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'DIRECT FOREIGN INVESTMENT, TRANSNATIONAL  
CORPORATIONS AND THE TRANSFER OF TECHNOLOGY  
TO EGYPT'

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SUBMITTED FOR THE DEGREE  
OF  
DOCTOR OF PHILOSOPHY

JUNE, 1986

TO

THE MEMORY OF MY FATHER

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## ABSTRACT

The main concern of this thesis is to assess the performance of the transnational corporations in the transfer of technology to Egypt.

The thesis first, reviews the economic literature concerning the economic rationale behind the phenomenon of direct foreign investment and its effect on transnationals' performance in host developing countries. It surveys the debate on the transfer of technology to developing countries and the major issues that arise and then looks at the development of the industrialisation process in Egypt from 1952 to 1974, the date that marks the adoption of the Open Door Economic Policy. The magnitude of foreign investment is assessed by sector and industry and the domestic policy context which might affect the outcome of the transfer of technology is discussed in some detail.

The main part of this thesis reports the results of a survey undertaken in Egypt on the contribution of the transnational corporations to the transfer of technology. It was found that the firms surveyed have not engaged in a genuine transfer of technology. The transnationals were found to be keen to transfer mostly unadapted technology from their own home countries or other advanced markets. Accordingly, no genuine effort has been made in fields such as research and development, training of local personnel and co-operation with local research and development institutes. Moreover, these firms were found to concentrate on products with a high import content. In the meantime, their record of exports from Egypt has proved to be very poor.

These conclusions are mostly consonant with what has been argued by the critical literature and dissonant with the conventional view of the transnationals' impact on developing countries with regard to both direct foreign investment and the transfer of technology.

## ACKNOWLEDGMENTS

In the course of this research, I have received a great deal of advice, encouragement and assistance from many people. I owe a particular debt and gratitude to my supervisor Mr. P. R. Lawrence whose advice, guidance and constructive criticism have contributed a great deal to this work.

My profound thanks go also to Professor Fishman and Mr. A. Hussain for their fruitful and helpful discussions and for getting through some parts of this work. Also, I would like to express my gratitude for Mr. Melikouf for guiding me through some of the material especially in the early stages.

Throughout this research I have drawn heavily on information and data provided by the General Agency for Investment and Free Zones; the General Agency for Industrialization; and the Academy of Scientific Research and Technology. So I would like to express my particular thanks to Mr. T. Abdu Ismail, the Minister of Tourism and Civil Aviation (at that time); Dr. W. C. Wahba, Dr. Ali, and Mr. M. Hassanean without whose help and assistance this work could never have been completed.

I am grateful also to the faculty of law at Mansoura University, especially Professor A. AL Naggar and Professor A. Badih for their encouragement and guidance while I was undertaking the field work.

Finally, my special thanks to my wife and my son Mohamed for their forbearance and support during the preparation of this work.

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## List of Abbreviations

ASRT	=	Academy of Scientific Research and Technology
CAPMS	=	Central Agency for Public Mobilization and Statistics
DFI	=	Direct Foreign Investment
GAFI	=	General Authority for Foreign Investment
GOFI	=	General Organisation for Industrialization
ILO	=	International Labour Organisation
ISI	=	Import Substitution Industrialization
IMF	=	International Monetary Fund
J.V.s	=	Joint Ventures
MFO	=	Majority Foreign Owned
MLO	=	Majority Local Owned
NCR	=	National Centre for Research
ODEP	=	Open Door Economic Policy
PCDNP	=	Permanent Council for Development and National Production
TNCs	=	Transnational Corporations
UNESCO	=	United Nations Educational Scientific and Cultural Organisation
UNIDO	=	United Nations Industrial Development Organisation
WFO	=	Wholly Foreign Owned
£E	=	Egyptian Pound

## INTRODUCTION

For developing countries industrialization has often been seen as the panacea for facing the problems of poverty, unemployment, lop-sided development and income inequality. It has also been seen as the most reliable path for building strong economies, and hence narrowing the gap between them and the developed countries. (Wright and Russel, 1975: 74-75). Such a belief could be legitimately justified on the grounds of the historic experience of the now developed world. These countries have built their advancement in industrialization from the time of the industrial revolution in Britain and its spread to other European countries. Japan added another example of eliminating poverty and backwardness mainly through industrialization (Mabro and Radwan, 1976: 1). In addition, developing countries, as a result of the deterioration of the terms of trade of their exports of primary goods realized the inevitability of diversifying their economies and avoiding the fluctuating prices of their exports of primary products, (Singer and Ansari, 1977: 36).

Moreover, industrialization has been considered as a stimulus for increasing growth in other sectors. It has been noted that the industrialization spill-over affects the rest of the economy by introducing intermediate inputs and capital goods. In doing so, it results in transforming sectors such as agriculture, construction, transport and services. Thus productivity in these sectors increases and hence releases resources to be invested further in industry (Hughes, 1984: 6). Equally important, industrialization gives the impetus for training and upgrading labour skills by providing labour and management with new modes of thinking, discipline and organization (Mabro and Radwan, 1976: 1, Bos, 1984: 37).

Based on these notions and beliefs most of the developing countries, in one way or another, have gone through some sort of industrialization process. Primarily, they launched industrial programmes especially in the 1950s and the 1960s based upon what was called import-substitution industrialization (ISI). They aimed to produce domestically some goods then imported from the developed countries. Thus, it was necessary to protect their infant industries by using tariff and non-tariff measures (Hughes, 1984: 6). This policy's primary concern was to lessen imports and meet local market needs from local production, and hence improve the balance of payments position. However, this policy turned out to be 'import-dependent'. Developing countries had to import most production requirements such as capital goods equipment, intermediate inputs, and raw materials. These imports by far exceeded the rate at which imports of some manufactured consumer goods decreased (Singer and Ansari, 1977: 36-37 and Hughes, 1980: 13).

Therefore, countries started to shift to policies depending on outward looking industrialization, i.e. industrialization for exports. This tendency has gained significant attention especially after some countries have achieved a relatively successful industrialization based on this policy. However this strategy has its own limitations. It depends, partly, upon the extent to which the developed countries' markets, which absorb about three-fifths of total developing countries' exports of manufactured goods, are open for such exports and also on the rate of growth in the former countries. It, in addition, makes the developing countries' development more vulnerable to any fluctuations that might take place for one reason or another in the world market (Kirkpatrick & Nixon, 1983: 35-40; Hughes, 1977: 7).

For developing countries, industrialization and technology are seen as inseparable (Patel, 1974: 4). To get technology, they have to appeal to developed countries where the bulk of commercial technology exists. A few developed countries such as the U.S.A., West Germany, the U.K., France and more recently Japan constitute the main sources for this technology. The U.S.A., for instance, represents a source of about 55% of 60% of the world commercialized technology (UNIDO, 1981: 4). In the meantime developing countries, mostly, have been suffering from the lack of needed technology. In consequence, policy-makers in these countries have sought more economic co-operation from the developed countries. So, they have gone through many changes in their economic, legal and political systems in order to attract direct foreign investment (DFI), in addition to importing foreign technology via many other channels such as licences, management contracts and hiring foreign skills.

Thus many of these countries opened their arms to welcome DFI by offering a package of incentives and guarantees which include tariff protection, duty exemptions on imports of machinery, equipment and other production requirements and guarantees against nationalization or confiscation. (Martin, 1973: 117 & Lim, 1983: 207).

In this regard, the TNCs come to play an important role in the economies of developing countries. It is worth noting that the TNC is defined as a:

"Corporation which owns (in whole or in part) controls and manages income generating assets in more than one country."  
(Hood & Young, 1979: 23)

This definition is chosen for the TNCs under study here. Nevertheless, there were many attempts to define these companies on criteria such as

the number of countries in which they operate (six countries at least), or the net sales of the corporation (\$100 mn at least); or the percentage of ownership (25% or more) to be held by the parent firm in the subsidiary (Lall and Streeten, 1977: 10). These definitions are not used in this study, since adopting them will exclude many firms that are working and affecting in one way or another the host economies. In addition, they are based on arbitrary criteria.

In this respect, there are also some alternative structurally-based definitions where the transnationality is to be determined in the light of the firms' organization and hierarchy. Also, it is thought that transnationality could be determined according to behavioural criteria, where the philosophy of the company determines such a feature (Buckley and Casson, 1985: 2). However, these definitions could be categorized as features rather than definitions of the TNCs, as pointed out by Kirkpatrick and Nixon, 1981: 370-73).

These companies have witnessed unprecedented growth in the period after the Second World War. They play an important role in the world economy and have subsidiaries nearly over all the world (Dunning, 1981: 3, Vernon, 1977: 13). These companies are rather important so far as technology transfer is concerned since they dominate the international technology market. UNIDO noted that the transnationals monopolize the process of commercialization of technology to developing countries (UNIDO, 1981: 4-5).

In this regard, it has been argued that the TNCs transfer and make available to a production enterprise the technical elements and know-how necessary for production (Cary, 1979: 37). By doing so, they stimulate economic growth and development in developing countries.

Thus they contribute towards solving the problems of unemployment, balance of payments deficits, inequality of income distribution and so forth. (Biersteker, 1978: 27-30, Katrak, 1981: 454).

On the contrary, it has been argued that the technology transferred via the TNCs to developing countries is double edged. In other words, such a technology produces desired and undesired results. More important, the undesired results by far offset the desired ones. The TNCs always introduce capital intensive and sophisticated technology to developing countries without a genuine adaptation (Singer and Ansari, 1977: 40). Such behaviour has resulted in adverse repercussions on the economies of these countries such as increasing unemployment in the long run, the creation of an unequal pattern of income distribution, and an increase in imports at a time when their record in exporting are very poor, thus adding to the onus of balance of payments rather than relieving it (Barnett and Muller, 1974: 58).

Consequently, the industrialization policies of developing countries which depend on foreign corporations have come under close scrutiny in countries such as Brazil and Mexico (Wionczek, 1976: 147-154).

#### The Case of Egypt:

The situation in Egypt has, in fact, some similarities to that in other developing countries. This country over the last thirty years or so, has laid emphasis on industrialization. Thus it was necessary owing to the limited local capabilities, to seek foreign co-operation for technology and capital. Over the 1950s and the 1960s the role of the government in the economy was noticeable, where the government established some institutions and organizations to supervise and lay

down industrial plans. The first industrial programme was launched in 1957 and replaced by the first comprehensive plan in 1960. This plan; with foreign assistance especially from the U.S.S.R. and the Eastern bloc achieved some tangible success. The compound rate of increase of GNP approached 6.5%, employment increased by 1.7 mn over the five years of the plan, many new industries were introduced and some others were expanded. In brief, this plan was described as a successful plan (Makki and Quyum, 1975: 158). However, this success was halted for many reasons, notably the cutting off of foreign aid, and the 1967 war. So, the rate of investment declined from 19.7% to 11.9% of GNP in 1967, and rate of growth was 0.7% in the same year (Radwan, 1973: 234).

As a result, the Egyptian government under President Sadat thought that opening up the economy for foreign investment would be the remedy for the slowdown in economic growth. Consequently, foreign investors have been called upon to play a greater role in the Egyptian economy. Thus, the Open Door Economic Policy (ODEP) became effective with the promulgation of law 43 of 1974 amended by Law 32 of 1977 on foreign investment and free zones. This law, as in many other developing countries, has offered a package of incentives and guarantees in order to encourage foreign investors to make their capital and technology available to Egypt. This package includes tax exemptions on commercial and industrial profits for 5-8 years, these exemptions are extended to cover re-invested profits, tax exemptions on loans for foreign firms, and exemption of duties on imports of capital goods and components necessary for investment. These are in addition to guarantees against nationalization or confiscation. (Law 43 of 1974, articles 4, 7, 8, 9, 14-18).

This policy was based on the belief that once the doors of the Egyptian economy were opened foreign investment would flow in with capital and technology and hence mobilize the process of rapid economic development (October Paper, 1974: 37-38 and Parliament Debate 1974). Thus, transfer of technology was one of the main arguments used by government for adopting the ODEP.

### The Purpose of the Study

The TNCs introduction of foreign technology in a developing country has a profound impact on its economic system. The latter in turn affects the whole socio-cultural aspect of the system such as employment, income distribution and the pattern of consumption. On top of that they deeply and thoroughly impact on local productive capability, local firms position local technological capabilities and the balance of payments. So, this study aims to examine: first, the performance of the TNCs in Egypt in respect of the transfer of technology in order to see to what extent the government argument is grounded in fact, secondly, the factors that contributed to shape such performance in its present state, factors which could be ascribed to the TNCs and to governmental and local policies and settings and thirdly, the lessons that one can draw from this study.

### The Scope of the Study

In the light of the previously stated objectives, the main focus of this study will be the transnational corporations, foreign direct investment and the transfer of technology to the manufacturing sector in Egypt. With regard to the TNCs, as defined above, they should operate in productive activities. This means that this study does not



include firms either wholly or partly foreign owned which are just working as sales offices or agents of foreign firms. In addition, foreign investors that have no parent firm abroad are excluded on the assumption that firms based in developed countries are the most likely source of technology,

Furthermore, companies engaged in direct investment are the main focus in this research. So, portfolio investment is out of the range of this study, since this sort of investment is different from DFI. Portfolio investment involves the acquisition of foreign securities without the participation in management or control of the companies concerned. Nevertheless, this sort of investment could be the start of direct involvement by taking part in the management and control of the firm concerned. As for direct investment, it embraces in addition to control, some other elements of production such as technology, managerial skills, capital and inputs (Hood and Young, 1979: 9). Thus foreign investors that have some securities or interests in companies operating in Egypt without participation in their control are not included in this study.

Despite the adoption of the Open Door Economic Policy in Egypt for over ten years, most previous work in this field has confined itself either to the legal aspects and problems which might arise from foreign investment law compared with these of other developing countries, or to direct foreign investment and transfer of technology in general terms, changes in the structure of labour force and the rationale for the policy of ODEP (infitah) as a whole. Thus, this study represents the first attempt of its kind either in Arabic or in English to assess empirically the performance and impact of the transnational corporations under the present policy regime on the transfer of technology in particular and on the Egyptian economy in general.

## Sources and Methodology

This study draws upon two types of data source. First, published material in the economic literature about foreign direct investment, the transfer of technology by the transnationals to developing countries, patents, capital goods industries, and about research and development in developing countries. Secondary sources have also been used regarding the development of the industrialization process in Egypt; governmental policies and settings, R & D and education in Egypt both in Arabic and in English and both from England and Egypt.

Secondly, primary official data was collected from the competent authorities in Egypt such as the Central Agency for Public Mobilization and Statistics; the General Authority for Foreign Investment and Free Zones; the Academy of Scientific Research and Technology, and the General Organization for Industrialization. For the empirical part of this study data was collected by undertaking a survey of selected foreign firms over two visits to Egypt which lasted for four months from 5/5/84 to 4/6/84 and from 25/8/84 to 22/11/84. This survey was conducted via a) a survey questionnaire, b) Interviews with plant managers, and c) general plant visits. The questionnaire represented the main tool of this study. It was prepared after consulting the economic literature on the role of the TNCs in the field of transfer of technology to developing countries. This questionnaire was prepared both in English and Arabic in order to overcome language problems for both foreign and local co-operators. It was distributed by hand to the firms concerned and hence appointments were fixed by the time of delivery.

Nevertheless, some companies were visited twice or three times, in cases where such appointments were broken and sometimes to meet more than one representative. So, much of the time was spent in travelling between El Mansoura, Cairo, Alexandria, and Port Said where these firms are located.

Interviews took place with senior managers of some of the firms studied whenever their time allowed that. This is while the others excused themselves for time limitation and/or for some other reasons mentioned in chapter 5. These interviews aimed at discussing issues that the managers might be reluctant to write down such as technology cost, nature of training courses, their perception of their involvement in the Egyptian economy and sometimes to clarify some questions in the questionnaire. Data collected by the questionnaire and the interviews was supported, complemented and checked against what was seen during plant-visits.

The collection of this data was surrounded with some difficulties. First, it was difficult to get a list of all firms operating in Egypt in order to select some of them for the survey. After writing to many authorities I had to appeal to the Egyptian-British Chamber of Commerce which reluctantly provided me with a long list which I had to copy by hand. In the meantime, I had to surmount some administrative hurdles which involved submitting both the questionnaire and a list of selected firms names and addresses to the Egyptian Education Bureau in order to get the approval of the authorities in Cairo. As a result I waited about nine months to visit Egypt and undertake the field work.

In Egypt, I had to deliver my questionnaire and fix the appointments personally, because of the fear of the delay in the case of using the

mail and the difficulty of using the telephones. In addition, I had to spend considerable time in travelling to the selected firms. Sometimes wrong addresses were supplied, making it necessary to spend extra effort and time for corrections. The most serious problem was the refusal of some firms' representatives to co-operate with the survey. Thus, it was necessary to rely on personal contacts in such cases where possible.

In general, in spite of these problems it was possible in the end to collect data which may give some indications about the role of the TNCs in the transfer of technology to Egypt. Nonetheless this data has its own limitations. Some of the required data were difficult to obtain either from the surveyed companies or the Egyptian authorities concerned. Such data included the cost of production, value added in Egypt, raw materials and other input, prices, value of exports and imports and so forth. Thus, it was not possible to analyse, comprehensively the exact cost of technology transferred to Egypt by firms studied. There are also limitations related to the number of surveyed firms. It was possible to collect information and data only on about 25 firms out of 45 were selected for the survey. So, a caution should be taken into account in generalizing from those data.

### The Structure of the Study

This study is divided into six chapters. The first chapter contains two sections. The first reviews the main theoretical hypotheses that tried to explain the rationale behind the phenomenon of DFI. It is noted that the TNCs investing in foreign markets have monopolistic advantages which they try to capitalize on and defend in order to maximize their returns in the long-run (Magee, 1977: 303-307). Some

others argue that DFI result from factors such as governmental policies to restrict imports into host countries either by tariffs or non-tariff measures and as a result of the penetration of these markets by their rivals which may create barriers against their entry (Martin, 1973: 42). This is while there is an argument that cheap labour and cheap raw materials play a significant part in this regard. This is in addition to the measures taken by host governments to attract foreign investment.

Section two highlights how far this rationale affects the actual behaviour of the transnationals in developing countries. It has been argued that these companies' operations in these countries retard economic development. The TNCs generate capital drainage, increase unemployment by employing capital intensive technology, create or add to the unequal pattern of income distribution, increase imports at a time in which their export records are very poor in the majority of developing countries and hence have an adverse effect on the balance of payments.

The second chapter is an attempt to shed some light on some major aspects that might arise from the transfer of technology by the TNCs. It has been widely argued that the international market in technology is highly imperfect. It is concentrated in developed countries and in very few of them and dominated by the TNCs where they take the lead in for example R & D activities, innovation, and taking out patents. On the opposite side the developing countries are in a weak position, since they lack the necessary technological infrastructure. Thus, it has been argued that the TNCs tend to introduce advanced and capital-intensive, inappropriate technology to developing countries, without a significant adaptation (Kirkpatrick and Nixon, 1983: 50).

Rather important, these companies are not keen to embark upon a genuine transfer of technology to the host countries for example real training, R & D, and subcontracting to local suppliers. So, they are working as enclaves in developing host economies.

The third chapter explores the main features of the development of the industrial process in Egypt, together with the relative weight of DFI. There have been many attempts since the 1952 Revolution to industrialize Egypt. They were relatively successful in diversifying the Egyptian economy in general and industry in particular. Nevertheless, such attempts suffered a set back in the second half of the 1960s which had adverse effects the economy. So, the government of that time (early 1970s), thought that the panacea lay in the invitation to DFI to come to Egypt. However, the results up to 1982 were far from satisfactory. Foreign capital introduced into the country was concentrated mainly in the finance and service sectors and reluctant to enter industry. So, these developments of both industrial development and foreign capital will be examined in this chapter.

The fourth chapter discusses the government policies which might influence the transfer of technology to Egypt. In this regard, it has been thought that government policies and intervention by adopting clear policies toward DFI and the transfer of technology have a tangible effect on the ultimate outcome of the transfer of technology by the transnationals. Thus, this chapter discusses Egyptian government policies towards DFI, technology transfer, R & D, education, industrial development and patents. In this chapter it is clear that Egypt has not yet formulated a strategy towards either the DFI or the transfer of technology. Thus, the absence of this strategy has been manifested in the absence of a legal framework to organize and monitor

the technology transfer process. The education system is still in general biased towards a general and theoretical type of education and disconnected with the development needs. Further the R & D system in Egypt suffers from many defects: its links with the productive sector are generally poor, it concentrates on the basic type of research and suffers from the lack of harmony between its institutions.

The fifth chapter tries to present the performance of the TNCs in the transfer of technology to Egypt on the basis of the fieldwork data collected. Here we show that, as in most developing countries, the TNCs tend to introduce a technology similar to that used in advanced markets. Such a technology is, mostly, capital intensive. In the meantime, these companies are slow to undertake a genuine adaptation that might make their technology more appropriate to the local milieu. Rather serious is the reluctance of the TNCs to embark upon a genuine transfer of technology through real training that could result in implanting the key information underlying technology in use in the local personnel, R & D in Egypt and getting rooted into the Egyptian economy by having strong backward and forward linkages with the productive sector. In addition these firms' record in exporting is very poor, while their imports are increasing over time.

The sixth chapter is an attempt to put the results of the field work in a broader context, the aim being to see how far the Egyptian economy has been affected by the performance of the transnationals, particularly via the transfer of technology, and how far the Egyptian economy is different from other developing economies. Here we find that the Egyptian economy industrial structure imbalance has been increasing under the Open Door Economic Policy. The share of the industry in terms of GDP, employment and exports is declining.

Imports from the developed markets by far surpassed the exports to them. This is not to mention the increasing rate of repatriated profits, royalties, and expatriates salaries, a situation that puts the Egyptian balance of payments in a very critical situation. In addition, the use of capital intensive technology by the TNCs and the imitation of this policy by local companies is making the situation for creating employment even worse, widening the pattern of unequal income distribution over the 1970s compared to the 1960s and leading to more alienation of local R & D units rather than an increase in their links with the productive sector.



The Theory and Practice of Transnational Corporations and Direction  
Foreign Investment

This chapter, discusses the theoretical background necessary for explaining the dynamism of the transnational corporations' performance in general and in developing countries in particular. In addition, it includes a short review of the empirically observed behaviour of TNCs, in some economic fields, in some developing countries. Consequently, this chapter will be divided into two broad sections. The first will embrace the theoretical hypotheses that try to explain the DFI phenomenon while the second will include the review of some aspects of the performance of the corporations in question.

Part I: A Review of The theory:

Direct foreign investment has recorded an unprecedented increase since World War II. This is while the portfolio investment prevailed over the period before the War and especially before the 1930s. Although the two phenomena, more or less include a movement of capital across national borders, they are different. Direct investment contains in addition to capital other elements such as control, management, production techniques and know-how. Even further such elements might be considered the crucial factors behind the investment decision in foreign markets. (Parry, 1975: 40).

The growth of DFI since the war has accompanied the striking growth of the transnational corporations. These companies, in fact, often represent the main vehicle through which this sort of investment takes

place. Thus, their activities have spread widely over nearly all economic sectors. It has been estimated that there are about 20,000 T.N.Cs. in the world economy. They produce about one-fifth of the world's output. Even more, there are some companies whose production might exceed the production of nation state countries. ITT for instance produces more than the GNP of economies such as Greece, Israel, Norway and Venezuela (Buckley & Casson, 1976:11).

Nevertheless, up until now, a unified theory to interpret the phenomenon of DFI via the TNCs, has been sought. It is supposed that such a theory would explain some crucial points in this respect such as the characteristics of firms that engage in such investment, the unique advantages which they possess compared to other firms, the aims of investing in foreign markets, the timing and location of investment, why direct investment is chosen rather than other means for serving foreign markets such as licensing, management contracts, exporting, what are the characteristics of countries that receive a particular kind of investment, and the concomitant consequences on both host and home countries, resulting from undertaking overseas investment.

Although the phenomenon of DFI raises many such issues, most, if not all, explanations relied on two or three features. Each of these explanatory elements represent hypotheses about the origins of DFI rather than a unified theory.

Correspondingly, the main theme of this section is to throw some light on some of the main hypotheses. So it might be convenient to start with, capital movement hypotheses, trade theory, market imperfections,

hypotheses related to the importance of markets, foreign exchange, and labour and to end with some concluding remarks.

### **1.1.2 Capital movements and direct foreign investment**

Here, we shall try to see the relation between the theories of capital movement and DFI. Therefore, the main essence of each will be reviewed briefly as follows:-

#### **1.1.2.1 The Classical Explanation:**

The essence of this argument is that the rationale underlying capital movements is the maximization of profits. Thus, such a movement across countries' borders takes place because of interest rate differentials. So capital flows from countries that are well endowed with it to countries that lack this advantage because the rate of interest is lower in the former and higher in the latter (Nurkse, 1972:98-99).

Regarding DFI, the hypotheses on which this argument is based have been criticized on the grounds that they are presupposing the existence of perfect competition. In so doing they have ignored the monopolistic nature of the market, where large firms are dominating (Sutton, 1980: 3-4). This theory does not make distinctions between the mere movement of capital and direct foreign investment as illustrated above (Dunning, 1973:299); most of the studies undertaken about the motives of DFI, have not supported these hypotheses. This sort of investment has been proved to take place for many reasons other than interest rate or profit differentials. In this connection, Agarwal suggested that:

"... MNCs are faced with a multiplicity of goals in their investment decisions for their worldwide operations ...." (1980: 744).

Consequently, this theory's hypotheses do not explain the DFI phenomenon, but rather relate more to the wider nature and objectives of portfolio investment.

#### **1.1.2.2. Other Hypotheses:**

In this respect it might be of interest to mention the main outlines of the Marxist approaches to the movement of capital. The transfer of capital, in these approaches, represents the intrinsic nature of capitalism. Nonetheless, they differ on the driving force that backs up such movements:

##### **First: The Capital Surplus Hypothesis.**

This approach contends that the export of capital was a result of a super-abundance of it in capitalist countries. This capital could not find profitable investment opportunities in the home market. So it inevitably looked for outlets in overseas markets. (Hobson, 1938: Chapter 6) (1). In this respect Magdoff argued, that, although a flow of capital to foreign markets might result from its abundance in its domestic markets, the significant factor lies in the nature of the capitalist system. This is where pressures from competition, technical advance and imbalances between production and consumption make the search for foreign markets necessary (Magdoff, 1972: 148-49).

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1. Mentioned in Brown, 1974: 172

In fact, such an argument is a subject to some of the criticisms addressed to the classical hypotheses. It over-concentrated on the abundance of capital considering it the main and the sole factor behind foreign investment. Thus, it gives the impression that foreign investors provide host markets with plenty of capital. However, from the empirical studies, it has been shown that this is myth rather than reality. (Muller, 1973:136-37).

Second. The declining rate of profits.

The argument of this approach is based on the way in which the capitalist mechanism works. It argues that the development of capitalism leads to more concentration of factors of production in fewer hands. Characteristically, the organic composition of capital tends to be higher and thereby the profits begin to decline. As a result of such decline, the metropolitan countries try to export capital, and hence start looking for a higher return elsewhere. The desired return can be found in countries where the organic composition of capital is lower (Hoogvelt, 1982:181; Glyn & Sutcliffe, 1976:147-149).

This approach in turn has been the subject of criticism. Magdoff criticised it in several respects. He contended that the previous argument is confined to the imperialist era. As far as investment in primary materials such as in oil and mining is concerned it takes place according to Magdoff, not only because of higher profits, but also for geological reasons viz, investment follows such materials wherever they are to be found. With regard to manufacturing investment, the criteria for it is not the decline of average rate of profits at home, but the ".... gap in marginal profitability which

produces the flow of foreign investment" (1) (Magdoff, 1972: 155-156). So, average profits at home might be higher than the marginal profits that the investor would achieve in foreign markets.

Thus, these hypotheses, although containing some useful elements, could not satisfactorily explain the DFI phenomenon.

### 1.1.3 The Free Trade Hypotheses

The Heckscher-Ohlin theory runs as follows: free trade between countries takes place because of the differentials in production which are based on the comparative advantage of each country. Such advantage is reflected in factor prices and hence cost. So, a country might benefit from producing goods that depend on its endowment of factors of production and hence enjoy lower costs. In such a case it is in its interest to export them for goods which their production needs a scarce resources and hence is costly. This theory assumes perfect competition; the non-existence of transport costs; international immobility and at the same time national mobility of factors of production; and identical production functions in all countries, (Bhagwati; 1964: 17:18; Kitamuza, 1971: 113-35).

It is clear that such hypotheses cannot explain the phenomenon of DFI. Therefore, there have been some tentative attempts to relax some of these hypotheses such as allowing for production functions to differ in order to see its effect on DFI; the existence of transport costs, etc. (Corden, 1974: 196-199; Johnson, 1975: 35).

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(1) for more details see Hobson and Lenin in Brown, 1974: 172.

Nevertheless, with the relaxation of some assumptions, the rest of the system must remain working under perfectly competitive conditions. And, if such an assumption is to be abandoned, there would be no free trade at all (Rugman, 1980: 367).

Correspondingly, such hypotheses were criticised by many economists. Sagasti is critical of free trade theory on the ground that:

- (i) its hypotheses ignore the effect of technological factors on production functions. They consider them as exogenous.
- (ii) Free Trade Theory in its pure form ignores the nature of the market. The capitalist market is of a monopolistic nature that has led to the exploitation of developing countries (1980: 10; also Gruber, 1967: 30).

In this respect Rugman contended that this theory's hypotheses as seen above do not fit DFI phenomenon:

"... the theory of direct foreign investment is the converse of the pure theory of international trade". (Rugman, 1980: 366) also (Parry, 1975: 23)

This is because under free trade with perfect competition, the absence of transport costs and so on, there would be no need for DFI by the TNCs. The phenomenon of DFI is the result of imperfection in the goods or factor markets. This is where firms tend to internalise the exploitation of their specific advantages. Hence the TNCs are a substitute for free trade. (Rugman, 1980: 367).

Against this situation of the relation between the previous different hypotheses and the DFI phenomenon, it was necessary for some others to try to explain this phenomenon directly.

#### 1.1.4 Market Imperfection and DFI

The foundations of this line of argument were laid by Hymer (1960) and have been developed by many economists since: (for example, Kindleberger 1969, Caves 1971).

The main theme of their argument concerns the market imperfection effect on the direct foreign investment. They argue that foreign firms in establishing and operating production or service facilities in markets other than the home market, have some disadvantages compared with local firms. These disadvantages emerge from the fact that they are operating far from the decision making centres; they may be ignorant of the characteristics of new markets; and they will have to confront different legal systems. So, corporations that invest overseas must have some advantages to which their potential competitors have no access. In addition, these advantages should enable them to acquire returns greater than they get from home markets, in order to offset the previous disadvantages (Kindleberger, 1969: 11-12).

Kindleberger summarized the monopolistic advantages that could result in DFI as follows:

- (i) In goods markets, they include product differentiation, special marketing skills, retail price maintenance, and administered pricing.



- (ii) In factor markets, they embrace the existence of patented or appropriated technology; access to cheaper financial resources and managerial skills.
- (iii) Economies of scale, internal and external, that might lead to vertical integration.
- (iv) Finally government policies regarding the methods of serving the local market i.e. either by imports or local production. The latter policy might result in high tariffs, that could bring DFI into existence (Kindleberger, 1969: 14, 25).

These advantages are, in fact, necessary for a firm to invest in a foreign market. But why do firms favour DFI rather than serving foreign markets in other ways such as exporting and/or granting licences? The answer to this and similar questions has been the task of some writers who accepted Hymer's main argument.

Buckley and Casson, argued that a market's imperfection works as an incentive for firms to internalize the exploitation of their resources such as technological superiority, and managerial skills. In so doing, the TNCs would be in a position to achieve higher profits and, thereby the internationalization of markets across national boundaries would result in direct foreign investment. Such a process has some benefits and costs. Benefits might include avoidance of time lags, communication costs, using tactics like transfer pricing, in addition to other measures, for circumventing the government's influence. Meanwhile, costs might include some communication and administrative ones. So, the internationalization process would

continue to the limits where both costs and benefits become relatively equal (1976: 36-45).

Johnson, argued that the TNCs can recapture the costs of R & D for generating technology by setting up and undertaking direct investment in foreign markets (1970: 40-41). In this respect, it has been contended by Magee that these corporations tend to internalize the exploitation of their technological edge via DFI. This is in order to be able to prolong their control over the information monopoly. In addition, this is more noticeable where the transnationals are specialising in highly sophisticated technology. (1977: 303-307).

Moreover, in an attempt to explain the rationale behind DFI, Caves argued that such investment might take the form of horizontal and/or vertical expansion. Regarding horizontal expansion the TNCs may go abroad in order to exploit their unique assets. By so doing they get engaged in producing similar products to those produced in their home markets. Thus the technology required for producing the similar products might be transferred at lower costs and lower risk as well. These corporations by using product differentiation and mass advertising campaigns might create an impression to the customers that their products are better than the others existing on the market. In addition, they are in a position to perpetuate as long as possible this way of performance via continuous product differentiation. Such a device protects their products from imitation and/or makes it very costly for potential competitors.

Regarding vertical integration, it could occur by the transnationals in order to secure sources of inputs and to lessen uncertainty

about this issue which is crucial if their monopolistic character is to be maintained. (Caves, 1971: 1-27).

Economies of scale, as well, could play a part, as argued by Horst (1972), in motivating the TNC to invest in foreign markets. These economies enable firms to incur the fixed costs and risks that might result from such investment. The TNCs have access to numerous cheap financial resources necessary for investing abroad, in addition to the availability of skilled managerial staff able to handle and deal with the risks of such investment.

These resources, in fact, enable the companies to invest abroad both horizontally in order to produce the same line of products and vertically to secure a permanent source of inputs on relatively cheap cost and prices (Horst, 1972, 258-260).

Vernon in his theory of the product life cycle tried to explain DFI in a sequential order. This theory divides the development of the product life into three stages. In the first stage, the product is to be produced initially in the home market, and stays for a while in it. At this stage the product might need some specific requirements that might not exist in other markets such as high skills, sophisticated production techniques, high income able to afford it and so forth. The second stage begins when a significant demand for the product emerges in countries with similar income and the product becomes in relative terms more mature. The producing firms then serve such markets via exports. At this stage, concomitant with the increase in demand and hence exports, there would be an increase in imitation by rivals from other developed countries. Such imitation might be considered, in fact, as a real threat to the innovating firm.

Therefore, it would be in its interests to get engaged in undertaking DFI in these countries. In this regard Vernon argued that

" ... threat in general is a more reliable stimulus to action than opportunity is likely to be ... An international investment by the exporter become a prudent means of forestalling the loss of a market".

The third stage starts with the complete standardization of both products and techniques used in their production. In this case they are at the disposal of other competitors and not confined to the original innovator. As a result, the price emerges as a significant factor in competition. Thus the developing countries' markets where cheap labour exists come to act as field for such competition and to be chosen as a production location". (Vernon, 1966: 200).

As a matter of fact, this theory has some useful elements that illustrate the role of monopolistic advantages in mobilizing foreign investment. In addition, it throws some light on how the holding companies try to keep and guard such advantages to maximize their returns from them.

Nonetheless, product life theory has been subject to criticism that could be summarized as follows:-

- (i) It has been argued that this theory describes the post-war DFI by the TNC, and does not explain recent trends. Products are no longer innovated for a certain market, since they are planned and diversified over many markets (Buckley & Casson, 1979: 76).
- (ii) Kojima expressed his discontent with the theory on the ground that it deals with the linkages between the monopolistic

advantages of investing firms and the location of production. In the meantime it cannot suggest or predict a convenient type of investment or technology for the developing countries (1978: 139).

- (iii) In addition, it was noted that Vernon confined his analysis to the final products. This is in spite of the fact that most foreign investment that takes place in developing countries are making components. Moreover, there are many other means that the transnationals could use to prolong their oligopolistic position, other than DFI, such as trade-marks; brand-names, patents etc. (Adikibi, 1981: 50-51).

In the end, it might be worth noting that Hymer's thesis was subject to criticism very recently by, for example Dunning, Rugman, and Teece. The first two critics argued that Hymer over emphasised the issue of market imperfection; ignored the importance that hierarchical organisation has on efficiency; and was not concerned with the location issue. They further argued that he hardly paid attention to the question of political or social factors related to developing countries. And he completely neglected the implications of DFI by the transnationals on these countries (Dunning & Rugman, 1985: 229-230). Teece added that Hymer paid no attention to the effect that horizontal integration might have on efficiency (Teece, 1985: 231). However, they emphasised the positive aspects they saw in Hymer's analysis such as introducing the phenomenon of DFI, in the framework of industrial organisation analysis (1).

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(1) for more detail see Dunning & Rugman, 1985; Teece, 1985

Thus it is evident from the previous approaches towards DFI that each is an attempt to find an explanation for this phenomenon via the TNCs. In addition none in itself is sufficient to do so, albeit, it is necessary.

#### 1.1.5 Markets and Direct Foreign Investment

The TNCs are an international organisation that conceive all the World markets as if they are their own markets and hence plan on a global scale. By and large markets are of crucial importance for these companies where they could capitalize on their own unique advantages, mentioned above. Thus, the larger the markets, the greater the possibilities would be for achieving more returns and efficiency and, thereby the more chance for understanding DFI (Scaperlanda, 1969: 559-560).

As far as direct foreign investment is concerned it may be noted that its expansion depends to a significant extent on the growth of markets. Kindleberger summarised such crucial interplay in this law:

"Direct investment is tied to markets, if markets grow, the firm must grow, if the firm stops growing, it dies. Anything that interferences with the growth of the firm ..., while the organic life of the market goes its way will kill the firm". (Kindleberger, 1969: 9)

On account of this it is not surprising to find that the TNC are very sensitive to the movements of each other towards markets. That is why, when a firm initiates investment in foreign markets, it works as a strong stimulus for the others to counter this movement by penetrating the same market of the home country. This phenomenon is more noticeable in fields with fairly narrow product lines (Sutton, 1980: 92). This sort of investment might be considered as a defensive

investment. The other firms fear that the initial investment could create barriers against their entry to the host markets and hence they should go and set up some facilities (Martin 1973: 42-60).(1)

These movements of actions and counter-actions have increased in recent years, especially after the emergence of the Japanese and the European firms as a real threat to the Americans who used to dominate the field. American firms came to realise that they are challenged in European, home, and even in third world markets. So, they felt that they should meet such a challenge. The most likely way to do this is embarking on more direct investment in overseas. (Hymer & Rothworn, 1970: 81) (2).

Nonetheless, not all foreign direct investment is of a defensive nature. Some companies initiate such investment in order to take advantages of the potential growth of foreign markets. This could be deduced from what has been noted by Dunning that 70% of U.S. investment was made in both Latin America and Canada in 1950. It declined to 64% in 1959 and continued to decline to the extent that Europe in 1972 had replaced the position of the both areas because of the establishment of the EEC, which resulted in creating a large market. This is in addition to the differentiation treatment against

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- (1) for more detail about defensive and aggressive strategies see: Brookes & Remmers, 1970: 230-243; Rowthorn, 1975: 158-180; Gilpin 1975: 9; Dunning 1973; Agodo, 1978 and many others.  
(2) see Bergsten, 1975: 260, Hymer & Rowthorn, 1970: 81-91.

N.B. Regarding the actions and counter-actions it might be of interest to refer to the potential threat to the TNCs of the developed countries coming from the emergence of some TNCs from some developing countries such as India, Brazil, Argentina, Taiwan etc. Such sort of investment, albeit, modest is increasing over time. See Lecraw, 1977, 443-455; Lall 1981: 228-257.

imports from non-member countries. (Dunning, 1981: 73). The same could be noted of the American investment in Australia (Johns, 1967: 260). In this respect Parry suggested that:

"It is likely that the apparent link between trade bloc formation and international investment is capturing a market size effect rather than the trade barrier effect alone". (Parry, 1975: 46).

In connection with this, it has been noted that DFI by the transnationals has been affected by the import-substitution industrialization policy adopted by some countries since the World War II. These companies in order to avoid the tariffs and other barriers step into these markets and establish production facilities (Martin 1973: 42; Rugman, 1980: 367). However, there are some economists who contend that tariffs and other restrictions for protecting the local markets, have no significant impact on the decision to invest abroad (Stevens, 1974: 75) (1).

#### **1.1.6 VI Foreign Exchange Hypotheses and Direct Foreign Investment**

Aliber, in an attempt to create some sort of links between foreign exchange differentials and DFI phenomenon argued that: the world is divided into different areas with different degrees of currency strength. Thus, firms from strong currency areas move to other areas where currency strength is relatively soft, insofar as strong currencies enable such firms to buy assets at cheaper prices which would not happen if the two currencies have the same strength. So, the TNCs via borrowing or using their own finance which is often from strong currencies might be able to initiate investment in host

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(1) for more detail see Brash, 1965: 25, 40; Horst, 1978: 291-295.



countries. Further, by so doing, they have advantages on potential competitors in host markets that do not have the same position (Aliber, 1970: 20-27). In addition, Aliber argued more recently, that the transnationals invest in markets other than the home one in order to internationalize the costs and risks of foreign exchange exposure at a low cost (Aliber, 1983, in Teece, 1985: 233-34).

This theory, in fact, has some useful elements. It could explain, partially, the insistence of some foreign investors on the devaluation of the local currency of the host country, especially in developing countries. Further such devaluation makes it easier for investors to take over local firms or to share them as partners in joint ventures. Nevertheless, it was not safe from criticism. It does not explain the cross-penetration of investment between developed countries. Further it is unable to interpret the continuous flow of American and British foreign investment in spite of the relative weakness of their currencies compared to the position in the 1960s (Lall, 1975: 21). It has been noted, in this respect, that the transnationals have had access to the variety of financial resources as a result of the existence of the Eurodollar and Eurobond markets. They can, hence, diversify their financial contributions and not depend on one currency, not to mention that their wide operation might enable them to have a basket of different currencies (Brown, 1974: 222).

As a matter of fact, the previous theory and some of its critics have over emphasized the issue of capital as if it is the only or the main reason for DFI. In the meantime, they overlooked the fact that these companies do not bring in significant capital to developing countries. And, in addition, they depend, mainly, on local resources for most of

their financial requirements. Thus, it is evident that capital is not even the main rationale behind the decision to invest abroad.

### 1.1.7 Other Explanations

It has been noted that the MNC's decision to invest abroad may reflect some interest in taking advantage of wage differentials between countries. Low wages mean low cost, high returns, and hence a more competitive edge, especially in the third stage of Vernon's theory, i.e. when the product becomes standardized (See above). This becomes more evident, when the productivity in the host countries is the same or even higher than in the home country for the same products. (Barnet & Muller, 1974: 41; Robinson & Tharakan, 1979: 52, 90, 105).

This section cannot end without reference to the incentives offered by the recipient countries especially from the Third World to attract DFI. They, mostly have the dogma that such overseas investment might help in alleviating the crises from which they have been suffering for a fairly long time. Therefore, these countries, mostly, are generous in offering a wide variety of incentives such as income tax exemptions, import duty concessions on investment requirements, import restrictions, easy access to foreign exchange and on favourable terms (Martin: 1973, 117).

In so doing and under these circumstances the developing countries, often, hardly pay attention to the effect of such incentives on the flow of direct investment and on their economies as a whole. In this regard, there is an argument that these incentives add to the cost

of the DFI in developing countries and have no significant effect on attracting DFI (Ruber, 1973: 128).

In conclusion, as hinted above, there has not yet been a unified theory that could explain or answer all the questions that arise from the big issue of DFI. Thus none of the previous hypotheses per-se, has been able to stand for explaining the rationale behind DFI. In an attempt to fill the gap Dunning put forward his 'eclectic theory' which seems to generate from the theory of industrial organisation. In addition, he went further trying to combine all parties that might affect the decision to invest abroad together, e.g. the investing firms, host countries and the home country.

Dunning argued that some conditions must be satisfied for DFI to take place: first, the investing firm must possess some monopolistic and unique edges over other firms. Some of these have been discussed above. Secondly, the investing firm should be able to internationalize the exploitation of its advantages, and that the direct investment way must be the best method for such exploitation. This ability depends upon the firm's capabilities. In addition, elements related to countries in which direct investment would take place must be taken into consideration (Dunning, 1981a: 46; 1981b: 30-64).

Again, as a matter of fact, there is no one factor that might be sufficient to explain the DFI phenomenon. Also, the factors that affect such a decision vary over time, from one branch of production to the other and in the same branch according to the stage of production, and from one country to another affected to some extent by the conditions prevailing in those countries such as its level of development and of market growth.

## Part 2 Performance of the TNCs in Practice:

In the previous section, there was an attempt to review the major theoretical explanations in the economic literature of TNC investment behaviour in foreign markets. Later, in this section, we attempt to explore some theoretical aspects related to the performance of these companies in developing countries, supported by empirical evidence whenever it is possible. The purpose of this review is in, fact twofold. First, it aims to see whether there is a connection between the rationale of the transnationals to invest abroad and their performance. Secondly, it aims to give some background to their performance in the area of transfer of technology which is the focus of this thesis.

Developing countries, mostly, have tried to attract direct foreign investment either via the adoption of import substitution industrialization policy 'ISI' or via the adoption of the so-called 'open door policy'. This latter has been done in the hope that such investment would provide them with finance capital, create employment opportunities, increase exports and decrease imports and thereby improve the deterioration in the balance of payments. Moreover, there is a relatively commonly held belief that DFI is the most effective way that could provide these countries with production techniques and advanced technology possibly leading eventually, to their economic development.

As regards these issues, there are, in general two main and contrasting views. The first, which is pro-TNC, believes in the virtues of the transnationals. This view considers these companies as vehicles for stimulating economic and social development all over the world and

especially in developing countries which lack most of the resources that such companies have the capabilities to provide. In contrast, the second view which is anti-TNC contends that the cost of transnational investment exceeds the benefits to the economies of developing countries.

### **1.2.2 The Financial Aspects:**

The net financial effect of the transnationals on developing countries depends upon several variables. Among these variables are: the main source of foreign exchange, its magnitude, and the rates of inflow and outflow. Thus the TNCs might have positive effects on developing countries if the main source of their capital was from external sources, and the difference between inflow and outflow was positive. Hence, they could be regarded as contributors to the capital formation in these countries. By contrast the net effect might be the opposite, when the source of capital is internal, i.e. from the host countries while the outflow rate exceeds the rate of inflow as a whole.

In this regard, there is a view that the TNCs have been acting as agents to transfer cheap resources from the developed to the developing countries. They offer these countries sizeable amounts of foreign exchange that they badly need for their development. (Barnet & Muller, 1974: 152).

Penrose claimed that the transnationals' subsidiaries have access to unlimited financial resources of their parents and, hence the recipient countries receive not only management and foreign technicians, but also foreign capital (Penrose, 1956: 232). By doing so, these companies contribute significantly to ease the balance of payments

crises which in turn has further repercussions on the economy of the host country. Further the most significant contribution of foreign investments is the mobilization of host countries' resources, resulting in increases in income, employment and growth (Biersteker, 1978: 27-28).

On the other side, the opposite argument is that the allegation that the transnationals provide significant capital to developing countries has been proved to be metaphor rather than reality. The subsidiaries operating in developing countries are representative of the interests of their parents. These interests are based on minimizing the dependence on their own capital. In the meantime they should raise their finance capital locally in host countries markets (Barnet & Muller, 1974: 152).

Moreover, TNC outflows exceeded by far inflows into developing countries. Such drainage might take place via a variety of channels such as royalties, interest, dividends, fees, and transfer pricing. As a result, the net flow is, often, negative for host economies. This situation has led some economists to comment that, the poor countries are helping the rich countries financially instead of the opposite. (Muller, 1973: 247).

While such behaviour has been taking place in the needy countries, these companies are ready to leave their earnings in developed and rich markets to be re-invested. Thus, the rate of outflow out from developing countries by far exceeds the rate of outflow from developed countries (Barnet & Muller, 1974: 152).

## Empirical Evidence:

The review of empirical studies or evidence may contribute to the verification of the previous theoretical debate. The recent statistics on the U.S. foreign investment in 1981 revealed that it increased by \$4.8 billion (bn) by the year end. Thus, the total American investment abroad amounted to some \$227 bn. at the end of the same year. The components of this increase were only reinvested earnings which accounted for \$13.0 bn., whilst the rest of it offset other inter-company net flows and adjustments.

Out of the considered increase, the share of the developing countries accounted for \$2.832 bn. (21.7%). So the total American capital investment in these countries amounted to \$56.109 bn. in 1981. Against, such stock and investment of earnings the total income from these countries amounted to \$12.283 bn., in addition to \$1.331 bn. from fees and royalties. This means that the rate of return was about 24% of the total stock in 1981. By contrast, the share of developed countries in the previous increase amounted to \$8.762 bn. in 1981 reaching a total of \$167.112 bn. The total income generated from these countries amounted to \$18.790 bn., in addition to \$4.805 as fees and royalties, i.e. the total rate of return was 14% (Wilchard, 1981: 11).

From the previous general indicators, one could infer:

- (i) A disproportionate rate of return from developed and developing countries, viz, the countries which receive less pay more and those which receive more pay less.

- (ii) The rate of outflows from developing countries was high. It accounted for about 24% in one year against investment stock accumulated over many years.
- (iii) Even for the year concerned (1981) these countries paid some 500% of what they received as reinvested earnings. Thus, one could imagine the net effect of such practices on the balance of payments in countries in terrible need of foreign exchange.

In a study on Kenya, Langdon has noted that over the years 1957 to 1972, the ratio of inflows to outflows was 1:3 including retained profits as inflow. This ratio escalated to approach 1:6 after excluding retained profits (Langdon, 1981: 72). (1)

In Nigeria, the outflows surpassed the inflows by six times over the period from 1960 to 1973. Over the same period the rate of inflows was 13.6% while the rate of outflows was 29.1% (Obadan, 1978: 66).

This phenomenon is not unique to Africa. It could be found in most developing countries which host foreign investment. Muller, analysing American investment, noted that over the period from 1957 to 1965, only about 17% of foreign investment in Latin America came from the U.S. He noticed, in addition, that

"Each one dollar of net profits is based on an investment that 83% financed from local savings. However, 21% of the profits remains only in the local economy".

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(1) Inflows amounted to 8520 K.shs over 1957-72. About 4920 K.shs out of them were equity invested in 1956, 3600K.shs as loans during the period. This was in addition to about 9280 K.shs as retained profits. In the meantime the outflow amounted to 55100 K.shs.



Even worse, the dependence of the American investors on local sources for finance was increasing over time. Thus, the proportion of foreign capital of the total invested by those investors decreased from 17% in 1957-1963 to reach some 9% in the last two years of the same period 1963-1965. (Muller, 1973: 136-137). (1)

In brief, it is evident that the TNCs' contribution to finance economic development and ease the balance of payments deficits in developing countries, is working contrary to the way these countries expected. This effect might become clear in the long-run where the outflow surpasses the stock of foreign investment. And these companies work as siphoning agents for drawing scarce resources from developing countries to be reinjected in developed countries.

However, these companies' performance might mitigate this effect through mobilizing local resources to contribute positively to domestic development and not to pour outside the country, and through encouraging exports and decreasing imports as far as developing countries are concerned. This is what will be explored in the next sub-section.

### 1.2.3 Exports and Imports

Balance of payments, in fact, reflects, inter alia, the movements of exports and imports. At the same time, the magnitude of this reflection depends, mainly, on many variables, such as the quantity

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(1) Muller considers re-invested profits and depreciation as local resources. This proportion was 59% in 1957 to 1965 and 60% in the last two years of the same period. See also, Clairmonte & Cavanagh, 1983: 462.

of exports/imports, their prices, and their destination. Correspondingly if the outcome of these activities is positive, i.e. the transnationals export large amounts of products from developing countries and the prices are as those prevailing on national and international markets, then the ultimate effect could be favourable to the balance of payments. In this case, one should bear in mind the imports of the companies in question, whether they offset exports or not. In contrast, the ultimate outcome could be negative, if the previous variables go in the opposite direction and the imports exceed exports.

Here again there are two controversial contentions: the first argument is essentially that the transnationals have access to many markets all over the world, via their subsidiaries, and marketing techniques. Therefore, they are in a position to contribute positively to exports from developing countries that, surely, lack such opportunities (Reuber, 1973: 200). Moreover, this view assumes that the manufacturing subsidiaries export more than local firms do (Biersteker, 1978: 30).

On the other hand, it has been argued that the role of the transnationals in exports from developing countries varies according to types of export production. These companies' participation might be in the form of offering marketing services such as information about potential markets and their conditions, licensing brand-names etc. This is when the goods are labour intensive or do not use sophisticated technology such as footwear, textiles and sports goods. Such participation goes further in the case of capital-intensive and sophisticated goods to include, besides the marketing services, technical information. Nevertheless, the argument comes to the

conclusion that the TNCs' contribution to exports from developing countries is modest. In addition, the local firms show higher propensities to export more than foreign companies and not vice-versa (Kirkpatrick & Nixon, 1983: 52-54).

In connection with that there is an argument that the TNCs have made their export decisions on a global basis in the way that achieves their own interests. So, they may impose some restrictions on exports from their production facilities abroad. Such restrictions might range from the absolute prohibition of exports to linking them to specific markets in which there would not be a contradictory interest (Lall & Streeten, 1977: 134-140; Vaitos, 1970: 41).

Moreover, the transnationals are keen to keep their export/import transactions as intra-firm trade. By doing so, it might be easier for them to manipulate the transactions terms and hence use the well-known transfer pricing tactic (Barnet & Muller, 1974, 158).

Not only have they done that but they have also aggravated the situation by their tendency to import from abroad at an increasing rate. Most of these imports, in fact, come from their parent or their sister companies in other developed or developing countries. Meanwhile, they are reluctant to get deeply rooted in host developing economies (Cohen, 1973: 169).

#### Empirical Evidence:

Each view tries to manipulate figures in the way that backs up its argument. The first view which argues that the TNCs encourage exports from developing countries depends on export figures from some states

in South-East Asia and Latin America. The situation in such countries regarding the involvement of the transnationals is shown in table 1.1.

Table 1.1

TNCs share in the exports of manufactured products as percentage of the total.

Country	Year	TNCs' share of manufactured exports %
South Korea	1974	27.8
Taiwan	1971	20.0
Singapore	1976	90.0
Colombia	1970	35.0
Argentina	1969	30.0
Mexico	1969	26.0
Brazil *	1972	43.0

SOURCE: Robinson & Tharakan, 1979: 98.

\* Brazil's share is taken from Nayyar, 1978: 62.

It is fairly evident that the transnationals play a significant part in exports from the above countries. Nevertheless, it has been noted that exports from these countries represent the majority of exports from developing countries (Nayyar, 1978: 61). The natural deduction is that the TNCs' significant participation was confined to particular countries which have been used as platforms for exports by these corporations (Robinson & Tharakan, 1979: 97). This is in addition to the fact that there is a little evidence that could support the previous first view.

On the contrary, there is plenty of evidence that backs the argument that the TNCs' contribution to exports is often modest. Nayyar has

shown that the share of American firms in exports from these countries averaged 9% of total manufactured exports of these countries over the period 1966-1974. Even further the share of the transnationals from America, Europe, and Japan may reach 15% and not show any sign of improvement since the base year (1966). Moreover, he registered that the U.S. majority owned affiliates' share in such exports declined from 11.5% in 1967 to 8.7% in 1974 (Nayyar, 1978: 78, table 4).

In this respect the U.S. Senate Committee on Foreign Relations has noted that, the share of American subsidiaries exports from Latin America declined within the period 1966/1976 from 10% to 6% as a percentage of their total sales. This situation is much worse in certain sectors such as transport equipment, chemicals, non-electrical machinery, and electrical machinery. Export percentages of these former manufacturers amounted to 3.5%, 0.9%, 8.2% and 5.1% respectively in Brazil. The same trend was found to stand for the Mexican case (Marinho, 1981: 26). Further, Chile's position is no exception. Lahera noticed that the transnationals' exports amounted to 5% of total Chilean exports to the U.S. and 10% only of their total sales went abroad in 1979 (Lahera, 1981, 118).

In addition, most of such limited parts of the TNCs, are intra-firm transactions. In Latin America, Marinho, recorded that the ratio of this pattern of trade increased from 68% to 73% and from 54% to 82% over the period 1960 to 1972 for Brazil and Mexico respectively (Marinho, 1981, Table 9: 27). Helleiner, has noted the same trend for developing countries in general. Over the period 1970-1975 the share of developing countries' majority foreign owned affiliates'

exports to their parent companies increased from 69% to 82% of their total exports (Helleiner, 1981: 18).

Such a pattern enables these companies to manipulate their prices to coincide with their interests. Thus, these prices have no linkages with the arms-length prices. It was estimated that these companies underpriced their exports by around 40% compared to the price received by national firms (Muller 1973: 140. See also Marinho, 1981: 18-19).

At a time when the transnationals are reluctant to export from developing countries, they are showing an increasing trend for imports, especially from their home countries (Long, 1981: 388). In Chile, in 1979, the behaviour of these companies in this respect, is shown in table 1.2.

Table 1.2

Trade Balance of the Chilean National Economy and the TNCs in 1979.

	Exports	Imports	Balance
National Total	3,821.1	4,442.7	- 621.6
TNCs	284.3	518.3	- 234.0
TNCs share of the total in %	7.4%	11.7%	37.6%
National Total (excluding mining)	1,509.5	3,297.5	-1,788.0
TNCs	171.1	505.4	- 334.3
TNCs share in %	11.3%	15.3%	18.7%
Share of mining in the external trade of the TNCs	39.8%	2.5%	

SOURCE: Lahera, E, 1981: 119.

The figures shown above summarize the fact that the TNCs depend on raw materials for their exports from Chile. Exports of these companies finance about 55% of their imports including mining exports. Had mining exports been excluded this ratio would decline to about 34%; not to mention the tiny contribution of these companies to the total exports from this country.

In brief, it is clear that the transnational corporations add to the crises of the balance of payments of developing countries rather than ease their situation. As seen above, this could take place either as a result of the negative outflow/inflow ratio, or the similar situation for exports/imports ratio or both. (1)

#### **1.2.4 Transfer Pricing**

Vernon defined transfer pricing for the American companies as:

"The process in which U.S. controlled firms prefer to register the lowest possible profits in the host country and the highest possible profit in the U.S.A." (Vernon, 1971: 137)

The use of this device might be due to the intrinsic nature of these companies to maximise their returns from their involvement in foreign markets. Therefore, as Lall pointed out, they may use it in conditions such as the loss in one centre of operations, where they try to offset it by maximising profits from the others. In addition, he listed some of the reasons behind such behaviour, including TNCs' tendency to use transfer pricing in countries with a high rate of taxes; a high rate of currency fluctuations; high political instability, and restrictions on the repatriation of profits. (Lall, 1973: 175-177).

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(1) For more detail see Lall & Streeten, 1977: 141.

Thus the transnationals, in this case, are keen to determine the prices of their transactions whether exports or imports, independently of those prevailing on the international markets. They usually tend to under-price their exports and over-price their imports. Correspondingly, they sometimes use a triangular method of trade. In this way, they ship their products (on paper) to a tax-haven country and reship them to the destination country. By doing so, their exports of inputs or raw materials reaches the country concerned over-priced, where they add extra prices such as transportation and insurance costs. However, the fact is that these companies shipped nothing to the second country but it is just a paper accounting device. (Muller, 1973: 141-142).

In a comparable way they under-price their exports from the host countries. In so doing, they could show lower profits and thereby escape tariffs, taxes and other local duties. Most important, especially in the long run, they might be able to avoid political provocation and public criticism in developing host countries (Vaitsos, 1970: 37). So, it is in their interests to tighten control over their trade which, as seen above, turned out to be of the intra-firm transactions pattern. (Lall, 1979: 62)

As a matter of fact, this phenomenon is not limited to the developing countries. It takes place in the developed as well, but it tends to be more severe and nearly common in the former ones. The difference might be ascribed to administrative and/or political causes. In developing countries, they have been suffering from many administrative deficiencies. They cannot get correct information about TNCs' behaviour internally or internationally. This is an addition to the difficulties of evaluating such information, supposing they obtain it.



These countries are very sensitive to the issue of foreign investment. So, they are reluctant to rationalize the transnationals' performance, on the basis that it might be misunderstood. Nevertheless, there are many countries which stepped in and have taken actions in this regard and the like, as will be seen in Chapter Two. In contrast, developed countries are well equipped with an efficient administrative apparatus capable of coping with such TNC practices (Lall, 1979: 65).

