THE IMPACT OF FOREIGN DIRECT INVESTMENT
ON TURKISH MANUFACTURING

E. Esra Karadeniz

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**Department of Economics
University College
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ABSTRACT

In the course of the 1980s, Turkey came to recognize the need to change its attitude towards foreign investment, assigning a significant role to direct foreign investment. Hence, after the 1980s, there was a significant increase in the number of foreign firms operating in Turkey and the inflow of foreign capital to Turkey. Although the importance of foreign direct investment in the Turkish economy has been increasing, a variety of questions are far from being resolved. The important obstacle is that the available data do not let us analyze the extent and performance of foreign firms. In this study a considerable effort was made in collecting new data from foreign firms operating in the Turkish manufacturing industry.

The main purpose of this study is to analyze and evaluate the economic effects of direct foreign investment on Turkish manufacturing. At the centre of our analysis has been the role of foreign firms in industrial concentration, technological choice and trade behaviour.

In the first chapter we outline the main issues to be analyzed in this study and explain the method of collecting and processing data from foreign firms operating in the Turkish manufacturing industry. The second chapter discusses the theories and empirical evidence concerning the

determinants of foreign direct investment. We also analyse the industrial distribution of direct foreign investment in Turkish manufacturing. In the third chapter we undertake an overview to the historical background of foreign firms and the legislation covering foreign investment in Turkey. At the beginning of the following three main chapters we analyze the performance of foreign firms in terms of those basic issues in the literature, according to the market imperfection approach, and later on we investigate the performance of foreign firms in Turkish manufacturing using our own data, supplemented by public sources of information.

To my father,

for his never-failing support

ACKNOWLEDGEMENTS

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ASEAN	Association of Southeast Asian Nations
DC	Developing Countries
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNP	Gross National Product
MNC	Multinational Corporation
LDC	Less Developed Countries
ILO	International Labour Office
OECD	Organization for Economic Cooperation
OLI	Ownership/Location/Internalization
RCA	Revealed Comparative Advantages
R&D	Research and Development
SEE	State Economic Enterprises
SIS	Statistical Year Book of Turkey
SME	Small-and medium-size Enterprises and Development
SPO	State Planning Organization
TNC	Transnational Corporation
UN	United Nation
UNCTAD	United Nations Centre for Trade and Development
UNCTC	United Nations Centre on Transnational Corporations

CHAPTER 1

INTRODUCTION

1.1. Objective of the Study

Over the past decade there has been a significant increase in the number of foreign firms operating in Turkey and the inflow of foreign capital to Turkey. In the 1954-1979 period, only $97.1 million of foreign capital came to Turkey. By the end of 1979, there were only 91 foreign firms operating in Turkey. The number of foreign firms and the inflow of foreign capital increased enormously through the 1980s. (It is interesting to compare this figure with the post-1980 picture.) In the 1980-1989 period, the cumulative total realized foreign capital was estimated as $2136.0 million. By the end of 1989, there were 1545 foreign firms operating in Turkey.

Over the past decade, the importance of foreign direct investment in the Turkish economy has been constantly disputed. The views range from a very optimistic line of thought, which strongly contends that the contribution of direct foreign investment is positive; to an extremely pessimistic view, which sees only the adverse effect of investment.

Unfortunately, there are hardly any conclusive answers,

as different interest groups bring different economic and noneconomic views to the field. Although some research has been done in this area for Turkey, there have been very few systematic studies. A variety of questions concerning direct foreign investment are still far from being resolved. The important obstacle is that the available data do not let us analyze the extent and performance of foreign firms. Without any systematic analytical evidence, to discuss the effects of foreign firms might be misleading or inappropriate and may effect adversely the Turkish economy. Therefore, a comprehensive study that includes data is needed to explain the issues and provide a basis for sound policies.

The main purpose of this study is to analyze and evaluate the economic effects of direct foreign investment on Turkish manufacturing industry. This will be assessed by concentrating on the three major issues: market structure, technology and trade. The analysis is based on a survey with questionnaires of 182 foreign firms in 1987 and 216 foreign firms in 1988 operating in Turkey.

In this chapter, we introduce the main issues which are going to be analyzed in this study and explain the method of collecting and processing data from foreign firms operating in the Turkish manufacturing industry. In the second chapter, we will discuss the theories and empirical evidence concerning the determinants of foreign direct investment in order to get a better understanding of its. The second objective of this

chapter is to use this review to analyse the industrial distribution of direct foreign investment in Turkish manufacturing industry. In the third chapter, we undertake an overview of the historical background of foreign firms and the legislation covering foreign investment in Turkey. In the following chapters, the effects of foreign firms on market structure (chapter 4), on the choice of technology (chapter 5), and on trade (chapter 6), will be analyzed. In the last chapter, a summary and main conclusions will be presented.

1.2. Major Areas in the Study

This study intends to evaluate the market imperfection approach, through the case study of the Turkish manufacturing industry. The crucial method that will be used is the comparison of proposed alternative hypotheses regarding direct foreign investment. The analysis is carried out over three major areas. These are

> (i) the market structure and Multinational Companies (MNCs)
>
> (ii) the technology choice of MNCs
>
> (iii) the trade strategy (exports and imports) of MNCs.

Every chapter includes theoretical background, a literature survey and empirical study of the related issues.

The first main issue is how investment by foreign firms

influences the existing Turkish manufacturing industry structure. In a study of foreign investment in Turkey, one can hardly ignore the effect of foreign firms on the domestic industrial structure. On the one hand, since 1980 the Turkish economy has entered a liberalization process with the prime objective of changing the roles of different economic agents. In this respect the domestic industrial structure, which was characterized by high concentration due to the dominance of a limited number of public sector producers in each industry, has been expected to change in the direction of more competition, and to be replaced by foreign and domestic firms that undertake industrial activities. In this sense, the market imperfection approach provides a testable hypothesis.

The market imperfection approach assumes that foreign firms face certain disadvantages over local competitors. For foreign firms to be able to effectively compete in foreign markets they ought to have some specific advantages that can only arise in cases of market imperfections either in the good or factor markets, or in both. On the one hand, foreign firms might have oligopolistic or monopolistic control over their products through the use of the patent system, trade marks, and product differentiation. On the other hand, foreign firms might have some ownership advantages (e.g. technology, cheap sources of capital, and managerial skill) which enable them to maintain their oligopolistic position in foreign markets. Two distinct lines of debate identified within the market

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imperfection approach, concern the effects of foreign investment by MNCs on concentration in host countries.

The first view argues that MNC entry into an industry means that one additional firm in the market indicates decreasing concentration and results in a more competitive market structure. The other view is that, MNCs are responsible for an increase in industrial concentration, barriers to entry in the host country market, and the elimination of competition, limiting any potential benefit that might be expected from the foreign firm's operation.

The aim of this chapter is to empirically analyze the influence of foreign firms on concentration and the process of competition in the Turkish manufacturing industry. Hence, it is concerned with industrial concentration and the foreign investment model which takes into account not only the effects of foreign ownership on industrial structure.

The second major issue in this study is which types of technology have been transferred under the aegis of foreign firms to developing countries and, and whether foreign firms adapt the technologies they transfer in Turkish manufacturing.

In general, the market imperfection approach argues that MNCs use relatively capital intensive production technologies in less developed countries. The capital-intensive technology is one of the main source of the specific advantages of MNCs which make them unique. It is the possession of advanced technology, combined in a profitable package with

organisational, financial and marketing factors, which can be applied elsewhere at little extra cost (Lall, 1980, p.48). As Lall argued that "Minor on-the-spot adaptation may be made to suit local conditions, to meet official requirements, or to save foreign exchange, but by their nature TNCs do not specialise in the simple, labour-intensive products which can be adapted to LDC factor endowments" (ibid).

Secondly, factors which influence the technology choices made by MNCs will be examined. These factors might be internal to MNCs, such as the quality of the product and the relationship between the parent company and foreign subsidiaries, or factors external to MNCs, e.g., country location-specific advantages such as labour costs, skilled labour and capital availability.

In the last section, the effect of foreign firms and other industrial factors affecting the capital intensity of Turkish manufacturing will analyzed.

The third major issue of this study is about the impact of multinational firms on Turkish manufacturing, the export and import performance of MNCs, and a comparison with domestic firms.

Recent years have seen a rapid growth in manufacturing exports from developing countries which has led scholars working in this area to become increasingly aware of the role of multinational firms in world trade.

Many writers say that foreign firms in developing

countries have played a vital role in the rapid growth of their manufactured exports. Because foreign firms have ownership-specific advantages, such as having marketing channels in place, having better knowledge of foreign markets, producing products with internationally well known brand names and trade marks. Therefore, subsidiaries of multinational groups have comparative advantages over domestic firms, and they enjoy the benefits of monopolistic advantages come over the marketing barriers which are usually faced by many domestic firms in developing countries.

Critics emphasize that the import content of foreign firm' exports should be analyzed in order to see the importance of the growth of exports by multinational corporations. It has been stated that these exports have a high import content, which would offset the export earnings and foreign exchange generated by exports.

Critics also argue that since multinationals are located in the oligopolistic industries, their operations in developing countries may constrain the benefits of comparative advantages. Because an increasing part of trade is not determined by the comparative advantage of countries, but is largely based on the product or process specialization within the companies.

In 1980, Turkey introduced a new economic program aimed at shifting Turkey away from inward-oriented industrial development towards export-oriented industrialization policy.

Since then the value of exports has grown rapidly. Hence, the aim of this chapter is to examine these issues applied to the Turkish manufacturing industry.

Firstly, the importance of foreign firms in Turkish manufacturing and their participation in the export of manufactures will be analyzed. Secondly, the export propensities of foreign subsidiaries and domestic firms will be compared. Thirdly, how foreign firms have affected Turkey's comparative advantages in world trade will be analyzed. Fourthly, import propensity of foreign firms will be examined and a comparison with domestic firms will be made. Finally, we will examine the factors which determine the export performance of foreign firms in the manufacturing sector.

We hope that our study will provide important economic information to assist in answering questions concerning direct foreign investment in the Turkish manufacturing industry.

1.3. Data Base

The Turkish government's foreign investment department[1] does not publish comprehensive and systematic information on foreign firms operating in Turkey. From the available data,

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[1] The main function of the Foreign Investment Department is:
   I. to help foreign firms to find out investment opportunities,
  II. to examine investment applications and allow foreign firms to operate in Turkey,
 III. to guide the implementation of foreign investment projects.

some general characteristics of foreign firms (origin of country, capital flows and profit remittance) can be seen in Chapter 2. Therefore, the available data do not let us analyse the extent and performance of foreign firms. Because of the very limited data on foreign firms, in this study a considerable effort was made in collecting new data from foreign firms operating in the Turkish manufacturing industry.

Therefore, the statistical data in this thesis is drawn largely from a questionnaire, and has been supplemented by public sources of information. The first step was to prepare a questionnaire. It covered the general characteristics of foreign firms and the three major topics noted earlier. It is based on the statistical data and a set of questions.

I sent my questionnaire to all the firms operating in the Turkish manufacturing sector in May 1989. Unfortunately, only 25 replied. As a last resort, I explained my project to the Foreign Investment Department. They thought it was a good study, they sent the questionnaire under their name, for which I am grateful. It was mailed for a second time in September 1989 to 326 firms operating in Turkish manufacturing. We required the firms to fill up the statistical part of the questionnaires for 1987 and 1988.

The 182 firms from 1987 and 216 in 1988 which form the heart of this thesis, account for something like 69.2 percent in 1987 and 66.9 percent in 1988, of all foreign firms in the manufacturing industry (see appendix I, Table A.I.1, and

A.I.2). In terms of the value of capital invested, our sample accounted for 81.8 percent and 83.4 percent of the total capital respectively, in 1987 and 1988.

The Table A.I.3 shows new firms' distribution according to sectors. There were 36 new foreign firms in 1987. Out of this, 23 started production in 1987 and 5 started production in 1988. There were 34 new firms in 1988. Out of this, 14 started production.

A foreign firm is defined by the Foreign Investment Department as one in which foreign corporations of individuals from one country have some equity shares. In this study, Table A.I.4 shows the ratio of the equity of firms. 19 firms were wholly-owned foreign firms (e.g., the ratio of equity of foreign firms is 100 percent), 79 firms are majority-owned foreign firms (e.g., the ratio of equity of foreign firm is more than 50 percent), 119 firms are minority-owned firms (e.g., the ratio of equity of foreign firm is less than 50 percent).

As for the age distribution of the firms in this study, about two-thirds of firms were established after 1980, about one-third did so between 1940-1980 (Table A.I.5). As we mentioned in the beginning of introduction, the number of foreign firms increased enormously after 1980. This may show that our sample is a reasonably representative one according to the trend of foreign firms.

To find out which nationality controlled the company in

our sample, we considered the nationality which controlled the largest share as its national identification. For example, if German investors had 45 percent of the share, Switzerland 35 percent, and Turkey the remaining 20 percent, we considered it as a German-controlled firm. In a few cases this rule has been broken. The investors of different nationality owned had an equal level of shares same shares i.e., 50-50. In this case, we chose the company which comes from the more developed country. We assumed that the company could have more initiative to set up the joint venture. The Table A.I.6 shows the distribution of foreign firms according to country of origin. Germany had first place with 54 firms in 1988, followed by Switzerland, the United States, and the United Kingdom. More than 50 percent of foreign firms come from these countries.

It should be noted that just because firms responded to the questionnaire does not mean that they has answered every question. Quite often, a few questions have been left out. Hence, the response rate for each question is given when it is analyzed in the following chapters.

We used three digit Standard Industrial Classification in order to compare our data with the other source of information, mainly Turkey's State Statistical Institutes.

It should also be noted that the data from questionnaires were collected on a confidential basis. It was agreed that the companies participating in the study would not be identified.

The quality of the replies to the questionnaire must be considered at various levels. Every question on every questionnaire has been checked carefully to ensure that there is internal consistency. This involved not only checking the arithmetic but also ensuring that the replies closely related to the questions. Where necessary, the replies were clarified by telephoning the firms.

The questionnaire data were processed and all the computations were performed by using the Dbase-plus 3 package.

CHAPTER 2

THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT

2.1. Introduction

This chapter has two objectives. The first one is to review literature on the determinants of foreign direct investment. The second objective is to use this review to analyse the industrial distribution of direct foreign investment in Turkish manufacturing. Hence our review will be based on theories with special reference to developing countries.

The theories we will discuss are based on some type of market imperfection and suggest that Multinational Companies (MNCs) exist because of market imperfections; without market imperfections, there would be no foreign direct investment as no advantage would accrue from it to the prospective MNC. These theories of foreign direct investment, which may broadly be called the market imperfection approach, explain the determinants of a firms's decision to invest and produce abroad, and the reason why it chooses foreign direct investment rather than alternatives such as exporting or licensing; and in which location foreign direct investment takes place.

2.2. The Industrial Organization Approach

A major contribution to the explanation of foreign direct investment is the industrial organization approach, originally made by Hymer (1976)[1]. He made it clear that foreign direct investment involved the transfer of other resources than capital, e.g technology, marketing skills, management etc,. It was the expected return on these rather than on capital per se which induced firms to invest abroad. He emphasizes that the structure of markets and specific future of the firms are crucial elements to explain foreign direct investment. He adds that the existence of multinational firms rests on market imperfections which help them to increase their market power. This arises as a result of scale economies, knowledge advantages, distribution networks, product diversification, and credit advantages. These are the firm-specific advantages with respect to domestic firms. When a foreign firm sets up a subsidiary abroad, it encounters some disadvantages when competing with domestic firms. These disadvantages arise because of the costs of operating at a distance, and include travel, communication, time loss as well as differences in the institutional and legal frame work, culture, language and so on. Despite these disadvantages, foreign firms do invest abroad. Hymer therefore proposed that they must have some

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[1] Although Hymer's dissertation was completed in 1960, it was not published until 1976.

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firm-specific advantages over existing or potential domestic firms which offset the disadvantages. Hence he explains the process of foreign direct investment as an international expansion of industrial organization (Dunning and Rugman 1985).

Hymer's ideas were refined by Kindleberger (1969) who distinguished four general sources of monopolistic advantages of MNCs. First, there may be imperfect competition in the final goods markets through the introduction of a new or differentiated product; second, imperfections in the factor markets may arise from patented technology, access to financial capital, or special management skills; third, internal or external economies, the latter conferring advantages to MNCs in the production process where vertical integration is economic; and fourth, government limitation on output or entry.

Kindleberger placed the analysis of foreign direct investment more firmly in the structure-conduct-performance paradigm of the industrial organization. MNC was a function of market structure characterized by monopolistic competition between differentiated products rather than as a means involved in oligopolistic/monopoly collusion. Thus unlike Hymer, he stated that market structure determines conduct of firms, not vice versa.

A number of economists, following the Hymer-Kinleberger theory, have tried to identify the ownership advantages of

MNCs. A major contribution was made by Caves, who suggested that the ability to differentiate a product was the major advantage of firms making horizontal investments (Caves 1971, 1974). Further studies: Caves et.al (1979), Saunders (1982), Gupta (1983), and Kumar (1987), supported the idea of the ability of product differentiation as an ownership advantage determined foreign direct investment.

Another characteristic of MNCs is the possession of superior technology over local firms. The most important form of superior production technology is the skills in product innovation (Shepherd et.al 1985), development and differentiation (Caves 1974) and superior production and marketing know-how. The sources of the technological advantage of MNCs over other firms can be distinguished as follows (Lall and Streeten 1977, p.24); first, the very high cost of resarch and development (R&D) required for successful innovation and a very large threshold size of market required before the technology can fruitfully be put into use, means only a very large firm like an MNC can undertake it successfully. Second, even if such costs and thresholds are not the problem, it is still the large firm with its other monopolistic advantages, especially marketing, which make its innovation into commercial use more efficient than a small firm. Third, where continuing R&D need outside financial support, it is the very large firms which are better able to attract government and private finance. Forth, when it comes to the ability to

maintain production secrecy or defend patents internationally, it is MNCs which are large enough to shoulder the heavy burden of expenses, and are most protected by the patent system. Fifth, if the international patent system is not enough, the large firms are in a better position to use restrictive practices, such as pricing conventions, cartels, information swaps and market allocations.

In foreign direct investment (FDI) literature, the intensity of R&D activities is often used as a proxy variable for the intensity of production of technology It has been found that MNCs do undertake a substantial amount of R&D activities (Lall 1980), and they are important innovators (Mansfield 1974). Furturemore, there is a significant correlation between multinational propensity and research intensity (Saunders 1982, Gupta 1983, and Buckley and Casson 1991).

Another ownership advantage explaining foreign production was the size of the firm (Horst 1972, Owen 1982, Lall and Mohammed 1983a, Grubaugh 1987, and Pearce 1989). However, Dunning (1977) mentioned that firm size is not a variable per se, it is the combined measure of the firm's ownership advantages: the availability of tangible assets such as cash resources as well as intangible assets such as superior management skills and production technology.

With regard to skill intensity, it is often claimed that MNCs have the advantage of superior management skills, and

bring this to their foreign investment. This superiority takes one of two forms: generally greater efficiency of operation, or specifically, greater entrepreneurial ability compared with their local competitors. Further research showed that skill intensity was significantly correlated with foreign direct investment (Caves et.al 1979, Buckley and Dunning 1976, Lall 1980, Saunders 1982, Lall and Mohammad 1983a, and Kumar 1987).

The advantage of MNCs concerning capital can be described as a possession of, or access to, a larger and/or cheaper source of capital than their local competitors, because of the financial strength of the parent company. The parent company of some MNCs may have such abundant internal funds that the opportunity cost of using them is low. Also, its established credit rating, size and its worldwide renown may help its foreign subsidiaries to obtain priority or favourable terms in rasing capital locally and abroad. However, the advantage of access to large and/or cheaper financial capital usually serves mainly as a permissive factor in foreign direct investment (Lall and Streeten 1977, p.20). Without other ownership advantages, it is unlikely that mere access to cheap and large financial capital would be a motivation for direct foreign investment.

Another type of advantage which foreign firms possess over their local counterparts, particularly those in developing countries, is that which arises specifically from the multinationality of a firm. The larger the number of

different economic environments in which a firm operates and the greater the differences between them, the better placed it is to take advantage of different factor endowments and market situations (Dunning 1981, p.27). An international involvement provides the opportunity for a MNC to exploit differential imperfections in national or international markets and/or currency areas through transfer-price manipulation; the acquisition and monitoring of information; and the extension of benefits enjoyed by multi-plant national firms at an international level (ibid., p.36). Consequently, the multinationality status reinforces the ownership advantages which foreign firms possess over their local competitors.

Ownership-specific advantages explain why a foreign firm can compete successfully over domestic firms in the host country, such advantages do not explain why this competition might take the form of foreign direct investment rather than other forms such as: exporting, licensing or selling the technical, managerial or marketing skill to the foreign market. The next section will answer this question.

2.3. Internalization versus Externalization

The firms have an alternative between utilising their ownership advantages to exploit the foreign market, or selling or leasing these advantages to domestic firms in that foreign market to exploit. Firms prefer to internalize their

advantages (technology, skill intensity, capital, etc) to produce in the host country in order to externalize the use of these advantages by engaging in portfolio investment and licensing. They do this because they can benefit by internalizing rather than externalizing their ownership advantages.

The essence of internalization is based on imperfection in intermediate product, which prevents the efficient operation of international trade and investment. When markets are perfectly competitive, the transaction between different parties would be at arm's length, and once imperfection occurs, the gains could be possible when controlling and co-ordinating independent activities through internalization (Dunning 1981, p.31).

Buckley and Casson (1991) emphasized imperfections particularly in intermediate-product markets rather than final-product markets. They argue that particularly the marketing, R&D, the training of labour, the building of a management team, the procurement of finance and the management of financial assets, are important activities of the modern business sector apart from the usual production of goods and services. All these activates are related through flows of intermediate products which include not only semi-processed materials but also knowledge and expertise included in patents and human capital. When the market of intermediate goods are imperfect it will be difficult to price these activities

efficiently. Therefore, efficient co-ordination of business activities requires a complete set of markets in the intermediate products. There will be an incentive for the firms to avoid these markets by creating their own internal markets. The internalization of these markets across national boundaries leads to MNCs (Buckley and Casson 1991, p.33).

Buckley and Casson list five main types of market imperfection which give rise to potential benefits from internalization (ibid., Chapter 2);

1 - the avoiding of time lags, because linking different activities through these markets involves significant time lags between initiation and completion,

2 - the ability to exercise price discrimination which is not practical in external markets,

3 - the elimination of uncertainty where a bilateral concentration of market power causes an unstable bargaining situation.

4 - the elimination of buyer uncertainty when buyer and seller are not informed about the value and nature of the product equally,

5 - the minimization of the impact of government intervention via transfer pricing.

