebanese	2[e/]	-	2	1,040	1
Mixed	3	-	3	8,226	6
Sample total	29	9	38	133,412	100

Source: Replies to questionnaire and data obtained from the Annual Survey of Manufacturing Industry 1969/70: Ministry of Commerce, Industry and Tourism.

a/ Data for one firm not available.

b/ Data for two firms not available.

c/ At least five firms include equity-holding by indigenous expatriates.

d/ All owned by indigenous expatriates.

e/ One firm owned by indigenous expatriate.

together accounted for 84 per cent of the sample value added. Thus those industrial countries, i.e. United States, United Kingdom, France, Germany Federal Republic of, and Switzerland, which are usually found to be major suppliers of capital and technology in other developing countries, would seem to play at most, only a minor role in the transfer of technology to Ethiopia through foreign investment.1/ The 38 foreign-controlled firms mentioned in the table are not all subsidiaries or affiliates of foreign corporations with headquarters abroad. At least eleven of the 38 are owned and managed by expatriates resident in Ethiopia, i.e. Italians, Greeks, and Lebanese. Such firms differ from foreign subsidiaries in that management decisions are taken in Ethiopia, only a small proportion of their operation is outside Ethiopia, and the surplus generated by their operations tends to be reinvested in Ethiopia.

98. There appear to be some clear patterns in the kinds of production in which the firms from various countries have concentrated their activities and in the importance of majority ownership of equity for each of these firms. First, the firms from the industrialized countries (excluding Italy and Japan) have tended to concentrate in primary processing 2/ rather than import-substituting activities, and in all cases these firms have majority foreign control. Second, the firms from India, Israel, Italy (excluding expatriate-owned firms) and Japan have tended to concentrate on import-substituting activities especially textiles. In contrast to the firms in the preceding group, these firms are not all predominantly foreign-owned, e.g. in six of the ten firms in the sample which are of Israeli, Japanese and Indian origin the foreign equity holding is 50 per cent or less. Third, so far as expatriate-owned firms were concerned their principal activities have been in textiles, primary processing and chemicals, and in most cases indigenous expatriates have retained the majority interest.

1/ See Constantine Vaitsos, Journal of World Trade Law, Nov.:Dec. 1973, op.cit. and the following UNCTAD documents:

"Major issues in transfer of technology to developing countries: a study by the UNCTAD secretariat", (TD/B/AC.11/10/Rev.1);
"Major issues ..... a case study of Spain", (TD/B/AC.11/17) and
"Major issues ..... a case study of Chile", (TD/B/AC.11/20).

2/ For example, sugar processing, leather tanning, spice extraction and salt production.

CHAPTER IV

CONTRACTUAL ARRANGEMENTS FOR THE TRANSFER OF TECHNOLOGY

A. The role of contractual arrangements in the Ethiopian context

99. The principal ways in which technology has been supplied to developing countries have been through direct foreign investment, contractual arrangements of various kinds, and direct sales of machinery: these ways have been used either singly or in combination according to circumstances. In the Ethiopian context, as has been shown in Chapter III, direct foreign investment has constituted the most important means by which technology has been supplied. The role of contractual arrangements has been closely linked with and even dependent upon the existence of foreign equity participation.

100. Unlike the situation in other developing countries, in Ethiopia licensing contracts for the purchase or lease of patented know-how have been of relatively little significance. 1/ The dominant type of contractual agreement has been the management contract. The reasons for this pattern have already been mentioned in Chapter III. That is to say, there were few domestic firms in Ethiopia in a position to negotiate for technology under licence, and much of the technology supplied has been of a non-proprietary type. In the latter case, management contracts have often provided a convenient way for the technology supplier of securing effective control.

101. The subsequent sections of this chapter deal, in turn, with management contracts, licence contracts, and the role of foreign machine suppliers. All of the data in this chapter, except where otherwise stated, refer to the sample of 51 major firms in the Ethiopian manufacturing sector.

B. Management contracts

102. Of the 51 major firms in Ethiopian manufacturing, 28 had contractual arrangements of one kind or another with their parent company or other enterprises located abroad. 2/ Twenty-one of the 28 firms which do have contracts were foreign subsidiaries; in contrast, of the 23 firms which did not have such contractual arrangements were foreign subsidiaries. The majority were firms owned without ties, and these firms obtained embodied technology from only one or two machine suppliers.

103. Of the 28 firms with some kind of contractual arrangements as many as 18 had management contracts. In a few of these cases management contracts were mixed with other types of contracts, particularly marketing arrangements. 3/ The Ethiopian case differs from that of countries hitherto studied in regard to the transfer of technology in that only a few firms from the "well known" countries of origin, i.e. United States, United Kingdom, Germany, Federal Republic of, France and Switzerland, entered into management contracts - in Ethiopia the principal sources of management contracts were India and Japan.

1/ See document TD/B/AC.11/10/Rev.1.

2/ Figures given in paras. 102 and 103 derived from UNCTAD research.

3/ In some cases contracts of different types had elements common to management contracts but most of these have been excluded from the present analysis.

1. Management contracts and equity holding

104. The 18 firms with management contracts - these accounted for 51 per cent of value added in manufacturing - are arranged in table 10 together with the 51 major firms in that sector, according to the extent of foreign equity holding. The table shows that in firms where foreign equity holding was 50 per cent or less, the frequency with which management contracts occurred was much greater than in the other categories.

105. There seem to be three main reasons for the apparent inverse relationship between the frequency of management contracts and the extent of equity acquired by the foreign firms. First, to some extent the Government has thought it desirable to insist on some commitment in the form of an equity investment on the part of the management contractor as an insurance against possible inadequacies in the contractors' fulfilment of the bargain. 1/

106. The second reason is related to the characteristics of firms which have entered into management contracts in Ethiopia. A majority of these firms were small and had their origin mainly in countries at an intermediate stage of industrial development. 2/ There may be a tendency for such firms to prefer, as they have done in Ethiopia, arrangements which minimize capital commitments and instead exercise control through management.

Table 10

The relationship between management contracts and foreign equity holding

Ownership pattern	Number of firms	
	In the sample	With management contract
1. 51-100 per cent foreign	29	10[a/]
2. 50 per cent or less foreign	9	7[a/b/]
3. Wholly Ethiopian	10	1
4. Unspecified	3	-
Sample total	51	18 35%
Manufacturing value added (E$ 000)	178	90[c/] 51%

Source: Annual Survey of Manufacturing Industry, 1969/70, Ministry of Commerce, Industry and Tourism, and research by the UNCTAD secretariat.

a/ Includes one firm with consultancy contract.

b/ Includes one joint-venture agreement which was found to be very similar to a management contract.

c/ Information for seven firms could not be obtained.