Nevertheless, in the conventional literature there are some views, albeit weak, which contend that the activities of the TNCs in developing countries may increase their tax revenues. They, in addition, refute the argument that the TNC uses the transfer pricing technique, arguing that the possibility of using transfer-pricing does not mean its frequent use (Biersteker, 1978: 31).

The final word in such a situation is to be left to the empirical evidence, where the literature on transnationals is full of ample evidence on the use of transfer pricing. So, in such a case one should refer to some studies as: Vaitos, 1970: 318-19, appendix 10; Barnett & Muller, 1975: 157-160; Muller, 1973: 143, Lall & Streeten, 1977: 150-152, and UNCTAD, 1975,

### **1.2.5 Employment and Income Distribution**

It has been argued that the TNCs contribute effectively to solving the problem of unemployment in developing countries. This has been due to their capital injections in these economies, and hence the establishment of new projects and the mobilization of local resources (Biersteker, 1978: 2-3). By doing so, these newly created employment opportunities would equalize income distribution rather than

concentrate it. Thus, the TNCs have been regarded as the best mechanism for national redistribution of income (Horst, 1978: 358).

However, the critics of the transnationals contend that these companies' contribution regarding employment creation is insignificant. Such a poor record might be due, from their standpoint, to the use of high and sophisticated technology which tends to be labour saving and capital intensive. These companies incline towards full mechanisation and to replace supervision posts by machines. Their impact has spilled over to many local companies. The latter companies, in an attempt to match the transnationals' have been pushed to use capital intensive technology irrespective of the conditions of the milieu in which they perform. The TNCs also, have often been recruiting those who are skilled or semi-skilled whilst leaving the rest (Sunke1, 1970/71: 518).

In doing so, they widen the gap between the two categories of labour and help little to solve the unemployment problem.

In this regard, the critics argue that, the TNCs work to accentuate the skewness of the income distribution pattern in developing countries. Apart from their role in employment issue as seen above, the capitalists who share these companies and/or have interests with them capture the largest part of investment returns. Thus the gap between the haves and the have nots get wider over time (Muller, 1973: 133). Even further, these companies via their concentration in towns, contribute not only to accentuating the problem of unemployment, but also to deepening the uneven pattern of development within the developing countries similar to that which has been established between developed and developing countries (Hymer, 1975: 48-56).

## Empirical Evidence:

In fact, most of the evidence at hand shows that the TNCs' contribution to employment and the pattern of income distribution backs up the critics' view. In 1970, according to an ILO estimate the major countries of Latin America (1), have suffered from 28% underutilization of their labour force and this after a period of two decades of development relying on the TNCs (Marinho, 1981: 13). In Chile, for instance, the contribution of the transnationals in generating employment was negligible, amounting only to 1.4% of the total employed in 1979 (Lahera, 1981: 116). The same trend holds for Egypt's case as will be seen below.

With regard to income distribution, it was found that in Latin America, which is the biggest receiver of direct foreign investment relative to the rest of the third world, 30% of the population gets some 72% of the income, 50% of them get 14% and 26% get also 14%. Even worse the gap was getting wider over time. In Brazil, the poorest 40% of the population saw that their share of income declined from 10.5% in 1960 to 7.1% in 1970 (Marhino, 1981: 13). In this regard the Brazilian President Emilio Medici commented that

Brazil is doing well but the people are not". (Barnet & Muller, 1974, 150)

A similar tendency could be observed in other countries like Mexico (Muller, 1973: 132-133)

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(1) These countries are Argentina, Brazil, Chile, Columbia, Mexico and Venezuela, whose population makes up around 75% of the total for Latin America.

### 1.2.6 Displacement of Indigenous Firms

It has been argued that, the TNCs create a competitive market in host countries, inasmuch as they inject successful projects into these economies and hence break down local monopolies. In addition, the transnationals by doing so, eliminate weak and uncompetitive local firms. Thus, only the efficient firms would remain in the market and thus benefit host countries through more efficient use of their scarce resources. (Areskoug, 1975/76: 540-542).

In conflict with this argument, the critics contend that the transnationals extend their monopolistic characteristics to host countries. In addition, these companies tend to take over local ones. This is since such a way of performance would then save finance and time. More importantly the TNC would inherit the share of the purchased company in the market. This eventually leads to the removal of an actual competitor from their way, not to mention that the fierce competition of these large enterprises undermine their local competitors. Hence, they dominate the host developing markets in the end, supposing there are no counter actions on the side of host governments (Sunkel, 1970/71: 525; Newfarmer, 1979: 25).

#### Empirical Evidence

In Brazil, Newfarmer pointed out that until 1975 more than one-third of the 242 U.S. based corporations were acquisitions. Furthermore, over the period from 1973 to 1975 nearly two of every three subsidiaries came via this route. Such a tendency was evident in the electricity industry where the acquisition ratio increased from 66% to 77% over the period from 1970 to 1974 (Newfarmer, 1979: 39,

41). A similar trend was found in Kenya in 1973 (Cronje, 1976: 37, 38). In fact this development weakened the local entrepreneurial class who found no way for them with the unfair competition of the TNCs. Furtado commented, in this respect that:

"The process of forming a local entrepreneurial class has been interrupted ..., the elimination of the national entrepreneurial class necessarily excludes the possibility of self-sustained national development, along the lines of the classical capitalist development". (Furtado in Sankel, 1971/72: 527)

### **1.2.7 Conclusion**

It is evident from the previous review that the rationale that has motivated the TNCs to invest in developing countries has been manifested in their behaviour in such countries. It has been argued that these companies plan on a global scale and they invest in other markets in order to maximise the global returns from their monopolistic advantages. Therefore, it is not surprising to find that they use similar production techniques as those used in advanced markets. So their record in employment creation is therefore poor. This is with the exception of the establishing of some assembly lines of production, especially in South-East Asia, in order to take advantage of cheap labour and thereby gain a competitive edge.

Rather, it is clear that the most important aim of the TNCs is defending their markets or opening new ones. So, the developing countries' markets are the focus of these companies investment. The fact has been mirrored in the poor record of exports from these countries. In the meantime, these companies are importing at an increasing rate, especially from their parent countries and the countries where their other subsidiaries exist.

Given that the limited inflow of capital by the transnationals into the developing countries has been superseded many times by the outflow from these countries, the reverse effect of these companies on the balance of payments becomes evident. So, it can be argued that the TNCs are accentuating the crises of the developing countries rather than alleviating them.

However, there are some advocates that contend that these companies contribute effectively to development in developing countries. Nevertheless, they do not have much strong evidence to support their views.

Having discussed the rationale behind the DFI decision by the TNCs and their actual performance in developing countries in general, one may ask is it the same in the transfer of technology? This is the question that will represent the main theme of the chapter to follow.

## CHAPTER TWO

### Aspects of the Transfer of Technology by the TNC, to the Developing Countries

The previous chapter reviewed the theoretical debate on the rationale behind the TNCs' involvement in overseas markets. It was argued that there has not been a unified theory to explain all the aspects related to this phenomenon. There are some views that attribute it to market imperfection and to the monopolistic advantages that these companies have over local ones. However, others ascribe it to motives such as defending and/or acquiring new markets; cheap labour; raw materials and the desire for diversification. The overview of the transnationals' general performance showed that the links between the TNCs and the rationale that guides their investment overseas are close and strong.

In this chapter, we discuss the issue of transfer of technology via DFI by TNCs to developing countries. Over the last 15 years there has been an increasing stress on the transfer of technology from developed towards developing countries. Such emphasis has occurred at both international and national levels. At the international level the United Nations Assembly is continually arguing that this transfer could be the most important area for international co-operation. Not only has it done that, but also it has brought attention to the point that such a transfer should aim at building up technological capabilities in the recipient developing countries (UNCTAD, 1976: 148).

At the national level, most of developing countries have seen foreign technology as the main device for achieving their industrialization. The greater the speed of the introduction of modern technology, the greater the growth of output, and the faster would be the solving of their chronic problems.

In this connection there has been an increasing emphasis on the role of the TNCs since they have held the lead in commercialization of industrial technology on the international market. In consequence, their role has received a great deal of scrutiny at both the theoretical and empirical level as will be discussed below.

But what is the technology that has raised all this attention? Actually, there has not been a unified theory that responds to all the questions that might arise from technology and its transfer, development, etc. As a result we find definitions as numerous as the number of those who have written about the subject. Nevertheless, the word technology, for analytical purposes, appears to embrace two major elements. The first, is that what is called 'hard technology' which includes machinery, and equipment embodying technology in it. The second element could be titled 'soft-technology', that includes the necessary 'know-how' for the effective use of the first element. And, it includes the technical information that underlies the hard technology. (Merhav, 1969; 33; Baranson, 1969; Galbraith, 1967; Ruber, 1973; Streeten, 1972; Oloko, 1964: 23, 25; Stewart, 1974: 17; Jennets Liander, 1978: 109; Teece, 1977: 245; Sagasti, 1980; Emmanuel, 1982: 9, etc).

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\* It may be worth to noting that the word technology is derived from the Greek word 'Techno' that means 'art or skill'; and the word 'Technics' that means one who possesses a certain art (Zvorikine, 1963: 59).



Turning to, the role of the TNCs in the transfer process, it might be dependent upon:

- A) The TNCs: their characteristics; global strategies including the rationale to invest abroad; and their perception with regard to the developing countries in particular.
- B) The developing countries: their technological capabilities; their policies and attitudes towards importing foreign technology; and their view as to the imported technology in relation to indigenous potential.

Consequently, this chapter will discuss these factors in an integrated way under the following heads: the market of technology; mechanisms of technology transfer; and issues arising from the transfer process, in the following order:

## **2.2 The Technology Market:**

Having understood the rationale of the decision to invest in foreign markets in Chapter One, the understanding of the structure and the dynamism of the technology market is of crucial importance to comprehend the performance of the TNC in developing countries. Characteristically, the technology market has had the following major features: it is highly imperfect; the transfer process is often a one way phenomenon from the developed to the developing countries; and the technology is not freely transmitted. These features are in fact correlated and they might be due to the object of the deal and the relative power of both the seller and the buyer of this object.

Technology represents the object of the market, and as seen above, it could be in 'hard' or 'soft' form. In the first form, it is embodied in goods (e.g. machinery and equipment). Mostly this form is indivisible. This means that the transfer of one part necessitates the import of the others, often from the same supplier. Thus the monopolization of one element leads to the monopolization of other complementary ones. Hence a state of imperfection arises in this case where the purchaser would not be able, supposing he wanted to, to turn to other sources for his requirements. This situation might be extended to technology products as well. For example, the import of one part of a car, makes it necessary or at least favourable to import the complementary parts from the same source (Vaitsos, 1970: 14). Furthermore, the second form is information, and what the developing countries want in this respect is information about information, a situation which, taking into account their weakness, adds to the imperfection of the market (Vaitsos, 1975: 190).

In addition, technology in both its forms is differentiable. The supplier tends to change its technical characteristics over time in order to distinguish it from the potential rivals. As a result, the recipient would be obliged to maintain more links with the same supplier than otherwise it should be. This is in order to keep abreast of the latest modifications, even if they are not essential (Clark, 1975: 14).

With respect to the source of the technology, it has been concentrated in the developed countries or in other words in the northern hemisphere. Rather importantly the commercialization of technology is concentrated in a few of them such as the U.S.A., the Federal Republic of Germany, the U.K., France, Canada and more recently Japan.

The U.S.A., for instance, has been responsible for 55% to 60% of world technology trade (UNIDO, 1981: 4); Goshal 1982: 31).

Within these markets, the TNCs are the main source for 80% to 90% of the commercialized technology to developing countries. Moreover, these companies become in some cases the sole supplier of technology needed by these countries (UNIDO, 1981: 4-5, 9). In this connection, it has been argued that the transnationals are responsible for the largest proportion of technology innovation in the world. In eight of the OECD countries, for instance, it was found that eight TNCs accounted for between 30% and 50% of all industrial R & D (Pavitt, 1971: 61). Nonetheless, it was argued that small firms contribute significantly to the invention stage (Freeman, 1974: 198-221).

Thus, it is clear that there is a close relationship between the transnationals and technology. This situation makes them keen to maintain their technological superiority which strengthens their bargaining position on the technology market. So, as Parker puts it:

"Multinational corporations and technology are mutually dependent". (1973: 202)

Correspondingly, these companies do not spare any effort to maximize their returns via spreading the exploitation of their technological edge, over large number of countries as Hymer, 1966: 275, argued. In this way, they act regardless of the interests of the developing countries. Hence, it has been found that the TNCs have the propensity to invest more in highly sophisticated technology, and can ensure that their technological secrets could be maintained for a relatively long time (Cary, 1979: 21, Vernon, 1974: 276).

Furthermore, in pursuance of their goal of tightening control over their valuable assets, they do by far the largest amount of foreign patenting, as will be discussed below. This is, as argued by Penrose (1975: 776, 783) in order to create unreal scarcity in the technology market. Thus, knowledge gets monopolized, bought and sold. In so doing, the TNCs are enhancing their unique position relative to their bargainers, and hence are able to dictate their own terms to get the fruits of their assets in price determination for technology and other complementary parts and markets for connected goods. So, some writers have commented that patents offer the transnationals unlimited monopoly power (Watson & Halman, 1970: 112; Lall, 1976:9).

The transnational corporations, in a tentative attempt to prolong their powerful position, even after the expiry of patents tend to use brand-names and trade-marks. It was found that they are extravagant users of brand-names relative to non transnationals. Alam and Langrish comparing the role of the TNCs and non-TNCs in the transfer of technology to LDCs, found that 93% of the agreements studied employed foreign brand-names while the comparable figure for the non-TNCs was 37.5%. (Alam and Langrish, 1981: 384). Using these means, the transnationals strongly establish themselves in the host market and get their products imprinted in the minds of people. It follows that the consumers demand not only that the final products embody the imported technology, but also that the final products are directly imported when that technology is has longer to be imported for one reason or another. In addition, the entry to the market by other competitors becomes very difficult or at least costly (Clark, 1975: 14; Fortner, 1977: 41).

The transnationals prefer to trade in technology in the form of a package including, know-how, machinery, equipment, skills, and management. In this way the purchasers get deprived of the possibility of buying their requirements from alternative sources maybe on more favourable conditions. They, thereby, as Vaitzos suggested, create non-competitive markets for each one of the elements (Vaitzos, 1973: 370, 374; 1975: 189).

On the other side of the markets stand the developing countries. As a matter of fact these countries' position adds to the market's imperfection. During a period when the commercial technology is concentrated in relatively few hands in the advanced economies, (UNIDO, 1981: 3), the purchasers of it are numerous and include nearly all developing countries. Furthermore, the developing countries are lacking most of the elements of technological capability in terms of R & D, scientists and technologists, technically skilled people, a dynamic industrial sector and a capital goods sector, which are important not only to strengthen their bargaining power but also to select, assimilate, adapt, imitate, and reproduce the suitable technology.

Furthermore, the developing countries are suffering from what Streeten labelled a 'Communication gap' (Streeten, 1972: 217, 218). These countries never get a complete or sufficient idea of the potential alternative sources or prices of required technology. The main and sometimes the only source of this information is the supplier itself. Naturally the TNCs would be biased towards their own technology and willing to supply it if the recipient country satisfied their conditions (Vaitzos, 1973: 370, 374). See West 1979: 297, 299; UNIDO, 1981: 3; Vaitzos, 1979: 101.

The developing countries are thus the weakest part of a highly imperfect world technology market. Consequently as Lall suggested:

"..., (the) Third World is bound to be exploited in international technology markets". (1979: 77) (1)

Thus the structure of the technology market has reflected itself on all other aspects that might arise or are related to the transfer of technology by the TNCs to developing countries as a whole. For more details about technology market see: Turner, 1974: 1; Helleiner, 1975: 165; Ewing, 1977: 2; Mercier, 1978: 210; Emmanuel, 1982: 123-124.

### **2.3 Mechanisms of Technology Transfer**

As far as technology transfer is concerned, it is worth noting that there is no definite view about the most workable and reliable mechanism in such a process.

But, before entering into the subject matter what does the word mechanism mean? It has been referred to it generally as any means of making available to a production enterprise those elements of technical knowledge which they use in installing and operating their production facilities (Cooper et al., 1971: 8). In this respect, these elements might be transferred in a variety of ways such as the flow of books, scientific journals, periodicals, technical assistance programmes, patents, licensing to private or public firms, management contracts or via direct foreign investment by the TNCs (Patel, 1974: 1-8; UNCTAD, 1975: 10).

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(1) It must be noted that Lall has changed his position on the grounds that the general climate in developing countries towards the TNCs is changing. He argued that technology never comes cheap and its transfer, especially to developing countries is costly. So innovators must be allowed to appropriate substantial benefits if they are to innovate at all. (Lall, 1984: 2-16).

These channels in fact, represent a wide range of knowledge.

Nevertheless, it has been noted by Cooper and Sercovich, that such channels, except DFI and licensing, transmit inadequate, simple, old and un-practicable elements. So, they are to be considered unimportant economically (ibid, 1971:8).

With regard to the developing countries, as a result of their position in the technology market, they tend to use most of the previous channels. Thus the main theme of the following analysis will be focused on the most significant channels that provoked a great deal of controversial argument. These are licensing per se and under DFI's umbrella, in addition to patents within the realm of the transnationals.

### **2.3.1 Direct Foreign Investment**

Direct foreign investment represents a mechanism of controversial potential, as far as the transfer of technology is concerned. In this respect some questions might arise: Why is DFI mechanism is preferred by the TNCs? What sort of technology does it transfer and what elements? Does the TNC undertake R & D in developing countries, and if they do what kind of R & D? Do they arrange genuine training for local personnel? If yes, what is the type of such training, (for example, theoretical, on the spot, or independent courses) and if they do not arrange such training, why not? Finally what is the comparable position of developing countries regarding these issues, that could affect the eventual outcome of the whole process?

As a matter of fact both DFI and technology transfer have the same core, which is the internationalization of production. The treatment

of DFI necessitates the exposure to the issue of transfer of technology as one of the major impulses of the transnationals to invest abroad as seen above. In addition, the treatment of technology transfer necessitates throwing some light on the mechanism of DFI as a potential for maximizing the companies' returns from such a process. In this respect Kojima suggested that the core of the issue of the transfer of technology is the same as that of direct foreign investment (Kojima, 1981: 13).

In this connection, it is considered that the TNCs tend to internalize the exploitation of their technological advantages in foreign markets. These advantages are firm-specific, hence the exploitation by the company itself might enable it to maintain technological superiority as long as possible. It would be in a position to hold the control and the secrecy, at least over the vital elements, in its own hands. Moreover, the returns would be higher and the cost lower if the companies performed in such a way, insofar as, they could provide complementary needed services and other things more efficiently, being near the production facilities. Additionally, the investing companies would be in a position to generate more profits from other sources in addition to technology transactions such as from selling inputs, and raw materials, using such tactics as transfer pricing. (Cary 1979: 14-20).

Rather, the developing countries' position in technology adds further dimensions to the issue. It implies that not only would they be bound to obey the TNCs' conditions but also, these countries invite the companies into their economies for direct involvement in the form of direct investment.



The transnationals, in this respect, prefer the establishment of wholly foreign owned subsidiaries (W.F.O.S.) in the host developing economies. This occurs especially in companies that enjoy plenty of investible resources such as capital; technological advantages; skills; and managerial capacities. Also, it often takes place in fields characterized as technologically sophisticated. This is in order to protect such technology from being leaked to rivals, and on the basis that the recipient countries lack the capacity and capabilities to use such technology. In doing so, there are immediate results. First, they work as enclaves in host economies, where technological elements are, often, not accessible to the local personnel. Secondly, the most important key decisions regarding technology and production are to be taken by the parent corporation, that is, these decisions are taken in other countries where the headquarters are located. Thus, the modern sector in host countries seem to be divorced from the rest of their economies (Ewing, 1977: 2). (1)

Technology supplied via WFOS and majority foreign owned subsidiaries (MFOS) is usually, as seen above, in the form of a package, rather than alternative arrangements (UNCTAD, 1974: 29; Alam & Langrish, 1981: 385). Transactions of this kind between the parent and its subsidiary are, often, unaccompanied by written contracts. They do not need, actually, to write such contracts, since the parent company is able to give its instructions through its own system of information directly. This also might due to the fact that the subsidiaries are guided by the global strategy planned to be carried out by them.

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(1) For more detail see Barnet & Muller, 1974: 171-172; Baranson, 1970: 438; 1979: 44; Aggarwal, 1978: 85; UNCTAD, 1975: 11, UNCTC, 1982: 126.

Nevertheless, this does not exclude that there are some corporations that write contracts with regard to the issue of transfer of technology. Often, they do that not for their subsidiaries, but in order to avoid any potential requirements from the recipient host countries such as that for reducing payments, exporting, the usage of local inputs or materials, etc. (UNCTAD, 1972: 20).

Transfers in package form means in addition that the technology used by these companies never becomes understood or known by the recipient countries. It leads to what Vaitos called 'pseudo transfers of know-how' (1974: 398). In consequence, these countries are obliged to revolve around the orbit of these companies. Moreover, the possibility for overpricing the complementary element would be more likely in such a situation. Thus, it has been noted that the suppliers of technology employ hidden devices in order to extract a high return from countries already suffering from a scarcity of foreign exchange (West, 1978: 320).

Meanwhile, what aggravates the situation is that the transnationals, in this way, tend to transfer capital intensive and advanced technology coincident with their interests at a time in which it is in conflict with the interests of the recipient host countries (Emmanuel, 1982: 320). This is since, capital-intensive technology developed in labour-scarce countries is, often, transferred by these companies to labour surplus countries without real adaptations (Aggarwal, 1978: 88).

However, there has been some argument that WFOS is the best method of technology transfer to the developing countries. Such an

argument goes further to suggest that these subsidiaries should be freed from any restrictions, which might hamper their activities,

"..., a wholly owned subsidiary has at its finger-tips technical know-how of the parents and the experience and the knowledge of other affiliates as well. This range of technical knowledge is not available to minority owned affiliates or to independent licences ..., The selection of the latter two routes may occur at very high cost in terms of technical assistance from the international companies". (Cary, 1979: 37; Watanabe, 1972: 427, UNCTAD, 1975: 10).

In an attempt to circumvent the deficiencies of WFOS and MFOS developing countries have shown a bias towards a joint-ventures pattern of direct foreign investment, in order to induce some sort of indigenisation and control that could result from taking a part of equity share. This sort of ownership would lead in their view to a harmony of interests between them and the investing companies. In this respect, also, some writers expressed the views that joint-venture (JV) firms are an effective mechanism in the transfer of technology. These ventures, via the close association between local personnel and foreign expertise at different levels in management and production could contribute to the transfer process in a tangible way. Meanwhile, local participation might restrict the freedom with which resources might be expatriated to the minimum level (Cooper & Sercovich, 1971: 22).

On the side of foreign corporations, they might prefer to embark on DFI in this form in cases where they do not have enough resources in terms of managerial personnel, skills, and capital that are necessary for WFOS or even MFOS and if they are investing in markets with some political or economic risk. (Singer and Ansari, 1978: 204-205). (1)

It is worth noting that the relationship between equity ownership and control is not straight forward. For example, the participation in ownership does not mean necessarily that the local partner would affect significantly the control of the venture or at least minimize the control held by the foreign partner. (Cooper & Sercovich, 1971: 24). The TNCs are keen to maintain control over their subsidiaries, even in cases with foreign minority ownership. This could be achieved via maintaining their control over the factors of the production that achieve their interests. Thus, it is not surprising to find that key managerial and technical positions, especially those related to technology and production, are occupied by expatriates. In addition, there is the desire to preserve the secrecy of their technology, so that it is not leaked to the locals. In so doing, these ventures, actually block technology information to the local personnel and its diffusion through the whole economy. (Constantino, 1977: 49). Bearing in mind the position of both the supplier and recipient of technology on the international market, it is hardly surprising that the TNCs are concentrating their control over the operations of their subsidiaries at their headquarters.

In an empirical study about JVs in Iran, Rafii has noted that, often, the foreign partner dictates his conditions to his local counterpart, even in cases with minority foreign ownership. In the automobile industry, for example, the JVs' production was confined to parts determined by the foreign partner, and they were not allowed to assemble parts produced locally except after written approval by the minority partner/licensor. Such control extended to include imports. He found that just 3 firms out of 25 were permitted to

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(1) For more detail see Cary, 1979: 15; Singer, 1975: 209, 14-15.

purchase their inputs from elsewhere rather than from the licensor (Rafii, 1978: 2-53-54). Even further, it has been noted that tie-in clauses were more heavy in joint-ventures than in W.F.O.S. (UNCTAD, 1975: 15).

Indeed, joint-ventures might pay lower prices for purchases of intermediate components than do W.F.O.S. But, on the other hand, they pay more royalties and service fees. Patel, in this respect, noted that salaries of foreign consultants exceed by several times those paid to their local counterparts undertaking similar work (1974: 10).

Moreover, in the joint-ventures investment pattern, the TNCs tend to transfer usually the same sort of technology they are using in developed markets and produce the same or similar lines of production. In addition, such transactions tend to be in the form of a package. In India, for instance, Davis concluded that:

"... 52% of 119 agreements investigated were comprehensive packages in joint-ventures. In contrast it was 5% in licences' (Davis, 1976: 142).

From this information, it can be seen that the role of joint-ventures is not so different from other forms of DFI, regarding the issue of technology transfer. This has led some to suggest that joint-ventures have not proved to be better channels for the transfer of technology to the developing countries than other forms like WFOS or MFOS (Singer & Ansari, 1978: 203-207).

Direct foreign investment could play its major potential role regarding technology via channels such as adaptation, training of local personnel in the elements of technology introduced by foreign investors,

undertaking R & D, and the integration in the host economies in way that might lead to the creation of a local entrepreneurial class. These issues will be discussed below.

A)       Adaptation:

The terms 'adaptation', 'modification', or 'adjustment' of technology may technically mean making technology introduced by the TNCs coincident with the particular conditions of the recipient developing countries. Such a coincidence might extend to include factors of production and production products as well. In this way, it could be easier for locals to absorb, use, develop, and reproduce such a technology in response to their particular environment. This is in addition to the appropriateness of products to the basic needs of the population in these economies.

As a matter of fact, the adaptation process to a large extent needs well-prepared engineers, scientists, a high level of technical skills, and an effective organisation that supports them. These requirements, as well as the required cost are within the reach of the transnationals, while, they are, mostly, or at least for some of them, especially organisation, out of the reach of most of the developing countries. Consequently, the TNCs as the main vehicle of the introduction of technology into these countries could play a significant part in adapting technology to suit the recipient economies, if they have the will to do so.

In this connection, Lall has noted two types of adaptation. First, 'peripheral', or 'ancillary' that could take place in processes such as handling, storage, and transport. Secondly, 'Core' or 'essential'

adaptation such as in machinery in a way that might result in more absorption of labour or using of local inputs and materials (Lall, 1978: 217-38). In this respect, the TNCs have a poor record. These companies are guided by their self-interest, hence, it is not expected to see them behaving always as the interests of the developing countries require. They have no definite policy regarding adaptation of their technologies, so they are introducing their intangible assets into the developing countries intact, and, often, without real modification (Gerimidis, 1977: 26). Not only have they performed in such a way, but also, they have deprived the recipient firms in developing countries of the right to adapt their own technologies supposing they are able to do that (Cooper & Sercovich, 1971: 47).

With regard to this issue there is an ample evidence that supports the previous argument. In Brazil, for example, Morley & Smith concluded that American firms do not tend to adapt their technologies. The Ford Company's reply to Morley & Smith stated that it would use the same assembly methods as they have been using in advanced European markets. This was so, despite that fact that the cost of labour was only one-fifth of that prevailing in the home country (1976/1977: 254, 261). Many other cases could be found in other developing countries in Latin America and Africa. (See West, 1979, Gerimidis, 1977).

However, some cases in which some sort of modification has taken place can be found, albeit very rare and not necessarily reflecting essential adaptation. The transnationals in a few cases might scale down their products in order to be suitable for local markets (Michalet, 1977: 53). In other cases it was reported that the TNCs might embark upon adaptation that could lead to more use of local materials or inputs. In the Philippines car industry, for instance,

it was found that the foreign manufacturers used such local materials as bamboo and wood in making car bodies as a result of the adaptation process (Singer, 1978: 54).

Such examples are in general exceptional. But how can this behaviour be interpreted? The answer perhaps lies in the weak technological situation of the developing countries and the rationale of the transnationals to invest in foreign markets. At a time when the developing countries have invited in DFI in order to, inter alia, transfer technology to their countries, they have, mostly, no strategic policy regarding this issue and not enough experts capable of absorbing, imitating or adapting the introduced technology, supposing they have the chance to get access to it. And countries which have relatively capable staff, suffer from the lack of organisation that could link the productive sector with the technological one. Probably, they invited or encouraged DFI because of that situation. But, as we have seen, foreign investors and TNCs are guided by their policies and interests. Thus they take the decision to invest in foreign markets in order to capitalize on their monopolistic advantages. Such advantages, especially related to the technology to achieve their purposes, must be applied abroad intact or if necessary with some slight modifications. So, it is not in the interests of the transnationals to embark upon genuine adaptation that necessarily would result in wasting time, money and personnel for them at a time when they have their reservoir of already tested and proved technology. This is in addition to other reasons that will be mentioned below.

In brief, despite the ability of the TNCs to adapt their technology for developing countries they are often reluctant to embark on such a process genuinely. More importantly, they are backed by the weakness



and policies of recipient developing economies. Apart from the weakness, seen above, these countries mostly, adopt policies that do not encourage the adaptation process. Policies such as the insistence on the introduction of advanced technology and exemption from duties on advanced and modern machinery, equipment and other production requirements. By and large, the developing countries need, in fact, to have second thoughts about their policies in this regard, especially local technological capability.

## **B) Training**

The shortages of well-trained skills able to cope with the process of technology transfer is one of the most serious problems that face developing countries. In consequence, the issue of practical training is of crucial importance insofar as the transfer of technology is concerned. The local trainees' existence is a basic requirement for not only the effective usage of foreign induced technology by the TNCs, but also for its absorption, understanding, assimilation, and hence adaptation coincident with the particular conditions of the recipient economies. The growing complexity of technology and its mastery requires skilled, and semi-skilled staff in the process of production (Inzemtsev, 1974: 46).

In this respect, the TNCs bear some sort of responsibility in training staff capable of tackling the previous tasks. Such a contribution could take place via employing and training locals as technicians and engineers in a way that might lead to a real transfer or implanting of technology. In doing so, it can be said that the new technology is transferred and established in the host country (Kojima, 1981: 13). In fact, for such a transfer to spill over into other sectors, it

requires that the DFI works as an integrated part of the domestic economy. This question will be discussed below.

In contrast, the transnationals pay hardly any significant attention to the question of genuine training. These companies tend to employ few qualified locals and do very little training for the un-skilled labourers (UNCTAD, 1972: 35, 38). (1) In addition, the type of training provided by the TNCs is mostly confined to the formation of craftsmen, operatives and supervisory skills (Chen, 1981: 586). Thus, the vital skills necessary for a genuine transfer of technology could not be traced in most developing countries. They are often designated to personnel from the developed markets (Kaplinsky, 1976: 207). In Iran, for instance, it was found that TNC partners in joint-ventures were not interested in either training the locals or getting them involved at the design stage or in production techniques (Alizadeh, 1976: 29).

Moreover, what makes the situation abortive is that in the few cases where local people get trained by the TNC's facilities, they are not allowed to move to other firms either locals or foreigners. In Brazil, Michalet found that trained locals are prevented from moving to other companies. The locals have to sign a contract stating that they will only work for the company that trained them (Michalet, 1977: 20-21, 65-68). Similar situations could be found in other developing countries such as Nigeria (Tuner, 1974: 11). Egypt's case offers a clear example in this regard as will be seen in Chapters 5 and 6.

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(1) For more detail see Gerimidis, 1977: 21; Michalet, 1977: 63; West, 1978: 348.

This element of the transnationals' performance is not unexpected in the light of understanding their unified style of behaviour, in addition to their keenness in perpetuating the technological dependency of the recipient economies. Their technological superiority is the main justification of their existence in these economies. Thus, it is not in their interest to leak their secrets to locals of these countries. Rather important is why should they incur the training burden at a time when they have the personnel needed to undertake the same job and who would guard their interests.

Furthermore, to be fair, the situation in developing countries regarding education and training adds to the problem of these countries. These countries, mostly, pay no significant attention to the question of training via the process of technology transfer by the TNCs. The training process needs some basic or fundamental information that could be provided by the educational system or by 'learning by doing'. In these countries, the educational process has been suffering from a variety of problems, including a lack of finance. Therefore, about 60% of children in these countries do not attend schools. Education has been confined to the theoretical aspects of information. Equally worse, there are no links between the former system and the productive sector. Consequently, as a result of this local disintegration, the productive sector has become more integrated with foreign economies (Dunn, 1978: 159-171). In addition, the industrial sector in these countries is relatively limited so that it might not be able to provide the opportunity for learning by doing. The TNCs, as seen above, instead of remedying the situation, aggravate it. Thus, these companies on their own would not undertake the required training, unless the developing countries would take the necessary measures to enforce them to do so. (Ibid, 1978).

### C. Research and Development (R & D)

UNESCO, has defined R & D in general as:

"Any creative systematic activity undertaken in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this knowledge to devise new applications".

In connection with such a definition, UNESCO classifies three kinds of R & D as follows:-

- (A) Fundamental Research: 'experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular or specific practical aim or object;
- (B) Applied Research: 'original investigation undertaken in order to acquire new knowledge, directed, however primarily, towards a specific aim or object'.
- (C) Experimental Development: 'systematic work, drawing on existing knowledge gained from research and/or practical experience that is directed to producing new materials, products and devices and to improving substantially those already produced or installed' (1) (UNESCO, 1983: V. 2, Sec. 5).

The issue of R & D, especially in the last definitional areas has acquired a great deal of attention as far as economic development is concerned. In this respect, it has been recognised by UNIDO as one of the vital pre-requisites for industrial and economic development (1969: 7). Employing R & D in developing economies might help to bring in new production methods and/or products that would be

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(1) For a similar definition by OECD see Gerimidis, 1977: 24).

coincident with the needs of the majority of the population. In addition, it is important for increasing productivity via the effective use of new techniques (Awojinrin, 1974: 265).

Moreover, so far as the transfer of technology is concerned, the existence of a reliable local R & D infrastructure in developing countries is of crucial importance. It is essential for adapting, modifying and hence reproducing the imported technology according to the requirements of their particular milieu. It reinforces the bargaining power of the recipient countries in technology markets. They might be in a relatively good position to select alternatives, and hence bargain about the price, conditions, and types of technology.

In consequence, the potential role that the transnationals could play is critical in this respect. They could set up R & D units in their production facilities to design and adapt their technologies in order to fit the new environment. In these units, they could employ local engineers and technicians in tasks that give them genuine practical skills and which would enable them to carry out an indigenous R & D on the basis of self-reliance. Thus, these units might be in a position to supply technologists to other economic sectors. Not only are they capable of that, but also they could support local R & D units in different ways, for example, providing financial assistance, which is the greatest problem that faces local units. Equally important is technical, scientific and organizational assistance that shifts R & D efforts in developing countries toward applied and experimental research in the way that responds to productive sector needs.

On the contrary, these presumptions about the potential role that the TNCs could play in this respect seemed to be confronted with hindrances. These companies, continue to work according to their global strategies in that their behaviour tends to produce some sort of a division between head offices and subordinate plants in developing countries which according to this strategy should be confined to lower levels of activities (Hymer, 1975: 38). Such a policy has been manifested in the distribution of R & D activities within the transnational organisation.

Correspondingly, it was found that the greatest and most significant R & D activities of the TNCs are centred in home and developed markets. These corporations' subsidiaries used to depend on the R & D facilities of their parents. American firms which still represent the main single source in foreign direct investment carried out only about 10% of their R & D in overseas laboratories in 1974. This figure rose to some 12% in 1980 (1) (Cheng, 1984: 183).

Moreover, though the American R & D abroad is limited, it was found that the largest part is channelled into the industrialized countries. It is, further, concentrated in a few of them with Canada, the U.K., the FRG and France accounting for some 75% of total R & D efforts by American firms in sectors such as chemicals, electrical machinery, non-electrical machinery and transportation equipment in 1972 (Fortner, 1977: 39). A similar notice was concluded in a study undertaken by Fisher & Behrman in the late 1970's concerning 31 U.S. TNCs' R & D abroad. They found that the vast majority of these companies' efforts in this field have taken place in the U.K., Australia, Canada, Japan

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(1) For more detail see Hewitt, 1980: 308.

the FRG and France. Moreover, an identical situation was found for the European transnationals, where most of their R & D has been undertaken in other developed markets like the U.S.A., France and the FRG. Meanwhile, the share of developing countries was not significant in any sense (1) (Fisher & Behrman, 1980: 11-12).

Such findings support the proposition by the UNCTAD that the TNCs are transferring ready-made innovations to developing countries. This is regardless of the new atmosphere in which such companies are going to operate (UNCTAD, 1972: 38). Even worse, the transnationals are, often, reluctant to establish units necessary for modifying imported technology, if necessary. In the tyre industries of some Latin American countries, it was found that:

"TNCs' subsidiaries R & D required for the adaptation of tyre designs to local conditions was found to be undertaken in the central research laboratories' (West, 1978: 336).

Nonetheless, the TNCs' subsidiaries might embark on R & D activities in some developing economies. But, in fact, their purpose was found to be a strictly commercial one and occurred when the required inputs or materials were not available in home markets. In Kenya, for example, these companies were obliged to do some experimental attempts on local materials in tea processing, since the materials needed do not exist at home (Gerimidis, 1977: 24). In addition, such experiments might take place to make their products more suitable for the local market

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(1) For more detail about TNCs, R & D see: Lall, 1974: 159; Alizadeh, 1976: 30, UNCTAD, 1976: 154; Servant & Lavipour, 1976: 29-38; Biersteker, 1978: 9; Aydin & Terpstra, 1981: 37-38; Fisher & Behrman, 1980 where the whole book is important in this respect.

such as has been done by Unilever and by Johnson & Johnson in Brazil (Fisher & Behrman, 1980: Chapter 4). Thus, it is self-evident that developing countries markets are the ultimate aim of the TNCs rather than the handicaps that curb the development of these countries.

In a parallel line with the previous one, the transnationals have kept their links with local scientific units to a minimum. They, actually, work as organisations divorced from the host economy and completely integrated in their parent companies' structure. So, there has been no significant evidence that these companies have had an effective financial or technical and scientific co-operation with local institutions (Michalet, 1977: 52-56).

The previous situation raises a question: why does this happen in developing countries? In fact the answer to this question could be found in factors related partly to the TNCs and partly to the recipient developing economies.

On the side of the TNCs, Kaplinsky argued that these companies tend to concentrate their R & D facilities in the head-quarters countries in order to tighten control over the subsidiaries (Kaplinsky, 1976: 20). In fact, this behaviour might be understood in the light of the rationale of these companies to invest in foreign countries.

As seen in the previous chapter, there is an argument that they invest in these countries as a result of market imperfection and hence, to get benefits of that. So, it is not in their interests to transfer the advantage that grants them the superiority over other countries, otherwise they would lose the justification of being in the host economies. In addition, it was argued above that the TNCs invest abroad to spread their R & D costs over more markets. So, it is not expected



of them to re-incur similar costs just in the interests of host economies.

Turning to the situation of developing countries, (1) adds to the problem. Some of their deficiencies have been mentioned above. But those that are related to R & D in particular could be mentioned here. Up to now R & D is mostly concentrated in the developed countries. In the meantime developing countries' commitments in this field are uncomparable. But, the situation within these countries as a category is not the same, since it differs from one country to another. UNESCO concluded that:

- (i) R & D expenditures by developing countries accounted for 6% in 1980 of the World total.
- (ii) R & D scientists and engineers in these countries approached about 10.6% in the same year.
- (iii) While there were 2954 scientists and engineers per million of population in developed countries in 1980, the figure for developing countries was only 0.125.
- (iv) Expenditure on R & D as a percentage of GNP was 2.24% for developed countries, and 0.43% for the developing ones (UNESCO, 1983: v. 18, 22).

From a cursory glimpse at the above figures one can see that developing countries play an insignificant part in World R & D both in terms of expenditures and personnel.

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(1) Regarding R & D links with production sector see Cooper, 1972, 1-8, For Africa see Wad, 1984; Chen, 1981: 586.

There has been a slight improvement in the situation of these countries in R & D expenditures from 2% in 1963, 4% in 1974 to 6% in 1980 of World totals. (Poznanski, 1984: 136). But, according to UNCTAD, such a limited proportion of the World's share is confined to no more than a dozen countries, mostly in South East Asia (UNCTAD, 1983: 19).

Furthermore, as seen above, the share of developing countries expenditures on R & D has not yet reached 0.5% of their GNP. In addition, it has been misallocated, a significant part of it going to prestigious civilian and military sectors which have very little to do with the satisfaction of the basic needs of the ordinary people. In India, for instance, about 60% of its R & D expenditures is devoted to atomic energy, defence, and space exploration. In China, the defence field employs some 20% of research scientists and 15% of the research budget (Poznanski, 1984: 143-144).

Nevertheless, there is an argument that military expenditures might have positive spin-offs for economic development in developing countries. A highly skilled labour force trained in this sector could benefit the civilian one, when they move to the civilian sector. In addition, military expenditures may increase demand for the existing industries' inputs or create new ones such as an iron and steel industry in Argentina. Military firms in India have provided the market with many products for civilian consumption such as radio components, transmitters and receivers, earth moving equipment, ships and railway coaches. (Ball, 1983: 84-92).

The scientific and economic organisation in developing countries is suffering from some deficiencies. Such a character which results the waste of the limited resources devoted to R & D activities. In

this regard it is well known that the links that must exist between R & D institutions and the productive sectors are often missed. And, in the best cases, it has been kept to the minimum (Pesmazoglou, 1977: 93). Not only is this so but also, R & D activities have, often, been concentrated on pure research which has had no economic significance.

Such a situation results in the alienation of local research units from the productive sector. Thus, this sector, especially, the modern one, gets integrated into foreign economies. In this case it reflects their interests more than local ones. In consequence and over-time, local R & D units themselves become devalued, and tend just to imitate those in developed countries, producing irrelevant and poor copies of them (UNIDO, 1981: 4) and hence the perpetuation of technological dependency (Akpakpan, 1983: 263).

Ultimately, developing countries are in a position in which they are not only unable to get significant benefits from the technological development in the world, but also, the gap between them and the developed countries is getting wider. And the TNCs, again, are aggravating the problem, rather than contributing to solve it. They exploit the situation in developing countries to apply their global strategies by incorporating countries' economies into their division of labour within their organisations. This is especially the case in the absence of well determined policies of most of the developing countries regarding technology transfer in general and local technological capabilities in particular. Therefore, UNIDO, commented that:

"The transfer of technology might lead to the increase of economic output in the developing countries, but it would leave the necessary capacity to adapt, develop or produce more appropriate technology". (UNIDO, 1981: 10)

## D Inter-Sector Relations

TNCs operating in developing countries might seek to establish interdependent linkages with sectors of the local economy. These kinds of linkages could take a variety of forms as Lall has listed:

- I Establishment: in this type, the subsidiary provides assistance to potential suppliers to create competition among suppliers and avoid dependence on monopolies.
- II Locational: in such a case, assistance would be offered to suppliers to set up their facilities near the subsidiary in order to provide cheaper inputs.
- III Informational: providing firm orders at specified intervals to facilitate current production planning and communication of long-term plans to facilitate investment planning.
- IV Technical: in this case the foreign firms either W.F.O.S. or joint-ventures supply the technical assistance to ensure the precise matching of needs with supplies, to provide for adequate quality and to facilitate innovation.
- V Financial: this includes the provision of grants and concessionary loans to ensure that the suppliers have adequate finance that would enable them to meet present and future commitments.
- VI Raw materials Procurement: assistance to provide required materials either directly or buying them in order to avoid

the uncertainty about availability and to ensure that they are of the appropriate quality.

- VII Managerial: the provision of managerial and organisational assistance aimed at improving the suppliers' performance.
- VIII Diversification: this case includes the offer of help to find outlets either at home or abroad which might secure more financial stability.
- IX These are in addition to pricing and distributional assistance in terms of setting up a negotiation procedure to determine prices and to distribute revenue in cases where the market does not give prices. This is in addition to the allocation of inventory and product development costs, and the sharing of replacement markets to distribute revenues in different ways. (Lall, 1980: 208-209).

The utmost shape of co-operation might include the establishment of new sources of inputs or of raw materials. It means, then, the provision of technical, financial and managerial assistance, and, above all, tests the seriousness of the foreign investor to get rooted in the host economy. In addition co-operation might include one or some of the previous forms depending on factors that could be ascribed to the TNCs and the host economies.

In this respect, inter-sectoral relations could be determined by contracts, subcontracts and/or could take the form of free transactions. In the latter case the foreign investor might purchase his requirements as ready made parts or materials, from any of the

local suppliers while in the former, the obligations of both contractors are determined in a contract. Such pre-determined relations might be commercial or industrial. In the commercial form the local supplier should manufacture finished end-products to be collected and sold by the foreign investor. This issue is beyond the scope of this study. What matters is the industrial subcontracting where there is some sort of specialization and division of labour between the subcontracts and the foreign firms. The latter asks the former to manufacture certain parts or components that represent a part of their final product. The industrial subcontracting could be for making finished products, components such as accessories, mirrors, electric bulbs, glass for an automobile for example, or half-finished parts such as engines and regulators; or other parts such as bearings, nuts and bolts. (Watanabe, 1971: 54).

In fact, the TNCs have the capacity to get integrated in host economies via involvement in such relations. They, in this way, could mobilize local resources by making use of those available and establishing or developing other potential suppliers. In doing so, and in supplying them with technical assistance and information underlying the manufacturing process in the way that enables them to undertake the process themselves, these companies may be in a position to create an entrepreneurial class able to bear the responsibility of development in the future.

However, in spite of the great potential that the TNCs could achieve in this regard, the linkages that might lead to it are yet to materialize on a sizeable and effective scale in most of developing countries. In this respect, it has been argued that the TNCs are dominated by commercial objectives. Thus, they consider the

technology transfer process as a commercial transaction. So, the first priority of these companies is to remove the trade barriers in order to keep markets open in the face of their products in a hidden way, for instance: the TNCs are biased towards imports from their parents under the cover of meeting their investment requirements (UNCTAD 1975: 10, 20). This tendency, in fact, could be deduced from first, the reluctance of these companies to work as integrated units in host economies and get involved deeply in an interdependent relationship as we have discussed above. In the Philippines, it was found that the foreign partner did not allow, even the test of local material either by himself or by the local counterpart. This was despite the fact that locally produced material, according to the local manager, could produce the same product with the same quality (Constantino, 1977: 49). In Kenya, in addition, Langdon has noted that:

"No MNC subsidiary had made a direct investment to develop local new material sources for soap production". (1981:70)

Secondly, the transnationals are meanwhile more integrated in their home economies for their requirements of inputs of components and raw materials. One study concluded that American firms tend to import most of their inputs from the U.S.A. or Europe. In the meantime local firms have the proclivities to diversify their sources of inputs, including home markets (Mason 1973: 353).

Such a performance by the TNCs could be interpreted in the light of what has been seen above that they tend to transfer more or less the same sort of technology used in the advanced markets without significant adaptation, the sort of technology that needs a high quality and particular inputs that might not exist except in these

markets. These companies, additionally, tend to capitalize on their technology and use their financial tactics, for example transfer pricing, as seen in the previous chapter. More importantly, the TNCs' subsidiaries constitute an organisation that works in a unified way according to a global strategy, albeit different in details. So, they are reluctant to get deeply committed to host economies.

In connection with this, the developing countries share the responsibility with the TNCs. These countries' markets might be narrow to the extent that they do not justify the establishment of new production facilities or the development of existing ones. Also, they are suffering from problems such as their lack of experience and the ignorance of manufacturing requirements; loose quality controls; red tape; uncertainty about delivery at the convenient times, which make close inter-sector relations more remote. (Watanabe, 1972: 437). But still, these hindrances or problems in economic development and organisation are among the reasons for inviting foreign investment in the hope that some of them might be overcome.

### **2.3.2 Licensing Mechanisms and the Transfer of Technology by the TNCs**

Licensing might be considered one of the most widespread mechanisms used for the transfer of technology from the developed to the developing countries. In the case of these latter countries, as a result of their weak position and their terrible need for technology, they tend to use all that they could get at their disposal. Licensing is in fact one of the major channels that appeals to these countries. This mechanism has been defined as

"A contract under which the licensee is granted certain rights to manufacture and sell products utilizing inventions, process techniques and other industrial property rights of the licensor". (Cooper & Sercovich, 1971: 23)



In this respect such a mechanism might be a pure licence, i.e. without equity participation by licensor or licensing with equity participation at different levels. It might extend in some cases to wholly foreign owned subsidiaries. It is worth noting that the first form has been observed more in countries that attained a fairly well-established industrial and technological base. Hence, these countries have the capability to shop around the technology market, select, choose, and negotiate from a relatively strong position. Thus, they might get their requirements on more favourable terms. In addition, this way grants them some sort of flexibility by avoiding the tight control, often concomitant with the DFI mechanism (UN, 1974: 31-32).

With regard to the TNCs, they might prefer to give licences as a way of entry to markets that impose heavy restrictions on DFI. In addition licensing prevails in the cases where TNCs production technology gets older and more standardized and hence becomes the subject of wide-use in producing products with a short-life cycle such as pharmaceuticals and foods (1) (Singer & Ansari; 1978: 205). This mechanism, also, might operate in cases when the transnationals have not enough financial and personnel skills or managerial staff that could enable them to embark on setting up production facilities in foreign markets or undertake them at a relatively high cost (Cary, 1979: 52).

Licensing either pure or with equity participation, takes place in a highly imperfect market. Thus, the extent and range of elements that could be included in the transaction depend on the terms of the

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(1) See also, Mansfield & Romeo, 1980, 739; UN, 1974: 31; Cheng, 1984: 182.

licences, such terms reflecting the position of both counterparts on technology market. It has been argued that most licensing agreements are made in the consumer goods sector such as food and tobacco. This is additionally to the use of trade marks, and brand-names in the markets of developing countries. Meanwhile, capital goods and intermediate industries are suffering from the lack of such contracts either with or without some degree of equity participation. (Odle, 1979: 193).

Moreover, one of the features of licensing is that the licenses tend to be of long duration lasting often, over five years and sometimes approaching 50 years. The suppliers are paying great concern to maximize their returns for as long as possible. So the longer the duration of the licence, the greater are the rewards to the technology's supplier (Girvan, 1979: 13).

It has been noted that in manufacturing industries most licences are of an assembly kind. This means that technology added locally in the host or the recipient economy is marginal (Cary, 1979: 45). In addition the dominance of the package form hinders the process of acquiring the real information which is fundamental for introduced technology (UNCTC, 1982: 126).

The main and most common feature of the licensing mechanism is that technology transfer agreements embrace conditions and obligations that represent a great hindrance to a genuine transfer of technology. These conditions, in fact, have held the attention of a great deal of technology transfer literature. There are conditions that prohibit the transmission of imported technology to a third party in the same country. This obligation might continue even after the expiry of

the agreement. Furthermore, there are cases where the agreement requires the licensee to return all technical information after its expiry. These and other similar conditions aim at obliging the licensee to seek new agreements which increase their returns from the same sort of technology and from the same country.

Even further, there are many other conditions that limit to a great extent the freedom of the licensee in the use of its technology. In some cases, the licensor prevents the licensee from moving to other lines of production. Some agreements prohibit the introduction of any local improvement on the imported technology. In the meantime, the opposite could be found, where the licensor obliged the recipients to incorporate changes introduced in the technology by the parent company irrespective of their suitability to the particular milieu of developing countries. These changes could be found in quality restriction and/or product differentiation. These conditions, inter alia, curb the possibility of adaptation, even supposing that the recipient has the capability to undertake it. And, hence, they make the acquisition of the imported elements unlikely (Odle, 1979: 190-217).

Agreements of technology transfer, are often concomitant with what is widely known as 'tie-in clauses' and export restrictions. These restrictions throw, in fact, some doubt about the real intention of the TNCs, that is whether they really aim to transfer technology to developing countries or just to circumvent trade barriers imposed in these countries' markets. The restrictions connect the recipient to particular sources for its requirements of raw materials, spare parts, machinery and other technical elements. Such behaviour grants the licensor a monopoly situation over these elements that might

not exist without such restrictions, a position that could result in transfer pricing, as has been found in Spain, Columbia, Chile and many other countries. (Barnet & Muller, 1975: 157-160).

From the data at hand, it is of interest to mention that tie-in clauses were observed to be more frequent in pure licences than in WFOS or joint-ventures. For example, according to an UNCTAD study, these sorts of restrictions occurred in WFOS in 10% of agreements in India and 9% in the Philippines compared to 10% and 20% in India and 25% and 58% in the Philippines for JVs and pure licenses respectively. This does not mean that WFOS are less restrictive than the other forms, but as seen above, the WFOSs do not need to write agreements and even in the case of writing they still do not need to include such conditions in them. They could dictate whatever they want to via their own internal system of information or communication (1) (UNCTAD, 1975: 18-20).

In this connection, it might be argued that the previous restrictions are imposed in order to achieve some objectives such as the assurance of certain levels of product quality for technical reasons, since the importing of a particular sort of technology might determine the source of the supply of production requirements. But as seen above, the UNCTAD study deduced that, the main objective underlying such activity is the desire to maximize the suppliers' returns in hidden ways (1) (UNCTAD, 1975: 14-18-20). Such an aim could be deduced from the reluctance of the TNCs to use or even to test local materials that could produce the same product with the same quality as we have noted above.

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(1) See also, Barnet & Muller, 1974: 163, UNCTAD, 1972: 23; 1975: 14-23.

Moreover, in addition to restricting imports the transnationals tend to restrict exports as well. They impose restrictions on exports of products produced under their licences. Such restrictions range from:

A) total prohibition of exports or the necessity of prior approval to do exporting.

to

B) the permission for exports to certain markets and of certain products (1) UNCTAD, 1975: 18).

This type of activity on the side of the TNCs could be interpreted in the light of what has been seen in the previous chapter, that these companies are interested in most cases in developing countries' markets. And in section two of that chapter it was clear that these companies exports are concentrated in a few countries, which these companies use in order to enter other markets. In addition, even in the few and limited cases in which the TNCs warrant exports they insist that goods are to be marketed by a wholly owned marketing company (Cooper & Sercovich, 1971: 21). They are clearly concerned to avoid competition between their subsidiaries and adverse competition by other producers using their licences (Barnet & Muller 1974: 32-37).

Among export restrictions, it was found that total prohibition restrictions are the most frequent ones. In a study of 2,000 transfer of technology contracts between global corporations and their subsidiaries, it was found that in countries such as Bolivia, Columbia,

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(1) See also Vaitzos, 1970: 5, 8, 14; 1973: 375; 1975: 192. Lall & Streeten 1977: 68.

Ecuador and Israel, this was the case. And it was the dominant condition in many other countries, such as Peru (90%), the Philippines (81%) and Mexico (62%) (UNCTAD, 1975: 18). In fact, the same tendency was emphasized in many other countries. (See Barnett & Muller, 1974: 163).

Nevertheless, evidence of the intervention of the State resulting in strengthening the bargaining position of the domestic enterprises is well documented. In Colombia the establishment of a 'Comité de Regalias' to monitor the process of transfer of technology resulted during the latter part of 1970 and the beginning of 1971, in:

- (i) the reduction of tied-in-purchases by 90% with respect to intermediate inputs.
- (ii) the elimination of all restrictions on exports.
- (iii) the abolition of about 80% of the clauses on minimum royalty payments. On the contrary, it established maximum rates of royalty by sectors.
- (iv) the prohibition of payments of taxes paid by the licensee on royalties remitted to the licensor.

Also, similar results were found in India as a result of introducing some screening measures by the Government (UNCTAD, 1975: 18).

In Korea, there was insistence on the part of the recipient to receive not only training for the efficient operation and maintenance of the plant, but rather, it was laid down:

"that the Korean engineers would be trained by (suppliers' name), in the application of all aspects of ... current technology, basic process design, detailed equipment design and procurement, construction, testing, start up, operation and maintenance and in the techniques employed in securing improvements to any petrochemical technology".

This was in addition to many other similar examples in other industries like steel for instance (Bell, M. 1984: 196).

The purpose of quoting this example is that the strong bargaining position could lead, partly, to a genuine transfer of technology. It clarifies, in addition, that the Korean side was aware that the genuine transfer is by, mainly, real training on the fundamental aspects related to technology starting from the design and ending with the maintenance and operation. The other face of this fact is that the TNCs under a 'laissez-faire, laissez passez' approach would not end with tangible results in the technology transfer field. Additionally, their performance would really cost the countries which follow such an approach dear.

### **2.3.3 Patents and Transfer of Technology**

The potential role of patents as a vehicle of the transfer of technology to developing countries has been hotly debated in the economic literature. But before proceeding to the heart of the issue, it is worth noting some of the basic features of patents.

Patents have been defined by the World Intellectual Property Organisation (WIPO) as:

"A legally enforceable right granted by virtue of a law to a person to exclude for a limited time others from certain acts in relation to a described new invention; the privilege is granted by a government authority as a matter of right to the person who is entitled to apply for it and also fulfils the prescribed conditions". (UNCTAD, 1975: 1) (1).

According to this definition, patents grant the patentee, either a natural person or a legal one like a company, the privilege of an exclusive right that precludes others from manufacturing, using, or selling patented products. These are in addition to the prohibition of making use of patented methods or processes, for a limited time.

It has been argued that these privileges have been given to the patentee on the grounds that they are necessary to encourage inventions and innovations at national and international levels. Thus, the patentee, acting true to this aim, must be given the opportunity of gaining returns in order to compensate him for investment of money and time spent on R & D (Taylor, 1973: 27).

As far as the international market of technology is concerned, it may be noted that, the structural distribution by holders of patents reveals that they contribute effectively to the imperfection of that market. This emerges from the striking phenomenon that patents are concentrated in developed countries. The developed market-economy countries are responsible for the bulk of World patents. Their share accounted for 80% of patents granted in 1970 (UNCTAD, 1975: 37). Moreover, six of these industrialized countries accounted for about 78.7% of all World patents granted by foreign countries in 1972. These countries were the USA (33.25%); the FRG (20.45%); Japan

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(1) Patents were not defined in the Paris convention for the protection of industrial property of 1883.



(7.27%); the U.K. (7.2%); France (6.85%) and the Netherlands (3.2%) (Fortner, 1977: 42-43).

In contrast, the share of the developing countries clearly reveals their weak position on that market. Their share of the World total accounted for 6% in 1970. Even worse, patents held by their nationals in their own countries amounted to no more than 1% of the World stock of patents in 1972 (UNCTAD, 1975: 38). The situation of some of these countries is deteriorating over time rather than improving. In Chile, for instance, in 1937 the percentage of nationally owned patents to foreign ones was 34.5% to 65%. Such a ratio declined, since in 1967 it accounted for 5.5% to 94.5% in the same order (Vaitsos, 1972: 74).

Practically, these patents held by nationals from developing countries seem to be insignificant economically. Penrose has noted in this respect that most of these patents are granted to individuals who are, often, unable to put them into work (Penrose, 1973: 769).

At the international level, both in developed and developing countries the TNCs hold by far the greatest amount of patents. These companies by the virtue of their sizeable resources are active in taking out patents following the policy of tightening control over their important assets as seen above. In Chile, for example, in 1967, about 90% of the patents granted were in hands of foreign domiciled corporations (UNCTAD, 1975: 39). A similar position was found in Colombia, as well, in industries with a high rate of change, since:

"in pharmaceuticals, synthetic fibres, and chemicals 10% of all patent holders own 60% of all patents and those 10% are all foreign TNCs (Fortner, 1977: 43).

But what is the purpose behind concentrating patents in their hands? What are these companies going to do with patents? Are they going to use them for the transfer of technology to developing countries? Or are they going to achieve other purposes? If the answer is in the affirmative, what exactly will they seek to achieve?