Buckley & Casson stressed that a market in an intermediate good will be internalised if the benefits outweigh the costs. They identified four major sources of

costs arising through internalization;

1 -   the resource cost of fragmentation of the market

       which depends on the relation between the optimal

       scales of the activities linked by the market,

2 -   the additional communication costs in an internal

       market compared to the external market,

3 -   the costs of political discrimination against

       foreign-owned firms,

4 -   the administrative costs of the internal market

       which rely on the professionals of the management.

Buckley and Casson concluded that the incentive to
internalise depends on the relationship between four groups of
factors (ibid., p.45);

1 -   Industry-specific factors, such as the nature of the

       product, the structure of the external market and

       economies of scale,

2 -   Region-Specific factors, eg., geographical and

       social distance between regions,

3 -   Nation-Specific factors, being the political and

       fiscal policies between the countries,

4 -   Firms-Specific factors, like the ability of

       organizing an internal market and dealing with

       multi-plant and multi-currency corporate accounting

       problems effectively.

Hence profit-maximising firms will internalise markets up
to the margin where the private benefit is equal to the

private cost. MNCs are created whenever markets are internalized across national boundaries.

So far, it has been shown that the possession of ownership advantages enables MNCs to compete with local competitors in foreign countries, and the net benefits from internalization induces them to choose FDI as the form of international investment because of market imperfection, particularly in the intermediate products market. Nevertheless, in addition to the firms-ownership advantages, location factors (region-specific and nation-specific factors), were accepted to be an integral part of the firms' decision to engage in multinational operations.

2.4. Direct Foreign Investment versus Export

In this section, we will discuss why firms choose to supply foreign markets through direct investment rather than exporting. The major strand of the argument is based on location and international trade theories concerning the factors determining the location of production. The idea behind locational-specific advantages is that the host country should have some locational advantages over the home country of the firm. Thus, it should be more profitable to use ownership advantages in combination with at least some factor inputs located in the host country, otherwise, foreign markets would be served solely by exports (Dunning 1981, p.81).

We classified factors influencing a firm's decision to invest abroad rather than to export into three groups: locational factors, oligopolistic reaction, and the product cycle theory.

2.4.1. Locational Factors

Unlike ownership advantages which are internal to the firms that posses them and can be transferred across countries, locational factors are external to the firms and specific to the country in which they originated.

Cost Consideration

Among the locational factors which may influence foreign direct investment, the difference in wage costs is considered. Relative wage costs are particularly important in sourcing activities[2] and export oriented industries (Lall and Streeten 1977, p.30). The supply of cheap labour is generally expected to be one of developing countries' comparative advantages in international trade which enable firms to gain an advantage in the home and world market. Moreover, when the product becomes standardized, the firm looks for the place where the supply of cheap labour is abundant in order to keep its

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[2] Sourcing activities refers to the transfer of certain stages of production to another country in order to minimize the cost of the total process.

international competitiveness.

The results of statistical evidence is mixed. Caves (1974), Riedel (1975), Saunders (1982), and Schneider and Frey (1985), found wage costs to have a significant influence on foreign direct investment. However, Papanastassiou and Pearce (1990), Gupta (1983), and Owen (1982), reported wage costs as never being significant.

Transport costs are another consideration for foreign firms affecting the initial decision to invest abroad. If transportation costs such as packing, shifting, insurance,..etc. are too high, firms may decide to invest in the host country rather than exporting from the home country. Moreover, producing in the host country provides the firms with better production and marketing adaptation to meet the requirements of host countries. Firms usually prefer to export to the foreign market first; then if the market is sufficiently large enough, they decide on local production for lower transport costs and better serving of the local market.

Market Size and Characteristics

The size of host country markets and certain of their characteristics, for example average income levels and growth rates, are important locational factors influencing foreign direct investment. The strong positive relationship between

absolute size of host country GNP or GDP and inward foreign direct investment, was found by Horst (1974), Maclayton et.al (1980), Shepher et.al (1985), and Papanastassiou and Pearce (1990).

However, Root and Ahmet (1979) found the rate of growth is more important than the market size in developing countries to atract foreign direct investment. Caves and Rueber (1971), and Goldberg (1972) found that foreign direct investment is a function of market growth.

Government Policies

Government policies relating to tariffs and other barriers to trade are likely to have a positive effect on foreign firms's decision, particularly in market-seeking investment, while they are likely to have a negative effect on efficiency-seeking foreign production (Dunning 1993, p.164-5). Empirical studies find the existence of tariff and non-tariff barriers which encourage firms to carry out foreign direct investment. These studies include Horst (1972), Lall and Siddharthan (1982), and Shepherd et.al (1985). All found protection to be a significant determinant of industry, However, Caves (1974), Caves et.al (1979), Owen (1982), Saunders (1982), and Gupta (1983), could not find significant results.

Government policies might act either as an incentive or

disincentive upon foreign direct investment. Incentive policies might be tax exemption, grants and subsidized loans, special credit privileges, and permission to profit remittance. Disincentives to foreign direct investment include restriction on foreign ownership, profit remittance and size, location, entry into some industries, and requiring foreign firms to use domestic input and export some part of their output. The slow processing of authorization of foreign investment projects and bureaucratic obstacles are more disincentives to foreign direct investment. The empirical evidence shows that the incentives and disincentives policies (those studies are documented in Agarwal 1980 and OECD 1989) have small affects on MNCs' decisions. These policies have had greater impact on smaller firms which have limited experience in foreign markets than on larger firms (Reuber et.al 1973).

In addition to the locational factors mentioned above, the political and social environment and government attitude towards FDI factors effect the foreign firms' decision. Nevertheless, once the firms have decided to undertake FDI, the host government policies may become an important factor in determining the location of FDI among several alternative countries.

Differential Rates of Return

This approach argues that foreign direct investment is the result of international differences in rates of return on capital investment. FDI flows from countries with low rates of returns to countries with high rates of return, under the assumption that investors are concerned about maximizing the rate of return on their investment, by using the marginalist approach that firms equate expected marginal returns with the marginal cost of capital. The differences in rates of return exist because of differences in factor production and prices. Hence capital moves from where it is abundant and cheap to where it is scarce and expensive.

This approach became popular during the 1950s when American FDI in Europe increased sharply. During that time, the rates of return of US firms in Europe were significantly above the rate of return on American firms in US. However, in the 1960s FDI continued to rise although the rates of returns of American firms operating in Europe become less than the rates of return on domestic manufacturing (Hufbauer 1975).

Although this approach restricted applicability to investment in Europe, it stays popular in the studies of the flow of foreign direct investment in developing countries. Stevens (1969) found there was a positive relationship between flow of US investment and the rate of return on capital invested in Latin America at a regional level, but not for

individual countries except in Brazil. Rueber et.al (1973), found similar results in Argentina, Brazil, Chile, India, Indonesia, Mexico and the Philippines.

Hufbauer explained the inconclusiveness of the emprical results as being due to methodological problems (ibid., p.261). First, reported profits might be different than actual profits because of intra-firm pricing, in order to reduce their overall tax burden, to avoid exchange control etc. Second, profit-rate differential was partly due to risk differentials, i.e., exchange-rate variations, political instability, the treat of expropriation, and business fluctuations. Third, in oligopolistic industries, earnings on new projects can differ substantially from return on existing plants, something which the published data do not take in account.

While the difficulties of measuring expected profits may be partly the reason for failing to provide strong supporting evidence, this theory can not explain certain aspects of foreign direct investment; firstly, this theory can not show how two-way flow of foreign investment can occur at the same time, because countries with similar factor proportions invest in each other; secondly, how there is an increase in the number of MNCs from developing countries investing in other developing countries and even in developed countries. Therefore, although the differential rates of return on capital invested is a factor encouraging capital flows this is

not the only factor which causes foreign direct investment.

2.4.2. The Product Cycle Model

The product cycle model, developed by Vernon (1966, 1971,1974, and 1979), and Hirsch (1967), is based on the changes in location specific factors over time as the product itself moves through its life cycle. This model is generally considered to be an extension of the industrial organization approach (Casson 1980, Dunning 1981).

According to the product cycle model, the life cycle of a product has three stages. The first stage is producing the new product. The new product is usually first developed, produced, and marketed in country with high income and skills like the U.S. The reason might be that the price elasticity of demand for the product is comparatively low because of a high degree of product differentiation, or the existence of monopoly in the early stages. Hence it may help the firm to regard cost considerations as being less important. Another reason might be the uncertainties at the initial stage. The firm prefers to have a close contact with customers and suppliers, so that response to changes in demand is made quickly. The firm prefers to increase production and export initially to other rich countries rather than foreign investment, because of its monopoly position, and less significant cost considerations at this first stage.

The second stage is the "maturing product stage", in which a certain degree of standardization starts to take place but the innovator still has technological advantages. At that stage the cost consideration becomes more important, because the product can now be produced by its competitors. The price elasticity of demand becomes more elastic, because of better knowledge of consumers on the product. At that stage an expansion of production becomes so important. Growing competition and expansion of demand leads the firm to decide to invest abroad. Also, it may be concerned about its market share. Consequently, production in some foreign countries begins to replace the export of this product. The location of investment is preferred in developed countries where income elasticity of demand is higher and has similar consumption pattern.

In the third stage, the product becomes standardized and the innovator has no technological advantage any more. The market is competitive on a price basis, and the innovating firm producing in developed countries faces competition from the domestic firms; who may even export some of their products to the innovating country. The cost consideration becomes very important at this stage. The innovating firm then prefers to invest in the cheaper locations so as to protect its profit and market share. In this case, the developing countries are being attracted to invest in order to obtain some cost advantages such as cheaper labour.

In the final stage, when the product becomes standardised, and when mass production combines economies of scale with the application of relatively unskilled labour, developing countries gain a competitive advantage over the innovating country, and may even export to the innovating country.

The product cycle theory was mainly aimed to explain the expansion of U.S multinational firms after World War II, particularly in Western Europe. However, since the early 1970s, the product life cycle theory has failed to explain foreign investment as a result of changes in the international environment. Specifically, the rise of U.S direct investment in Western European countries, and subsequently in the developing countries, is no longer defensible.

Vernon (1971) admitted the limitations of the initial Product Cycle model and reformulated it through incorporating and emphasising the oligopolistic behaviour of MNCs. The model now contained "innovation-based oligopoly", "mature oligopoly" and senescent oligopoly". The first stage was very smiler to first version of the Product Cycle model. In the second stage, scale economies in research, production and marketing constituted an effective entry barrier to an industry, and oligopolist rivals match each other's moves in order to strengthen their bargaining power. In the final stages, scale economies weaken and lose their significance as effective barrier to entry. However, firms try to erect other barriers

such as product differentiation via advertising, so that eventually they are in a competitive environment. In the final stage, the location of production is determined by cost differences.

Vernon (1979) explained the reasons for his theory failing to explain the pattern of foreign direct investment even though he made modifications to his model. First, U.S firms now have a better knowledge of market demands all over the world and they are part of an established world-wide network of subsidiaries. In this situation, a new product can be developed in any part of the world, not just in U.S. Secondly, the technological gap and the income differences between the United States and the other developed countries has been narrowing. Hence, it is hard to defend the assertion that U.S firms are subject to a very different home environment than firms in other countries. However, Vernon (1979) still asserts that the hypothesis is likely to explain the innovating activities of smaller firms investing abroad. and the development of foreign direct investment in developing countries, where income levels and labour cost are still far below those of developed countries.

2.4.3. Oligopolistic Reaction

The oligopolistic reaction approach is also an attempt to answer the question of why a firm chooses FDI rather than

other alternatives. This reaction approach was first put forward by Knickerbocker (1973). It is based on the interaction among mutually interdependent firms within oligopolies. He has hypothesized that FDI undertaken by one firm in a particular market will immediately be followed by similar investment in the same market by its rivals, in order to keep their market share. His hypothesis showed that the initial investment of foreign firms in a given industry will tend to be "bunched" in time and that the more oligopolistic the industry, the greater the bunching will be. He tested his theory on data for 107 US MNCs, and the bunching of American firms into foreign markets was positively correlated with the four-firm concentration ratio which is used as an index of the presence of oligopoly. He also found that the bunching was strongly correlated with profitability of foreign investment in the particular industry and with an index of the stability in the MNC's domestic market. Hufbauer (1975) indicated that increased industrial concentration induced the reaction of rivals in order to minimize the possibility of one rival gaining a significant cost or marketing advantage over others. He also found that the bunching of investment was positively correlated with market size, showing that the reaction tends to be stronger in a larger market. Moreover, the bunching of investment in a foreign market was also negatively correlated with product diversity and with their research and development expenditure, suggesting that the intensity of reaction was

less when firms had a variety of investment opportunities, or when they had some technological advantages.

To examine the factors motivating the initial investment of multinational firms, Yu and Ito (1988) studied one oligopolistic and one competitive industry. Their results suggest that in an oligopolistic industry, foreign direct investment is motivated by the behaviour of rivals, as well as host country-related and firm-related factors; by contrast, in more competitive industries, besides considering their competitors' activities, firms do not generally match their competitors' foreign direct investments. As a result, the authors argued that firms in oligopolistic industries, besides considering their competitors' activities, make their foreign direct investment decisions on the basis of the same economic factors as firms in competitive industries.

What we have discussed so far is that foreign firm-ownership advantages over their domestic rivals enable them to compete in an unknown market, while the theory of market failure or property rights applies to explaining the costs and benefits of internalizing the firm-ownership advantages. Finally, the theory of location and trade is adopted to explain the reasons why foreign firms choose foreign production rather than exporting to the foreign market.

2.5. Eclectic Approach

Dunning (1977, 1981, and 1988) formulated an eclectic approach by integrating ownership, internationalization and locational advantages, in order to explain why direct foreign investment takes place, since no single economic theory can provide a satisfactory explanation. He argued that FDI is a function of all three elements, and he puts them in the form of three conditions which a firm has to satisfy in order to undertake FDI. First, the firm should have some ownership advantages with respect to other firms in the host country, and these advantages should outweigh the firms's disadvantages because of operating in a foreign country. These ownership advantages largely take the form of the possession of intantgiable assets. Second, assuming condition one is satisfied, it should be more beneficial for the firm to internalize the advantages through foreign investment rather than any other method of exploiting them (e.g., licensing). Third, assuming conditions 1 and 2 are satisfied, it should be more profitable for the firms to use these advantages in combination with at least some factor input (e.g., lower wage costs, cheaper energy or raw materials, and investment incentives) outside its home country, otherwise direct export to the host country may result.

In conclusion Dunning (1988) defends the eclectic paradigm as a "tool kit" for the formulation of a general

theory of international production. Its applicability relies on identifying and evaluating the specific OLI (Ownership/Location/Internalization) variables likely to affect the different types of foreign direct investment.

2.6. Dynamic and Development Prospect of Eclectic Approach: The Investment Development Cycle

Dunning (1981, 1988, and 1993) has extended his basic OLI approach to develop the idea of an investment development cycle, in order to explain the dynamics of international production.

According to the investment development cycle, a country's propensity to engage in FDI (both inward and outward) will depend on (i) its stage of economic development; (ii) the structure of its factor endowments and market; (iii) its political and economic system, and (iv) the degree of market failure in the transaction of intermediate products across national boundaries (Dunning 1988). This suggests that, as a country's level of development grows, its international direct investment role will pass through a number of stages. In the first stage the location advantages of the country are insufficient to attract either market seeking or resource based investments. The country's political, commercial and technological infrastructure is also inadequate to back services required by foreign direct investors and the growth of indigenous firms as well. Inward direct investment is

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likely to occur in the second stage of the investment development cycle where the overall infrastructure improves and incomes rise, subject to economic structure and government policy. The third stage is where the country's firms can develop their ownership advantages, which will initially be based on the structure of the country's factor endowments. The level of outward investment will rely on the nature of these advantages, the relative attractions of production abroad, and of internalizing production. The point at which a country reaches the third stage of the investment development cycle depends on its resource endowments and government policy towards international economic involvement, including inward and outward foreign direct investment. The fourth stage of the cycle occurs when a country becomes a net outward investor. Here the expenditure to exploit indigenous ownership advantages abroad must exceed the expenditure by foreigners on the exploitation of their ownership advantages in the particular country in question. The fifth stage of the investment development cycle occurs when the ownership specific advantages of the country's MNCs become more firm specific and less country specific, and locational decisions of firms depend on extending regional or global markets, exploiting economies of scale in production, avoiding uncertainty and market instabilities, rather than comparative advantages. This is reflected by the fact that most intra-industry production is performed by large, diversified MNCs.

The fast growth of FDI and the emergence of MNCs has been noticeable not only for developed countries, but also for a wide range of smaller industrialized and third world countries.

The convergence of both income levels and the economic structure of the advanced industrial countries, together with the harmonisation of international product markets, is seen by Dunning (1988) as making for more symmetrical cross investment patterns, so reflecting a balancing of OLI advantage for this group of nations.

2.7. The Determinants of Foreign Direct Investment in Turkish Manufacturing Industry

In the previous section we reviewed the determinants of foreign direct investment for a better understanding of the factors that influence the locational decisions by transnational corporations and patterns of foreign direct investment.

In this section, we will examine the ownership-specific advantages of foreign firms, and the country-specific characteristics of the Turkish manufacturing industry which are likely to explain the industrial distribution of foreign direct investment. In the previous section, we showed that a number of studies have examined the determinants of foreign firms, mostly in the advanced industrial countries, but also in some developing countries. There is no study of is kind in

Turkey. Non-availability of data on foreign firms could be the reason for the lack of such studies for Turkey. We will try to find out whether factors that have been found to influence foreign direct investment in those developed countries, also determine it in a developing countries such as Turkey.

The dependent variable is the foreign presence in Turkish manufacturing industry, measured by the share of sales in each industry. The data for foreign firms were collected from my own questionnaire, which contains a sample of 182 foreign firms out of the 263 foreign firms operating in the Turkish manufacturing industry in 1987.

The independent variables are proxies for:

Production differentiation (ADV): The extent of product differentiation as an industry characteristic is not easily measured (Caves, 1974). This is due both to the fact that differentiation is an amalgam of qualities intrinsic to the product and to the past efforts of firms at designing, and promoting their products, that has established their differentiated products in the minds of consumers. The way of creating and sustaining such a competitive advantage is mainly through advertising and firm's outlays on research and development. The independent variable here is given by the ratio of advertising expenses to sales of each Turkish manufacturing sector. Figures for research and development outlays are not available.

<u>Scale economies (MEPS):</u> There are different methods [3] for

measuring scale economies. Because of the extensive amount of

work needed to produce many of these indices, some ad hoc

measures of minimum efficient plant size (MEPS) have become

increasingly popular. The most commonly used MEPS is the

average size of the largest plants accounting for half the

industry's output. Davies (1980) has criticized the concept

that distribution of plant sizes will definitely relate to the

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[3] One method is profit-rate studies, which relate firm size to firm profit rates. Economies of scale may effect profit rates; it is not necessarily that high profit rates are an evidence of economies of scale. Large firms may realize higher profit rates because of more monopoly or monopsony power.

Another approach is statistical cost analysis. Average cost is related to output, considering also for such variables as the capacity utilization ratio, differences in the age of the capital stock and in input prices, cumulative output volume, and so on. The date requirement of a statistical scale economies study are extensive and complete, reliable data are hard to find.

Another measure of the size-scale economies relationship is the survivor test, developed by Stigler. The survivor test considers the firm size distribution classed by size groups, so that as firms move away from smaller size classes into one particular size class over time, that size of the firm is considered to be privately efficient. The efficient firm is the one that meets any and all problems the firms faces such as domestic competition, labour legislations, changes in technology, and government regulation. The advantage of this test is that can be implemented with readily available data. The drawback of this test is that technology may change, there may be no detectable movement, or movement may be in contrary directions, and therefore this technique is used for a small subset of industries (Waterson, 1984, p.177).

An alternative measure of scale economies is the engineering approach, which relates the volume of a machine and the maximum output of that machine. Therefore engineers who plan and design new production units and plants, collect information on equipment cost, investment cost and operating cost of various plant sizes by questioning business people. it is find a very costly process, because of the considerable amount of time required to interview, to have a wide range of detailed sources.

size distribution of firms, and therefore to measures of concentration. However, scale economy entry is also determined by the cost advantage of production (Caves et al., 1975). Caves suggested a method to include both MEPS and the cost advantage of plants. Although significant success has been achieved in using these proxies to measure the importance of technical economies of scale, these results need to be treated with a good deal of caution.

We employed the MEPS which is based on as the ratio of the average size of plant of the largest plants accounting for 50 percent of industry sales to total sales in the relevant industry. This measure approximates the size, relative to the market, of a plant large enough to exhaust economies of scale.

<u>Skill-intensity (SI):</u> The average wage for all employees is as a proxy of the general skill requirement in Turkish manufacturing industry. We expect that if skills are an important ownership advantage, foreign direct investment will be greater in those industries.

<u>Capital Requirement (CR)</u>: This is measured by MEPS multiplied by the fixed assets to sales ratio for each industry. This measure is likely to understate capital requirements (Comanor et al., 1967, p.429). The book value of total assets will be less than replacement cost because of inflation in preceding years. We expect that foreign investment will be greater in those industries where capital availability is important.

Market structure (CR4): The most common variable used to measure the market structure of an industry is the four-firm concentration ratio (CR4) which is the share of industry sales accounted for by the four largest firms. It is most commonly used because it is easily calculated and a large body on N-firm concentration ratios is available from government sources. Other concentration measures have been employed in the literature; for example, a function of all the individual firms' market shares to measure concentration. The most commonly used function is the Herfindahl-Hirschman Index (HHI), which equals the sum of the squared market shares of each firm in the industry. HHI incorporates not only the market shares of the largest firm but also the shares of all other firms, and also takes into account the relative size of the firms. But the data from which to compute this index are not available for many, if not most, industries in the economy.

Overall, concentration measures have two serious problems. First, seller concentration measures are affected by many factors. They are probably not exogenous measures of market structure. The second serious problem is that many concentration measures may be biased because of improper market definitions.

Industries with a high degree of concentration present more difficulties to the potential entrant, but it will be less difficult for foreign firms than local firms. The proxy

used is the four-firm total sales concentration ratio at industry level.

Effective Protection Rate (EPR): The hypothesis that, other things being equal, there will be a positive relation between foreign direct investment and the level of effective protection, because foreign firms will substitute potential imports with local production.

Market Growth Rate (MGR): We expected that foreign firms would tend to concentrate on the faster growing industries in Turkish manufacturing industry, than domestic firms. The growth rate of output between 1982-1987 was measured in a semi-log trend function in the form:

$$LnYt = a + bt$$

where Y is output and t is time.

Profitability (P): Foreign firms will tend to concentrate on the most profitable industries. Lall (1983a et al., p.150) used profits before tax on net worth, an indicator of managerial efficiency. This measure might capture factors related to entry barriers which might be linked to the various advantages of MNCs (ibid).