1/ For a better understanding of this point, see section D of the present Chapter.

2/ Japan is, of course, the exception to this generalization.

107. A third reason for acquiring an equity stake may be the desire of the contractor to want a measure of formal control in order to reinforce his management control. This is particularly so if there is a tendency for the extent of the contractor's control to diminish gradually. Gabriel 1/ has commented on this point in his study of management contracts. He suggests that the bargaining power of the management contractor weakens over time; in the cases he studied he found that in the contract extensions the contractors' management authority was curtailed, restrictions were placed on the flexibility of their operation and there were more conditions regarding specific performance. In Ethiopia, the management contractors with initial minority equity stakes appear concerned to prevent such erosion of their bargaining power. In the case of three out of 11 contracts with firms in which they had minority holdings the contractors increased their shares; in fact, as mentioned earlier, in two of these cases a minority was converted into a majority equity holding. Furthermore, a manager of one other firm indicated in an interview that his group was considering increasing its equity control in order to circumvent excessive interference in management from other shareholders (50 per cent of shares in this firm were held by Ethiopians).

2. The terms and conditions in management contracts

108. The considerations influencing the decisions of a management contractor tend to differ significantly from those influencing a licensor, and for this reason the kinds of contractual terms and conditions which are sought by a management contractor are not always the same as those sought by the licensor. There are two important respects in which the management contractor is concerned with issues somewhat outside the scope of the licensor's normal preoccupations. First, by its very nature, the work of the management contractor involves him in the day-to-day decisions of the firm in which his services are being used. Secondly, in general, the management contractor exercises control over a wider spectrum of decisions taken at the firm level. 2/

109. Table 11 sets out the terms and conditions which were found in the 20 contracts examined. The table would appear to have two main features. First, the large number of clauses connected with the human skill factor in production, i.e. clauses concerned with the degree of control exercised by management, clauses giving the management contractor the right to appoint the managing director, clauses affecting the employment of technical and professional staff, and clauses regarding training. Within the clauses concerning control areas in management, conditions affecting overall management were the most prevalent, occurring in 17 of the 20 contracts.

110. Second, the tie-in clauses found in these contracts refer mainly to tied purchases of intermediate inputs, particularly of machinery. Explicit tie-in clauses regarding the purchase of intermediate inputs seem to have occurred mainly in contracts involving Japanese firms.

111. The available evidence seems to suggest that few of these contracts specify arbitration procedures.

1/ See P.P. Gabriel, The International Transfer of Corporate Skills, Harvard Graduate School of Business Administration, 1967.

2/ It may happen that a licence contract includes such stringent restrictions on the decision-making freedom of the licencee that the scope for major decision-making within the firm is thereafter effectively removed.

3. Duration of contracts and forms of payments

112. Many of the management contractors in Ethiopia appear to have maintained their initial bargaining advantages through contracts of long duration (see table 12). Of the 12 contracts on which information was available, only one contract was for three years; in contrast, nine were for 10 years or more. In fact, in two cases contractors who had entered into long contracts in the first place renegotiated their contracts before the terminal date for further long periods, to perpetuate their control over management decisions in exchange for some concessions on training, sales and imports. None of the contractors seems to have shown any interest in training Ethiopians to take over such key managerial and technical functions.

113. This discussion suggests that management contractors in Ethiopia commonly start with a minority holding in the client company - the exceptions being primary processing industries - financed either from part of the contractor's initial machinery sales or through the capitalization of know-how. They then build up their equity stakes to counterbalance the erosion of control and/or the loss of opportunities for hidden profit appropriation, financing the increase from funds generated in Ethiopia. The erosion of control is also checked through management contracts of long duration, which serve the additional purpose of providing the contractors with an alternative means of remitting profits abroad.

Table 11

Terms and conditions occurring in management contracts

Elements in management contracts	Total
1. Control areas in management:	
(a) Overall management (o.m.)	17
(b) o.m. excluding finance and accounting	2
(c) purchase of machinery and intermediate inputs	1
2. Managing director appointed by the contractor	13
3. Limitations on employment of technical and professional staff	(6)
4. Tie-in arrangements	
(a) intermediate input	8
(b) machinery	14
5. Provisions for training and Ethiopianization	(9)
6. Responsibility for engineering and feasibility studies with contractor	(12)
7. Arbitration according to ICC rules in a foreign country	(3)
8. Total number of contracts	(20)

Source: As for table 12.

Note: Figures in brackets indicate inadequate information on some contracts.

Table 12

Duration of management contracts

Contract duration (years)	Number of contracts
Unlimited	4
10-20 years	5
8 years	2
3 years	1
TOTAL	12

Source: Information obtained on the basis of research undertaken by the UNCTAD secretariat.

114. The direct payments for management contracts have been of two types, namely lump-sums and a proportion of net profit on sales; in some cases both have been used. Particulars of the form of payment and the amounts involved are given in table 13.

Table 13

Terms of payment in management contracts (per year)

Firms[a/]	Terms of Payment				
	Fixed sum in E $ (1)		Proportion of		
			Net profits (2) Per cent		Sales (3)
A	37,510		-		-
B	-		10		-
C (i)	30,000		-		-
" (ii)	25,000	or	-		4.0
D	30,000	+	10		-
E	43,000		-		-
F (i)	-		7.5		-
" (ii)	-		8.0		-
G (i)	30,000	+	8.0		-
" (ii)	30,000	+	8.0		-
H	-		10.0		-
I	30,000	or	5.0		-
J (i)	-		-		2.5
" (ii)	300,000	or	10.0	or	2.5
K	65,000		-		-
L	30,000		-		-
M	...		...		...
N	None		None		None
O	None		None		None
P	...		...		...

Source: As for table 12.

a/ The letters have been used to indicate names of firms.

C. Licence contracts

115. Only six of the sample of 51 Ethiopian firms had acquired technology under licence up to 1970-1971. Data concerning the number, date and duration of the licence contracts of these six firms are summarized in table 14.

116. The table shows that not only is the number of Ethiopian firms with licence contracts small but also that these contracts are few in number. Five of the six firms have one licence contract each; for the sixth firm, while precise data on the number of contracts are not available, it is known that by 1970/71 it had entered into several licence agreements with different technology suppliers. 1/ The five contracts are all post-1958, i.e. fairly recent in origin. In effect, all of them do not specify a fixed terminal date, since three of the five are of unlimited duration and the other two are renewable.

117. The licence contracts examined were of four types, namely: franchise, know-how, joint-production and patent agreements; as shown in table 15 all of them related to import-substituting industries, i.e. soft drinks, paints and varnishes, textiles and pharmaceuticals.