In this regard, there is a contention that the elimination of discrimination against foreign holders of patents might lead to the disclosure of new technology sources (Parker, 1973: 149). Such a practice, in addition, encourages the corporations to provide the granting countries with information and know-how crucial for an effective exploitation of patents and hence transfer of technology. They go on, further to argue that patents by creating a good reputation to the granting country, might lead to the inflow of DFI which means, in their view, new injections of technology (Penrose, 1973: 771, 773, 775; Singer, 1977: 44). However, this argument so far lacks the empirical evidence to substantiate it.

Indeed, there is a contrasting contention supported by plenty of empirical evidence. The core of it is that the patents per se have transferred no significant technology to developing countries. The TNCs are not keen or interested in using their patents in developing economies' markets. They allocate their use according to their own interests. So, they might use some of them in one or two profitable markets and hence attempt to serve the reserved markets from such locations (Vaitsos, 1972: 76).

Moreover, very few patents granted to foreigners by the developing countries are utilized by them or via licensing to locals who have the capability to exploit them. Penrose commented on this situation

by saying that:

"Patents that are neither exploited by the foreigner nor licensed to domestic producers cannot transfer technology".  
(1973: 772)

As suggested above, there is ample evidence to support the latter argument. In a study done by the Peruvian Ministry of Industries and Commerce, it was found that only 54 out of 4,872 patents granted over the period 1960-1970 were exploited in that country, i.e. about 1.1% of the total (Vaitsos, 1972: 78). Similar results have been found by Grundmann's study in 17 African countries. He found that only 1.7% of all patents held by 34 TNCs were exploited in the countries studied (1976: 192-193). (1) The same trend has been noted for many other developing countries such as Chile, Argentina, Mexico, and Columbia (UNCTAD, 1975: 40-41).

Rather important, the TNCs deliberately chose not to embody full knowledge in their patents. Hence, the embodied elements per se are not sufficient for effective use by potential users. Therefore, the latter must appeal to the patentee for further know-how, in order to be able to utilize the patents. In such a case the user would deal under the technology market condition as seen above. Taylor & Silberston have noted that:

"It happens quite frequently that technical information which is essential to the most efficient operation of an invention on a large industrial scale is not designed in a patent specifications. This may be ..., to avoid disclosing a vital piece of knowledge". (1973: 95)

So, the TNCs are keen to guard their technological superiority and do not waste any effort to close potential outlets that might erode

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(1) The 34 reporting companies own: Algeria 264 patent; Libya 238; Morocco 834; Tanzania 242; and OAMPI state 810 patents. In general, these companies own about 27% of total foreign owned patents in the considered countries. (Grundmann, 1976: 186, 188).

such advantage. In addition, this case threw grave doubts on the validity of the compulsory licensing provision contained in article 5 (A) of the Paris convention.

On account of these arguments and evidence, it is clear that the direct contribution of patents if any to the transfer of technology is marginal, So the question remains do the patents represent an impulse for any other mechanism, such as DFI or licensing, to take place in developing countries?

With regard to licensing, from the material at hand, no evidence that patents caused licensing could be found. On the contrary it has been noted that contractual arrangements for the sale of technology are not connected to patents, i.e. patents are not a precondition for licensing (Penrose, 1973: 776). Indeed, patents are very rarely licensed themselves in host countries. They often constitute a part of combined technical property rights in addition to know-how and brand-names (Cooper & Sercovich, 1971: 17).

Turning to the issue of DFI, the same argument stands. No evidence has been found to suggest that patents are behind or among the major factors that represent the rationale for the TNCs to invest in foreign developing markets. In an independent study done for the committee of the judiciary of the U.S.A. Senate, Vernon concluded that:

"..., it would seem ... that although investors and their patent attorneys may wish for patent protection if it can be had, the nature of that protection is rarely a significant factor in the ultimate decision whether to invest". (1) (U.S. Senate, 1975: 17)

Thus, the contribution of patents to transfer the technology to developing countries could not be traced either directly or indirectly as seen above. So, what are the other purposes they might achieve?

In this connection, there is an argument that the TNCs are in a position to protect their innovations without legal procedures. These companies, mostly, do not take out patents on technology that is considered to be highly secret (Singer, 1978: 43). In addition, the space of time between the process of innovation and that of imitation should be taken into consideration. Such a time might grant the transnationals enough opportunity to capture proportionate returns, using no legal protection (Parker, 1973: 162, 175). Furthermore, there are other means that could result in a reasonable return to innovations without the sacrifice of states' interests such as certificates for innovators, utility models, etc. (UNCTAD, 1975: 2-5).

Correspondingly, the patents encourage neither transfer of technology nor innovation at both international and national levels. This holds, especially true for the developing countries, as seen above (Vaitsos, 1975: 75). However, they offer much protection to the TNCs. They enable them to preempt the competition from their rivals in foreign markets and keep these markets open for their products. They thus strengthen the monopolistic position of these companies in the technology market. They raise the prices of patented products to an extraordinary degree. The pharmaceutical industry offers the ideal example in this regard. It was found that drug companies sell

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(1) It has been quoted from Vaitsos, 1972: 77 and Penrose, 1973: 774)

their drugs in bulk for five times the cost of production. This is while some 86% of all international patents in pharmaceuticals have required no more research than simple modifications to chemicals already known and patented (The Economist, 1974: 88). There are in fact many examples of the extent of protection that patents offer the drug companies. But we shall mention the most recent one at hand which shows the effect of the expiry of patents for some companies in the U.S.A. The president of the Generic Pharmaceutical Industry Association mentioned that:

"When Librium came off patent, prices dropped from \$15 to \$1". (Int., Herald Tribune, July, 26, 1984: 7, 9).

For many other examples see, Parker, 1973: 166).

In conclusion, the patents role in the transfer of technology either directly or indirectly is negligible. In addition, their role in encouraging innovation is limited and not unique, since there are some other ways that could play the desired role. The significant contribution of patents is, in fact, to the imperfection of the technology market and hence the strengthening of the monopolistic position of the TNCs that results in over-pricing their products. So, one might agree with Penrose that:

"..., the LDCs gain little or nothing, and may even lose, from granting patents on inventions developed, published and primarily worked abroad". (Penrose, 1973: 783)

#### **2.4 Major issues arising from the transfer of technology to developing countries via the TNCs**

As a matter of fact the process of technology transfer in general and via the TNCs in particular affects nearly all the aspects of socio-economic and political development in the recipient countries. It

leaves an impact on the economic structure, balance of payments, income distribution, and employment. It even affects the pattern of daily life of people in these countries. But how does transferred technology leave its impression in such a broad way? This can be illustrated by a discussion of such questions as suitability, technology costs, and patterns of economic development.

#### 2.4.1 Suitability:

The issue of 'appropriateness', 'inappropriateness' or 'suitability' of TNCs' technology to the Third World countries has been one of the most extensively discussed issues in the literature. (UNCTAD, 1975; Lall & Streeten, 1977; Muller, 1973; Barnett & Muller, 1974; Helleiner, 1979, Langdon, 1981; Solomon & Forsyth, 1977).

This issue is for the developing countries a matter of great complexity. These countries' economies do not all have the same characteristics, and differ among themselves in a variety of ways. Some of them are rich with natural resources, and capital finance. Some others, might have a huge population, but lack some of the other elements. Nevertheless, all of them are, though to different degrees, technologically undeveloped. Therefore, they often depend on the advanced countries for their technological needs.

Thus it is hard to find a definition of 'suitability' valid to all these countries as one group. As a consequence, a general rather than a specific definition may be more appropriate. For analytical purposes, suitable technology can be described as those technological elements that: first, are easy to absorb and adapt by local personnel in developing countries, secondly, that optimally use available local

resources thirdly, that respond effectively to the need of the mass of the population and satisfy them. (Morawetz, 1974: 517; Manser & Webley, 1979: 1). The convergence among these elements may represent, inter alia, the right start for a self-reliant development in the long-run. In any case the determination of appropriate technology should take into consideration, not only the peculiar conditions, but also the needs of the recipient countries for self-sustained development.

As for the technology which the TNCs introduce into developing economies, it may be of interest to note that it has been created and developed in what are known as the developed countries, countries which are characterised by conditions quite different from those prevailing in developing ones. Thus, technology as a social product comes to reflect such conditions. In the developed market economies, the capitalist stands in the saddle of economic organisation. So, in a society of a relative scarcity of labour; high labour cost, well organized trade unions, relative abundance of capital, a high rate of savings, high rates of incomes, sophisticated patterns of demand and a high proportion of skilled labour, it is expected that technology reflects these conditions. Consequently, developed countries' technology tends to be capital and skill-intensive. Rosenberg, noted that in America:

"..., the relative scarcity of labour in the U.S. has led to the development of our well-known, much admired labour-saving technology". (1) (1977: 141)

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(1) See: Rosenberg, 1977, 60-63; Merhav, 1969: 34; Inozemtsev, 1974: 32, 44; Stewart, 1974: 20; 1978: 66-105.



In contrast, the situation in developing countries is very different. These countries mostly have a sizeable reservoir of unskilled labour and suffer from shortages of capital and skilled labour. The majority of them have been experiencing low levels of incomes, a low rate of savings and a relatively limited market. In such a situation they imperatively need a different kind of technology from that which is used in the developed markets.

What is the contribution of the transnationals in this regard? There is a semi-consensus that these corporations transfer inappropriate technology to the developing countries. In this respect inappropriateness could be perceived according to Cooper in different ways. There is inappropriateness that could be ascribed to production techniques and technology and that might be attached to products (Cooper, 1972: 13).

Taking the first kind as the starting point, the heart of argument is that the TNCs introduce capital-intensive and labour-saving technology in developing economies. In addition, these companies as seen above have no interest in adapting their technological elements to fit these countries' milieu. This has led them to leave idle the abundant factors like unskilled labour, and lower quality of inputs, at a time when they aggravate the problems of scarce resources such as capital and highly-skilled labour etc. (1) (UNCTAD, 1972: 6).

This argument, actually has a great deal of evidence in its favour. In Kenya, for example, Langdon has noted that foreign companies are more capital-intensive than local firms working in the same industry.

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(1) See especially Streeten, 1981: 398.

Capital employed per work place in the subsidiaries exceeded K. sh 140,000, while it was K. sh 94,500 and 28,400 in local mechanized and non-mechanized ones respectively, i.e. the ratio was one and half times, and about five times more than of two local sorts respectively (1981: 67). In India, Agarwal found the same tendency. In his survey on 34 firms, he concluded that 22 out of 34 foreign firms used more capital per employee than domestic firms. Foreign firms employed some 17% fewer workers and as much as 70% less supervisory staff than domestic firms to produce the same amount of gross output (1) (1979: 117).

However, there are some economists who contend that TNCs use more appropriate technology than do domestic firms. The managerial staff of these companies are capable of choosing and combining the most effective production techniques that might achieve the interests of their companies. Thus, Pack has suggested that:

"TNCs are able to identify and use somewhat more labour intensive technologies than do the domestic firms".  
(1976: 53)

The suitability issue, although it appears to be controversial the dominate argument biases the first one. (2) Also, it might be of interest to note that the measurement of intensities is a complicated issue and there is no consensual view concerning it. (Bhalla, A. 1981: Chapter One).

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(1) See Mason, 1973: 353; Barnet & Muller, 1975: 169; Radhu, 1973: 71; Adheghian, 1982; Solomon & Forsyth, 1977: 284.

(2) Biersteker, 1978: 38.

Having behaved in such a way, these companies might add to the problems of host countries rather than alleviate them. In this respect they contribute in no significant way to solve the unemployment problem, and they, in addition, aggravate it especially in the long-run.

Stewart commented in this respect that:

"The transfer of advanced technology is in large part responsible for the growing unemployment problem".  
(1974: 28). (1)

In addition, this sort of technology leads to many other unfavourable repercussions on host developing economies, such as the widening of the income distribution gap between the haves and the have nots; unequal pattern of development, and the worsening of the position of the balance of payments as seen above (2) (Barnet & Muller 1975: 162-172).

However, the appropriate technology might lead to favourable outcomes for the developing countries. In a recent study undertaken by the World Bank on some industries (3) in certain L.D.Cs it was found that an investment of \$900 mn using capital-intensive technology produces \$374 mn of value-added and generates about 60,000 jobs. In contrast, the same amount of investment, if used with an appropriate technology might provide 300,000 jobs and produce some \$800 mn in value added (Goshal, 1982: 36). A similar case was found, in Venezuela in 1972 (Morawetz, 1974: 524).

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- (1) See Muller, 1979: 249; Lall & Streeten, 1977: 71; Kennedy, 1981: 344.
  - (2) Dos Santos, 1970: 234; McRobie, 1971: 71. The case of Egypt below may provide a clear example.
  - (3) Studied industries were beer, bricks, cornmeal, cotton cloth, cotton yarn, fertilizer, leather, shoes, and sugar.

These examples clarify the fact that capital intensive technology introduced into developing countries not only aggravates the unemployment situation, but also produces less in a different environment.

Furthermore the inappropriate technology yields naturally, inappropriate products which represent the other face of the whole issue as suggested by Cooper above. In fact, the causal relationship between the two faces is difficult to be determined. There are arguments which contend that the choice of the products determines the production techniques and hence the technology that is going to produce them. Thus, if the product is a luxury and requires some sort of sophistication and differentiation, then they would need the relevant technological elements. This is especially the case in industries or products where:

"..., the technology shelf consists of only very few techniques, each with a narrow range of substitution possibilities". (Siggel, 1984: 232)

In another dimension, it has been argued that the transfer of products produced to satisfy the needs of developed countries imperatively accompany the introduction of their technology into the developing countries (Stewart, 1978: 78). Thus, the introduction of consumption technology results in the concentration on unnecessary and artificial elements of products i.e. on the luxury elements (Helleiner, 1975, 172-73). So, the transnationals' insistence on producing the same line of products produced at home, creates over-differentiated, over-packaged, over-specified, different coloured and smelling products, other than the essential elements (Lall & Streeten, 1977: 70-71). What could be deduced, here, is that the existence of both luxury goods and the TNCs in developing countries markets is correlated.

Correspondingly, the introduction of such luxury goods into these markets, on the part of the TNCs goes, usually, hand in hand with intensive promotion campaigns. These companies do not spare any effort to take advantage of the most effective media means such as daily newspapers, radio and television. Therefore, it has been noted that they often, dominate advertising activities in host markets. In Indonesia, it was found that only large foreign companies and joint-ventures like Unilever, Toyota and Berjer monopolize local television advertising. The TNCs have been found to spend on advertising as much as four times the television budget provided by the government (Reiffers et al, 1982: 146, 149). The same phenomenon of heavy advertising was found in Kenya by Langdon, (1981: 58, 63).

Such activity reveals how far the transnationals are keen to reshape the way of life in host countries by imprinting their brands and goods in the minds of people and trying to convince the clients that their way of life is inferior to that dominating in the Western World.

Thus Reiffers, suggested that:

"..., TNCs are conducive to the introduction into the developing countries of a 'consumer logic' such as already prevails in Western societies". (1982: 154, 158)

So, these companies, instead of satisfying the needs of the population in the countries in question, are creating new needs the satisfaction of which would be at the expense of essentials. (Lall & Streten, 1977: 70-71).

Moreover, in doing so, the new products would replace the old local ones. The introduction of new goods is likely to raise the cost for the existing ones, since both might compete for some scarce factors of production such as labour, capital, or even raw materials. In

the meantime, the new goods might contain the essential and non-essential characteristics. So the consumer in a situation like this would prefer the latter ones. Thus the consumers' welfare will be decreased (1) (James & Stewart, 1982: 228-229). In India, Unilever, relying on heavy advertising, wanted to substitute its own products (like margarine and Vanapasti, for the local product, Ghee (Reiffers, 1982). Naturally, this situation would benefit the tiny portion of the population that enjoys high income and consumes the new luxury products, while the majority of the population who cannot afford them would be the losers.

The other consequence is that, in this way these companies, are making technological dependence imperative. Once they succeed in their plans it would become impossible for the developing countries to get rid of such sort of technology and look for alternatives (2) (Ikonicoff, 1979: 281). This is especially so since introduced products come to occupy an essential part of the daily life of the influential people, insofar as the interests of those people get connected with the interests of the TNCs. So, a change would cause unrest, a situation that governments in developing countries are keen to avoid.

Such behaviour results from the technological dependency of these countries, a situation that gives the transnationals the upper hand to decide and apply their strategies, which, as we have seen, aim

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(1) Helleiner, 1975: 175.

(2) See Evans, 1971: 332-335; Nagafbogy, 1984: 20.

at maximizing their returns from exploiting their monopolistic assets, especially technological monopoly in the markets in question. In this connection it has been argued that these companies have no interest in producing products appropriate to the mass market, as it currently stands, such products are not profitable compared to the production of luxury goods, which are usually consumed by those who have the effective demand (Langdon, 1977: 99). In addition, products of mass consumption are simple and easy to be imitated. Hence, the companies' position might be vulnerable. Streeten in this connection suggested that:

"The sophistication of the products and the complexity of the technology ..., are ..., not only a response to the high incomes and high savings in the mass markets of the developed countries, but are of the very essence of the TNCs. (1). (Streeten, 1981: 399).

Also, some international factors have contributed to this phenomenon. It has been noted by UNIDO that just a little over 1% of total R & D expenditures in developed countries is directed towards the problems of the Third World countries. In the meantime about 50% of that total are diverted to the production and development of sophisticated weapons and armaments while two-thirds of the rest is designated for producing non-essential goods (UNIDO, 1981: 7). According to Singer, if the R & D machinery has proceeded in such a way, in the advanced countries, thereby it is not expected to produce more suitable products to answer the developing countries' problems (Singer, 1975: 192-197).

#### **2.4.2 Pattern of Development**

One of the major impressions that results from the introduction of foreign technology via the TNCs is their effect on the pattern of

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(1) In the same meaning see Lall & Streeten, 1977: 71.

development in the developing countries. Such effects include geographical structure, e.g. urban against rural development; production structure, e.g. consumption vs. capital goods; production structures e.g. internal vs external viz, whether the production machinery is integrated with the rest of the economy or with foreign economies.

### Capital vs Consumption Goods of the TNCs in Developing Countries.

It may be useful to determine what capital and consumption goods mean. For analytical purposes capital goods mean machines manufacturing industries, while consumption goods industries means the industries that produce, for final consumption purposes, either durable or non durable goods.

Capital goods are studied here for several reasons:

First, machinery itself is labelled as 'hard technology'. These machines contain information and know-how underlying their manufacturing and design. The mastery of such information generates the capability to master other sorts of technology. Secondly, so far as technology transfer is concerned, the capital goods industry is of vital importance. This industry has important forward and backward linkages and thereby could diffuse technology to other economic sectors. Thirdly there is the insignificant role played by the TNCs in capital-goods manufacturing in developing countries.

It has been argued that the capital goods industries have been a source of many innovations. The production of new goods, services, and other processes needs new machines, and thus requires designs, modification



or maybe innovations in the sectors concerned. So, it is not surprising that some remarkable innovations in Western technology have emerged from these industries (Rosenberg, 1977: 142, 146).

In addition to a capital goods industry, a variety of skills could be trained and developed on the original ideas of the dynamics of designing and manufacturing. The growth of a stock of skills of that kind is of crucial importance for absorbing, adapting, and developing imported technology in accordance with the host countries needs. Furthermore, they could work as transmitters of technology to other industries by moving to them. Thus, here, the capital goods industry may play a two faceted role. First, new skills are learned, trained and developed in coincidence with specific requirements prevailing in host economics. Secondly, these skills, after their preparation, would be in a position to move to other sectors in the economy (1) (Rosenberg, 1978: 18).

The great potential that the capital goods sector has is its multiplier effect on the whole economy via its forward and backward linkages with the other sectors of the economy. Regarding backward linkages, this industry, being in the local economy and working according to its conditions may depend to a significant extent on local suppliers for raw materials, intermediate inputs or components. Such a linkage could take, as seen above, the form of buying ready-made parts or subcontracting. In doing so, the industry mobilize local resources, create more specialization within narrow lines of production and thereby more flexibility and accuracy in responding to the

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(1) See Stewart, 1981: 152.

particular needs of both machinery manufacturers and other producers (UNCTC, 1982: 20). Ultimately, these two together could soften the constraints on the balance of payments, unemployment and hence on economic development.

Turning to the issue of forward linkages, it is related to the previous one, in the sense that it is not enough just to mobilize local resources, but it is also important to look forward to the market for which it is going to cater i.e. this market as is explained in the previous section is characterised by low average income, widespread poverty and hence inability to satisfy the basic needs of the majority of the population. In this case, a capital goods industry would provide the producers of goods with the machines that are required for manufacturing consumption goods for which there is a demand in the market. Thus, the demand for machinery is derived from the consumption function in the local market. Hence, a sort of linkage between the pattern of demand in a developing market and that for capital goods might be created. The consumers' pattern of demand might play a role in the machinery's specification and in turn the capital goods sector would provide the producers with the machinery necessary to meet such a demand. So, some sort of circle could be created between the consumption pattern and capital goods industry. A 'virtuous' circle could develop as a result of the change of factors that affect it, especially the pattern of consumption.

Supposing that the developing countries have succeeded in achieving a reasonable level of manufacturing in the capital goods industry. They could lessen their absolute dependence on developed countries' markets for technology a technology which is, as seen above, in most cases inappropriate. This is in addition to many other favourable

repercussions on the whole economy. In this respect UNCTAD, suggested that:

"If the continuation of technological dependence is to be overcome and if the developing economies are not to be mirror images of the developed countries the creation of a national capital goods sector is of vital importance". (UNCTAD, 1983: 15)

So, what is the role of the TNC in stimulating such a crucial sector?

As a matter of fact, the creation of a reliable capital goods industry in developing countries needs, inter alia, the existence of fundamental skills in engineering, design, manufacturing, R & D and trained intermediate personnel. As a matter of fact, most developing countries are suffering from shortages of most of these elements. And above all they lack the organisation necessary for linking this sector with the rest of the economy. In this respect the TNCs can play a significant role via adapting and simplifying their technologies, training local personnel in the key elements underlying the design and manufacturing of machinery, undertaking R & D for those tasks, employing local personnel among their staff and more importantly working as an integrated part of the local host economy.

However, the contribution of the TNCs in this sector has been kept to the minimum. Even more they are trying to integrate the host economies into the economies of developed countries. Such a tendency could be deduced from exports/imports, R & D, inter-sector relations, their bias towards consumption goods and heavy advertisement campaigns. In addition, at a time when they prefer the consumption sector, they are reluctant to invest in the capital goods industry. In a study undertaken by the UNCTC on TNCs transfer of technology in capital goods industry in selected developing countries, it was found that their investment in this sector was limited. In South Korea, for

instance, over the period from 1967-1981, DFI directed into machinery industries accounted for 10% of the total DFI in the manufacturing sector. Even worse results were found in countries such as Indonesia, the Philippines, Kenya, and Egypt. Nonetheless, their role was more significant in Brazil, and India, albeit the latter depended on getting licences from the TNCs (UNCTC, 1982: parts II: III).

Moreover, within the limited proportion channelled into this sector in certain countries, it was found that the TNCs tend towards an assembly pattern of investment. This means that technology added in host economies is insignificant. These companies have not established or undertaken R & D in order to adapt or design machinery that fits developing countries. In Brazil, for example, the largest single developing country that receives DFI, R & D facilities in the capital goods industry are very minor and the subsidiaries of the TNCs are dependent on their parents for designs and manufacturing drawings (UNCTC, 1982: part 1: 13, 243, 255).

The same trend was noted for licences. Most of contractual agreements have been directed to consumption industries (Odle, 1979: 193). In the Philippines, for instance, the percentage of contracts entered into in the manufacture of electrical motors, engines, machinery and distribution transformers accounted for 7% of the total in this country (UNCTC, 1982: 131-132). Nevertheless, such a mechanism played a significant part in countries such as South Korea, and India. This difference could be attributed to the relatively strong bargaining position of these countries which emerges from having the skills and entrepreneurs capable of adaptation, assimilation and imitation and to the role of the state's policy as in India (UNCTC, 1982: part III: 253-54).

Consequently, the developing countries' share of the World production of capital goods was negligible (4%) in the late 1970s. In the meantime their imports of machinery and equipment rose from \$7 b in 1963 to \$62.3 b in 1976 and is estimated to have reached over \$80 b in 1981. These imports included durable goods such as automobiles and household electrical equipment (UNCTC, 1982: part 1: 49, 66). These figures, illustrate in fact, that the developing countries are getting dependent more and more on developed markets. This dependence might have bad repercussions on the economy. The technological dependence, means not only imports of machinery, but also, other sorts of know-how inputs, and raw materials that fit in. Equally worse, is the disintegration of the local economy and the alienation of the masses of the population out of the integrated circle between the modern sector in developing economies and developed economies.

The TNCs , in this regard might find it easier and more profitable to create markets for their technology and products rather than to create technology that suits existing markets in developing countries. Thus, their interference in the circle between the capital goods industry and the consumers might shift it towards their capital goods and hence, alienate the local capital-goods industry if there is any. This could be deduced from their efforts in adaptation, R & D, and advertising. So, in the end, the technological dependency gets perpetuated as long as possible. The end that is in harmony with the global strategy of the organisation of the TNC, and if, the establishment of an efficient capital goods sector in these countries would put an end to the technological dependence, as UNCTAD suggested, how could we expect the transnationals to help in a situation like this!

In this respect however, one should not gloss over the the limitations of some developing countries' markets that might adversely affect this industry. The capital goods sector needs an effective demand in order to be efficient. This is a requirement that most of developing countries' markets cannot offer (Rosenberg 1977: 145). In addition, these markets mostly suffer from over-diversification; the reluctance of local producers to use local capital goods because of lower quality, high risk, and high cost. And this sector needs a significant amount of investment in countries with high risk and instability (Colman & Nixon, 1978: 234-35). These limitations, as suggested above, might not encourage the transnationals to get involved in the capital goods sector.

#### **2.4.3 Technology Cost**

The process of transfer of tehcnology via the TNCs raises two questions related to cost. The first is related to the cost for the suppliers of technology while the second, is related to the cost for the recipient of technology.

The first question is in fact a controversial one. Some argue that technology transfer is a costly task. Every new application of technology requires some sort of adaptation which might be expensive especially in the case of developing countries. This is since these countries' environment as seen above, is so different from the environment where such a technology has been created (Lall, 1984: 8). Thus, the TNCs as a profit-seeking organisation, albeit globally, should be compensated for such a transfer and for their investment in creating or innovating new knowledge (Johnson, 1975: 59).

In contrast, there are some others who contend that the transfer of technology is in some cases costless and it might be costly in some others. The first case takes place when the TNCs introduce a given innovation in recipient countries to produce the same line of products without adaptation. In the second case (where it is costly), the TNCs might bear minor costs on occasions where only a few adaptations take place. In a situation like this Vaitzos estimated the cost as tens of thousands of dollars (Vaitzos, 1973: 371; Teece, 1977: 260).

With regard to developing countries, technology costs might take two forms. The first, is direct costs, and the second is indirect costs. Direct costs, consists of payments that the recipient should pay for the use of technological elements either soft or hard. Soft elements are such as know-how and technical assistance, while hard elements are such as machinery and equipment, where costs should be paid, almost, during the first stages of the establishment and which tend to be exaggerated. As for the soft elements' price, it differs from one transaction to another and could be lump sums, royalties, equity participation, or a combination of two or all of these. Such a kind of cost is very difficult to estimate accurately. Wholly foreign owned subsidiaries, as seen above, do not, often, enter into contracts with their parents. Even in cases, where they do so, the price has no meaning beyond being an accounting requirement to satisfy the developing country government. Hence, the written price does not reflect the real value of the flow of technology from the parent firm to its subsidiaries (Cooper & Sercovich, 1971: 27). In some other cases WFOS do not include the price in their contracts (Patel, 1974: 9).

As for the other forms of DFI, in general there are some factors that affect the real price. Among them are the strong monopolistic position of the TNCs and the weakness of their counterpart developing countries, as seen in the technology market above. We should therefore expect that the developing countries have over paying for their technological needs. Vaitzos, has mentioned many examples (1973: 315-319; 1973: 370-376). According to UNCTAD estimations, the cost of payments connected directly with the transfer of technology to developing countries were equal to 5% of their total exports (excluding oil) and 8% of their imports of machinery and equipment (excluding passenger vehicles) and chemicals. In addition, it was estimated that the cost of technology was growing at 20% annually until the end of the 1970s. (Patel, 1974: 9-10; UNCTAD, 1975: 27).

Despite the fact that the direct costs seem to be increasing at a high rate, they, as Patel described them, represent the 'tip of the iceberg', inasmuch as the indirect costs resulting from restrictions, transfer pricing and some other devices are a serious source of foreign exchange drainage from the developing countries. One striking example emerges from Colombia, where costs arising from over-pricing intermediate products accounted for some six times the declared profits (Patel, Ibid, 11). See also, UNCTAD, 1975: 25-30).

Thus, it is clear that the weak position of recipients of technology from developing countries, and the previously described policies of some of them towards DFI and transfer of technology would put serious constraints on the development of these countries.



## 2.5 Conclusion

In this chapter the purpose was an attempt to throw some light on the nature and structure of technology markets. In addition, it aimed to discuss the main mechanisms through which the TNCs might introduce foreign technology into developing countries, and the issues that such mechanisms and performances might raise. Characteristically, the technology market is concentrated in developed countries. It is also dominated by the TNCs. These companies hold the majority of patents especially in developing countries. They by virtue of their enormous capabilities, undertake the majority of R & D, and of innovations and hence take the lead in the transfer to technology process.

In contrast, the technological situation in developing countries suffers from many deficiencies. These countries hardly pay significant attention to R & D in terms of expenditures, equipment, and required personnel and their educational systems tend to be biased towards the theoretical aspects rather than empirical or practical ones. In a word, these countries mostly lack the necessary technological infrastructure.

It was natural that such a situation, involving both dealers, would be mirrored in technology transactions. It has been noted that the TNCs do not transfer technology in a genuine way. They do not embark upon training, undertake R & D, adapt core technology, or integrate in host economies. Thus they are behaving as if they are 'enclaves' in host economies. Moreover, the suitability of technology introduced by the transnationals has been under question. There is semi-consensus that it is inappropriate to recipient countries conditions. It tends

to be capital-intensive technology that is concentrated in the consumer goods' sector to produce luxury goods, goods which satisfy the needs of only a small proportion of the population. It also deepens the unbalanced economic development especially between capital and consumption goods.

Consequently such activity could not be expected to produce anything but unfavourable results for the recipient economies, such as increasing unemployment and widening income inequality, adding more constraints on the balance of payments and hence on the process of economic development. Above all this does not lead to the creation of an indigenous technological capability.

The responsibility for this lies on both the TNCs and the developing countries. The first tend to work as a global organisation in an unified way irrespective of the differences between markets in which they operate, while the looseness of developing countries' policies and their technological weak position has encouraged the TNCs.

So, these countries badly need to rethink their policies on local R & D, education, industry, legislation, training, and organisation to work in harmony and lead in the end to a technological and economic independence.

## CHAPTER 3

### Industrial Development and Direct Foreign

### Investment in the Egyptian Economy

Having discussed in the last chapter the major issues that might arise from the TNCs' foreign direct investment in general and transfer of technology in particular, this chapter describes the industrialization process in Egypt as a backdrop to the later analysis of the effects of DFI in Egypt on the transfer of technology.

The Egyptian economy has witnessed many distinct changes over its recent history. However, the main part of this chapter will be mainly confined to the changes that took place over the last three decades since the 1952 Revolution. 1952 marked the beginning of a new page in the economic, social and political life of the Egyptians. The leaders of the revolution realised the crucial importance of state intervention in the economic policy in order to rectify the poor economic and social situation that prevailed before that time. This attitude took different characteristics at different stages and witnessed some changes - so, it thereby resulted in different outcomes for the economy as a whole. Thus, the analysis of this chapter will be divided into two distinct stages.

The first stage which is the concern of the first part of this chapter, starts from 1952 and extends until the early 1970s. It will be in its turn divided into two phases from 1952 to 1956 and from 1957 to the early 1970s. The second main stage began in the early 1970s the Open Door Economic Policy (ODEP) was adopted and is the subject of the second part of the chapter.

Section 1. The Industrial Development of the Egyptian Economy  
(1952-1973).

Industrialisation has been of vital importance for Egypt. This country is not sufficiently well endowed with natural resources such as oil and other materials to match the increasing rate of population growth. Since 1927, this growth rate has been rising by 1.09% over the period 1917-1927, 1.78% between 1937 to 1947 and 2.54% in the period 1960-1965. The latter rate was much the same for 1970s (UNCTAD, 1980:1). There has therefore been some attempt to industrialize this country during the last and present centuries.

Characteristically, the conditions under which such attempts have taken place changed from one period to another. The first genuine attempt was started by the founder of modern Egypt, Mohammad Ali (1805-1849).

During that time Ali tried to build up a strong economy based on a modern industry. He established many industries which produced a variety of products such as woven silk, linen, cotton clothes, sulphuric acid and other chemicals. The striking achievement was in the establishment of a capital - goods industry that contributed significantly to satisfy the needs of local factories for machinery and equipment, especially in textiles (1) (Issawi, 1961:2; 1963:22). Ali also sent some missions to Europe, especially France, for training and studying in order to keep abreast with the last developments in other countries. (Issawi, 1954: 23). In addition, there was emphasis on training and technical education resulting in the establishment

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(1) See: Mabro & Radwan, 1976:13.

of a school for engineering. These efforts resulted in improving the local skills to a level comparable with that which was prevailing in Europe at that time (Carr, 1979:12).

In order to encourage industry locally, Ali followed an administrative protection policy against imports of competitive products. Moreover he monopolized both the industrial sector, exports and large parts of imports. In addition, some sectors such as the military, were closed in the face of foreign competition. These measures, inter alia, helped local industry to flourish. However, such a situation was to be halted at the hands of France and Britain. Thus Egypt's market was forced to open its doors to foreign products under the Anglo-Turkish convention in 1838 which resulted in turning Egypt as an integrated unit into the international economy.

The French and British goods penetrated the local market competing fiercely with the infant domestic ones. In this way the domestic products lost their market, a loss that was aggravated after the defeat of Ali in 1840 by the superpowers at that time, since the military sector was a significant market for local production (Mabro & Radwan, 1976: 11-17). Many infant industries lost the battle with foreign goods. The cotton trade was the backbone of the economy until very recently. Such a situation continued from bad to worse until the 1920s. In this decade, under the British occupation, there were some notional attempts to establish a local industry. Although these attempts succeeded in their efforts, especially after the restoration of tariff and fiscal autonomy after 92 years, the established industries suffered from problems because of the rise in the price of raw materials after the second World War and, accordingly the rising cost of its products. In addition, Egyptian industry at that time

used old machinery which produced goods of poor quality by international standards, hence it was not able to compete either in the internal market or on the international one having advantages in terms of neither cost nor quality. The goods were simple and concentrated in food and textiles without connection with a global strategy for the development of the economy as a whole. (O'Brien, 1966: 19-20). In addition, these attempts lacked the tangible support from the government. This situation continued until the break-out of the Free Officers Revolution in 1952. That date marks the beginning of phase one.

#### Stage I: Phase One 1952 - 1956.

The beginning of this phase coincides with the most drastic change by which Egypt came to identify itself as an independent country. The government of that time embarked upon the adoption of a double-sided policy. First, it encouraged private investment, both local and foreign. Secondly, there was a direct participation of the state in the industrial process, especially in heavy industries.

As far as the first side is concerned, the authorities did not spare effort or time to encourage foreign and local investment. Thus there were a series of laws promulgated in order to achieve this purpose. In this regard, Law No. 156 of 1953, amended by Law No. 475 of 1954 offered foreign capital incentives such as unlimited transfer of profits in full and the repatriation of imported capital only one year from its importation. It relaxed the regulations that restricted foreign ownership to allow majority foreign ownership 51% instead of the 49% maximum allowed under the 1947 Law. Moreover, foreign

investors were invited to enter most of the major economic sectors and industries such as trade, energy, mining, transport and tourism.

Parallel with this tendency many incentives were also given to the mining and petroleum industries by the promulgation of law No. 430 of 1953. Among the incentives was the exemption of profits from taxes for 5 to 7 years for existing and new projects respectively. Thus in 1954 petroleum concessions were granted to four companies (Issawi, 1963:53).

Nevertheless, despite the previous generosity, the outcome of foreign investment came to be an insignificant proportion (0.7%) of total investment (Driscoll, 1978:6). This investment was mostly channelled into the oil sector (Carr, 1979:20). This might be due to the reluctance of foreign investors to enter into a country with a high degree of political instability, especially in the wake of the revolution. In addition, the government declared its firm intention to intervene in the economy from the beginning.

With regard to the second characteristic, the government recognised the urgent need on the part of the industrial sector for a strong push and for diversification. In order to carry out this objective, Law No. 213 of 1952 was announced for establishing the Permanent Council for the Development of the National Production (PCDNP). Its aim was to study and promote new projects in parallel with the development of the national economy. Thus the government participated directly in the establishment, promotion and running of several pioneer industrial projects (Radwan, 1973:227).

The PCDNP realising that the heavy industries were of crucial importance for a reliable development sought the participation of West Germany in establishing the Helwan Complex for iron and steel in May 1954. Meanwhile, it contributed to the setting up of companies for rubber tyres, fertilizers, railway equipment, electric power stations, hydroelectric power stations, and oil exploration in different parts of the country. Therefore, this council organised the direct participation of the state (Girgis, 1977:20).

Such efforts in addition to the tendency to diversify the economy to include other basic industries such as chemicals and petroleum resulted in an increase in the capital/labour ratio (K/L). Thus this ratio became relatively high compared to that prevailing in the preceding years. Over the period between 1952 and 1958, capital intensity in the modern sector in establishments of 10 workers and more increased by 40%. This resulted in an increase in labour productivity by about 4% (Mabro, 1974:151). Nevertheless, such intensity did not dominate the largest part of the industry. Only over half of domestic manufacturing output in 1957 was produced by factories that used capital/intensive techniques (Mabro, 1967:343).

Furthermore, the industrial sector had no significant forward linkages with other economic sectors. In 1954 such linkages were so weak that some 20% of the total supplies to other industries came from local sources. In the meantime, backward linkages were stronger than ever, and agricultural raw materials amounted to about 50% of total domestic inputs supplied to the industrial sector at that time. These economic phenomena could be interpreted in the light of the very limited share of capital goods in the economy (2%) of value added in the industrial sector (Mabro & O'Brien, 1970:418). This sector was in no position



to supply industries with their needs for machinery, equipment, and spare parts. In addition, the intermediate industries' role was also limited since food processing and textiles dominated the industrial sector, despite the PCDNP efforts to diversify the industrial base. So, this sector badly needed a strong impetus in order to take off.

Stage I Phase Two: 1957 - 1974.

It could be deduced from the previous section that government intervention in the economy was as described by Mabro & O'Brien a 'gentle one' (1970:413). But the 1956 war came to represent a turning point in this respect. Following this war a strong belief was generated that the country ought to depend on itself economically after the measures taken by the British and the French to boycott Egypt. The greater the dependence on the outside world, the more vulnerable the country would be. Thus, state intervention in order to lessen such a dependence on consumer and manufactured goods was imperative at that time.

The role that the state had to play was extended both in range and intensity to take further dimensions. So, there was a sequence of steps in order to achieve that end. There was the creation of the Ministry of Industry in 1956, and the Economic Organisation (E.O.) in 1957. To this organisation many industrial and trade establishments were affiliated such as the Egyptianised French, Belgian and British ones, after the Suez War. This was in addition to newer corporations ranging from petroleum to banking and insurance. These affiliated companies accounted for 30% of total output and 20% of employment in the organised sector at that time. Thus, the government was able to control about 50% of total credits via commercial banks and some

68% of the insurance business and was therefore in a position effectively to affect the financial activities (Radwan, 1973:230-31).

Moreover, a remarkable manifestation of bold and firm intervention was the creation of the National Planning Committee in 1957 (N.P.C.). Its task was to put forward a path for industrial development. Maintaining that aim, in the same year, the committee prepared a programme for mobilizing both public and private efforts towards economic and industrial development. This program was to be carried out with the help of the USSR and West Germany, both financially and technologically (Issawi, 1961:19).

The programme was to run from 1957 to 1961. It aimed at a total investment of £330mn over five years to increase employment by 120,000 and net output by £84mn. Industrial production as a percentage of GNP was targeted to increase from 11% to 19% over the same period (Radwan, 1973:228). Thus the total investment was allocated among the three major sectors, industry, agriculture, and services. The industrial sector was allocated the largest single part, about 40% of that total, divided as follows: 30% for consumer goods industries, 41% for intermediate goods and 29% for capital good industries including durable consumption goods. (Agwa, 1978:305). It is clear from this allocation pattern that there was some emphasis on both the capital and intermediate goods industries. This emphasis coincided with the declared policy of reducing the dependence on foreign sources for requirements of such goods.

This programme, in fact, represented the first step in building a planned economy. Nevertheless, it fell short of achieving its goals. It was prepared in so short a time that there was no specification of its

sources of finance. In addition there was the reluctance of the private sector to invest in industry preferring investment in real estate (Mabro & O'Brien, 1970:416). Such a tendency on the side of this sector had adverse repercussions on industry, since private investment was estimated to reach 79% of suggested total investment in this field and the government's share was 21% of the total (Mabro & Radwan, 1976:67). Consequently, the general structure of the Egyptian economy did not demonstrate significant change. Thus, until 1959, the industrial sector remained dominated by simple industries which need simple production techniques as it was over the previous phase (Agwa, 1975:48; Shafik, 1983:16).

Correspondingly, as a result of the shortcomings of the 1957 programme coincidental with the objective of speeding up social and economic development, there was a comprehensive five year plan 1960-65 which represented the first stage of the ten year plan 1960-1970.

The general philosophy that underlined this plan was import - substitution, the industrialisation philosophy that prevailed in most developing countries at that time. Accordingly, there was a concentration on producing the products that the country used to import in order to meet local needs from local sources. In line with this, there was an increase in tariffs and other measures to protect local infant industries from foreign competition and accelerate the industrialisation process.

Moreover, the plan had some other ambitious aims. It aimed to raise national income by 40%, increase employment by one million over the 5 years, decrease imports by 6%, speed up the industrial growth by

15% per annum and agricultural sector growth by 5% compared to 6% and 25% over 1952-1960 respectively (Radwan, 1973:231).

In line with these aims, the plan laid down a total investment amounting to £1636mn over the plan period. This amount implied an increase in the investment to GNP ratio from 12.5% in the base year to about 20%. This target was based on the presumption that domestic savings would increase to a similar ratio of GNP. Hence, it would be possible to allocate the industrial sector some 27% of the total. Yet, the actual investment fell short by 25% of the target in the first year of the plan.

So a belief was generated at that time that it is impossible to achieve inclusive planning in an economy where about two-thirds of output was produced out of the control of the state. By the same token, the competent authorities were convinced that for successful planning the allocation of resources and output must be in the hands of the people represented by the state. On these grounds, there were the striking and intense nationalization waves of large firms operating in the industrial and commercial sectors in 1961-1963. The Egyptian economy, thereby, became dominated by the public sector, nearly a decade after the 1952 Revolution (Mabro & Radwan, 1976:98).

The share of this new sector in total output rose from 15% to 35% between 1953 and 1963/64. The share of investment by the public sector in total investment amounted to 90% of the total investment over the years of the plan and its share in local saving reached about 46% of the total (Ministry of Planning, 1960:108-118). On the other hand, by 1963 the private sector was confined mainly to small scale industries such as leather and furniture. In addition, it dominated

the retail trade, housing, professional services and land property as a whole (Girgis, 1977:27).

However, comprehensive planning in a developing country with limitations of available resources, was naturally to face some challenges on its way. Such challenges, either internal or external, caused setbacks against the achievement of the planned targets. Still, the private sector remained unwilling to take an active role in the plan; and there was a harvest failure in the cotton crop which represented a disaster for the country, since cotton exports were the main source of exports and hence foreign exchange. The share of raw cotton and agriculture products in total exports amounted to over 78%, 71% of which was raw cotton alone (Mabro, 1974:179). Another factor that added to the burden on the available resources was the increase in consumption expenditures owing to the ambitious social objectives that the plan traced to achieve such as the employment push-up policy, where the government was obliged to employ all the graduates from universities or secondary schools and increasing the minimum level of wages. Thus, both public and private consumption expenditures increased by 17.8% and 7.3% per annum respectively. Hence, there was a shortage of capital finance for investment. (N.B.E.,1969:25).

Furthermore, there was a difficulty emerging from the policy of ISI which was adopted at that time not only by Egypt but also by most of the developing countries. Such a difficulty resulted from the increasing dependence of these countries on developed markets for their requirements of capital goods, equipment and capital finance either in DFI, loans or even grants. The developing countries, by and large, became more linked to external sources for their development process

to go ahead. Such a position makes the whole process vulnerable and sensitive to any changes that might happen and affect these sources. So, if these external sources for one reason or another cut the developing countries from their aid, they would affect the whole development effort adversely. This is since as Nixon pointed out:

"a decline in the availability of foreign exchange will lead to forced import curtailments and industrial recession"(Nixon, 1982:45).

Regarding the case of Egypt, it was noted that imports were increasing over the plan years rapidly. The average annual rate of increase amounted to 15.5%. This increase took place even though imports of consumption goods (excluding food) witnessed a sharp decline from 28.7% over 1953-59 to 16.0% over 1960-1965 of total imports (Mabro & O'Brien, 1970:424). This phenomenon might be explained in the light of a structural shift in imports. At a time when consumer goods imports declined as a result of tariff and non-tariff measures, the imports of capital goods, inputs, raw materials, and spare parts, increased so rapidly that it offset the decline in output of the former goods. Such a shift could be deduced from Table 3.1.

TABLE 3.1.

Composition of Manufactured imports over the period 1945-1968 as a % of the total.

	1945	1952	1957	1960	1965	1968
Consumer Goods	43.3	34.9	54.3	22.1	24.8	14.7
Intermediate Goods	40.7	36.7	27.7	44.3	41.6	45.6
Capital Goods	16.0	28.4	18.0	33.6	33.6	35.3
Others	-	-	-	-	-	4.4
TOTAL	-	100	100	100	100	100

SOURCE: Radwan, S. 1973 : 245.

Table 3.1 outlines clearly the structural changes in imports from 1952-1968. Imports of consumption goods witnessed a sharp reduction from over half of the total imports in 1957 to less than one-quarter in 1960-1965 and continued to decline to 14.7% in 1968, while imports of intermediate goods represented the most significant increase over 1960-1965 compared to the previous period. As for capital goods they witnessed a significant change. Although imports of durable consumption goods such as cars, electric fans and refrigerators, were restricted, imports of machinery and capital equipment steadily increased in order to meet the industrialisation process requirements. In addition, imports from foodstuffs nearly doubled. Thus, the deficits of the balance of payments reached about 5% of GNP during the plan period (Radwan, 1973:234; Agwa, 1978:381).

What made the situation even worse, was that exports were falling behind imports as shown in Table 3.2.

TABLE 3.2

Balance of Trade situation over the periods 1960-1964 and 1965-1969

Year	£EMN			
	(1) Exports	(2) Imports	(3) (½)%	2-1 Balance
1960 - 1964	986	1,590	62	-604
1965 - 1969	1,367	1,782	76	-415
TOTAL	2,353	3,372	69.7	-1,019

SOURCE: N.B.E. 1969, No.1:61; 1973 No. 1:37.

This table, summarizes the situation of both exports and imports over these periods. It is clear that export value fell short of paying for imports by 38% over the period 1960-1964. So, such a gap had to be bridged by loans. Meanwhile, there was another choice to the government which was to rationalise imports. In fact the government used both means. The authorities imposed heavy restrictions on imports of consumer goods which resulted in decreasing imports of these goods and hence, balance of payments deficits dropped to about 1% of GNP in 1968/69 (Mabro & Radwan 1976:46).

In addition, the government anticipated a higher level of foreign resources to finance the ambitious 5 year plan projects. The share of foreign capital as a source of finance then rose from 8.8% over the period 1952 of 1960 to reach about 23.6% in 1961-1967/68. The Egyptian economy, therefore, became increasingly vulnerable to changes that might come from external factors. Such vulnerability was manifested when the Americans cut off their aid to Egypt in 1964. At that time, a severe shortage in foreign exchange tangibly constrained industrial development. The country was not able to afford imports of necessary spare parts, machinery, raw materials. So there was an increase in under utilization of potential capacity. (Radwan, 1973:234) Such a situation represented the common complaint of firms with idle capacity in their response to questions from the Treasury. They specified that shortages of imported inputs and spare parts the outcome of foreign exchange dearth were responsible for their idle situation. (Mabro & Radwan, 1976:163) This idle capacity was estimated to reach in some industries up to 70% of the total capacity (Matar, 1981:23).

In brief, the lack of foreign exchange was the biggest obstacle in the path of success for the five year plan. Nevertheless, despite



the previous challenges, this plan was described by some economists as one of the most successful and sustained economic development plans relative to other developing countries (Makki & Qayum, 1975:158).

Over the years of the plan, national income rose by 37%, the increase that was close to the planned target (40%). In percentage terms the compound rate of increase was 6.5% compared to the 4.8% to what prevailing over the previous five years. During the years of the plan, employment recorded an unprecedented increase which exceeded the target, increasing from 6mn in 1959/60 to about 7.3mn. Nevertheless most of the increase was channeled into the services sector (Abdel-Fadil, 1980:9). These changes are be summarised in Table 3.3.

TABLE 3.3.

General Indicators of the Egyptian Economy over the period 1955-1965.

	1955/56-1959/60	1960/61-1964/65
Total growth rate during period:		
Output	26.3	37.1
Demand	32.0	55.1
Investment	17.1	112.9
Consumption	34.4	46.8
Private	29.1	36.9
Public	67.9	89.0
Annual compound growth rate:		
Population	2.3	2.8
Output	4.8	6.5
Output per capita	2.5	3.6
Real private consumption per capita	1.7	1.7
Real public consumption per capita	6.1	8.8

SOURCE: Gerakis, 1967:458.

Having outlined the general changes that took place in the Egyptian economy over the 1960-1965 plan, it might be of interest to concentrate on the process of industrialization at that time.

In industry, there were many industries introduced over the years of the plan in addition to the expansion of the existing ones. The new industries included the production of electric bulbs, radios, cables and tubes, medical preparations, automobiles, spare parts, railway cars, rubber tyres and steel. The expanded industries included for instance, batteries, assembly of refrigerators, petroleum refining, and textiles manufacturing. (El-Kummash, 1968:213). In the meantime there was a tangible focus on capital intensive and heavy industries such as chemicals, pharmaceuticals, petroleum, iron and steel. Such a focus increased the absolute capital investment in the projects. Nevertheless the K/L ratio remained relatively constant, because of the driving-up employment policy that made the increase in labour offset the increase of capital investment (Mabro & Radwan, 1976:169). So compared to some developed countries, capital intensity in Egypt remained low. It was in 1965, for instance one-fifth of that which existed in Sweden (Mabro, 1967:342).

The common feature at that time was the dependence on Eastern and Western technology. both in its hard and soft forms. Eastern technology dominated the new projects and some of the existing ones, and the Western technology was almost in the nationalized and Egyptianized projects that were established with the West's assistance over the 1950s. As a result the absolute dependence on foreign technology at that time deprived the country of maximizing the backward and forward linkages among the economic sectors that might result from the big push policy towards industrialization. (Abdel Fadil,

1980:9). Thus employment in industry rose only by 6% and the rest of the increase was poured into other sectors, especially the service sector.

However, there was an increase in industrial inputs provided for other sectors from 20% in the previous period to 33% in 1967/68 (Agwa, 1978: 308). For example domestic production as a percentage of total supply in metallic products was 42.5%, non-metallic machinery 0.4%, electrical machinery 0% and transport equipment 8.3% in 1947. The comparable figures were 80.9%, 14.3%, 46.0% and 43% respectively in 1967 (Mabro, 1967:196). These figures prove that the emphasis put on industry in general and capital and intermediate goods industries in particular was promising. Regarding industry, it achieved at that time a remarkable contribution to the GDP by the yardstick of developing countries. Its share in GDP increased from 15% in 1945 to 26.6% in 1966/67. This is while the other sectors share were declining with the exception of the services sector that whose share rose from 39% to 41.4% over the same period (Radwan, 1973:242). Such an emphasis has led, in addition, to the increase of intermediate and capital goods in terms of value added. On the other hand the share of consumption goods was declining as shown in Table 3.4.

TABLE 3.4

Consumer, Intermediate and Capital Goods Industries in terms of percentages of value added over 1947-1967.

Sector	1947	1950	1956	1961	1967
Consumer Goods	81.7	75.1	70.4	64.2	59.9
Intermediate Goods	14.4	20.9	25.4	29.0	30.5
Capital Goods	3.9	4.0	4.2	6.8	9.6

SOURCE: Girgis, 1977 : 42 Table 1-16.

This table outlines the fact that at a time when there was a steady decline in the share of consumption goods, there was an increase in the shares of both capital and intermediate good sectors. Nevertheless the share of consumer goods remained to dominate the economy, while the share of capital goods remained to represent a very tiny proportion of the value added. This situation confirms that the Egyptian economy was suffering from an imbalance between the two sectors, and it might partly explain the absolute dependence of the country on foreign sources for technology in all its forms.

In addition to the features seen above, one may draw the conclusion here that there was over the first half of the 1960s, in Egypt a serious attempt to rectify the unbalanced situation in the economy, but the outcome was slow and relatively insignificant for the capital goods sector. But, these attempts, as seen above, increased the contribution of industry to the economy. Further, industry became more diversified, and hence its share in exports increased as shown in Table 3.5.

TABLE 3.5

Commodity composition of Exports in terms of percentages

	1952	1960	1965
Agricultural Products	3.3	12.6	14.6
Raw Materials	85.4	66.5	57.2
Fuels	1.0	3.1	8.0
Finished & Semi Finished Goods	5.1	14.5	17.5
Others	5.2	3.3	2.8
TOTAL	100	100	100

SOURCE: Radwan, 1973 : 245.

It is apparent from this table that raw materials came far up at the top of the list of exports with more than four-fifths of the total in 1952. But after that time and as a result of the attempts to industrialize raw materials internally and export them as manufactured goods, their share declined by 50% in 1965. In contrast, there was an increase in the exports of other sources such as fuels, agriculture products, and industrial finished and semi-finished goods, where the share of latter goods in exports increased by 3.5 times than it was in 1952 and by 20% than it was in 1960.

In this respect, in a study undertaken on exports by certain developing countries over the period 1953-1968, O'Brien concluded that:

"At the beginning of the period (1953) the U.A.R.(Egypt) was the least diversified exporter, with exports of raw cotton alone accounting for more than 85% of the total, but by 1968 that country occupied a middle position in the ranking and the share of raw cotton in the total had fallen to about 45%" (O'Brien, 1972:703). (1)

From the list of countries studied below, it is clear that it included some of the major semi-industrialized countries. And for Egypt to change its place to the middle means that there was a remarkable change in the structure of the country's exports.

Yet the challenges that faced this country, as seen above, accumulated to squeeze the process of economic development. So, the government of that time was obliged to reduce the investment rate from 19.7% to 11.9% of GNP. The rate of growth diminished to 0.7% in 1966/67. Even worse, it accounted for a negative rate given the rate of

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(1) The countries studied were in alphabetical order, Argentina, Brazil, Burma, Ceylon, Dominican Republic, Ghana, India, Jamaica, Kenya, Mexico, Nigeria, Sudan, Tanzania, Trinidad, Tobago and U.A.R. (Egypt).

population growth of 2.8%, to reach about 2.2% in the same year, and the share of industrial investment decreased by 24% over the same time (Ministry of Planning, 1968:66-71; CAPMS, 1970:10). Meanwhile, the country to some extent depended on the excess capacity in some sectors such as industry, and electricity. (Mabro, 1974:231). But the 1967 war came to aggravate the country's problems.

In the wake of that war, the country and the economy were to work under war time conditions, which imposed severe constraints on economic development, the steady and rapid increase in military expenditures from 5.5% of GNP in 1966 to over 25% in 1973, the loss of Sinai oil with about 70% of total oil production; the loss of £E 30mn as a result of the destruction of refineries in the Suez Zone; the loss of tourism revenue; and the loss of Suez Canal revenue. These were in addition to the indirect problems that emerged from the immigration from the Canal Zone and the stoppage of the production in this area, and many other repercussions that wars have on any economy. In addition Egypt was engaged in a war of attrition with Israel from 1969 to 1973 (Matar, 1981:39).

Consequently, the second half of the 10 year plan was cancelled and replaced by yearly programmes and decisions (Girgis, 1977:27). Hence, the Egyptian economy was burdened by many problems, a situation that continued up to the 1973 war and the start of a new page in Egyptian economic policy, as will be seen below.

## Section 2: Open Door Economic Policy (ODEP)

Foreign capital has been playing a role in the Egyptian economy especially since the integration of the country into the international

capitalist system in the last century. Yet, this role did not take a unified form. It was sometimes dominated by portfolio investment and sometimes by direct investment and in most cases it was mixed, especially during the occupation era that started since 1882, foreign capital was playing its role without a comprehensive law to organise it; a situation that remained until the early 1950s. By this date legislation was promulgated to organize and attract foreign investment. But the response of foreign investors was limited (£E 0.8mn) over the period 1954-1960 (Dabbous, 1974:18). During the 1960s and especially after the nationalisation and Egyptianization waves, the role of foreign capital confined mostly to the establishment of turn-key projects, loans and technical assistance from both the West and the East, especially the USSR, which played the major part over that decade.

Since the early 1970s and the assumption of office by President Sadat, there has been a shift in the economic policy of the country. Some sort of liberalization of the economy has taken place. Private investment both foreign and local has been invited to play a significant role in the machinery of the economy. Such a tendency was evident in the passage of Law No. 65 of 1971. This law represented a precursor to what followed after then. Again the response of foreign investors was so cool that just 46 projects were approved. And only five out of this total have reached the production stage (Carr, 1979:41-43).

Hence, this law was replaced by the most decisive step to redirect Egyptian economic policy, by the adoption of what is called ODEP. The main instrument of this major change was the Law No. 43 of 1974 amended by Law No. 32 of 1977. This law has opened nearly all fields of the Egyptian economy for private investment both local and foreign,

though it was designed primarily to woo DFI. It was made a condition that foreign investment must take the form of joint-ventures with local capital either private or public. Nonetheless wholly foreign subsidiaries were permitted in certain cases. In order to achieve its purpose the foreign investment law has granted foreign investors a package of privileges to work as incentives, such as tax holidays, duties and tariff exemptions, no confiscations, relaxed repatriation of profits etc. (Law 43 of 1974, articles 4-8, 12, 15-18)). In addition there was some new legislation accompanying the open door policy concerns the relaxation of foreign exchange regulations, exports and imports, the property system, and the tax system. These policies will be discussed in Chapter Six.

This section is concerned to ask the following two questions:

First are these policies and the concomitant measures crucial to the Egyptian economy? Secondly have they been beneficial to the country in overcoming some of its problems of unemployment and in foreign exchange shortages?

In fact the answer to these questions will constitute the main theme of this section. Its importance in addition emerges from providing the background necessary for understanding the role of foreign capital in general and the TNCs in particular in the economy of this country. So, this section will consider the theoretical debate about the rationale of this policy and empirical analysis of the inflow of foreign capital and its sectoral and geographical allocation.

### **3.2.1 The Theoretical Debate:**

In the early 1970s as noted above, there were some preliminary actions taken with the objective opening-up the Egyptian economy.



In this sense, the October 1973 paper issued by President Sadat and approved in a national referendum in May 1974, represented the decisive step toward achieving this goal. This paper was followed in the following month, by Law 43. Since then, the ODEP has been the subject of continuous debate at all levels. Such a debate extended to include not only the reasons and justifications of the policy but also its potential outcome.

In this respect, there is an argument that is representing the government's view for which the General Authority for Foreign Investment and Free Zones (GAFI) has been standing. The ODEP was justified in the October paper by the claim that it would bring in hard currency, and hence fill the gap between local savings and required investment, the deficiency in know-how, and in hardware technology. Such injections into the economy would lead to the restoration of the growth rate prevailing over the first five year plan 1960-65 (October paper, 1974:37-39). This claim in the October paper left its echo on the debate that took place in the people's assembly about this policy. So, the new policy was justified on the grounds that:

".... in order for us to march with the times and in order for us to benefit from advanced technology, which in fact develops from one day to the next, it's inevitable that we make use of the existing relations between capital and technology by attracting it here to invest in projects' (Peoples Assembly debate, 1974:80).