In our studies we used the price-cost margin because of data constraints. It was calculated as value added less total payroll costs, rental payments, insurance premiums, communication expenses, advertising, and other total costs divided by the value of total sales.

These variables incorporate most of the determinants of

the industrial composition of foreign direct investment which have been tried for the developed countries, and enable us to test how they work for the Turkish manufacturing industry.

The statistical tool employed was multiple regression analysis on a cross-section basis. The data set is taken from surveys of 28 manufacturing industries by three-digit standard industrial classification of the Prime Ministry State Institute of Statistics. Data are highly aggregated, and it may be misleading to deal with industrial variables at this level as source of firm-level monopolistic advantages. Our results will still be interesting because this is the first time that variables will be analyzed that might capture foreign firms' advantages over domestic firms in coping with entry barriers in Turkish manufacturing industry.

Table 2.1 presents the simple correlation coefficient for variables. That there is a very high correlation between the concentration and minimum efficient plant scale variables, raises some doubt the exact meaning of MEPS. The profitability is highly correlated with concentration, skill intensity, and MEPS. This means that the most profitable industries are the most concentrated, skill intensive, at producing MEPS. The correlation between skill intensity variable and growth rate is high, which means that skill intensity is important in the faster growing industries.

The regression results are presented in Table 2.2.

Table 2.1.

Simple Correlation Coefficient for (logs of) Independent Variables

	MEPS	CR4	SI	CR	P	MGR	ADV	EPR
Minimum Efficient Scale (MEPS)	1.0000							
4-Firm Concentration Ratio (CR4)	0.9564	1.0000						
Skill Intensity (SI)	0.4819	0.4848	1.0000					
Capital Requirement (CR)	-0.1273	0.0256	-0.0965	1.0000				
Profit Rate (P)	0.5992	0.5712	0.4952	-0.0674	1.0000			
Market Growth Rate (MGR)	0.4910	0.4255	0.2834	0.3434	0.3636	1.0000		
Advertising-sales Ratio (ADV)	0.2760	0.3012	0.1031	-0.0294	-0.0182	-0.0469	1.0000	
Effective Protection Rate (EPR)	-0.2825	-0.2883	-0.4517	-0.1108	0.3479	-0.2641	-0.0839	1.0000

Table 2.2.

Regression Equations for the Determination of Foreign Firms

Intercept	MEPS	CR4	SI	CR	P	MGR	ADV	ERP	R²	Adj. R²	F Ratio
-56.4940 (-3.2232)			18.1873 (2.9331)a		19.0386 (3.3557)a	-1.7925 (-0.912)	-0.3543 (-0.1932)		0.5560	0.4760	7.2000
-54.6170 (-3.2198)			19.3639 (3.2196)a	1.2358 (2.099)b	20.2376 (3.6242)a	-3.7027 (-1.0343)			0.5870	0.5152	8.1732
-59.7801 (-2.4429)			20.2298 (3.3682)a	1.2767 (2.089)b	20.5001 (3.4955)a	-3.6437 (-0.9960)		0.7081 (0.2985)	0.5887	0.4952	6.2974
-60.8442 (-3.8311)			18.0034 (23.2134)a	0.8421 (1.7180)b	18.3939 (3.5333)a				0.5678	0.5138	10.5104
-66.8212 (-2.8527)			19.0510 (3.3501)a	0.8979 (1.6934)c	18.7384 (3.2001)a			0.8358 (0.3529)	0.5701	0.4954	7.6264
-15.7071 (-2.0003)	3.2019 (1.7749)b		25.2875 (3.3790)a	0.8867 (1.4505)c					0.4112	0.3377	5.5880
-7.0651 (0.4670)	4.2792 (1.6538)c		25.8317 (3.3517)a	1.2500 (1.6110)c		-3.1271 (-0.6712)			0.4226	0.3221	4.2077
-5.6323 (0.2379)	4.2638 (1.6622)c		25.5310 (3.6633)a	1.2372 (2.2419)b		-3.1494 (-0.6601)		-0.2227 (-0.0799)	0.4227	0.2915	3.2220
-57.2639 (2.1213)	0.7638 (0.8033)		19.8071 (3.112)a	1.3456 (1.8694)b	19.8481 (3.3540)a	-4.0773 (-0.9876)		0.7097 (0.2927)	0.5899	0.4727	5.0342
-26.3315 (-1.5732)		7.0048 (1.8094)b	24.8817 (3.2202)a	0.8677 (1.3564)c		-2.0523 (-1.1769)			0.4271	0.3275	4.2869
-30.2613 (-2.1062)		6.1962 (1.8503)b	24.225 (3.2360)a	0.6676 (1.1641)					0.4214	0.3490	5.8256
-61.5524 (-3.6403)		0.6705 (0.2205)	17.6366 (2.7857)a	0.8286 (1.6104)c	17.9800 (3.3627)a				0.5682	0.4931	7.5670
-30.3211 (-2.1337)		6.4620 (1.8295)b	23.4732 (2.7076)a						0.4103	0.3631	8.6973

Notes : White's (1980) correction to the standart errors was implemented for all reported models because of hetero-skedasticity. Figures in parenthesis are
t-values. The significance of the regression coefficients is tested using a one tail test and the significance of the coefficients of multiple
determination is tested with F test, (for abbreviations see Table 2.1).
a = Coefficient is significant at 1 percent level.
b = Coefficient is significant at 5 percent level.
c = Coefficient is significant at 10 percent level.

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The best results were taken by semi-logarithmic formulation. The fitted regressions are generally significant at the one percent level in terms of F-statistics, and the industry characteristics identified here are able to explain nearly half or over half of variation in the dependent variable.

Advertising-intensity is not a significant determinant of foreign direct investment in Turkey. This may be because local advertising does not capture the effect of product differentiation. Lall (et al., 1983a, p.151-152) also found insignificant results for India, and they explained this by indicating that "at the low and relatively unsophisticated consumption levels of the Indian economy, large domestic firms are able to compete fully in marketing their products with foreign ones". There is a strong possibility that subsidiaries of multinational enterprises benefit from the widespread promotional efforts of the parent company, and so may not themselves need to spend more than local competitors (Lall et al., 1977, p.113).

The skill-intensity variable is always significant, which may show that foreign firms enter industries requiring high levels of general skills. Lall's (1980) study of United States foreign direct investment found that the average wage per employee tended to be positively related to overseas production.

The capital-intensity variable shows significant positive

effects on foreign participation except where it loses in significance when combined with the concentration ratio. This suggests that foreign firms tend to go into capital-intensive activities in Turkey. The market structure variable is significant except where it loses in significance when combined with the profit variable. Scale economies are significant when problems of collinearity are taken into consideration. The profit variable has a significant positive effect on foreign shares, which may show that foreign firms concentrate on the more profitable sectors.

The rate of output growth is not significant. The measure of the effective protection rate ie never significant although it usually takes the expected sign. The reason for this might be that we are using recent tariff rates, whereas foreign firms' decisions to enter the Turkish market have been influenced by tariffs prevailing at various time in the past. Caves (1974), Caves et.al (1979), Owen (1982), Saunders (1982), and Gupta (1983), could not find significant results either.

In summary, the factors that were found to influence the determinants of foreign direct investment in advanced industrial countries also determine it in the Turkish manufacturing industry. The industrial structure of foreign participation is explained by the relative barriers to entry to Turkish manufacturing and profit rates. Foreign firms, because of their comparative advantages vis-a-vis domestically

owned firms, are more able to overcome barriers to entry exercised by capital requirements, skill-intensity, economies of scale, and market structure.

2.8. Conclusion

In this chapter we have discussed the determinants of foreign direct investment that have been identified in theories which assume imperfect markets. The essence of the industrial organization approach is that firms possess sufficient firm-specific advantages to offset the disadvantages of investing abroad. However, it is not only the possession of firm-specific advantages which give firms an edge over their rivals, but also the net benefits of internalizing these advantages, rather than externalizing by selling or leasing them to other firms for the production of those goods. Once a firm decides to internalize, location and trade theories determine the location of production.

Direct foreign investment and MNCs can be explained by the theory of Industrial Organization (Kindleberger 1969, p.11) in conjunction with internalization theory, location and international trade. Dunning further suggested that an eclectic approach drawing on each of the main strands of the theory was necessary to adequately account for the international involvement of firms.

The theories we have discussed not only try to explain

"why firms invest and produce abroad", but attempt to answer
" why", "when", and "where" foreign direct investment takes
place.

We have tested the explanatory power of factors likely to
determine the incidence of foreign direct investment and its
industrial structure in Turkish manufacturing.

The factors that have been found to influence the
industrial structure of foreign-owned production in developed
countries also determine it in a developing country like
Turkey.

Our analysis shows that foreign firms seen to enter
concentrated industries requiring a high level of general
skills, scale-intensity, and a strong position where capital
availability is important. They concentrate on the more
profitable sectors of manufacturing.

Foreign firms, because of their comparative advantages
vis-a-vis domestically owned firms, are more able to overcome
barriers to entry in a developing concentrated market.

CHAPTER 3

HISTORICAL BACKGROUND OF FOREIGN FIRMS
IN TURKEY

3.1. Introduction

Before we analyse objectively the role and impact of foreign firms in the manufacturing industry, and in order to assess their contribution, we will give a full description of foreign firms in Turkey and determine their position in the economic structure. The legal framework of foreign firms is an important factor influencing their decisions as regards investing in Turkey. Hence we would also like to outline the development of foreign investment regulations to the present day.

3.2. Historical Background and Legal Basis of Foreign Investment

Foreign capital in the Ottoman State was first met through the Free Trade Treaty of 1838. The Ottomans made important concessions, called capitulations, to Western countries, in return for financial support to help the economic weakness of the Ottoman State, as well as military and political support. Throughout the Free Trade Treaty era, liberal trade polices were imposed on the Ottoman Empire. Hence, The Ottoman state lifted all monopoly control over

trade. From the middle of the 19th century to the beginning of the 20th, the vast majority of foreign investment was concentrated in the rail network, infrastructural facilities like gas and water works, the banking system, and the mining of coal, boracite and chromate. This was because there were quite high profits and financial concessions operating in these sectors in the short-run. Hence industrial development in the nineteenth century was dependent on the western powers. The Ottoman economy became an open market and a primary producer, exporting wool, cotton, tobacco and dried fruits in exchange for manufactured goods. The textile industry in particular collapsed because of competition from cheaper imports, so that by 1913 the empire was exporting its raw cotton, raw wool, and untreated hides, and importing cotton thread, cotton textiles and finished leather (Hale 1984, p.37).

As a result of the economic and political weakness of the Ottoman state and its liberal trade agreements, it eventually became bankrupt. The government was unable to pay off its foreign debt by 1875. Therefore in 1881, The Public Debts Administration was set up by the creditors to collect all state taxes to pay the debt. The government could not control and/or collect its revenue, lost all control over the economy, and the British owned Ottoman Bank got the privilege to print money.

The activities of foreign firms only came to an end with

the Lausanne Treaty and the establishment of the Turkish Republic in 1923. The Treaty erased the capitulatory privileges of foreigners such as tax immunity; on the other hand, Turkey was obliged to retain the guarantees to foreign firms before the First World War, which was weakening state finances. However, the Turkish government was allowed to buy out of these concessions. As a result, the period between 1923-1944 was a time when foreign firms were nationalised in order to get rid of concessions.

Although the Ottoman empire had a bad experience with foreign capital, the new Turkish government was not hostile to foreign capital after 1923, and was willing to have foreign firms' cooperation, as long as they were under the control of domestic law regulations. During the 1920's, the Turkish Republic followed liberal market policies. The role of private domestic and foreign capital was emphasised, and the role of the government confined to major infrastructural investment. Private capital was attracted to the commercial, trading and construction sectors rather than production due to higher short term profits and minimum risk. However, there was almost no inflow of foreign capital to Turkey during the 1920's. The cause of this could have been the establishment of the new social, legal and political foundations of the new states, and the nationalization of already operating foreign firms, in order to take over foreign concessions, as well as the 1926-27 recession in Europe.

The weakness of private firms and the world economic crisis led the Turkish Republic towards "etatis," or state-controlled economic policy, during the 1930's and 1940's. By the beginning of the 1930s, Turkey had adopted central planning which aimed at import substitution policy. Under this plan, the state's role was encouraged in banking, industry, foreign trade, mining and infrastructure. State Economic Enterprises, State and other banks were established. As a result of these policies in the 1930s, GNP started increasing, and the share of industry in GNP increased from 14 percent in 1929 to 19 percent in 1939. Except for 1938, Turkey's trade balance remained in surplus. However, agriculture had been neglected, and there was no significant increase in agricultural inputs or machinery.

On the foreign capital level, the first government regulation for foreign investment (Decree No.17 on Law 1567) was promulgated in 1930. This law was enacted during the Great Depression in order to regulate all foreign economic transactions and protect the value of Turkish currency. It contained rigorous restrictions. First of all, the profits of foreign firms were not allowed to be transferred and earnings or capital kept in the Turkish Bank, and could only be used for expenditures inside Turkey. In principle, foreign firms were not allowed to increase their capital. The firms operating under Decree No.17 were mainly in of insurance, banking commerce, chemicals, and electronics. The gradual

nationalization of foreign-owned enterprises, mainly transportation and public utilities (Hershlag 1988, p.13), went on until 1944. Highly restrictive foreign investment regulation might have resulted in a very low inflow of new foreign capital to Turkey.

There then followed the economic and political changes of the 1940s. The neglect of agricultural policy during the 1930's resulted in a large fall in its production. There was a big shift of labour from agriculture to military production due to the second world war. Although the country remained out of the war until almost the end, public sector production supplied war needs. Heavy defence spending forced the government to introduce a new tax in the agricultural sector. Private enterprises declined because of the uncertainties introduced by new agricultural taxes such as the wealth tax in 1942. Increasing money supply because of tax revenues and economic aid, at the same time as a lack of basic consumer goods, resulted quadrupled annual inflation.

On the political level, the one party system was abolished. The new Democratic party was set up and took power in 1950 from the monopolistic Republican party who had been in power since the Turkish Republic had been established.

As soon as the second World War was over, Turkey loosened its "etatism" and switched to liberalized economic policies. Although the new democratic regime was against etatism and planning, the structure of the economy did not change. They

tried to sell the public enterprises to the private sector, but the later was not keen to get involved with inefficient and risky public enterprises. Partnership of the state and private enterprises still grew. Public participation involved in the private sector where none had existed before.

On the foreign capital level, as part of this liberalization, Turkey introduced the new Direct Foreign Investment Law (DFI). Law 5821 (Law for the Promotion of Foreign Investment) was enacted in 1951. Investment capital was defined as the form of foreign currency, machinery, equipment, tools and machinery parts etc,. All sectors of the economy except agriculture and commerce were opened up to DFI, and foreign firms were entitled to transfer ten percent of their profits outside the country. Even so, there were just 42 applicants in a two-year period as a result of this law.

On the economic level, in the first half of the 1950's the Turkish economy was quite progressive. The Korean war, and the boom in the world economy, increasing output in the agricultural sector, led GNP to increase by 14.6 percent annually between 1951-1953. However in 1954 drought caused a sharp decrease in agricultural output. As a result, the share of agricultural exports fell and eventually exports stagnated, while rising imports caused a higher current account deficit in 1954.

A fairly liberal foreign capital law (The Law on the Encouragement of Foreign Capital Law, No:6224) was passed in

1954 because of the failure of the previous foreign capital laws and the insufficient financial resources or the saving gap. First of all, foreign capital was redefined as: in the form of foreign currency, machinery and installations, licences, patents, trademarks, services, and reinvested profits.

Unlike the previous laws, this one lifted all prior restrictions in order to encourage foreign investment. Additionally, the new law gave the following rights to foreign investors:

1 - restrictions on profit transfers were lifted,

2 - foreign personnel could be employed and their earnings transferred out of Turkey,

3 - foreign firms were entitled to apply the same rights, exemptions and incentives that domestic firms had.

On the other hand, this law had three criteria in order to gain the approval of foreign investments' applications in Turkey;

1 - foreign investment should help Turkey's economic development,

2 - they can only invest where Turkish private enterprises operate,

3 - they do not use any monopoly or special privileged position.

Although this new law provided more liberal conditions

for foreign investors, the inflow of foreign capital still remained low from 1954 to 1980 (Table 3.1). The following factors seem to have been responsible for this. The criteria for the approval of foreign investment, especially in article 1: "direct foreign investment should help Turkey's economic development", had not been specified, and gave the government wide-ranging political and bureaucratic leeway of interpretation to reject the applications made by foreign firms. Another factor was the continuing political uncertainty in Turkey. During this period, economic, social and political problems led to a military takeover in 1960, repeated in 1970 and in 1980. As a result, Turkey was a risky country for foreign firms in the world. Bureaucratic obstacles were another vital factor which discouraged the potential foreign investor. This is because foreign investment matters were dealt with separately in the Ministries for Trade, Industry and Technology, Finance and the State planning Office which resulted in a lot of red tape. Finally, instability in the economy, particularly high inflation and high interest rates, put any potential economic stability in jeopardy.

The failure of the 1950s liberalization policies resulted in heavy inflation, unemployment, a high current account deficit and social turmoil. Therefore, the strategies of the 1960s and 1970s were based mainly an import substitution policy under the implementation of three five years plans 1963-67, 1968-72, and 1973-77. Over this period, there were

structural changes of GNP. The share of industry in GNP rose from 16.8 percent to 24.1 percent while agriculture's share fell from 41.2 percent to 22 percent, in 1963 and 1977 respectively.

Exports rose by 25 percent, while imports increased by around 49.3 percent over the same period. External factors such as rising oil prices between 1973-74 and the world recession in 1974-75 had an adverse affect on the current account. In spite of these external shocks, Turkey did not alter its economic policy in order to meet these new conditions. It tried to maintain its rate of growth through rapid reserve decumulation and massive external borrowing. Although the budget deficit was kept under control in the early 1960s, in the first half of 1970s it increased to its highest levels because of agricultural subsidies, infrastructal investment and state economic enterprises. This led to an increase in inflation. Over the 1970's nominal interest rates were below the rate of inflation. The negative real interest rate, and the appreciated exchange rate encouraged an increase in imports, as well as capital intensive techniques and stagnated exports. The gap between national savings and investments widened, and heavy borrowing soon resulted in high external debt. As a result, the worsening current account deficit developed into a payments crisis in 1977, and Turkey lost its internal creditworthiness.

In 1979, Turkey's debts to western governments and

foreign commercial banks were rescheduled according to the conditions of the IMF's structural adjustment program. In January 1980, a new stabilization program was introduced. Foreign trade and foreign exchange were liberalized. All goods could be imported. The prices of state economic enterprises' products were increased in order to lessen the budget deficit burden. The money supply was also tightened, and interest rate controls were lifted. In addition fixed exchange rates were replaced by a multiple exchange rate system. These policies aimed to increase market forces in the economy.

Following this new economic stabilization program between 1981 and 1987 the average annual growth rate of GNP was 5.5 percent, and that of the manufacturing sector about 8.5 percent. Exports grew from $ 4703 million to $ 12960 million in 1990.

On the foreign capital side, when the stabilization programme was introduced in 1980, there was an important development in the administrative form of Law no 6224. A "Foreign Investment Department" was set up in the State Planning Organization, which provided assistance and guidance to foreign investors. It was directly linked with the Prime Minister . The department was authorized to approve foreign investment projects up to $50 million, with foreign equity participation less than 50 percent. Applications above these limits are approved by the council of Ministers. These new developments have proved their efficiency. Investment

applications which would have taken years to approve in past, are now usually examined and decided upon within two to four weeks by the Foreign Investment Department.

In the area of DFI policy regulation, several further restrictions were lifted with decree 86/10353. The obligation of undertaking joint ventures with domestic firms was dropped, hence foreign firms could invest in any sector of the economy with 100 percent foreign ownership. Export requirements from foreign firms were abandoned. Personal and corporate tax legislation was amended to eliminate biases against foreign investors.

Three criteria for direct foreign investment under law 6224 remained (see p.71). Hence, the approval of foreign direct investment applications still depends on very broad criteria. As a consequence, the legal framework is based on government opinion towards direct foreign investment. This does not give foreign firms much confidence in the sustainability of the new policy.

However, as a result of this more liberal foreign investment policy as well as the simplification and speeding up of administrative procedures, the number of foreign companies and rate of foreign capital investment in the economy has tended to increase in recent years.

3.3. A Profile of Foreign Investment in Turkey

In this section, we want to examine some of the main features of foreign investment in Turkey. When one examines the inflow of foreign capital to Turkey, there are two important periods (Table 3.1): one is the period from 1954 to the stabilization policy introduced in January 1980, and the second covers the capital that has flowed in since then. Although Turkey had enacted a liberal foreign capital law in 1954, the amount of authorized capital was only 228.5 million dollars between 1954-1979. However, between 1980-1989 authorized capital increased by 19 times, to reach 4633.7 million dollars by the end of 1989.

Although the inflow of foreign capital has increased remarkably since 1980, Table 3.2 shows that the realized level of foreign capital is quite a way below the authorized level. However, while changing from year to year, it averages just half of the authorized amount, although this gap has been narrowed in the period 1980-1989. The gap between realized capital and authorized capital might be explained as follows; foreign firms may overstate the capital size of any investment project because of inflation. The larger projects may get speedy approval of their applications than smaller ones. Another reason might be that foreign firms apply for projects in Turkey is in order to secure a future market advantage against present and/or future competitors.

Table 3.1.

Authorized Foreign Capital in Turkey
(Million $)

Years	Authorized Capital	Cumulative Capital
pre-1954	2.8	2.8
1954	2.2	5.0
1955	1.2	6.2
1956	3.4	9.6
1957	1.3	10.9
1958	1.1	12.0
1959	3.4	15.4
1960	1.9	17.3
1961	1.2	18.5
1962	4.2	22.7
1963	4.5	27.2
1964	11.9	39.1
1965	11.6	50.7
1966	9.7	60.4
1967	9.0	69.4
1968	13.9	83.3
1969	13.2	96.5
1970	9.0	105.5
1971	11.7	117.2
1972	12.8	130.0
1973	67.3	197.3
1974	-7.7	189.6
1975	15.1	204.7
1976	8.9	213.6
1977	9.2	222.8
1978	11.7	234.5
1979	-6.4	228.1
1980	97.0	325.1
1981	337.5	662.6
1982	167.0	829.6
1983	102.7	932.3
1984	271.4	1203.7
1985	234.5	1438.2
1986	364.0	1802.2
1987	536.5	2338.7
1988	824.5	3163.2
1989	1470.5	4633.6

Source: Foreign Investment Department of
State Planning Organization (SPO)

Concerning the effect of direct foreign investment on the balance of payments, profit transfers out of the country are as important as the realization of foreign capital. Table 3.2 gives the figures of profit transfer. In 1954-1979 these exceeded realized capital by a huge percentage (125.9 %). This was because unstable economic and political conditions induced foreign firms to transfer their profits out of the country. Nevertheless, there was a sharp decline in the period 1980-1986, when an average 16.9 percent per annual of profit transfer to realized capital took place. Since 1980, political stabilization and economic progress have increased the confidence of foreign firms in the Turkish economy.