118. The two franchise agreements have essentially involved the lease of brand names of internationally known products (Pepsi-Cola and Coca-Cola) to Ethiopian firms. The owners of brand names (franchisors) in both cases took no share in the equity nor did they stipulate any other specific form of payment. Their main interest was in setting up an outlet which would use their branded inputs. The franchisees (Ethiopian firms) have been tied to the international franchisors for the purchase of intermediate inputs through explicit clauses in contracts for as long as they use the brand name in the final output. The prices of the inputs appear to have been set according to the sales price of the final product in Ethiopia rather than on a cost basis.

Table 14

Number and duration of licence contracts for six firms

Firm	Number of contracts (1)	Date of agreement (2)	Contract duration (3)
A	1	1959	unlimited
B	1	1965	unlimited
C	1	1967	10 years (renewable)
D	1	1969	unlimited
E	1	1970	10 years (renewable)
F	(several)	"	"

Source: Research by the UNCTAD secretariat based on information made available by the Ministry of Commerce, Industry and Tourism, and by individual firms in interviews.

1/ This information was obtained through interview.

Table 15

Terms and conditions occurring in licence contracts

Characteristics	Franchise	Type of licence agreements		Joint production agreements	Number of cases
		Know-how	Patents		
	(1)	(2)	(3)	(4)	(5)	(6)
1. Industrial branch	Beverage	Paints	Textiles	Pharms. (1)	Pharms. (1)	
2. Number of contracts	2	2	1	(several)	(several)	7
3. Duration of contracts:						
(a) unlimited	yes (2)	yes (1)	-	n.a.	-	3
(b) 10 years renewable	-	yes (1)	yes (1)	n.a.	-	2
(c) 5 to 10 years	-	-	-	n.a.	yes (1)	1
4. Majority equity holding by technology supplier	-	yes (2)	-	-	-	2
5. Forms of payment:						
(a) royalty	-	yes (2)	yes (1)	n.a.	-	3
(b) profit sharing	-	-	-	n.a.	yes (1)	1
(c) included in sales price of intermediate goods	yes (2)	-	-	n.a.	-	2
6. Tying of intermediate imports	yes (2)	yes (2)	-	yes (1)	yes (1)	6
7. Export restrictions	yes (2)	yes (2)	-	yes (1)	-	5
8. Limitations on:						
(a) management and operations	-	yes (2)	-	-	yes (1)	3
(b) sales and marketing	-	yes (2)	-	-	yes (1)	3
(c) appointment of managing director and tech. manager	-	yes (2)	-	-	-	2
9. Quality control by tech.s.	yes (2)	yes (2)	yes (1)	yes (1)	yes (1)	7
10. Arbitration according to ICC rules in mother country	n.a.	yes (2)	yes (1)	n.a.	n.a.	3
11. Research and development:						
(a) no provisions	yes (2)	-	yes (1)	n.a.	yes (1)	4
12. (b) R and D for Ethiopia in the mother company abroad	-	yes (2)	-	n.a.	-	2

Source: As for table 12.

119. There were two cases of licence agreements in which the technology transferred, though simple, has been packaged in nature 1/ and in which the comparative advantage of the licensors seemed to rest on the differentiated nature of their products (paints). Their main concern appeared to be the retention of control over the Ethiopian market which they had previously served through exports and which had been threatened with competition from domestic and foreign firms as a result of the imposition of import tariffs on similar products by the Ethiopian Government. Consequently, this control was acquired directly through the acquisition of a majority equity shareholding in licensee firms and indirectly through licence agreements which formalized the managerial and marketing control of the licensors over the affiliates as well as ensured the tying of intermediate inputs. Licence agreements were employed also to justify the charging of royalties (royalty rate of 2½ per cent of net sales after tax) for financing R & D expenditure by the parent company. 2/

120. While the two franchise agreements, mentioned earlier, have been similar in almost every respect. 3/ the case of the patent agreements in textiles and pharmaceuticals is different. The only common element between the two seems to be that they both involved purchase of the right to patented products. In the case of the textile patent, the patentor was mainly interested in ensuring that he obtained a return which would not be less than a certain minimum amount and that this return would be maintained for a minimum number of years. Hence the two significant clauses included in the contract stipulated a royalty payment of at least E $12,500 per year (US$ 5,000) or 1½ per cent of gross production, whichever was the greater, for a minimum period of 10 years. For that reason there are also no tie-in or export restriction clauses. Patentors in the pharmaceutical branch, on the other hand, seem to conform in their behaviour more to the two international franchisors than to the patentor in the textiles branch. Like the former they have been mainly interested in the sale of inputs for their patented products and this has been assured through the insertion of explicit tie-in clauses in contracts. The question of royalties or other explicit forms of payment has consequently not arisen in most of these cases.

121. The fourth type of licence contract has involved a joint-production agreement, also in the pharmaceutical branch. Unlike the previous cases, this agreement represents a more packaged form of transfer consisting of patented product and process know-how, technical assistance and management skills. One alternative for the licensor would have been to supply the package in return for a fee or royalty payments. However, in this particular case the expected rate of return of the licensor seemed to be critically dependent on the efficient functioning of the plant in Ethiopia and on sales maximization, neither of which could be guaranteed under Ethiopian control. Thus the licensor has been mainly interested in acquiring direct control over management and over sales and marketing of the patented product in Ethiopia. Moreover, this control

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1/ The package consisted of patented products and processes, manufacturing instructions, technical advice, new inventions, raw materials and the use of their brand names.

2/ "Royalty proceeds make it possible to build up R & D laboratories of a size enabling us to compete with the large foreign paint groups". Extract from report of the chairman of the board to the shareholders at the Annual General Meeting of Sadolia Paints Ltd., March 1970.

3/ The main reason was that the two franchise agreements related to the same industrial branch in which the two international franchisors are close competitors and therefore cannot determine individually the terms and conditions independently of each other's reactions.

was also considered necessary by the licensor for ensuring that the demand for the intermediate inputs supplied by him was maintained at a particular level. Consequently, a joint-production agreement with explicit clauses reflecting these various concerns of the licensor was employed which also ensured for the licensor a stake in the firm's profits through a profit-sharing arrangement that was justified by the degree of the licensor's participation in the operation of the Ethiopian firms.

122. A detailed analysis of the terms and conditions of the licence agreements examined reveals (see table 15) seven principal features. First, in only two of seven cases did the licensor acquire any equity interest in the licencee enterprises; in the remaining five instances the areas of foreign control were specified through various contractual clauses.