In addition to these aspirations the GAFI added that DFI would generate positive multiplier effects on the Egyptian economy as a whole. It would increase production, create employment, and ease the chronic difficulties if the balance of payments has been suffering. (Atif, 1981:263). Some economists claimed that the ODEP would extricate

the country from the accumulated problems of the 1960s (Sherif, 1975:32).

Against this view of the ODEP, it has been argued that the rationale behind the adoption of the new policy was more political than economic. There was evidence of the continuing influence of the feudalist and capitalist interests nationalized in the early 1960s. The arrival of Sadat, who was regarded as pro-western, encouraged the learning towards the ODEP. (Dessouki, 1981: 413). Similarly, it has been argued that those in charge of the management of the public sector educated in the superiority of a flourishing capitalism played a key part in pushing towards the new policy. (Ayubi, 1982: 280).

On the other hand, the international factors played a more major role than that of the internal ones. In this respect, it has been argued that these factors have had the upper hand in the shift of the Egyptian economic policy (Abdel-Khalek, 1981:394). Among the international factors are the interest of the Americans and their allies (1) the international financial institutions especially the IMF which has been exercising a continuous pressure on the government to follow a free economy principles and to give the decisive role to the market (Dessouki, 1981:413).(2)

As a matter of fact the adoption of the new policy could not be explained in the light of one of these arguments in isolation from the others. The view that justifies the new policy on the grounds of

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- (1) This was clear from visits of William Simon, U.S. Secretary of Treasury; Rockefeller, Chairman of Chase Manhattan Bank, Robert MacNamara, President of the World Bank in 1974, etc.  
(2) For more details about these factors, See: Abdel-Khalek 1982; Ayubi, 1982, and Dessouki, 1981.

internal socio-economic factors, claiming that the economy needed a new and external blood, did not study or expose itself to other potential alternatives. And it did not specify why the 'infatih' towards the North-West was imperative and the sole panacea for Egypt's problems. The other view, that ascribes the new policy to external factors, although right in some elements, relatively neglected the effect of internal problems mentioned above. So, one tends to contend that the new policy was a combined result of all the above factors. The economic problems accumulated by the end of the 1960s and the early 1970s represented the appropriate atmosphere for both the internal and external factors to emerge on the surface and reshape the economic policy of the country. This has taken place irrespective or whether it is going to solve the country's crisis or aggravate it.

The new policy, has existed for more than ten years now. In consequence, it has had some effects on foreign exchange flows, technology, employment, production, exports/imports, and balance of payments. In the following pages we will take a general look at some of these aspects, delaying some others to the next chapters:

### **3.2.2 Capital Approved to Work Under Law No. 43 of 1974:**

#### **A) Capital Approved in Inland Projects.**

Responding to the new foreign investment policy and its concomitant measures, capital has begun to flow into Egypt. According to the GAFI, the number of projects approved to work in both inland and free zones amounted to 1634 by the end of 1982. These projects are distributed as shown in Table 3.6.

It is obvious that projects approved to operate inside the country represent the majority of the total approved. They account for 78%, 74% and 78% of the total approved number, capital and investment costs respectively. They are followed by projects in public free zones in terms of number and finally projects in private free zones in number. But, considering capital the latter category jumps to occupy the second rank in both capital and investment costs whilst the public free zones projects come in the third place for both capital and investment costs. As far as inland (as opposed to Free Zones projects) approved projects are concerned, it has been noticed that they are of a fluctuating nature, their number and hence their capital were varying sharply from one year to another as is indicated in Table 3.7.

In this Table, these fluctuations are very clear in all sectors: financial and service projects, construction and agriculture and industry. Thus the projects number accepted in 1976 represented some 32.5% of those accepted in 1975. This proportion increased in 1977 to 262% of 1976, but again declined in the following year to 94.5% and so on. This unsteady development was accompanied in most cases by the same tendency in capital. By the same token, the striking irregularity was in industry. In the last two years, for example, apart from number, capital approved in in the industrial projects increased in 1981 by 260% relative to 1980, but in 1982 it decreased by about 700% or seven times the 1981 figures. This feature over the years 1974-1982 makes the dependence on the foreign investment sector to revive the economy a myth rather than a reality.

Characteristically, the structural distribution of approved projects reveals that they are biased towards service and finance projects.

TABLE 3.6

Total Approved Project Until 31-12-1982

(000)

	Number of Projects (%)		Total Capital (%)		Total Investment Costs (%)	
A) Projects inside the country	1273	78	5 012 011	74	9 503 279	78
B) Projects in the Public Free Zones	301	18.4	0 249 632	4	342 878	3
C) Projects in the Private Free Zones	60	3.6	1 502 451	22	2 281 928	19
TOTAL	1634	100	6 764 094	100	12 128 085	100

SOURCE: G.A.F.I., 1983, table 1.

TABLE 3.7

Development of approved projects inside the country until 31-12-1982

(000)

SECTOR	YEAR	1975		1976		1977		1978		1979		1980		1981		1982	
		No.	C.	No.	C.	No.	C.	No.	C.	No.	C.	No.	C.	No.	C.		
Financing & service projects		55	345 492	32	138 195	68	586 084	49	169 803	61	261 048	81	422 195	102	326 698	48	782 066
Construction & Agricultural projects		16	11 112	8	29 202	32	107 274	40	49 691	53	80 373	53	97 911	72	114 805	24	94 299
Industrial Projects		98	146 641	15	85 676	44	117 782	47	78 554	67	156 391	57	207 311	123	536 163	28	67 255
TOTAL		169	503 245	55	253 073	144	811 130	136	218 048	181	497 812	191	727 417	297	977 666	100	943 620

SOURCE: G.A.F.I., 1983, Table 2.

No. = Number  
C. = Capital

These projects captured as shown in Table 3.8 some 60.5% of total approved capital. The break-down of this category suggests that capital employing projects occupied the first rank with 43% of this category's approved capital, followed by tourism projects with 21.5% of the category capital. The remaining projects are in the banking services, transportation and health sectors.

As regards the construction projects, they take the third ranked place with 16.6% and 7.5% of both number and capital in order. While in the agricultural sector it is self-evident from the previous table that private capital is reluctant to invest in it. Hence its share of projects number and capital totalled to 7% and 4% respectively. This means that this sector comes in the fourth place in investors' priorities.

The industrial sector held the second priority of the investors' preference ladder, both in capital and number. However, though this position seems to be a healthy sign, the share of this sector's capital is less than one-third of the total approved capital. Further, compared to accepted capital in the financing and service projects, its share accounted for less than half. It might, therefore, be of interest to illustrate the allocation of projects according to main industry and category of industries in order to see the relative weight of this sector's projects by industry.

More specifically the structure of projects approved within the industrial sector, as made clear in Table 3.9, indicates that the intermediate goods industries occupy the first place in terms of capital number and investment costs. In this category chemical industries take the first position with over one-fifth of total

TABLE 3.8

Distribution of Capital and Number of Projects Approved up to the End of 1982

	(000)			
	NUMBER		CAPITAL	
	No.	%	Value	%
- Financial & service projects	496	39	3 031 6	60.5
- Industrial projects	479	37.5	1 395 8	28.0
- Construction projects	210	16.5	372.0	7.5
- Agricultural projects	88	7.0	212.5	4.0
TOTAL	1273	100.0	5 012.1	100.0

SOURCE: Calculated from data provided by the G.A.F.I., 1983.



approved projects, albeit less than one-third of approved capital in all the industrial sector. It is followed by building materials, metallurgical and mining industries.

With regard to the consumption industries category, it is ranked in the second position. And this category is still dominated by food-processing and textile manufacturing industries. These two industries in fact represent some 84.5% of total capital approved in the same category.

The Engineering industries category comes in the third place relative to the previous categories and as the fifth among the five major industries such as chemicals 30%, building materials 18%, food processing 18%, textiles 13% and engineering industries with 10.5% of total capital in all these industries. These industries altogether represent about 84.5% of total capital approved to work inside the country. In this respect, it might be of interest to note that engineering industries are dominated by consumer durable goods like cars, refrigerators and the like. Nothing significant was traceable to be directed towards machine-making industries as will be illustrated in Chapter 6.

Moreover, the approved projects tend to be concentrated in big towns near large markets. Cairo governorate for instance, has had the lion's share of projects in terms of both capital (48.5%) and number (35%). It is followed by Giza, Alexandria, lower Egypt, Suez Canal Zones and upper Egypt governorates as represented in Table 3.10. Such a bias, in fact, adds to the problems of the big towns extra pressure on infrastructure and services in transportation, communications and

TABLE 3.9

Distribution of Total Approved Industrial Projects Until 31-12-1982

(000)

	Projects		Capital		Investment Costs	
	N	%	V	%	V	%
Spinning and Weaving Industry	62	13.0	180 556	13	743 003	17.3
Food Industries	92	19.0	183 765	13	481 468	11.2
Wood Industries	17	3.5	27 519	2	49 707	1.0
Pharmaceuticals	13	2.7	39 306	3	77 250	2.0
<b>Total of Consumption Industries</b>	<b>184</b>	<b>38.4</b>	<b>431 146</b>	<b>31</b>	<b>1 351 428</b>	<b>31.5</b>
Chemicals	108	22.5	417 238	30	1 275 311	30.0
Building Materials	77	16.0	254 402	18	672 107	16.0
Metallurgical	39	8.0	99 716	7	507 517	12.0
Mining Industries	7	1.5	29 808	2	82 929	2.0
<b>Total of Intermediate Industries</b>	<b>231</b>	<b>48.0</b>	<b>801 164</b>	<b>57</b>	<b>2 537 764</b>	<b>60.0</b>
Engineering Industries	59	12.0	149 129	10.5	358 144	8.0
Petroleum Industries	5	1.0	14 334	1.0	29 874	0.7
<b>Total</b>	<b>479</b>	<b>100.0</b>	<b>1 395 773</b>	<b>100.0</b>	<b>4 277 859</b>	<b>100.0</b>

SOURCE: Calculated from data provided by the G.A.F.I., 1983.

traffic and the unbalanced pattern of development between urban and rural areas.

Having described the type of projects and the capital allocation, we now move on to detailed consideration of the projects implementation rates and determinants.

### 3.2.2.1 Implementation Ratio:

The ratio of implementation as a matter of fact depends upon many variables among which are: the total number of approved projects, the number of projects per category and industry, total approved capital, approved capital per project, and type of product. It depends in addition on the extent of the pressure the government is ready to exercise in this regard. In general, 552 projects started production inside the country by the end of 1982, i.e. 43% of the total. They are distributed by category as follows in Table 3.11.

The table illustrates that first of all, while the ratio of implementation in terms of number is reasonable at 43%, it is less good in terms of capital (31.5%) Secondly, the annual average rate of capital actually invested is, indeed, insubstantial. It accounted for some £E 176mn per annum, and of this more than 60% is invested by Egyptians. (See below).

In this respect, it will be interesting to break down this general position about implementation into sectors. Capital financing and service projects represent by far the most sizeable amount of capital implemented, capturing more than two-thirds of the total.

TABLE 3.10

## Geographical Distribution of Projects Approved to Work in Egypt up to 31-12-1982 in Terms of Percentage

Sector	Cairo		Giza		Alexandria		Suez Canal Area		Lower Egypt		Upper Egypt		The 10th Ramadan City		Other Areas		Total		
	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	
A) Finances & Services																			
Employing Money Co.	60	80	13	5.5	3	1	3	1	3	0.6	2	0.8	-	-	16	16.5	100	100	
Banks	64	78	6	3	2.5	4	6	3	10	8	9	4	-	-	1	0.2	100	100	
Tourism	44	44	24	18	10	14.5	3	3	-	-	11	19	-	-	7	2	100	100	
Transportation	28.5	57	9.5	7	33	13	19	20	-	-	-	-	-	-	9.5	2	100	100	
Health & Hospitals	60	80	28	18	12	2	-	-	-	-	2	-	-	-	-	-	100	100	
Services	33	22	20	7	18	66	9	3	9	1	2	0.2	-	-	9	0.8	100	100	
TOTAL	53	68	16	8	8	9	4	2	4	2	5	5	-	-	10	6	100	100	
B) Agri & Animal Wealth Co.	2	4	20	10	15	10	10	19	33	40	15	15	-	-	4.5	2	100	100	
C) Housing	7.5	83.5	17	11	6	4	1.5	1	-	-	-	-	-	-	-	-	100	100	
D) Construction Co.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	100	100	100	
E) Consultancy	76	81	17	16	-	-	-	-	3	2	-	-	-	-	3	0.7	100	100	
TOTAL	24	36.5	11	8	6	5	3	7	10	15	4	5	-	-	41	22.5	100	100	
F) Industrial Projects																			
Textiles	29	11	24	6	11	43	3	15	19	11.5	-	-	9.5	10.5	3	10.5	100	100	
Food	12	12	17	9	16	12.5	4	4	35	23.5	3	2	5	17.5	6.5	19.5	100	100	
Chemicals	29.5	10	23	10	7	2.5	1	34	19	9	1	23	14	8.5	4.5	2.5	100	100	
Wood	35	13	12	6	17.5	24	-	-	12	19	-	-	17.5	36	6	2.5	100	100	
Engineering	22	17	20	9	10	4.5	1.5	7	8	2	-	-	22	41	15	19	100	100	
Building Materials	18	12	17	8	9	6.5	8	6	14	11	6	3.5	18	22	9	29	100	100	
Metal Industries	28	8	18	6	5	50.5	7.5	4	18	19	-	-	15	6	7.5	6	100	100	
Pharmaceuticals	23	12	15	10	15	9.5	7.5	30.5	15	4	7.5	2.5	7.5	18	7.5	13	100	100	
Mining	14	0.6	-	-	-	-	-	-	-	-	43	9	-	-	43	8	100	100	
Oil	40	66	-	-	-	-	-	-	-	-	20	4.5	-	-	40	29	100	100	
TOTAL	23	12	19	8	10	14	4	16	19	11	3	10	13	16	8	12	100	100	
GRAND TOTAL	35	48.5	16	8	8	10	4	6.5	11	6	4	6.5	5	4.5	16.5	9	100	100	

SOURCE: Calculated from Table 12 of G.A.F.I. Annual Report 1983.

TABLE 3.11

Total Approved Projects Which Started Operation up to 31-12-82

	Number			Capital			Investment Costs		
	N	% (1)	% (2)	V	% (3)	% (4)	V	% (5)	% (6)
A) Industrial Projects	220	46	40	310 524	22	19.5	598 751	14	24.5
B) Financial and Service Projects	214	44.5	39	1 087 554	36	68.5	1 389 166	36	57.5
C) Agricultural Projects	29	33	5	107 976	51	7	221 550	46	9
D) Construction Projects	89	42	16	76 448	20	5	206 588	24	8.5
TOTAL	552	43	100	1 582 502	31.5	100	2 416 055	25	100

SOURCE: G.A.F.I., 1983

(1, 3, 5,) represent a percentage of total approved projects in terms of number, capital and investment costs in order in the same category.  
 (2, 4, 6) represent a percentage of total implemented projects in the same order.

N = Number of Projects

V = Value of Capital and of investment costs

Industrial sector projects' capital accounted for less than one-fifth of total capital invested and was equivalent to 28% of the capital invested in the finance and service sector. As for agricultural projects, their share of capital invested (7%) was rather insignificant as was that of construction (5%).

This structure of capital invested, biased towards the finance and service sector, reveals in fact, the conflict between the interests of foreign investment sector projects and the priorities of the country. The priorities of this sector, in this way, did not satisfy the aspirations of the Egyptians and fell short of the expectations of the government. A country like Egypt, as emphasized many times by the authorities, has followed the new policy in order to industrialize the country and overcome its major crises which have been mentioned above. In this respect the striking example of the conflict between the interests is that about 68.5% of total implemented capital biased finance and service projects whilst the industrial sector captured a small ratio.

It is self-evident then that foreign investors favour fields that generate high and quick profits without significant risks. American Express Bank, for instance, started operation in 1975 with \$2,500 mn and by the end of 1981 it transmitted about \$7mn as net profits. This means that this bank was able in such a limited time to repatriate nearly three times its capital. The same behaviour was traced more or less for other foreign banks operating under Law 43 (1) (Al-Ahali, 1984:8). This raises three issues. First of all, the nature of these

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(1) See: Atif, 1981:217.

banks' transactions, i.e. financing industrial projects and long or short-term loans; secondly, sources of these banks' finance i.e. foreign sources from the home country, from international markets or from internal sources, thirdly, that these foreign banks, instead of financing domestic development, are siphoning the capital out of the country to finance their operations elsewhere.

In brief, it was noted that foreign and joint-venture banks preferred to give credit to short-run commercial transactions that generate quick profits. In addition, they concentrated on financing imports. As a result, they contributed partially to the large increase of the number of commercial agencies to about a one-thousand representing about 2600 giant companies in Western Europe and the U.S.A. (Abdel-Khalek, 1981:407; Shafik, 1983:26).

This behaviour might find some explanation in the theoretical argument that foreign investors are usually keen to maximize their returns from their involvement in foreign markets.

Turning in more detail to the industrial sector in particular it may be worth noting the structure of implemented projects in this sector. Within it, the ratio of implementation varies from one industry to another according to the factors mentioned above. In this connection, as indicated in Table 3.12 the petroleum industry occupies first place in both number and capital in the percentage of total approved projects in the industry, with 100% of approved projects implemented. This high ratio in fact could be ascribed to the relatively limited number of projects approved in the petroleum industry. In addition, there has been a continuous encouragement on the side of the governments

towards projects in this field in order to extract more oil, and hence increase exports and foreign exchange.

As for the consumption industries, shown in the same table, their rate of implementation within the category is high to rank the second. Such a position is mainly owing to the low average amount of capital per project £E 1,574.0 in textiles and other industries such as food. Therefore the highest ratio of implementation was to be found in wood, textiles, food and pharmaceuticals in that order.

The striking phenomenon is the high ratio of completed projects that started production in the chemical industries. Projects in this field represent 28% and 25% of total implemented number and capital respectively in all the industrial sectors. Such a unique situation could be explained by the fact that chemical products are of increasing importance as inputs in many other industries. It could be attributed, further, to the urgent need for fertilizers and pesticides, for agriculture. Again, in the intermediate category of industries, it was found that their implementation ratio within the same category is relatively low. This is because that implemented projects are those with limited capital needs compared to the other ones. This might be deduced from Table 3.12 where the percentage of implemented projects in terms of number was 57.6% while in terms of capital it was 0.18%.

In the engineering industries, the share of actual invested capital is low taken either as a percentage of total approved capital within this category or as a percentage of total implemented capital. Moreover, engineering implemented projects are characterized mostly



TABLE 3.12

Implemented Industrial Projects by Sector and Industry up to 31-12-1982

(000)

	No. of Projects			Capital			Investment Cost		
	(1)	%		(4)	%		(7)	%	
		(2)	(3)		(5)	(6)		(8)	(9)
1) Spinning and Weaving Industries	37	59.6	16.8	58 238	32.2	18.7	122 120	16.4	20.3
2) Food industries	37	40.2	16.8	58 314	31.7	18.7	142 139	29.5	23.7
3) Wood Industries	8	47	3.6	9 447	34.3	3	17 089	34.3	2.8
4) Pharmaceutical Industries	3	23	1.3	3 943	10	1.2	5 221	6.7	0.8
<b>Total of Consumption Industries</b>	<b>65</b>	<b>46.2</b>	<b>38.6</b>	<b>129 942</b>	<b>30.1</b>	<b>41.8</b>	<b>286 569</b>	<b>21.2</b>	<b>47.8</b>
1) Chemical Industries	62	57.4	28.1	77 324	0.18	24.9	131 806	10.3	22.0
2) Building Material	20	25.9	9.0	31 554	12.4	10.1	63 512	9.4	10.6
3) Metalurgical Industries	21	53.8	9.5	27 962	28.0	9.0	43 480	8.5	7.2
4) Mining Industries	2	28.5	0.9	1 444	4.8	0.5	3 024	3.6	0.5
<b>Total of Intermediate Industries</b>	<b>105</b>	<b>45.4</b>	<b>47.7</b>	<b>138 284</b>	<b>17.2</b>	<b>44.5</b>	<b>241 822</b>	<b>24.8</b>	<b>40.3</b>
Engineering Industries	25	42.3	11.3	27 964	18.7	9.0	40 486	11.3	6.7
Petroleum Industries	5	100	2.3	14 334	100	4.6	29 874	100	4.9
<b>Total</b>	<b>220</b>	<b>46</b>	<b>100</b>	<b>310 524</b>	<b>19.5</b>	<b>100</b>	<b>59 875</b>	<b>11.3</b>	<b>100</b>

Calculated from data provided by the Authority of foreign investment and free zones.

- (2) the proportion of implemented projects to the total approved projects within the same industry.  
 (3) the proportion of implemented projects to the total implemented projects in the industrial sector.  
 (5) the proportion of implemented projects capital to the total within the same industry.  
 (6) the proportion of implemented projects capital to the total implemented capital in the industrial sector and the same for (8) and (9) for the investment costs.

by being relatively simple, for example razors, gear boxes, and refrigerators, as we shall illustrate in Chapters 5 and 6.

### 3.2.2.2 Employment and Production.

It may be useful to note briefly the effects of the foreign investment sector on employment and production in the Egyptian economy. According to GAFI, total approved projects were supposed to provide some 200,820 job opportunities up to the end of 1982. Nonetheless, the implemented projects created only about 72,495 jobs (GAFI, 1983: Table 3), 36% of the targeted goal. Furthermore, this contribution amounted only to 0.6% of the total labour force of 12.5mn in Egypt (NBE, 1983:Table 6/5).

The industrial sector's share in this total accounted for about 29291 opportunities i.e 41% which appears to be poor compared to the actual labour force in this sector (1,514, 2), where the foreign investment projects contribution was only 1.9%. (NBE, 1983: Table 6/5a). The construction and agriculture projects besides the finance and service projects, provided the rest of the total of about 42,168 jobs i.e. 58.9%. This limited participation in solving unemployment raises some worries about the potential role that foreign sectors are going to play in this economy in the future, especially as the tendency is to give the market mechanism the upper hand. These worries may be justified in the light of what is seen that firms working in the DFI sector are inclined to use capital-intensive technology as will be illustrated in Chapters 5 and 6.

Such a limited contribution is not in fact confined to employment but it is also clear regarding production as indicated in Table 3.13.

This table maps the actual distribution of production and services by projects working under Law 43 of 1974. It reveals that the total output of goods and services was £E 1.316.084mn up to the end of 1982. This figure means that the actual addition to production and services by these projects fell short of the targeted goal by 76%, where it was expected that by this date that the contribution would be about £E 5.500.423mn. Moreover, the actual production amounted to 6.7% of GDP in the same period (GAFI, 1983:5).

The industrial sector's contribution in this regard was about 50% of the total, which represented about 7% of the total national industrial production (£E 9.494.0mn) by 1981/82 (Ministry of Planning, 1983:1-5). The question of the kind of production and the extent of its relevance to the needs of the masses of population will be the subject of a detailed analysis in Chapter 5.6.

### **3.2.2.3 Net Foreign Capital Inflow Into the Egyptian Economy.**

In the previous part we have presented the broad outline of direct foreign investment sector projects both foreign and local. But in this subsection, we shall concentrate the relative weight of foreign participation. The aim behind that is first, to see to what extent the inflow of foreign investment is coincident with the aspirations of the government. Secondly, such foreign capital especially from market economies represents the main source of technology.

In this regard, the foreign capital contribution indicators are based on their share in total approved capital and not by the actual investment. This is owing to the absence of a distribution of implemented projects by source. So, the distributional structure

TABLE 3.13

Estimated Production and Services by Operating Firms up to 31-12-1982

Sector	(000)	
	Total Value of Production	% of total
- Financial and Service Projects	300 002	23
- Construction Projects	245 496	18.5
- Industrial Projects	663 939	50.5
- Agricultural and Animal Wealth Projects	103 647	8
Total	1 316 084	100

SOURCE: GAFI, 1983.

by country participation as represented in Table 3.14 shows that Egyptian capital dominates the foreign investment sector. This domination reaches its peak in sectors such as agriculture and animal husbandry with 4/5; construction with three-quarters; industrial projects little less three-quarters and financial and service projects with less over half of the total potential contribution. Regarding Egyptian capital, it might take the form of wholly local owned projects and/or joint ventures with foreign firms at different degrees of ownership.

In addition, according to Table (3.14) foreign sources of capital taken together amounted to £E 1,931,806 m by the end of 1982. Arab capital comprised 58.5% of all the external sources and less than half of the foreign capital was divided between many sources such as E.E.C. countries with £E 271,247 (14%); the U.S.A. £E 205,692 (10.5%) and other countries with some £E 326,272 (17%) of the total.

In fact this limited potential contribution could actually be smaller, taking into account the low rate of implementation as seen above. And, these findings coincide with what has been argued in the economic literature that the TNCs are keen to depend on local sources and reluctant to depend on their own finance for investment in developing countries:

".... MNCs, have rarely been great foreign investors of their own capital in developing countries".  
(Franko, 1977:19).

As far as the foreign capital contribution by category is concerned, U.S. capital, as in Table 3.15, was found to be biased towards financial and service projects with a little less than three-quarters of the total American contribution while industry took second place.

TABLE 3.14

## Contribution by State in the Projects Approved to Work in Egypt up to 31-12-82

(000)

Sector	States	EGYPT		ARAB STATES		U.S.A.		E.E.C.		OTHERS		TOTAL	
		£E	%	£E	%	£E	%	£E	%	£E	%	£E	%
- Financial & Service Projects		1 631 677	54	939 658	31	149 364	5	92 206	3	215 676	7	3 031 581	100
- Industrial Projects		1 000 868	72	111 251	8	46 601	3	147 630	11	89 423	6	1 395 773	100
- Agricultural & Animal Wealth Projects		170 128	80	17 878	8	6 598	4	8 507	4	9 472	4	212 583	100
- Construction Project		277 532	74.5	59 808	16	3 129	1	19 904	3.5	11 701	3	372 074	100
TOTAL		3 080 206	61.5	1 128 595	22.5	205 692	4	271 247	5	326 272	7	5 012 011	100

SOURCE: Calculated from material provided by G.A.F.I., 1983.

TABLE 3.15

Direction of Foreign Capital by Sector up to 31-12-1982

(000)

Sector	States	EGYPT		ARAB STATES		U.S.A.		E.E.C.		OTHERS		TOTAL	
		£E	%	£E	%	£E	%	£E	%	£E	%	£E	%
- Financial & Service Firms		1 631 677	53	939 658	83	149 364	72.5	95 206	35	215 676	66	3 031 581	60.5
- Construction & Housing Projects		277 532	9	59 808	5	3 129	1.5	19 904	7.5	11 701	3.6	372 074	7.5
- Agricultural & Animal Wealth		170 128	5.5	17 878	1.5	6 598	3	8 507	3	9 472	3.0	212 583	4
- Industrial Projects		1 000868	32.5	111 251	10.5	46 601	22.5	147 630	54.5	89 423	27.5	1 395 773	28
TOTAL		3 080 205	100	1 128 595	100	205 692	100	271 247	100	326 272	100	5 012 011	100

SOURCE: Calculated from material provided by G.A.F.I., 1983.

American capital might share other sources of capital this bias. Nonetheless the EEC capital tends to prefer industrial projects (54%) of its total approved capital. Such a general bias towards financial and service projects might find its explanation in the reasons mentioned above.

The industrial sector, as shown in Table 3.16, is dominated by local capital with little less than three-quarters of the total capital approved in this sector. In this respect the Arab contribution was about 8% while the rest is from the EEC countries and the U.S.A. respectively. As indicated in the Table above, it was found that foreign capital's bias are different according to source. U.S. capital with its poor contribution to the industrial sector (3%) was found to be biased towards consumption industries' category. This is noticeable in textiles that captured about 71% of approved capital followed by pharmaceuticals with 18% and food and wood industries. This category is followed by intermediate industries which are dominated by building materials and chemicals with 55% and 40% of the total approved capital respectively in the same category. This is whilst the engineering industries category is ranked the third with a little less than one-quarter of American capital.

As for the European capital, its priorities are different from the Americans. They prefer intermediate industries category that captured over 60% of their total approved capital. This category is dominated by chemicals with about half of all European capital. In addition the second difference from American capital is that engineering industries comes in the second place while the consumption industries' category ranks third with heavy emphasis on food and pharmaceuticals.



TABLE 3.16

## Participation of States In Projects Accepted to Operate as Inland Projects up the end of 1982, by Industry

Sector States	EGYPT			ARAB STATES			U.S.A.			E.E.C.			OTHERS			TOTAL	
	£E	(1) %	(2) %	£E	(1) %	(2) %	£E	(1) %	(2) %	£E	(1) %	(2) %	£E	(1) %	(2) %	£E	%
	Spinning & Weaving	116 502	64.5	11.5	19 419	11	17.5	14 250	8	30.5	2 325	1	1.5	28 060	15	31	180 556
Food Industries	144 988	79	14.5	15 038	8	13.5	2 183	1	4.5	9 388	5	6.5	12 168	7	13.5	183 765	100
Wood Industries	20 902	76	2	4 392	16	4	57	0.2	0.12	1 882	7	1	286	1	0.31	27 519	100
Pharmaceuticals	29 781	76	3	200	1	0.17	3 553	9	7.5	3 004	7	2	2 768	7	3	39 306	100
Total of Consumptions	312 173	72.5	31	39 049	9.0	35	20 043	4.6	43	16 599	4	11	43 282	10	48.5	431 146	100
Chemical Industries	283 635	69.5	28	25 550	6	23	6 419	1.5	13.5	74 033	18	50	27 601	6.5	31	417 238	100
Building Materials	209 912	82.5	21	18 558	7	16.5	8 849	3.5	19	12 203	5	8	4 873	2	5.5	254 402	100
Metallurgical	71 926	72	7	15 421	16	14	843	1	2	4 153	4	3	7 373	7	8	99 716	100
Mining	29 125	98	3	442	1	0.4	-	-	-	-	-	-	241	1	0.25	29 808	100
Total Intermediates	594 605	74	59.5	59 971	7.5	54	16 111	2.0	34.5	90 389	11	61	40 088	5	45	801 164	100
Engineering Industries	92 003	62	9	12 231	8	11	10 447	7	22.5	28 395	19	19	6 053	4	6.5	149 129	100
Petroleum	2 087	15	0.20	-	-	-	-	-	-	12 247	85	8	-	-	-	14 334	100
GRAND TOTAL	1 000 868	72	100	111 251	8	100	46 601	3	100	147 630	11	100	89 423	6	100	1 395 773	100

SOURCE: Calculated from material provided by GAFI, 1983

(1) represents the percentage share of each industry by state.

(2) represents the relative allocation of capital by state on different industries.

Investment by other countries tends to be relatively balanced between the two main categories of consumer goods and intermediate industries. But its contributions to the engineering industries are limited.

This broad issue will represent a subject of detailed analysis over the next chapters.

#### **3.2.2.4 Projects Approved to Work in Free Zone Areas According to Law 43 of 1974:**

Egypt has established free zone areas in order to capitalize on its strategic geographical location. It, thus, can export to neighbouring Arab and Middle Eastern countries without high cost, and thus attract foreign capital, and skills and generate employment in such areas.

In this respect, there are according to Law 43 of 1974 two types of free zones. The first is the so called 'Public Free Zone' (PFZ) which means 'the area decided by the Government which takes the responsibility of equipping it with the required infrastructure'. The second is the 'Private Free Zone' (PFZ), the area chosen freely by foreign investors who are responsible for equipping it with the necessary infrastructure (Atif, 1981:326). These latter areas might be created exclusively for a single project by a resolution of the competent board of the authority (Article 30 of Law 43).

In order to achieve the previous objective, the Egyptian legislation granted projects operating in these areas many incentives such as exemption from custom duties on all instruments, machinery, equipment and transportation equipment necessary to the establishment of such projects. Goods or materials exported/imported into these areas should

not be subject to normal customs procedures. These are in addition to other incentives related to tax holidays, exemption of some other duties, income tax for expatriates and foreign exchange regulations (Law 43, Chapter 4, Articles 36,38,46,47,49).

In consequence, there are some projects that have been approved to work within such areas as indicated in Table 3.17. It is clear from that table that these projects represented up to the end of 1982 about 26% of the total approved capital and 22% of the whole number. In addition, the table outlines that despite the number of PFZ projects, their capital share declines to 16.6% of total approved capital in these areas. This contrasted position might occur owing to what is mentioned above, that projects in the RFZ must provide the required infrastructure for their effective operations.

As far as the implementation ratio is concerned, Table 3.17 clarifies the fact that projects in public free Zones have a higher ratio than those in private Zones. Although, there is a slight difference in implemented number, the ratio of implemented capital is much higher in the PFZ. This could be attributed to the relatively small amount of total capital approved to work in PFZ and the relatively large amount channelled towards RFZ.

Regarding the relative contribution by States as shown in Table 3.18, it is evident that the American and EEC positions have not shown significant change from what has been noted about their investment in inland projects. The significant change came just from the exchange of positions between Egyptian and Arab capital, where the Arab capital occupied the first place and the Egyptian second.

TABLE 3.17

Total Projects Began to Work in Free Zones Areas up to 31-12-82

Areas	(000)									
	No. of Project		Capital		Investment Costs		Labour		Wages	
	N	%	£E	%	£E	%	N	%	£E	%
Public Free Zones	207	69	159 149	64	208 679	80	6 171	59	9 730	48
Private Free Zones	43	71.5	226 893	15	298 348	13	7 168	77.5	18 098	63
TOTAL	250	69	386 042	220	507 027	19	13 884	67	27 828	57

SOURCE: Calculated from data provided by the G.A.F.I., 1983.

TABLE 3.18

## Approved Projects to Work in Free Zone Areas by States 31-12-82

(000)

	EGYPT		ARABS		U.S.A.		E.E.C.		OTHERS		TOTAL	
	£E	%	£E	%	£E	%	N	%	£E	%	£E	%
Public Free Zones	124 144	50	51 850	21	12 035	5	31 152	12	30 451	12	244 632	100
Private Free Zones	164 610	11	1 203 280	80	33 563	2	17 042	1	83 856	6	1 502 451	100
TOTAL	288 754	16	1 255 230	71	45 598	3	48 194	3	114 307	7	1 752 083	100

SOURCE: G.A.F.I., 1983.

## Conclusion

The purpose of this chapter was describe the characteristics of the industrial sector of the Egyptian economy. There have been many attempts to industrialize Egypt that emerged from necessity generated by population growth pressure and the relatively poor natural resources endowment of the country. Although, these attempts go back to the early years of the last century, the most significant push came with 1952 Revolution. Successive governments since that date have given industry first priority, albeit under different policies. There was some mild intervention from 1952-1956, with government participation in some projects side by side with the encouragement of both foreign and local private capital.

After 1956, the Egyptian government decided that it was of crucial importance to intervene more and plan for the country's industrial development in order to lessen the dependence on external sources for its industrial needs. So there was Egyptianization of some foreign interests, as a response to the 1956 war and so that the government could turn the economy away from the foreign influence. Moreover, there was the 1957 programme, that was followed by the First Five Year comprehensive plan from 1960-1965. This plan was characterised by:

- (i) the concentration on industry in general and within that section on heavy and capital-intensive industries such as chemicals, and iron and steel,
- (ii) the emphasis placed on both capital and intermediate goods.

(iii) the dependence on foreign sources not only for finance but also for technology.

It was hoped that the country could diversify its economy in general and industry in particular. So, the share of industry in GDP was increased and the industrial exports rose. Yet, a lesson that should be learnt from this experience is that the more a country depends upon foreign sources, the more vulnerable it would be. This became apparent in Egypt's case when the U.S.A. cut off aid, which had a detrimental effect on the economy. Moreover, 1967 came to add to the problems of the country that of scarce foreign exchange. So, the end of the 1960's and the beginning of the 1970's the economy was in a critical situation.

To some extent this situation became the reason for the adoption of the ODEP in 1974. This argument was based on the ground that DFI would bring in capital technology, skills, create employment, and ease the problems of the balance of payments. Still the rationale behind this policy is a matter of controversy. Nevertheless, the early impact of DFI under this new policy could be summarised as follows:

(i) Foreign capitals' response to the ODEP has been really far from satisfactory. Foreign capital contribution was 4% by the U.S.A., 5% by the EEC countries and 7% by other countries of the total approved capital. And even worse was the situation in industry, especially for the American capital that represented about 3% of the total approved capital in this sector, and was biased towards financial and service projects.

- (ii) As far as the implementation ratio is concerned it was modest. It was less than one-third of the total approved capital, and particularly evident in agriculture, construction and industry, where DFI accounted for less than one-fifth of the total implemented capital and slightly over the same proportion of capital accepted in this sector.
  
- (iii) The projects' structural distribution tended to be unbalanced geographically, favouring big urban markets.
  
- (iv) Finally, the impact of the DFI in Egypt up to December 1982 in employment, capital inflow, and on the balance of payments is not encouraging.

Given this performance we are prompted to ask whether DFI in general and TNCs in particular will perform any differently in respect of technology transfer. This question will be the subject of study over the remainder of this thesis.



## CHAPTER FOUR

### The National Policy, Context and the Transfer of Technology to Egypt

It has been noted in Chapter Two above, that the effective transfer of technology to developing countries depends on the transnational corporations' strategies and the policies adopted by these countries. In this respect, it is clear that countries which adopted definite policies related to the transfer of technology have achieved relative success compared with the others which have not.

The existence of clear and determined policies is crucial. This emerges from the position of both TNCs and developing countries in the technology market as explained in Chapter Two. These companies monopolize the processes of innovation, R & D patents and hence technology commercialization. In the meantime, the recipient developing economies, mostly lack the primary technological infrastructure and hence need to import almost all their needs. In such a situation, these countries need policies that serve to capture the maximum benefits of technology transactions. These policies could be related to regulations, dealings with the suppliers, including the TNCs, for protecting local R & D. They could be policies related to the patent system, the invitation to foreign capital, the industrial dynamism as a whole, local skills and training (1).

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(1) For detail about the effectiveness of government intervention see Denison & Chung, 1976: 82-83; Lall, 1975: 63; 1979: 81; 1980: 42; Kojima, 1978: 10; Pozanski, 1984: 144; UNIDO, 1981: 20; Hope, 1983: 395; Hass, 1980: 542; Felix, 1974: 237; Newfarmer, 1984: 193; Sutcliffe, 1975: 190.

In the case of Egypt, the process of technology transfer is not a new phenomenon. In the first half of the last century the country achieved relative success in this field, albeit unplanned. It experienced what the Japanese experienced more than 50 years later. Egypt sent missions to Europe and especially France in different scientific and engineering fields for training. Their number amounted during Ali's era to about 321 (Issawi, 1954: 23). Egypt imported technology embodied in machinery and equipment and stripped it down in order to make copies and to acquire their informational secrets. In addition she established a capital-goods industry to manufacture spare parts and machinery especially in the textile industry. (Issawi, 1961: 6). Moreover, the number of invited foreign experts totalled 10,000 over the period 1805-1849 in different fields (El-Kholly, 1982: 10). These and similar efforts met almost all the needs of the local economy by that time. However, such efforts came to a halt because of foreign intervention as seen in Chapter Three.

As we have already shown, Egypt after more than one hundred years, and especially by 1952, tried to industrialize its economy. It was, therefore, necessary to import foreign technology in addition to many other elements of production. Nevertheless the national attitude has not been consistent since then. It has changed according to the circumstances that the country witnessed over the 1950s, 1960s, and the 1970s as seen above in Chapter 3. The recent attitude is what is so called 'Infitah' in which transfer of technology via DFI has been advocated as one of its two main pillars.

Thus, it may be of interest to throw some light on some of the governmental policies and national contexts that might affect the ultimate outcome of ODEP in the technology transfer field. On the

national level, the concerned policies could be related to policies and strategy for technology transfer; development of human capital resources; national institutions for scientific and technological development; and legal framework, patent law, industrial development, and DFI policies. So, the analysis of this Chapter will deal with each of these issues in turn.

#### **4.2 Development of Technology Transfer Policy**

Technological development in general and the transfer of technology in particular should ideally take place according to well established policies, that aim to achieve technological independence in the long run, minimize the costs incurred in the transfer of technology process. Egypt shares with most of the developing countries the absence of such policy or strategy. It has not in all its modern history laid down a long term strategy related to the technological development as an integrated part of economic and social development. As a result, Egypt has not experienced the mastery of technology, despite scattered efforts in some productive and scientific research units.

Nevertheless, after realizing the losses suffered from such an approach the Government of Egypt has recently made tentative governments efforts to formulate a much desired policy. In 1983, the president of the Academy of Scientific Research and Technology (ASRT) promulgated decree No.15 in order to create working groups to achieve this end. These groups, as did many studies, embarked upon analysing and studying the experience of other developing countries such as India, the Philippines and Mexico.

Following these studies, they offered some recommendations that represent the basis for the suggested policy. These are:

- A) Organizing the transfer of technology from abroad. In this respect, the third group has put forward certain criteria concerned with the meaning of technology and the question of determining whether or not it has been transferred. It also, discussed the conditions of the process of transfer, in addition to the methods of settling conflicts that might arise.
- B) Strengthening the national technological capability. In connection with this point the group emphasized heavily the vital importance of the increase of the local technological participation side by side with the imported one; the support of local R & D efforts and the marketing of locally produced technology.
- C) In addition, the same group suggested the creation of a national agency whose main task would be to carry out the previous broad suggestions, harmonizing the different efforts by sub-committees working in this field and located in different ministries (ASRT, 1983: 48-61).

However, despite what might be considered a positive step, and despite the expenditure of time, money and personnel, such recommendations have not yet materialized into a tangible, clear and well defined policy regarding the transfer of technology. Consequently, such a situation has cast some shadows over various elements of policies and attitudes that might affect the whole process in one way or another.

### 4.3 The Legal Framework

The existence of both a strategy and a legal framework to monitor the transfer of technology is crucial. The existence of policy without legislation to execute, results in merely theoretical slogans. However, the existence of legislation without strategy becomes of little importance, since the one often contradicts the other. In actual fact the second case is more likely to be found than the first. Moreover, the developing countries, almost lack both. Egypt's case offers no exception in this respect.

This unfortunate condition prevails in Egypt despite the consensus that an effective transfer of technology depends, inter alia, on a definite and clear legal framework. Furthermore, the nature of the technology market, as noted in Chapter 2, and the strong dominating position of the TNCs necessitates such legislation. It is important to avoid hindering restrictions on exports, tie-in clauses imposed on imports, excessive costs of personnel recruitment, and restrictions on the effective diffusion of imported technology, that might result in adverse effects on the economies of recipient countries. The existence of such legislation is important to protect the country against inappropriate technologies and products that lead to the misallocation of scarce resources. It is important to protect and strengthen local technological capabilities and to give them the chance to be improved and developed.

In this respect UNCTAD suggested that:

"Successful technological transformation in the long run depends crucially on the existence of an appropriate legal framework".  
(1983: 21)

Thus, the absence of such a legal framework in Egypt has resulted in what might be labelled 'technological chaos', since the process of importing technology has been left to be organised by the technology market mechanism noted above in chapter 2. So, it may be interesting to outline the situation in Egypt where the TNCs have been invited:

- (i) there is no technology registration system.
- (ii) restrictions have not received significant attention.  
Furthermore, tie-in clauses related to the supply of raw materials, intermediate products and capital goods have been generally warranted (UNCTAD, 1982: 51).
- (iii) the local investor is free to negotiate payment conditions with his foreign counterpart. In most cases the result is payment on a lump sum basis. In other cases, management fees and royalties are determined against agreed prices. This is, since some products are priced by the government. Nevertheless, this condition has been relaxed now under the ODEP (Al Shishini, 1984: 108; UNCTAD, Ibid, 51).
- (iv) there is no systematic consultation between the relevant authorities and the local recipient of technology; in cases in which such consultation might take place, there is no scrutiny of imported technology in order to determine whether there is a local technology similar to it and hence there is a need to import or not;

- (v) no serious attempts have taken place to adapt foreign imported technology in order to suit it to the local environment (UNCTAD, 1980: 11, 13),
- (vi) agreements might cover patents, trademarks, or know-how singly or in a combination of these;
- (vii) the duration of such agreements has received little attention; they may last from 5 years to 10 years renewable year after year until terminated by either of the counterparts (Wahba, 1983: 13).

Such a situation would cost the country very dear bearing in mind the dynamics of the TNCs, the main supplier of technology. It might lead to the duplication of imported technology of the same kind; a long duration of agreements; the importing of obsolete know-how; the misallocation of local resources; and the suppression of potential local efforts to create similar technology.

On the contrary, it is of interest to note that some developing countries have achieved a tangible relative success by intervening in the process of technology transfer. In Columbia, there was some 40% reduction in royalties as a result of such intervention (UNCTAD, 1974: 29). In addition, it has been noted that countries that have achieved a relative success in the technology transfer field have practised some sort of organizing tough policy such as in Japan (Ohera, 1981: 83-90). This does not mean that the legal framework is enough but it means that it is necessary.

Having realized this and in an attempt to catch up with these countries, Egypt's government in the last three years has formed some expert groups, as indicated above, in order to lay down the desired legislation. But despite the formulation of such a law, it has not yet been passed (Hilal, 1982: 5).

#### 4.4 The Patent System

The question of patents in the process of technology transfer to developing countries has been thoroughly examined in the economic literature. (Vaitsos, 1976, 1974; Penrose, 1973, Fortner, 1977, UNCTAD, 1975). The common line of such studies is that patents in and of themselves are a poor mechanism in the transfer of technology.

Egypt in common with many other developing countries signed the Paris Convention for the protection of industrial property in 1951. This initiative on the Egyptian government's part was made more for prestigious reasons and irrespective of the benefits that might accrue to the country from such adherence. It has also been a party to the Strasbourg agreement concerning patent classification since 1977, and the Patent Co-operation Treaty. This is in addition to its membership of World Intellectual Property Organisation since 1975. (Wahba, 1982: 17).

Thus, patents and industrial models in Egypt are regulated by Law No.132 of 1949 amended by Law No.65 of 1955. This law embraces some of the following relevant provisions. Invention patents are valid for 5 years following the application and renewable for another 5 years. For chemical processes, including foodstuffs, medicines, pharmaceuticals they are renewable for longer. Patents or additions



are valid for the rest of the period granted to the main patent. The striking feature is that no examination of novelty is needed. It does not matter, therefore, if the invention has been used abroad for not more than fifty years. Such a Law indicates how far such law is compatible with the achievement of national interest! The passage of 50 years or so on the application of an invention abroad makes it a free good. Thus, it might be commercially exploitable by locals without breaking the law and without the need for licensing and hence paying compensation for that. So, it is clear that the patentee in Egypt gets rights and privileges that he would not get if there was no such provision. There is thus no real opportunity for local capital to use the same processes, without being given a licence to do so by the owner of the process, i.e. by the competing TNC or TNC subsidiary.

In addition to these features, the Egyptian law in article 30 validates compulsory licensing (1) in three cases: first of all, if the patent is not exploited for three years after its granting, secondly, if the patentee is not able to satisfy the needs of the country by using it, thirdly, and finally, if the patentee has not made use of the invention for two successive years. In fact this article is an application of article 5 (A) of the Paris convention (UNCTAD, 1975: 10-13).

Moreover, Egyptian law warrants compulsory licensing in cases where there are strong relationships between the patents and the national interests such as in defence, public health, and national economy. This is where both the patentee and a potential exploiter fail to reach

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(1) Compulsory licensing means "... an authorization by an authority designed for this purpose (usually the competent administration or a court) to a person other than the patentee to do, without the authorization by the patentee, acts which would otherwise be excluded by the patent". (UNCTAD, 1975: 10).

an agreement for the exploitation of such patents. In this case, fair compensation is to be determined by the courts (Articles, 32, 33).

This law has resulted in a flow of applications for patents. Some of them have been approved and granted for both foreign and local applicants. Thus, the total number of granted patents as seen in table (4.1) amounted to about 11,279 out of 20,148 total applications over the period 1951 to 1981, i.e. about 56% of the total.

Figures shown in this table, especially after 1969 when the classification of patents according to their sources took place, reveals that the average of granted patents for foreigners between 1969 and 1980 is a relatively modest 347 a year; the average for locals over the same period was insignificant. The behaviour of foreign patentee might find its interpretation partly in Egyptian laws, permitting registration of patents exploited abroad for about 50 years. Thus, the foreign inventor or innovator find it possible to come anytime within this period and take out patents. This means that foreign patentees appeal to the country often by the time in which their processes or products became standardized in order to monopolize the markets and achieve their other interests (see Chapter 2 above).

The other feature that could be deduced from the previous table is that the rate of foreign requests has increased over the 1970s since the adoption of the ODEP. This might be explained by the fact that the local market has been opened not only for foreign investors but also for trade from different sources and of different types, especially from the North-West hemisphere of the globe. So, foreign firms in order to defend markets or to keep markets for their products

against competition from other sources are trying to take out patents as has occurred in the case of Egypt.

Furthermore, the share of patents held by the Egyptians over the period 1951-1981 represents a very tiny proportion of the total. Data provided by the ASRT indicates that the local patents accounted for (514) compared to (10,765) held by expatriates i.e. 4.5% and 95.5% of the total respectively. Such a situation makes it evident that the Egyptian patent law as in most of developing countries, protects the interests of foreign holders which are, almost always the TNCs.

Worse still, the analysis of lists provided by the ASRT authorities shows that over the period 1951-1981 about 92% of local patents were held by individuals and only some 8% were held by companies (ASRT, 1983: 109-119). Such a pattern, as noted by Penrose, in Chapter Two, throws serious doubts on the effective and beneficial use of these patents.

In addition, the structural distribution of patents by field clarifies the fact that chemicals dominate the other types. Over the period 1975-1982 about 1153 out of 3183 patents granted within this period were in the chemical field, with 36% of the total, followed by pharmaceuticals and cosmetics with 450 or 14%. Thus, chemical innovations in a broad sense represent about 50% of all patents during the same period. In contrast, the share of other important fields such as agriculture was negligible (1.4%) (ASRT, 1983: 47). So it is clear that patents are concentrated in fields and industries where technologies are capital intensive and that enjoy a relatively high rate of change. Therefore, it is in the interests of innovators to perpetuate as long as they can their returns from their properties.

Ultimately, what is the contribution of patents and hence the patents law to the transfer of technology to Egypt? There are two sets of effects to assess: first, the direct effect of the exploitation of patents in Egypt by TNCs patentees; the second is the indirect effect of patents in generating information to local capital about the sources of the technology, the nature of the technologies with which they might be in competition.

The first set of effects will be referred to in Chapter Five in the light of the findings of the survey. As for second set of effects the evidence is not favourable.

In a study undertaken by the GOFI in 1982, it was found that:

- (i) The patent office did not contribute at all to providing surveyed public sector companies (30) with sources of technology or technological alternatives.
- (ii) In addition, all surveyed companies appealed to foreign sources for information and 33% of them occasionally consulted local sources for this purpose, not including the patent office.  
(ASRT, 1983: 249).

Furthermore, in an interview in the patent office, I was told that local businessmen did not bother to go to the office to use consultancy services. Even more there was a serious complaint that the local media do not recognize the office and has been invited many times to cover its conferences, but without response.

TABLE 4.1

Requests and Patents Granted in Egypt Over the Period from 1951-1982

Year	Total Requests	Total granted patents	(Nos.)			
			Foreign Requests	Foreign Patents	Egyptian Requests	Egyptian Patents
1951	1 196					
1952	408	9				
1953	421	79				
1954	444	143				
1955	471	75				
1956	49	249				
1957	435	28				
1958	476	157				
1959	586	240				
1960	664	196				
1961	1 382	245				
1962	606	508				
1963	754	71				
1964	792	1 111				
1965	770	857				
1966	766	817				
1967	743	920				
1968	657	610				
1969	697	249	632	236	65	13
1970	551	249	494	239	57	1

Cont'd ....

TABLE 4.1 Cont'd

Requests and Patents Granted in Egypt Over the Period from 1951-1982

Year	(Nos.)					
	Total Requests	Total granted patents	Foreign Requests	Foreign Patents	Egyptian Requests	Egyptian Patents
1971	556	159	490	157	66	2
1972	549	253	485	242	64	11
1973	490	373	433	364	57	9
1974	592	398	538	376	58	22
1975	775	397	714	381	61	16
1976	805	527	757	511	48	16
1977	728	513	670	490	58	23
1978	752	515	675	495	77	2
1979	784	376	723	370	61	6
1980	807	317	731	310	76	7
1981	-	257	-	-	-	-
1982	-	282	-	-	-	-
GRAND TOTAL	20 148	11 279	7 342	4 171	744	128

SOURCE: ASRT, 1983: 43. N.B. Statistics for 1981, 82 have been derived from separate paper without classification according to nationality which only started in 1969.

In conclusion it would seem that the patent law in Egypt in aiding the transfer of technology has no significant role to play.

#### **4.5 Development of Human Resources and Transfer of Technology**

##### **A. Education**

Educational policy in developing countries is one of the most important determinants of the effectiveness of the transfer of technology.

The adaptation, adjustment and reproduction of imported technology has implications for education and training (Callidos, 1984: 211).

In addition as Solow noted, an effective exploitation and adaption of knowledge and information underlying advanced technology necessitates competent scientists, engineers and technicians who are familiar with the particular needs and circumstances of a low productivity society (1966: 92-93). See also, Callidos, Ibid, 216).

In connection to this point Ranis argued further, that the Japanese exploitation of imported technology both in industry and agriculture would not take place without the existence of well-spread educational base, both general and technical. In addition, he extended this argument to include the case of the U.S.A. (1984: 99). In this respect one could argue that a broad educational base may, in general, reduce the social resistance to the introduction of new technology and make technology products more desired and tangible.

The contribution of education depends, inter alia, on certain variables that may differ according to the actual situation in each country. These major variables are educational opportunities for the mass of the population; and relative levels of expenditure on education. Much also depends on the nature of education, i.e. whether it is biased towards the academic and theoretical or towards the vocational and technical. Needless to say the way education is organized and how far it responds effectively to the requirements and priorities of the country's development has a significant part to play in this respect.

Taking all these factors into account, one tends to deduce that developing countries, often, are in a weak situation. They, mostly, lack the majority of factors necessary for the development of human resources. Such a lack has had its effects on education and technology transfer. Tuma succinctly described the outcome of the educational process in these countries

"The university graduates and native technicians are trained simply to operate the imported machinery, to be caretakers and to depend on imports for spare parts and expertise to make sure the machines remain in operation (1983: 32).

This situation, naturally, circumvents the desired contribution of education and isolates it from the actual needs of the country for absorption, adaptation and reproduction of imported technology, not to mention the innovation of production techniques that fit into the particular environment of these countries.

Turning to Egypt, it was noted that the process of education hardly received any significant consideration during the occupation era.



So, by 1952, the number of illiterates amounted to over 81% of people of 15 years and above (UNESCO, 1963: 29). While this was the situation in Egypt in the early 1950s a country like Japan had achieved nearly universal literacy by 1935 (UNCTAD, 1983: 7).

On the contrary, evidence in Egypt has been the subject of increasing concern since 1952. The government has adopted a philosophy based on broadening the educational base at all levels. Such a philosophy mirrors the desire to achieve equality and abolish class privilege. So, education was to be freed from the primary school to the university and to be expanded to rural areas. These tendencies resulted in the drop in the illiteracy rate from over 80% in the early 1950s to 56% in 1976 (UNESCO, 1983: 1-16). Nevertheless, one may consider this percentage high, taking into account the aspirations of the country for technological and scientific transformation.

Over the period from 1952 until the present there has been a significant transformation in the education system in Egypt. These changes are qualitative and quantitative as well. Regarding the latter aspect there is an increasing rate of enrolment at all levels. In the first level this ratio rose from 72% in 1972 to 76% in 1980 for population aged 6-12 years. In the second level (12-18), the ratio increased from 55% to 64% over the same period. In the meantime the ratio in the third level increased from 8% in 1972 to 14.1% in 1980. (UNESCO, 1983: 111-112).

These figures are of some significance compared with figures from other developing countries. In Brazil, for instance, in 1980 the enrolment ratio at the third level accounted for 11.9%. In addition, the ratio of enrolment in Egypt is higher than that in Pakistan and

India at all levels. In contrast, compared with figures from the developed countries the Egyptian figures leave much to be desired. In the U.S.A. the enrolment ratio accounted for 99% at 1st and 2nd levels and 57% at the third level.

The second main feature of Egypt's educational policy is that there has been a shift of emphasis away from general towards technical and vocational education in recent years. Since 1981, the emphasis has been put on providing technical culture and practice to students at the first level. Further this age group has been expanded to include children from 6 to 15 years instead of 6 to 12 years.

As regards the second level, the bias towards technical and vocational education can be deduced from figures presented in Table 4.2.

TABLE 4.2

General and Vocational Education at the Second Level  
in Egypt in 1970 and 1980.

YEAR	T. NUMBER (1)	GENERAL EDUCATION (2)	% 2/1	VOCATIONAL EDUCATION (3)	% 3/1
1970	1 448 242	1 147 366	79	275 281	19
1980	2 929 168	2 238 882	76	636 909	21.6

SOURCE: Calculated from UNESCO, 1983, table 1-16.

N.B. the difference between the total numbers and the numbers in both general and vocational education has gone into teacher training.

The figures shown on the previous table outline the increasing shift in favour of technical and vocational education. At a time when there was a decreasing ratio of enrolment in general education, there was an increase in vocational training. This reveals that the absolute increase within the last category is higher than the similar rate in general education. It was 195% for the latter and 230% for the former over the period 1970-80.

With regard to the third level, as shown on table 4.3, it includes a sizeable number of students. It is clear also that it is dominated by the humanities such as social sciences, education sciences, law, and commerce while the numbers of engineers, agriculturalists and other scientists have declined in recent years. Nevertheless, such figures compared with figures from some other developing countries are still encouraging. In India, for instance, the country that has the largest sizeable reservoir of engineers and technicians in the Third World, the ratio of engineers to the total number of students at the third level was 7.5% in 1979, while it was about 10.5% in Egypt in 1980. In Egypt, in addition, there has been an increase in fields such as natural science, mathematics and computer science.

Again, by comparison with developed countries, it becomes clear that there is a wide gap between what actually exists and what are the real development needs. For example, in Japan, the U.K. and the USSR, the proportion of engineers to the total number of students was 16.6% 18.2% and 45.6% respectively in 1980.

In connection with education policy, there was for the first time a plan to send students abroad for training and in 1959/60 (Sabet, 1978: 199-207). The purpose of such missions has always been to keep

TABLE 4.3

Third Level Students by Field of Study in Egypt

FIELD OF STUDY	1976	1978	1980
Education Science & Teacher Training	55 269	51 417	54 787
Humanities, Religion & Theology	55 265	61 560	72 903
Fine & Applied Arts	7 757	7 203	2 411
Law	45 479	55 642	64 123
Social & Behavioral Science	7 935	7 346	5 268
Commercial Business and Administration	10 285	112 563	120 887
Mass Communication & Documentation	4 626	2 009	1 505
Home Economics	2 025	1 850	1 553
Service Trades	0 356	0 366	0 569
Natural Science	16 687	18 979	22 990
Mathematics & Computer Science	0 650	1 157	1 226
Medical & Health Related Science	52 193	57 625	60 169
Engineering	58 293	18 979	22 990
Architecture & Town Planning			
Trade & Craft & Industrial Programmes			
Transport & Communications			
Argriculture, Forestry & Fishery	46 596	45 811	46 358
Other and Not Specified	6 346	5 543	4 796
TOTAL	462 328	486 067	528 751

SOURCE: UNESCO, 1982, 11-334 for 1976 and 1978 figures and UNESCO, 1983, 11-282 for 1980 figures.

abreast of the latest developments in host countries in different fields. In so doing those who return might contribute to the transfer and diffusion of knowledge into their places of work either in universities or directly productive enterprises.

This policy has contributed to the creation of a significant stock and of skills in this country. However, there is the accompanying problem of 'Brain Drain', a problem that represents a serious challenge to the efforts of the developing countries to transfer and develop technology. Its danger emerges from two sources. First, these countries lose gradually their best 'brains' which have the capability and the potentiality to assimilate, adapt, adjust and reproduce appropriate technology. Secondly, this problem has been increasing over time at an accelerating rate as in the case of Egypt below.