Table 3.3 shows the broad sectoral distribution of foreign capital operating in Turkey. It can be seen that while the share of the manufacturing sector has diminished, the share of the service sector rose remarkably in the period 1979-1989. Before 1984, approval of foreign firms in the service sector was restricted by decree no.17 on Law no.1567 concerning the protection of the value of Turkish currency. In 1984 this authority was given to the Foreign Direct Investment department, while foreign firms have been allowed to undertake export, import, and wholesale trade as well as similar activities.

Table 3.2.

Realized Foreign Capital and Profit Remittance
(Million $)

Years	Authorized Capital (1)	Realized Capital (2)	(2/1)	Profit Remittance (3)	(3/2)
1954-79	228.1	97.1	42.6	122.28	125.9
1980	97.0	35.0	36.1	11.7	33.4
1981	337.5	141.0	41.8	9.35	6.6
1982	167.0	103.0	61.7	15.39	14.9
1983	102.7	87.0	84.7	22.55	25.9
1984	271.4	162.0	59.7	15.7	9.7
1985	234.5	158.0	67.4	51.66	32.7
1986	364.0	170.0	46.7	39.57	23.3
1987	536.5	171.0	31.9	46.84	27.4
1988	824.5	406.0	49.2	41.56	10.2
1989	1470.5	738.0	50.2	112.06	15.2
TOTAL	4633.7	2268.1	48.9	488.66	21.5

Source: SPO, Foreign Investment Department.

Table 3.3.

The Sectoral Distribution of Operating
Foreign Capital (%)

(Million $)

YEARS	Industry	Agriculture	Mining	Services
1979	79.4	0.0	0.8	19.8
1980	87.3	0.0	0.2	12.5
1981	81.9	3.4	0.6	14.1
1982	72.5	2.3	0.7	24.4
1983	67.9	2.4	0.7	29.0
1984	60.9	1.9	0.5	36.6
1985	56.6	2.9	0.4	40.1
1986	51.2	2.9	1.1	44.8
1987	57.0	5.5	1.4	36.2
1988	53.4	5.0	1.1	40.4
1989	50.9	2.2	1.0	45.9

Source: SPO, Foreign Investment Department.

Table 3.4 shows the subsectoral distribution of foreign firms operating under law no.6224. At the end of 1989, total foreign capital in the service sector amounted to 1104369 million TL., accounting for 45.9 percent of the total foreign capital. The share of agriculture and mining in total foreign capital was quite small, being 2.22 and 1.02 percent respectively. Although the share of the manufacturing sector has decreased in the period 1980-1989, this sector has the highest share of 50.88 percent in total foreign capital stocks. Most firms in the manufacturing sector are concentrated in the other chemicals, electronics, iron-steel, transport equipment, food, alcoholic and beverage industries. In these sectors, a value of 740871 million TL foreign capital was invested, accounting for 60.49 percent of the total foreign capital stock in manufacturing, while the total capital of relevant firms in these sectors was 1553191 million TL, accounting for 56.42 percent of total capital.

In manufacturing industry, the highest foreign participation of foreign capital is in alcoholic drinks (92.12 %) while in the other 12 industries the share of foreign participation is above 50 percent. The capital share by domestic firms in the DFI firms in manufacturing is 55.52 percent. This means that foreign firms are looking for domestic partners in order to keep close relations with the officials of the Turkish government, as well as making a good impression with the Turkish public although there is no

Table 3.4.
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Sectoral Distribution of Foreign Firms
Operating Under law 6224 (as of December 1989)
(Million TL.)

	No of Firms	Existing Foreign Firms' Capital	Total Capital of Relevant Firms	Share of Foreign Cap in Total Capital	Share in Total Foreign Capital
AGRICULTURE	46	53320	83129	64.14	2.22
PLANT PRODUCTION	9	1901	2252	84.41	0.08
ANIMAL HUSBANDRY	12	18726	41700	44.91	0.78
FISHERY PRODUCTS	7	1198	2037	58.81	0.05
FORESTRY PRODUCTION	1	648	4160	15.58	0.03
AGRICULTURAL SERVICES	17	30847	32980	93.53	1.28
MINING	23	24499	34678	70.65	1.02
METALLIC MINING	3	4963	9840	50.44	0.21
OTHER MINING	20	19536	24838	78.65	0.81
MANUFACTURING INDUSTRY	427	1224647	2753060	44.48	50.88
FOOD INDUSTRY	53	80072	131573	60.86	3.33
ALCOHOLIC DRINKS	4	77879	84543	92.12	3.24
TOBACCO INDUSTRY	3	12291	21413	57.40	0.51
TEXTILES	25	45824	96480	47.50	1.90
APPAREL	44	18455	37510	49.20	0.77
LEATHERWEAR	11	3925	5545	70.78	0.16
FORESTRY PRODUCTION	8	1777	4526	39.26	0.07
PAPER	10	36084	71046	50.79	1.50
PRINTING AND PUBLICATION	7	54660	63120	86.60	2.27
INDUSTRIAL CHEMICALS	17	70620	125160	56.42	2.93
OTHER CHEMICALS	44	238335	315355	75.58	9.90
PLASTIC	18	11344	15468	73.34	0.47
RUBBER	4	38174	94523	40.39	1.59
FERTILIZER	3	26325	52315	50.32	1.09
BAKED CLAY AND CERAMICS	10	5777	42648	13.55	0.24
GLASS	6	17534	179196	9.78	0.73
CEMENT	1	150	1350	11.11	0.01
IRON-STEEL	10	100475	541400	18.56	4.17
NON-FERROUS METALS	7	2389	14230	16.79	0.10
METAL PRODUCT	23	10384	25007	41.52	0.43
MACHINERY (EXC.ELEC.MAC.)	21	17089	50991	33.51	0.71
ELECTRICAL MACHINERY	28	46849	90760	51.62	1.95
ELECTRONICS	19	160705	217644	73.84	6.68
TRANSPORT EQUIPMENT	11	83405	262676	31.75	3.47
TRANS RELATED IND.	13	36711	152403	24.09	1.53
MEASURING EQUIP.OPTICAL G.	4	1278	2540	50.31	0.05
AIRCRAFT INDUSTRY	2	245	500	49.00	0.01
OTHER	21	25891	53138	48.72	1.08
SERVICES	1046	1104369	1976962	55.86	45.9
TRADE	629	270751	304699	88.86	11.25
RESTAURANT, CAFE	32	103765	110522	93.89	4.31
HOTEL, CAMPING MANAGEMENT	125	290186	790808	36.69	12.06
CONSTRUCTION	13	8585	18272	46.98	0.36
LAND TRANSPORTATION	15	2997	5264	56.93	0.12
SEA TRANSPORTATION	7	15679	31298	50.10	0.65
AIR TRANSPORTATION	33	3325	3484	95.44	0.14
OTHER TRANSPORTATION	8	917	1394	65.78	0.04
BANKING & FINANCIAL SER.	30	196655	401198	49.02	8.17
INVESTMENT FINANCE	11	63904	84505	75.62	2.66
INSURANCE	21	32486	88656	36.64	1.35
LEASING	1	1800	3000	60.00	0.07
RESEARCH & DEV. ACTIVIT.	5	1172	3225	36.34	0.05
HEALTH SERVICES	3	11360	17100	66.43	0.47
OTHER	113	100787	113537	88.77	4.19
GENERAL TOTAL	1542	2406835	4847829	49.65	100.0

Source: SPO, Foreign Investment Department

obligation to undertake joint ventures with domestic firms.

The distribution of firms by countries is shown in Table 3.5 which shows that more than half of foreign investment is from EEC countries. Among these countries, the largest number of companies were from West Germany, while the highest value of foreign capital came from Britain. When one looks closely at the firms' countries of origin, there is some deviation. For example, the U.K Derby company names Germany as its country of origin, while the Italian Pirrelli company shows its origin as Swedish, and the Swedish Atlas Coppco shows its origin as Belgium. Hence, an affiliate firm rather than the parent company invests in another foreign country. This does not mean the parent company has no control over the affiliate in another country. This might be for tax reasons which benefit the parent firms.

Table 3.5.

The Breakdown of Foreign Capital by Countries
At the end of 1989

	No of Firms	Existing Foreign Firms' Capital	Total Capital of Relevant Firms	Share of Foreign Cap in Total Capital	Share in Total Foreign Capital
ENGLAND	131	420348	581758	17.46	72.25
SWITZERLAND	117	310558	786695	12.90	39.48
WEST GERMANY	248	247072	599105	10.27	41.24
HOLLAND	60	241963	309236	10.05	78.25
ITALY	44	213001	302854	8.85	70.33
U.S.A	130	199136	461865	8.27	43.12
FRANCE	54	110420	164989	4.59	66.93
JAPAN	25	110063	177718	4.57	61.93
SAUDI ARABIA	42	86589	242278	3.60	35.74
DENMARK	9	47113	57354	1.96	82.14
BELGIUM	20	36238	69702	1.51	51.99
LUXEMBOURG	12	34723	65651	1.44	52.89
LIBYA	11	32669	60217	1.36	54.25
KUWAIT	6	30599	61009	1.27	50.15
SWEDEN	14	28509	45106	1.18	63.20
IRAN	167	28051	33316	1.17	84.20
SINGAPORE	2	25232	125534	1.05	20.10
U.ARAB EMIRATES	10	14752	23608	0.61	62.49
SYRIA	90	13133	17427	0.55	75.36
PANAMA	4	12953	32468	0.54	39.89
LIECHTENSTEIN	5	12363	12431	0.51	99.45
CANADA	7	11457	159814	0.48	7.17
AUSTRIA	25	10410	18320	0.43	56.82
BAHRAIN	4	6517	6854	0.27	95.08
LEBANON	27	5981	16902	0.25	35.39
SOUTH KOREA	5	5828	14052	0.24	41.47
FINLAND	8	5814	13810	0.24	42.10
QATAR	4	5783	10487	0.24	55.14
MONACO	2	4088	8110	0.17	50.41
IRAQ	22	3823	5374	0.16	71.14
YUGOSLAVIA	6	3433	8682	0.14	39.54
JORDAN	23	3334	4358	0.14	76.50
EGYPT	5	3309	3944	0.14	83.90
PAKISTAN	5	2720	2793	0.11	97.39
CAYMAN ISLANDS	3	2241	3141	0.09	71.35
ISRAEL	10	1922	2484	0.08	77.38
GREECE	9	1848	2149	0.08	85.99
SPAIN	6	1607	2175	0.07	73.89
RUSSIA	2	1575	2750	0.07	57.27
HONGKONG	4	1530	2635	0.06	58.06
CHINA (P.R)	4	1101	1197	0.05	91.98
OTHERS	160	67029	327480	2.78	20.47
TOTAL	1542	2406835	4847832	100.00	49.65

Source: SPO, Foreign Investment Department

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3.4. Conclusion

In this chapter, we have tried to give a brief historical background of foreign firms and Turkish industrial policy, as well as a quantitative view of the main features of foreign firms in Turkey.

Because of the economic and political weakness of the Ottoman State, foreign firms were granted important privileges so that the state could borrow foreign funds in order to recover from her worsening economic situation. This came to end with the establishment of the Turkish Republic. Since then, a cautious attitude has been taken towards foreign capital. Privileges were taken away from foreign firms and those set up under the Ottoman Empire were nationalized. By the same token, foreign firms were cautious of coming to Turkey, and the inflow of foreign capital remained negligible until 1980. Political and economic instability were the main factors discouraging investment by foreign firms in Turkey over this period. Foreign firms wishing to invest in Turkey faced bureaucratic obstacles to the approval of their application. Although law 6224 was a liberal foreign investment law, the implementation of it was inefficient.

After new economic policies were accepted in 1980, significant increases occurred in the flow of foreign capital. This policy, coupled with a welcoming approach to foreign capital and a reduction in bureaucratic obstacles, played a significant role in this increase.

CHAPTER 4

FOREIGN FIRMS AND MARKET STRUCTURE

4.1. Introduction

This chapter examines the impact of Multinational Companies on market concentration and competition in less developed countries, especially Turkey.

The discussion of the chapter proceeds as follows: Section two will review the role of MNCs in influencing industrial concentration, and the effect of foreign investment by MNCs on competition in host countries. The existing empirical evidence will be discussed in section three. Section four outlines the industrial structure of Turkey in terms of public, private and foreign enterprises. We look at the size of distribution of foreign firms and their sectoral shares in total sales, and in total employment of the Turkish manufacturing industry, in order to examine the extent of their significance. We also compare the industrial distribution of total and foreign investment to see which industries they are concentrated in and to show the extent of control exercised by foreign firms in the Turkish manufacturing industry. Section five discusses and tests hypotheses to explain concentration in the Turkish manufacturing industry, in terms of factors usually found to

affect market structure in developed countries, such as scale economies, capital requirement, product differentiation, market size and market growth as well as, foreign presence. Section six investigates the influence of some of the major market structure elements on one aspect of performance -price cost margins- in Turkish manufacturing industry and especially evaluate the impact on these relationship of foreign trade and direct foreign investment. Section seven concludes the study.

4.2. Industrial Concentration, Competition and Foreign Firms

The structure-conduct-performance model holds that industries that are competitively organized will be forced to set price equals to marginal cost and will earn normal profits. On the other hand, industries that are more monopolistically organized, as indicated by high levels of concentration and substantial entry barriers, will be able to either unilaterally set prices above marginal cost, in the case of a firm monopoly or dominant firm industry, or will be able to collude and set price above marginal cost in the case of a tight oligopoly. Thus, they will be able to earn supernormal profits.

The pioneering test of this paradigm came in two studies by Joe Bain (1951,1956). He found a significant relationship between concentration level and profitability, especially among industries in which entry barriers were sufficiently

high and showed a greater concentration ratio, the greater the large firms' profit rate. He concluded that high concentration facilitates collusion and leads to excessive profits.

The bulk of the research tended to confirm Bain's finding of a significant positive relationship between concentration and profits[1]. This was particularly true when barriers to entry were included.

Beginning with Demsetz, a group of economists sometimes referred to as the Chicago-school economists or revisionists, have argued that a positive correlation between concentration and profitability actually shows this is an efficiency effect, not a collusion or monopoly-power effect. The Chicago-school economists argue that concentration, operating through the scale economies of large firms, tends to lower average costs (that is, promote efficiency) and this is why profits tend to be higher in concentrated industries.

Demtsetz (1973) has argued that if collusion explains the concentration-profit relationship, then higher profits should be enjoyed by all firms (both small and large) in colluding industries. However he finds only large, not small firms, earn supernormal profits in concentrated industries. Hence he concludes that collusion is not the explanation of the concentration-profits relationship; rather the efficiency of large firms explains why concentration is positively related

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[1] Weiss (1974) surveys the early studies, while Schmalensee (1989) surveys more recent studies.

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to profit margins. Demsetz's efficiency explanations of the concentration-profits relationship have been supported by several studies (Peltzman 1977, Carter 1978, Chapplell and Cottle 1985).

The efficiency explanation for the concentration-profits relationship has been challenged by Weiss (1974). If size-induced efficiencies cause high profits, then large firms should earn higher profits in unconcentrated as well as concentrated industries. But Demsetz and others have found no such effect in unconcentrated industries. The structure-conduct-performance school has argued that large firms will have cost advantages over small firms, and that small firms will benefit less from product-differentiation advantages than large firms. Small firms in concentrated industry are not expected to benefit from tacit or overt collusion in the same way as large firms (Martin, 1994, p.219).

However, the debate about higher concentration might bring forth either greater efficiency or more monopoly power, or both continues.

A central argument in defence of monopoly is that some degree of monopoly power is conducive to innovation and technical progress. It is argued that more competitive industries undertake little or no research on their own behalf, while oligopolistic industries at least have the funds for potential R&D projects. This argument stresses that finance for research might be less of a problem in

concentrated industries, because oligopolistic markets which provide above-normal profits have a ready supply of such funds which may not be available to firms in more competitive markets.

A relatively large firm in a more concentrated market is more likely to be able to conduct R&D on an efficient scale. When a minimum efficient scale for research exists it may not be feasible for independent firms in competitive markets to undertake efficient R&D. In some circumstances this problem may be overcome by pooling research efforts, but such a solution may not always be possible given the previously noted financial problems of small, competitive firms and also the large transaction costs implied in organizing a joint research programme. In some circumstances, of course, firms in concentrated industries may need to pool research resources with respect to particularly risky and expensive research projects. And indeed, this may well be socially desirable if wasteful duplication of research is to be avoided. Firms earning monopoly profits may be in a better position to protect their patents than firms in more competitive market and hence may be more willing to undertake research.

Firms in more concentrated industries may undertake more research in order to protect their market share against both actual and potential competition. Firms earning monopoly profits in concentrated industries may be able to employee better qualified research personals and so increase and/or

improve their research output per unit of resource.

On the other hand, of an argument against monopoly power being conducive to innovation can be also made. Firms in concentrated markets may have less incentive to engage in extensive research and development or adapt potentially risky productive processes or product. This effect arises because firms with considerable market power do not face the rigours of competition, and innovation produces only limited extra profits for a monopolist. Established firms are unlikely to support radically new innovations that might require re-equipment. Hence, minor innovations and style improvement might take place rather than more major path-breaking research, or established monopolists might buy and suppress new patents which favour radical production changes for similar reasons. Such effects are, however, likely to be important only where barriers to entry protect established monopoly producers from potential competition.

Broadly speaking, an industry with high concentration may have less incentive to innovate than a more competitive industry; however, it may be in a more advantageous situation to undertake research because of research resources and finance. Industries with very low and very high levels of concentration, where interest in research had been slight, and technical advance slow. This could mean that some mixture of competition and monopoly is most conducive to innovation.

Market concentration may affect the level of advertising

intensity in a market. As concentration rises from low levels, individual producers become aware of their mutual interdependence and therefore increase in advertising expenditure. This can lead to possibly excessive and wasteful levels of advertising in moderate-to-high concentration industries as oligopolistic firms engage in mutually offsetting advertising. In addition, excess advertising in oligopolistic markets may raise barriers to new entry and increase market concentration, thereby raising prices and profits especially in consumer goods industries. Also, it can lead to excessive brand proliferation of patenting, or alternatively to predatory and other anti-competitive tactics designed to restrict entry and/or discipline rivals.

In some industries, concentration of production is associated with the existence of economies of scale which provide real cost savings for the economy. The assumption is based on mergers giving rise to cost savings. This possibility was first addressed by Williamson (1968), for the case of a large monopolistic firm, where the adverse effects of increased power arising from horizontal merger were thought to be offset by efficiency gains from economies of scale. However, several authors, most notably Leibenstein (1966), have argued that lack of competitive pressures may well cause costs to rise after merger. He has coined the term X-inefficiency to denote such an effect and stressed its importance to economic welfare. Thus the price increase and

the cost increase contribute to the reduction in social welfare.

The role of direct foreign investment in the industrial organization framework suggest that horizontal direct investment is most likely to occur in industries marked by product differentiation and a relatively small number of sellers (Caves, 1974).

An industry with high concentration has monopoly power which the number of identifiable groups or firms that own or control economic activity in the whole economy or in the sector. This power has many dimensions (Fishwick 1982, p.4): first, seller concentration, that is a small number of firms, and imbalance among the firms' size. Second, the presence of a degree of product differentiation, i.e. products within the market are virtually substitutes for each other. Third, the existence of barriers to the entry of new competitors. Fourth, the degree of collusion or agreement to restrict competition, both between existing firms and with potential competitors not yet active within the market.

This table shows that a small number of MNCs have large market shares. They are concentrated in the most technically advanced or capital intensive activities and, are likely to produce differentiated products in oligopolistic markets.

Table 4.1.

Major MNCs Share of Western World Output of Selected Products

Products	No of MNCs	% of output	Year
Crude oil	7	25	1979
Refined oil	7	40	1979
Iron ore	7	50	1976
Copper	7	23	1981
Bauxite	6	45	1982
Alumina	6	50	1982
Aluminium	6	46	1982
Bananas	3	75	1970
Vehicles	8	76	1983
Tractors	10	70	1979
Agricultural machinery	11	73	1980
Tyres	6	70	1982
Cigarettes	7	59	1974
Tin smelting	4	50	1980
Nickel	4	60-64	1978

Source: Jenkins (1987, p.40).

Foreign firms which have monopolistic advantages are likely to impact on the structure of industries, either by decreasing concentration and inducing competitive forces, or by increasing concentration and worsening monopolistic and/or oligopolistic elements in the host country. There are two opposing views which concern the effect of foreign firms on the industrial concentration and the process of competition in the host country.

The first view argues that MNC entry reduces concentration by increasing the number of firms in the market, and raising competition (Knickerbocker 1976, Vernon 1977, and Rueber 1973). MNCs which have specific ownership advantages

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can only compete effectively with a domestic oligopolist or existing MNC, and break down entry barriers in the domestic market. As MNCs erode initial entry barriers, the "follow-my-leader" tactics of MNCs are likely to encourage more foreign investment in the host country market and, thereby increasing the number of firms and promoting competition.

It has also been argued that the entry of foreign subsidiaries in local markets has spill-over effects on domestic firms. MNCs are a means of transferring technology, innovation, skills and marketing techniques to host countries. As a result of deteriorating barriers to entry and an extended domestic market, domestic firms may become increasingly competitive and move into the extended market.

A second view contends that MNC entry does not necessarily indicate an increase in the number of firms, because of the mode of entry into the host country market. The entry of a foreign firm is more likely to be set up by the purchase of, or merger with, an existing producer, rather than by the establishment of a greenfield venture (Newfarmer 1985, p.33). Hence, the number of firms does not increase, and industry concentration levels remain unchanged.

These critics also argue that MNCs take place in new, largely import-substitution industries where local firms do not exist. In this case, the argument that MNCs increase the number of the firms in an existing industry does not hold (Jenkins 1987, p.42).