123. Second, payments for know-how transferred under licence have been specified in three different forms, viz., royalties, tied purchases of intermediate inputs and profit sharing. In the case of the royalty payment, it was explicitly stated in one contract that the royalty rate could be increased arbitrarily by the licensor at any time he considered necessary. The "tied" purchases of intermediate inputs were to be made at prices fixed in relation to the selling price of final output rather than on a cost price basis.

124. Third, there were two kinds of restrictive clauses which occurred frequently and which, according to some of the firms interviewed, constituted the most serious problems encountered by them in their use of foreign technology. These were the tying of intermediate inputs, and export restriction clauses, both of which occurred in six out of seven instances. In four of these there was a total prohibition on exports, whereas in one case exports were allowed only to neighbouring territories.

125. One pharmaceutical firm in Ethiopia stated in an interview that as regards certain lines of production it had both the competitive-cost and geographical advantages that would enable it to export to other African markets, but that it was prevented from exploiting these advantages because of restrictions on exports. 1/

126. Fourthly, among other limitations explicitly specified in licence contracts, in three cases it was stated that the licensor would exercise complete control over management, sales and marketing operations of firms. In the context of management control, specific references were made to control over accounts and information by the licensor. Thus, under one of the contracts examined, the licensor "has the right to control, either directly or by a chartered accountant of its own choosing, all work and all bookkeeping matters pertaining to the production and sales of goods produced by the company". In two cases, the appointment of the managing director and of the technical manager was also controlled by the licensor.

127. Fifthly, strict quality control was maintained by the licensor in all cases.

128. Sixth, there has been an almost total absence of provisions for encouraging domestic research and development activity in Ethiopia. Only two contracts made reference to R & D, but in these it was specified that R & D for Ethiopia would be carried out by the parent company for which the subsidiary in Ethiopia would be charged a royalty. Furthermore, one of the two firms also stated in an interview that

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1/ This firm also indicated that in one case, while there was an explicit restriction on exports, it had been able to negotiate with the licensor in a manner such that it was allowed tacitly to export to African markets, provided that it did not use the name of the patentor on its products.

on several occasions results of R & D of an adaptive type undertaken in the firm in Ethiopia were transferred back to the mother company abroad free of charge and became the property of the latter company. 1/

129. Finally, the settlement of disputes which may arise in the operation of licence contracts does not appear to be under Ethiopian jurisdiction. Definite information on judicial procedures in case of complaint was available in the case of three contracts only, and in all three the settlement of disputes was subject to rules established by the International Chamber of Commerce and under its arbitration.

D. Role of foreign machine suppliers

130. Research was undertaken on 12 firms in Ethiopia which were established with the initiative of, or in collaboration with, foreign suppliers of machinery. The 12 firms included four from the sample of 51 major firms which provided the basic data for the earlier sections of this chapter; the remaining ones were selected on a random basis. 2/

131. The key to an understanding of the performance of these firms is that the main interest of the foreign technology supplier was in the sale of machinery and equipment. It was a once-and-for-all interest rather than a desire to establish longer term contractual relationship with enterprises in Ethiopia. The machinery seller therefore had an interest in encouraging the setting up of operations and in influencing the purchasing decision. He had no interest in any subsequent control of the firm, save for the period it took to repay suppliers credits (if any). In these firms, therefore, foreign equity plays a much smaller role than foreign aid. Returns are realized more in the form of the sale of the equipment than in the form of a regular flow of dividends, technical fees or profitable transfer prices.

132. In six of the 12 firms the Ethiopian Government held 100 per cent of the equity. In three others equity was held by Ethiopian private or public interests. In the remaining three there was also some Ethiopian participation, but in conjunction with a participation by the foreign machinery supplier. With the exception of the last three, it was Ethiopian equity which was at stake.

133. The fact that the capital was Ethiopian does not imply that Ethiopians - or particularly the Ethiopian Government - had provided the capital. In at least 10 of the cases all or part of the Government's contribution was funded by foreign public funds. What in effect this meant, however, was that the Government had to fund its equity stake out of future profits which would be transferred to the aid donors as interest and repayment of principal. The risk that there might be no profits was thus borne by the Ethiopian Government.

134. There are several features of the performance and operations of these 12 companies which deserve some comment.

135. The first is that 10 of the companies made continuous losses, and an eleventh recorded losses for most years.

136. The second is that these losses occurred at a time when the firms were being managed or technically assisted by foreigners. Eight of the 10 companies received the

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1/ For an analysis of conditions governing technical improvements see the case study of Spain by the UNCTAD secretariat (TD/B/AC.11/17), paragraphs 75-78.

2/ Two of these are companies in the transport sector.

technical direction or advice from the machinery suppliers or, in the case of one enterprise, from the firm responsible for the original feasibility study and for setting up of the plant. Many of them either would not or could not perform these services. One company whose plant began to be established in 1968 was still not operating four years later. Another, which started production in 1970, made such large losses in the first two years that it was unable to cover even its depreciation provisions. In the case of one company, the machinery supplier and turn-key operator went bankrupt in the United States, leaving the Ethiopian Company without any technical support. In the case of another company the machine suppliers management was found, by the Agricultural and Industrial Development Bank of Ethiopia, to be technically inadequate, and proper cost accounting procedures or overall co-ordination had not been established. In these cases, the machine suppliers' main interest seems to have been in selling the machinery with little regard to the subsequent efficiency of its operation.

137. Third, the performance of firms using machinery purchased from foreign machinery suppliers was adversely affected by both the technical and economic suitability of that equipment and by its price. Six of the 12 sample firms bought machinery which either individually or as a set was unsatisfactory and to two of them machinery was sold which they did not really need.

138. The characteristics of these firms are inter-related. The machinery suppliers secure their outlets by controlling the feasibility study and purchasing contract, by starting up the firm which is to buy the machines, or by offering credit to finance the purchase. Their own financial and technical commitments are usually kept to a minimum. Ethiopian capital bears the main financial risk. The technical advisory input has often gone by default.

139. It must be emphasized that the conclusions of this section are somewhat tentative in character. The majority of the 12 firms dealt with have been established for only a short time, and their losses might be regarded as temporary. Nevertheless, the conclusions point to several problem areas in the negotiation and implementation of arrangements with machinery suppliers.

CHAPTER V

MARKET CONCENTRATION AND CONTRACTUAL ARRANGEMENTS

A. Negotiating strength and monopoly power

140. Many studies on the transfer of technology to developing countries have tended to focus on two sources of monopoly power, viz. equity control and control exercised through clauses occurring in transfer of technology contracts between the supplier enterprise and the user enterprise. This emphasis, however, takes little account of the control that foreign technology suppliers could exercise through arrangements the purpose of which is to secure monopoly power in the market for the final goods. Such arrangements may include Government-granted protection in the form of tax and duty reliefs, tariff protection and, occasionally, franchises.