In Egypt (1), the ratio of students who were officially sponsored and did not return over the period 1963-1972 amounted to 9% (805 out of 8,533). This ratio rose over the following six years to approach some 40% (about 1.311 out of 3.284) (Ayubi, 1983: 436).

In general, the rate of emigration accounted for some 3% in the early 1960s (Sabet, 1978: 210), it increased to its peak by the end of that decade to reach 51.5%. More serious is that needed scientists, engineers, physicians and university staff amounted to 70% of all emigrants in the 1970s. Additionally, some 20% of scientific personnel

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(1) It is in the case of Egypt difficult to estimate accurately the number of emigrants in terms of permanent and temporary migration. This is since the statistics provided by official bodies are inadequate and inaccurate and tend to underestimate total number. So the figures above are a rough attempt to outline the size of problem in this country.

who work in research and supporting activities have left the country to work in European and Arab countries on both a permanent and temporary basis (2) (Ayubi, 1983: 436).

In fact, this 'brain drain' has been the outcome of a combination of factors:

- (i) The excess of graduates over the absorptive capacity of the local economy. In 1970 the number of engineers exceeded by three times the existing needs of the economy (Moore, 1980: 46). This proportion was alleged to reach four times by 1980 (Ayubi 1983: 434).
- (ii) From the actual experiences, one could safely add the effect of recruitment policy. Many graduates get appointed in places or positions hardly related to what they have studied. In addition, the conditions of their work are relatively poor, in terms of low salaries, poor equipment and promotion system.
- (iii) One important point, often, overlooked by writers is the lack of moral and financial support and the recognition of the scientists class. The situation became clearer with the emergence of the new mercantile class accompanying the ODEP. Such factors have made the scientific class feel inferior and underestimated.

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(2) For detail see Kadhim, M., 1984, pp.21-53.

- (iv) Finally, one of the streams that feed such a phenomenon is the absence of an organisational apparatus necessary to connect the requirements of social and economic development with other fields such as education. This throws serious doubt on the claim that the number of engineers exceeds the needs of the country, since the inability to use or employ the graduates properly and in appropriate jobs does not mean they are in excess of the country's requirements.

So, the country, as a matter of fact, urgently needs to follow a coherent policy that links all national fields together.

## **B. Vocational Training**

The emphasis put on training was in fact concomitant to that on education, especially in the late 1950s and the 1960s (1). With the big push policy for industrialization, there has been a great tendency to set up training centres in order to provide the industrial sector with its requirements of skilled and semi-skilled workers (Shafik, 1983: 15). Thus in September 1967, a central organization for training was established to organise the different activities of different institutes in co-operation with different ministries (Sabet, 1978: 203).

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(1) Unfortunately, as a result of the lack of accurate figures or statistics and data about training schemes and their graduates by field, the above section will give merely a general idea.

In pursuance of this effort, the Plan of 1982-87 has come to revive the training process, especially after the serious shortage in some skills after the emigration to the Arab World. The plan referred to:

- (i) The adoption of modern technological applications via a widening education at all levels, giving special care to technical and industrial education and in particular, specialization in Engineering and technological science;
- (ii) The improvement in productivity by vocational training and through successive educational programmes for engineers and technicians (Ministry of Industry, 1983: 17).

Thus, it is clear that the industrial programme of the 1982-1987 plan has clarified the close links between technological and industrial education. In addition it linked productivity and training, a tendency that coincides rightly with the aspirations of technological development of the country. Yet evidence on the actual application of such provisions has yet to be found.

In brief, Egypt over the last 30 years or more has created a sizeable reservoir of qualified human resources both in qualitative and quantitative terms. Nonetheless, although this reservoir is important it is not sufficient. It needs to be employed and its knowledge put into practice.



#### 4.6 Research and Development

The importance of R & D activities, in fact, emerges from their contribution to the establishment of a solid indigenous technological capability. This capability is crucial for the effective use, adjustment, adaptation, assimilation and hence the creation of appropriate technology for the specific economic and social environment in developing countries (Stewart, 1984: 81). In addition, the importance of such a capability emanates from the capacity of local skills to choose the suitable technology, since locally qualified experts might be able to know what the country's particular conditions require and what they do not. In this connection they might be in a better position to negotiate for favourable terms, modest cost and effective transfer. Thus, in this respect, some have argued that scientific and technological institutions have a major effect on the process of technological change (Stewart, 1984: 90). These institutions, in addition to other research and development units, represent the natural base for upgrading the skills capable of accomplishing the previous tasks and which are able to master and diffuse imported technology to other undertakings and thereby reduce the absolute dependence on foreign sources for not only technological elements but also the ability to use them (Westphal, et al, 1984: 295).

The efficiency of such institutions and units depends, inter alia, on factors such as the nature of the research tackled within them, i.e. whether it is applied, experimental research or of a basic nature, as defined in Chapter Two; the size of resources devoted to this field in terms of qualified staff of engineers scientists and supporting tasks, equipment necessary for effective R & D and equally important

the financial expenditure. This efficiency depends heavily on the organization that links such activities to the requirements of the economic sectors and to harmony between the activities of different units to avoid duplication and waste of their resources.

As far as Egypt is concerned in this regard, the government has not spared any efforts to set up scientific research units and institutions, since the middle of the 1950s. In 1956, the National Research Centre (NRC) was established. It has a relatively well qualified staff of some 1,600. A significant portion of the staff (40%) hold Ph.D Degrees and the rest have a bachelor degree at least. In 1961, a Ministry of scientific research was created in order to put into action a plan for scientific research over the period 1960-1965. But, this plan was to come to a halt as a result of many obstacles, mainly the shortages of financial resources (Sabet, 1978: 190-194).

Nonetheless, many universities have started their own research units, in addition to many others in different Ministries. Thus, the apparatus of scientific and technological research in Egypt was large enough at the beginning of the 1970, to break down into 260 units, which are staffed with some 22,500 holders of Ph.D and M.Sc degrees (Wahba, 1982: 10). Moreover, in 1971, the presidential decree number 2405 proclaimed the establishment of the Academy of Scientific Research and Technology (ASRT). It now stands as a nucleus to which most research institutions are affiliated.

In addition, it includes about 16 specialised departments representing different fields, which are not affiliated to it. The Academy aims at bridging the gap between research units and the productive fields.

So, it necessitates the shift from basic and laboratory research to the experimental type. Thus, in the early 1980s some 60% of research projects were customer oriented with a long-run objective of approaching 90% (UNCTAD, 1980:17).

In the same time, the General Organisation for industrialisation (GOFI) has a promising potential in this respect. It has a sizable staff of engineers and technicians, in addition to the Engineering and Industrial Design Development Centre (EIDDC). This centre has great potential to offer regarding the transfer and adoption of technology. It employs some 400 staff of which one-third are engineers and draftsmen. This centre tackles some highly technical functions such as:

- (i) Product design and development such as plugs, switches, heaters and electric fans etc.
- (ii) Processing and capital goods equipment design such as machine tools and spare parts for textile machinery and so forth.
- (iii) Process design
- (iv) Training. (UNCTAD, 1980:20)

Thus, is it clear that Egypt, over a relatively short time has established a sizeable apparatus of scientific research institutions and units. However, they have been working under conditions that make their outcome less tangible. These conditions are due, mainly to the fact that:

- (i) These institutions have been suffering from the lack of coordination between them, a situation that has resulted in a duplication of research and hence a waste of their rare financial resources, not to mention the time and personnel effort.
- (ii) Research at most of these institutions has been biased towards a basic kind of research, which is a poor copy of what had been done in the advanced countries and has little economic significance to the urgent needs of the local economy. In this connection Rosenberg commented that:

"It is not...scientific knowledge which is ultimately valued in the economic sphere but, rather knowledge in a form which is directly applicable to the productive activity (1976:65)."

- (iii) Financial resources devoted to R & D activities in this country, as in most of the developing countries, are meagre. They accounted for 0.8% of GNP in 1977 compared to 2.4%, 2% and 2% for the U.S.A., the U.K. and Japan respectively (UNESCO, 1977, tables 5-1, 5-3 and ASRT, 1983: 27-28, 51). So, provided that all the other conditions are well organized, it is beyond doubt that such resources in Egypt are far behind the needs of the country in its pursuit of technological and scientific development.
- (iv) In addition, the major problem comes from the non-existence of an efficient organisation necessary to make such apparatus respond effectively to the needs of the economy. There are no systematic relations between the two fields, since each has its own world. This situation makes one wonder how

the outcome, albeit limited, of R & D efforts would spill over into the economy.

Charles Cooper has noted the likely results of the alienation of R & D units from the rest of the economy thus:

- (i) scientific and technological work is unlikely to be related to the practical needs of the economy;
- (ii) the organisation of these activities are likely to be obstacles to the development of local capabilities;
- (iii) scientists, and engineers have no definite and clear idea about what they have to produce;
- (iv) duplication of licences from abroad for the same sort of technology in the country will occur and thereby the marginalization of science and technology in the country (Cooper, 1980:10).

This situation, in fact, could result in distrust between local businessmen and the local R & D units and might enhance the dependence on foreign supplies. This situation prevails in Egypt as we shall indicate in chapter 6, even for research that could be undertaken locally. Not only that, but such a situation throws serious and grave doubts on the possibility of co-operation between these units and the TNCs, in the field of technology transfer and its adaptations.

In order to rectify this situation the ASRT has created a committee for the transfer and development of technology. The functions of this committee can be summarized as follows:

A) with the regard to the transfer of technology, it has to identify the technological requirements of the country and formulate an optimum contract for their transfer taking into account all aspects of transfer.

B) As for the development of technology, it aims to strengthen R & D efforts, and to co-ordinate between R & D units and productive activities. It also aims at the diffusion of technology throughout the economy (UNCTAD, 1980:22).

Nevertheless, it is difficult to imagine that a committee of this kind would work effectively in the absence of a definite strategy or policy, or even a law that put down the broad lines to be followed. So, its work has no practical base at all. The situation makes it just a new body to be added to the existing complex.

In connection with this issue, the Egyptian government has made many scientific agreements with both developed and developing countries from the West and the East. But as Sabet noted, such agreements have very little to do with the transfer of technology, since they just express, in most cases, the friendly relations between the two countries (Sabet, 1978:216-17). In this respect, an agreement was held by the ASRT and the American Agency for International Development. This convention was to be implemented on two stages: the first from 1977-80, and the second from 1980-83, with a total American finance of \$24.4mn. Its main purpose is the concentration on the re-orientation of research in favour of the applied kind and technological and vocational training (Ministry of Industry, 1983:19)

To conclude, although Egypt has built up an immense apparatus of scientific and technological institutions, significantly better than many other developing countries, their effect on the economy is still to be seen.

#### **4.7 Industrial Development Policy**

Egyptian leaders have not spared time to industrialize the country. Thus many industries have taken place over the 1950s and the 1960s. The policy that experienced many crises, as above, that resulted in the establishment of many industries rather than an intergrated industrial system. So, the country over that time had to depend heavily on foreign sources for hard and soft technology elements, in addition to the critical requirements of raw materials and intermediate inputs. It is such a dependence that has made the dynamism of the industrialization process depend upon exogenous sources and hence become vulnerable to any changes that might be made outside the country.

By 1974, a real shift in industrial policy took place as a part of the overall economic policy. So the main aim of industrial investment has shifted from the emphasis on heavy and basic industries in the 1960s to consumption industries and infrastructure (GAFI, 1982:11). The natural corollary of such a shift is the reduction in the limited backward and forward linkage that existed throughout the 1960s. And it results in the economy turning to foreign sources for almost the largest part of its industrialization requirements. So, the industrial sector in Egypt has become, as we shall see in chapter 6, a consumption sector, and hence a burden on the economy as a whole.

In this regard the framework of the industrial programme of 1982-1987 might give some indications of industrial policy under the ODEP. This programme has the following main features such as:

- (i) The emphasis on strengthening and deepening the tendency towards the ODEP with priority given to Egyptian private sector participation in joint-ventures. Therefore, the share of the private sector including foreign investment has increased from just under 20% in the 1977-82 plan to about 25% in the 1982-87 plan. This is while the public sector used to capture some 90% of total investment in earlier plans.
- (ii) The programme aims at increasing industrial output from LE 9494mn in 1982 to LE 14949mn in 1987 at the 1981/82 constant prices. This means that the average annual composite rate of growth will be 9.5%.
- (iii) The analysis of the programme's investment shows that top priority is given to on-going projects followed by replacement and renewal projects and rehabilitation projects, together accounting for 92% of total investment of the programme's £E 3750mn. Such a structure is depicted in the following Table 4.4

TABLE 4.4

Distribution of industrial investment by projects category in the 1982/87 plan.

Industrial Categories	(£E mn)	
	T.Costs	% of Total
Replacement and renewal projects	1121	30
Ongoing projects	1892	50
New rehabilitation	432	12
New projects	305	8
<b>TOTAL</b>	<b>3750</b>	<b>100</b>

SOURCE: Ministry of Industry, 1984:7.



This table points out that the vast majority of industrial investment has limited new additions to the industrial structure. Only some 8% of this investment is going to new projects. In addition to the screening projects suggested in it, it can be deduced that nearly all of them are channeled into the consumption sector such as ready made clothes, and some durable goods like TV sets and fans.

In consequence, from this programme it can be deduced that:

- (i) Such a bias coincides with the general aim of the plan of giving more support to the consumption industries, especially textiles and food processing which captured about 34% of total investment in the industrial sector.
- (ii) As for intermediate goods, the plan has envisaged increasing their share of total investment from 41% in 1975 to 45% over the programme duration. This is as stipulated in the plan in order to meet the expanding needs of manufacturing industries in other categories.
- (iii) Meanwhile the capital goods share of investment is targeted to reach 14% of the total over the same period. This category includes engineering industries in addition to projects that are mostly related to consumption. In the meantime, the machinery manufacturing share of investment is not referred to in this programme.
- (iv) Finally, it seems from this programme, as far as technology transfer is concerned, that most, if not all the projects planned have been studied and prepared by foreign consultant

companies without the significant participation of local firms or individuals. A striking example mentioned in the programme is the case of the Abu-Tartour Phosphate project. In this project a detailed feasibility study was carried out by:

- SOFREMINE (France)
- ALUSUISSE (Switzerland)
- Central technology (U.S.A.) studied the railway line to Safaga on the Red Sea.
- The office of Professor Lacker (Germany) prepared the engineering work at the port of Safaga.

Thus, nearly all of the technical aspects of the project have been studied and prepared by expatriates without a serious attempt to make the local specialists or agencies take a part in order to absorb, and acquire the foreign experience. Such participation is of great importance, because the locals are more able to comprehend the domestic conditions of the country and will be able to diffuse their knowledge to other projects or industries. The situation becomes more impressive if one knows that phosphate rock reserves represent the second most important mineral wealth in Egypt, with crude petroleum coming first and iron ore reserves third (Ministry of Industry, 1983:1-22).

The analysis of this framework in the light of technology transfer and development considerations reveals that there is an increasing gap between what should be and what does take place. At a time when the same paper emphasizes the process of training and increasing

technological capabilities of the country, the government surrenders the second largest mineral wealth to be exploited by foreign companies in the absence of a significant national participation. This illustrates that the alienation of local potential of technological capability and the productive sector is getting deeper. So, it is not just enough to write objectives on paper, but it is the actual practice which is the most significant.

Moreover, the concentration on consumption industries and the related industries from both intermediate and durable goods, and the relative neglect of machinery manufacturing are among the origins of perpetuating the technological dependency phenomenon. The more the country wants to produce such goods, the more it should look outside for supplies not only for soft but also for hard technology. This deduction could be supported by the fact that at a time of increasing consumption industries under the ODEP, the rate of growth of capital goods including durable goods' could not match these increasing demands. The capital goods share in terms of value added improved slightly from 6% in 1945 to only 9% by the end of the 1970s (UNCTAD, 1982:46).

The shortcomings of this situation, in addition to what is noted above, becomes clear by comparison with the experience of a country like post-war Japan, where about 70 to 80% of the imported foreign technology was directed towards the heavy and chemical industries and two-thirds of manufacturing investment was poured into those two sectors (Kitamura, 1977:43). Furthermore, it is in conflict with policies followed by some developing countries such as Brazil, where the government stepped forward and has taken major steps to encourage the capital goods sector at a time when it monitored the imports of

technology channelled into this field (Fransman & King, 1984:19). In India, the most striking phenomenon in industrial planning is the emphasis on the development of a capital goods sector (Patel, 1971:116). This favourable tendency has resulted in an increase in the share of capital goods products in total industrial production from 8% in 1956 to 25% in 1979. Correspondingly, imports of machinery for domestic production decreased from 70% in 1950/51 to 15.3% by the end of the fifth plan period 1977/78 (UNCTC, 1982:64).

#### **4.8 Direct Foreign Investment and the Transfer of Technology:**

Direct foreign investment has been envisaged in Egypt since the early 1970s as the effective way for obtaining technology from abroad, especially the 'North-West'. President Sadat was keen to emphasize that in his different meetings especially with businessmen.

In one of his meetings with American businessmen he said:

"Water we have, land we have, climate we have ....  
But we need technology, we need know-how. All this  
one can find in the U.S.A." (Journal of Commerce, 1979).

This statement of the president reveals that the prevailing orientation for technology at that time have been totally outward oriented especially from the U.S. Correspondingly, there has been the ODEP based particularly on the need for foreign technology.

Correlatively, there was, also, the Law 43 of 1974, as the main instrument of the new policy. This law was promulgated to put such perceptions into practice. Regarding technology, it includes some provisions that deal generally with the issue of transfer. In this respect, Article Two of Chapter 1, considered as capital:

"Intangible assets, such as patents and trade marks registered with member states of the international convention for the protection of industrial property or in accordance with the rules of international registration contained in the international conventions concluded in this respect and held by residents abroad and pertaining to the projects.

This article means that the potential investors have been allowed to capitalize on intangible assets such as patents and trade marks. And as seen above this article did not succeed in attracting foreign know-how embodied in patents. But it might succeed in introducing many trade-marks to the local market. This mechanism throws some light on the type of technology introduced into this country as we shall discuss in Chapter 5. Having done so, nevertheless this law has not embodied any provisions that organise the process of the transfer of such assets or monitor their introduction.

Among provisions that have implications for the whole process of transfer is Article Three, which has given a special priority to projects that require advanced technical expertise or which make use of patents or trade-marks of Worldwide reputation. As far as machinery is concerned the legislation has allowed their introduction into the country on the condition that they should be new and compatible with modern technological development and have not been used previously. It may be interesting to mention that according to Article 16 'Capital goods and component materials may be exempted from or granted the privileges of deferred payments or instalment payment for all or part of the customs duties and any other taxes or duties'. In addition all capital equipment introduced and used in Free Zone Areas is exempted from custom duties and other taxes and duties (Article 36 of Law 43).

From the previous provisions it is clear that Egyptian policy related to DFI, has disregarded the question of monitoring the transfer of

technology either in the DFI law or separately. This situation, in the absence of a strategy regarding the technological development of the country led to the UNCTAD mission to Egypt in 1978 noting:

"...., there is no means of knowing how much of the imported technology was necessary from the national point of view, taking into account alternatives, domestic actual and potential nor is it possible to tell whether the terms in which such technology was acquired are in any sense reasonable (UNCTAD, 1980:15).

Thus, the DFI legislation inter alia has made the situation for technology transfer much worse instead of rectifying it. The previous provisions, in addition to the other issues discussed before have permitted the importation of complicated and highly sophisticated technology to the country in some cases side by side with technology products. This issue will be discussed in detail when considering the survey results in Chapter 5.

#### **4.9 Conclusion:**

Government policies, particularly in developing countries, have a promising potential with regard to the issue of technology transfer. The importance of these policies emanates from the position of both the supplier and recipients of technology on its international market as discussed above. These policies also have a wide variety of fields to affect such as legislation, education, R & D, industrial development and so forth.

Egypt has embarked upon a new policy in the 1970s based upon the necessity of importing and introducing foreign technology into the country. Yet the fruitful outcome of such a policy hinges, as hinted above, on many other inter-related policies in the fields mentioned above.

In this country, these policies have been suffering from some serious deficiencies. These could be easily concluded from the non-existence of a global technological strategy as an integral part of a strategy of economic and social development. This absence has had reverse repercussions on the other aspects. So up to now, there is no legislation or even broad guide lines to regulate or monitor the importation of technology and to protect local potential. Thus all aspects related to the whole question of technology transfer have been left to be handled by market forces.

In Education, although the country has achieved a sizeable reservoir of skills through educational policies, a significant part of this reservoir has not put what they learned into practice and some of them have been misallocated. This situation exacerbates the 'Brain Drain' and thereby deprives the dearest asset of the country from taking effective part in developing the country. So, complaints arise from the shortages of skills and technicians and hence affects the type of behaviour towards importing technology. The same could be said for R & D activities, which have been suffering from such problems as shortages of finance, equipment, and above all, its link with the productive sector is kept to the minimum; a situation that has led to its alienation from the productive sector in the country. Even more, local scientists in order to retain their identity have identified themselves with the international scientific community. This tendency makes R & D in this country rigid and inflexible with respect to what the particular local environment requires and hence technological dependency becomes inevitable.

The industrial sector's dynamism has thus depended on external sources for its continuity. This is clear from the heavy emphasis put on consumption industries from durable and non-durable goods, while manufacturing machinery have been accorded little attention, if any at all. Such an imbalance leads to more imports of this sector's requirements of machinery, equipment and hence raw materials. This all happens, while the country opens its doors widely to DFI and the TNC, to choose where to work and how to work, what to produce and what not etc.

Consequently, such a situation might lead in the long run as Sagasti suggested, to self-defeating development policies (Sagasti, 1973:58). In consequence, it is crucial now, to explore the effect of these policies on the role of the TNCs in the transfer of technology to Egypt. This question will be the main theme of the next Chapter.



## CHAPTER FIVE

### Transnational Corporations and Transfer of Technology to Egypt

This chapter draws upon the findings of a survey undertaken in 1984 of the subsidiaries of transnational corporations operating in Egypt. The analysis of these findings will follow the structure of the argument in the first two chapters, concerning the rationale that rests behind the decision of TNCs to invest in foreign markets and their role in the transfer of technology to developing countries, together with the local policies and context that might affect the performance of the TNCs in this area, discussed in the third and fourth chapters.

The study which this chapter comprises adds to other empirical studies on the role of the transnationals in technology transfer to developing countries. (Aggarwal, 1978; Adikibi, 1981; Adheghian, 1982; Akpakpan, 1983, Alizadeh, 1978; Blinder, 1980; Barker, 1974-75 and UNCTC, 1982). It reveals, in addition, that the behaviour of these companies in Egypt does not show much difference from their behaviour in other developing countries. Furthermore, it adds further empirical support to the theoretical argument, outlined in the second chapter, that the TNCs do not embark upon a genuine transfer of technology to these countries (Chapter Two).

#### The Questions:

This study, in fact, seeks not only to provide information about the TNCs' transfer of technology to Egypt, but also aims to shed some light on factors that might underlie this process in Egypt. It is guided by the following broad questions:

- (1) What is the nature of the technology introduced by the transnationals to Egypt?
- (2) Is the technology transferred appropriate to the specific conditions prevailing in Egypt? If not, has any process of adaptation taken place to make it more suitable?
- (3) Under what conditions and at what price have they introduced their technologies?
- (4) What is the role played by the transnationals in training local personnel? What are the characteristics of such training?
- (5) What is the role played by these companies in R & D inside the country? Do they have relationships with local R & D units and/or universities and other higher education institutions? If yes, what sort of relationship?
- (6) What is the extent of their integration into the local economy, viz, have they made sub-contracts with local suppliers or manufacturers? If yes, what kind of co-operation do they have? What is the relative weight of their imports from outside compared with local purchase internally?
- (7) What is their role in exports? Are they free or restricted to export? What sort of restrictions, if any, are there.
- (8) What kinds of products do they make? Are they different from those which they used to produce at home? Are these products complementary or competitive with local products?

- (9) Finally, did the national policies and local contexts affect the performance of the TNCs, regarding the transfer of technology? If yes, how?

These broad questions are represented in the more specific questionnaire prepared for the purposes of this study. In order to prepare such a questionnaire, technology transfer literature was surveyed, and some other empirical studies were consulted (for example, Reuber, 1973, Langdon, 1981, UNCTAD, 1982, etc.).

Taking into account the previous considerations and in order to answer the questions noted above, the survey was based on, first, the questionnaire, secondly, interviews, and thirdly, plant visits. The questionnaire was the main tool of the survey. Concurrently, a series of interviews with senior representatives of some of the selected companies took place. The purpose underlying such interviews was the desire to get some information which the companies might be reluctant to reveal in written answers to the questionnaire.

Plant visits, in addition, provided a valuable complementary source of information. By undertaking such visits, it was possible to get access to, and a clearer idea about, some crucial points so far as technology transfer is concerned, such as the degree of mechanization, training, and localisation of employment. Also, it was possible to have some constructive discussions with engineers and employees about a variety of issues as will be illustrated below.

Moreover, many visits were paid to the local authorities that might have connections with the transfer of technology. They included the General Authority for Foreign Investment (GAFI) and the General

Organization for Industrialisation (GOFI). Such visits were intended to get some data about issues such as technology price, exports, imports, and production. The Academy of Scientific Research and Technology (ASRT) was visited, especially the Patent and Transfer of Technology Offices, the aim of such visits being to get data about the relationship that might exist between foreign companies and local R & D units and between these companies and patents.

Thus, every effort possible was made in order to ensure that the information provided reflected the actual performance of surveyed companies. But before entering into the subject matter, we should briefly discuss the sample on which the survey was based.

#### The Sample:

Relying upon sources such as the Directory of Foreign Investment in Egypt, obtained from the British-Egyptian Chamber of Commerce in London, lists provided by the Department of Trade and Industry about the British firms investing in Egypt and lists provided by Barclays Bank especially about American investment, a list of companies was prepared.

This preparation was guided by three factors. First, the degree of foreign ownership of equity: companies with a high foreign equity share were preferred. This was on the premise that, foreign companies (American, European, Japanese) represented the likely source of technology transfer. Secondly, companies actually in operation were preferable to those that were in a state of preparation. This aimed to gain information that reflected the current behaviour of foreign companies. Thirdly, bearing in mind the previous factors, a great deal

of attention was given to make the selected companies provide a suitable and representative sample of different industries.

Based on these considerations, a sample of 45 enterprises (see above) was prepared (see table 5.1), from different broad industrial categories that include a wide variety of activities within them. Also, as this table shows, about 25 firms co-operated in a significant way, whilst, 20 were excluded for different reasons: in five cases, enterprises were not accessible because of wrong addresses, in six cases, they refused openly on the grounds that they would like to avoid any problems such research might create for them; in seven cases, companies answered, but inadequately; so, they were excluded; in two cases, refusal was based on limitations of time.

In spite of these refusals, the sample remains representative. First, all the different industries chosen for the survey are still represented. Secondly, most foreign firms have been engaged in similar lines of production within the same industry, and using, more or less, similar production techniques, as will be illustrated below, and to some extent, even few firms may represent the industry.

TABLE 5.1

Sample Survey Companies

Sector	Total Number	Co-operating	Excluded
Chemicals	14	4	10
Engineering	14	9	5
Food	1	1	-
Metallurgy	6	4	2
Pharmaceutical	5	4	1
Textiles	5	3	2
TOTAL	45	25	20

SOURCE: Questionnaire Survey.

The surveyed sample has many other properties which together with the main issues related to technology transfer constitute the main data obtained by the questionnaire. So, the analysis in this chapter will run as follows:

Part II provides some basic information about the firms studied, including date of establishment, nature of activity, structure of ownership, financial structure, together with the motives to invest in Egypt. Part III, deals with the main issue, which is the production technology. It embraces issues such as the nature of technology introduced in this country, whether adaptation has taken place, the sources of technology, the form of its supply, its cost, and the question of choice of technology. Part IV tries to identify the relationship between technology transfer and control. Part V will discuss issues related to employment and training such as the number of local employees, what positions they hold, whether there is training courses, and how they have been taking place. Part VI assesses the transnationals' role in undertaking R & D inside Egypt, in addition to their links with local R & D units. Part VII investigates whether these companies work as an integrated part of the national economy or works as enclaves. Part VIII will examine the role of the TNC, and DFI in exports of Egypt. In addition Part IX will identify the pattern of their products and whether or not they meet the basic needs of the masses. Part X draws conclusions from the findings of this chapter.

## **5.2 The Surveyed Companies basic information**

This section aims to provide some background information about the surveyed firms:

## Ownership Structure:

According to foreign investment law, companies investing in Egypt should take the form of joint-ventures (JVs). Nonetheless, they can take the form of 100% foreign ownership in certain cases conditional upon a two-thirds majority of the Foreign Investment Board of directors (Law 43, Article: 4).

In fact the rationale behind this article is, as seen in Chapter Two, the belief that local participation might make the control and decision making process more sensitive to local interests.

Regarding the sample firms, it was found, as shown in table 5.2, that firms with majority local ownership (MLO) come on top with 44% of the total. In second place came majority foreign owned firms with 32% of the surveyed firms. They are followed by 12% for firms with wholly foreign ownership and the same percentage for 50/50 ownership. So, as far as the sample firms are concerned, it is clear that both foreign and local ownership in approximate terms in number are equal. But does such structure has some connection with control? This will be explored in a later section.

TABLE 5.2

### Ownership Structure of Sample Firms

Structure	Number	%
- Majority Local Owned (MLO)	11	44
- Majority Foreign Owned (MFO)	8	32
- Wholly Foreign Owned (WFO)	3	12
- 50/50	3	12
TOTAL	25	100

SOURCE: Survey Results.

In this connection, the findings of the survey suggest that companies with WFO and MFO are concentrated in industries such as pharmaceuticals, chemicals, and engineering. Further, in firms with MFO the foreign share ranged from 60% to 95%. On the other hand firms with MLO tend to be concentrated in field such as textiles, metallurgy and engineering, where the foreign share is as low as 20% in some cases. This would suggest that foreign firms wanted to capitalize on the position local firms enjoy in the local market in such industries.

#### The Financial Structure:

For the sample firms, it was found that capital per project differs considerably from industry to industry and from one project to another. While some firms were found to have a fixed capital of some millions, others have about a million. In addition, firms with sizeable fixed capital were found to be mainly concentrated in industries such as pharmaceuticals, chemicals, engineering and food, and such concentration was more tangible in firms engaged in manufacturing activities.

The other feature that characterizes the financial structure is the source of finance. It was found, contrary to the premise that ownership structure is usually coincident with the source of finance, that there is no straightforward connection between the two in Egypt. Some firms with MFO, raised the largest part of their capital in the local market, mostly via loans. Such a source represented in some cases 90% of the total fixed capital of such companies.

The third feature is that surveyed companies' size in terms of the average capital invested per project is higher than the general



average in firms which started operations before 31-12-1982. While the average was about £E 1,250,000 for the latter, it accounted for about £E 3,500,000 in the former. This is because the focus in selecting the sample was, directed to large firms as far as was possible given what we noted above about the choice of the sample.

**The Commencement of Production:**

In fact, most firms which co-operated in this survey started production very recently. Of the 25 firms, represented in table 5.3, just 4 firms started operation about 10 years ago, while the majority began only 5-6 years ago. Against this situation, it was necessary during the field survey to give more attention to the actual performance of the firms studied, in addition to their plans for the foreseeable future regarding the issue under concern.

With regard to the production of the surveyed firms, it is of interest to note that figures for their production were not accessible either from firms or from the GAFI. This is since both of them considered this as a matter of secrecy. Nevertheless, there were some companies which disclosed their figures.

TABLE 5.3

Date of Commencement of Production of Cooperating Sample Companies

Year	Number
Before 1974	1
1974	1
1975	2
1976	1
1977	4
1978	2
1979	6
1980	4
1981	4
1982	
<b>TOTAL</b>	<b>25</b>

SOURCE: Questionnaire Survey.

One important indicator of performance is value-added created in Egypt. This also, unfortunately, was hard to calculate for the reasons listed above and because of the inaccessibility of figures relating to imports of production requirements, wages, profits, rent and capital depreciation rates. So, it was impossible to estimate exactly how much value added was created and retained in Egypt and how much of it was repatriated.

Nonetheless, this performance indicator could be deduced indirectly from the nature of the surveyed firms activities. Of these firms as shown in table 5.4, the majority responded that they are engaged in manufacturing activities (80%). They are followed by assembling and combining as in the case of pharmaceuticals and chemicals (40%). Finally, activities like packing, re-packing, reformulating rank third with about 12%. This structure indicates that the value added in production in Egypt is relatively significant. However some firms are engaged in more than one activity. For example, some companies, in addition to manufacturing some products, combine some others, package, re-package or re-formulate imported elements and provide them to the local market. Such activities were noticeable in the pharmaceutical and chemical industries.

TABLE 5.4

Nature of Samples Firms Activities

Status	Number	%
Manufacturing	20	80
Assembling & Combining	10	40
Miscellaneous Activities	3	12

SOURCE: Questionnaire Survey.

N.B. The total number and percentage are more that the total surveyed companies, since some companies reported more than one activity.

These firms have been producing a variety of consumer products of durable and non-durable goods. In the engineering industries they produce razors, oil seals, gear boxes, assemble lifts, parts of extinguishers, and computers. In the chemical industry, they produce dry and liquid batteries, pesticides, and multipurpose plastic tubes. In the pharmaceuticals industry, firms surveyed produce a wide variety of drug products such as rimactane 300 mg capsule 80 H.P., Spasmo cibalyine Supp 5, tanderil 100 mg tablets 30, Tavegyl 100 ml Syrup 100 ml, velosef, 500 mg capsule 12, pridilone tablets 10, in addition to medical equipment. Also, products such as metal doors, windows, frames, and construction bars have been produced in the Metallurgical industries. Dry milk, pasteurized milk, together some other different sorts of processed food are produced by the food producing firms. And in textiles, ready made clothes, mainly from ribbon synthetics have been produced.

The striking feature in this respect is that at a time when foreign firms and JVs are producing such a range of consumption goods, they are reluctant to get involved in manufacturing-machines-industries as we shall see in the next chapter.

#### Motives for Investment in Egypt:

There is no consensus about the rationale of foreign investment by the TNCs. Thus, there are, as seen in the first chapter, many different hypotheses which seek to explain the phenomenon from different perspectives. In the case of Egypt, the evidence from our survey is summarized in table 5.5. This structure of motives, shows that the local market has represented the main rationale of foreign investment in Egypt. This deduction was, in fact supported by

interviews with senior managers of some surveyed companies. One of them mentioned that:

"Egypt has an enormous market that grows at an increasing rate with developed and varied tastes and requirements".

TABLE 5.5

Motives for Investment in Egypt

	Number	%
Local Market	20	80
Cheap Labour	13	52
Government Incentives	11	44
Cheap Raw Materials	8	32
Patents	0	0

SOURCE: Questionnaire Survey.

N.B. The total of responses exceeds the total surveyed companies because some of them reported more than one factor.

As for the second factor, cheap labour, it was found, as will be illustrated in Chapter Six, that the foreign expert commands a salary about 10 times higher than his local counterpart.

In addition, raw materials as a rationale were mentioned by companies operating in the textile, food, and metallurgical industries.

Furthermore the generosity of the Egyptian law of foreign investment played a significant role in this respect.

It was noted above (Chapter Two) that patents might represent an impulse for firms to invest in foreign markets. However, this effect could not be found to operate in the case of Egypt. Not one of the surveyed companies mentioned that they invest in Egypt in order to exploit their patents. In fact, this situation coincides with what has

been argued in Chapter two that patents per se, have a poor record in transfer of technology directly or indirectly.

Thus, having discussed the fundamental available information which represents a background to this survey, we now turn to the main issues concerning the role of the TNCs in technology transfer to Egypt.

### 5.3 Production Technology

This section intends to discuss the introduction of foreign technology into Egypt by the TNCs, such as its nature, appropriateness, adaptation, and direct and indirect costs.

It was noted above (Chapter Two), that the TNCs tend to introduce highly-sophisticated and capital-intensive technology into developing countries. Such technology is mostly identical to what is used in developed markets and hence, more capital-intensive compared with what similar local firms use.

In the case of Egypt, it was concluded in the light of the findings of the survey, that the situation in this country does not show much difference either from what has been argued above or what has been noted in other developing countries (see Chapter Two). From the analysis of the field survey, it was found that about 80% of the surveyed firms introduce and use technology similar to that used in their home markets and in other developed countries, while some 20% use less sophisticated technology.

For these companies with less advanced technology, the available evidence suggests that their operations were mainly confined to last

stage assembly of imported parts, especially in some engineering and metallurgical industries. Further, it was observed that their products were in most cases assembled parts of electric bulbs for street lighting being metal bars and metal frames.

On the other hand, firms that use advanced technology are mainly engaged in whole lines of manufacturing including assembling as well. This was noticeable in the chemical, pharmaceutical, food, engineering projects and textile industries.

In this connection, it was necessary to illustrate the capital intensity of surveyed companies. Such intensity is measured by using data provided by these firms about their fixed capital and number of employees. It is also measured by using a capital/labour ratio (K/L) measurement. The possibility of using other means of measuring was very limited because of the dearth of information on such variables as output and value-added. Thus, it was necessary to employ one method in order to give some indication of capital-intensity. Bhalla in this respect commented that:

"For purposes of comparison a common value denominator may be essential even though imperfect". (1981: 35)

Based on the previous measurement, it was deduced that the K/L ratio for the surveyed firms, as represented in table 5.6, is relatively high. From this table, the general average amounted to £E 18,814 per employee and about £E 23,644 per operative. (1) Further, this ratio approaches higher levels in industries such as chemicals and

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(1) By operative we mean in this study those who are engaged directly in the different stages of the production process of managers, technicians, and those who store output.

TABLE 5.6

## The Capital/Labour ratio of the firms surveyed

Industry	Average of Capital Per Firm	Average Number of Employees Per Firm	Capital/Labour Ratio (£E)	
			Fixed Capital Per Employee	Fixed Capital Per Operative
Engineering	2 061 333	130	15 856	18 739
Pharmaceuticals	4 550 625	120	37 921	46 435
Metallurgy	4 061 000	300	13 537	17 429
Chemicals	4 594 333	070	65 628	76 572
Textiles	2 134 769	305	6 999	9 084
Food	N	N	N	N
TOTAL	17 402 060	925	18 814	23 644

SOURCE: Questionnaire Survey.

pharmaceuticals. Such a level, in fact, exceeds by 2.5 to 3.5 times what is used in similar local firms in general (Abdel-Khalek, 1982: 277). And for the pharmaceuticals and chemicals, the ratio exceeds by more than four times that in similar local firms (Ali, 1983: 322)(2).

Moreover, the tendency to use capital-intensive and highly advanced technology was emphasized by the interviewees during the undertaking of the survey. In an interview with a senior manager of a joint-venture I was told that:

"We are proud that we are in the forefront of using the latest advanced technology in our company. You imagine! There is no difference between what we use and what is used in ... (the parent country)".

As a matter of fact all managers met during the survey showed the same spirit.

Such an inclination is supported by what was noticed during field visits to some plants. In one medical equipment plant, the production process was divided (during the visit time) into five stages: Feeding machines; processing; quality control; stamping and printing; and packaging.

- 
- (2) Regarding K/L ratio, as noted by Sakr, one must take into account such factors as:
- Decrease in the value of the Egyptian pound in 1977 and afterwards and its effect on the capital - value of foreign projects.
  - Public-Sector Firms' capital is assessed according to its book-value, so it sometimes appears to be less than their reality.
  - The policy of recruitment in public-sector firms, of over-staffing (Ali, 1983: 322).



The first stage was fully automatic. Intermediate inputs were pumped into containers and mixed by machines, and then re-piped to the second stage of processing. I was told by one of the firm's engineers that this stage of feeding could be done manually. But, he, in a response to a question about the previous level of automation, said that, machines are preferred to labour for two reasons: first, they give a proper mixture of inputs; secondly, they are quicker, i.e. automatic mixing and piping go smoothly with the speed of processing machines.

The second stage was not fully automised. Products were transferred from one machine to another by unskilled workers (women). This is because women generally charge low wages than men. All they do is to transfer the products between machines. I was also told that in the near future, they are going to replace these women by machines. As for the third stage, the quality control task was tackled by a trained woman who used some mechanical devices supplied by the parent company together with the necessary instructions.

In the fourth stage, stamping was achieved totally automatically, with products moving from one machine to the next. After that, the products reached the last stage which is packaging. On the contrary, this stage was noted to be labour-intensive, depending totally on the labour force and representing over 70% of the total labour force employed by this firm.

Such a situation was more or less, similar to what was found in some other plants. In addition, it was found that local partners either public or private firms were as eager as foreign firms in using the

most advanced technology, irrespective of its socio-economic repercussions on the economy as a whole.

Adaptation:

The question of adaptation is one of the major issues that arises from technology introduction by TNCs into host developing economies. In this regard it has been argued that these companies are, mostly, reluctant to embark upon a genuine adaptation of such technology. This argument, as seen in Chapter Two, has ample evidence to back it up.

As far as Egypt is concerned the evidence at hand reveals that the above argument holds beyond any doubt, insofar as the vast majority of surveyed companies were noted to be reluctant to modify or adapt their technology to fit local market peculiarities. Of the total firms, about 72% responded that they have done no adaptation while about 28% replied, in contrast, that they have undertaken some sort of modification.

Regarding the last category and guided by the distinction made by Lall in Chapter Two between 'core' and 'auxiliary' production technology it was found that the overwhelming majority of adaptations were restricted to auxiliary technology. What these companies achieved was some sort of modification in the size of their products, especially in textiles, to suit local consumers; and some modification of the material used in painting products in order to cope with the high degree of temperature in the country especially in summer.

Thus it is not surprising to find that those who claimed adaptation responded that in this process costs were negligible. Additionally,

they replied that the slight modification of products was undertaken by the parent corporation computer.

In conclusion, surveyed companies, not only have introduced capital-intensive and advanced technology, but are also reluctant to adapt it. Even worse, the slight modification that has taken place was made by the parent firms. Thus, they deprived local employees from getting experience of this process.

Such behaviour prevents the diffusion of foreign introduced technology in the economy. For instance, during my field work, I was told that two local engineers were trained in one advanced country to work on its subsidiary in Egypt. For certain reasons they left that company in order to work in another one from another advanced country working in the same industry. After a while they found themselves unable to get familiar with the new organisation of production either in terms of management, and new production techniques. This was in spite of the higher salary in that firm. So, they expressed, unsuccessfully, their wish to return to the first company. Consequently, the engineers will leave Egypt for other countries because of the absence of local firms similar to the company which initially trained and employed them.

As a correlate, it is not surprising to find that parent corporations represent the main and in most cases the sole source of technology elements for the surveyed firms. Such elements were for the overwhelming majority introduced in a package form. The parent corporations represented the sole source of soft technology, know-how, and technical assistance in all co-operated firms. While, regarding hard technology i.e. machinery, and equipment, a tiny part was

introduced from elsewhere other than their parents. These exceptions were observed in industries such as textiles, chemicals, and pharmaceuticals. Nonetheless, such transactions were recommended by the parent firm.

Thus, this situation, by and large has caused serious problems to employment, balance of payments, and income distribution as will be illustrated in the Chapter to come.

Choice of technology decision and its preparatory and complementary elements:

With regard to the choice of technology decision, according to the available evidence, it was left by and large to be determined by the foreign investor. The foreign partner, as is demonstrated in table 5.7 was alone responsible for technology choice in 80% of the cases. Meanwhile, about 16% was left to both foreign and local partners together, and in 4% of the total cases the choice was concentrated in the local partner's hands only. In this respect, it is worth noting that the previous 80% includes the firms with wholly foreign ownership in addition to some joint-ventures.

Nevertheless, further insight into the 16% of co-operatives, reveals that such co-operation is a myth rather than a reality. In these four firms as indicated in table 5.7, it was apparent that the local partner was a public sector firm. Hence, in such a situation, the representation of the local side becomes a necessary formality. But, I was told that the final word always rests with the foreign partner.

According to one manager:

"This is the reason for which we accept their partnership. And frankly they are more competent than us in this regard".

Even more, in the case reported where the local partner had an effective role, from a discussion with a senior manager, it was understood that the foreign partner recommended some alternatives from which choice should be made. In the end, the chosen source was a company from the home country of the foreign partner.

Such a situation reveals beyond doubt, how negligible is the role of the local partner in the choice of technology.

TABLE 5.7

Representation for Technology Choice

	Number	%
- Parent Company	20	80
- Local Partner	1	4
- Consultant Company	-	-
- Both Local and Foreign Partner	4	16
TOTAL	25	100

SOURCE: Questionnaire Survey.

Additionally, the respondents were asked; who was principally responsible for, feasibility studies; product design; plant construction (its technology, and its supervision); and the accounting system. The responses as summarized in table 5.7 and figure 5.1 indicate that foreign investors have the lion's share of control in fields such as product design (96%), feasibility studies (72%), and construction technology (71%).

TABLE 5.8

Distribution of Contributions in Issues Below.

	Foreign Investor (1)		Local Investor (2)		Both 1+2 (3)		G.A.F.I. (4)		Consultant Co. (5)		TOTAL
	N	%	N	%	N	%	N	%	N	%	
	- Feasibility Studies	18	72	1	4	6	24	-	-	-	
- Product Design	24	96	-	-	1	4	-	-	-	-	25
- Supervision on Construction	3	12.5	8	33	7	29	-	-	6	25	24
- Construction Technology	17	71	1	4	3	12.5	-	-	3	12.5	24
- Accountant System	6	24	14	56	5	20	-	-	-	-	25
- Management	13	52	3	12	9	36	-	-	-	-	25

SOURCE: Survey Results.

These figures have left no room for doubt that all activities related to technology were dominated by the foreign investors. Thus, such domination could be depicted in terms of category of technology transfer contributed by investors in figure 5.2 as follows: 30% for product design, 22.5% for feasibility studies and 22% for construction technology thus: Personnel management 16%; accounting systems 7%; and 4% for supervision on construction of the projects. In the meantime the local partner role was more tangible in activities such as accountancy (52%), construction supervision (30%), and personnel management (12%), etc. Thus, the more technology is concerned, the less the role the local partner would play and vice versa.

In fact, the previous phenomenon could be regarded as a cause and/or a result of the previous performance of introducing capital intensive and advanced technology, mostly in a package form and without significant adaptation. It could be a cause, since in the absence of effective local participation the decision to choose technology would leave such corporations free to apply their strategies, such that, as discussed in Chapter Two, aim, inter alia, to expand the use of their superior technology as widely as possible. And it could be a result since the tendency on both sides, both the local partner and foreign investors, to introduce the technology described above makes such concentration imperative.

Consequently, performing in this way leads to what Vaitzos labelled 'pseudo' transfer of know-how. This is because most of the elements contained in the package are never understood or assimilated by the recipients (1974: 398). Moreover, such a situation, seen in Egypt deprives local personnel from getting into the technology markets to look for more suitable technology and may be at a cheaper cost. In

FIGURE 5.1

Contributions of Foreign Investor, Local Investor and Other Bodies Distributed in Percentages.

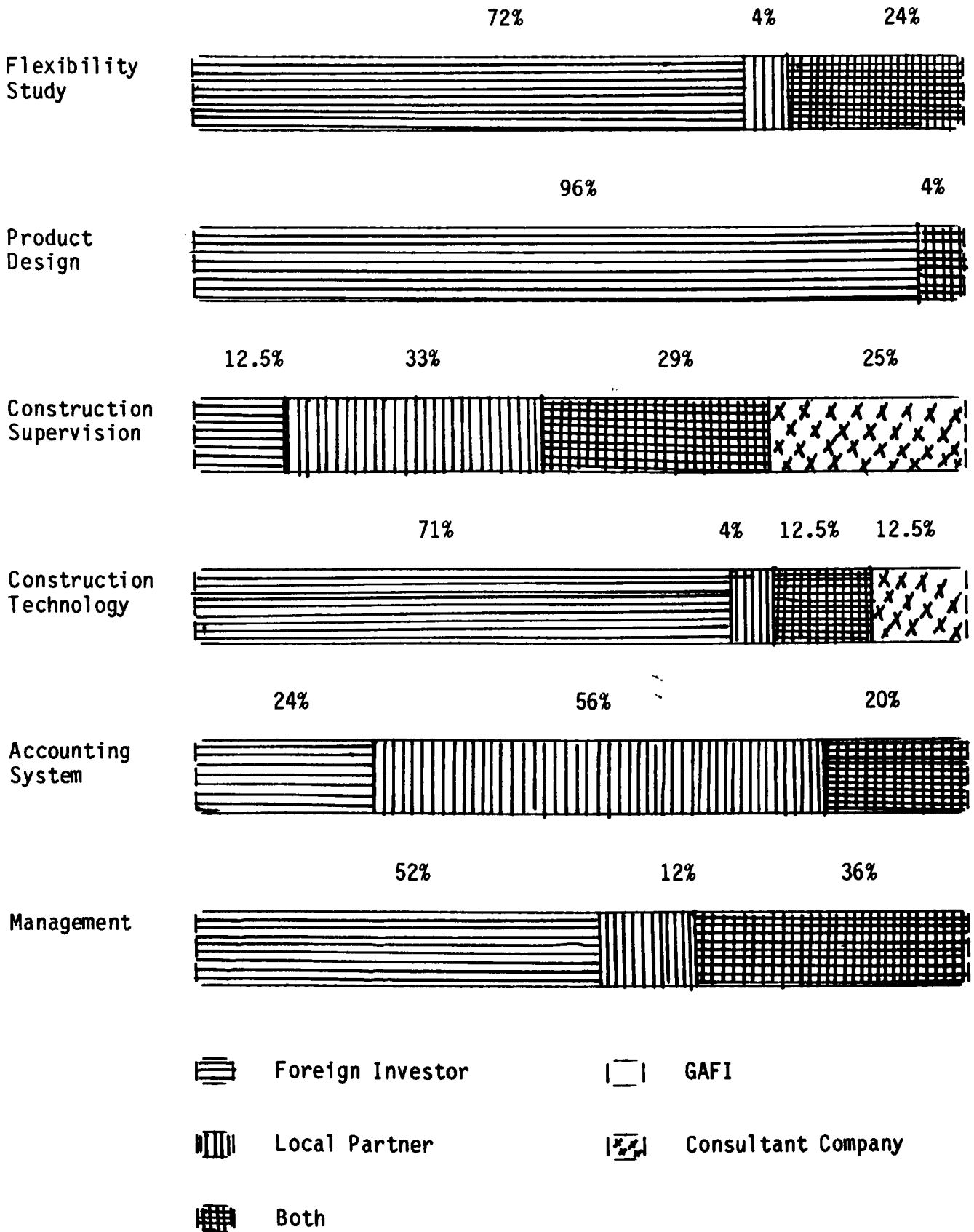
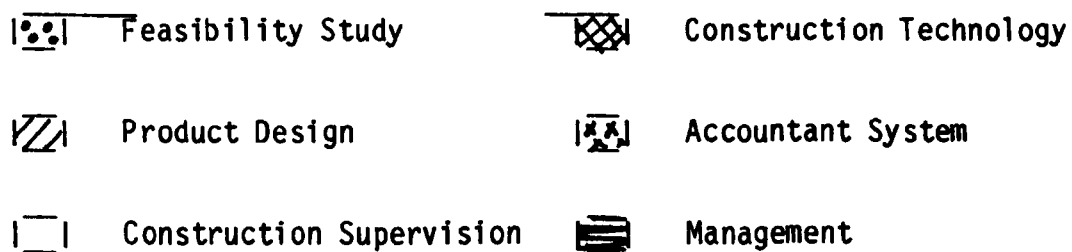
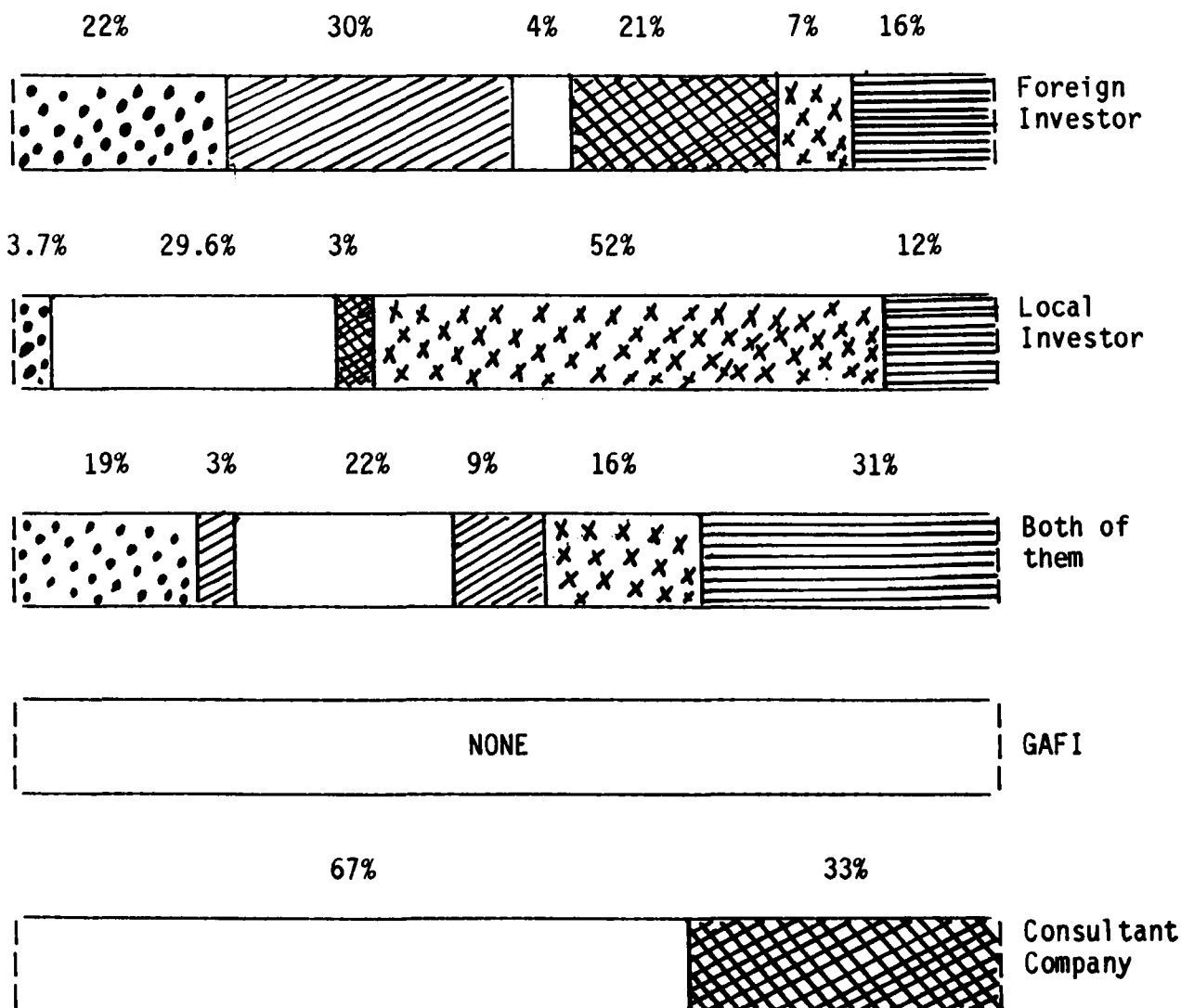




FIGURE 5.2

Contribution of Foreign Investor, Local Investor and Other Bodies by Category of Technology Transfer



addition, leaving of the choice of technology to be imposed by the foreign investor leads as Ikonicoff, (1979: 282) remarked, to some sort of imbalance in the economy. This question that will be examined in the next chapter.

#### Costs of Technology Transfer:

Taking all the previous issues in retrospect, one should ask, at what cost does the foreign investor introduce technological elements into the recipient country? This question has been in fact a subject of debate at all levels, politically, economically and socially. In this connection, it has been argued, (see in Chapter two), that technology transfer imposes heavy costs on developing countries. In the meantime, the technology transfer is costless for the TNCs, since they are introducing the same technology used abroad and in most cases without adaptation. Even in cases where adaptation takes place, its cost is so modest that it may not be proportionate to what these companies charge for their technology, and this is not to mention their overpricing of hard technology. (see Chapters One and Two).

As far as Egypt's case is concerned, the findings of our survey proved that this country has experienced different kinds of technology costs. To start with direct costs, it was found that they take the form of royalties, equity, lump sums or a combination of some of these. It was also found that royalties as shown in table 5.9 represent the dominant form of payment for the respondent companies (21). In this respect, 90% of the surveyed firms' payments for technology took the form of royalties either separately or in combination with other forms. This was followed by lump sum and equity forms for 43% and 33% of the companies, respectively.

TABLE 5.9

Distribution of Payments for Technology by Method

Form	Number	%
Royalty	19	90
Equity	7	33
Lump Sum	9	43

SOURCE: Questionnaire Survey.

N.B. The sum of these companies is more than the total surveyed, because there are some companies which mentioned more than one form of payment.

Thus, it is clear that the respondent firms prefer payments in the form of royalties. Further, it was observed from information provided by GAFI that this form is more common in the pharmaceuticals, chemicals and engineering industries. Not only that, but also its level was high in these industries compared to other industries: while it was about 5% for the former, the average was about 2% for the latter.

However, as a result of the inaccessibility of data related to sales amounts, cost, and market prices, it is difficult to draw a judgement on the rate of royalties. Rather important, it was noted that most of contracts of between 1.5 - 3% of net sales royalties are characterised by long duration period of 25-50 years, while other duration periods range from 5 to 10 years, albeit renewable automatically in most cases. It was also noted that the level of royalties in Egypt, in general is low compared to the international levels. While the rate in Egypt as seen above revolved around 1.5 to 5%, it was estimated to be around 10-30% of sales in most developing countries (Patel, 1974: 10).

From the evidence at hand and so far as direct costs are concerned, it was found that some joint-ventures (33%), tend to capitalize on their know-how in order to increase their equity share in the firm. Some firms within this category contribute their know-how as capital. This question raises two important points. First, this kind of participation means that the foreign partner is going to continue to get profits for his know-how as long as the firm operates, even if his know-how becomes obsolete. Second, who is going to evaluate the offered know-how as a share in the proposed firm? According the article (13) of the executive regulation of law 43 of 1974, it is stipulated that:

"The authority (Foreign Investment Authority) shall assess the value of imported and intangible assets contributed to any approved project by any investor ....., in the light of:

- (a) Submitted documents.
- (b) World Prices.
- (c) Assessment by customs department.
- (d) Consulting some qualified experts".

If we are to analyse this article, taking into account the nature of the international technology market, the strategies of the transnationals as seen in Chapter Two, together with the local settings and policies towards DFI and technology transfer as seen in Chapter Four, we would seriously doubt its effectivity. The developing countries are weak in the technology market which is dominated by the TNCs. These companies represent overwhelmingly the main source of technology to developing countries. And Egypt is no exception to that. Thus, Egypt suffers from the 'communication gap' i.e. its knowledge about world prices and alternatives is relatively limited. As for qualified experts, who are mostly expatriates, they in fact would not necessarily differ from the TNCs. So, the source that will be recorded the decisive factor is the documents offered by the foreign partner. It is, then most likely, as seen above that the transnationals over-

value their know-how. This means that they are going to capture more compensation than actually contributed.

As regards lump sums, they represent a significant portion of payments of the technology cost structure. They are as shown in table 5.4 reported by 43% of co-operating firms. It could be noted regarding this form that:

- (i) It represents a significant method of payment.
- (ii) Lump sums had to be paid irrespective of the commencement of production or the profitability of the firm.
- (iii) Also during the field work, it was noted that some companies combine three forms of lump sum form: one part to be paid at the beginning according to the agreement; a second sum to be paid for every produced unit, and the third to be paid for every sold unit.

This means that the transnationals do not spare any effort to maximize their returns from their technological assets.

In connection with this issue, a very important question emerges, that is, whether the sort of technology explained above is worth this price. In fact, the evaluation of this question depends on the level of analysis i.e. a micro or macro. So, regarding firms which are recipients of technology either private or public, the introduced technology might be worth this price or even more. This is since such firms are guided by their own interests, and as long as technology enables them to produce and market their production competitively, they

would welcome it. This is especially when technology is accompanied by trade marks with a worldwide reputation as was the case for 40% of the firms in the survey.