Lall observes in his study that, MNC entry may increase concentration in the long run (Lall 1980, p.67): there are two mains reason for this; first, the monopolistic advantages of MNCs may raise the barriers to entry for local firms. They can introduce more differentiated products by using heavy advertising, introduce capital-intensive large scale production, and have better access to financial sources. Hence domestic firms may not be competitive with MNCs and may leave the market, or have "defensive" mergers among each other in order to survive in the market. As a result of this, concentration tends to increase. Second, MNC conduct may increase the process of concentration. Newfarmer (1979) discussed seven forms of MNC conduct which are interlocking directorship, mutual forbearance (a "live and let live" strategy), control of supply channels, cross-subsidization, formal and informal collusion, formal political ties and acquisition behaviour. MNCs use different tactics in order to control competitive forces, market conditions and market development. These market tactics sustain their monopolistic advantages and reinforce entry barriers against potential competitors, especially domestic ones.

Such advantages may help MNCs to become large and monopolistic, and the existence of such firms in an industry is an indication of market imperfection at the industrial level. MNCs are likely to produce differentiated products in oligopolistic markets in their own country. When they engage

in horizontal investment abroad, they simply try to transfer their own national market structure to the host country (Caves 1971). Expanding horizontally can help the MNCs to achieve monopoly control in the long run. Other industrial characteristics, i.e., R&D expenditure and barriers to the entry of new competition, are very relevant in the case of vertical foreign investment abroad. Vertical expansion involves integration with the source of raw materials, proceeding to final products and the development of distribution and selling facilities. This results in the control of supplies of raw materials in order to avoid the risks and uncertainties of business activity, and the desire to erect barriers to the entry of new competition. The oil industry is typical of vertically integrated oligopolies which decrease risk and control resources, profit and price. Therefore, these attributes arise from concentration in the market and reduced competition.

The "technology/market size " hypothesis (Merhav 1969), which claims that developing countries usually have a smaller market size than developed countries. Merhav assumed that technology is a homogeneous variable with a given relation to economies of scale, so that these techniques become implanted in a small developing countries' markets; all the market demand or a large part of it may be provided by modern productive techniques. Consequently, the technology/market size hypothesis predicts a higher level of concentration in

developing countries. In fact, Merhav did not emphasize the role of ownership in his hypothesis. But MNCs usually have economies of scale in production, and intensive, advanced technology is generally used. Hence, increasing concentration level would be expected when MNCs invested in developing countries' markets.

Evans (1977), in his paper on "Direct Investment and Industrial Concentration" develops the opposite hypothesis to that of Merhav, known as the "miniature replica", in which he predicts that the increase in the number of foreign firms in the industries of developing countries may be less concentrated than in the home market of developed countries. He (1977) predicts that the largest firms will follow one another into an important developing market regardless of the relationship between technology and market size. So they produce a "miniature replica" of the developing country's industry. Hence, they are not excluded from that market by their rivals. The hypothesis assumes that MNCs will get into the market under conditions which would impede the entry of domestic firms, and they will stay there despite conditions that would drive out domestic firms (ibid., p.375). By acquiring certain advantages, i.e., technology and capital resources which form entry barriers to potential domestic firms, MNCs can stay in the market, even where there is inefficiency and low levels of capacity utilization, in order to keep their market share.

Evans' hypothesis is based on a "defensive oligopolistic reaction" model, which shows that if one firm establishes a subsidiary abroad, the other firm in the oligopoly may follow so as to protect their market share, both in the home country, and in the world market and as a result of a "bandwagon effect" according to which firms fail that should they enter any market that their rivals consider attractive.

Under the "defensive oligopolistic reaction" model, Evans' "miniature replica" leads to a fragmentation effect in the markets of small developing countries, although the degree of concentration is decreased. LDCs' industrial sectors are comparatively small, and do not show the full diversification of advanced industrial countries. If the companies are interdependent, due to a small number of firms, they compete through advertising and brand proliferation rather than through price cuts or improvements in quality. This results in inefficiency and low levels of capacity utilization, and the misallocation of resources in developing countries.

4.3. Empirical Evidence

We would like to find out what existing empirical evidence supports the views discussed above. Vernon (1977, p,81) shows a declining trend of concentration in world production between 1950-1975 in automobiles, aluminium, petroleum, lead pulp and paper, slab zinc, copper and styrene

monomer. Vernon explains in the same study that in Brazil, Mexico, Colombia, and India number of foreign subsidiaries producing in each 3-digit industry increased significantly from 1960 to 1970 (ibid., p.78). Rueber (1973) shows that in Mexico, the entry of new foreign firms reduced concentration and increased competition.

On the other hand, industrial concentration has increased in industries such as, tractors, tyres, electrical equipment and cigarettes since World War II (Newfarmer ed., 1985). Newfarmer criticized Vernon's and Reuber's work for not paying attention to the mode of entry of firms. For example a third of new subsidiaries are set up by takeovers. The number of firms should presumably have declined by a comparable amount (Newfarmer 1985, p.34). That's why the effects of the entry of foreign firms depend on the mode of entry. The entry of new firms must be via establishing new plant and must not take place through acquisition (ibid, p.33). Connor and Mueller (1977) found the market share of U.S subsidiaries in Brazil and Mexico increased considerably from 1966-72, because the new entry of firms was through the acquisition of local firms or took place in non-competing product lines (quoted in Newfarmer 1985, p.34). Evans' (1977) study the Brazilian pharmaceutical industry found that oligopolistic reactions led to lower concentration levels than in the U.S's pharmaceutical industry. But he could not find "the miniature replica" effect in the cigarette industry in Brazil.

Newfarmer's (1979) study of the Brazilian electrical industry showed that MNCs may be able to control the market by using market tactics and their monopolistic advantages to create high entry barriers for potential competitors, especially domestic ones. In 1960, MNCs controlled about 66 percent of the assets of the largest electrical firms in Brazil, and this share had increased to 80 percent by 1976 (Newfarmer 1979, p.108). Chudnovsky (1974), found that in Colombian industries, where foreign participation is high, concentration levels range from 60 to 80 percent (quoted in Newfarmer 1985, p.33). Newfarmer and Muller's study on Brazil found the largest four plants accounted for half or more of the markets' total sales, where 61% of MNC production was sold in the whole manufacturing industry (Newfarmer and Muller 1975, Table 3-11, p.61). Newfarmer and Marsh's (1981) study of Brazilian manufacturing sectors by cross-section econometric analyses showed that there is a positive relation between foreign ownership of an industry and industrial concentration.

Lall (1980) analyses how MNC entry effects market concentration, using the model of the determinants of industrial structure. First of all, he found the factors that affected concentration in developed countries also impacted on less developed countries like Malaysia. Scale economies, capital requirement and product differentiation cause barriers to entry and also concentration. Secondly, he says: "foreign investment serves to raise concentration over and above the

level accounted for by the other industrial variables ...
However, it also serves to raise concentration via the
industrial variables, by raising capital-intensity, and
minimum capital requirements, and, rather less so, through
local advertising. The fact that foreign presence has an
independent effect on concentration suggests that causation
runs from MNCs entry to concentration, rather than from the
industrial variables associated with concentration to foreign
entry" (Lall 1980, p.77).

In conclusion, we show an hypothesis related to
concentration and MNCs, in order to examine the effects of
foreign investment on industrial concentration and
competition. Although the empirical evidence on
concentration is rather mixed, MNC penetration is likely to
decrease the level of industrial concentration in the short
run, as a result of their activities and /or by encouraging
other MNCs to enter the market as well. But in the long run,
MNC entry may increase concentration "partly by their conduct
and partly by their role as the agent of transferring highly
developed modes of operation to small and backward economies"
(Lall 1980, p.68). This was supported by available evidence,
especially in Latin American Countries where MNCs have
influential economic power, and the majority of concentrated
industries were dominated by foreign firms.

4.4. Structure of the Turkish Manufacturing Industry

Since the establishment of the Turkish Republic, industrialization has been the goal of national policy, a process that is taking place through various kinds of business enterprises. Hence, the nature of this process depends on the type, size and performance of these enterprises. An attempt is made to explain the industrial structure of Turkey in terms of the public, private and foreign enterprises, by informal and formal sector where they operate, and the role of small and large scale manufacturing enterprises.

The size of small-scale enterprises is defined by the State Institute of Statistics as being any enterprise that employs less than 10 workers. From Table 4.2, it can be observed that these enterprises have been numerically important in the manufacturing sector, but they decreased slightly as a percentage of establishments in the period 1970 to 1985. They were 11.66 percent (of manufacturing value added, in establishments having less than 10 workers) in 1970, 11.51 percent in 1980, and 12.50 percent in 1985. These small scale enterprises have a relatively high percentage of total manufacturing employment, because most of them are labour intensive and use traditional technology leading to the use of part-time and underemployed workers.

Table 4.2.

Large and Small Establishments in Manufacturing Industry: 1970,1980,1985

	Establish-ments	%	Employment	%	value-added (Million TL)	%
1970						
L	4851	2.77	510630	60.97	28550	88.34
S	170448	97.23	326835	39.03	3770	11.66
T	175299	–	837465	–	32320	–
1980						
L	8710	3.05	795650	61.71	823977	88.49
S	177159	96.95	493666	38.29	107135	11.51
T	285869	–	1289316	–	931112	–
1985						
L*	4870	2.52	846174	57.84	5454237	84.37
M*	5777	2.98	90566	6.19	202538	3.13
S	182991	94.50	526107	35.97	807786	12.50
T	193638	–	1462847	–	6464561	–

Source: Own calculations based on data from "Statistical
Yearbook of Turkey, SIS" (various issues).
Note : L; Large establishments employing more than 10
persons,
S; Small establishments employing up to 10 persons,
L*; Large establishments employing more than 25
persons,
M*; Medium establishments employing between 10 and 24
persons,
T; Total.

The activities of these enterprises are connected with the informal sector of manufacturing. The main characteristics of the informal sector are: they are labour intensive and use traditional technology, ease of entry, use of indigenous resources, family ownership, small-scale operations, and a competitive market. Informal sector enterprises in Turkey are usually engaged in food, textiles, clothing, leather, wood and cork products, furniture and fixtures, plastic, fabricated metal products and professional, scientific, measuring and controlling equipment.

The structure of the formal sector in the Turkish manufacturing industry contains a mixture of: (i) modern large industrial enterprises, operating relatively modern technology and situated mainly in urban areas and, (ii) medium and small-scale enterprises, using differing intermediate levels of technology and situated in urban areas, as well as in some rural areas. As is shown in Table 4.2, small numbers of large scale enterprises have a large proportion of value added in the manufacturing sector and have a high share of employment.

The formal manufacturing sector may be divided, on the basis of type of ownership, into private and public enterprises. This subdivision is important in both economic and political respects, because the behaviour and performance of business enterprises may differ according to type of ownership.

State enterprises have an important role in the Turkish

economy. They are concentrated in the high forward-linkage industries of steel and iron, chemicals, petro-chemicals, paper, cement and machinery. They have also played a major role in producing consumer goods such as tobacco and alcohol. They performed a catalytic function in the early stages of industrialization by providing essential inputs to other manufacturing activities.

The importance of the public sector decreased after the introduction of liberalization policies in 1980. Over the past ten years, joint ventures of public enterprises with private and foreign enterprises have continued to grow, especially in iron and steel, cement, machinery, paper and non-ferrous industry. As is shown in Table 4.3, the proportion of public enterprises in the value added is diminishing, especially in food, paper, iron-steel, non-ferrous basic metal, machinery and transport, while private enterprises are spreading throughout the manufacturing sector, with the exception of tobacco and petroleum refineries.

The impact of foreign investment on the structure of the manufacturing sector depends on the size of that investment and its composition. Hence in order to examine the significance of foreign investment, one needs to observe the participation of foreign firms in the manufacturing sector at the sectoral level, the size distribution of foreign firms and compare the sectoral distribution of foreign firms with all firms in the manufacturing industry.

Table 4.3.

Value Added in the Manufacturing Sector
(private and public) (%)

Sector	Value Added 1977		Value Added 1987	
	Private	Public	Private	Public
Food products	59.27	40.23	77.31	22.69
Beverage	34.53	65.47	37.87	62.13
Tobacco	1.90	98.10	5.84	94.16
Textile	86.25	13.75	89.46	10.54
Apparel	96.36	3.64	99.87	0.22
Fur & leather	100.00	0.00	100.00	0.00
Footwear	51.55	48.85	47.48	52.52
Wood & Cork	60.00	40.00	59.73	40.27
Furniture	78.74	21.26	72.57	27.43
Paper	41.00	59.00	64.33	35.67
Printing & publishing	90.66	9.34	94.73	5.27
Industrial chemicals	51.39	48.61	52.43	47.57
Other chemicals	92.62	7.38	96.36	3.64
Petroleum	0.00	100.00	0.00	100.00
Pet.& coal deriv.	93.05	6.95	96.40	3.60
Rubber	100.00	0.00	100.00	0.00
Plastic	99.43	0.57	100.00	0.00
Pottery	88.68	11.32	92.78	7.22
Glass	100.00	0.00	98.54	1.46
Non-metallic mineral	77.83	22.17	77.47	22.53
Iron & steel	29.75	70.25	53.44	46.56
Non-ferrous basic metal	42.50	57.50	65.51	34.49
Fabricated metal	94.52	5.48	93.00	7.00
Machinery	64.93	35.07	85.76	14.24
Electrical machinery	96.73	3.27	93.26	6.74
Transport Equip.	74.55	25.45	93.06	6.91
Scientific measuring	100.00	0.00	98.04	1.96

Source: Prime Ministry State Institute of Statistic,
    Statistical Year Book of Turkey, 1977, 1987.

Table 4.4 shows foreign participation, which is expressed as a percentage of total sales and employment level in Turkish manufacturing. The data about Turkish manufacturing were taken from the State Institute of Statistics. Information about foreign firms was provided by my own questionnaires. There was no foreign participation in five sectors [2]: footwear, wood and cork products, printing, petroleum refineries, and other non-metallic products.

Foreign participation in most of the manufacturing sectors is low, but played a very important role in other chemicals (combined with the manufacture of paints, varnishes and lacquers, drugs and medicines, soap and cleaning preparations, perfumes, cosmetics, and other toilet preparations), petroleum derivatives, tyres, pottery, glass, iron and steel, non-ferrous basic metals, electrical machinery, and transport equipment. Foreign firms control more than one third of total sales in transport equipment, tyres, and electrical machinery. For manufacturing as a whole, foreign firms accounted for 13.70 percent of total manufacturing sales, 8 percent of total employment.

The size distribution of foreign firms in terms of sales, paid-up capital, and employment is showed in Table 4.5. In terms of sales, only 16 out of 179 foreign firms accounted for 60.2 percent of total sales of foreign firms in 1988. While

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[2] There is one new firm in the footwear industry, and one in printing, but they did not start production.

Table 4.4.
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Participation of Foreign Firms
in Sales and Employment in 1987 (%)

	Sales	Employment
Food products	7.53	3.15
Beverage	4.11	6.37
Tobacco	1.89	4.61
Textiles	3.11	2.78
Apparel	0.91	0.74
Leather	0.33	1.58
Footwear	-	-
Wood and cork products	-	-
Furniture and fixtures	0.87	1.84
Paper	2.14	1.73
Printing	-	-
Industrial chemicals	7.92	7.98
Other chemicals	18.79	15.49
Petroluem refineries	-	-
Pet. derivaties	23.70	49.53
Tyres	44.80	24.78
Plastic	4.73	2.63
Pottery	13.69	16.84
Glass and glass product	17.05	6.23
Other non-metallic mineral	-	-
Iron and steel	16.97	7.86
Non-ferrous basic metal	16.13	3.43
Fabricated metal products	5.67	4.66
Machinery	8.26	4.47
Electrical machinery	37.53	28.67
Transport equipment	46.27	30.62
Scientific equipment	3.68	1.04
Others	15.28	3.69
TOTAL	13.70	8.00

Source: Prime Ministry State Institute of Statistics,
Statistical Yearbook of Turkey, 1987, and
my own questionnaire.

Table 4.5.

Distribution of Foreign Firms by Size of Sales in 1988

Sales Million $	No of Firms	% of Firms	Sales Million $	% of Sales
100 and Over	16	8.9	3087.6	60.2
99-75	5	2.8	425.8	8.3
74-50	6	3.4	362.9	7.1
49-25	17	9.5	579.5	11.3
Less than 25	135	75.4	674.1	13.1
Total	179	100.0	5129.9	100.0

Distribution of Foreign Firms by Size of Paid-up Capital in 1988

Paid-up Capital Thousand $	No of Firms	% of Firms	Paid-up Capital Million $	% of Paid-up Capital
10000 and Over	21	9.7	419.9	50.0
9999-5000	15	6.9	101.7	12.1
4999-3000	14	6.5	45.9	5.5
2999-1000	50	23.1	70.1	8.3
999-500	33	15.3	22.8	2.7
499-250	23	10.6	8.8	1.0
Less than 250	60	27.8	6.7	0.8
Total	216	100.0	675.9	80.5

Distribution of Foreign Firms by Size of Employment in 1988

Employment	No of Firms	% of Firms	Employment	% of Employment
1000 and Over	20	9.3	35677.0	51.0
999-500	18	8.3	13661.0	19.5
499-250	32	14.8	11857.0	17.0
249-100	32	14.8	4982.0	7.1
99-75	18	8.3	1567.0	2.2
74-50	14	6.5	910.0	1.3
49-25	17	7.9	577.0	0.8
Less than 25	65	30.1	693.0	1.0
Total	216	100.0	69924.0	100.0

Source: My own questionnaire

75.4 percent of the number of foreign firms accounted for only 13.1 percent of foreign sales.

In terms of paid-up capital, only 21 firms accounted for 50 percent of total paid-up capital of all foreign firms. While 67 firms or 30.7 percent of the number of foreign firms account for only 0.8 percent of the total.

The size of foreign firms by employment confirms sales and paid-up capital figures. 20 foreign firms out of 216, employed over 1000 employees and accounted for 51 percent of the total employment of foreign firms; while 67 firms employed less than 25 employees and accounted for only 1 percent of total employment of foreign firms.

In terms of sales, the largest firm in iron-steel industry which has $ 411 million sales, 1188 employees and $ 134 million paid-up capital. The other three largest firm are involved in the transport industry. Three of these firms altogether have 1031 million dollars sales, 9594 workers and 57 million dollars paid-up capital. The fourth largest firm is in the food industry, and has 119 million dollars sales, 1028 employees and, 10 million dollar paid-up capital. At the other three largest firms engaged in the tyre industry, these altogether have 523 million dollars, 3620 employees and 38 million dollars capital. The largest 16 firms accounted for 60 percent of total sales, 40 percent of total employment, and 47 percent of paid-up capital of foreign firms. The distribution of the 16 largest firms in terms of sectors is follows;

transport (4 firms), tyres (3 firms), iron-steel (3 firms), electronic (3 firms), non-ferrous basic metal (1 firms), machinery (1 firms), and food industry (1 firm).

These measures showed that a significant concentration of activity is in the hands of a few large firms and in a few sectors. Hence there are a small number of big firms which have a large proportion of sales and a high share of employment.

Table 4.6, shows the sectoral distribution of sales and employment levels for all and foreign firms in 1987. It is clear that there is high foreign participation in a few sectors, namely: food, other chemicals, tyres, iron and steel, electrical machinery and transport equipment, which accounted for 75.41 percent of their total sales of foreign firms and for 67.37 percent of their total employment levels. The most concentrated sector is transport equipment which accounts for 22.66 percent of the total sales of foreign firms. The second most concentrated is electrical machinery, with 18.07 percent of total sales of foreign firms. Third and fourth are iron-steel and other chemicals, with 13.59 percent and 7.85 percent of total sales of foreign firms respectively. The food and tyre industries follow with 7.74 percent and 6.43 percent. The share of all firms (including foreign as well as domestic firms) in the sales of industries mentioned above is 45.29 per cent, and the share of all firms in the employment of the above-mentioned industries is 38.73. This might show that

Table 4.6.

Sectoral Distribution of Sales, and
Employment for All and Foreign Firms

Sectors	(1)	(2)	(3)	(4)	(5)
Food products	13.88	7.63	15.35	6.04	0.55
Beverage	2.04	0.61	1.45	1.16	0.30
Tobacco	3.87	0.53	4.22	2.43	0.14
Textiles	15.05	3.42	22.46	7.80	0.23
Apparel	3.61	0.24	5.34	0.50	0.07
Leather	0.55	0.01	0.63	0.12	0.02
Footwear	-	-	-	-	-
Wood products	-	-	-	-	-
Furniture	0.34	0.02	0.62	0.14	0.06
Paper	2.90	0.43	2.64	0.57	0.16
Printing	-	-	-	-	-
Ind. chemicals	8.36	4.83	4.01	4.00	0.58
Other chemicals	5.20	7.13	3.08	5.96	1.37
Petroluem ref.	-	-	-	-	-
Petrol derivaties	1.27	2.19	0.50	3.12	1.73
Tyres	1.93	6.33	1.42	4.41	3.27
Plastic	1.55	0.53	1.38	0.45	0.35
Pottery	1.23	1.25	1.48	3.11	1.02
Glass	1.61	2.00	1.67	1.30	1.24
Other non-metallic	-	-	-	-	-
Iron and steel	10.97	13.59	7.05	6.93	1.24
Non-ferrous metal	2.86	3.36	2.60	1.11	1.18
Metal products	3.61	1.49	4.87	2.84	0.41
Machinery	5.54	3.34	6.60	3.69	0.60
Electrical mach.	6.60	18.07	5.08	18.19	2.74
Transport equip.	6.71	22.66	6.75	25.84	3.38
Scientific equip.	0.07	0.02	0.23	0.03	0.27
Others	0.26	0.29	0.55	0.25	1.12
TOTAL	100	100	100	100	1.00

Notes : (1) The Distribution of Total Manufacturing Sales.
(2) The Distribution of Foreign Firm's Sales.
(3) The Distribution of Total Employment.
(4) The Distribution of Foreign Firm's Employment.
(5) The Relative Importance Coefficient of Foreign
Firms (Column.2/column.1).

foreign firms concentrate in a few sectors at a rate much higher than that for all in the industry.

Foreign firms are concentrated in high technology sectors or capital-intensive sectors, except for food. Transport, electronics, and iron & steel in particular account for 54.32 percent of all foreign firms' sales, and the concentration in these sectors is much higher than in manufacturing sales for all firms, which account for 24.28 percent of all manufacturing sales. The above concentration is further confirmed by observing employment levels.

The last column of this table shows the relative importance coefficient of foreign firms. It is defined as the distribution of foreign firms' sales in each sector, divided by the distribution of each sector of all firms' sales. Again, in these five sectors mentioned above, the coefficient is much greater than one, while it is just greater than one in petroleum derivatives, pottery, glass, non-ferrous basic metals and other manufacturing industries. We may say that the dominance of foreign firms in sales indicated by the high coefficient, may reflect how foreign firms have greater participation in these sectors than domestic firms.

To conclude, the manufacturing sector in Turkey has a mixed structure, in common with most LDCs. The modern component comprises large industrial enterprises, while the non-modern consists of small industrial enterprises.