141. Most technology used in manufacturing in Ethiopia is relatively simple and widely known; hence the prevalence of intermediate economies among the sources of supply of technology to Ethiopia, as well as the paucity of licensing agreements. The monopoly power which these suppliers enjoy springs from government protection, institutional tying, and possibly a certain ignorance on the part of competitors. To put the point differently, in Ethiopia foreign firms have obtained their monopoly position through bargaining over the totality of items affecting their operations and not merely over the less broad range of issues specific to contracts between technology suppliers and technology users. As shown in subsequent sections of this chapter, such bargaining seems to have been quite successful from the point of view of foreign technology suppliers. Among possible reasons for the latter's success it would seem that Ethiopia's position as a least developed country, having a small domestic market and few significant domestically controlled firms, may have been an important factor.

142. The second section of this chapter describes the extent of concentration in domestic production, and the third section discusses the principal forms of protection which major firms, most of which tend to be foreign-owned, have been able to negotiate with the Ethiopian Government. Section D offers a few concluding remarks about some possible implications of concentration in the market for the final goods.

B. The extent of concentration in manufacturing industries

143. The analysis in Chapter III revealed a high concentration of foreign equity ownership in 23 of the 34 branches of Ethiopia's manufacturing industry. Corresponding to this concentration there is a high degree of production concentration in Ethiopian manufacturing. Table 16 shows the results for 1970 of calculations of industrial concentration for 36 branches of Ethiopian manufacturing at the four-digit level. A quarter of the branches have one firm each accounting for more than 50 per cent of sectoral output. A number of other sectors are dominated by duopolies. In 33 of the branches the top three firms accounted for more than 50 per cent of sectoral output, in 26 of them the proportion rose to over two-thirds, and in 15 cases (more than two-fifths of the branches) the top three firms accounted for more than 90 per cent of output in the particular sector. Only in three branches - "grain-milling and baking", "sawmills", and "other non-metallic minerals" - did the top three firms account for less than half the sector's production.

Table 16

Concentration in manufacturing industry in Ethiopia, 1970

Sector	No. of firms	% of output by top firms			
		1st firm	2nd firm	3rd firm	top 3 firms
Slaughtering	15	29	20	15	63
Dairy products	6	26	23	22	71
Oil and fat	29	27	23	9	59
Grain mill and baking	56	10	9	9	28
Sugar and confectionery	9	71	28	-	99
Other food	8	42	37	9	87
Distilling	9	24	22	18	65
Wine	10	49	21	19	88
Malt liquors	3	62	21	17	100
Soft drinks	16	42	17	9	68
Tobacco	2	79	21	-	100
Spinning, weaving and finishing	18	26	17	9	52
Non-wearing textile	5	43	39	17	99
Knitting	20	68	13	13	94
Wearing textiles	5	51	19	16	87
Tanneries	9	39	20	12	72
Footwear (leather)	15	28	23	13	64
Sawmills	54	23	8	6	37
Furniture	19	35	25	21	81
Printing, publishing	29	27	15	9	51
Pulp and paper	9	66	16	5	87
Basic industrial chemicals	5	60	22	9	91
Paints, varnishes	5	43	24	23	91
Soap, perfumes	5	58	20	12	90
Other chemicals	3	71	25	4	100
Petroleum refining	1	100	-	-	100
Other rubber	5	76	16	4	96
Other plastics	9	41	17	13	71
Glass	4	97	3	1	100
Structural clay	20	29	16	9	54
Cement, lime	6	65	31	2	97
Other non-metallic	18	17	13	11	41
Iron and steel	3	44	35	22	100
Cutlery, hardware	5	45	22	16	84
Structural metal	12	42	17	9	67
Other metal goods	7	-	-	-	-
Electrical goods	3	58	33	9	100

Source: Annual Survey of Manufacturing Industry 1969/70, op.cit.

144. These figures suffer from the difficulties common to any calculations of degree of concentration. In some cases the sectoral breakdown fails to take account of cross-elasticities of demand between sectors. In some cases the four-digit breakdown is too aggregated. Each of the top two firms in "other chemicals", for example, had a strong position in its own sector of the market. In spite of these difficulties of quantification, it may be concluded that Ethiopian industry is characterized by a high degree of concentration in most branches.

145. In a country with so narrow an industrial base as Ethiopia the high degree of concentration in domestic production is not surprising. A priori reasoning would suggest that in Ethiopia the strongest competition would be likely to come, not so much from domestic firms as from foreign firms wishing either to set up production facilities in the country or to supply the market through exports.

C. Forms of protection and technology transfer

146. Firms starting operations in Ethiopia have often been able, either through explicit negotiations with the Government or through taking advantage of the existing incentives, to obtain and maintain control of the market for the final goods. The principal ways in which this control has been achieved are described in the following subsections.

1. Tariff protection

147. Recent studies have shown that most of the leading importers of foreign technology in Ethiopia benefit not only from substantial nominal rates of protection but also from high effective rates of protection (that is, protection of the process of production rather than the product, protection of the Ethiopian value added rather than the final product price). Table 17 shows calculations made of the effective rate of protection for 17 products, together with their nominal rates. Just under half of these products are sheltered by effective rates of protection of more than 100 per cent and five of them by rates of over 200 per cent.

TABLE 17

Nominal and effective rates of protection for manufacturing in Ethiopia

Product	Nominal rate	Effective rate
1. Synthetic textiles	67	522
2. Cotton yarn	53	502
3. Galvanised iron sheet	49	435
4. Cotton cloth	54	388
5. Shoes	66	230
6. Ceramic tiles	68	188
7. Men's suits	83	165
8. Soaps	43	126
9. Jute and sisal bags	42	90
10. Soft drinks	40	66
11. Glass bottles	43	63
12. Sugar	41	41
13. Beer	37	37
14. Cement	-5	34
15. Men's shorts	79	31
16. Petroleum	0	0
17. Leather processing	-2	-2

Source: S. Guisinger, "Tariffs and Trade Policies in the Ethiopian Manufacturing Sector", August 1972 (mimeograph), Ministry of Commerce, Industry-Tourism.