In this respect it has been argued that the technology price never reflects the value of technology (Ikonicoff, 1979: 283). In addition, Vaitzos suggested that:

"The difference between the explicit price paid for know-how and the marginal cost of its transfer to the seller constitutes a properly defined monopoly rent". (1970: 46)

As for the worthness of technology on the macro level it, in fact, must include the indirect cost. Such costs are usually connected with machinery and equipment technology as well as other requirements of raw materials, and inputs, where the TNCs, as we have seen in Chapters One and Two, tend to over-price.

Regarding the case of Egypt, it was difficult to draw a firm conclusion in this regard for several reasons, among them are, first, data necessary for estimating some elements of indirect costs such as transfer pricing were not available for nearly all the surveyed companies. Secondly, the very nature of some of these cost elements cannot be converted directly into figures. These elements include such factors as the inappropriateness of introduced technology, and the effect on local technological capabilities.

Nevertheless, it was possible to get some indications that the situation is roughly similar to that prevailing in other developing countries. The available evidence suggests that these companies impose heavy restrictions not only on their subsidiaries but also on local authorities promoting foreign investment:

- (i) It was found that some TNCs with a worldwide reputation made the condition that the foreign investment authority should not authorize the establishment of competitive firms. And if necessary, it should consult the concerned companies.
- (ii) Public Sector companies operating in the industry in which the foreign partner operates must not be enlarged for a certain time.
- (iii) Conditions related to the prevention of disclosure of information to a third party were reported. This was in addition the undertakings by employees who have access to such information to preserve its secrecy.
- (iv) Also, there were conditions which confined exports to some neighbouring countries.
- (v) Tie-in-clauses were found in some companies. In one of these I was told that the foreign partner obliged the company to purchase raw materials at 150% over its normal price.
- (vi) In connection with the joint-ventures, if the company were to purchase raw materials elsewhere, the foreign partner should test such materials in order to see if they are consistent with the quality control standards required by the parent firm. Such an obligation, of course, put some sort of pressure on the firm to purchase the required materials from the parent corporation. So, it has the same effect as that of tie-in-clauses.

Nonetheless, one does not intend to generalize since contracts disclosed in this respect were as few as the data gathered via interviews. But the lesson that could be learned here is that the performance seen by the TNCs in other developing countries is very likely in Egypt.

But how could such situation be interpreted? In fact, the performance described above could be understood in the light of some factors that might contributed to it. Some of these factors are related to the local situation, and some others are connected with the TNCs.

Regarding the local situation, it could be argued that it encourages the introduction of capital-intensive and advanced technology, since Law 43, at a time when it embraces no single article to organise the transfer of technology, encourages the introduction of the most advanced technology (articles, 2, 15, 15). This legal standpoint, in fact, reflects the absence of a technological strategy or even a policy in the short run as illustrated, in Chapter Four. A situation like this naturally gives no impulse for foreign investment sector firms to adapt their technology to fit local conditions.

Moreover, the TNCs as seen in Chapters One and Two, are keen to maximize their returns from their technological superiority. This goal could be achieved by expanding its exploitation intact in as many markets as possible. In addition, they tend, as will be seen below, to produce products similar to that which they are producing at home.

Finally, these companies' subsidiaries tend to be concentrated in industries such as pharmaceuticals, chemicals and to a lesser extent engineering. In the first two industries, according to UNIDO, the



potential for substitution of labour for capital is limited only to about 5% to 10% (1969: 43). Nevertheless, no difference between industries was noticed regarding the TNCs' role in adaptation.

#### **5.4 Management and Transfer of Technology:**

This section is an attempt to shed some light on the relationship between management, and hence control, and technology transfer to Egypt by the TNCs. This is since, as alluded above, there has been some stress on the necessity of local ownership and on the firm being in the form of a joint-venture. In fact this version, in Egypt, as in most of the other developing countries is based on the understanding that joint-ventures are the ideal form of DFI, since it means, in the view of J.V.s advocates, participation in control, maximizing returns, and acquisition of knowledge and as seen in Chapter Two this view is supported by some theoretical argument.

However, there is a strong counter argument that the link between the degree of equity participation and the TNC's control over their subsidiaries may not be straight forward i.e. the more local ownership does not necessarily mean more effective local control over the operations of the venture. So, these companies under host government pressure may reduce their equity share, but in the meantime, they exercise control firmly over the critical decisions (Lecraw, 1984: 30-41). In this respect Vernon commented on the flexibility of some transnationals and the establishment of more joint-ventures, by saying that:

"I would be surprised if on balance Multinational Enterprises had greatly reduced the degree of control over their global operations" (1981: 525).

In the case of Egypt, the material available at hand, tend in fact to confirm the second line of theoretical argument. From a comparison between tables 5.2 and 5.8 above, it is quite clear that foreign investors have dominant control. This is so, since while foreign investors have the equity majority of about 11 firms, they dominate the management in 13 firms. On the contrary, while the local investors hold the equity majority in about 11 firms, they hold the management only in three firms, while the other 9 firms are managed equally by both partners. Thus management and control are not always positively proportionate with ownership of the host firms.

Furthermore, foreign investors even in these companies with local majority or equal management tend to concentrate the decisions related to technology and production in their hands. For instance, the foreign managers have a right of 'veto' in some of these companies against any decision of which they do not approve, although they are a minority.

Even worse, in a surveyed firm with majority foreign ownership, it was found that the local partners are excluded totally from the management board. This was justified on the grounds that the existing board has been working in the interests of all the partners.

In general, it was found for these companies that the foreign managers are mainly responsible for:

- (i) choice of technology, feasibility studies, product design and other related activities such as quality control;
- (ii) putting detailed plans into operation.

In sum: the TNCs tend to concentrate control over their subsidiaries in their hands. This is irrespective of the level of equity participation by these companies.

Such behaviour could be explained on the grounds of first, the nature of the technology introduced by these companies: the more advanced the technology the more the concentration of control in foreign partner hands. In addition, in a document provided by a surveyed firm in the metallurgical industry, after describing the different stages of production, it was found that the technical department was absolutely in the foreign partner's hand. When they were asked about the reasons, the answer was this was because of the advanced nature of the technology which needed special skills. Secondly, it has been noted by Kaplinsky that the TNCs are keen to keep the control in their own hands to increase their share of company returns and to maintain control when a conflict of interests arises between both partners. (Kaplinsky, 1976: 20). In addition, such a tendency could be attributed to the intrinsic nature of the TNCs, where they tend, as seen in Chapter 2, to operate according to a global strategy. Hence maintaining the control over their subsidiaries is vital for organising their operations in a harmonized way. In this connection, it may be useful to note that, the U.S. Chemical Marketing Association in its advice to its members recommended:

"If you have the necessary balance of resources, a wholly owned subsidiary is preferable to a joint-venture. If you use a joint-venture, secure control". (Balasubramanyan, 1984:730)

Thirdly, the bargaining power of the transnationals increases with the level of technology they introduce into the host countries. The more advanced the technology, the stronger the position these companies would have. In addition, the TNCs position gets stronger, the more the

host countries' dependence on them for such elements as technology, marketing, and advertising, increases. (Lecraw, 1984:30-41). This analysis, by and large, holds for Egypt's case. The transnationals, are mostly introducing highly advanced technology. And it was noticed also that these companies with wholly foreign ownership have an international reputation for their technologies.

Fourthly, on the side of the local partners, no evidence was found to indicate that they are significantly connected with the issue of control, since, all that matters to them is a secured source of foreign technology or trade marks, encouraged by the absence of a law to monitor technology transfer. All that the government has done up to now is to insist that foreign investment should be in the form of a joint-venture, believing that ownership is synonymous with control. This belief is shown to be far from reality.

#### **5.5 Employment and the Transfer of Technology:**

This section tries to examine the surveyed firms' participation in employment creation and training. It has been expected as has been argued above in chapters 1 and 2 that these companies are introducing labour-saving technology and this is likely to make their contribution in creating employment very limited. In addition, these companies mostly employ expatriates in key technical positions. So, the benefits for those who are locally recruited are insignificant so far as technology transfer is concerned. Further, it has been noted that the TNCs do not regard training as of significant concern in terms of expenditure, equipment, and key information underlying hard technology.

Regarding the question of employment, in the case of Egypt the available data suggests that the surveyed firms, as seen in Table 5.6 above, are capital-intensive and employ less labour compared to local firms. The dimensions that such a situation implies for the whole economy are discussed in detail in chapter 6.

For those lucky enough to get a job in these companies at salaries as high as 2 to 3 times the prevailing rate in the local industries, it was found from the field-work that they are mostly confined to peripheral jobs. They comprise about 100% of clerks, production and services workers and about 85% of accountants. This structure coincides with the tendency as seen above that the less connected is the task with advanced technology, the more use is made of local personnel and visa versa.

Turning to training, 24 firms out of 25 replied to the questions on this issue. It was found that about 58% of them organised some sort of training course, while 42% do not. These figures may give the impression that these companies in general are active in this respect in contrast with what has been argued theoretically. Nevertheless, the quantitative figures lead to a superficial understanding, and emphasis should be put on the qualitative aspects as well.

Thus the respondents were asked about the duration and nature of courses, the curricula, expenditures, and equipment. It was found that some courses for engineers had taken place in the parent corporation's plants. The duration of such courses amounted, on average to 6-12 weeks. From the interviews with some managers, the general response was that they send some managers and engineers abroad in order to see

what is going on in these countries. Nevertheless some companies send their employees for between 24 and 48 weeks.

As for courses arranged locally for workers, it was noted that their duration was too short: 3-6 weeks on average. These courses were run by local engineers and some former employees with long experience who, mostly came from public sector firms operating in similar industries. For those workers the training they had was in how to handle the materials and products between machines and how to package the product. This was in addition to some theoretical lectures about safety measures and work discipline.

Even for engineers all that they learned was how to make the machines operate smoothly. But they have not been taught the key information necessary to understand the detailed operations of these machines. This was really emphasized during the plant visits. So, how could it be possible for these firms to adapt, modify, or even develop such sophisticated technology?

And, unfortunately, it was impossible to translate training efforts into figures, since no one company was found to have plans for training. So, there was no special budget or plans for manpower planning.

In brief, there was no training that could possibly result in the implementation of technology into the country in the sense Akpakpan suggested:

"Indigenous personnel employed in the firm are trained in the critical aspects of the operations and let into the secrets of the technology, to the extent that they are able to perform the relevant operations from start to finish without recourse to external agencies" (1983:185).

This situation in Egypt could be interpreted, in addition to what is noted in Chapters 2 and 4, by the fact that these companies are employing mostly workers who used to work in similar local industries. Hence, what they all need to know is how to deal with the new machines. So, there is no rationale for the transnationals to incur loss of time and money for further training especially if, as seen above, they are guarding their technology secrets jealously.

#### **5.6 Research and Development and Technology Transfer (R & D):**

Research and development is one of the aspects closely connected with DFI in general and transfer of technology via the TNCs in particular. There is a consensus in the economic literature, as seen in Chapter 2, that these corporations tend to concentrate their R & D activities in their home countries. Further, the vast majority of such activities outside the home country are channeled into other advanced markets. Hence, the share of developing countries in these efforts is very limited. This argument is supported by ample evidence as seen in the same chapter.

As far as the case of Egypt is concerned, the analysis of our findings suggests that the actual practice of these companies has shown no contradiction with the argument summarized above. Two out of twenty five companies said that they undertake R & D. Nevertheless on investigation it transpired that what they claimed is not R & D in the sense noted in Chapter two, but they are doing tests on some chemical inputs in their own laboratories according to standards dictated by their parent firm. In addition both companies were in the pharmaceutical industry. Not one company of the 25, including these

two has plans, budget, staff or any sign that indicates that they may consider embarking on R & D in Egypt.

Thus, since the beginning of their production up to now, no one company reported the invention or the development of any their products or processes locally. And hence, they are, as seen above, absolutely dependent on their parent firm for technology and its R & D requirement.

Furthermore, the respondents were asked about the extent of their links with local R & D units and universities. The response was that all companies but one, have no relation of any kind with such local institutions. And in the unique case, it was found that it had some sort of link, albeit unsystematic, with Ain Shams University in order to research the best ways for the storage of their products. In consequence, there were no exchange visits, lectures, studies or any financial support even in the form of scholarships for those who are working in the local institutions in fields related to the activities of the TNCs.

But one might ask why is this in a country which has great potential in this regard, as we have seen in the last chapter? This could be attributed to many factors, some of them are related to the TNCs and others are connected with the situation in Egypt.

On the one hand, the respondent companies tried to justify their position on the grounds of the smallness of their size. Such a justification raises an important question about the relationship between R & D and the size of the firm. This question is in fact a subject of controversy. Some see that large size and monopoly power



are important pre-requisites for firms to perform R & D (Pavitt and Worboys, 1977:36), while others argue that small firms are more efficient at performing innovative activities and represent the main source of innovations. (Rothwell and Zegveld, 1982:43). A third group adopted a compromise between the two standpoints above and suggested that:

"Both large and small firms play essential roles in the process of technological innovation, and ... these roles are complementary, interdependent and ever changing." (1) (Pavitt & Worboys, 1977:37).

And as far as the TNCs are concerned, it may be useful to mention that they are, mostly, producing products similar to those they are producing in advanced markets. Hence there is no logic, from their point of view, in undertaking new R & D to produce different products or to use different methods to produce the same products. Secondly, in addition, it has been noted by the ILO that:

"Foreign companies are keen to circulate their R & D efforts within the company and dislike to get rooted to the host countries, especially if they are developing ones." (ILO, 1976:25).

On the other hand, some factors related to the attitude of the Egyptian government in this regard could be noted. First, this government has paid no significant concern to the question of R & D. So foreign firms are left free to link their production in Egypt with R & D undertaken in another country. Secondly, as for local R & D institutions, it was found that they also paid no attention to establishing a relationship with the Foreign investment sector. These factors are in addition to what has been noted in Chapter 4,

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(1) For more detail see: Rosenberg, 1976, 109 and Parker, 1973 : Chapter 8.

regarding the lack of links with the productive sector and the domination of basic rather than applied research, etc.

Ultimately, these factors together have contributed to the creation of the situation described above.

### **5.7 Inter-Sectoral Relations:**

This section seeks to present results regarding the extent to which the surveyed firms are rooted in the machinery of the local economy. The relations between these companies and the rest of the productive sector could take the form of: a) backward linkages, in order to obtain machinery, equipment, intermediate inputs, raw materials and other requirements of production and b) the supply of technologies, components and inputs, to other industries or sectors of the economy.

The potential role that the TNCs may play in this regard depend upon such factors as:

- a) The global strategy of the TNCs, taking into account the nature of the technology transferred, its adaptation, and R & D.
- b) The socio-economic and political situation in the host country.
- c) Government policies (Lall, 1978: 1).

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(1) For more detail see Watanabe, 1972: 427; Lall, 1980: 208-209.

This issue has been argued in the economic literature as, we have noted in Chapter Two. The dominant view is that the TNCs are reluctant to get rooted in the developing host economies and hence, they hardly buy their requirements or establish supplying industries in these markets. In the meantime, these companies are deeply connected with their economies and keen to keep developing economies' markets open for their products abroad, a situation which would enable them to maximize their returns, albeit in a hidden way.

In the case of Egypt, 24 firms out of twenty five responded to question on this issue. A deep insight into the data provided by them suggests that forward linkages were so limited that they may be negligible. Only one company out of 24 responded that it has a systematic relation with a public sector marketing company in order to market its products.

Furthermore the contract conditions included no technical assistance in market research and in the art of marketing. Beyond this case, no one firm was found to provide systematically local industries with some of their inputs requirements or the means of manufacturing them.

As for the backward linkages, it was noted that they are relatively more significant. Raw materials purchases represent, as shown in Table 5.10 about 69% of all mentioned linkages. For capital goods, the evidence suggests that the respondent firms have been outward looking for their requirements viz, they import the vast majority of their needs of such goods from foreign sources. This is apart from one firm that was found to obtain some of its machine tools, no other company was found doing the same. This was in addition to few other companies

that unsystematically purchase their needs from local markets in food and textile industries.

TABLE 5.10

Frequency Distribution of Relation Between Survey Companies  
and Other Local Firms

	Number	%
Forward Linkages	1	7.7
Backward Linkages:		
- Capital Equipment	1	7.7
- Intermediate Inputs	1	7.7
- Raw Materials	9	69.0
- Specific Manufactured Inputs	-	0
- Other Contracts	1	7.7
TOTAL	12	100

SOURCE: Questionnaire Survey.

Nonetheless, it must be noted that purchases in the local market are concentrated in industries such as textiles, food and metallurgy. Moreover, these purchases account for a tiny portion of the total purchases of these companies. It was a common feature to find during the plant visits that there was a bias towards importing machinery, equipment and the complementary parts in addition to the vast majority of inputs and raw materials that fit in. In one firm, I was told:

"It is easier and safer to purchase the machinery and their requirements from abroad. Since when we come back locally produced ancillary products may fit the machinery or may not".

In addition, in an interview with a senior manager of a firm operating in the pharmaceutical industry and which obtains 4% of its requirements of raw materials locally and 96% from abroad, he said that:

"Our parent company is recommending the specifications of raw materials to produce the same product as in (the parent country). This is why we are purchasing the raw materials from the same source that provide them in (the parent country)".

The previous situation outlines the fact that these companies are locked into specific sources of supplies of raw materials, spare parts, machinery, equipment, rather than in to the local market. Moreover, nothing was noted to indicate that these companies have engaged in manufacturing some of their requirements locally or prepared any plans, in this regard for the foreseeable future. This is in spite of the fact that the country has a great potential, if used, in industries such as natural plants for drugs, textiles, food, metallurgicals, and capital goods.

Of course, this performance represents an extra burden on the balance of payments, a question that will be examined in the next chapter.

But why is there such a heavy reliance on external sources? Again, this situation is due to many factors. Among them are: first, according to the replies of the respondent firms, they believe that local inputs of raw materials are uncompetitive being not of a quality as high as the imported ones. They are afraid of the delay in delivery which might cause a loss because of stoppages or below capacity working. All these companies in fact mentioned the unavailability of machinery, equipment and most of the required inputs and raw materials.

Secondly, factors which are related to the transnationals' strategy. These firms as seen above tend to introduce advanced technology. Such a technology requires raw materials and inputs, etc., which are not available, in most cases in the local market. In addition, as seen

above, these companies are not keen to undertake R & D in the country in order to adapt their technology to use more local resources. And, it is not coincident with these companies' interests to establish local complementary industries as long as they produce the same supplies abroad and even more, they might maximize their returns from such supplies as will be seen below. So, as Hymer noted:

"International firms may find it much easier to import than to search for ways to use domestic sources".  
(Baranson, 1966: 276).

Thirdly, the attitude followed by the Egyptian government regarding DFI in general and technology transfer in particular encourages the previous behaviour. At a time when there is no clear vision of what the country expects from DFI as we have seen in the previous chapter. The present Law article (15), stipulates that firms operating under it:

"shall be allowed to import, on condition of inspection but without a license, whether by themselves or through a third party, the production facilities, materials, machinery, equipment, spare parts and transportation equipment required for the installation and operation of the project ...".

Additionally, there were many other concomitant measures that aimed to liberalize importation such as Law No. 118 of 1975 on exports and imports, the system of importing where imports were permitted for anyone possessing hard currency. Such an atmosphere partly encouraged these companies not to consider getting their requirements locally either via sub-contracting or by manufacturing them.

## 5.8 Exports and the Transfer of Technology:

In fact the question of exports by the TNCs from developing countries is a controversial one. Some argue that these companies via their advanced technology, high marketing skills, and their access to markets, are in a position to export more than local firms. In the meantime, there are some others who contend that the transnational corporations do not tend to export significantly from developing countries and their priorities are the markets of these countries (see Chapter One, Section 2 (II)).

The advocates of O.D.E.P. in Egypt presumed that the TNCs would bring in advanced technology that would improve product quality. Thus these products would be more competitive, and hence exports would follow automatically. So, the national legislature has given a priority to projects that aim to export, (article 3 of Law 43 of 1974).

As far as the surveyed companies' are concerned, the available data suggest that these companies' record in exports is far from satisfactory. Four firms out of 25 exported some part of their products while the other 21 only supplied the local market. These four firms, as table 5.11 shows, differ between themselves, one exporting some 42% of its total production, while the others export between 3% to 10.5% of their total production the rest being directed to the local market. This situation has resulted in an unfavourable position for local firms which are working in similar industries as we shall show in the next chapter.

TABLE 5.11

Exports Value as a Percentage of Total Production  
by Exporting Companies of the Survey

Firms	Total Production (1)	Exports (2)	% (2/1)
Metallurgy )	13,244,000	4,198,000	31.6
Pharmaceutical	9,255,000	255,000	3
Textiles	984,000	45,000	4.5
	23,483,000	4,498,00	19

SOURCE: GAFI

From Table 5.11 above, it can be seen that the surveyed firms, in general, have a poor export record. This is consistent with the fact that the total exports of 'Infitah' firms accounted for £E 16,872,800 mn up to the end of 1982, representing about 2% of total manufactured exports from Egypt. (Al Ahram Iktisadi, 1984). This performance is not surprising, since, as seen in the beginning of this chapter, the Egyptian market was given the first priority by the vast majority (80%) of the surveyed firms. The loose policy of the government in this regard did not encourage firms to consider exporting significantly. Up to now there is no obligation imposed on those companies to export. In contrast, their behaviour might sometimes be justified. For instance, in an interview the vice-chairman of the GAFI in the daily newspaper (ALAKHBAR) asked:

"How can you make these companies export goods, which the local market imports from abroad". (27-10-1984).



This statement reveals that the local policy is contradicted in this regard. At a time when a priority is given to firms that mention in their application for investment that they are going to export, their failure to do so is justified by the same authority. Then why is this set as a priority from the beginning!

### **5.9 Products of Foreign Sector Firms and the Transfer of Technology:**

This section is an attempt to examine to what extent products of the technology introduced by the TNCs in Egypt are appropriate to the needs of the masses. It has been argued, as noted in Chapter Two, that the inappropriate technology these corporations usually introduce into developing countries yields inappropriate products. Such technology produces luxury goods which concentrate on unnecessary and artificial ingredients of products rather than essential ones. In so doing TNCs' products mostly cater for a very tiny portion of the population in developing host economies (Chapter Two, III(A)).

Regarding Egypt, it was possible to obtain data which suggests that: First, the foreign investors were reluctant to get engaged in the capital goods industry, in the sense discussed in Chapter Two. In fact, this was so, since foreign investors were found to be reluctant to enter this field except for one firm from West Germany which formed a joint-venture with a public sector firm in 1979 to produce distribution transformers up to 1,500 KVA/1 KV (UNCTC', 1982: Schedule II p. 294). This means so far as technology transfer is concerned, that the country is deprived of a) establishing a well founded capital goods industry integrated into the local economy, which could respond to its requirements more appropriately and b) further it is deprived of

creating a very important centre for spreading technological skills throughout the economy, in the sense discussed in Chapter Two.

Secondly, contrary to the dearth of foreign investment in capital goods, it was noticed that the vast majority of foreign capital is directed towards consumption industries, both perishable and durable. This phenomenon, in fact may be considered a blessing, if such industries cater for the masses of the population. But, based on the available evidence, it was discovered that this tendency falls far short of meeting the basic needs of cheap clothing, food, housing, health services, essential and unavailable drugs. This is, because, it was found that the surveyed firms produce products identical to those produced in the advanced markets and at high prices which are far from the capacity of the ordinary people to pay. Not only have they done that, but also, most of their products are substitutes for products already locally produced and used to satisfy similar needs at lower prices.

So, perhaps a review of some products would put the situation in a proper perspective. In the textile industry, which used to dominate the Egyptian industrial sector together with the food industry, it was found that surveyed firms in this industry, mostly, produce ready made clothes identical to what is sold in the advanced markets. What matters in this respect is two fold; first, the prices of these clothes are so high that only a very tiny portion of the population can afford them, apart from those who work in Arab oil-rich countries. Secondly, manufacturing these materials does not suit the local climate at all, especially in summer with hot weather. So, the products cause some skin problems to the body.

Another example is from the pharmaceutical industry. Here, it was found that the situation is not different from that seen above. Firms studied in this sector either wholly or majority foreign owned are engaged mainly in producing products that have the medical effect which products produced by local firms have. Nevertheless, their products are more expensive than their local equivalents as shown in Table 5.12.

From figures shown in this table, it is clear that foreign subsidiaries' products price exceeds by 15% - 100% the price of local firms' products. In the meantime the local market is suffering from the shortages of some important drugs for heart disease, diabetes and inflammation (October Weekly, No. 468, October 13, 1985).

Moreover, these companies have embarked on heavy campaigns in order to create the impression that their products are superior compared with local ones. In this regard they have concentrated mainly on direct contacts with physicians and pharmacists. They are, in doing so, trying to capitalize on their worldwide known brand names.

However, it was found that there are some intermediate products which are needed for economic development; examples of these were found in chemical industries such as insecticides, and ground plastic tubes, used in agricultural projects.

Generally, the surveyed firms have been engaged in producing what they want to produce rather than what the masses of the population want. Such an attitude, in addition to other factors, has resulted in unfavourable repercussions on such factors as income distribution and local industry, which are discussed in Chapter Six.

TABLE 5.12

Foreign Subsidiaries' Products and Their Local Equivalents.

Foreign Subsidiaries Products	Price £E (1)	Local Products	Price £E (2)	% $\frac{1}{2}$
1. Rimactane 300mg cap. cap. cap. 8	5.250	RiFadin 300mg cap. cap. 8	4.250	124
2. Spasmo cibalgin Ad. supp. 5	0.800	Supergen Adult supp.	0.500	160
3. Tanderil 100mg tab. tab. 30	1.600	Oxyzone tab. tab. 30	0.800	200
4. Velosef 500mg cap. cap. 12	6.550	CeFalexin 500mg cap. cap. 12	4.250	154
5. Deltacortril 5mg tab. tab. 20	0.800	PridiLone tab. 10	0.500	160
6. Dexacillin 500mg Vial. Vial. 1	0.750	Ampicillin 500mg vial	0.650	115

SOURCE: Interviews with some Pharmacists.

The kind of behaviour documented above could be interpreted in many ways. First, these companies have been introducing and using advanced technology, where they are specialised and have advantages over local firms. This sort of technology naturally produces goods of the same kind, i.e. luxury sophisticated, and differentiated goods. As Streeten noted:

"The TNC has no special advantage in supplying simple basic needs goods and services". (1981: 399).

Secondly, the most promising sector in a developing country economy is that of luxury consumption goods, where the effective demand of the tiny population is concentrated. The mass of the people, without effective demand, have limited weight in the market. So, their demand could not be reconciled with the interests of the investing companies. This situation is described succinctly by Alan Bary:

"The major impediment is the inability to reconcile the demand for corporate profits with a product low enough in cost to reach the needy in large numbers". (Streeten, 1981: 400).

Thirdly, the attitude of the Egyptian government of trying to get foreign investment at any price shares with the transnationals the blame in this regard. The government has invited foreign firms to invest in the country without determining the priorities to which foreign investment should be directed. Naturally, this is so, as noted in Chapter Four, in the absence of a strategy of economic development in the long run.

#### **5.10 Conclusion:**

This chapter sought to identify in empirical terms the role the TNCs played in technology transfer to Egypt. The evidence which was found and analysed over the previous pages suggested that the surveyed firms,

mostly introduce advanced and capital intensive technology compared with local firms. Such capital intensity was more noticeable in the chemical and pharmaceutical industries. Although such technology is inappropriate to Egypt since it suffers from foreign exchange shortages, no significant adaptation effort was seen to take place either in the country nor abroad.

Moreover, no R & D efforts of any kind could be traced. Such a phenomenon was justified on the grounds that these firms are of small size. So, these firms were found to be absolutely dependent on their parents not only for technology but also for other complementaries, a situation that resulted in concentrating the choice of technology and other key decisions in the hands of the foreign partner. In addition, the relations between these firms and local R & D units and universities were cut off.

Rather noticeable was the absence of a genuine training of local personnel on the key information and knowledge underlying introduced technology. So, a real transfer of technology by these companies to Egypt is in serious doubt. What aggravates the situation is that the surveyed firms were found disintegrated with the national economy. The vast majority of production requirements of inputs, raw materials and machinery are imported from abroad and mainly from their parents.

Additionally, it was noted that most of these companies were producing only for the local market, while four of the total exported about one-fifth of their production and the rest channelled into the local market. Further, the majority of these products was not coincident with the needs of the masses for housing, health, food and drugs, etc.

Such behaviour was the outcome of many factors, some of them are connected with the strategies of the TNC as an organisation which ultimately aims at maximizing its returns. Some others rest with the attitude adopted by the Government towards DFI. For example, up to now, there is no definite policy related to technology transfer, and what the country needs and what it does not need.

So, logic dictates that the Egyptian government should step in and take the necessary measures to implant and anchor technology into the local economy. This means that it must abandon the belief that market forces would automatically do its task. This is if the country is to achieve a self-reliant economic development:

"Successful industrialization has depended not simply upon the transfer of more advanced technology to a backward country, but upon the acquisition of the ability to originate technical progress". (Sutcliffe, 1971: 335).

## CHAPTER SIX

### The Economics of Foreign Direct Investment and Transfer of Technology to Egypt

As we have argued and tried to show, the outcome of the transnational corporations' involvement in foreign markets is in question. There is strong and ample empirical evidence that the results of TNC direct foreign investment in developing countries are very disappointing.

As far as the question of transfer of technology is concerned, it has been noted that these companies involvement in developing economies has not resulted in a genuine transfer of technology in a way in which these countries might be able to master the technology introduced in their economies. Nonetheless, it has been noted also that the blame rests with the transnationals as well as with the host countries, in terms of their policies towards DFI, technology transfer, their commitments to industrialization, R & D and education. In addition, the introduction of foreign technology in particular and DFI in general (as we saw in Chapter Two) has immediate direct and indirect repercussions on the host economy. Such repercussions can affect the whole economy, the industrial structure, balance of payments, employment, income distribution, and the potential that the country might have for developing technical capabilities.

Regarding Egypt's case, this chapter presents an attempt to put the findings of the survey, detailed in Chapter Five, in a broader context. So, its analysis will proceed at the macro level. The aim is



to see how far the TNCs and DFI have affected the performance of the Egyptian economy. In so doing, I will draw on the theoretical debate reviewed in the previous chapters.

This chapter will be divided into five broad sections. First we shall attempt to explore how far the structure of the Egyptian economy is affected by DFI and the importing of new technology. Secondly, we shall examine the balance of payments situation under the ODEP and assess whether it has improved as was claimed by the advocates of this policy. Thirdly, we shall assess the contribution of DFI and the introduced technology towards the creation of new jobs in addition to the effect that they might have in this respect at present and for the future. Naturally as alluded to above, the pattern of income distribution would be affected under the new mechanism at work in the Egyptian economy and this question will be examined in the fifth section. The sixth section will try to estimate the impetus that foreign companies might give to the development of local technological capabilities. The chapter will end with a conclusion summarizing its main findings.

## **6.2 TNCs, Transfer of Technology and Structural Changes in the Egyptian Economy**

The development trends of any economy's structure could be deduced from features such as the relation between production factors, for instance the relation between labour and capital, the aim of the production e.g. whether it produces to satisfy basic needs. The method in which certain economies managed and directed viz, by planning or market forces; the relative weight of economic sectors; and the

relations between the economy with other external economies [Abdel-Khalek, 1978:363].

In the case of Egypt, the effect of DFI on the structure of the economy has not yet become clear. However, there are many changes that might bring us towards a tentative conclusion in the light of the field survey findings revealed in Chapter Five.

The notion held in the early 1970s was that the mere opening of the economy towards foreign investment, including the TNCs, would be followed by an inflow of capital and technology and hence economic development (Waterbury, 1983: 126). Thus, foreign investors have been left free in making their decisions about the field of investment, products, techniques, location and so forth. Naturally, these investors were to choose fields in harmony with their own interests irrespective of the country's urgent needs. (1)

The analysis of the structural distribution of the investment that actually took place as presented in Chapter Three (section two), backs up the previous argument. Such a distribution could be summarized as follows:

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- (1) This attitude on the side of the government of that time could be deduced clearly from the announcement made by the Premier of Egypt at the early stages of this policy:

"Every condition is a restriction, and every restriction is incomprehensible. The thing is to let the investor direct himself to his natural place according to his own freedom of action and the dictates of the needs of the Egyptian market.... Anything that leads to an increase in production and self-sufficiency and prosperity, we must accept and not refuse. We must accept all Arab and foreign capital that finds its way to investment in Egypt". (Al-Akhbar in Waterbury, Ibid).

- (i) Industry takes the lead with 39.8% of the total number of projects and occupies second place in terms of capital with 19.6% of the actual invested capital up to the end of 1982.
- (ii) Service and finance projects take second place with 38.7%, but are in the lead so far as actual invested capital is concerned with 68.7%.
- (iii) The construction sector, in turn occupies third place with 16.1% of projects and the bottom place in capital with 4.8% of the total.
- (iv) Finally, the agricultural projects come nearly at the bottom with 5.2% and 6.8% of both number of projects and total capital respectively.

In fact, these figures seen above speak for themselves. Comparatively, in spite of a slight difference between finance and service projects and the industrial ones in terms of number (1.1%), the former projects are very well ahead in terms of capital. Their share is nearly three and half times (350%) the share of industrial projects. It is also about ten and fourteen times more than capital invested in both agriculture and construction respectively. Such a bias towards finance and service projects resulted, as noted in Chapter Three (Section two) in a rapid increase in the number of commercial agencies.

Another result of the bias towards finance and service projects and the 'laissez faire' policy is the mushrooming increase in foreign and joint-venture banks. Those banks numbered 63, by the end of 1982

not only exceeding the country's needs but also working against the desired objective of allowing them in. They, at a time when they are reluctant to finance long-term transactions, are financing short-term ones (Male, 1983: 32). And, during a period they were supposed to inject new capital into the economy, they siphoned it off. According to the central bank reports in 1977 foreign banks held foreign exchange deposited with them by Egyptians working abroad in accounts with their parent banks outside Egypt. Their initial capital was £E 26 mn, whilst they transferred to their parent banks about £E 160 mn, i.e. 6 times over their original capital (Dessouki, 1982: 81).

Such behaviour attracted the attention of public opinion, press and the specialists as well. Gritli questioned the justification for the existence of such banks in the Egyptian economy and suggested that the country should support and encourage the indigenous banks. (Gritli, 1977: 275-76).

Again, though there is no clear-cut causal relationship between DFI, technology transfer and structural changes in the Egyptian economy, the previous structural distribution of foreign investment is coincidental with some structural changes this economy witnessed over the last ten years or so. These changes as depicted on table 6.1, could be illustrated as follows: First, agriculture's share in the GDP, though it averaged around 30% from 1972 to 1973, dropped from its peak (34.1%) in 1974 to 20% in 1982, experiencing a steady decline over the period 1978-1982. In addition, its proportion of total investment over the period 1974-1979 witnessed a decline it did not witness since 1952 (El-Zohry, 1984: 119) the same fate was experienced in its share of employment as will be seen below. This is while the

TABLE 6.1

## National GDP by Sector at Current Factor Cost 1971/72 - 1981-82.

Year/Sector	(per cent)											
	1971/72	1972	1973	1974	1975	1976	1977	1978	1979	1980	1980/81	1981/82
Agriculture	29.6	31.6	33	34.1	32	30.1	27.5	29	26	22.4	20.6	20
Manufacturing Industries	20.5	18.8	18.7	18.3	18.2	17	17.1	16.3	14.8	13.6	12.3	13.5
Petroleum	1.5	1.1	1.1	1.5	2.7	5.4	7.2	8.1	14	18.4	18.4	14.9
Electricity	1.7	1.5	1.4	1.3	1.6	1.3	1.2	1.1	1.0	0.9	0.8	0.5
Construction	4.1	4.1	3.3	3.6	3.2	4.3	4.3	4	4.2	5	4.6	4.7
Transport, Communication & Storage	5.1	5.2	4.9	4.5	5	7.0	7.3	5	4.4	4.2	3.6	4.3
Suez Canal	-	-	-	-	-	-	2.4	2.2	4	4.2	3.7	3.5
Trade & Finance Insurance	9.1	9.5	9.7	10.8	10.9	11.7	9.8	11.8	10.8	10.2	17.2	18.3
Hotels & Restaurants	-	-	-	-	-	-	-	-	-	-	1.3	1.1
Housing	4.2	4.1	3.9	3.4	3	2.3	2.2	1.9	1.6	1.4	1.8	1.8
Public Utilities	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1
Service ) Private ) Social ) Insurance )	23.6	23.6	13.6	21.1	21.0	20.1	20.1	19.7	18.3	19.1	3.6	4.2
Services Finance	-	-	-	-	-	-	-	-	-	-	11	13
Grand Total	100	100	100	100	100	100	100	100	100	100	100	100

SOURCE: years from 1971/72 to 1975 from Central Bank annual Report 1976 in Abdel Khalek 1978:382  
years from 1976 to 1981/82 from N.B.E., 1983 vol.XXXVI No.1 Table 611

country's imports of food have been increasing over time. Their imports represent, according to the Minister of Economy, about (40%) of the country's total needs (Al-Akbar, August, 6, 1985). Secondly, as for manufacturing industries, their share in GDP witnessed a steady decline over the last ten years, as table 6.1 indicates a drop of 54% over the period 1971/72 -1981/82. Thirdly, there has been, in contrast with the commodity sector, a relatively steady increase in the trade and finance sector's share. It rose by about (100%) over the same period. Fourthly, these changes were in addition to the increase in the share of oil in GDP from (1.5%) in the beginning of this period to about (15%) at the end. The Suez Canal revenues started to benefit the economy after 1977 and their share in the GDP rose from (2.4%) in 1971/72 to (3.5%) in 1981/82. By the same token some other activities not in the commodity sector have experienced increases as Table 6.1 shows.

In brief, the economy of Egypt witnessed the development of an economic structure biased towards the finance and service sectors, whilst industry and agriculture were badly and adversely affected, over the period 1971/72 - 1981/82. And such a development was concomitant with a similar pattern of DFI distribution structure as seen above.

This situation was naturally to be reflected in the structure of exports and imports development, insofar as both exports and imports have witnessed a dramatic change over nearly the same period and under the same conditions in terms of both quantity and destination. As for the development of exports of finished, semi-finished manufactured goods and raw materials (oil, raw cotton, etc.), figures shown in Table 6.2 clarify the fact that exports of manufactured goods are

deteriorating. In absolute terms they declined over the last three years, since 1979. In some detail traditional exports of semi-finished goods as cotton yarn, essential oil, and ingot aluminium, dropped by 34% since 1979. In addition, the exports of finished goods experienced a decline by 4.7% over the same period. Correspondingly, their share as a proportion of total exports was declining since 1978 from 43% to 15% in 1982 (NBE 1983: 103). This drastic change could be interpreted as a consequence of the increasing local consumption. But why under the ODEP, did other exports of other goods not offset such a decline, when increasing exports was one of its declared aims! In fact there are many other reasons as will be discussed below in turn.

So, the Egyptian economy came, in an unprecedented way since the 1960s, to be highly dominated by exports of raw materials. Oil exports for instance, accounted for 66% of the total in 1982. Thus, oil and raw cotton, in addition to some other raw materials accounted for 85% of Egypt's exports in 1982 instead of 62% in 1974. This deteriorated position reminds one of the position which prevailed in the pre-1952 era as seen in Chapter Three (Section one).

Thus the structural changes seen above clearly affected the pattern of trade. On top of that imports increased very rapidly over the same period 1974-1982, as we shall observe in section III below. In addition, what constitutes a noticeable change in the economic structure is the shift of its trade away from centrally planned economies toward capitalist markets over the period 1972-1982. In this regard, as table 6.3 demonstrates, at the beginning of this period the largest proportion of exports was channelled to centrally planned economies and just about one-third of imports came from these

TABLE 6.2

The Development of Exports of Finished, Semi-finished Goods and Raw Materials 1974-1982.

Year	Total Exports (1)	Exports of finished and semi-finished goods (2)	% of (2/1) (3)	% of exports of primary goods (4)
1974	593.3	224.8	38	62
1975	548.6	248.6	45	55
1976	594.4	219.5	37	63
1977	668.4	245.8	38	62
1978	679.8	292.4	43	57
1979	1. 787.5	402.5	31	69
1980	2. 132.2	360.6	17	83
1981	2. 262.9	381.2	17	83
1982	2. 184.1	316.6	15	85

SOURCE: Calculated from table 2/3, N.B.E. 1983, p.103



countries. At a time when the country imported about one-half of its needs from the market economies, it exported about one-fifth of its total exports to them. And the situation with the third group (developing countries) was relatively equal. But, over time and under the adoption of ODEP and the concomitant policies to liberalize the economy as seen above, the situation became different. As the same table reveals, trade with the centrally planned economies dropped in terms of both exports and imports. In the meantime, trade with developed markets witnessed a sharp increase to approach over 50% of total exports and nearly 75% of total imports. And its share of exports going to developing countries increased by 61% while the share of imports from these countries decreased by 26%.

In addition to the structural changes noted above, which took place under the aegis of DFI led development, there is a similar situation regarding DFI in the industrial sector. The general presumption as seen in Chapter Two is that TNCs prefer to invest in the consumer goods industries and are reluctant to invest in capital goods manufacturing in developing countries. This argument was supported by empirical evidence from many of these countries.

In this connection, Egypt is no exception. During the field-work, we could not discover significant DFI in the machinery manufacturing industries except for a joint-venture established in 1979 between a public sector company and a West German firm (see Chapter Five).

This point is supported also by Professor Gameh:

"Law No.43 of 1974 has not achieved its purpose until now. It (DFI) does not produce capital goods or equipment necessary for the production process. What we have seen are a variety of consumption goods". (Al-Ahrami Ktisadi, 1981: 15)

TABLE 6.3

The Egyptian International Trade by Economic Groups.  
1972-1982.

Year	Centrally Planned Countries		Capitalist Developed Countries		Developing Countries	
	EX %	IM %	EX %	IM %	EX %	IM %
1972	61.1	32.3	20.9	48.4	17.8	19.1
1973	55.1	29.5	28.3	53.1	16.5	17.2
1974	55.4	24.1	30.8	62.6	13.7	13.2
1975	67.7	19.1	14.4	65.4	11.5	15.4
1976	48.9	14.8	31.9	68.3	19.1	16.8
1977	44.1	16.1	34.8	68.9	20.9	14.9
1978	49.3	14.4	43.8	69.4	21.4	16.1
1979	26.1	10.8	63.5	73.0	10.2	13.1
1980	18.1	13.3	60.2	73.0	21.6	13.5
1981	17.6	13.1	52.1	54.3	30.1	32.4
1982	17.7	13.2	53.1	72.6	29.1	14.0

SOURCE: Calculated from N.E.B., 1983, Table 2.2

In this respect, there are limits, as we saw in Chapter Two, for setting up capital goods industries in the Third World countries. It has been noted that a capital goods sector is a function of market size (Rosenberg, 1977: 143). Therefore, the narrower the market, the limited the chances of establishing such a sector. In fact, this argument is very strong. Yet, it does not explain the behaviour of foreign companies in Egypt for the following reasons. First, this country has a promising potential market for such goods. Imports of capital goods as illustrated in next section, have been growing at about 100% per annum, since 1973. This increase could be ascribed to the rehabilitation and modernization of existing local firms (see Chapter Four), in addition to the increase resulting from imports by project operating under the ODEP. According to UNCTAD, Egypt's imports of metal cutting and metal forming machine tools increased from \$59 mn to \$65 mn in 1977 and 1979 between constant prices (UNCTAD, 1982: Part III). Secondly, Egypt is relatively the most industrialized country in the Arab world. So, it has an encouraging potential to export capital goods to these countries' markets.

So, what could be the reasons behind the reluctance of the TNCs towards investment in such a crucial industry? As a matter of fact, as far as Egypt's case is concerned, no particular reasons were found. In consequence, one may draw on the theoretical explanations for this behaviour. Colman & Nixon, have noted, among other reasons (see Chapter Two), that capital intensive techniques and the reluctance of the TNCs to invest in machinery-manufacturing-industries support each other. This is since the adoption of capital intensive techniques of production by the transnationals necessitates highly advanced and specialized machinery, a situation that constrains the demand for machinery that could be manufactured in developing countries (1978:

234-235). Not only this but also there is a 'demonstration effect' that might push local firms to buy advanced technology and hence compatible advanced machinery from foreign sources. This sort of behaviour eventually would detach them from local suppliers.

On the other hand, as demonstrated in Chapter Two, the TNCs are keen to introduce consumer goods similar to those produced in their home markets. Such goods are often luxuries as far as the majority of people in developing countries are concerned. Their production requires advanced techniques and hence sophisticated machinery, and this demand can only be met from developed countries. So, as seen in that chapter, an indirect relationship between the consumers and the manufacturers of capital goods in developed countries might arise. Therefore, a local capital goods sector in developing countries, if there is any, would be damaged or at least undermined.

In the light of this argument, one may claim that this is the situation that at least exists in Egypt now. In Chapter Five, the findings of the field work revealed that these companies introduce mostly capital intensive techniques, produce products similar to those seen in developed countries, and campaign heavily for such products. So, the 'vicious circle' is working in the Egyptian economy instead of the 'virtuous circle' as illustrated in Chapter Two.

As a corollary, technological dependence as defined by Merhav as 'the dependence on imports of capital goods' becomes unavoidable (Merhav, 1969: 16). In addition, from the pattern of the goods produced it is clear that they cater for a certain tiny class who could afford them (see Chapter Five). This issue, in fact, adds further dimensions

to the change in the economic structure. We shall discuss this question, in detail in Section IV below.

The consumption goods produced by the TNCs have represented a major challenge to local industry as a result of fierce competition. Since the TNCs are enjoying many privileges under the foreign investment law, as seen in Chapters Three and Four, having a superiority in advanced production technology, marketing skills and high product differentiation capacity, they are in better position to dominate the market. As a result, local industries which produce products that satisfy similar needs to those which the transnationals products satisfy, have been suffering.

The pharmaceutical industry, one of the most successful local industries, saw its share in the local market decline from 88.2% in 1973 to 78.3% in 1980. Even worse, some of the local firms began to achieve losses for the first time (Galal, 1983: 240-41). In fact, this is not because of the inefficiency of these firms, but because as seen above, foreign companies enjoy a variety of incentives, and they are embarking upon very heavy campaigns to promote their products, especially the direct contacts with the physicians and pharmacists. More recently they appealed to the last group in the local newspaper offering reduction in their prices of 10% off the normal price of their drugs. (different issues of Al Ahram newspaper, see No. November 1984).

This sort of performance is taking place, despite what Galal noted:

"Foreign subsidiaries shared or not with Egyptian capital have proved to be as poor channels for technology transfer as their parents' MNCs". (1983: 240).

In this respect, the ASRT in one of its studies came to the conclusion that foreign companies' investment in pharmaceuticals is a waste of resources. And it suggested that such investment would be more effective if channeled into manufacture of inputs and capital goods necessary for the pharmaceutical sector which needs more capital and high technology (ASRT, 1983: 14).

The crises are not confined to this industry, but they, also, extend to include some other successful industries such as tyres and textiles, (Abdel Fadil, 1983: 6). In brief, Lloyds Bank Group in one of its reports commented that:

"ODEP has been damaging Egyptian local industry rather than encouraging development". (1982: 12)

So, DFI is not only accentuating unbalanced development especially between capital and consumer goods sectors, but it also affects adversely existing local consumer goods industries.

To summarize and conclude, the Egyptian economy has experienced various structural changes under the ODEP as follows:

- (i) The declining share of industrial and agricultural production as a proportion of GDP.
- (ii) In contrast with the commodity goods, the increasing share of trade and finance, in addition to fields such as oil and Suez Canal, in the GDP.
- (iii) A decrease in the ratio of manufactured exports to total exports, in addition to the decreasing share of domestically produced goods in the local market.

- (iv) An increase in the dependence on the advanced capitalist markets for trade with either or both the centrally planned economies and developing countries.
- (v) The imbalance between capital and consumer goods sectors and the dependence on developed market economies for importing the first category of goods.

Such changes mean that, first, the Egyptian economy became more dependent upon unsteady revenues from sources such as oil, tourism, remittances of Egyptians working abroad, the Suez Canal and foreign aid. These sources could be characterised in two ways. (1) They do not reveal a genuine improvement in the economy. (2). They are unstable, viz their value is dependent on the situation on the international markets. So, the country's income becomes vulnerable to any possible events that might take place on the international scene. The clearest and most up to date example is, the decline in the national revenues from oil, remittances of workers abroad, the Suez Canal, as a result of the drop in oil prices. This is while the drop in oil prices has led to the dismissal of many Egyptians who used to work in oil exporting countries, the reduction of oil revenue and a reduction in shipping going through. Secondly, at a time when the government, without a deep and thorough study adopted the new policy to industrialize the country, the mechanism of DFI has been working the other way round. Thirdly, this means more dependence on foreign markets (Capitalist markets) for not only manufactured goods but also for food and in order to export the country's primary materials.

These are the main structural changes the Egyptian economy has undergone since 1974. In addition, the situation may get clearer, if we consider some of the other aspects of the economy such as the balance of payments situation, employment, and income distribution.

### **6.3 TNCs Transfer of Technology and the Balance of Payments**

The balance of payments in developing countries mirrors the structural changes that take place, in addition to the performance of the economy as a whole. Correlatively, DFI-led development has its impact on the balance of payments of countries adopting 'Laissez-faire' policies. This could take place via many mechanisms that TNCs employ. Technology in the case of DFI, usually is transferred with some amount of capital finance. It also is involved in the structure of exports and imports of the recipient country, and hence the use of transfer pricing becomes likely (see Chapters One and Two). It often has to be paid for in foreign exchange and these costs are in addition to some other subsidiary payments such as technical fees and expatriates' salaries, besides the indirect repercussions that it might have on the economy as a whole.

In this respect, it has been noted that DFI would help to bridge the gap between local savings rates and necessary investment rates in recipient host economies. So, they might help in financing economic development and growth in these countries. In the meantime, advanced technology introduced by the transnationals could enable local products to be competitive and thereby, able to penetrate new markets, increasing export revenues and hence improving the balance of payments of developing countries (Agarwal, 1978: 83-84).



There are counter arguments (Chapter One (Section two) and Chapter Two regarding technology cost), which suggest that the TNCs in general are reluctant to export from developing countries and their record in this respect is relatively poor compared to that of local firms. They tend to concentrate in industries with a high import content, so their imports are far higher than local firms.

So far as the Egyptian case is concerned it will, unfortunately, not be possible to determine in an accurate way the effect that technology transfer might have on its balance of payments. The access to statistics necessary for such assessment was not open, and what was made available was insufficient. Consequently, this section represents an attempt to shed some light on the effect that DFI and transfer of technology might have on the balance of payments.

In Egypt, it was suggested that the best way to attract foreign technology was through foreign capital investment. According to GAFI (Chapter Three, Section two) the actual total inflow of capital from foreign sources (including Arab capital) amounted to £E 617,175 mn over the period 1974 - 1982, i.e. an annual average of some £E 68,575mn. In fact this amount represents an insignificant proportion of the annual average investment (£E 3,607mn) over the period 1977 - 1982. (Ministry of Planning, 1982: table 2: 15).

Although, this contribution is modest, it may be useful to note, as we have seen in Chapter Five, that some of this capital represents a capitalization on intangible assets such as know-how and patents. In this respect, it has been argued that, the initial inflow of resources in kind cannot be considered as net foreign exchange gains, since TNCs usually tend to over estimate the value of their goods

and services, not to mention their intangible assets (Patel, 1984: 64).

The other possible source of contribution could be exports by foreign investment sector firms. In 1982, operating firms exported goods valued at nearly £E 17 mn out of a total industrial production of about £E 663,939 mn, viz, they exported some 2.5% of their production. These figures, undoubtedly, outline the fact that foreign companies have really a very poor record in this field either in absolute or relative terms. Reasons for such behaviour were discussed in Chapter Five.

On the contrary there are many other factors that contribute significantly to the negative effects of DFI on the Egyptian balance of payments. Among these is the cost of technology that must be paid for in hard currency. Here, the exact determination of the price is impossible in the light of available and accessible material. Yet, it is necessary to refer to what has been noted in Chapter Five, that the duration of most licences, could be as long as 25-50 years, i.e. the country pays for technology that might be obsolete. In addition foreign firms charge different forms of payments for their technology such as lump sum royalties, equity share, or a combination of some of these.

Moreover, it may be interesting to mention some examples of the effects which technology price might have in the long run. In the pharmaceutical industry, for instance, there are joint ventures operating Egypt since the 1960s. Their financial position as depicted on Table 6.4 demonstrates how royalties alone exceeded the initial capital introduced by them. Pfizer Misr, is an American subsidiary

TABLE 6.4

The Actual Situation of Drug's Subsidiaries Operating in Egypt.

						(£E)
First Year of Production	Company	Fixed Capital in 1967/68 (1)	Total Sales Until 1979 (2)	Total Royalties (3)	Scientific Office Fees (4)	3/1 (5)
1962/63	Pfizer-Misr	1.200,0	51.129.500	1.993.341	3.358.493	166 %
1965	Swiss-pharma	0.313,0	77.360.354	1.146.643	8.146.643	366 %
1962/63	Hoech-Orient	0.624,0	33.428.259	1.832.975	2.006.531	294 %

SOURCE: - Capital employed from Handeussa, 1974, Ph.D 1974, p. 95.  
 - 2, 3, 4, from survey by A.S.R.T., 1981, p. 5-2/26.  
 - (5) calculated by the author.

with 60% foreign ownership. The royalties charged for technology over the period 1962/63 - 1979 accounted for 166% more than its capital used in 1967/68. The situation for Hoechst-Orient is even much more pronounced. The ratio of royalties to the initial capital amounted to 294% over the same period. And Swiss-Pharma heads the table with a ratio of 366% over the period 1966-1979. The last subsidiary paid in one year only 1979 as royalties £E 464,438, which exceeded the capital employed in 1967 by (48%). These were in addition to the scientific office fees that approached some £E 1,346 mn in the same year (ASRT, 1981: 5-2/25).

This example leaves no room for doubt that royalties work as a source of foreign exchange drain. And as seen in the previous section, these companies do not really transfer technology. This is since although the original period of licenses, for manufacturing certain products, was five years it has been repeatedly renewed over four times. This implies that these firms have not embarked upon a genuine transfer of technology, otherwise they would be able to depend on themselves (ASRT, 1983: 12).

Secondly, profits also, represent another channel for draining foreign exchange out of Egypt. Regarding the three subsidiaries above it was reported that they achieve a high rate of profits. Such profits were 115%, 53% and 52% for Hoechst-Orient, Pfiza-Misr and Swiss-Pharma, respectively, of capital employed in 1967, (Gereffi, 1983: 191).

Moreover, while undertaking the fieldwork for this thesis, it was possible to find some more examples. One subsidiary achieved profits within three years of the commencement of production of about 85% of its invested capital. So, suppose it is going to transfer from these

profits, a percentage equal to the foreign ownership share of 95%, this means that, it is going to transfer what amounts to 80% of its invested capital in just three years as profits. This is without counting the soft technology price that accounts for 5% of net sales as royalties (Chapter Five).

In pursuance of profits, a strong correlation was found between the ODEP and the increase in repatriated profits from Egypt to abroad. In a study by the World Bank, it was noted that externally remitted profits were increasing over the period 1974 to 1981/82 as a percentage of GDP. As shown on Table 6.5 this rise in remittances is really impressive. It accounted in just three years for £E 2,3580 mn. This sum exceeds, in fact, the approximate inflow of foreign capital £E 617,176 mn over the same period by about four times (World Bank, 1983 in Zaki, 1984: 16). This means clearly that just profits alone over three years were four times the capital brought in over eight to nine years.

Yet, we must note that, these figures do not distinguish between sources of these profits since it might be there are other sources from other sectors. And, it should be noted also that these figures do not include royalties and other payments for foreign technology. But still what could be deduced here is that there is a coincidence between DFI policy and increasing repatriated profits. And these profits are not matched in any sense by foreign capital inflow.

The question of repatriated profits raises a very important point. Namely the nature of such profits? Roythgeb noticed that in manufacturing sector profits usually come from sales in the host developing market in the local economy (Roythgeb, 1984: 1065).

TABLE 6.5

Repatriated Profits and as Percentage of G.D.P.

Year	Repatriated Profits as (£E)	G.D.P. (2)(000)	% of G.D.P. (1)
1974	-----	----	0.5
1979	512.0	9.846.0	5.2
1980/81	806.0	15.808.3	5.1
1981/82	1.040.0	19.638.8	5.3

SOURCE: World Bank, 1983 in Zaki, 1984, p. 16 and G.D.P. figures are from N.E.B. 1983 Table 6/1.

In Egypt, it was found as made clear in Chapter Five that the local market is the most important motive for the transnationals' involvement in this country. Hence the bulk of their industrial production 97.5% goes to the local market. In this market there are two systems of charges. First, these companies might charge for their products in foreign exchange mainly from the Egyptians working abroad, in addition to many others who are working within the country and get their salaries in dollars (Al Ahram Iktisadi, 1986: 7) and/or secondly, they might charge in Egyptian pounds and this is, in fact the dominant form.

With regard to the first form, it has the possibility of depriving the country of a part of its foreign exchange by siphoning off the currencies from those people who are working abroad and possess hard currency. In addition, it helps to create a black market for foreign exchange transactions, thus adversely affecting the value of the local currency. As for the second form, foreign companies in order to repatriate their profits and the like, go to banks working in the country to do so. By doing so, they decrease the availability of foreign exchange in the local market, and hence increase, partly, the external debts of the country.

Thirdly, in addition to the price that must be paid for intangible assets, there is the price of the 'hardware-technology' (see Chapter 5). We have seen that TNCs are keen to import their requirements for such technology mainly from their home countries. Needless to say that the same tendency was found for the intermediate inputs and raw materials, in that these companies mostly, have not shown any will to establish locally industries for such needs. The reasons behind this policy are discussed in Chapter Five. As a result of

this tendency, it is not surprising to find that the foreign sector firms' imports of capital goods and other productive requirements have soared over the 1980-1982 period as shown in Table 6.6a.

It is clear from this table that the operations of DFI sector firms are a net contributor to the deficits of the balance of payments in Egypt. In 1982, for instance, while their exports accounted for nearly £E 17 mn, they imported capital and intermediate goods valued at £E 558.8 mn. This simply means that their trade balance adds £E 541.8 mn to the deficits of the national balance of payments. This adds to the burden the economy has been suffering, since not only are imports soaring in quantity but also, their prices, as shown on table 6.6 are increasing very rapidly. The prices of capital goods in 1980 were about 2.7 times of 1975 prices. As for intermediate goods they were 1.7 times more over the same period. Thus, the more the country imports the more it would pay for the same quantity. (NBE, 1983, Table 3.1 b).

Fourthly, an additional source of foreign exchange drain is the sizeable salaries of the expatriates working in these companies. These salaries are often in foreign exchange and are exempted from the general tax on income. In addition, the expatriate has the right to repatriate (50%) of his salary to his country (Article 20 of Law 43). This is, of course, via the formal channels, but in fact the expatriate could repatriate all what he wants in other forms such as, for example, travel cheques, or take his money in cash home with him. On the top of this the annual average of these salaries is not only high but also it is by far in excess of what their Egyptian colleagues command as shown in table 6.7. As a matter of fact the figures in this table speak for themselves, where the gap between



TABLE 6.6a

Value of Imported Goods for Investment Projects in Inland  
1980-1982.

(£E,000)

Years	Capital Goods	Productive Requirements	Total
1980	118.5	151.4	269.9
1981	202.1	174.4	376.5
1982	255	303.2	558.8

SOURCE: G.A.F.I. Annual Report, Sept 1983 p. 104.

TABLE 6.6b

Indices of Foreign Trade Prices of Main Imports 1975 = 100

Year/Items	Capital Goods	Intermediate Goods
1976	110.5	80.8
1977	132.5	89.5
1978	153.6	118.1
1979	206.2	141.0
1980	272.6	171.9

SOURCE: N.B.E., 1983 table (3.1b).

both categories is very wide especially in sectors such as agriculture and animal wealth, finance and services.