The role of large scale enterprises in the formal

manufacturing sector in Turkey is very substantial. Publicly owned enterprises are mostly large-scale organizations and their relative importance has reduced since 1980 because of privatization policy. Small scale enterprises have been numerically important in the manufacturing sector. Although these firms make a small contribution to value added, they have an impact on employment levels, because they use more traditional, labour intensive techniques.

Thirdly, the growing importance of foreign and domestic private enterprises in the manufacturing sector means they have become more directly involved with the industrialization process of Turkey. The role of large domestic firms has been particularly significant where foreign penetration is low or non- existent.

The size structure of foreign firms in terms of total sales, employment, and paid-up capital showed that there is significant concentration of activity in the hands of a few large firms in a few industries. The largest firms are concentrated in iron-steel, tyres, transport, electronic, non-ferrous basic metal, and food.

All foreign firms' sales and employment cover just 13.70 and 8 percent of all manufacturing sales and employment respectively, which is very low compared with other less developed countries. The distribution of foreign and all firms and the foreign participation in sales, employment, and the relative importance coefficient, show that a substantial

proportion of foreign firms' activity is in a few sectors, namely, other chemicals, petroleum derivatives, tyres, iron and steel, electrical machinery, transport, glass, pottery, and non-ferrous basic metals. Foreign firms tend to concentrate in those industries which are different from those of local firms. Local firms are especially concentrated in the food and textile industries.

4.5. Determination of Concentration on the Turkish Manufacturing Sector

In this section, firstly, the level of concentration in the Turkish manufacturing sector will be analyzed. Secondly, the question of foreign firms have contributed to the degree of concentration will be examined. Finally, major factors effecting the level of concentration in the Turkish industrial structure, including foreign investment, will be tested.

The estimate of the 5-firm concentration ratio according to a 3-digit classification is shown in Table 4.7. The data are taken from the publication of SIS's Annual Manufacturing Industry Statistics. The first column shows the share of total sales of the first five firms, and the second column refers to the number of foreign firms among the five largest ones.

The Turkish manufacturing industry shows wide variation in degree of concentration but, on the average concentration level, it is reasonably high, 44.00 for the year 1987.

Table 4.7.
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5 Firm Concentration Ratios of Turkish
Manufacturing Industry in 1987

Sectors	Total Sales	No. of Foreign Firms Among the Five Largest Firms
Food Prod.	18.0	2
Other Food Prod.	20.6	-
Beverage	47.8	1
Tobacco	72.2	-
Textiles	11.5	1
Apparel	11.2	-
Leather	30.5	-
Footwear	60.4	-
Wood	23.8	-
Furniture	63.0	-
Paper	35.4	-
Printing	37.2	-
Industrial Chemicals	55.4	-
Other Chemicals	27.0	3
Petroluem Refineries	100.0	-
Petroleum Derivaties	65.0	2
Tyres	79.2	3
Plastic Prod.	28.6	1
Pottery	65.2	1
Glass	67.3	1
Non-metallic Prod.	20.4	-
Iron & Steel	48.3	2
Nonferrous Metal	58.5	1
Metal Products	22.0	1
Machinery	42.1	1
Electrical Mach.	40.0	4
Transport Equipment	49.9	5
Scientific Equipment	42.1	-
Others	33.3	-
Average	44.0	-

Source: Prime Ministry, State Institute of Statistics,
Statistical Yearbook of Turkey (1987), and
our own questionnaries.

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Considering the level of concentration CR>70 which may be accepted as heavily concentrated, we counted 3 industries, which are petroleum refineries, tobacco and tyres. Petroleum refineries and tobacco are dominated by public enterprises. By contrast there are three foreign firms among the leading five firms in the tyre industry.

Industries which have the level of concentration 33<CR<69 are petroleum derivatives, iron-steel, machinery, electrical machinery, transport, glass, pottery, and the non-ferrous basic metal industry, which has at least one foreign firm among the first five leading firms of the industry. This may show that foreign firms have contributed to the oligopolistic structure of the Turkish manufacturing industry.

Some of the industries having low concentration within the first five firms account for less than 30 percent of total sales of the industry in 10 out of 29 industries. The structure of Turkish manufacturing in these industries is highly competitive. As we mentioned in the last part, small-scale enterprises are numerically important in these sectors.

The mode of entry by foreign firms into a market is an important factor influencing concentration. When firms invest in the host country for the first time (greenfield) and the firm is not introducing a completely new product into the economy, competition is likely to increase, while the concentration ratio will decrease (Dunning 1993, p.432). By contrast, new entry by a foreign firm takes place through

acquisition of a domestic firm. There may be no effect on the concentration ratio in the short run, except that there are changes to the acquired firms's output as a result of changes in ownership (ibid., p.432).

Table 4.8 shows the mode of entry by firms into the Turkish manufacturing industry. 143 foreign firms have invested in the Turkish manufacturing industry for the first time and 73 firms have been involved in the acquisition of existing firms. There were 35 new firms in 1987 and 34 firms in 1988. Out of these 10 firms in 1987 and 4 firms in 1988 were set up through the acquisition of existing domestic firms. In most of the cases, acquired firms were well established domestic firms and had important share of market output. Moreover, acquisitions were also likely to occur in the more concentrated industries where barriers to entry were highest.

Table 4.8.

The Mode of Entry of Foreign Firms, 1988

	Total No of Firms	Acquisition		Greenfield	
		No	%	N	%
Food products	25	9	36	16	64
Beverages	3	1	33	2	67
Tobacco	3	0	0	3	100
Woven, knit. yarns	14	7	50	7	50
Apparel	12	0	0	12	100
Leather	4	0	0	4	100
Forestry products	2	1	50	1	50
Paper	5	1	20	4	80
Printing & publish.	2	0	0	2	100
Industrial chem.	12	5	42	7	58
Other chemicals	25	7	28	18	72
Petroleum products	1	0	0	1	100
Plastics	3	1	33	2	67
Tyres	4	2	50	2	50
Fertilizer	1	0	0	1	100
Pottery	6	3	50	3	50
Glass	3	1	33	2	67
Iron & steel	9	5	56	4	44
Non-ferrous metal	2	1	50	1	50
Metallic products	12	6	50	6	50
Non-Elec. machinery	13	9	69	4	31
Electrical machinery	15	4	27	11	73
Electronic	13	3	23	10	77
Transport equipment	8	5	63	3	38
Transport related I.	7	1	14	6	86
Measur. control equ.	3	0	0	3	100
Others	9	1	11	8	89
Total	216	73	34	143	66

Source: My Own Questionnaire

4.5.1. Hypothesis and Variables

It has been shown that there is a relation between industrial market concentration and the presence of foreign firms. But in a study of foreign investment in Turkey, one can hardly ignore their effects on the levels of concentration. This is the first time that the effects of foreign investment on the level of concentration across Turkish domestic industries have been analyzed. In this section we want to find out what are the major determinants of concentration in the Turkish manufacturing industry.

The market structure is determined by the results of such variables as technology, size of the market, effectiveness of managerial organization, and receptiveness of consumers to advertising (Scherer, et al,. p.141, 1990). Concentrated market structures may arise from persistent scale economies, allowing relatively large firms to produce their products at lower average cost per unit than relatively small producers. Economies of scale can arise generally as product-specific, involved with the volume of production of a single product, as is the case with specialization and division of labour; plant-specific, related to the expanding the size of individual processing units; or multi-plant economies of scale associated with economies of increased cash reserves and spread production, market, and financial risks over a larger volume of activity (ibid, p.97-98).

Aside from MES proxies, capital requirements have been

identified as an important variable affecting market structure. Entrants may have trouble finding finance for their investment due to the level of risk to the lenders. One argument is that banks are less enthusiastic to lend to new entrants because they are less well known than incumbents. Some potential entrants can be capable of acquiring enough capital in order to build plants, but others will not. Therefore there may exist capital requirements that discourage the entry of new firms.

Other measure of entry barriers is product-differentiation advantages. Firms can try to differentiate their product by advertising, by efforts of their sales forces, and design changes. To deter entry, established firms try to pack the market with a variety of products or brands so that insufficient room exists for a new firm's product to compete profitability, or they may have patented product innovations, or enjoy consumer loyalty. However, recent theory implies that entry will be deterred if a large fraction of entry costs are sunk (Kessides, 1986).

Foreign investment is another variable in our model. We have found in Chapter 2, that industries which give rise to foreign firms are concentrated and foreign firms have various monopolistic advantages over domestic firms such as easy access to capital, specialization in capital and skill intensive activities. The question is whether foreign entry has an impact on industrial market structure independently of

the industrial variables that give rise to foreign direct investment.

There are two conflicting hypotheses on the effects of MNCs activity on the market structure of host countries (Dunning, 1993, p.431). The first one suggests that MNCs are likely to increase competition and reduce industrial concentration by their entry into existing foreign markets. The second one argues that MNCs form their own barriers to potential competitors by virtue of their unique O-specific advantages, or they drive out competitors from existing markets as a result of their superior efficiency and aggressive business practices, therefore increasing industrial concentration.

It is hypothesized that concentration in the Turkish manufacturing sector is effected by foreign participation, advertising-to-sales ratio, scale economy, market size, capital intensity of production market growth. Although these factors have become the established determining variables in the differential market structure analysis, controversies still exist about the measurement of these variables[3]. Usually, data availability rather than theory appears to dominate the choice of measurement used in such analyses.

This analysis is based on cross-section data for the year 1987. The data set is taken from surveys of 28

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[3] For a detailed survey, see, Curry and George (1983), Geroski (1988) and Chapter 2.

manufacturing industries by the three-digit standard industrial classification of the Prime Ministry State Institute of Statistics.

The dependent variable (CR4): This is the four-firm concentration ratio which is measured according to sales. The share of sales may be a better measure than employment levels or capital assets. Since large establishments usually use more capital-intensive techniques than small establishments, employment levels and assets as units of measurement of market share might underestimate or overestimate concentration levels.

Independent variables:

Some of independent variables were defined in Chapter 2 where we examined industrial determination of foreign direct investment in the Turkish manufacturing industry.

Foreign participation (FP): This variable is taken for the first time to test the effects of the entry of foreign investment on the level of concentration across Turkish domestic industries.

Foreign participation is measured according to the share of sales by foreign firms in the total sales of the industry. The data were collected from my own questionnaire.

Advertising Intensity (ADV): Advertising to sales ratio per industry is a proxy to reflect product differentiation as entry barriers.

Minimum Efficient Plant Scale (MEPS): The minimum

efficient, or optimum size, in relation to the size of a market, is generally recognized as one of the most important factors determining concentration.

Capital Labour Ratio(K/L): The capital intensity of production is measured by the ratio of fixed assets per employee.

Market Growth (MGR): This variable is taken to test for the significance of growth in the local market. Market growth may encourage the entry of firms into industries, since scale related barriers tend to be less significant in a growing market.

Market Size (MS): This variable is used to show the ease with which new firms start operations in efficient sized plants. It is measured by value-added in each industry.

4.5.2. Statistical Results

The OLS method was used to estimate parameters, and the results are given in Table 4.10. Data on the Turkish manufacturing sector were fitted into a double-log formulation.

Simple regression of concentration ratio on foreign participation gave that the effect of foreign participation is positive and significant at 95 percent;

$$C_i = 3.0530 + 0.22 \text{ FP}_i \qquad R^2 = 2108 \qquad F = 7.94$$

$$(2.6355) \qquad \text{(t-value in parentheses)}$$

The simple correlation coefficient between them is 0.46. Concentration was very highly correlated with MEPS (0.96) and fairly highly correlated with K/L (0.48) and also MGR (0.43). A high incidence of collinearity is expected among the explanatory variables as well (Table 4.9). The high correlation co-efficient of foreign participation with K/L ratio shows that capital intensity may be related to foreign direct investment through the introduction of modern technology, embodied in new capital equipment. There is a relatively high correlation coefficient of foreign participation with minimum efficient scale and market size. This may show that foreign firms have a significant presence in large scale industries and start operating with efficient sized plants. MEPS was fairly correlated with growth rate. This points to the importance of large scale industry in Turkish manufacturing, and its growth during 1982-1987.

Turning to the interpretation of regression results, the existence of scale economies has been found to promote concentration, and to be positively related to it. MEPS has powerful effects on concentration, which raises doubts about the exact meaning and explanatory power of this variable.

The capital requirement variable is quite significant and has a positive effect on the level of concentration, because the firms construct high barriers to entry for potential

Table 4.9.

Estimated Correlation Matrix of Variables for Double Logarithmic Model

		FP	MES	ADV	MS	MGR	K/L
Foreign Firm Participation	(FP)	1.0000					
Minimum Efficient Scale	(MES)	0.3967	1.0000				
Advertising-sales Ratio	(ADV)	-0.0310	0.2760	1.0000			
Market Size	(MS)	0.2627	-0.0991	-0.2772	1.0000		
Market Growth Rate	(MGR)	0.2385	0.4910	-0.0469	-0.2244	1.0000	
Capital-labour Ratio	(K/L)	0.5483	0.5041	-0.0246	0.2942	0.2619	1.0000

Table 4.10.

Regression Equations for the Determination of Concentration

Intercept	FP	MES	ADV	MS	MGR	K/L	R²	Adj. R²	F ratio
3.1476 (2.6375)	0.1358 (1.4628)c		0.1451 (1.7923)b	-0.0697 (-0.7454)	0.2227 (2.1158)b	0.3703 (1.6913)c	0.4949	0.3801	4.3114
2.2137 (4.4793)	0.1214 (1.3370)c		0.1671 (2.1880)b		0.2706 (1.9707)b	0.3208 (1.5272)c	0.4779	0.3871	5.2693
2.3190 (4.6772)			0.1654 (2.1321)b		0.2921 (2.1073)b	0.4663 (2.5542)a	0.4373	0.3670	6.2178
2.9756 (2.4456)			0.1500 (1.8109)b	-0.0483 (-0.4838)	0.2606 (2.4538)b	0.5126 (2.5515)a	0.4458	0.3494	4.6251
2.6811 (8.2243)	0.0612 (1.8872)b	0.5296 (7.899)a	0.0220 (0.8133)	-0.0258 (-0.7446)			0.9279	0.9153	73.9554
2.5424 (2.1479)	0.2056 (1.9895)b		0.1561 (1.8611)b	-0.0337 (-0.3391)	0.2838 (2.6725)a		0.4292	0.3300	4.3243

Notes : White's (1980) correction to the standart errors was implemented for all reported models because of hetero-skedasticity. Figures in parenthesis are t-values. The significance of the regression coefficients is tested using a one tail test and the significance of the coefficients of multiple determination is tested with F test, (for abbreviations see Table 4.9).
a = Coefficient is significant at 1 percent level.
b = Coefficient is significant at 5 percent level.
c = Coefficient is significant at 10 percent level.

firms, by using a large amount of capital to build efficient plant. The market size coefficient is not statistically different than zero in all equations. The market growth has significant and positive effect which suggests that growth increases concentration in the Turkish manufacturing industry. Concerning advertising, its co-efficient has statistically significant positive effects on concentration except where MEPS seems to overwhelm it.

The foreign participation variable always has a positive and significant effect on concentration whether or not the K/L ratio and MEPS variables are included. Its significance increases when combined with MS, MGR and ADV. Foreign participation influences concentration over and above the level accounted for by other variables, and also raises concentration through these variables by directly influencing capital intensity, minimum efficient plant scale, and market growth as shown by the simple correlation coefficients mentioned above. This finding is broadly similar to the results obtained by Lall (1980) on Malaysia. However the evidence does not show how the effect of foreign direct investment on concentration manifests itself. Nevertheless, foreign participation has independent effect on concentration ratio and also foreign firms may increase concentration through either aggressive conduct, technological and marketing factors.

The empirical evidence supports the view that barriers

to entry as described by capital intensity of production, MEPS and advertising affected the concentration. The growth of output has a positive effect on concentration whereas market size does not have the expected effect. Foreign direct investment, either in conjunction with other industrial variables or independently, influences concentration. It can be argued that the same set of factors which influence market structure in developed countries also seem to do so in Turkey.

4.6. Profitability and Market Structure

In the previous section it was found that most sectors in Turkish manufacturing have high levels of concentration. In other words, a few firms have monopoly or oligopoly power which enables them to increase their selling price above the marginal cost of production, therefore earning monopolistic profits. Traditionally, the existence of excessive profit can be explained by industrial concentration, the height of barriers to entry, and growth of demand.

Hence, this section has two objectives; First, I will analyze the impact of some of the major market structure elements on one aspect of performance - price-cost margins - in the Turkish manufacturing industry. Second, I will attempt to evaluate the impact on these relationships of foreign trade and foreign direct investment.

4.6.1. Hypothesis and Variables

A - Price-Cost Margin (PCM)

There has been some debate as to which profit rate[4] should be used as the dependent variable in the analysis of structure-profit relationships. There are three different measures that directly or indirectly reflect profits or the relationship of price to costs. The relevant profit rate was taken to be the rate of return on assets, the price-cost margin or Tobin's q. From a theoretical viewpoint, the rate of return on capital, either assets or equity, would seem the most appropriate measure. However there are many difficulties that arise in calculating rates of return correctly (See Carlton et.al, 1994, p.336-341). The first problem is that capital is usually not valued appropriately because accounting definitions are used instead of economic definitions. The second problem is that depreciation is usually not measured properly, and there are several fixed formulas to measure the depreciation of assets. The third problem concerns valuing advertising, and research and development. The fourth problem is whether the rate of return should be adjusted to eliminate the effects of inflation or not. The fifth problem is that pre-tax rates of return may have been calculated instead of the appropriate after-tax rates of return. The sixth problem

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[4] Fisher and McGowan (1983), Benston (1985), Geroski (1988), Kay and Mayer (1986), and Scherer et al (1987).

is that rates of return do not take debt into account properly. In order to avoid the problems associated with calculating rates of return, many economists use the Lerner Index or price-cost margin, (P-MC)/P, which is the difference between price (P) and marginal costs (MC), as a fraction of the price. Unfortunately, because a marginal cost measure is rarely available, average variable is used instead. The price-average variable cost margin is typically calculated as sales revenue minus payroll minus materials' cost divided by sales. That is, they tend to ignore capital, R&D, and advertising costs. Another measure of performance, Tobin's q, is the ratio of the market value of a firm's assets (as measured by the market value of its outstanding stock and debt) to the replacement cost of the firm's assets (Tobin 1969). This measure of performance is not used as often as either rates of return or price-cost margins. The advantage of using Tobin's q is that the difficult problem of estimating either rates of return or marginal cost is avoided. On the other hand, for q to be meaningful, accurate measures of both the market value and replacement cost of a firm's assets would be needed.

In our studies we used the price-cost margin because of data constraints. The dependent variable in the present study is defined as the percentage gross return (before taxes and depreciation) on sales for the industry. It was calculated as value added less total payroll costs, rental payments, insurance premiums, communication expenses, advertising, and

other total costs, divided by value of total sales. Since price-cost margins are not net of capital costs, variation in the ratio will in part reflect differences in inter-industry variation in capital intensity. To avoid this problem, a capital-labour ratio is included in the regressions, to control for the different degree of capital intensity among industries. The inclusion of advertising expenditure in total direct costs lessens the possibility of a spurious correlation between price-cost margin and concentration, due to the observed close relationship between advertising and concentration.

$$PCM = \frac{\text{Value added} - \text{payroll} - \text{other cost}}{\text{Total Sales}}$$

B - Seller Concentration

The oligopoly theory suggests that the higher the level of seller concentration, the more likely it is that the dominant firms will be able to collude, tacitly or expressly, to raise prices above long-run average costs. On the other hand, the theory of contestable markets (Baumol et al., 1982) argues that even in very concentrated markets, firms will not be able to hold the price above marginal costs if entry and exit are costless and can occur very rapidly. However, the theory of contestable market has received little support in empirical tests (Carlton et al., 1994). No real-world industry

has as yet been shown to be contestable. The analysis of contestable markets has been a useful exercise to the extent that it has clarified the way market performance departs from the optimal in imperfectly contestable markets. It does not provide a tool that can be used to analyze the determinants of performance in real-world markets.

C - Barriers to Entry

In addition to seller concentration, entry barriers are also important in explaining profitability differences. Concentration may be conducive to high prices and high profits, but if there are few or no barriers to entry, then we would expect high profits to be competed away by new entrants (Scherer et al., 1990, p.424). Monopoly returns may be realized despite low concentration if entry has been restricted and the individual seller's output cannot readily be expanded.

In recent years there has been considerable development in the barriers to entry literature, particularly on the use of non-price strategic entry deterrence by established or potential firms. Established firms may deter entry to the use of excess capacity and product proliferation, the use of pre-emptive patenting or the use of predatory pricing tactics. In all cases, established firms attempt to protect themselves from the threat of new competition in order to be able to earn monopoly profits in the long run. Much of the recent

literature on entry deterrence has centred on the ideas of first-mover advantages, commitment and sunk cost (Clarke, 1988, p.88). First mover advantage may enable the established firm to prevent entry. Because the established firm is already in the market, this gives it an advantage in being able to choose its product position. Or an incumbent firm may influence entrant expectations that a new entry would not be profitable. One way the incumbent can do this is to be committed to a certain line of action in response to an entry occurring. For example, the established firms may carry excess capacity and use it as entry threat when new entry occurs. This commitment strategy may be related to sunk cost, because an incumbent, in backing its commitment may undertake investments which are wholly or partly irreversible, thereby incurring a sunk (i.e. non-recoverable) cost.

In our study we used three main sources of barriers to entry[5]: 1.economies of large scale, 2.product differentiation, 3.capital intensity of production.

Economies of scale pose a significant source of entry barrier if a new firm enters at minimum efficient scale into industry, so inducing a decrease in market price, possibly to below its unit costs, because of the increase in industry output (ibid., p.78). Alternatively, if it enters at less than minimum efficient scale, it will have a cost disadvantage and will make a loss. Hence, the established firm will be able to

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[5] These variables are defined on pages 109-110.

increase the price without inducing any entry (ibid., p.78).
Price-cost margins can be expected to be positively related to
the level of scale economy.

Product differentiation barriers to entry arise from
consumer preference for the product of established firms over
new entrants. Hence, new entrants would sell its products by
offering a price discount relative to established products,
and/or would have to incur large sales-promotion costs to
overcome the preference for established products. Advertising-
sales ratio is a proxy to reflect product differentiation.

The capital intensity of production may make entry
difficult for firms because of the substantial amounts of
capital required to enter at an efficient scale and also to
compensate for losses until profits are achieved.

D - Growth of Demand

We may expect that, all other things being equal, growth
of industry demand would have a positive influence on price-
cost margin. First, firms in industries facing high growth of
demand are less likely to feel competitive pressures than
those in industries having slow growth or stagnation (Gan
et.al 1977, p.283). Second, in oligopolistic industries where
fixed-costs are relatively high, slow growth of demand may
cause the breakdown of established price behaviour, leading to
lower price-cost margins (ibid., p.283).