148. There would seem to be quite a strong correlation between those industrial branches where effective rates of protection are very high and the branches which are dominated by subsidiaries of foreign firms. This is true of synthetic textiles, cotton yarn, galvanized iron sheets, cotton cloth, and soaps. 1/

149. It has often been pointed out that both nominal and effective rates of protection in Ethiopia are non-uniform. Industries with diverse rates of protection are found in the same sector. There is no general tendency for final goods to benefit from higher rates of protection than intermediate or capital goods. Intermediates, indeed, are sometimes subject to higher duties than the final goods in the production of which they are used - spices and food flavour extracts, for example, or woven textile fabrics and clothing. For these reasons, the tariff structure has been referred to as arbitrary. The data suggest that in one respect it is not arbitrary: most of the large firms producing import-substitutes, particularly the foreign owned ones, succeed in securing for their products high rates of protection. As one official report put it, "It may be conjectured that the degree of protection obtained by the companies was more a result of the individual company bargaining strength and abilities than of any rational policy.". 2/

150. Some individual cases lend support to this view of tariff protection. Leading companies in the sugar industry, cotton textiles, synthetic textiles, drugs, and iron and steel all secured "necessary protection". In the iron and steel industry, for example, a prospective foreign investor made it clear that its home Government would require a letter of intent from the Ethiopian Government promising to give protection and encouragement to the industry as soon as production started. The Ethiopian Government agreed, and evidently interpreted this promise as an undertaking to grant a substantial increase in the nominal tariff. The firm, arguing some time before the concept of "effective rate" of protection became common, insisted that the protection should yield a net difference of 40 per cent between the duty on the imported intermediate and that on the imported final product. Similarly, in one case arising in the chemical industry the Government was persuaded to raise and maintain import duties on competitive products or on the raw materials used in the manufacture of such competitive products at a rate of 15 per cent above the existing level as well as maintaining the current rates of transaction and municipal taxes on such products. The Government also agreed to purchase the firm's local products as long as their price did not exceed by more than 15 per cent the landed price of competing products.

2. Franchise agreements

151. In some cases where the domestic market is large (like that for cotton textiles), where scale economies are slight and/or where the marginal cost of developing a plant in Ethiopia is small, there is a genuine possibility that new firms may enter

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1/ The only exceptions being the foreign firms active in sugar and leather processing, but these firms produce mainly for the export market rather than for the Ethiopian market. Consequently, tariff protection is of relatively minor importance for them.

2/ IBRD, Economic Growth and Prospects in Ethiopia, vol II, 22 September 1970, Section on Manufacturing Industry, page 16.

production. Some firms have accordingly sought a guarantee from the Government against the entry of new firms. HVA (Ethiopia) was granted an exclusive franchise for sugar in 1951, though the Government attempted to break this sole franchise agreement only a year after its conclusion. In the chemical industry, the firm which successfully applied for a concession was promised that in the unlikely event of the Government's deciding to establish further facilities in the same field the concessionnaire would have priority. Originally there had been three applicants for the concession to manufacture the product in question in Ethiopia. Two of the applicants came from the same foreign country, and were forced by their home Government to merge their Ethiopian bid. They did so, linked up with an established expatriate - owned firm in Ethiopia and won the concession. In spite of understandings to the contrary, and even though the new plant had a capacity adequate to meet the demand of the Ethiopian market, the Ethiopian Government granted a license the following year to the original third (a previously unsuccessful applicant) to set up a rival plant.

D. Concluding remarks

152. This chapter has pointed to the importance which foreign technology suppliers appear to have attached to the control of the market for the final goods in Ethiopia. It would seem that they have been successful in negotiating protection, both through tariffs, and, in some cases through franchises, against the establishment of competing firms in Ethiopia as well as against imports. It was not possible, within the context of the present study, to quantify the impact of this control on prices in the market, and accordingly, it has not been possible to estimate the extent to which technology suppliers were able, through their hold on the market for the end products, to increase their share of the surplus generated in the manufacturing sector in Ethiopia. Furthermore, while it seems likely that the existence of foreign monopolies would have inhibited the development of Ethiopian enterprises in the manufacturing sector, it was not possible to investigate this matter in the present study.

CHAPTER VI

THE COST OF FOREIGN TECHNOLOGY IN A LEAST DEVELOPED COUNTRY

A. Scope of the analysis

153. The study has analysed the factors responsible for initiating the growth of a still rather small manufacturing sector in the Ethiopian economy. In the course of this analysis particular emphasis has been given to the role of foreign technology, capital and management, the institutional and policy framework in which these elements have operated, and the terms and conditions established by foreign enterprises for the use of the productive elements over which they have control.

154. The second section of this chapter describes, on the basis of evidence relating to some of the foreign-controlled firms in the manufacturing sector, various ways in which foreign technology suppliers have earned returns on their operations in Ethiopia. In the third section, the available empirical material is used to calculate tentative estimates, using alternative assumptions, of the effective returns to foreign technology suppliers and, therefore, of the foreign exchange costs to the Ethiopian economy. 1/ The final section considers these costs in the context of Ethiopia's position as a least developed country.

B. Elements in the estimation of effective rates of return to foreign technology suppliers

155. Data concerning the profitability of foreign controlled firms in Ethiopia were not generally available. However, figures have been published which made it possible to calculate estimated average earnings on fixed assets for all firms in the sector. 2/ It appeared that average pre-tax returns were approximately 16 per cent in 1969. There could be two objections to using this figure as an approximation to the reported returns actually received by foreign-controlled firms in the manufacturing sector in Ethiopia. On the one hand, taxation would reduce the net rate of reported returns and, for this reason, the 16 per cent might be regarded as an overestimate. On the other hand, the 16 per cent estimate is an average for the manufacturing sector as a whole and therefore includes Ethiopian as well as foreign-controlled firms. The evidence presented in earlier chapters of this study would suggest that foreign firms, in view of their concentration in the more dynamic branches of industry and the high protection and

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1/ An estimate of total social cost would require the consideration of many other factors (as well as an evaluation of the foreign exchange costs in terms of the shadow price of foreign exchange). For a discussion of this question see UNCTAD "Guidelines ....." op.cit.

2/ See Statistical Abstract, 1970, page 55.

generous benefits they obtained, have probably earned higher returns than the average for the sector. For the purpose of calculations in the remainder of this chapter it is assumed that these two factors - the one tending to result in overestimates of reported post-tax returns and the other tending to result in underestimates of such returns - approximately cancel each other out, with the consequence that the reported figure may be taken as a starting point for calculations of effective returns to foreign technology suppliers.

156. There are some reasons, however, why the reported returns cannot be used as an indication of the effective returns obtained by the foreign technology suppliers. 1/ These reasons are discussed in the subsections which follow.

1. Management fees, royalty payments and lump-sum payments

157. The discussion in Chapter IV indicated that several firms had management contracts and some had licence contracts. Firms in Ethiopia involved in these contracts made payments in the form of management fees and royalties. While such payments appeared as cost items on their balance sheets, from the point of view of the technology supplier the payments involved represented returns. Hence any calculations of the total return to technology suppliers should include the amounts recorded under the headings of management or consultancy fees and royalty payments.