Fifthly, even the danger does not stop here, but with the increase of imports the use of 'transfer pricing' by the TNCs becomes very likely. The general argument, as seen Chapter One (Section two) and Chapter Two, suggests that the use of this device is in the very nature of the TNCs. This could be even if the subsidiary is a joint venture. Svejnén & Smith contended that 'transfer pricing' plays an important part in joint venture mechanisms, especially for products untradeable on the international markets (1984: 164).

Handoussa, in her research on the pharmaceutical industry in Egypt, noted that one subsidiary used 'transfer pricing' tactics so that the difference between the local value paid by that subsidiary and the arms length price for the imported inputs exceeded the value of royalties and profits repatriated to the parent company in the same year (1) (1974: 116). These practices happened in the pharmaceutical industry, in spite of the existence of a central agency to monitor imports of drugs and their manufacturing requirements.

The same behaviour was found in the textile industry, where the foreign partner offered to sell the joint venture machinery valued at £E 58 mn. In the meantime the same machinery from the same supplier was offered at £E 38 mn to a public sector company, i.e. there was (52.6%) over pricing for the joint venture (Al Ahram Iktisadi, 1979). There were also other expenditures surrounding the transaction

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(1) For more detail about this issue in the pharmaceutical industry in Egypt see Handoussa, 1974: 116-118.

TABLE 6.7

Expatriates & Locals Wages Average Per Employee in a Year  
in Projects Started Operation up to the End of 1982.

Sector	(£E)		
	Expatriates (1)	Locals (2)	1/2 (3) times
Industry	5,075	1,075	5
Agricultural & Animal Wealth	22,200	795	28
Construction & Consultancy & Housing	10,805	640	16
Finance & Service	20,486	1,321	16
General	(1) 10,633	(2) 910	11,6

SOURCE: G.A.F.I. Statistics Department.

(1) this general average is the result of expatriates salaries and the same for (2).  
expatriates number

N.B. The comparison shown in the above tables does not compare like with like as far as expatriates and locals are concerned i.e. it does not take into account the difference in skills and occupation. It simply indicates that expatriates are in the more highly paid jobs.

such as \$6.1 mn as commissions and \$4.5 mn feasibility study paid to an American consultancy company (Ajami, 1982: 501).

What one can deduce from the above is that the possibility of using transfer pricing in Egypt does exist and its use by the TNCs may increase especially after the expiry of tax exemption incentives. In this connection, it has been argued that the tax differential between countries is one of the greatest inducements for using transfer pricing by the TNCs (Lall, 1973: 196). And one might add that that this possibility is quite likely in Egypt in the DFI sector. This is because, there are no monitoring measures or policy to control the process of imports. So, firms are free to negotiate their transactions terms.

In the light of what was seen above, we incline to agree with Professor Dowidar that:

"Technology transfer is a method of dominating and mobilising the drain of economic surplus abroad". (Dowidar, 1979: 820)

The fact of the matter is that these companies' behaviour has had adverse repercussions on the economy, and especially on its balance of payments. The reasons for this are mentioned in Chapter Five, and they could be summarized here:

- (i) These companies main interest is the Egyptian market.
- (ii) They are working according to a unified global strategy. So, they have mostly adopted capital intensive techniques in the country.

- (iii) This has made them closely integrated in their home economies and working as enclaves in the local economy.
- (iv) The effect that they have had on local industry is very damaging. In addition, local firms, in order to match them need to import similar technology and machinery. And this effect is not confined to the private sector companies but extended to include the public sector, (Abdel Fadil, 1983: 6-9).
- (v) So, the machinery of the whole economy is fueled from external sources and leads to what Yamazaw & Hirata labelled as 'shallow development' viz, development that depends heavily on imports and is not rooted deeply in the local economy (1978: 55).

Naturally, the aggregate outcome has not been in favour of the balance of payments. So, figures of imports of capital intermediate and consumption goods are increasing very rapidly. Imports of capital goods increased from £E 79.2 mn in 1973 to reach £E 1,682.4 mn by the end of 1982, i.e. they increased by about 21 fold over the ten years, vehicles with a 67 fold increase; electrical machinery 47 fold, tractors 45 fold; and machinery for excavation and levelling 26 fold. This is in addition to what was mentioned in section two about machine tool imports. Also, imports from intermediate products increased from £E 131.8 mn to £E 2.033 mn over the same period.

So, this increase in addition to the rise in imports of consumption goods, contributed to increasing the deficits of the balance of payments from £E 326.8 mn in 1974 to £E 4,170.4 mn in 1982. This situation is summarized in Table 6.9

TABLE 6.8

Exports/Imports over the period 1974-1982 in (£E mn)

YEAR	EXPORTS (1)	IMPORTS (2)	DEFICITS (3)	1/2 (4)
1974	593.3	920.1	- 326.8	64%
1982	2,184.1	6,354.5	-4,170.4	34%

SOURCE: N.B.E., 1983 vol.XXXVI, No.1, table 2/5b.

Thus, the situation of balance of payments, as shown in Table 6.9, deteriorated over the period 1974-1982. While, the exports are able to pay for 64% of imports in 1974, when Egypt was a net importer of oil, this ratio decreased to 34% in 1982, at a time when the country became a net exporter of oil. Oil exports alone accounted for £E 1,446.7 mn in 1982, i.e. 66% of total exports in that year. So, if oil exports excluded the exports would only have been able to pay for 11.5% of total imports (N.B.E. 1983, table 2/3: 103).

So, the aspirations pinned on DFI and technology transfer to extricate the balance of payments out of its crises have proven to be unfounded. The Ministry of Planning in this regard noted that over the period 1977-1982 the industrial sector turned out to be a net importer whereas industrial exports are still confined to the traditional industries such as food processing, shoes, beverages and textiles (Ministry of Planning, 1982: 14). Even more, as seen in the previous section some of these exports are declining because of the fierce competition from the TNCs. Consequently, all the previous factors (fewer exports and more imports, outflow of foreign exchange in the form of royalties, profits, transfer pricing) have had a steadily adverse effect on the balance of payments position. (Ranney, 1983: 13).

To sum up the deterioration of balance of payments situation emerged from:

- (i) high technology cost either directly in terms of soft technology such as know-how and technical assistance, or in terms of hard technology such as imported machinery, and equipment.
- (ii) indirectly, as in the imperative importation of intermediate inputs and raw materials compatible with capital intensive technology introduced by foreign sector firms and their local imitators.
- (iii) the excessive repatriation of profits, mostly generated in the local market and from capital raised in this market as well, in addition to transfer pricing practices.
- (iv) the remittances of foreign expatriates involved with these companies.
- (v) the reluctance of foreign companies to introduce capital into the country, in addition to their poor record in exporting from the country.
- (vi) other factors such as the drop in manufactured exports and the increase of durable and non-durable consumption goods.

So, against a situation like this, what could Egypt could do in order to continue in its policy, to sustain its reputation as a country to invest in, and to finance its investment programmes? The natural result was that the government went to the international financial



market, and to other institutions and governments, seeking loans and aid.

This situation has led to two unfavourable results. First, the financial institutions such as the World Bank and the IMF for example have had some influence on national economic policy. This influence is always in favour of liberalizing the economy and granting more room for market forces in allocating the resources and distributing the products. Secondly, this situation is one of many factors that propelled Egypt into the 'debt trap'. In this connection, Egypt's external debts increased at a very rapid rate over the 1970s and the early 1980s. They rose from \$1.6 billion in 1970, i.e. 23.7% of GNP to \$2.3 billion in 1974, and reached about \$27.8 billion in 1982 of short, medium and long term loans. This means that debt per capita rose from \$58 in 1970 to over \$620 in 1982/83 (World Bank, 1983 in Zaki, 1984: 330, Akbar Alyoum, 1982). This is in addition to the military debts that accounted for \$3 billion for the Socialist countries (Zaki, 1984: 33) and \$4.5 billion for the U.S.A. alone (The Herald Tribune, 1985: 12-2-1985). (1)

This trap has caused many difficulties to the Egyptian economy. Apart from the political elements, the World Bank Report noted that Egypt would have to pay debt service of about \$2,336.5 mn in 1982/82 for its civil debts only (Zaki, 1984: 34). What is alarming is that the interest rate rose from 6.1% in 1970 to about 12.5% in 1981 for countries described as countries with a medium level of income. (Sultan, 1984: 4). This phenomenon becomes self-generating, since

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(1) An IMF report issued in June 1985 estimated that Egypt's foreign debt rose to \$31 bill (The Herald Tribune, 6-9 - 1985).

to face these obligations in addition to the country's needs, the government might have to look for new loans and so on.

Ironically, this phenomenon is taking place at a time when the Egyptian economy diversified its source of foreign exchange, it never experienced before, such as remittances from Egyptians abroad, oil, Suez Canal, and tourism.

#### **6.4 TNCs, transfer of technology and Employment**

The problem of unemployment and under-employment is getting worse over time in the developing countries. This has been concomitant with the industrialization programmes these countries have launched. In consequence, there has been increasing emphasis on creating jobs for people, and hence the whole question of DFI and Technology Transfer has come under close scrutiny (Ghoshal, 1982: 27).

In this connection, it has been noted as discussed in Chapter One, (Section two, IV), and Chapter Five (V), that the TNCs via transfer of capital and technology and hence the creation of jobs, help to ease the problem of unemployment in developing countries (Bierstaker, 1978: 2,3). In the meantime, there is a counter argument that these companies are alleviating the problem (Chapter One, Section two IV).

As far as Egypt is concerned, it gave this problem a great deal of attention, especially in the late 1950s and in 1960, (see Chapter Three (Section one)). As a result over a million job opportunities were created over all the economy and the industrial sector's share of total employment increased from 8% in 1947 to 13.4% in 1966 (Ibrahim, 1984: 6 and Abdel Fadil, 1980: 9).

By the beginning of the 1970, and the adoption of the ODEP, a new page in the economic policy started in Egypt. So, as a part of this policy that gives market forces much more influence in allocating factors of production, the government's obligation to find a job for every graduate was relaxed. In addition, the notion held by the advocates of the new policy was similar to the one classical one, as seen above, viz, once foreign capital started to flow into the country many jobs would be created automatically.

Thus, in the light of this situation, the contribution and impact that foreign sector firms have on the employment question could be discussed within two broad elements: first, the actual contribution of capital invested in Egypt including the local share, working under law 43, to employment; secondly, the potential role that this sort of investment may have on this problem at the national level and its potential for the future.

Characteristically, Egypt has one of the highest rates of population growth in the world. Its average over the period 1966-1979, has been around 2.7% (CAPMS, 1980: 4). Further, there has been an annual addition to the labour force of 400,000 workers (Al Ahrar). Some other estimations put this figure as 450,000 a year (Hansen & Radwan, 1982 in Aliboni, 1984: 123). Against this fact and as far as the first element is concerned the actual contribution of DFI sector firms over 8-9 years as shown on table (6.10) amounted to 71,459 job opportunities.

TABLE (6.9)

The Employment Structure in DFI firms starting operation up to the end of 1982

SECTOR	NUMBER	% OF THE TOTAL
Industry	29291	41
Agri & Construction	33794	47
Finance & Service	9374	12
TOTAL	71459	100

SOURCE: GAFI, 1983 tables 3.

This table outlines the structural distribution of employment in the DFI sector. It is clear that agricultural and construction firms have captured the majority compared to the other sectors. This is in spite of the fact that, as seen in Section II, they contribute the least in terms of invested capital. The industrial sector takes second place, and finally finance and service projects.

Thus, the total contribution of the DFI sector (71,460) represents only a very modest proportion (0.6%) of total employment (12,100,700) in 1982/83. And the industrial sector share contributed only 1.9% of the total employment in this sector (1,514,2). (NBE 1983, Table 6/4). Moreover, the total contribution over 8-9 years represents just about 17.8% of jobs needed in one year only as seen above.

Furthermore, such a modest share of DFI firms does not represent a genuine gain to the labour force in this country. Most of these jobs were by people who were already working in local firms in both public and private sectors. In fact, the public sector was the most hit one. Its employees mainly left their jobs under the lure of high

salaries in DFI sector firms (Gillespie, 1984: 138). Rather important, the fields most affected by this drain are those of the most skilled and technical labour as well as middle management. The ratio reached about 10.5% in each of the previous categories. In addition, the higher management lost over 9% of its people. On the other hand the lowest effect was noticeable in the least qualified and the least trained employees (Ayubi, 1982: 391).

So, the problem of the drain in Egypt is not only a 'Brain Drain' but also a 'muscle drain'. This problem represents the most common complaint whenever one goes among different industries (1).

If this is the actual contribution of these companies to employment, what does the future hold for Egypt in this regard? In fact, bearing in mind the past performance as seen above and in Chapter Five one tends to agree with Muller's standpoint that if the past is any indication, the natural answer would be that the future is not promising (Muller, 1979: 249).

During the field survey it was found that in most cases the TNCs introduce capital intensive and unadapted technology. The average amount of capital needed to create a unit of labour, the capital-labour (K/L) ratio; was £E 18,000 in general, and £E 23,000 per operative. At the level of the DFI sector as a whole, it was £E 15,000 according to GAFI figures. As seen in Chapter Five this ratio is two to four times what is used in similar local firms.

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(1) See Al-Ahram Ktisadi, 1980: 23, Ayubi, 1982: 391-410; Sagasti Negad, 1982: 103; Gillespie, 1984: 137-138 etc.

Against this fact and in the light of the actual average rate of investment £E 198 mn including the local share, the expectations would be disappointing indeed. This is because by the same measure (K/L) the previous sum this sector's firms in general could create about 13,200 job opportunities a year compared with the figure of 400,000 added to labour market every year.

To create jobs for these workers, the country needs to invest some £E 6 bn each year in new fields in different sectors. But, this is not likely in Egypt's case for the following reasons. First, the contribution of DFI, as seen above, is indeed modest and does not genuinely help in this situation. Secondly, the emphasis in the 1982 - 1987 plan as seen in Chapter Four, is on the rehabilitation of the ongoing projects and just about 8% of the planned investment is targeted towards new projects. Thirdly, local firms, as seen in Chapter Five, are trying to follow the same path followed by Foreign companies. Thus, it is likely that the unemployment problem will become worse in the long run.

This argument could be justified in the light of the relative share of the economic sectors of total employment, as shown in Table 6.10. The figures demonstrate clearly that the service sector's relative share in total employment is the only one that showed a significant increase over the period 1976-1982/3. In the meantime, the relative share of agriculture dropped over the same period to just 35%. As for industry, its relative share was characterised by relative steadiness around 12.4% over the same period although it declined from the position (13.4%) it reached in the middle of the 1960.

TABLE 6.1D

The Development of Employment by Sector  
in Percentage of Total Labour Force.

Year/Sector	1976	1977	1978	1979	1980	1980/ 81	1981/ 82	1982/ 83
Industry	12.2	12.4	12.5	12.6	12.6	12.2	12.1	12.5
Agriculture	42.1	41.5	40.4	39.4	37.9	37	36	35
Commodity Sector in General	60	59.2	58.9	58.7	57.7	56	55	54.4
Service Sector	40	41	41	41	42	44	45	46

SOURCE: Calculated from NBE, 1983, Table 6.5.

While this is the situation in Egypt in the 1970s and early 1980s, some other developing countries have achieved a remarkable success in employment. In South Korea and Singapore, for instance, the proportion of the labour force in industry jumped from 9% to 29% and from 23% to 39% in both countries respectively over the period 1960-1980. Such a successful achievement, as noted by Stewart, was a result of adopting policies that encouraged the expansion of labour intensive industries. Thus, these industries, were able to absorb the labour surplus (Stewart, 1984: 288-89).

So, proceeding in this direction without radical changes in policies towards DFI in general and the nature of their technology in particular would aggravate the problem of unemployment in Egypt. In this respect Singer suggested:

"The larger the rate of population increase, the more is radically different technology needed to provide productive employment and prevent poverty". (Singer, 1975: 177).

Also, Franko commented on the expectations of the advocates of ODEP for DFI to create more jobs, by saying that, the top 400 U.S. and non U.S. TNCs employ 30 million people all over the World. The number employed in developing countries totalled 5 mn, a number not twice as large as the employable population of Cairo and consistent with the capital intensive not labour intensive nature of the technology the TNCs tend to use (Franko, 1977: 21).

## **5 TNCs, Transfer of Technology and Income Distribution**

The question of the effect of DFI in general and the transfer of technology in particular on the pattern of income distribution is one



of the most hotly debated issues in the economic literature. It has been theoretically argued that DFI usually leads to equality in the recipient countries. This sort of investment via injecting new capital and setting up new projects creates jobs and hence increases the demand for labour. In so doing, it raises wages, while capitalist income declines (Moran, 1978: 90).

However, there is another argument, as seen in Chapter One (Section IV), that DFI led industrialization creates a mechanism that deepens inequality in income distribution in developing countries. And, in fact, this argument is supported by ample evidence as well.

Regarding Egypt, the structure of income distribution has witnessed different changes under different socio economic policies. This country, before 1952, when the role of the government was intangible, represented a traditional example of an unequal society. The land that was the main source of income and wealth was distributed in a way that support this argument. The ownership was concentrated in a tiny segment of the population. Two thousand families possessed same 20% of the land. Meanwhile, there were many millions who were landless. So, in the early 1950s about 30% of the total income was captured by only 4% of households (El Issawy, 1982: 102).

After the 1952 Revolution, there was a series of measures to rectify the situation. The first major reform was the land reform in September of the same year, i.e. after few months of the Revolution in July. This was followed by other successive measures such as progressive taxation, control of rents, subsidies, nationalization, Egyptianization, driving up employment policy, minimum wages, free education for all people, and free health service, (Dessouki, 1982: 100).

These measures, and the like, resulted relatively in easing the unequal distribution of income the country witnessed before the revolution.

Waterbury commented in this respect that:

"There is no question that Nasserist policies led to far reaching socio-economic leveling. In the span of two decades Egypt moved from a society in which the inequitable distribution of wealth was of a highly skewed Latin America variety to one which by non-socialist LDC standards was among the more equalitarian". (Waterbury, 1983: 207)

By the end of the 1960s decade and the early 1970s, especially since the adoption of the ODEP, the situation regarding income distribution has reversed. Unfortunately because of the non-existence of an accurate income distribution map, the analysis will depend upon a theoretical analysis, supported by some examples whenever it is possible. Drawing on Muller's method of analysis regarding the relationship between MNC's technology and income distribution, we can analyse this question taking three factors into account: first, the capital-labour ratio; secondly, who this ratio benefits and thirdly, the nature of the tax system prevailing in the country (1979: 250).

Given that TNCs introduce capital intensive technology into the country, the largest part of generated income comes from capital and hence is captured by the capitalist. Thus, in a country like Egypt, the capitalists who are able to share with the TNCs are fairly few in number. In consequence, those who capture the largest part of income are a tiny class while the mass of the labour force share in the rest. Even more, what aggravates the situation is 'the demonstration effect' that the TNCs have on local businessmen, who increasingly employ capital intensive technology.

This behaviour results, as seen in the previous section, in an increase in unemployment both in the short and long run. This means that the share of labour in national income is relatively declining over the time. Kassem, in his study about joint ventures in Egypt, noted that wages' share in the national income distribution declined from 45% to 30%, whilst, the property rights revenues increased sharply (1) (Al Ahrar, 1984).

Furthermore, the legal system has granted firms operating under Law 43 many privileges as seen above in Chapter Three (Section two I). And Law No.159 of 1981 came to extend such privileges and even more to the local firms (GAFI, 1983: 40). In addition, the tax law has been modified many times in favour of large income groups. The amendments of 1978, for instance, reduced the limits of tax for income of £E 70,000 and £E 100,000 to 70% and 80% respectively, instead of 95% on income of £E 10,000 (Dessouki, 1982: 77). Furthermore, these groups are able to sidestep the tax system in many ways, by providing false statements or nothing at all. In the meantime, people with limited income represent the guaranteed source of direct tax. So, about 70% of the tax revenues comes from indirect taxes (Dessouki; 1982: 78).

Moreover, the imbalance of income distribution extends to include the labour force itself. Within this category, the maldistribution is quite clear between the expatriates and the locals. And within the

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(1) E1- Essawy estimated that wages share in the national income dropped from 50% in 1970/71 to 42.6% in 1976. And he estimated that 5% of population capture about 30% of this income. (1982: 102).

last category there is a difference between those who are working in DFI sector firms and those who are working in local firms. Regarding the expatriates, although they represent about 1.4% of the total labour force in the DFI sector, they get about 14.5% of total wages. On the contrary the locals represent about 98.6% and get only some 85.5% of total wages (GAFI, 1983: table 3). The difference between the two categories by sector is noted in Section III above.

Even within the local labour force, there is a gap between those who work in DFI firms and those who work in local firms in both the private and the public sectors. The first segment as seen above, represents a very tiny fraction of the total labour force and gets income in terms of salaries and wages about 340% of what their colleagues receive (Ayubi, 1982: 366).

Thus, the pattern of income distribution in Egypt, by and large, has witnessed a significant shift compared with what prevailed in the 1960s. The shift is in favour of the profit earners and those who are working in co-operation with them, while, the majority of the population, especially those who have no members of their families abroad, are suffering a great deal. Their problems increase under an average annual inflation rate of 20% over the 1970s and early 1980s. This rise really badly hit people on fixed income such as pensioners and wages earners, (Abdel Khalek, 1982: 275).

Mursi, (1982: 28) suggested in this respect that the pattern of income distribution has been re-shaped during the open-door policy. He summarized the situation as follows:

- (i) people living under the poverty line are 44% in rural areas, 33% in urban areas and 37% at the national level.
  
- (ii) 5% of the population obtains 20% of national income and 20% of the population obtain less than 5%. Also, in this connection, see El-Essawy, 1982: 102).

To conclude, capital intensive technology, among other factors has contributed to re-shaping the pattern of income distribution in Egypt. In addition to what has been noted above, this link could be illustrated theoretically. Moran, in this respect contended that:

"A capital intensive foreign investment may rarely bid up the wages for a small domestic labour elite ...." (1978: 91).

More precisely, Vernon summarized the link as follows:

"If too much capital and too little labour are being used, then the class associated with modern activities reaps more rewards than it ought to. And if they are sharing in the foreign investors monopoly rents by means of partnership in foreign owned enterprises then the inequalities of income distribution are greater still (1971: 184).

Thus, the above analysis reveals how far conventional ideas (as noted above) about the inflow of foreign capital and income distribution could not be substantiated in the case of Egypt.

In Egypt, as a matter of fact, it is very easy to find the three patterns (pattern of technology, pattern of income distribution, and pattern of consumption) working together in the way noted in Chapter Two. In this country, in the 1970s, luxury goods can be found in every town, when the most needed essential goods example, bread and cooking oil are difficult to find. However, many goods, such as cosmetics, biscuits, many kinds of soft drink, colour TVs, cars,

and metallic products are in surplus. Even more, these goods as seen during undertaking the field work and presented in Chapter Five are accompanied by a very heavy campaign of advertisement on the TV and the radio. So, actually one might be safe in arguing that foreign investment firms in Egypt instead of satisfying the essential needs of the masses are promoting what people do not need.

Consequently, this sort of investment under the indifferent attitude of the government is transferring a way of life that affects adversely a developing country economy. The more people consume, the less capital is directed towards investment and the greater the dependence on foreign capital.

## **6.6 TNCs, Transfer of Technology and Indigenous Technological**

### **Capability:**

The issue of building up an indigenous technological capability has attracted attention in developing countries in recent years. This could be a result of the desperation of these countries of the results of transfer technology via the TNCs viz: no genuine transfer of technology, the introduction of inappropriate production techniques, high cost, and unacceptable terms as we have seen in Chapters Two and Five. And it could be as a result of realizing that countries that have built a significant technological base have gained more from imported technology imported from abroad, and could catch up, and even compete with other advanced countries. So, this issue is in focus at both national and international levels now as we saw in Chapter Two.

### **The role of the TNCs**

As far as Egypt is concerned, apart from the internal factors that have been discussed in Chapter Four, the TNCs' role could be judged in the light of many factors. Among these are: genuine training of local personnel on key aspects of imported technology; genuine R & D with access by the local personnel to key information; close financial and technical information with local R & D units, and integration into the local economy instead of creating enclaves for operations.

Bearing these elements in mind and in the light of what was found during the field work, the performance of the TNCs in Egypt in these

respects is not promising at all. In so far as these companies:

- (i) Are tightly controlling the key aspects related to technology such as its choice, nature, its control, feasibility studies, products design etc.
- (ii) Have thus introduced of capital intensive technology, no significant adaptation and hence no diffusion of technology in the economy.
- (iii) Have not introduced genuine training, except on how to use the machinery, i.e. to be operative.
- (iv) Have not made any significant R & D inside the country.
- (v) Have not engaged in any technological or specific collaboration between investing companies and the local R & D units or universities.
- (vi) Have not initiated significant systematic sub contracts with local suppliers except occasionally in very few of firms. Even in those few cases, it was not possible to trace any kind of technical or financial co-operation with local suppliers. So, there is no encouragement for creating an entrepreneurial class that could accelerate the development process in the future.
- (vii) Have maintained an absolute dependence of these firms on their parents for all technological needs.



So, the TNCs, instead of bridging the gap between local R & D units and the productive sector, came to make it even wider and deeper. The effects of this behaviour extends to accentuate the gap between local firms and R & D institutions, under the demonstration effect seen above. As Mytelka demonstrated, local managers get used to depend on foreign sources for technology, even if it is available locally (1978: 103, 123). This is despite the fact that it might cost less. (Moore, 1980: 98).

This situation pushes the most reliable class of scientists to emigrate. Hence the possibility for building a local technological capability becomes far removed and the technological dependence is maintained. The position that results is summarized by Lall & Streeten thus: hindering the potential for even slight adaptive research; avoiding putting what already developed locally into practice; confining the local efforts in science and education to theoretical aspects; and finally, hampering the efforts, if there are any, for achieving technological independence (Lall & Streeten, 1977: 73).

## 6.7 Conclusion

This chapter is an attempt to put the findings of the field survey in addition to other information collected during undertaking this survey into a broader context. The underlying aim was to examine how far the TNCs' performance under the umbrella of ODEP, described above, has affected the Egyptian economy. In addition, it aimed to test to what extent this performance fits with what has been noted in the previous chapters both theoretically and empirically about these companies' behaviour in other developing countries.

In Egypt, the impact the TNCs have had on the whole economy is far from satisfactory. Their performance in the absence of a strategy for economic development in general and for technological transformation in particular has affected the economy adversely. Thus, there is an unbalanced development: the share of both industry and agriculture as a percentage of the GDP declined in favour of the trade and service sectors; the external relations of the country are biased towards the North-West hemisphere at the expense of the relations with both the East and developing countries; the concentration has been on the production of consumption goods that cater for a tiny proportion of the population at the expense of the majority, in the meantime there is a bias against capital goods industries in the sense seen above.

In consequence, it was natural for such an imbalance to have its effect on the rest of the economy is sectors. So, the share of both agriculture and industry as a proportion of total employment decreased. Exports of industrial manufactured and semi-manufactured goods declined. Thus, the dependence on the exports of primary goods

especially petroleum and raw cotton rose to an unprecedented level since 1952. In the meantime the dependence on foreign markets for imports has been increasing very rapidly so that the exports (excluding oil) could pay only for about 11.5% of imports in 1982. That situation adds to the crises of the balance of payments inasmuch as this balance is suffering from other sorts of draining of capital outside the country such as the repatriation of profits, royalties, expatriate salaries, and other drainage resulting from the performance of the transnationals in this country. On the other hand their positive contribution to the balance of payments has been very limited in terms of export revenues and inflows of capital.

On the top of that the TNCs' contribution to solving the problem of unemployment is insignificant. But even more they have made the situation for it more difficult via the introduction of capital-intensive technology. This could result, inter alia, in an unequal distribution of income not only between the haves and the have nots but also between those who work in these companies and those who do not. In doing so, the TNCs could create a market for their products of luxury and non essential goods. In addition, the way these companies perform in such as non genuine training, R & D, controlling technological information keys and subcontracting cannot lead to the building up of a local entrepreneurial class nor to the development of an indigenous technological capability.

## CONCLUSION AND POLICY IMPLICATIONS:

This study has mainly sought to assess the contribution of the TNCs to the transfer of technology to Egypt. The analysis over the previous chapters has revealed that most of the corporations perform, more or less, in a similar way in developing countries. Also, it is clear that the policies adopted by the recipient countries with regard to the transfer of technology in general and by the TNCs via DFI might affect the ultimate outcome of these companies' operations.

Thus, the theoretical hypotheses set up to explain the motives of the transnationals for investment in foreign markets together with the debate about their performance in developing countries were presented in the First Chapter and supported by some empirical data. It was concluded that the phenomenon of DFI is the outcome of a combination of factors rather than one of them. These factors which enable the investing firms to have an edge over their potential competitors are such as easy access to financial resources, managerial skills, technical skills and personnel, and highly advanced technology. Nonetheless such factors, although necessary, are not sufficient. Some other important factors such as large host markets, favourable host policies and environment, cheap labour, and raw materials have some impact on the foreign investment decision.

From the debate in the second section of the first chapter we conclude that there are strong links between the rationale of the transnationals to invest abroad and their behaviour in the host developing countries. It was found that these companies do not inject a sizable amount of money in host developing economies, rather they raise the bulk

of their money from internal sources. They, further, siphon off many times the amount they brought in via dividends, royalties, fees, profits, and the use of transfer pricing. In exports the empirical evidence revealed that these companies are interested in keeping developing countries' markets open for their exports rather than to export from them and this in addition to the unfavourable impact they have had on other fields such as employment, income distribution, pattern of consumption, and local industry. To sum up, it became clear that the positive character of TNCs' contribution to the development in host developing economies is in question not necessarily positive.

Chapter two presented the analysis of the major aspects that connected with the transfer of technology via the TNCs such as technology market, major mechanisms of transfer, technology cost, and capital-goods. It could be concluded that these corporations' behaviour in this field is not much different from that seen in other fields. Thus, the transnationals proved to be unwilling to transfer genuinely their sources of power to their potential competitors that might preempt their activities in the domestic markets. It was clear that the TNCs are concerned to develop the international network in order to distribute the exploitation of the unique assets they have and hence maximise the returns from them. In consequence, they embarked upon introducing in developing countries a technology identical to that which is used in developed markets, without a significant adaptation. In addition, their records in R & D, and training in countries are very poor indeed.

Moreover the TNCs' investment in developing countries is characterised by imbalance. This is where it is biased towards the consumer goods

sectors, while the capital-goods sector is suffering from the shortages of investment. In addition, the contractual arrangements of the transfer of technology are, mostly, characterised by having many restrictions such as these which confine exports to certain markets or prohibit them totally and tie-in-clauses which require the recipient to buy production requirements of raw materials and intermediate inputs from the same supplier of technology.

Chapter Three traced the development of the industrialization process in Egypt, especially since the early 1950s. We concluded that the difficulties that the economy underwent in the late 1950s paved the way for the advocates of liberalizing the economy to capitalize on this situation. As a result, Egypt has adopted the Open Door Economic Policy since 1974. Thus, there has been some sort of foreign investment. However, this investment fell very short of achieving the aspirations of the new government. There was very limited actual investment in terms of the implemented projects in general and in industry in particular. Exports were negligible, and the bulk of their products were channeled into the local markets.

As for the technology transfer to Egypt, it was discussed in the last three chapters. Chapter four tried to analyse the domestic factors that might have some influence upon the performance of the TNCs in this respect. Here we discovered that a genuine transfer of technology to nationals has not been of significant concern for the Egyptian government. This could be deduced from the absence of a global strategy for development and transfer of technology, and the absence of legislation to monitor and organise the process. The majority of economic sectors are depending on foreign technology that is imported just to meet the markets' needs for certain products. The DFI Law came

empty of provisions to regulate technology transfer by foreign corporations. Moreover, although Egypt has an enormous number of education and R & D institutes, they have been suffering from some deficiencies such as the concentration on basic research, theoretical education and unsystematic links with the needs of the economic and productive sectors; and a lack of links between domestic R & D units and the productive sector.

Thus, the influence of these factors in addition to the factors that are related to the TNCs have been manifested in their performance in Egypt as the analysis of the findings of our survey revealed in chapter five.

In fact, these companies' behaviour in Egypt regarding technology transfer is not contradictory to what has been argued and seen in other developing countries. The evidence at hand suggested that the TNCs are performing according to the dictate of their global interests. They are biased towards the exploitation of their existing stock of sophisticated technology developed and used in advanced markets. Meanwhile, it was clear that these companies are reluctant to take the plunge of adapting such type of technology, to fit the milieu of developing countries which is, mostly, different from that of developed countries.

The transnationals were seen to concentrate the control of their operations in Egypt in their hands, even in cases, where they are a minority. This was conspicuous in the decisions and tasks that are related to technology. Thus, by so doing they were always able to maintain control over the key decisions in the choice of technology, feasibility studies, product design, and construction technology.

As far as R & D was concerned, no sign of undertaking such activities by the TNCs could be found in the Egyptian case. The available evidence suggested that these companies were in absolute dependence on the parent companies for ready made technology and its requirements of R & D activities even in the very minor cases needed for slight adaptations. In consequence, these companies, had no significant links with domestic R & D institutes or universities. These companies are in fact, accentuating rather than alleviating the gap between these institutes and the productive sector.

Furthermore, the records of these corporations in employment are poor. Such an outcome came as a result of the capital intensity of technology introduced in this country. And it was the result of the recruitment policy of employing people who were working in similar industries from the domestic sector both public and private. In accordance with this policy, the TNCs showed no significant concern for training and building up local skills in a genuine way. Local personnel were not only in most cases, kept away from tasks connected with technology, but also, in the few cases, they had no access to key information underlying technology introduced and used by these companies in Egypt.

Thus, it is not unexpected in such a situation to reach the conclusion that transnationals are working in the Egyptian economy as 'enclaves'.

In addition to what was seen above, they were importing the bulk of their needs and requirements from external sources rather than the internal ones. Correspondingly, raw-materials, inputs, equipment, and capital- goods, were mostly imported from abroad. They made no effort to set up industries to develop and produce some of their requirements,



a situation which externalizes rather than internalises the dynamism of this sector within the country.

In the light of these companies' behaviour in Egypt, it is not difficult to deduce that their contribution to create a local entrepreneurial class is in serious doubt.

Moreover it is natural that inappropriate technology produces inappropriate products. The bulk of these companies' products caters for a tiny segment of the population, resulting in a shift of local resources from meeting the basic needs of essential goods, health care, housing, and clothing. Rather worse, the vast majority of the TNCs products were pouring into the local markets so their record in exports was limited. Thus local products which used to satisfy similar needs faced fierce competition, resulting in heavy losses for many of local companies especially in the textile and chemical industries.

It is against this background that it could be concluded that the introduction of foreign technology by the TNCs in a random way, not only fell short of achieving government objectives but affected adversely the Egyptian economy as a whole. There have been unfavourable changes in the structure of the economy. These changes were manifested in the shrinking of the share of both industrial and agricultural production and the increase in the share of service sectors as a percentage of GDP over the period of 1971/72 to 1981/82.

This phenomenon manifested itself in fewer exports and more imports; less employment, an unequal pattern of income distribution and an ill-fitted pattern of consumption. The economy has been increasing its

dependence on outside sources for its development rather than achieving some sort of self-reliant development.

Correspondingly, on account of this position Government intervention became by and large, imperative. Such intervention need to tackle both DFI by the TNCs and the domestic policy context. Egypt must have a long-term policy towards transfer and development of technology as an integrated part of a global strategy for economic and social development. The proposed policy should be guided by the objective that the introduction of foreign technology in general either by the TNCs via DFI, or by any other means results in the development of local technological capabilities and hence helps towards the achievement of self-reliant development. The implementation of the required policy needs some coherent measures and tools intergrated with one other in such a way as to achieve the desired result. First, measures are required to the suppliers of technology which are mainly the TNCs. One of the most advocated tools in this respect is the promulgation of legislation in order to control and monitor all aspects of the transfer of technology. It may be worth mentioning some examples of countries that intervned in the transfer of technology and acheived some success. In Japan according to the foreign investment act of 1950, the licencee must get the validation of his contract from the competent minister, otherwise he would be liable to imprisonment or a fine. Although Japan liberalised the introduction of foreign technology in July 1st 1974, the fair trade commission issued some guide lines that should be observed in contracts which introduce foreign technology. Thus Japan toughly controlled the importation of foreign technology until very recently. When they strengthened their technological position and became able to stand-up for foreign competition they liberalised its introduction. Nevertheless, they

laid down some guide lines to be followed in this regard (Lahera, 1981:84:87).

Also, in general it is clear that in sectors where governments intervened by protection and support of local technological efforts they have shown a stronger technological position. In India for example, where in the electronic industries foreign suppliers' share accounted for 95% over the period 1960 - 1965, this share declined to about 10% just after less than 15 years, as a result of controlling technology by the government (Griew, in Poznanski, 1984:144). The same phenomenon was noted in Brazil, in the steel industry (Lall, 1980:42).

Thus, the proposed law in Egypt should necessitate the registration and inspection of all contracts and investment applications considered to introduce technology into this country. This law should have provisions that:

- (i) eliminate restrictive practices imposed by TNCs in technology transfer contracts, and which might make such agreements abortive and add an unjustifiable burden on to the Egyptian economy.
- (ii) regulate the terms of payments for technology. It should prohibit the long duration of contracts, taking into consideration the size of sales, profit, and the rate of payments. It should prohibit the restrictive provisions.
- (iii) unpack the imported technology package by determining clearly the elements which could be considered as transfer

of technology and exclude the other ones such as capital, and raw-material, and inputs. Thereby, the position of national negotiators may be strengthened, where they can get some of other elements from other sources on more favourable conditions. More important, by doing so, a demand for local sources of supply may be created.

- (iv) prohibit the introduction of technology that could be developed and obtained locally. Even more, the proposed law should encourage and oblige firms investing in Egypt to purchase the available technology developed in the country.
  
- (v) prohibit the imports of raw-materials, intermediate inputs, equipment and even capital goods which could be obtained from local sources and protect those that can be developed within the country. This could be carried out, in addition, via a review of some existing tariffs and foreign investment legislation in order to abolish provisions contradictory to this aim. Further, differentiated treatment should be given to these projects which establish industries to provide them with their requirements.
  
- (vi) encourage and enforce foreign firms to undertake a genuine R & D in Egypt, not only to adapt their technology but also to develop some products and processes locally. Again, a special treatment should be granted to firms engaged in such a task such as tax write-off on research expenditures and the offer of higher investment allowances. Such encouragement should extend to strengthen their links with domestic R & D institutes and universities.

- (vii) focus significantly on training local personnel and engineers not only on the operation and maintenance of the plant, but local personnel to assimilate, operate and maintain imported technology, Chapter 2.3.2.

In fact, similar provisions were found in other industries (Bell, 1984:198). Moreover, the Korean government maintained a free hand to refuse contracts that did not satisfy it and chose other contracts from other sources if the latter terms were more favourable (Enos, 1982:74).

On the domestic side, the previous broad suggestions should be accompanied by positive policies, if the imported technology is to be acquired and mastered by nationals. These policies should extend to include the educational process, local R & D, training, industrial policy and the regulation of DFI.

- (i) In education, as seen in Chapter Four although the country has a significant number of students enrolled in different stages and the number of graduates is great and increasing over time, it is suffering from some problems that make its contribution to the process of development limited. Thus, this system needs to concentrate vigorously on the applied side and together with technical and vocational training, develop and proceed in response to the economic and social development requirements.

- (ii) The same point is valid for R & D. At a time when the country has many specialised institutions in every field, their contribution to the productive sector is marginal. So, such institutions' activities need to be (i) co-ordinated to avoid duplication of research; (ii) linked closely to the productive sector and (iii) concentrated on the applied and development sides of research rather than the basic one.

These efforts suggest that some part should be played by the government, such a part embracing increasing R & D expenditures as a percentage of GDP, moral and material support to the people working in this field, marketing and promoting the products of these institutions via encouraging and enforcing firms operating in the country to use them by granting them some privileges in terms of financial assistance, buying their goods embodying local technology and marketing them. Also, the government should encourage the private sector firms to undertake their R & D by granting them some favourable treatment.

(iii) In this connection, national consultant companies and institutions must be given a first priority and every possible encouragement by employing their efforts wherever and whenever it is possible. In cases where it is necessary to depend on foreign companies, they must be joined with local ones and local personnel at every stage of the required work.

(iv) The present traditional patent law should be revised in the light of the benefits that accrue to the country from it. Other forms of industrial property protection should be considered such as an inventors' certificate.

In addition a differentiation in granting patents should be considered according to the industry concerned. For example, patents should not be granted in fields such as food and pharmaceuticals. Further, in other fields, it must be clear that the introduction of patented products is no substitute for exploiting the patent inside Egypt.

Correspondingly, a system of intelligence should be created in order to know the different sources of similar and alternative types of technology, how long they have been used abroad, their terms, and cost. Such a system may enable the competent authorities to deal with the suppliers and potential investors from a strong position. In so doing it could enable the country to get the right technology at the right cost to give the right products to the country, and hence save the domestic economy much burden.

Equally important the existing apparatus of Laws regarding DFI, taxes, industrial development, and tariffs should be revised, for all to be in harmony according to a national strategy of economic and social development.

Such an immense task must be given a first priority by the government if an explicit objective of different policies and different Laws is to be reached and achieved.

In this thesis we have tried to examine the performance of the TNCs in the transfer of technology to Egypt on a macro-economic basis according to the available data. Far more empirical work is needed on the social costs and benefits of foreign technology on a case by case basis and the effect of incentives on both DFI and the national economy. In addition further research is required about the future of the local technological capability under the present policy in the long run and on the alternatives to the policies so far adopted by the Egyptian Government.

THE  
QUESTIONNAIRE



# QUESTIONNAIRE FOR FOREIGN COMPANIES

## Part I: Background Information

1. Name of company

Name of foreign investor

Name of domestic investor, if any

2. Year of foundation in Egypt

Year of partnership in joint ventures, if any

3. Nature of industrial activity

- manufacturing

- assembling

- components

on the following dates

(i) At the commencement of production

(ii) 5 years after the commencement of production

If any plans for future changes, please specify.

4. Motives for investment in Egypt

- incentives from the Government
- local market security
- (i) overcome barriers
- (ii) forestall rivals
- cheap labour
- cheap raw materials
- combination of these

More details, if possible, please.

Could you please indicate to the relative importance of each?

5. What has been the nature of ownership in your firm?

- Wholly foreign owned
  
- Majority foreign owned
  - (i) foreign %
  
  - (ii) local %
  
- 50/50
  
- Minority foreign owned
  - (i) foreign %
  
  - (ii) local %

Are there any plans for changes?

6. What has been the financial structure of your firm?

- fixed capital
  
- working capital
  
  
- total :

- capital raised in Egypt                      debt            % equity %
- capital raised in home country    debt            % equity %
- capital raised in third countries    debt            % equity %

## Part 2: Production Techniques

1. How do the production techniques your company uses in Egypt compare with those your parent company and/or your other subsidiaries use in Europe?
  
2. Were/Will any technological adaptation be made for the Egyptian environment?
  - (i) product design
  
  - (ii) production equipment
  
  - (iii) production techniques
  
  - (iv) different scale of output

Reasons for adaptation:

- (a) scaling down to lower volume for narrow market



5. Does your firm buy technological elements from different sources?

Yes

No

Reasons:

(i)

(ii)

6. The form of technological elements transferred

- separate elements

- a package

Comment:

7. If payments are made for technical elements, what form did/will they take?

(a) lump-sum

(b) royalty

(c) equity

(d) combination of these

Comments:

8. On what basis have these payments been founded, e.g. are they a percentage of output?

9. Does: will your project team make its own management decisions in the following areas:

(i) choice of technology

(ii) production market development

(iii) production volume

(iv) production price

(v) additional capital financing

(vi) recruitment of employees

Comment:

10. For each of the following, indicate who was principally responsible, i.e. 1, 2, etc.

1. foreign investor
2. foreign and domestic investors together
3. domestic investors
4. general authority for investment and free zones
5. a consultant company
6. others, please specify
  - (i) feasibility studies
  - (ii) selection of production technology
  - (iii) production design
  - (iv) plant construction
    - (a) supervision of construction
    - (b) technology for it (blueprints, etc.)
  - (v) accounting system



(vi) inventory control

(vii) organisational structure

(viii) personnel management

Please comment:

### Part 3: Employment Aspects

1. The total number of employees and their classification:

	Total	Expatriates	Locals
directors		%	%
production workers		%	%
clerical		%	%
accountants		%	%
management		%	%

technicians	%	%
engineers	%	%
services	%	%

Total:

2. Is there a training scheme for local employees?

Yes

No

If yes, could you please specify:

(a) duration of training programmes at various levels

(b) location of training

- locally in Egypt, at the project's facilities

- abroad (please specify)

(c) the nature of the training

(d) the role of your company in the training

(e) future plans

Further comments:

3. What has been the estimated cost of training as a percentage of value added, and by whom was it paid?

cost:

domestic currency equivalent:

Further comments:

4. How many of your local employees have:

- university degrees
- any other technical or professional training
- secondary schools' diplomas

More details if possible.

5. Approximately what percentage of the following group leaves the factory each year to work elsewhere or to do something else?

(i) engineers

%

- |                             |   |
|-----------------------------|---|
| (ii) skilled labourers      | % |
| (iii) unskilled workers     | % |
| (iv) supervising personnel  | % |
| (v) others (please specify) | % |

Further comments:

**Part 4: Research and Development (R & D)**

1. Does your company undertake R & D in Egypt?

Yes

No

If yes, please specify the sort of R & D and the years of establishment.

- basic research
- applied research
- development research

Further comments, if any:

2. What products or processes were developed internally in Egypt?
  
3. Are there contracts with public and/or private research units or universities?

Yes

No

Please give further details if possible.

4. Participation of scientific and technical staff of the subsidiary in the activities of local research centres:

- research work
  
- teaching

Comment:

5. Proportion of local researchers and engineers amongst your company's research staff.
  
6. Future plans in R & D field in Egypt.

**Part 5: Patents and Trade Marks**

1. Has the technology you used in Egypt been patented?

Yes

No

Comments:

2. What role did your Egyptian patent play in your decision to invest in Egypt?

- crucial
- major significance
- minor significance
- no effect

3. Did you supply only patented technology or was it in combination with particular know-how?

- patented only %
- patented and know-how %

- unpatented

%

Any further comments:

4. Was the use of trade-marks or brand names available or involved?

Yes

No

#### **Part 5: Inter-Sector Relations**

1. Has your company made sub-contracts with local suppliers?

Yes

No

If yes, in what sectors:

- capital equipment

- consumer goods

- civil engineering

- construction
- components
- others (please specify)

Further comments:

2. Is there financial co-operation between your firm and the local suppliers?

Yes

No

Further details, if any.

3. Is there technical co-operation between your firm and the local suppliers?

Yes

No

Further details, if any.



4. What percentage value of total requirements of materials and services was supplied by:

	Start of the Project	Projected 1984
(i) indigenous Egyptian firms	%	%
(ii) locally based foreign subsidiaries	%	%
(iii) parent company	%	%
(iv) parent company suppliers	%	%
(v) others (please specify)	%	%

Further details:

5. If import requirements are substantial, is this because local suppliers are:

- not available
- not competitive

- not up to quality specifications
- other reasons (please specify)

Further comments:

6. Did/will you take any steps to manufacture components and/or other intermediate parts locally?

Yes

No

Further details:

7. Imports of parts and components from abroad: could you please provide information on
- percentages of parts imported from parent company
  - the specific parts and components
  - their percentage share from the total value of input used in production

8. Could you please provide information on percentages of

(i) total imported machinery

(ii) imported machinery from parent company

(iii) any chances of such capital goods being available locally?

### Part 6: Exports of Egypt

1. What was/is the annual value of exports

- in the first year of production
- after three years of production
- as in 1984

Further details:

2. The major direction of exports: could you please show the shares of the largest markets as a percentage if possible; and give reasons why this destination is preferred to others.

3. Is there any agreement with the parent firm about territories to which you may export?

4. Does the Egyptian Government exert any pressure over exports?

Yes

No

Details:

5. Please specify the type of products being sold

- at the commencement of production
- 5 years after commencement of production
- as in 1984

Any further details:

6. How much emphasis does your firm place on advertising?

Show if possible as a percentage of value added and/or total sales.

7. Are the products offered

- identical to those in country of origin
- adapted
- peculiar to the local market

8. Where was the decision take to launch a new product, if any

- at head office
- at Egyptian company
- elsewhere (please specify)

Further details:

9. Is the full range of products of the parent company available on the local market? What proportion of them is manufactured on the spot compared with those imported?

10. What are your plans for the future?

Thank you

## BIBLIOGRAPHY

- Abdel-Allah, I. S. (1977) "Technology Strategy"  
A Paper presented to the 2nd conference of the Egyptian Economists, 24-26 August, Cairo.
- Abdel-Fadil, M. (1983) Informal Sector Employment in Egypt  
ILO, Geneva.
- Abdel-Fadil, M. (1980) The Political Economy of Nasserism: A study in employment and income distribution policies in urban Egypt, 1952-1972. Cambridge University Press.
- \_\_\_\_\_ (1983) "New Problems of Management and Economic Planning under Open Door Economic Policy" Paper presented to the eighth conference of the Egyptian Economists, 12-14, May, Cairo.
- Abdel-Khalek, G. (1978) "The Most Important Indicators of Open Door Economic Policy for Structural Changes in the Egyptian Economy". A Paper presented to the third conference of the Egyptian Economists, 23-25 March, Cairo.
- \_\_\_\_\_ (1982) The Open Door Economic Policy in Egypt: Its contribution to investment and its equity implications in, Keer Yassin. (ed.) Rich and poor countries in the Middle East, the American University Press, Cairo.
- \_\_\_\_\_ (1981) "Looking Outside, or Turning Northwest?: On the meaning and external dimension of Egypt's Infitah 1971-1980". Social Problems, Vol.28, No.4, April.
- Abou El-Enein, A. (1983) Egypt's Experience in Technology Transfer in the Pharmaceutical Industry. Academy of Scientific Research and Technology, Cairo.
- Adheghian, P. (1982) "The Comparative Capital Intensities of Joint-Ventures and Local Firms in Iran". Journal of Economic Development, Vol.1, No.2, December.
- Adikibi, O. T. (1981) The Multinational Company and Technology Transfer to Nigeria: Case study of type industry. Ph. D., Manchester University.
- Agarwal, J. P. (1976) "Notes and Memoranda; Factor proportions in Foreign and Domestic Firms in Indian Manufacturing". The Economic Journal, 86, September.
- \_\_\_\_\_ (1979) "Productivity of Foreign and Domestic Firms in Indian Industries". Review of World Economics, Band. 115 Heft. 1.
- Agarwal, J. P. (1980) "Determinants of Foreign Direct Investment". Weltwirtschaftliches Archiv Band. 116 Heft. 4.
- Aggarwal, R. (1978) "Technology Transfer by Multinational Companies: Their Role in India". Foreign Trade Review Vol.13, April-June.
- Agodo, O. "The Determinants of U.S. Manufacturing investment in Africa" Journal of International Business Studies Vol.9 (3) Winter.

- Agwah, A. A. (1975) Import Substitution Policy and the Export Performance of the Manufacturing Sector: The Egyptian Experience Ph. D. University of Strathclyde.
- Ajami, F. (1982) The Open Door Economy: Its Roots and Welfare Consequences in; Abdel-Khalek, G. & Tignor, R. (ed.) The Political Economics of Income Distribution in Egypt, Homes & Meier, London.
- Akpakpan, E. B. (1983) Foreign Firms and Indigenous Firms in Economic Development: A Case Study of the Brewing Industry of Nigeria. Ph. D. University of Manchester.
- Alam, G. & Langrish, J. (1981) "Non-Multinational Firms and Transfer of Technology to Less Developed Countries". World Development, Vol.9, No.4.
- Al-Greatly, A. (1977) Twenty Five Years: Analytical Study of Economic Policies in Egypt: 1952-1977. The General Agency for Books, 1977, Cairo.
- Ali, A. A. (1983) Transfer of Technology to the Developing Countries: Special Reference to Egypt. MA thesis, Faculty of Economics and Political Sciences, Cairo (Arabic).
- Aliber, R. Z. (1969) "Exchange Risk, Yield Curves, and the Pattern of the Capital Flows". Journal of Finance. Vol.24, May.
- \_\_\_\_\_ (1970) A Theory of Direct Investment in Kindleberger, C. (ed.) The International Corporation. MIT Press.
- Aliboni, R. (1984) Egypt's Economic Potential. Croom Helm, London.
- Alizadeh, P. (1976) Foreign Direct Investment, Transfer of Technology in the Non-Oil Sectors of the Iranian Economy, MA Thesis, Sussex University.
- Allende, S. (1975) His Speech to the United Nations General Assembly in; Radice, H. International Firms and Modern Imperialism. Penguin Books Ltd., England.
- Al-Shishini, N. (1981) "Technological Dependency and Industrialization of the Developing Countries", Le Contemporaine Egypte, No.383 Janiere, Le Caire.
- Al-Shishini, N. (1984) "The Policy for Developing Small Scale Industries in Egypt". L'Egypte Contemporaine, No.395, Anuee, LXX Veme Le janvier, Le Caire, (Arabic).
- Al-Tokhy, A. (1978) Analysis of Structural Changes in the Characteristics of Labour Force in Egypt: 1947-1974. The Egyptian Association for Political Economy and Statistics, Cairo (Arabic).
- Al-Zahawi, F. (1984) Joint-Ventures According to Investment Law. Ph. D., Faculty of Law, Cairo University, (Arabic).
- Amer, N. Y. (1984) "The Future of Local Manufacturing of Spinning and Weaving Machines". Mohandseen Magazine, Year 40, No.352, July, Cairo (Arabic).

- Amin, G. A. (1982) External Factors in the Reorientation of Egypt's Economic Policy in; Keer, M. H. & Yassin, s. (ed.).
- \_\_\_\_\_ (1976) "Development ... or Economic and Cultural Dependency". L'Egypte Contemporaine, No.366, October, Le Caire (Arabic).
- Andriamananjara, R. (1978) "Relating Industrialization in Africa to People's Needs". International Labour Review, Vol.117, No.6, November-December.
- Areskoug, K. (1975-1976) "Private Foreign Investment and Capital Formation in Developing Countries". Economic Development and Cultural Change Vol.24.
- Arge, R. D. (1969) "Notes on Customs Unions and Foreign Direct Investment". Economic Journal, Vol.74.
- Awojinrin, J. F. (1974) British Direct Investment and Economic Development in Nigeria, 1955-1972. Ph. D., Keele University, January.
- Aydin, N. & Terpstra, V. (1981) "Marketing Know-How Transfer by Multinationals: A Case Study in Turkey". Journal of International Studies, Winter.
- Ayubi, N. M. (1982) Implementation Capability and Political Feasibility of the Open Door Economic Policy in Egypt in; Keer & Yassin (ed.).
- \_\_\_\_\_ (1982) "Organisation for Development, the Politico-Administrative Framework of Economic Activity in Egypt under Sadat". Public Administrative and Development, Vol.2, No.4, October-December.
- \_\_\_\_\_ (1983) "The Egyptian Brain Drain: A Multidimensional Problem". International Journal of Middle Eastern Studies, 15.
- Baker, R. W. (1981) "Sadat's Open Door: Opposition From Within", Social Problems, Vol.28, No.4, April.
- Balasubramanyam, V. (1984) "Incentives and Disincentives for Foreign Direct Investment in Less Developed Countries". Weltwirtschaftliches Archiv, Band, 120 Heft. 4.
- Ball, G. W. (1967) "The Promise of the Multinational Corporations". Fortune, Vol.75, No.6, June.
- \_\_\_\_\_ (1974) Global Companies: The Political Economy of World Business. The U.S.A.
- Ball, N. (1983) "Military expenditure and socio-economic development", International Social Science Journal, Vol. XXV No.1.
- Bandera, V. N. & White, I. I. (1968) "United States Direct Investment and Domestic Market in Europe". Economica International, Vol.21.
- Baran, P. & Sweezy, P. (1966) Monopoly Capital: An Essay on the American Economic Social Order. Penguin Books Ltd., England.



- Baranson, J. L. (1966) "Transfer of Technical Knowledge by International Corporations to Developing Economies". American Economic Review, Vol. LVI, No.2, May.
- \_\_\_\_\_ (1970) "Technology Transfer Through the International Firm". American Economic Review, May.
- \_\_\_\_\_ (1976-1977) "Technology Transfer Can Hurt Us". Foreign Policy, No.25.
- \_\_\_\_\_ (1979) Technology and the Multinationals Corporate Strategies in a Changing World Economy. Massachusetts, Heath & Company.
- Barker, C. E., Bhagavan, M. R.; Mitschke-Collande, V. & Wield, D. V. (1974-1979) Industrial Production and Transfer of Technology in Tanzania: The Political Economy of Tanzania Industrial Enterprises. Institute of Development Studies. University of Dar-Es-Salam.
- Barnet, R. J. & Muller, R. N. (1974) Global Reach. Jonathan Cape Ltd., London.
- Barten, J. H. (1984) "Coping with the Technological Protectionism". Harvard Business Review, No.6, November-December.
- Behrman, J. (1970) National Interests and the Multinational Enterprise: Tensions among the North Atlantic Countries. Englewood Cliffs.
- \_\_\_\_\_ (1960) "Promoting Free World Economic Development Through Direct Investment". American Economic Review, 50, No.2, May.
- Behrman, J. & Fischer W. A. (1980) Overseas R & D Activities of Transnational Corporations. Cambridge, Gunn & Hain.
- Bell, M. (1984) Learning and the Accumulation of Industrial Technological Capacity in Developing Countries in; M. Fransman & K. King (ed.). Technological Capacity in the Third World, the Macmillan Ltd., London.
- Bergsten, F. (1975) "Multinationals Find the Going Tougher". Business Week, July 14.
- Berkowitz, M. K. & Kotowitz, Y. (1982) "Patent Policy in an Open Economy". The Canadian Journal of Economics, Vol.XV, No.1, February.
- Bernal, R. L. (1984) "Foreign Investment and Development". Inter-American Economic Affairs, Vol.38, No.2, Autumn.
- Bhalla, A. S. (1981) The Concept and Measurement of Labour Intensity in; Bhalla & A. Sen, (ed.) Technology and Employment in Industry. ILO, Geneva.
- \_\_\_\_\_ (1974) "Technological Choice in Construction in Two Asian Countries: China & India". World Development, Vol.3, No.3, March.
- Bhawagti, J. (1964) "The Pure Theory of International Trade: A Survey". The Economic Journal, Vol. LXXIV, No.1.

- Biersteker, T. J. (1978) Distortion or Development: Contending Perspective on the MNC's. MIT Press, Cambridge.
- Bilnder, R. (1980) Strategies and Effects of Multinational Corporation in Iran and Yugoslavia. Yale Scholar of the House in Economics.
- Bornschier, V. (1981) "Dependent Industrialisation in the World Economy". The Journal of Conflict Resolution, Vol.25, No.3, September.
- Borts, H. G. (1971) Long-Run Capital Movements in; Dunning, J. H. Economic Analysis and MNE. George Allen & Unwin Ltd., Britian.
- Bos, H. C. (1984) The Role of Industry and Industrial Policies in the Third Development Decade, in Ghosh, P. K.
- Brash, D. T. (1965) American Investment in Australian Industry. Harvard University Press, Cambridge.
- Brooke, M. Z. & H. L. Remmers, (1970) The Strategy of Multinational Enterprises. Longman Group Ltd., London.
- Brown, M. B. (1975) The Economics of Imperialism. Penguin Books Ltd., England.
- Brown, D. (1981) "Egypt and the United States: Collaboration in Economic Development". The Middle East Journal, Vo.35, No.1, Winter.
- Bruton, H. J. (1983) "Egypt's Development in the 1970's". Economic Development & Cultural Change, Vol.31, No.4, July.
- Bruton, H. J. (1981) The Promise of Peace: Economic Co-operation Between Egypt and Israel. The Brookings Institution, Washington.
- Buckley, P. J. & Casson, M. (1978) The Future of the Multinational Enterprise. The Macmillan Press Ltd., London.
- \_\_\_\_\_ (1981) "The Optimal Timing of a Foreign Direct Investment". Economic Journal, 91, March.
- \_\_\_\_\_ (1985) The Economic Theory of the Multinational Enterprise, The Macmillan Press Ltd., London.
- Bugliarello, G. (1984) "Technology and Economic Development". Metroeconomica, Vol.XXXVI, No.1, February.
- Cailods, F. (1984) Education, Organisation of Work and Indigenous Technological Capacity in; Fransman & King (ed.).
- Caporaso, J. A. (1981) "Industrialisation in the Periphery". International Studies Quarterly, Vol.25, No.3, September.
- Carr, D. W. (1979) Foreign Investment and Development in Egypt. Praeger, New York.
- Carry, F. P. (1979) The Transfer of Technology to Developing Countries and the Role of Foreign Corporations: A Comparison of Yugoslavia and Mexico. Ph. D., California, Berkeley, May.