An alternative hypothesis has been proposed by Caves

(1972, p.30-1). Rapid growth of demand is likely to encourage firms to behave competitively in an industry characterized by oligopoly and product differentiation. Although price cutting leads to lower current profits, it would increase the market share of the firm which offers greater profits in the future.

E - The role of Exports

Oligopolistic firms are likely to employ competitive pricing strategies in the international market, because it might be more difficult to achieve a collusive, joint profit-maximization pricing behaviour in the international market than in the domestic one. Besides, alternative export markets might lessen the collusive behaviour of the oligopolist with local counterparts (Gan et.al 1977, p.285).

Export opportunities for each industry are approximated by the ratio of net exports to total industry sales, and are expected to be negatively related to the price-cost margin.

F - Import Competition

Structure-conduct-performance analysis suggests that the ability of domestic firms to exercise market power will be less in the presence of competition by foreign suppliers. Hence domestic firms would be more likely to set import-entry-forestalling prices approaching competitive prices. Such competition appears to exert a significant negative effect on industry profit rates.

In January 1980, Turkey introduced trade liberalization policy. Reforms carried further the liberalization process. In particular, the quota list was abolished and after 1984, all goods in principle could be imported.

The ratio of imports to total industry sales is used to measure the degree of actual foreign competition in an industry and serves as a proxy for the threat of potential foreign competition.

G - Foreign Direct Investment

Imports, exports and tariff protection are not the only important trade variables. Foreign investment is also correlated with profitability (Hay et al., 1991, p.239).

MNCs may earn monopoly profits in host countries because of their market power (Jenkins, 1987, p.24). Market power of MNCs, can be obtained from a number of oligopolistic advantages possessed by MNCs, particularly access to capital, control of technology, marketing through advertising, product differentiation and privileged access to raw materials (Lall et al., 1977, p.20-29).

4.6.2. Statistical Results

Table 4.12 presents the multiple regression equations relating price-cost margins to various combinations of structural variables for the sample of 28 industries.

The statistical tool employed was ordinary least-squares regression analysis. A series of regression models were performed. However, the double-log formulation provided more significant results.

The fitted regressions are significant at one per cent level in terms of F-statistics, and the industry characteristics identified here were able to explain over half of the variation in price-cost margins among the industries.

We start commenting on the interrelationship between the variables as seen from the correlation matrix in Table 4.11. The correlation of foreign participation, concentration, MEPS, and capital intensity of production are quite significant with profitability, We did not run the regression when we introduced a collinear variable like minimum efficient plant scale with the concentration variable.

As may be observed, foreign presence, the capital intensity of production and concentration ratio appear to be the most important explanatory factors. Their regression coefficients are generally significant even when all other variables are included.

The finding is consistent with the hypothesis that DFI tends to take place in industries characterised by oligopoly and product differentiation and have the expected effect on industry profitability. There is a significant positive relationship between the price-cost margin and concentration, supporting the hypothesis that higher concentration promotes

Table 4.11.

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Estimated Correlation Matrix of Variables

		FP	CR4	K/L	GR	ADV	M	EX	MES
Foreign Firm Participation	(FP)	1.0000							
4-Firm Concentration Ratio	(CR4)	0.4592	1.0000						
Capital-labour Ratio	(K/L)	0.5483	0.4849	1.0000					
Growth of Market Demand	(GR)	-0.2524	-0.4321	-0.3314	1.0000				
Advertising-sales Ratio	(ADV)	-0.0310	0.3012	-0.0246	-0.0308	1.0000			
Import-sales Ratio	(M)	-0.1854	-0.1911	-0.3617	0.1768	-0.2004	1.0000		
Export-Sales Ratio	(EX)	-0.1664	-0.2281	-0.4287	0.1109	-0.0033	0.0912	1.0000	
Minimum Efficient Scale	(MES)	0.3967	0.9564	0.5041	-0.4582	0.2760	-0.1626	-0.3185	1.0000

Table 4.12.

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Regression Equations Explaining Price-Cost Margins

Intercept	FP	CR4	K/L	GR	ADV	M	EX	MES	R^2	Adj. R^2	F ratio
1.9314	0.1334	0.2789		0.0104	-0.0598	-0.0338	-0.0110		0.5438	0.4135	4.1725
(1.9813)	(2.3444)b	(2.0388)b		(0.0605)	(-1.0365)	(-2.5131)a	(-0.4422)				
1.9213	0.1347	0.2891		0.0106	-0.0615	-0.0344			0.5396	0.4349	5.1565
(2.0085)	(2.4199)b	(2.1836)b		(0.0631)	(-1.0881)	(-3.1432)a					
1.9624	0.0741	0.1891	0.4483	0.0456	-0.0276		-0.0147		0.6640	0.5681	6.9180
(2.3457)	(1.8657)b	(1.5670)c	(3.1629)a	(0.3088)	(-0.5642)		(-0.6412)				
2.2590	0.1817	0.1503	0.4187						0.6516	0.6081	14.9649
(6.9840)	(1.8521)b	(1.4964)c	(3.4098)a								
1.9844	0.1333	0.2759			-0.0593	-0.0336	-0.0110		0.5437	0.4401	5.2438
(4.7318)	(2.4074)b	(2.2220)b			(-1.0614)	(-2.5648)a	(-0.4528)				
2.1161	0.1489	0.2406				-0.0295			0.5147	0.4540	8.4842
(5.3752)	(2.6255)a	(2.1208)b				(-2.8044)a					
2.3417	0.1368			0.0597	-0.0649	-0.0358	-0.0010	0.2024	0.5887	0.4711	5.0089
(3.0956)	(2.2791)b			(0.3597)	(-1.1988)	(-3.3726)a	(-0.0427)	(2.6266)a			
2.5813	0.0869		0.3909					0.1079	0.6673	0.6258	16.0485
(20.8340)	(2.0377)b		(3.1825)a					(1.8647)b			

Note: Same as Table 4.10. (for abbreviations see Table 4.11)

the ability of firms to coordinate their behaviour and hold the prices above marginal costs.

Advertising intensity has a negative and insignificant effect, irrespectively of which variable is combined. If there are economies of scale in advertising, and if firms within an industry have similar markups of price over production cost, a negative correlation between profit rate and advertising/sales ratio at the industry level would be expected (Scherer,1990, p.438). However, advertisements may not have the role in influencing profit margins in the case of the Turkish manufacturing industry. The measurement of advertising intensity may have limitations in reflecting the economies of scale in advertising, and the capitalized value of past advertisement expenditures. Growth of sales was also not significant. Most of studies too, the growth was not important[6].

The export variable did not turn out to be an important determinants of profit rates. The import ratio rate has significant and negative effect on industry profits. The evidence is consistent with the hypothesis that less restrictive trade policies after 1980 encourage more competitive pricing behaviour in domestic industries.

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[6] Comanor and Wilson (1967), Siddharthan and Dasgupta (1983), Kumar (1990).

4.7. Conclusion

We have considered the relevance of the views on MNCs and their process in concentration and competition in developing countries. It has been argued that MNCs are likely to break down barriers to entry because of their specific advantages. MNCs also follow one another into an important LDCs market, thus providing a "miniature replica" of that industry. Hence, MNCs' entry and their behaviour tends to increase the number of firms in the market, reduce concentration levels and make the market more competitive. In the long run, however, MNC entry may increase concentration. Because, the mode of entry of foreign firms, and their monopolistic advantages, such as capital-intensive technologies, differentiated products, superior managerial and organisational skills, etc., which create entry barriers to potential entrants, especially domestic firm, mean MNCs increase industry concentration levels.

We have analyzed the extent, the characteristics, and features of Turkish manufacturing structure in terms of public, private and foreign enterprises, and the role of small and large scale enterprises. The manufacturing sector in Turkey has a mixed structure because of greater variability in the "mix" of types and scale of operation in business enterprises. The importance of the public sector diminished after the introduction of liberalization policies in 1980,

while private enterprises have been spreading throughout the manufacturing sector. The role of private domestic firms has been particularly significant where foreign penetration is low or non-existent.

The size distribution of foreign firms in terms of sales, paid-up capital and employment, shows that a small number of big firms accounted for a high share of total sales and total employment of foreign firms. However the size of small-scale foreign firms has been numerically important; a similar pattern applies to manufacturing as a whole.

Foreign firms have penetrated to a considerable extent in some industries such as: other chemicals, petroleum derivatives, tyres, iron and steel, electrical machinery, transport equipment, glass, pottery, and the non-ferrous basic metal industries.

The level of concentration in the Turkish manufacturing industry has been examined, and the analysis has tried to establish the main determinants of concentration. The structure of the Turkish manufacturing sector is quite diverse. Most of the sectors have a high level of concentration, but some sectors are highly competitive. This arises from a mixed structure, because small scale firms are numerically important. We also found that there is at least one foreign firm among the biggest five firms in industry where foreign participation is generally high.

The results taken from the regression analysis showed

view, that foreign participation always has a positive and significant effect on concentration. The effect of foreign presence is exercised through other independent variables which determine the industrial market structure and partly independently of them. Foreign investment increases concentration by introducing more capital intensive techniques and by operating at a MEPS and also by influences not captured by other industrial variables.

Empirical evidence has shown that MEPS, which is a proxy of economies of scale, capital intensity of production, foreign direct investment, and market growth, are the major determinants of concentration in Turkish manufacturing.

In the last section we analyzed the impact of some of the major market structure elements and foreign direct investment on one aspect of performance -price-cost margins- in the Turkish manufacturing industry. The results of our statistical analysis of the Turkish manufacturing industry provided significant support for the structure-profitability hypothesis. There is a positive relationship between the degree of oligopoly and price-cost margins. MEPS and capital intensity of production exerted a significant positive influence on inter-industry differences in price-cost margins. Direct foreign investment has a significant influence on price-cost margins. This finding is consistent with the hypothesis that foreign direct investment tends to take place in industries characterized by oligopoly, and to have the

expected effect on industry profitability.

The export variable is not significant. The import ratio rate has significant and negative effect on industry profits. The evidence is consistent with the hypothesis that less restrictive trade policies after 1980 encourage more competitive pricing behaviour in domestic industries.

CHAPTER 5

TECHNOLOGICAL CHOICE OF FOREIGN FIRMS

5.1. Introduction

In most developing countries, high levels of unemployment are one of the major problems although relatively high rates of growth occurred in the aftermath of the Great Depression or the Second World War. The rate of output-growth greatly exceeds the rate of job creation, leading one to search for the causes of the manufacturing industry's failure to provide enough employment. Because low labour absorption in manufacturing industry unemployment persists, one should pay attention to the technology used. Most LDCs have a relatively labour-abundant and capital-scarce resource endowment. It is argued that LDCs should select technologies that employ a more abundant factor and save the scarce factor. Hence, the manufacturing sectors have employed capital intensive and labour saving techniques which are limited for developing countries in terms of employment by their technology earnings (Little et.al 1970, p.86).

On the other hand, multinational corporations are an important source of investment in LDCs, and one of the substantial channels for the transfer of technology to LDCs. The technology used by MNCs is usually biased towards capital-

intensive and labour saving and/or technology that has been developed in the capital-abundant/labour-scarce developed economy. Hence capital-intensive technology does not contribute significantly to the absorption of a growing labour force in developing countries. Indigenous technological capabilities are needed for facilitating adequate choice of technique and the successful assimilation of technology since it could increase output and employment of developing countries by substantial amount.

The Turkish economy has been faced with the problem of unemployment and low labour absorption during its industrialization process. We assume that the choice of technology might influence the employment creation capacity of an industry in Turkish manufacturing. Hence in the first part of this chapter, we investigate which types of technology have been transferred under the aegis of foreign firms to developing countries and the main theoretical reasons for this will be discussed. In the second part we investigate the empirical evidence of the choice of techniques by foreign and domestic firms. In the third part, we will discuss why developing countries should develop their technological capacity. In the fourth part, we try to analyse what forms of technological adaptation occurred by foreign firms operating in Turkey. In the fifth part, we investigate the main factors which determine the choice of techniques by foreign firms in the Turkish manufacturing industry. In the sixth part, we try

to find the factors influencing the capital intensity of Turkish manufacturing and include the role of foreign investment as one factor. In the last section we conclude with our findings.

5.2. Theoretical Considerations

Most technological inflows into developing countries originated from advanced countries. Consequently, the means and processes of transferring foreign technology become critically important to the development and growth of industry in those countries.

Firms in developed economies have been observed to be willing to transfer their advanced and even the latest technologies to developing countries. The reason is generally believed to the supplying firms' attempt to obtain a quasi-monopolistic position to harvest super-normal profit from the temporary technological advantage created by innovation. Firms may choose to exploit its quasi-monopoly in foreign markets where it does not face such fierce competition or new opportunities for super normal profits are offered.

In many developing countries, local factor prices are often distorted, and market prices do not reflect social opportunity costs. Capital is underpriced as a consequence of subsidies and incentives given by governments. Analogously, overvalued exchange rates and the granting of favourable

tariff rates on imports of intermediate and capital goods for production encourage the importation of capital goods. On the other hand, labour is abundant, but over priced in many LDCs because of minimum wage legislation, fringe benefits and trade union pressures. These policies encourage foreign firms as much as domestic firms to use capital intensive technologies. Besides, MNCs can access international capital markets where capital is relatively cheap. MNCs' subsidiaries can reap benefits from their parents' financial resources. Therefore foreign firms may be able to get capital at a lower cost than domestic firms. These distortions in the capital and labour markets stimulate foreign firms to use more capital.

Another explanation for the high capital intensity of MNCs is reinforced by the "inappropriate products" argument. There is only one or at most a very small number of efficient techniques for the production of a particular product to a particular quantity. The products foreign firms sell originally developed according to the income levels and needs of the developed countries. These products by their nature embody capital-intensive techniques, are associated with advertising and marketing skills, and are subjected to strict quality control. Therefore Stewart argued that producing particular products narrow the possibilities for labour-capital substitution in their production (Stewart 1972). MNCs' products face high rigidity in the sense that the elasticity of factor substitution is low. This means that the rigid

proportion is shown on a straight line from the origin, instead of as a negative sloping isoquant curve, as the neoclassical approach states. Since a specific number of techniques have been advanced by multinational firms according to the factor proportions of developed countries, there will be no choice concerning efficient techniques according to developing countries' factor endowment. As a consequence it results in an increase in capital intensity in developing countries.

Foreign firms usually have the advantage of superior technology which is part of the monopolistic advantage they enjoy over domestic firms. This advantage "enables them to grow is precisely the possession of advanced technology, combined in a profitable package with marketing, administrative and financial factors, which can be applied with little adaptation to different areas. It is not to be expected, therefore, that they will undertake major, expensive alterations to suit the relatively small markets of LDCs, or to take advantage of differences in labour costs which form a small proportion to total costs" (Lall, 1980, p.48).

The protectionist policies in LDCs provide foreign firms with a non-competitive environment and high monopoly profit. In the absence of competition, foreign firms have no pressure for adapting technology to local conditions which exists in more competitive industries (Wells, 1973)

On the other hand, some authors have claimed that foreign

firms have a greater opportunity to develop capital saving technologies than domestic firms. According to Pack (1976) foreign firms are more "efficient" investors than are domestic firms in that their superior "managerial adaptive ability in searching for appropriate techniques" enables them to identify and use somewhat more labour-intensive technologies than do the domestic firms this special capacity being the product of "technical training or a background in production". Vaitsos came to the same conclusion, that foreign firms may employ more labour-intensive techniques than local firms, because they have better management capacity and/or the ability to hire local skilled supervisory staff (quoted in Helleiner 1975, p.169). They also have larger markets and therefore the capacity to use extra shifts in minimum-efficient scale plants (ibid., p.170). They have a greater need to demonstrate "good corporate citizenship" (ibid., p.170). Foreign firms also have a greater involvement in R&D and better access to the international technology market which enables them to search for the appropriate technology and to substitute labour for capital.

5.3. Empirical Evidence

We looked through the empirical evidence and attempted to find out whether MNCs employ more capital intensive technologies than domestic firms, and whether or not they try

to adapt the technologies they transfer to the less developed countries.

The studies whose results give support to the hypothesis that MNCs tend to use more capital-intensive technologies than local firms are the following. Agarwal (1976) used two measures of capital intensity: average productive capital (fixed and working capital) per employee and average value added per employee. The study is based on 34 large-scale Indian manufacturing industries at three-digit level of the classification. He found foreign firms used more productive capital per employee than domestic firms in 22 industries, and higher than the average value added per employee in the case of 31 industries out of 34. The reasons he advanced for this were that capital was relatively cheaper for foreign firms, and they had more experience in capital-intensive technologies than domestic firms.

Morley and Smith (1977a), performed analyses of variance and the electrical energy per work used as a capital proxy in Brazilian four-digit industries. They found that in ten out of twenty industries, foreign firms were more capital intensive. They explained the difference as being due to large scale operation by foreign firms in Brazil, and the way they faced different relative factor prices from domestic firms. The Forsyth and Solomon (1977a) study was based on a questionnaire survey of 120 manufacturing firms in Ghana. The product groups used were wooden furniture, bread, footwear, shirts,

concentrated blocks, small metal fabrications, small fabrications, blouses, and veneers and plywood. They found that foreign firms were more capital-intensive than indigenous firms in the corresponding sectors. There were no significant differences observed in the wage rates paid by the foreign-owned firms compared to indigenous firms.

In another study by the same authors (1977b), the data used refer to 154 firms consisting of 42 private Ghanaian, 69 resident expatriate (i.e. private firms owned by foreigners permanently resident in the host country), and 43 of MNCs in ten industries. The principal findings of this study were that MNCs are more capital intensive than private domestic firms, and less capital intensive than resident expatriate. However this difference varies from industry to industry. Therefore it can not be said that MNCs were always more capital intensive than domestic firms. Contrary to Morley and Smith, they did not find that scale is a determinant of technology. The Wells (1973) study was based on a comparison of ten foreign-owned with thirty-three indigenous firms in six industries in Indonesia. He found that MNCs used more capital-intensive techniques than local firms. But he explained this by the fact that foreign firms had monopolistic advantages rather than by their being foreign firms.

Newfarmer and Marsh (1981) in a study based on over 150 Brazilian and transnational firms operating in Brazil's electrical industry, showed that the labour capital ratio of

Brazilian controlled firms is 35-50 percent higher than that of their MNC counterparts. MNCs appear to employ less unskilled labour, and a greater share of their labour force in activities ancillary to the production line, such as maintenance and administration. They also regressed the ratio of total employment to fixed assets on the market structural variables. When other variables were held constant, Brazilian firms used more labour per unit of capital than MNCs.

Ranis and Schive (1985) gathered two sets of data which were based on samples from a census in Taiwan. The data showed that fixed assets per employee of foreign firms (except in the garment industry) were higher than domestic firms. When the capital intensity variable was measured by machinery and equipment per worker, it was constantly higher for foreign firms than for domestic firms, except in the electrical equipment industry. However they reported in another special study that fixed assets per employee of domestic firms and foreign firms appeared with a much smaller gap and showed variation across industries. Foreign firms in light industries have a lower capital-labour ratio than domestic firms. This is because foreign firms might take advantage of cheap labour and then gradually export products with the help of labour-using adaptation of imported technology.

Ahiakpor (1986) employed the technique of one-way analysis of variance using data on 297 manufacturing industry firms in Ghana. Capital intensity was defined as the value of

fixed assets per number of production workers. The capital-labour ratio was not significantly different between ownership groups of firms at the 5% level of statistical significance in 10 out of 11 industries. However, state sector firms were the most capital intensive, followed by foreign firms, and private local firms.

On the other hand, there are studies which show that there is no technology difference between foreign and domestic firms. Mason (1973) in a study for 14 US subsidiaries and 14 closely matched local counterparts, of which nine pairs were operating in the Philippines and five operating in Mexico, were matched primarily by product and secondarily by size. He found that United States firms employed more buildings but not significantly more equipment per factory worker than local counterparts. They tended to employ more capital per worker than local counterparts, whether capital per worker was defined as building and equipment per factory worker, or as total capital per employee, because they had relatively heavier investment in buildings and inventories than domestic firms, whereas domestic firms used more skilled workers than US firms. He concluded that multinational firms cannot be a reason for factor proportion problems. Cohen (1975) carried a questionnaire and gathered data from 12 local and 10 foreign firms operating in South Korea, 8 local and 15 foreign firms operating in Taiwan, and 4 local and 9 foreign firms operating in Singapore. He found no significant difference in factor

intensity between foreign and domestic firms in these three countries. Chen (1983) used the technique of analysis of variance and found that foreign and local firms tend to employ similar factor proportions in four exporting industries, namely textiles, garments, plastics and toys, and electronics in Hong Kong. Chung and Lee (1980), compared the capital-labour ratios and capital-output ratios used by nine U.S. subsidiaries and eight Japanese subsidiaries, with Korean counterparts using Wilcoxon's matched-pairs test. They found that there was no difference in the production techniques chosen by foreign and local firms in Korea.

In addition to the above studies, it is of interest to note that foreign firms use labour-intensive production techniques in developing countries. Willmore (1976), in his study of a Costa Rican sample in manufacturing consisting of 33 pairs of firms matched by size and product mix, performed the Wilcoxocon matched-pairs, signed-ranks test of the significant difference between the two types of firms. When capital-output is measured by either equipment per factory worker, or fixed assets per employee and total assets per employee, foreign firms were less capital intensive than domestic firms. But when the capital intensity variable was measured by the fixed assets or total assets to value added, the result was that foreign firms were not less capital intensive than domestic firms. Pack (1976) found that in Kenyan manufacturing, foreign firms used more labour-intensive

and less skill- intensive production techniques than local firms. The use of more labour-intensive techniques by foreign firms in this case was made possible by their greater managerial ability.

On the subject of whether MNCs transfer the same technological process from their country to developing countries, or whether they tend to adapt more labour intensive techniques is highly debatable. Courtney and Leipziger (1975), compare the production functions of 1484 foreign affiliates of US-owned parent MNCs, where the affiliates operate in LDCs and in developed countries' manufacturing industries. They defined the technology ex ante and ex post. The former refers to the choices of plant design and equipment, the latter refers to the way the plant is run. They found that there was no difference ex ante technology transferred from DCs to LDCs. As regards ex post however, 9 out of 11 industries' transferred technology was run more labour-intensively in the LDCs because of a lower wage-interest ratio. Leipziger (1976), compared the production functions in logarithmic form for a matching sample of Indian-owned and US-owned manufacturing firms. The result of the study was that Indian firms imported or developed technology which was more capital-intensive than US-owned firms when both were producing the same product. He also found that foreign firms used more fixed capital per person than Indian firms because US firms in India faced a higher wage-interest ratio than domestic firms.