2. Valuation of capital

158. There were two main ways in which capital committed by foreign enterprises was overvalued.

159. First, in some cases foreign suppliers overstated the value of capital committed as equity and intermediate inputs (e.g. spare parts) by overpricing technology initially supplied to the new operation. The values assigned to various items of technology could have served as a contribution to equity (investment in kind) or could have been exchanged against equity capital contributed in cash form by the technology supplier. In either case the effect would have been the same.

160. Although several problems are involved in the estimation of initial over-pricing, the evidence that has been collected provides a tentative basis for assessing the extent to which such pricing practices occurred in Ethiopia. The discussion in Chapter IV showed that there were 28 major firms in Ethiopia which had contractual arrangements of one kind or another with foreign technology suppliers (including parent firms), and one or two firms which were wholly-owned subsidiaries of foreign firms but did not have formal contracts. In the majority of these cases, trade in machinery was either an "intra-firm" flow or was tied to specific sources and could, in principle, have been subject to overpricing.

1/ For the classic discussion of this subject see Sven Lindqvist, The Shadow: Latin America Faces the Seventies, Penguin Books 1972, especially pages 240-253 entitled "The Poetry of Figures".

161. The Ethiopian Government did not have an elaborate system for monitoring input prices of this sort, nor was there a general study of the subject. However, different government departments have had occasion to check initial input values in the course of investigating individual firms. In one of the cases examined by the auditors, it was found that the invoices in respect of the plant and equipment were not received from the manufacturer but from the foreign parent firm. Given these circumstances the auditors stated that they were not satisfied as to the accuracy of the values attached to the plant and machinery. In another case, the auditors found that intermediates supplied by the parent were on several occasions more expensive than identical items received from other suppliers. They also found that unit prices appearing in the parent company's invoices were comparatively higher than those shown on invoices sent to the company direct from the manufacturers. In one case which the auditors followed up by way of a test the discrepancy between prices charged by the parent and those charged by other firms was 57 per cent.

162. Second, in some instances the value of capital equipment of foreign branches or subsidiaries was inflated in order to provide a source of nominal funds for increases in share capital. In one case, an independent valuation of the subsidiary's capital expenditure estimated that, at the time when the foreign owned branch was transferred into a subsidiary, such capital expenditure had been inflated by about 43 per cent as compared to a similar plant located elsewhere. Another company in the sample appeared to have revalued some of its fixed assets upwards by more than 30 times without any evident justification.

3. Transfer pricing in trade in commodities

163. Transfer pricing as a means of hidden profit repatriation was of two kinds. In some cases exports to parent or sister companies overseas were under-invoiced and/or intra-firm imports over-invoiced.

164. As far as the first was concerned there was evidence of under-invoicing for a few companies. One of these had aroused the Government's interest because, after a decade of losses amounting to nearly 14 times the original equity contribution, the company wanted to expand its operations. The losses appeared improbable for the additional reason that the price of the commodity in question had shown a steady upward trend in the world market. Accordingly, a study was undertaken which found that, on conservative assumptions, the company was undervaluing its exports by 150 per cent. If the profit/loss figures had been adjusted accordingly, an accumulated loss of 14 times the share capital would have been transformed into a profit of 50 times the share capital in five years. Similar calculations for another exporter of processed primary products suggested an underpricing of 56 per cent. Goods were shipped to the parent at prices which had been set by the leading buyers of the commodity, all of whom were located in one European capital. The effect of the overcharging was to raise stated profits for

two years in question by a factor of 39. 1/ A third company produced a commodity sold in the domestic and export markets. The domestic/export price ratio was 12.5:1, a difference which one official felt could only partly be explained by transport costs within Ethiopia. A similar discrepancy between domestic and export prices was noted in the case of the other exporter of the same commodity. A fifth company, wholly foreign-owned, began by exporting its commodity to independent producers, and then switched to supplying its mother company. It appeared that the price of the export fell after the export became an intra-firm flow. The company argued that the lower price was the result of the export being of lower quality than had originally been thought.

165. The second form of transfer pricing was that involving over-invoicing of intra-firm intermediate imports. From a sample of 17 firms with significant intermediate imports, it was found that 13 received most, if not all, of their imports from or through their overseas corporate network. A further firm received its imports from a network of United States firms under a long-term contract that appears to have been arranged in conjunction with the entry of the foreign shareholder. In at least one other case there was indirect evidence that imports were intra-corporate. Thus, for most foreign equity holders in firms active in import substituting industries, there was the possibility of adjusting invoices relating to intra-firm transfers.

166. This information suggests that there were indeed ample opportunities for transferring funds through overpricing of intra-firm imports in Ethiopia. One firm was found by the Ethiopian Government to be over-invoicing inputs identical to those being imported by another foreign competitor by an amount which yielded a 40 per cent return on equity in each of the three years investigated. (The National Bank in fact ordered the foreign company to repatriate this accumulated sum plus 9 per cent interest *per annum* to Ethiopia). 2/ Another company's imports were the object of a detailed study

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1/ The methods involved in the two calculations were not the same. In the first, FAO figures for export prices for that part of Africa were taken as a criterion, and an adjustment made for quality differences. In the second, there was no satisfactory world price for comparison. The price of the final commodity as sold in developed countries was used and the excess profit was distributed among different operations according to their share in total costs. The parent company had argued that all excess profit should go to its sales department, but this seemed unsatisfactory since the Ethiopian subsidiary had already been charged a fee for the use of a product's brand name.

2/ The firm whose imports were assumed "normal" for this calculation was itself under suspicion for overpricing.

by an inter-departmental team. The team found significant over-pricing whose effect was to raise the overall "expatriated return" from E$405,063 (23.6 per cent on equity) to E$ 963,771 (56.1 per cent) for the year 1970.

C. Estimation of the cost of technology transfer

167. The preceding section discussed four main ways in which foreign technology suppliers obtained returns on their operations in Ethiopia. This section attempts to provide some tentative estimates, on the basis of alternative assumptions, of the foreign exchange cost to Ethiopia of the use of foreign technology. The estimates given here provide broad orders of magnitude only.

168. Table 18 summarises estimates regarding four of the elements relevant for an assessment of the cost of foreign technology. These estimates have been derived from figures presented earlier in this study and on the basis of two assumptions pertaining to overpricing. Assumption I is the extremely conservative one that there was no overpricing of imports of either machinery or intermediate goods. The available evidence, limited though it may be, nevertheless suggests that overpricing did occur and may have been substantial. To take account of this factor alternative cost calculations were carried out according to assumption II, which supposes that there was overpricing of 50 per cent on the inputs, by the manufacturing sector, of machinery and intermediate goods. In the light of the evidence in paragraphs 158-166, assumption II would also appear to be a moderate one.