- Caves, R. E. (1974) Industrial Organisation in; Dunning, J. H. (ed.).
- \_\_\_\_\_ (1971) "International Corporations: The Industrial Economics of Foreign Investment". Economica, Vol.38, February.
- \_\_\_\_\_ (1974) "Causes of Direct Investment: Foreign Firms Shares in Canadian and U.K. Manufacturing Industries". Review of Economics and Statistics, Vol.56, August.
- \_\_\_\_\_ (1980) "Corporate Strategy and Structure". Journal of Economic Literature, March.
- \_\_\_\_\_ (1983) Multinational Enterprise and Economic Analysis, Cambridge University Press, London.
- Chen, E. (1981) "The role of MNC's in the Production and Transfer Technology in Host Countries". Development and Change, Vo.12.
- Cheng, L. (1984) "International Trade and Technology: A Brief Survey of the Recent Literature". Weltwirtschaftliches Archiv, Band 120, Heft 1.
- Choi, H. (1979) Technology for Development: The South Korean Experience in; Ramesch & Weiss, Mobilising Technology for World Development, New York, Praeger.
- Chudnovsky, D. (1982) "The Changing Remittance Behaviour of U.S. Manufacturing Firms in Latin America". World Development, Vol.10, No.6.
- Clairmonte, F. F. & Cavanagh, J. H. (1983) "Transnational Corporations and the Struggle for the Global Market". Journal of Contemporary Asia Quarterly, Vol.13, No.4.
- Clark, N. (1980) "The Economic Behaviour of Research Institutions in Developing Countries: Some Methodological Points". Social Studies of Science, Vol.10, No.1, February.
- \_\_\_\_\_ (1975) "The MNC's: The Transfer of Technology and Dependence". Development and Change, Vol.VI, No.1, January.
- Clarke, P. G. (1982) Private Sector Industrial Development in Egypt. Research Memorandum No.85, Centre for Development Economics, William College, Massachusetts, September.
- Cohen, B. I. (1973) "Comparative Behaviour of Foreign and Domestic Export Firms in a Developing Economy". Review of Economics and Statistics, Vol. LV, No.11, May.
- Colman, D & Nixon, F. (1978) Economics of Change in Less Developed Countries. Philip Allen, London.
- Comanor, W. S. & Wilson, T. A. (1967) "Advertising: Market Structure and performance". Review of Economics and Statistics, Vol.49.
- Constantino, R. (1977) "Global Enterprises and the Transfer of Technology". Journal of Contemporary Asia, Vol.7, No.1.

- Contractor, F. (1980) "The Profitability of Technology Licensing by U.S.A. Multinationals: A framework for Analysis and Empirical Study". Journal of International Business Studies, Vol.II, No.2, Fall.
- Cooper, C. (1972) "Science, Technology and Production in the Underdeveloped Countries: An Introduction". Journal of Development Studies, Vol.9, No.1.
- \_\_\_\_\_ (1973) "Choice of Techniques and Technological Change as Problems in the Political Economy". International Social Science Journal, Vol.XXV, No.3.
- \_\_\_\_\_ (1980) "Policy Interventions for Technological Innovation in Developing Countries". Washington, World Bank Staff Working Paper, No.441.
- Cooper, C. & Kaplinsky, R. & Turner, H. (1981) Second Hand Equipment in Developing Countries: Jute Processing Machinery in Kenya in; Bhalla & Sen (ed.).
- \_\_\_\_\_ Bell & W. Stayarakint (1981) Choice of Techniques for Can Making in Kenya, Tanzania and Thailand, in; Bhalla & Sen.
- Cooper, C. & Sercovich, F. (1971) The Mechanisms for the Transfer of Technology from Advanced to Developing Countries. Science Policy Research Unit, Sussex University.
- Cooper, M. N. (1982) The Transformation of Egypt: State and State Capitalism in Crisis. Baltimore, Johns Hopkins University Press.
- Corden, W. M. (1974) The Theory of International Trade in; Dunning, J. H. (ed.).
- Conje, S., Ling, M., & Conje, G. (1976) LONRHO: Portrait of a Multinational. Penguin Books Ltd., England.
- Cyert, R. M. & March, T. G. (1955) "Organisational Structure and Pricing Behaviour in an Oligopolistic Market". American Economic Review, Vol.XLV, No.45.
- Dabbous, A. (1974) Alternative Approches to Financing Projects under the New Investment Law in; Stephens & Hayek (ed.). Investment in Egypt: Law No.43 and Its Implications for the Transfer of Technology. Fund for Multinational Management Education, November.
- Davis, H. A. (1976) Transnational Business Collaboration and the Transfer of Technology. MS. C., University of Lancaster, March.
- Denison, E. & Chung, W. K. (1976) How Japan's Economy Grew So Fast; The forces of Post-War Expansion. The Brooking Institution, Washington.
- Dessouki, A. e. (1981) "Policy Making in Egypt: A Case Study of the Open Door Economic Policy". Social Problems, Vol.28, No.4, April.
- \_\_\_\_\_ (1982) The Politics of Income Distribution in Egypt, in Abdel-Khalek & G. Tignor (ed.).

- Diaz-Alejendro, C. F. (1977) Foreign Direct Investment by Latin Americans in; Agmon & C, Kindleberger (ed.). Multinationals from Small Countries. MIT. London.
- Dickson, D. (1974) Alternative Technology and the Politics of Technological Change. William Collins & Sons, Glasgow.
- Diebold, J. (1968) "Is the Gap Technological?" Foreign Affairs, Vol.46, No.2, January.
- Donges, J. B. (1976) "A Comparative Survey of Industrialisation Policies in Fifteen Semi-Industrial Countries". Weltwirtschaftliches Archiv, Band. 112, Heft. 4.
- Dos-Santos, T. (1970) "The Structure of Dependence". American Economic Review, Vol.60.
- Dowidar, M. (1979) The Egyptian Economy Between Underdevelopment and Development. Dar Algameaat Al-Misria, Alexandria. (Arabic)
- \_\_\_\_\_ (1984) "La Politique Economique de L'Infitah et La Construction Industrielle, La Cas de L'Egypt". L'Egypte Contemporaine, LXXV eme Annee No.397. Juillet, L'Caïre.
- Doyle, M. W. (1983) "Stalemate in the North-South Debate: Strategies and the N.I.E.O.". World Politics, Vol.35, No.3, April.
- Driscoll, R. E., P. F. Hayek, & F. A. Zaki, (1978) Foreign Investment in Egypt. Fund for Multinational Management Education (F.M.M.E.).
- Drucker, P. F. (1974) "Multinationals and Developing Countries: Myths and Realities". Foreign Affairs, Vol.53, No.1, October.
- Dunn, C. C. (1975) "The Effects of International Economics Dependence on Development and Inequality: A Cross National Study". American Sociology Review, Vol.4, December.
- Dunn, P. D. (1978) Appropriate Technology: Technology with a Human Face. The Macmillan Press Ltd., London.
- Dunning, J. H. (1971) The Multinational Enterprise. George Allen & Unwin Ltd., Britain.
- \_\_\_\_\_ (1972) International Investment. Penguin Books Ltd., England.
- \_\_\_\_\_ (1973) "The Determinants of International Production". Oxford Economic Papers, November.
- \_\_\_\_\_ (1974) Economic Analysis and the M.N.E. Allen & Unwin, London.
- \_\_\_\_\_ (1981a) "Explaining the International Direct Investment Position of Countries: Towards a Dynamic or Development Approach". Weltwirtschaftliches Archiv. Band. 117, Heft. 1.
- \_\_\_\_\_ (1981b) International Production and the Multinational Enterprise. Allen & Unwin Ltd., London.

- \_\_\_\_\_ & A. M. Rugman, (1985) "The Influence of Hymer's dissertation on the Theory Direct Foreign Investment". American Economic Association, Papers and Proceedings, Vol.75, No.2, May.
- Eiseman, T. O. (1984) Insular and Open Strategies for Enhancing Scientific and Technological Capacities: India's Educational Expansion and Its Implications for African Countries in; Fransman & King, (ed.).
- El-Borolossy, A. W. (1984) "Experiment" Investment Review, Vol.5, No.2, October.
- El-Essawy, J. H. (1982) Interconnections between Income Distribution and Economic Growth in the Context of Egypt's Economic Development in; Abdel-Khalek (ed.).
- El-Kammsh, M. M. (1968) Economic Development and Planning in Egypt. Praeger, London.
- El-Karnashawy, H. (1976) Choice of ~~Choice~~ Weaving Technology in Egypt. Ph. D. University of Strathclyde, March.
- El-Kholy, O. (1982) "Reflections on Egyptians Experiences in Technological Development". Egyptian Bulletin No.2, September.
- El-Zohry, A. H. (1984) The Role of the Egyptian Financial System in the Economic Development of Egypt 1966-1979. Ph. D. Thesis University of Dundee, July.
- Emmanuel, A. (1982) Appropriate or Underdeveloped Technology. Chichsyer, John Wiley & Sons.
- Ernst, D. (1981) "Technology Policy for Self-Reliance: Some Major Issues". International Social Science. Journal VI. XXXIII (3).
- Evans, P. B. (1971) National Autonomy and Economic Development: Critical Perspectives on M.N.C.s in Poor Countries in; Kechane, R. O. & Nye, J. S. (ed.). Transnational Relations and World Politics. Harvard University Press.
- Ewing, A. F. (1977) "Transfer and Development of Technology: The Problems of Developing Countries in Perspective". Journal World Trade Law, Vol.II, No.1.
- Felix, D. (1974) "Technological Dualism in Late Industrializers on Theory, History and Policy". The Journal of Economic History, Vol.34, No.1, March.
- Findlay, R. (1978) "Relative Backwardness, Direct Foreign Investment and the Transfer of Technology; A Simple Dynamic Model". Quarterly Journal of Economics Vol.XCII, No.1, February.
- Fortner, R. S. (1977) "Strategies for Self Immolation: The Third World and the Transfer of Advanced Technologies". Inter-American Economic Affairs. Vol.XXXI, No.1, Summer.
- Fowler, D. J. (1978) "Transfer Prices and Profit Maximization in MNE Operations", Journal of International Business Studies, Vol.9, No.3, Winter.

- Franko, L. G. (1974) "International Joint-Ventures in Developing Countries: Mystique and Reality". Law and Policy in International Business.
- Franko, L. G. (1976) The European Multinationals; a Renewed Challenge to American and the British Big Business. Harper & Bow, London.
- \_\_\_\_\_ (1978) "Multinationals: The End of the United States Dominance". Harvard Business Review, November-December.
- \_\_\_\_\_ (1974) "The Origins of Multinational Manufacturing by Continental European Firms". Business History Review, Vol.68, Autumn.
- Frank, A. G. (1970) On the Mechanisms of Imperialism: The Case Study of Brazil in; Rodes R. Imperialism and Underdevelopment. Monthly Review Press.
- Fransman, M. & King, K. (1984) Technological Capability in the Third World. The Macmillan Press Ltd., London.
- Freeman, C. (1974) Comment on the Chapter by Pavitt in; Dunning. J. (ed.).
- \_\_\_\_\_ (1974) The Economics of Industrial Innovation. Penguin Books Ltd., England.
- Gabriel, P. G. (1972) "Adaptation: The Names of the MNC's Game". Columbia Journal of World Business, November-December.
- Galal, E. E. (1983) "National Production of Drugs: Egypt". World Development, Vol.11, No.3.
- Gereffi, G. (1983) The Pharmaceutical Industry and Dependency in the Third World. New Jersey, Princeton University Press.
- Germidis, D. (1977) Transfer of Technology by MNC's. Development Centre of the OECD Paris.
- Germidis, D. (1977) Technology Transfer, Regional Co-Operation and MNF's in; Germidis, D. (ed.).
- George, K. D. (1972) "Concentration and Specialisation". Journal of Industrial Economics, Vol.20.
- Gerakis, A. S. (1967) "United Arab Republic: A Survey of Development during the Five-Year; 1960/61 - 1964/65". IMF Staff Papers, 14.
- Ghanem, M. (1976) "Foreign Investment and the MNC's: A question of Sovereignty". A Paper Presented to the First Conference of the Egyptians Economists. Cairo, (Arabic).
- Ghosh, P. K. (1984) Industrialization and Development: A Third World Perspective, Greenwood Press, London.
- Ghoshal, A. (1982) "Multinational Corporations, Technology Transfer and Economic Development". Economics International, Vol.XXXV, No.1.
- Gillespie, K. (1984) The Tripartite Relationship: Government, Foreign Investors and Local Investors During Egypt's Economic Opening. Praeger Publishers, New York.

- Girgis, M. (1977) Industrialization and Trade Pattern in Egypt. Institute for Welwirtschaft an der Univsersitat Kiel, J C B Mohr.
- Girvan, N. (1979) "The Approach to Technology Policy Studies". Social and Economic Studies, Vol.28, No.1, March.
- Giplin, R. (1975) United States Power and the MNC: The Political Economy of Foreign Direct Investment. The Macmillan Press Ltd., London.
- Glyn & Stuclyff, (1976) Capitalism Crises. Pantheon Books. New York.
- Goodstell, C. T. (1975) "The MNCs as Political Actor in a Changing Environment: Peru". Inter-American Economic Affairs, Vol.XXIX, No.3, Winter.
- Graham, A. (1979) "The Transfer of Technology: A Test Case in the North-South Dialogue". Journal of International Affairs. Vol.33, No.1, Spring/Summer.
- Gray, Jr. A. L. (1976) "Egypt's Ten Year Economic Plan". The Middle East Journal, Vol.30, No.1, Winter.
- Griffin, K. (1974) "The International Transmission of Inequality". World Development, Vol.2, No.3, March.
- Gruber, W., Metha, D., and Vernon, R. (1967) "The Research and Development Factor in International Trade and International Investment of U.S. Industries". Journal of Political Economy, Vol.LXXV, February.
- Gruhn, I. v. (1984) "Towards Scientific and Technological Independence". The Journal of Modern African Studies, Vol.22, No.1.
- Grundmann, H. E. (1976) "Foreign Patent Monopolies in Developing Countries: An Emperical Analysis". Journal of Development Studies, Vol.12, January.
- Gurradi, W. (1967) "Why the Climate is Changing from U.S. Investment". Fortune, Vol.LXXVC, September.
- Gvishiani, J. M. (1979) "Management and Technological Change". Technology in Society, Vol.1, No.2.
- Hass, E. (1980) "Technolgical Self-Reliance for Latin America: The OAS Contribution". International Organisation 34(4), August.
- Hakam, A. N. (1966) "The Motivation to Invest and the Locational Pattern of Foreign Private Industrial Development in Nigeria". Economic and Social Studies, Vol.8, No.1, March.
- Handoussa, H. A. (1974) The Pharmaceutical Industry in Egypt. Ph. D. Thesis, University of London, 'SOAS' School of Oriental and African Studies.
- (1978) "The Public Sector in the Egyptian Industry 1952-1977". A Paper Presented to the Third Conference to the Egyptian Economists, Cairo.



- Heath, D. C. & Company (1975) Towards a New International Economic Order: Selected Papers of C. Fred Bergsten 1972-1974. The Brookings Institution, Washington.
- Helleiner, G. (1973) "Manufactured Exports from the Less Developed Countries and the Multinational Firms". Economic Journal, Vol.83, No.329, March.
- \_\_\_\_\_ (1975) "The Role of MNC's in the LDC's: Trade in Technology". World Development, Vol.3, No.4, April.
- Helleiner G. (1979) International Technology Issues: Southern Needs and Northern Responses in; Ramesh, J. & Weiss, C. (ed.).
- \_\_\_\_\_ (1981) Intra-Firm Trade and the Developing Countries. The Macmillan Press Ltd., London.
- Hegazy, A. M. (1984) "Crises of International Capitalism and the Dependent Countries Position: With Special Reference to the Egyptian Society. A Paper Presented to the Eighth Conference of the Egyptian Economists. November, Cairo.
- Hewitt, G. (1980) "Research and Development Performed Abroad by U.S. Manufacturing Multinationals". Kyklos, Vol.33.
- Hilal, M. (1982) "Technology Adaptation in Egypt". Investment Review, January, Vol.2, No.4.
- Hirsch, S. (1967) Location of Industry and International Competitiveness. Clarendon Press, Oxford.
- \_\_\_\_\_ (1976) "An International Trade and Investment Theory of the Firm". Oxford Economic Papers, Vol.28, No.2, July.
- Hoogvelt, AM. M. (1982) The Third World in Global Development. The Macmillan Press Ltd., London.
- Hope, K. R. (1983) "Basic Needs and Technology Transfer Issues in the New International Order". The American Journal of Economics and Sociology, Vol.42, No.4, October.
- Hopwood, D. (1982) Egypt Politics and Society 1945-1981. Allen & Unwin, London.
- Horst, T. (1972) "The Firm and Industry Determinants of the Decision to Invest Abroad: An Empirical Study". Review of Economics and Statistics, Vol.54, August.
- Horst, T., C. F. Bergsten, and T. H. Moran, (1978) American Multinationals and American Interests. The Brookings Institution. Washington.
- Hughes, H. (1980) Achievements and objectives of industrialization, in; Cody, J. et al. Policies for industrial progress in developing countries, Oxford University Press, London.
- Hughes, H. (1984) Industrialization and development: A stocktaking, in; Ghosh, P. K., 1984, MNCs and Third World Development, Greenwood, London, 1984.

- Hughes, H. and Y. P. Seng, (1969) Foreign Investment and Industrialisation in Singapore. Wisconsin Press, Madison.
- Hymer, S. (1966) "A Response to J. Baranson". American Economic Review, Vol.LVI.
- \_\_\_\_\_ (1969) The MNC's: A Radica Approach. Cmabridge University, New York.
- \_\_\_\_\_ (1970) "The Efficiency Contradiction of MNC". American Economic Review, May.
- \_\_\_\_\_ & Rowthron (1970) MNC and the International Oligpoly: the non-American Challenge in; Kindleberger, C. (ed.). The International Corporation. The Massachusetts Institution of Technology.
- \_\_\_\_\_ (1975) The MNC and the Law of Uneven Development in; Radice, H. (ed.). International Firm and Modern Imperialism. Penguin Books Ltd., England.
- Ikonicoff, M. M. (1979) "Transfer of Technology and Patterns of Consumption on the Periphery". Labour and Society, Vol.4, No.3, July.
- The Institute of Technology Research, (BOGOTA), (1981) Capacity of the Engineering Industry in Columbia in; Bhalla & Sen (ed.).
- The International Labour Organisation (ILO), (1976), The Impact of MNE on Employment and Training. ILO, Geneva.
- Isaa, H. (1976) "The MNCs: A Survey of Economic and Legal Aspects of Recent Capitalistic Concentration". Journal of Law and Economics, Aim Shams University, Cairo, (Arabic).
- Issawi, C. (1954) Egypt at Mid-Century. Oxford University Press, London.
- Issawi, C. (1961) "Egypt Since 1800: A Study in Lopsided Development". The Journal of Economic History, Vol.XXI, No.1, March.
- \_\_\_\_\_ (1963) Egypt in Revolution: An Economic Analysis. Oxford University Press, London.
- Itagaki, Y. (1982) "Multinational Firm and Nationalism". Asia Pacific Community, Quarterly Review, No.16, Spring.
- James, J. & F. Stewart, (1982) New Products: A Discussion of the Welfare Effects of the Introduction of New Products in Developing Countries in; Stewart, F. & James, J. (ed.).
- Jeanett, J. & Liander, B. (1978) "Some Patterns in the Transfer of Technology Within Multinational Corporations". Journal of International Business Studies, Vol.9, No.3, Winter.
- Johns, B. L. (1967) "Private Overseas Investment in Australia: Profitability and Motivation". Economic Record, Vol.43, June.

Johnson, H. (1970) The Efficiency of Welfare Implications of the International Corporation in; Kindleberger, C. (ed.).

\_\_\_\_\_ (1975) Technology and Economic Interdependence. The Macmillan Press, London.

Jorgenson, J. J. (1975) Multinational Corporations in the Indigestion of the Kenyan Economy in; Widstrand, C. (ed.). "MNF's in Africa". Uppsala: Scandinavian Institute of African Studies.

Kadhim, M. (1984) "Labour Export and Economic Development in Egypt". Journal of South East Asian and Middle Eastern Studies, Vol.VII, No.4, Summer.

Kaplinsky, P. (1976) "Accumulation and the Transfer of Technology: Issues of Conflict and Mechanisms for the Exercise of Control". World Development, Vol.4, No.3, March.

Kaplinsky, R. & Chishti, S. (1977) "Technical Change and the Multinational Corporations: Some British Multinationals in Kenya & India. Gerimidis, (ed.).

Katrak, H. (1981) 'Multinational Firms and host country commercial policy', The Economic Journal, 91, June.

Kennedy, M. C. (1981) "Introduction: Open Doors, Transnationals and the Global Division of Labour". Social Problems, Vol.28, No.4, April.

Keohance, O. R. & Van Doorn Ooms, (1975) "The Multinational Firm and International Regulation". International Organisation, 29 (1), Winter.

Kerr, M. H., & Yassin, S. (1982) Rich and Poor States in the Middle East: Egypt and the New Arab Order. The American University Press, Cairo.

Kidron, M. (1965) Foreign Investment in India. Oxford University Press, London.

Kindleberger, C. P. (1965) "United States Private and Government Investment Abroad". Economic Development and Cultural Change, Vol.13.

\_\_\_\_\_ (1966) "European Integration and the International Corporation". Columbia Journal of World Business, Vol.2, No.1, Winter.

\_\_\_\_\_ (1969) American Business Abroad: Six Lectures on Direct Investment. Yale University, New York.

\_\_\_\_\_ (1970) Power and Money: The Economics of International Politics and the Politics of International Economics. Basic Books Inc., New York.

\_\_\_\_\_ (1970) The International Corporation. The Massachusetts Institute of Technology.

\_\_\_\_\_ (1974) The Multinational Corporation in a World of Militant Developing Countries in; Ball (ed.).

- \_\_\_\_\_ (1984) Multinational Excursions. The MIT Press, London.
- King, K. (1984) Science, Technology Education in the Development of Indigenous Technology Capacity in; Fransman & King (ed.).
- Kirkpatrick, C. & Nixon, F. (1981) "Transnationals Corporations and Economic Development". The Journal of Modern African Studies, Vol.19, No.3.
- \_\_\_\_\_ & Yamin M. (1981) "The Determinants of Export Subsidiary Formation by United States Transnationals in Developing Countries: An Inter-Industry Analysis". World Development, Vol.9, No.4.
- \_\_\_\_\_ & Nixon, F. (1983) The Industrialisation of Less Developed Countries. Manchester University Press, Manchester.
- K. Kojima, K. (1978) Direct Foreign Investment: A Japanese Model of Multinational Business Operations. Croom Helm, London.
- \_\_\_\_\_ (1978) "A New Capitalism for a New International Economic Order". Hitotsubashi Journal of Economics, Vol.22, No.1, June.
- Kollantai, V. (1983) The Scientific and Technological Revolution and the Developing Countries in; Dadlish, R. (ed.). The Scientific and Technological Revolution: Social Effects and Prospects. Moscow.
- Kozlow, R. (1982) "Capital Expenditure by Majority-owned Foreign Affiliates of United States Companies". Survey of Current Business, August.
- Krainer, R. E. (1967) "Resources Endowment and the Structure of Foreign Investment". The Journal of Finance, Vol.22, No.1.
- Lahera, E. (1981) "The Transnational Corporation in the Chilean Economy". Cepal Review, August.
- Lall, S. (1973) "Transfer Pricing by Multinational Manufacturing Firms". Oxford Bulletin of Economics and Statistics, Vol.35, No.3, August.
- \_\_\_\_\_ (1974) "The International Pharmaceutical Industry and Less Developed Countries with Special Reference to India". Oxford Bulletin of Economics and Statistics, Vo.36.
- \_\_\_\_\_ (1975) "Multinational and Development: A New Look". National Westminster Bank, Quarterly Review, February.
- \_\_\_\_\_ (1975) Foreign Private Manufacturing Investment and Multinational Corporations. Praeger, New York.
- \_\_\_\_\_ (1976) "The Patent System and the Transfer of Technology to Less Developed Countries". Journal of World Trade Law, January-February.
- \_\_\_\_\_ (1978) "Transnationals, Domestic Enterprises and Industrial Structure in Host Less Developed Countries: A Survey". Oxford Economic Papers, Vol.30.

- (1978) "The Pattern of Intra-Firm Exports by United States Multinationals". Oxford Bulletin of Economics and Statistics, Vol.40.
- (1979) "Transnationals and the Third World Research and Development Factor". Third World Quarterly, Vol.1, No.3.
- (1979) "Transfer Pricing and Developing Countries: Some Problems of Investigation", World Development, Vol.7, No.1, January.
- (1979) "Developing Countries and the Emerging International Technological Order". Journal of International Affairs, Vol.33, No.1, Spring/Summer.
- (1980) "Developing Countries As Exporters of Industrial Technology". Research Policy (90).
- (1980) "Monopolistic Advantages and Foreign Involvement by Buy Manufacturing Industry". Oxford Economic Papers, Vol.32, No.1, March.
- (1980) "Vertical Inter-Firm Linkages in Less Developed Countries: An Empirical Study". Oxford Bulletin of Economics and Statistics, Vol.42, No.3, August.
- (1981) Developing Countries in the International Economy. The Macmillan Press Ltd., London.
- (1984) "Transnational Corporations and the Third World: Changing Perceptions". National Westminster Bank, Quarterly Review, May.
- & Streeten, P. (1977) Foreign Investment, Transnationals and Developing Countries. The Macmillan Press Ltd., London.
- & Mohammad, S. (1983) "Foreign Ownership and Export Performance in the Large Corporate Sector of India". The Journal of Development Studies, Vol.20, No.1, October.
- Langdon, S. (1975) "Multinational Corporations, Taste Transfer and Underdevelopment: A Case Study From Kenya". Review of African Political Economy, Vol.2, No.2.
- (1981) Multinational Corporations in the Political Economy of Kenya. The Macmillan Press, London.
- Lawrence, B. K. & W. D. Kenneth, (1964) Federal Tax Treatment of Foreign Income. The Brookings Institutions, Washington.
- Layton, C. (1969) European Advanced Technology. Allen & Unwin, London.
- Lecraw, D. (1977) "Direct Investment by Firms from Less Developed Countries". Oxford Economic Papers, Vol.29.
- (1984) "Bargaining Power, Ownership and Profitability of International Corporation in Developing Countries". Journal of Internationals Business Studies, Spring/Summer.

- Lee, C. H. (1984) "On Japanese Macroeconomic Theories of Direct Foreign Investment". Economic Development & Cultural Change, Vol.32, No.4.
- Leff, N. & A. D. Netto, (1966) "Import Substitution, Foreign Investment and International Dis-Equilibrium in Brazil". The Journal of Development Studies, Vol.2, No.3, April.
- Leffler, K. B. (1981) "Persuasion of Information?: The Economics of Prescription Drug Advertising". Journal of Law and Economics, Vol.XXIV, No.1, April.
- Lent, G. E. (1967) "Tax Incentives for Investment in Developing Countries". I.M.F. Staff Papers.
- Lim, D. (1976) "On the Measurement of Capital-Intensity". Welwirtschaftlides Archiv, Band. 112, Heft. 4.
- Lim, D. (1983) 'Fiscal Incentives and direct foreign investment', The Journal of Development Studies, Vol.19, No.2, January.
- Lindeau, J. M. (1968) Micro-Economic Readings. The Free Press, New York.
- Lindenberg, M. (1975) "The Politics of Foreign Investment in South East Asia from 1945-1973". Journal of Contemporary Asia, Vol.5, No.1.
- Long, F. (1981) "Multinational Corporations and the Non-Primary Sector Trade of Developing countries: A Survey of Available Data". Economica Internazionale, Vol.XXXIV, No.2-3-4, November.
- Long, T. D. (1975) "Japanese Technology Policy: Achievements and Perceptives". Research Policy, Vol.4.
- Mabro, R. (1967) "Industrial Growth, Agricultural Under-Employment and the Lewis Model: The Egyptian Case: 1937-1965". Journal of Development Studies, Vol.3 (4).
- \_\_\_\_\_ (1974) The Egyptian Economy 1952-1972. Clarendon Press. Oxford.
- \_\_\_\_\_ & O'Brien, P. (1970) Structural Changes in the Egyptian Economy 1937-1956 in; M. A. Cook. Studies in the Economic History of the Middle East. London.
- \_\_\_\_\_ & Radwan, S. (1976) The Industrialisation of Egypt 1937-1973: Policy and Performance. Clarendon Press, Oxford.
- MacDougall, C. D. A. (1972) The Benefits and Costs of Private Investment from Abroad: A Theoretical Approach in; Dunning (ed.).
- Maclean, J. G. (1963) "Financing Overseas Expansion". Harvard Business Review, March-April.
- Madden, C. I. (1977) The Case for the MNC. Praeger Publishers, New York.
- Magdoff, H. (1981) Imperialism without Colonies, Longman, Essex.

- Magee, S. (1977) "Multinational Corporations, the Industry Technology Cycle and Development", Journal of World Trade Law, Vol. 11 N.4.
- Makki, M & A. Qayum. (1975) "Prospects for Egyptian Economy Development", Economia Internazionale, Vol. XXVIII.
- Male, B. (1983) "The Egyptian Dilemma", World Review, Vol. 21 N.3, August.
- Manser, W.A.P. (1973) The Financial Role of Multinational Enterprises Associated Business Programmes Ltd., London.
- Manser, W.A. & S. Webley (1979) Technology Transfer & Developing Countries, The Royal Institute of International Affairs, London.
- Mansfield, F & A. Romeo (1980) "Technology Transfer to Overseas Subsidiaries by United States Based Firms", The Quarterly Journal of Economics, Vol. 95, December.
- Marinho, L.G. (1981) "The Transnational Corporations and Latin America's Present Form of Economic Growth", Cepal Review, N.14, August.
- Marsden, K. (1970) "Progressive Technologies for Developing Countries", International Labour Review, Vol. 101, N.5.
- Martin, G.G. (1973) Private Foreign Investment in Developing Countries An appraisal of Incentive Measures, M.Sc University of Bristol, December.
- Mason, R.H. (1973) "Some Observations on the Choice of Technology by MNFs in Developing Countries", Review of Economics and Statistics. Vol.55.
- Matar, M.J. (1981) Direct Foreign Investment in Egypt, with Special Reference to U.K. during the Period 1974 - 1978., Ph.D thesis, Birmingham University.
- May, H.K. (1975) The Multinational Corporations in Latin America Study Prepared for the Council of the Americas, September.
- Mazhar, Y. (1981) Adaptation of Appropriate Technology, Cairo Papers in Social Science, Vol. 4, Monographs 2 & 3 July 1981, Social Science Centre, The American University, Cairo.
- McKenzie, R.D. (1927-28) "The Concept of Dominance and World Organisation", American Journal of Sociology, Vol. XXXIII, July.
- McRobie, G. (1979) "Intermediate Technology : Small is successful", Third World Quarterly, Vol. 1, N.2, April.
- Mead, D.C. (1967) Growth and Structural Change in the Egyptian Economy, Homewood, Illinois.
- Meller, P & A. Mizala (1982) "United States Multinationals and Latin American Manufacturing Employment Absorption", World Development, Vol. 10, N.2.
- Melrose, D. (1983) Bitter Pills : Medicines and the Third Poor, Oxfam.

- Merhav, M. (1969) Technological Dependence, Monopoly and Growth, Pergamon Ltd., London.
- Michael, M.H. (1966) "Entry Barriers in Thirteen Industries", Review of Economics and Statistics, Vol. 48.
- Michalet, C.A. (1976) "The International Transfer of Technology and the Multinational Enterprise", Development and Change, Vol. 7, No.2.
- \_\_\_\_\_ (1977) Multinational Corporations and Transfer of Technology : A Comparative Approach of Greece, Ivory Coast, Morocco and Spain, in Germidis. D. (ed).
- Mikesell, R.F. (1967) "Decisive Factors in the flow of American direct investment to Europe", Economia International, August.
- Moore, C.H. (1980) Images of Development : Egyptian Engineers in looking for industry, MIT press, Cambridge.
- Morad, M.H. (1972) "The Role of Technology in Economic and Social Development", A Papers presented to the Egyptian Association of Economics & Statistics and Legislation, March.
- Moran, T.H. (1978) "Multinational Corporations and Dependency : A dialogue for dependentistas and non-dependentistas", International Organisation (32).
- Morawetz, D. (1976) "Employment Implications of Industrialization in Developing Countries : A survey", The Economic Journal, September.
- Morehouse, W. (1982) Opening Pandora's Box : Technology and Social Performance in the Indian Tractor Industry, James & Stewart.(ed).
- Morely, S.A. & G.W. Smith (1976-1977) "The Choice of Technology : MNFs in Brazil", Economic Development & Cultural Change, 25, 1.
- Muller, M. (1982) The Health of Nations : A North-South Investigation Faber & Faber Ltd., London.
- Muller, R. (1973) The Multinational Corporation and the Under-development of the Third World, Wilber, C.K. (ed). The Political Economy of Development and Under-development", Random House, London.
- \_\_\_\_\_ (1979) Poverty is the Product, G. Modelski. (ed), Transnational Corporations and World order; Readings in International Political Economy, Freeman and Company, San Francisco.
- Mursi, F. (1982) "The Social Side of the Economic Issue", Al-Ahram Aliktisadi, No. 684, 22 February.
- Mytelka, L.K. (1978) "Technological Development in the Andean Group", International Organisation, Vol. 32, No.1, Winter.
- Najafbagy. (1984) Special Research About Egypt, unpublished Research, Geneva. Institute for Research and Information on Multinationals (IRM).



- Naur, A. (1980) "Transfer of Technology : A Structural Analysis", Journal of Peace Research, Vol. XVII, No.3.
- Nayyar, D. (1978) "Transnational Corporations and Manufactured Exports from Poor Countries", Economic Journal, Vol. 88, March.
- Negandhi, A.R. (1982) Multinational Corporations : Issues, Context, and Strategies in: Negandhi, A.R. (ed) 1980, 1982. Functioning of the MNC : A global comparative study, Pergamon, New York.
- Nelson, R.R. (1974-1975) "Less Developed Countries, Technology Transfer and Adaption; The Role of the Indigenous Science Community", Economic Development & Cultural Change, Vol. 23.
- New Farmer, R. (1979) "Transnational Corporation Takeovers in Brazil : The uneven Distribution of benefits in the market for firms", World Development, Vol. 7, No.1, January.
- \_\_\_\_\_ (1980) Transnational Conglomerates and the Economies of Dependent Development : A case study of the International electrical oligopoly and Brazil's electrical industry, AI JAI press, Greenwich.
- Newfarmer, R. (1984) Multinationals and Market place in the 1960s, Welber, K. (ed).
- Nixson, F. (1982) Import-substitution Industrialisation, Fransman, M. Industry & Accumulation in Africa, Heinemann, London.
- Noaman, M. (1981) "Reservations from the Actual Experience of Foreign Investment in Egypt", Al-Ahram Aliktisadi, No.661, September 14.
- Nurkse, M. (1972) Causes and Effects of Capital Movements, Dunning, J.H. (ed).
- Nye, Jr, J. (1974-1975) "MNCs in World Politics", Foreign Affairs, Vol. 53.
- Obadan, M.I. (1978) "The Determinants of Direct Investment Income Remittance from A Developing Country : Nigeria", Economia Internazionale, 31.
- O'Brien, P. (1966) The Revolution of Egypt's Economic System, Oxford University Press, London.
- \_\_\_\_\_ (1972) "On Commodity Concentration of Exports in Developing Countries", Economia Internazionale, Vol. XXV.
- \_\_\_\_\_ (1974) "Developing Countries and the Patent System : An Economic Appraisal", World Development, September.
- \_\_\_\_\_ (1976) "Trade Marks in Developing Countries", The Journal of Modern African Studies, Vol. 14, No.2.
- Odle, M.A. (1979) "Technology Leasing as the Latest Imperialist Phase : A case study of Gayana & Trinidad", Social & Economic Studies, Vol.28, No.1, March.
- OECD (1968) Technological Gaps, Their Nature, Causes, Effects, OECD Observer, No. 33, April.

- \_\_\_\_\_ (1974) Choice and Adaptation of Technology in Developing Countries. Paris.
- Ohera, Y. (1981) "Japanese Regulations of Technology Imports", Journal of World Trade Law, Vol. 15, No.1, Jan-February.
- Olmer, L.H. (1983) "High Technology Trade : A United States of America" Economic Impact No.41, A Quarterly Review of World Economics.
- Oloko, O. (1964) "The Impact of Advanced Technology on The Social Structure", The Nigerian Journal of Economic & Social Studies, Vol. 6, No. 1, March.
- Owen, R. & Sutcliffe, B. (1981) Studies in the Theory of Imperialism. Longman, Essex.
- Ozawa, T. (1973) "Technology Imports and Direct Foreign Investment in Japan". Journal of World Trade Law, Vol.7, No.6, November-December.
- Pack, H. (1976) "The Substitution of Labour for Capital in Kenya Manufacturing". Economic Journal, Vol.86, No.341, March.
- Pack, H. (1981) "Fostering Capital Goods Sector in Less Developed Countries". World Development, Vol.9, No.3.
- Parker, J. E. S. (1973) Diffusion and the Multinational Enterprise. Ph. D. Thesis, Exeter University.
- Parry, T. G. (1975) International Location of Production: Studies in Trade and Non-Trade Servicing of International Markets by MNE. Ph. D. Thesis, London School of Economics, London.
- \_\_\_\_\_ (1975) "Technology and the Size of the MNC's Subsidiary". Journal of Industrial Economics.
- Patel, I. C. (1971) The Strategy of Indian Planning: Aspects of Indian Economic Development. Allen & Unwin, London.
- Patel, S. J. (1972) "Transfer of Technology and Developing Countries". Foreign Trade Review, Indian Institute of Foreign Trade. January-March.
- \_\_\_\_\_ (1974) "The Patent System and the Third World". World Development, Vol.2, No.9, September.
- \_\_\_\_\_ (1974) "The Technological Dependence of Developing Countries". The Journal of Modern African Studies, 12.
- Patel, M. (1984) "The Technological Dependence and Balance of Payments Effects in India During 1960-1970". The Indian Economic Journal, Vol.31, No.3, January-March.
- Pavitt, K. (1971) The MNC's and the Transfer of Technology. Dunning, J. (ed.).

- Pavitt, K. & M. Worboys, (1977) Science, Technology and the Modern Industrial State. Butterworths, London.
- Penrose, E. T. (1956) "Foreign Investment and the Growth of the Firm". Economic Journal, 66, June.
- \_\_\_\_\_ (1972) The Theory of the Growth of the Firm. Basil Blackwell, Oxford.
- \_\_\_\_\_ (1973) "International Patenting and the Less Developed Countries". The Economic Journal, Vol.LXXXIII, September.
- Pesmazoglou, V. (1977) The Economic Theory of Technology Transfer and Technological Dependence. M. Sc., University of Bradford.
- Phelps, D. M. (1936) Migration of Industry of Latin America. McGraw Hill, New York.
- Pickett, I., D. J. Forsyth, & N. S. McBain, N. S. (1974) "The Choice of Technology, Economic Efficiency and Employment in Developing Countries". World Development, Vol.2, No.3, March.
- Porters, A. (1976) "On the Sociology of National Development: Theories and Issues". American Journal of Sociology, Vol.82, No.1.
- Poxanski, K. Z. (1984) "Technology Transfer: West-South Perspective: Review Article". World Politics, Vol.XXXII, No.1, October.
- Radhu, G. M. (1973) "Some Aspects of Direct Foreign Private Investment". Pakistan Development Review, Vol.XII, No.1, Spring.
- \_\_\_\_\_ (1973) "Transfer of Technical Know-How Through MNC's". Pakistan Development Review, Vol.XII, No.4, Winter.
- Radice, H. (1975) International Firms and Modern Imperialism. Penguin Books Ltd., England.
- Radwan, S. M. (1973) Capital Formation in Egyptian Industry and Agriculture. Ph. D. Thesis, London University.
- Rafii, F. (1978) Joint-Venture and Transfer of Technology to Iran: The Impact of Foreign Control. Ph. D., Disertation. Harvard University.
- Rahman, A. (1981) "The Interaction Between Science, Technology and Society: Historical and Comparative Perspectives". International Social Science Journal, Vo..XXXIII, No.3
- Ranis, G. (1984) Determinants and Consequences of Indigenous Technological Activity in; Fransman & King (ed.).
- Ranney, S. (1980) The Open Door Policy and Industrialisation in Egypt: A Preliminary Investigation. A Discussion Paper No.87, Centre for Research on Economic Development. The University of Michigan, August.
- Reiffers, J. (1982) Transnational Corporations and Endogenous Development. UNESCO. Paris.

- Reuber, G. (1973) Private Foreign Investment in Development. Oxford University Press.
- Rhodes, I. B. (1969) "The American Challenge Challenged". Harvard Business Review. September-October.
- Robinson, H. J. (1961) The Motivation and Flow of Private Foreign Investment. Investment Series No.4, California; Stanford Research Institute.
- \_\_\_\_\_ & Tharakan, (1979) The International Division of Labour and Multinational Companies. Saxon House, Teakfield Ltd., England.
- Rosenberg, J. B. (1976) "Research and Market Share: A Reappraisal of the Schumpeter Hypotheses". The Journal of Industrial Economics, Vol.XXV, No.2, December.
- Rosenberg, N. (1977) "American Technology: Imported or Indigenous?" American Economic Review, Vol.67, No.1, February.
- \_\_\_\_\_ (1977) Perspectives on Technology. Cambridge University Press.
- Rothgeb, JR. J. M. (1984) "Investment Penetration in Manufacturing and Extraction and External Public Debt in Third World States". World Development, Vol.12, No.11, 12, November-December.
- Rowthorn, B. (1975) Imperialism in the 1970's: Unity or Rivalry? Radice, H. (ed.).
- Rothwell, R. & Zegveld, W. (1982) Innovation and the Small and Medium Sized Firms. Frances Printer, London.
- Rugman, A. M. (1980) "Internationalization as a General Theory of Foreign Direct Investment: A Reappraisal of the Literature". Weltwirtschaftliches Archiv. Band. 116, Heft. 2.
- Sabet, A. A. (1978) United Arab Republic Commitments to Science and Technology. Zahlan, A. B. (ed.). Technology Change and Transfer in the Arab World. Pergamon Press Ltd., Oxford.
- Sabolo, Y., Trajtenberg, & J. P. Sajhan, (1976) The Impact of TNCs on Employment in Developing Countries, Preliminary Results. W E P 2-28 I W P 6, I & O, Geneva, January.
- Sadar, Z. (1982) Science and Technology in the Middle East. Longman, London.
- Sagafi-Nejad, T. (1982) Technology Exports from Developing Countries: The Case of Egypt. UNIDO IS 362, December.
- Sagasti, F. R. (1973) Underdevelopment, Science and Technology: The Point of View of the Underdeveloped Countries. A Discussion Paper. Science Studies, Vol.1.
- \_\_\_\_\_ (1979) National Science and Technology Policies for Development: A Comparative Analysis". Ramesh, J. & Weiss, Jr. C. (ed.).

- (1980) Science and Technology for Development: A Review of Schools of Thought on Science, Technology for Development and Technical Change. STPI Module I. STD in INDRC, Ottawa.
- Saiacuse, J. W. (1982) Arab Capital and Trilateral Ventures in the Middle East: Is Three a Crowd. Keer & Yassin (ed.).
- Sampson, A. (1973) The Sovereign State. Hodder & Stoughton, London.
- Sauvant, K. P. & Lavipour, F. G. (1976) Controlling MNE: Problems, Strategies and Counter-Strategies. Wilton House Publication Ltd.
- Scaperlands, A. E. & Mauer, L. I. (1969) "The Determinants of U.S. Investment in the EEC". American Economic Review, Vol.59.
- Schiavo-Campo, S. & H. W. Singer, (1970) Perspectives of Economic Development. Houghton Mifflin Company, Boston.
- Schalensee, R. (1982) "Product Differentiation Advantages of Pioneering Brands". American Economic Review, June.
- Seran-Sehriber, I. I. (1968) The American Challenge. Hamish Hamilton, London.
- Serveriens, J. T. (1979-1980) "Foreign Investment in Egypt: What are the Dividends of Peace?" Middle East Review, Winter.
- Shfik, R. (1983) "Egyptian Industrial Development and the Role of State in it". A Paper Presented to the Eighth Annual Conference of the Egyptians Economists, 12-14 May, Cairo.
- Sherif, M. (1975) Ifitah Iktisadi, Economic Opening. Labour Books, No.137, July.
- Siggel, E. (1984) "On the Nature of Technology Shelves Facing Less Developing Countries: Some Hypothesis and Case Studies". The Journal of Developing Areas, Vol.18, January.
- Singer, H. W. (1950) "The Distribution of the Gains Between Investing and Borrowing Countries". American Economic Review, Papers and Proceedings, Vol.40, No.2, May.
- (1975) The Strategy of International Development. The Macmillan Press, London.
- (1977) Technology for Basic Needs. ILO, Geneva.
- & Ansari, J. (1978) Rich and Poor Countries. Allen & Unwin Ltd., London.
- Sinha, R. H. (1975) "Multinational Corporations Impact on Indian Economy". Economic Affairs, (20), 4, April.
- Solo, R. (1966) "The Capacity to Assimilate an Advanced Technology". American Economic Review, Vol.LVI, No.2, May.

- Soloman, R. F. & Forsyth, D. J. C. (1977) "Substitution of Labour for Capital in the Foreign Sector: Some Future Evidence". The Economic Journal, 87, June.
- Soltan, F. (1984) The Economics of Investment in Egypt and the Impact of the International Economic Crises on it. A Paper Presented to the Nineth Conference of the Egyptian Economists, November, Cairo.
- Spencer, D. (1970) Technology Gap in Perspective. The Macmillan Press, London.
- Spielman, J. D. B. (1983) "Redefining the Transfer of Technology Process". Training and Developing Journal, Vol.37, No.10.
- Steel, H. (1964) "Patent Restrictions and Price Competition in the Ethical Drugs Industry". Journal of Industrial Economics, Vol.XXI, No.2, March.
- Stephens, J. W. & Hayek, P. F. (1974) Investment in Egypt: Law No.43, and its Implications for the Transfer of Technology. Fund for Multinational Management Education, November.
- Stevens, G. V. (1974) The Multinational Enterprises and the Determinants of Investment. Dunning, J. (ed.).
- Stewart, F. (1974) "Technology and Employment in Less Developed Countries". World Development, Vol.2, No.3, March.
- \_\_\_\_\_ (1978) Technology and Underdevelopment. The Macmillan Press Ltd., London.
- \_\_\_\_\_ (1984) Facilities Indigenous Technical Change in Third World Countries. Fransman & King (ed.).
- \_\_\_\_\_ (1985) "The Fragile Foundations of the Neo-Classical Approach to Development: Commentary". The Journal of Development Studies, Vol.21, No.2, January.
- Streeten, P. (1972) New Approaches to Private Investment in Less Developed Countries. Dunning, J. (ed.).
- \_\_\_\_\_ (1973) "The Multinational Enterprise and the Theory of Development Policy". World Development, Vol.1, No.10, October.
- \_\_\_\_\_ (1976) "Bargaining with Multinationals". World Development, Vol.3, No.3, March.
- \_\_\_\_\_ (1981) Development Perspectives. The Macmillan Press Ltd., London.
- Sunkel, O. (1969) "National Development Policy and External Dependence in Latin America". Journal of Development Studies, October.
- \_\_\_\_\_ (1971-1972) "Big Business and Dependencia: A Latin American View". Foreign Affairs, 50.
- \_\_\_\_\_ (1973) "Transnational Capitalism and National Disintegration in Latin America". Social and Economic Studies, Vol.22, No.1, March.

- Sunkel, O. & Fuenzalida, E. E. (1979) Transnational Capitalism and its National Consequences in; Millamitt, J. National Capitalism and National Development. The Harvester Press Ltd., Sussex.
- Sutcliffe, R. B. (1971) Industry and Underdevelopment. Addison-Wesley, London.
- Sutcliffe, R. B. (1981) Imperialism and Industrialisation in the Third World. Owen & Sutcliffe (ed.).
- Sutton, G. T. (1980) Economies and Corporate Strategy. Cambridge University Press.
- Svejnar, J. & S. C. Smith, (1984) "The Economics of Joint-Ventures in Less Developed Countries". The Quarterly Journal of Economics, February.
- Swannack-Nunn, S. (1978) "United Business and the Transfer of Intermediate Technology: Agricultureal Equipment and the Developing Nations". Journal of International Business Studies, Vol.9, No.3, Winter.
- Swift, A. & O. Beily, (1983) "The Role of the State in Organising Transfer of Technology in Mixed Economy". A Paper Presented to the Eighth Conference of the Egyptians Economists, Cairo.
- Taylor, C. T. & Silberston, (1973) The Economic Impact of the Patent System. Cambridge University Press, London.
- Taylor, L. (1978) "The Political Economy of Egypt: An Opening to What?" Middle East Review, Vol.10, No.4, Summer.
- Teece, D. J. (1977) "Technology Transfer by Multinational Firms: The Resource Cost of Transferring Technological Know-How". The Economic Journal, 87, June.
- \_\_\_\_\_ (1985) "Multinational Enterprise, Internal Governance and Industrial Organisation". American Economic Association: Papers and Proceedings, Vol.75, No.2, May.
- Tella, G. (1973) "The Manipulation of Demand: The Problems of Trademarks". World Development, Vol.1, No.11, November.
- Todaro, M. P. (1970) "Some Thoughts on the Transfer of Technology from Developed to Less Developed Nations". American Economic Review, Vol.2, No.1, June.
- Torr, J. (1974-1975) "Foreign Investment and Export Dependency". Economic Development and Cultural Change, Vol.23.
- Tugendhat, G. (1971) The Multinationals. Penguin Books Ltd., England.
- Tuma, E. H. (1983) "Science, Technology and Economic Development in the Middle East". L'Egypte Contemporaine, No.391-392, LXXIV eme Annee, Janvier-April, Le Caire.
- Turner, T. (1974) A Comparative Study of Technology Transfer to the Nigerian Refining Industry. Unpublished Paper, November.

- Ulmer, M. J. (1980) "Multinational Corporations and Third World Capitalism". Journal of Economic Issues, Vol.XIV, No.2, June.
- U.N. (1974) The Acquisition of Technology from Multinational Corporations by Developing Countries. Department of Economic and Social Affairs, New York, ST/ESA/12.
- \_\_\_\_\_ (1974) Summary and Hearings before the Group of Eminent Persons to Study the Impact of Multinationals on Development and on International Relations. Department of Economic and Social Affairs, New York, ST/ESA/15.
- UNCTAD (1972) Guidelines for the Study of the Transfer of Technology to Developing Countries. A Study by UNCTAD Secretariat, TD/B/AC.11/9.
- \_\_\_\_\_ (1975) The Role of the Patent System in the Transfer of Technology to Developing Countries. DOC TD/B/AC.11/19/REV.1.
- \_\_\_\_\_ (1975) Major Issues Arising from the Transfer of Technology to Developing Countries. TD/B/AC.11/10/Rev.2, July.
- \_\_\_\_\_ (1976) Technological Dependence: Its Nature, Consequence and Policy Implications. UNCTAD Secretariat, DOC.TD/190.
- \_\_\_\_\_ (1978) Transfer of Technology: Its Implications for Development and Environment. TD/B/C.6/22.
- \_\_\_\_\_ (1980) Transfer and Development of Technology in Egypt. Report by an UNCTAD Mission. DOC.TT/AS/7.
- \_\_\_\_\_ (1983) A Strategy for the Technological Transformation of Developing Countries. Policy Paper. TD/277, Belgrade, June.
- UNCTC, (1982) Technology Transfer Through Transnational Corporations in Capital Goods Manufacture in Selected Developing Countries. Three Volumes, New York.
- UNESCO, (1983) Statistical Yearbook. Paris.
- UNIDO, (1969) Industrial Research. New York.
- \_\_\_\_\_ (1969) Textile Industry. New York.
- \_\_\_\_\_ (1969) Food Processing Industry. New York.
- \_\_\_\_\_ (1969) Engineering Industry. New York.
- \_\_\_\_\_ (1969) Chemical Industry. New York.
- \_\_\_\_\_ (1981) Technological Self-Reliance of the Developing Countries: Towards Operational Strategies. Development and Transfer of Technology Series. No.15, Vienna, July.
- \_\_\_\_\_ (1981) Science and Technology in Less Developed Countries". Vienna.
- Vaitsos, C. V. (1970) Transfer of Industrial Technology to Developing Countries Through Private Enterprises. Sussex University.



- (1970) Transfer of Resources and Preservation of Monopoly Rents. Economic Development Report, No.168. Harvard University, June.
- (1972) "Patents Revisited: Their Function in Developing Countries". The Journal of Development Studies, Vol.3, No.1, October.
- (1973) Bargaining and Distribution of Returns in the Purchase of Technology by Developing Countries. Bernstein, H. (ed.). Underdevelopment Development. Penguin Books Ltd., England.
- Vaitos, C. V. (1973) "Strategic Choices in the Commercialisation of Technology: The Point of View of Developing Countries". International Social Sciences Journal, Vol.XXV, No.3.
- (1974) Inter-Country Income Distribution and Transnational Corporations. Dunning, J. (ed.).
- (1975) The Process of Commercialisation of Technology in the Andean Pact. Radice (ed.).
- (1976) Power, Knowledge and Development Policy: Relations Between TNEs and Developing Countries. Helleiner, G. K. (ed.). A World Divided. Cambridge University Press.
- (1979) Government Policies for Bargaining with TNE in the Acquisition of Technology, Ramesh & Charles Weiss, Jr (ed).
- Van-Heemst, J. J. P. (1984) "Sub-Contracting Small Scale Enterprises in Developing Countries: A note". The Journal of Industrial Economics, Vol.XXXII, No.3, March.
- Vayrynen, R. (1978) "International Patenting as a Means of Technological Dominance". International Social Science Journal, Vol.XXX, No.2.
- Vernon, R. (1966) "International Investment and International Trade in the Product Cycle". Quarterly Journal of Economics, 80.
- (1971) Sovereignty at Bay. Longman Ltd., London.
- (1970-1971) "The MNE: Power Versus Sovereignty". Foreign Affairs, 49.
- (1974) "Competition Policy Towards MNCs". American Economic Review, Vol.LXIV, No.2, May.
- (1977) Storm Over the Multinationals: The Real Issues. The Macmillan Press Ltd., London.
- (1979) "The Product Cycle Hypothesis in a New International Environment". Oxford Bulletin of Economics and Statistics, Vol.41.
- (1981) "Sovereignty at Bay: Ten Years After". International Organisation, Vol.35 (3), Summer.

- Wad, A. (1984) "Science, Technology and Industrialisation in Africa". Third World Quarterly, 6 (2), April.
- Wahba, W. G. (1982) Acquisition of Foreign Technology in Egypt: A New Approach. UNIDO, ID/WG .388/3, November 22.
- Warren, B. (1980) Imperialism Pioner of Capitalism, NLB, London.
- Watanabe, S. (1971) "Subcontracting, Industrialisation and Employment Creation". International Labour Review.
- \_\_\_\_\_ (1972) "International Subcontracting, Employment Skill Promotion". International Labour Review, Vol.105, No.5, May.
- \_\_\_\_\_ (1974) "Reflections on Current Policies for Promoting Small Enterprises and Subcontracting". International Labour Review, Vol.110, No.4.
- Waterbury, J. (1983) The Egypt of Nasser and Sadat: The Political Economy of Two Regimes. Princeton University Press, New Jersey.
- Watson, D. S. & Holman, M. A. (1970) "The Concentration of Patent Ownership in Corporations". The Journal of Industrial Economics, Vol.XVIII, No.2, April.
- West, P. J. (1978) The Tyre Multinationals: A Study of Foreign Investment and Technology Transfer in Latin America. D. Phil. Sussex University.
- Westphal, L. E., Y. W. Rhee & Co. Pursell, (1981) Korean Industrial Competence: Where it Came From. World Bank Staff Working Paper, No.269. July.
- \_\_\_\_\_ (1984) Sources of Technological Capability in South-Korean. Fransman & King (ed.).
- Whichard, O. G. (1982) "United States Direct Investment Abroad in 1981". Survey of Current Business, Vol.62, No.8, August.
- Wionczek, M. Notes on Technology Transfer through Multinational Enterprises in Latin America. Development and Change, 7 (1976), 135 - 155.
- Wolf, B. M. (1977) "Industrial Diversification and Internationalisation: Some Emperical Evidence". The Journal of Industrial Economics, Vol.XXVI, No.2, December.
- Wolf, R. D. (1970) "Economics of Imperialism: Modern Imperialism: The View from the Metropolis". American Economic Review, No.60.
- Wright, R. & Russel, C. (1975) "Joint-Ventures in Developing Countries: Realities and Responses". Columbia Journal of World Business, Vol. X, No.2, Summer.
- Yamazwa, I & A. Hirata, (1978) "Industrialisation and External Relation: Comparative Analysis of Japan's Historical Experience and Contemporary Developing Countries Performance". Hitotsubashi Journal of Economics, Vol.18, No.2, February.

Young, S. & S. Hood, (1979) The Economics of Multinational Enterprise. Longman Ltd., London.

Zahlan, A. B. (1978) Technology Change and Transfer in the Arab World. Pergamon, Oxford.

Zaki, R. (1978) "The Political Economy of Egypt's External Debts". A Paper Presented to the Nineth Conference of the Egyptian Economists, November, Cairo.

Zvorikine, (1963) Ideas of Technology: Technology and the Law of its Development. Stover, C. F. (ed.). The Technological Order. Wayne State University Press Detroit.

## National and International News Papers and Magazines.

- Akhbar Alyoum: January 16, 1982: 3
- Al-Ahali: November 14, 1984: 8
- Al-Ahram: October 10, No.32445, 1975
- " June 30, No.598, 1980
- Al-Ahram Alikhtisadi, June 16, No.596, 1980
- Al-Ahram Alikhtisadi, August, No.575, 1979
- Al-Ahram Alikhtisadi, November 9, No.669, 1981
- Al-Ahram Alikhtisadi, May 14, No.800, 1984
- Al-Ahram Alikhtisadi, May 28, No.802, 1984
- Al-Ahram Alikhtisadi, June 3, No.855, 1985
- Al-Ahram Alikhtisadi, February, 24 November, No.893, 1986
- Al-Ahrar, November 12, 1984
- Business Week, July 14, 1975: 69
- The Economist, February 16, 1974: 88
- The International Herald Tribune, September 6, No.31, 895, 1985
- Lloyds Bank Group: Economic Report: EGYPT, 1982

## EGYPT:

### National Official Publications:

- Central Agency for Public Mobilization and Statistics (1973)  
Population and Development: A Study on the Population Increase and its Challenge to Development in EGYPT, Cairo.
- Central Agency for Public Mobilization and Statistics (1970)  
Economic Indicators: 1961-1969, July, Cairo.
- The General Agency for Investment and Free Zones (1982)  
The Official Guide to Investment in EGYPT, Cairo.
- The General Agency for Investment and Free Zones (1977)  
Law No.43 of 1974, amended by Law No.32 of 1977. Cairo.
- Ministry of Industry (1982)  
The Industrial Programme of the Ministry in Economic and Social Development Plan 1982/83 - 1986/87, Cairo.

- Ministry of Planning (1968)  
Following-up and Appraisal of Economic Growth in the U.A.R. (EGYPT) for the Year 1966/67. August, Cairo.
- Ministry of Planning (1966)  
Follow-up and Appraisal of the First Five Year Plan 1960/61 - 1964/65. February, Cairo.
- Ministry of Planning (1982)  
The Detailed Frame of 1982-1987 Plan, Cairo.