169. According to assumption I the estimated foreign exchange cost to Ethiopia in 1969/70 was approximately E$ 42 million. Since this assumption ignores the possibility of overpricing, the cost has two components only, i.e. the management fees and salaries of expatriate personnel (E$ 20 million) 1/ and the estimated value of declared returns going to foreigners on their equity holding in the manufacturing sector (E$ 22 million). The latter figure was derived by applying the 16 per cent rate of return (see paras. 155-156) to the value of paid-up capital held by foreigners in the manufacturing sector in 1969/70 (see Table 6 above).

170. If it is now assumed (assumption II) that imports by the manufacturing sector of both capital and intermediate goods were overpriced by 50 per cent, then the figure of E$ 42 million given in the preceding paragraph would represent only a part of total costs. As regards, first, the overpricing of imports and intermediate goods, the Annual Survey of Manufacturing Industry, 1969/70 indicated that the value of such imports by the manufacturing sector in that year was E$ 96 million. On the assumption that these

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1/ See paragraph 31 above.

imports were overpriced by 50 per cent, the estimated foreign exchange cost, calculated by this procedure, comes to E$ 32 million. The calculation of overpricing of capital goods imports by the manufacturing sector was made in a similar manner and yielded an estimated cost through overpricing of E$ 34 million. 1/

Table 18

Elements relevant to estimating costs of the transfer process

	Estimated foreign exchange cost	
	Assumption I	Assumption II
	E$ million	
(a) Management fees and salaries of expatriate personnel	20	20
(b) Value of declared returns on fixed assets	22	22
(c) Overpricing of intermediate imports	-	32
(d) Overpricing of imported machinery	-	34
Grand total	42	108

Sources: Item (a) from paragraph 31; item (b) from paragraph 169; items (c) and (d) from paragraph 170 and footnote to that paragraph.

Note: The estimates are approximations and should be read in the light of explanations in the text.

1/ Since imports of machinery by the manufacturing sector were not shown separately, it was assumed that the ratio of such imports to total imports of capital equipment in the Ethiopian economy was the same as the ratio for intermediate goods imports, i.e. 72 per cent.

171. Consequently, according to assumption II foreign exchange costs were equal to E$ 108 million. This figure was approximately five times the value of declared returns (item (b) in table 18) and more than two and one half times declared returns plus management fees (item (a) of the table).

172. The figure of E$ 108 million gives a broad order of magnitude of the foreign exchange cost of technology imported by the manufacturing sector in Ethiopia. It would appear, however, that this figure is likely to err on the side of underestimating total costs, for the following reasons. First, no account whatsoever has been taken of the underinvoicing of exports by the foreign-controlled firms in the manufacturing sector although, as explained in paragraphs 163-164, some firms in Ethiopia engaged in such underinvoicing. Second, no allowance has been made for either royalty payments or lump-sum payments under turn-key agreements. And lastly, part of the payments for technology is sometimes included in interest repayments to parent companies, and this form of payment has likewise not been taken into account.

D. Foreign exchange costs in the context of a least developed country

173. The significance of the cost estimates must be assessed in relation to the main features of the Ethiopian economy. Three features seem particularly relevant here. For 1970, they were: (i) GDP amounting to E$ 3,861 million; (ii) net value added in modern manufacturing equal to E$ 212 million; and (iii) annual export proceeds of E$ 305 million.

174. The cost estimates presented in Table 18 may be compared with the figures cited above to gain an idea of their significance. The costs involved in the transfer process amounted to some 2.8 per cent of GDP, to over one-third of export proceeds and to a little more than half the net value added in the modern manufacturing sector.

175. Comparable figures for developing countries as a group have been estimated to be - again with many qualifications - under 1 per cent of their combined GDP and around 4 to 5 per cent of their export proceeds. 1/

176. The sharp contrast between Ethiopia - the largest of the least developed countries - and the developing countries as a group serves to underline the severity of the burden of costs of the transfer process on least developed countries. At the same time, it emphasises the urgency of formulating policies that can provide an adequate response to this situation.

1/ See Proceedings of the United Nations Conference on Trade and Development, Third session, vol.III, Financing and Invisibles, United Nations publication, Sales No.E.73.II.D.6, page 110, document TD/106, "Transfer of technology: report by the UNCTAD secretariat"; and document TD/B/AC.11/10/Rev.1.

Annex

Sources for figures in Table 1

I. Population: 1954 figures from Second Five Year Development Plan of Ethiopia, 1963-67, Outline, Addis Ababa, May 1963, page 17. The figures give a rough estimate since so far no population census has been carried out in Ethiopia. Figures for 1970 from Central Statistical Office, Statistical Abstract, 1970, Table B.3.

II and III. Total and composition of GDP: 1954 figures from Second Five Year Plan, Outline, op. cit., page 23. 1969 figure from Statistical Abstract, 1971, Table I.2.

IV. Gross fixed capital formation: 1954 figure from Second Five Year Plan, Outline, op. cit., page 22, 1969 figure from Statistical Abstract, 1971, Table I.3.

V. Employment by sector: 1954 figure from Second Five Year Plan, Outline, op. cit., page 74. 1967/68 figures from data supplied by the National Bank of Ethiopia, Table B.1 of statistical tables (mimeograph).

VI. Output per employed person: estimated from data referred to in III and V.

VII. Exports: Figures for total exports in 1954 and 1970 and coffee exports in 1970 from Statistical Abstract, 1971, Tables 4.1 and 4.4. Figure for coffee exports in 1954 from Second Five Year Plan, Outline, op. cit., page 70.

Imports: 1954 figure from Second Five Year Plan, Outline, op. cit., page 72. 1970 figures from Statistical Abstract, 1971, op. cit., Table H.6.

VIII. Financial transactions: 1954 and 1970 figures for inflows of long-term private and public capital from Stanford Research Institute, Industrial Investment Climate in Ethiopia, Report No.2, July 1968, page 90, and National Bank of Ethiopia, Quarterly Bulletin, No.32 (91), March 1972, page 59 respectively. 1962 and 1970 figures for net investment income (outflow) from Quarterly Bulletin, op. cit., page 58. 1954 figures for foreign debit payments (public) from Second Five Year Plan, Outline, op. cit., page 31, and 1970 figure from the National Bank of Ethiopia.

IX. School enrolment: 1959/60 and 1969 figures from Statistical Abstracts of 1969 and 1971, Table 0.7. All-weather roads, railway and shipping freight: earlier figures from Statistical Abstract, 1963, op. cit., Tables 25, 30 and 33(a) respectively. 1970 figures from Statistical Abstracts of 1970 and 1971, op. cit., Tables G.5, G.11 and G.15.