Chen (1983) found that MNCs adopted their technology in Hong Kong, and apart from the textile industry, a very high proportion of foreign firms did make an effort to adapt technology for local use. In contrast to the other sectors, their technology was different from their parent firms, and when introducing innovations they tended to make technology adaptations. He observed that the lower labour costs existing in Hong Kong was in most cases not the major reason for a choice of technology different from the parent firms. Rueber (1973) found that in 57 out of 78 cases, investing firms introduce production technology to LDCs without change, and only in 19 cases was the technology introduced in an adapted form. In the area of quality control, the investing firm presented its standard system without adaptation in 48 out of 59 cases and with adaptation in 9 cases (ibid., p.196). The most important reason for adaptation was to scale down plant and equipment in order to adjust to the smaller market of LDCs (ibid., p.196). Most of the other adaptations were required by local customs and legal regulations in the host country (ibid., p.197). There were only a few cases of adaptation due to labour cost and lack of skilled labour in the host country (ibid., p.196). Morley and Smith (1977b), found that MNCs did not undertake considerable searches for alternative techniques to employ more labour-intensive methods. This "scaling down" of operation was employed in order to use more labour-intensive methods for the Brazilian market.

Empirical works have shown that in some cases MNCs are more capital intensive than their local rivals, in other cases they are more labour intensive, and in other cases there is no difference in factor intensity relative to the nationality of firms. We observe that there may be considerable inter-industry variations. In the more technology intensive industries which are usually dominated by MNCs, technological choice is likely to be limited, and so MNCs employ capital-intensive technologies in most LDCs in these sectors. In less technology intensive industries which usually have low income elasticities of demand, technological choice is likely to be flexible. Where there is no clear difference between MNCs and local firms, the latter should use similar techniques in order to compete with their rivals. The reason which we can not have a clear cut conclusion from the evidence is because of the methodological difficulties. The best effort might be aiming at working with matched pairs of foreign and local firms of similar size, making similar products, with equal access to the relevant technology and facing identical market conditions. However, most studies compared large and distinct groups of local and foreign firms, so could be misleading.

Although we cannot draw clear cut conclusion from the evidence, however, techniques and products developed in the industrialized countries tend very often to be inappropriate in terms of developing countries' resources and needs (Stewart, 1979). The size and characteristic of local markets,

the availability and quality of different kinds of skilled labour and the supply of local resources are different in all countries. So developing countries need to develop the technologies that is appropriate to them which requires technological capability. Technological capability has been defined as the ability to make effective use of technology, having a local capacity to create, adapt, modify technology. The systematic adaptation of appropriate rather than advanced industrial technology in the modern manufacturing sector of less-developed countries could increase output and employment by substantial amounts (Pack, 1984). In the next section we will discuss indigenous technological development in developing countries.

5.4. Indigenous Technological Development

The technological dependence is a major factor behind the generally dependent relationship many countries vis-a-vis industrial countries. Developing countries are trying to create indigenous technological capacity in order to reduce technological dependence on advanced countries. By reducing technological dependency firms/countries can have the local control over many aspects of production (Stewart, 1984). Technological capacity will help the firms to select the right technology to purchase, to adapt its application to the a given environment and then use it efficiently (Katz, 1984).

Indigenous technological developments were actually taking in many new industrializing countries (See evidence collected by Lall, 1982, 1992). Foreign technology could be successfully mastered, adapted to local circumstances and, substantially improved upon in some Latin American and Asian countries. Such evidence suggested that problems do not lies as much on the supplying mechanism as on the ability on the part of the recipient to generate capabilities to assimilate and change imported technology.

Over the last decade, there has been growing amount of research on the process of technological learning, i.e., the development of indigenous technological capabilities in industrializing countries.

The evidence based on enterprise and industry studies in Latin America indicates the existence of a fair amount of technological creativity, first in the form of adaptation of imported technologies to local conditions, followed by technological developments leading in a number of cases to the creation of new products and processes (Teitel, 1981). Technological development process seems to consists of some major stages. The process of technological development in developing countries involved following stages[1] (Lall, 1985,

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[1] Lall (1982) classifies technological development into two broad types of learning; technical learning and non-technical learning. Non-technical learning refers to the whole range of functions, from organizational, managerial and marketing to financial ones, involves in commercial activity.As far as technical learning is concerned Lall distinguish between its three stages, each with two stages as follows; 1- learning

p.116); the initial stage include the knowledge of how to carry out manufacturing activity, from the setting-up of a new assembly activity, the assimilation of imported techniques, quality control, improved plant layout and production practices, scanty modification to equipment and tooling, trouble shooting, the use of different raw materials, and so on. Lall used the term "know-how" to label this stage.

The next stage is extension and deepening of know-how capabilities which leads to significant adaptation and improvement of process and product technologies and even replacement by new processed and products. Lall named this the development of "know-why" capabilities.

Know-why development may be followed by applied and basic research which involves the application of given scientific knowledge to the process of commercial innovation as well as an innovation of the frontier process and product without

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with a given technology (elementary learning): when a host country imports a new technology, greater efficiency in its application over time can result two sorts of learning, that is a- learning by doing, and b-learning by adaptation. Such activities involve such as troubleshooting. rearrangement of plant, adaptation of equipment and so on. 2-Learning the embodied technology (intermediate learning): In this stage, two sub-stages are a-learning by imitation, where local engineers simply replicate foreign designs and blueprints, and b-learning by design, where they undertake the basic scientific and engineering principles involved and so can adapt, alter and improve the machinery. 3-learning the entire technology or production system (advanced learning): the final stage of learning technology involves major innovation and requires basic R&D on the frontiers of particular technologies. The two steps of this stage are a-learning to provide a turnkey plant embodying a given technology, and b-learning to innovate completely new process or products.

regard to specific commercial application.

The contribution of MNCs to technological development in host developing countries can take place at any or all these levels. However it is most likely that MNCs are an important agent of technology transfer at the know-how stage.

Lall (1982) argues that, regardless of the region and development of the basic technology involved, know-how learning goes on in every manufacturing industry. Know-why learning can only "take place if the learning enterprises is given an assured market and protection against the import of ready-made technologies from abroad" (ibid., p.81). He argues that advanced technological learning requires "a judicious restriction of MNC entry and of other forms of easy access to foreign technology combines with a judicious use of import protection" (ibid., p.81). He explains India's success in technology market with the protection of local learning in the manufacturing sector. According to him, India is a semi-industrialized developing country and has applied for a policy of establishing a local technology capability for a long period of time. However the technological effort under such policy may have in many instances been wasteful or misdirected, but at the same time this pursuit has encourage and/or forced local enterprises to develop their technology. "In particular, the close restriction placed on technology imports by MNC entry has protected basic learning in several high skill and complex industries in the capital goods sector.

These are precisely the industries which can act as focal points for technical progress in a broad range of user industries" (p.84). He compares with technology exports by other countries such as Brazil, Mexico, and Argentina. Mexico and Brazil have large industrial sector, long experience of industrialization and fairly outward looking policies have achieved technology exports mainly in sectors where "MNCs have not dominated their industries". In the sectors in which either the host country has intervened to protect local firm or the large multinationals are not very active. Argentina has able to achieve technology exports mainly in relatively simple industries where the large multinationals are not particularly active.

On the other hand, small newly industrialized Korean, Taiwanese and Hong Kong (NICs) enterprises have also been able to achieve rather simple technology exports. This is mainly in sectors where "there is the natural protection given by the wide diffusion of the know-how" (ibid., p.85). He points out that in the case of NICs that their export production is confined to either simple labour-intensive operations by MNCs or is conducted by MNCs or local licensees "with designs entirely imported from abroad". While this may assist their economic growth, it will not give the countries " a base for the export of the entire technology involved" (ibid., p.74). Finally, Lall concludes that "multinationals may contribute to local technological capabilities in certain specific

circumstances, but in general a strong foreign presence (or a heavy dependence on licensed technology) may inhibit the local progress of learning. Foreign enterprises thus have two crucial roles to play, of providing the initial injection of new knowledge on which the host country can build, and of supplying the sort of new technologies which cannot be mastered in the developing countries: whether this is best done in the form of wholly-owned foreign subsidiaries, joint ventures or licenses, depends on the nature of the technology and the state of development of the recipient" (ibid., p.89).

Developing countries can get some benefit by attracting TNC research activity into sectors where local technological activity is either well established or is non-existent.

Lall and a number of other scholars have emphasized that the assimilation and effective utilization of technology by developing countries involves technological change and local innovation. Technological change refers to "changes in the way in which inputs are transferee into output, including improvements in the quality of output" (Fransman, 1986, p.3). The following forms of technological change have been observed to occur in developing countries, namely, the search for new products and processes, the adaptation of products and processes to local conditions, improving products and processes, developing "new" products and processes and basic research. In general, there is a qualitative increase in the required depth of knowledge in moving from the former to the

later (ibid, p.23-26).

There are two sets of forces inducing technological change. The first of these sets, endogenous to the firm, is conformed by a flow of minor technological changes introduced over the years with the purpose of "improving the plants; operating standards, enchasing the product quality, maximising working hours and operating speed, reducing the amount of waste, replacing expensive raw materials by other relatively cheap ones" etc (Katz et.al, 1978).

The second set of forces inducing technical change is exogenous to the firms and is related to change in the physical, legal and economic framework in which the company found itself operating through time.

In the developing countries, it is argued that technical change has mostly consisted of the adaptation of imported technologies and product characteristic to the local environment and factor supplies. Thus, typical R&D efforts in Third World countries would be determined by the need to use different raw materials, change the product design, use simpler, more universal, less automated and lower capacity machinery, scale down plant size, diversify the product mix, stretch out the capacity of existing equipment etc (Teitel, 1979).

Factors such as large markets, experience, skilled manpower, and formal science and technology programs usually accompany technological learning. They are, however, necessary

but not sufficient for such learning. Given all the other requirements of technological progress, the enlargement of indigenous capability in basic design and development work in industry necessarily requires some protection of local learning (Bell, 1984).

The protection of local learning can take several forms (Lall, 1982, p.82) such as; confine foreign participation in some sectors, or prevent foreign enterprises from specified sectors, confine the types and periods of technological agreements and prevent licences where local technological activity might be developed, subsidizing local firms which involved technological work, and investing directly in R&D facilities. Japan, through successful cases of technological protection lead us to believe that a properly managed policy can yield tremendous benefits (ibid).

Finally, the protection of domestic learning must not be a continuous policy. There are large areas of industry where local enterprises can not master the requisite technology or, having mastered it, cannot keep pace with its development. In this case there must be a continuous inflow of technology from abroad, complemented by local efforts to absorb and reproduce it. A sensible technology policy thus lies in identifying a country's dynamic comparative advantage in the absorbtion and generation of technology (Lall, 1984, p.241).

5.5. The Transfer of Technology by Foreign Firms in the Turkish Manufacturing Industry

It is generally believed that multinational firms do not make an effort to adapt technology to the conditions in the developing countries. This could be because of the unique technology which gives foreign firms a monopolistic advantage in developing countries. They may not be willing to change their developed technology since it is relatively cheap and less risky for them than it is to transfer it to a new, unknown market. Besides, factor price distortions and the unavailability of skilled labour might restrict the ability of foreign firms' technological adaptations.

In fact any transfer of technology will require a degree of adaptation (Fransman, 1986, p.24) in order to suit local scales, materials, climate and market need (Lall, 1987, p.3). After technology introduction, technology creation in the forms of know-how (production engineering and minor adaptation) occurs over time (Lall, 1985, p.118).

In our questionnaire survey we asked firms to point out the general nature of their technological activities. It could be any of the following, or could be a combination of them.

A - The adaptation of existing products to local conditions,

B - The adaptation of existing production techniques to local conditions,

C - Developing new products,

D - Developing new production processes according to local conditions,

Most of the firms gave priority to adaptation of their existing products as a major technological activity. Adaptation of existing production techniques took second place. This was followed by the importance given to new product development. Only a few firms stated that they undertook the creation of new techniques.

As seen from Table 5.1, 59 firms aimed at only the adaptation of existing products (A) as their technological activity. 9 firms gave priority only to the adaptation of existing technology to local conditions (B). 3 firms and 2 firms aimed at only developing new products (C), and developing new technology (D). 50 out of 123 foreign firms had multiple aims. 23 firms marked two different types of activities (AB). 12 out of 123 firms aimed at 2 different (AC) activities. 4 firms aimed at only 2 (BC) activities. And 3 firms aimed at only improvements of existing products and developing new production techniques (DA). 2 firms aimed only at developing new production techniques and new production (DC). Three activities (ABC) were aimed at by 6 firms.

Our survey showed that activity (A) was pointed out by 103 firms which accounted for 83 percent of all sample size. Foreign firms in Turkey gave priority to the adaptation of existing products due to local condition as a major technological activity. The adaptation of imported

technologies to local conditions was indicated by only 42 firms. 27 firms engaged with developing products. We only found 7 pharmaceutical firms engaged with developing new production processes according to local conditions.

Table 5.1.

Distribution of Technological Activities

	Number of firms	%
A	59	47.9
B	9	7.3
C	3	2.4
D	2	1.5
AB	23	18.6
AC	12	9.7
AD	3	2.4
BC	4	3.2
CD	2	1.5
ABC	6	4.8
Total	123	100.0

Source: Own elaboration from the questionnaire.

However, the foreign firms described the nature of their adaptation, such as process and quality control, market and sales research, tests of materials and products, inspection of tools and machinery, and reducing the cost of production process. Firms described the nature of the adaptation in soaps, cosmetics, and food products, to adapt to local consumers' requirements in Turkey. In agricultural machinery and equipment, they tried to redesign according to the agricultural practices of Turkey.

Most firms' technological activities are directed toward upgrading and improving product quality and reducing the costs of the production process. One of the reason for those kind of activities in Turkish manufacturing might be the export promotion policies of Turkish government. As firms try to generate export markets and enhance their competitive power against their rivals, they target to perform the above objectives.

Technological activities of foreign firms occurring in the Turkish manufacturing industry are not responses to introduce new products and processes but to the need to make use existing technology in order to produce more efficiently, and to improve technology for use in a different environment.

After these initial changes to run-in the plant, achieve quality standards and make minimal process/product adaptations, firms goes on to cover subsequent efforts to indigenize inputs. This means rapidly raising the local content of manufacture and adapting imported process and equipment to the available materials. To choose between foreign or local sourcing of inputs is regarded as the most important one as far as local industrial linkage effects in developing countries are concerned.

Table 5.2 shows the percentage of the imported inputs of the foreign firms that are used in their production process. 37 foreign firms did not import any inputs. Out of these, 20 firms did not start production. 14 firms (eight food, one

beverage, one tobacco, 4 textile) could obtain all their inputs from the Turkish market. However, rest of foreign firms depend on imported inputs for their production. The continued inflow of foreign technology would lead to continued imports of inputs. Thus, the country's production structure may become more dependent on foreign technology, and this puts additional pressure on the limited supplies of foreign exchange in Turkey.

Another two questions in our survey questionnaire are related with the availability of foreign firms' inputs locally, and which factors influenced their decision to buy inputs from abroad. Table 5.3 showed that only 13 out of 179 foreign firms could purchase all inputs locally. 62 foreign firms could not purchase their inputs because they are not available in Turkey. The reason might be that foreign firms use relatively more advanced technologies and require more sophisticated inputs. 104 foreign firms could get some part of their inputs. The decision to buy inputs from domestic producers instead of importing them is strongly influenced by uneven standards and poor quality of products (see Table 5.4). Domestic firms have been protected from cheaper imports since 1960. Although trade liberalization has been introduced since 1984, protection still takes place several forms. Since they are protected for such a long a time, they do not make an effort in the modernization of their investment and improve production quality. The high cost of inputs was a second

Table 5.2.

Percentage of Imported Inputs Used by Foreign Firms
Operating in Turkish Manufacturing Industry (1988)

% of Imported Inputs	Number of Firms	%
0	37	17.13
1-25	40	18.52
25-50	54	25.00
50-75	44	20.37
75-100	41	18.98
Total	216	100.00

Source: Own elaboration from the questionnaire.

Table 5.3.

Availability of Foreign Firms's Inputs Locally

	Number of firms	%
All	13	7.26
Some	104	58.10
None	62	34.64
Total firms	179	100.00

Source: Same as Table 5.2.

Table 5.4.

Factors Influencing the Purchasing of Inputs Locally

	Number of firms
Higher price	93
Low Quality	116
Delays in deliveries	57
Limited variety	76
Difficulty in responding to sudden changes in orders	19

Source: Same as Table 5.2.
Note : The firms usually indicated more than one factor.

important reason for not buying locally available materials. High inflation and sudden changes in prices discourage foreign firms from depending on domestic producers. The limited variety of inputs, inability to respond to changes in orders in the short term, and delays in deliveries are other problems to purchase inputs from Turkey. This shows that local suppliers are initially inefficient compared with foreign producers. Therefore, either unavailability of local inputs or/and inefficient local suppliers do not allow extensive use of domestic materials by foreign firms. As a result it does not promote significant linkages affects to stimulate the growth of domestic input industries, the creation of indirect employment, and save foreign exchange earnings.

5.6. Determinants of the Choice of Technique

In this section we try to analyze the main determinants of the choice of technique by foreign firms in manufacturing industries in Turkey. In our questionnaire, we asked the firms to indicate and rank the main three factors in terms of their importance that influence their choice of techniques (See Appendix IV, Question 19). 182 firms answered this question, and Table 5.5 presents the results of ranking. The most important factors influencing the choice of technique are market size, quality of product, and availability and quality of local inputs.

Table 5.5.

Determinants of the Choice of Technique

Factors	Rank (1)	(2)	(3)	Total	Rank
Labour Cost	20	18	23	61	5
Shortage of Skilled Labour	12	13	21	46	7
Capital Availability	13	26	19	58	6
Market Size	48	35	13	96	1
Quality of Product	38	28	17	83	2
Technological Dependency on the parent company	23	19	26	68	4
Availability & quality of local inputs	25	20	31	76	3

Source: Own elaboration from the questionnaire.
Note   : The firms usually indicated more than one factor.

Size of market is indeed an important determinant of machine choice and labour use. The production methods of multinational firms have in general been developed in order to benefit from scale whilst operating in large markets. Hence, where the use of imported techniques are concerned, the size of market might be very important to the Turkish manufacturing industry. Turkey has also shown product quality to be an important determinant of technology. Focusing on "quality of product" may narrow the range of options regarding choice of techniques. Stewart has argued that "to produce identical physical products, only one method is possible" (Stewart 1972, p.111). Hence, when the product is closely defined, labour-capital substitution becomes less likely. Foreign firms are concerned to keep their international reputation for quality, and Turkey's export promotion policy may influence this in

terms of the export of manufactured goods.

Availability and quality of inputs is ranked in third position. Foreign firms wish to take account of the differences in availability and quality of local inputs, which may induce foreign firms to adapt their production technology in the host country. Another important factor regarding technology choices by foreign firms is the degree of technological dependence by the subsidiary relative to its parent company. The multinational affiliate (or joint venture or licensee) may depend on its foreign partner apart from minor adaptation and detailed engineering work. Lall (1982, p.81) explains the reasons for this follows; it might be costly and risky for them to reproduce the technological work already undertaken and proved abroad. The foreign producers of technology also prefer to centralize its basic design and development at home in order to take advantage of economies of scale and of communication as well as of various externalities occurred at home.

Concerning the determinants of the choice of technique according to neoclassical economies, factor prices are the main determinants. Those who believe the price of labour and capital are the main determinants of this choice, are not supported by the results of my questionnaire. The fact that labour costs in Turkey are relatively low by international standards does not in any way incline encourage foreign firms to use more labour intensive techniques. As far as capital

availability is concerned, foreign firms depend mainly on internally and externally created funds for financing their investments in plant and equipment. Hence borrowing from the Turkish market is not one channel for them to finance their investments.

The shortage of skilled labour (poor level of local skills) is in the last position. This factor motivates some foreign firms to choose capital-intensive techniques which are easier to manage and control in the production process.

In the above section, foreign firms' decisions about their technology are clearly influenced by the size of the market, quality of the product, and embodying sophisticated inputs, and technological dependency on the parent company. The importance of scale, producing the same quality of products, and technological dependency on the parent company, may show that there is no significant difference in production techniques transferred by foreign firms. Technology choices of foreign firms are determined by these factors which are more important than labour cost, capital availability,and lack of skilled workers. The last three factors do not play an important role in decisions regarding the basic technology to be used.

In this section, we try to find out the influence of foreign firms, technical rigidities, and other market structure variables on the capital intensity of the Turkish manufacturing industry. To test these relationships, we ran

the ordinary least-squares regression analysis.

Capital intensity[2] is defined as capital per unit of labour (K/L ratio) which, used in the analysis is an dependent variable.

Foreign participation is one of the vital independent variables in terms of our research. The role of foreign firms in affecting the capital intensity of manufacturing industry is through the choice of technology. Since this choice is seen as the monopolistic advantage of foreign firms, we would expect technological intensity to be associated with foreign market share. This could be captured in part by the measure for capital intensity. Foreign participation is measured by the foreign firms' share of total sales in industry, and is expected to have a positive relationship with the capital-labour ratio, since it is assumed foreign firms do employ more capital per labour, other things being equal.

The index of technical rigidity is another independent variable in the model. The index is developed by Forsyth, McBain and Solomon (1980), and is based on an engineering assessment of the opportunities for substituting labour for capital in the manufacturing sub-processes. Eight major physical barriers to the substitution of labour for capital were followed:

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[2] See appendix II for the capital-output ratio of foreign firms, comparing it with the capital-output ratio of all firms in the Turkish manufacturing industry.

1 - the use of high or low, process temperatures;

2 - the presence of fluids (liquids of gases);

3 - the application of fluid pressure on materials in the process;

4 - the need for high-speed operation;

5 - the achievement of close manufacturing tolerances;

6 - the application of electrical power and of high load factors;

7 - the handling of indivisible, heavy materials; and

8 - the presence of special hazards.

An industry with a high number of these processes has a high technical rigidity index, and therefore, labour cannot be substituted efficiently for capital. In their study, 181 manufacturing industries were classified into eight categories according to their technologies. We try to aggregate the industries according to our 3-digits ISIC classifications. There is expected to be a positive relationship with the K/L ratio.

Another measure which may influence capital intensity is minimum efficient plant scale of production. This measure assumes that these largest plants use available technical economies of scale, and have the great advantage that they incorporate the size of the market into the measurement of efficient scale, using the capital intensive production process, and expecting a positive association with the K/L ratio.

Other measures is the skill-intensity. Using advanced technology and more machines can reduce the labour content of a production process, but can also increase the number of skilled workers and the positive relationship expected.

The last variable is the size of market and we expected that it is an important determinant of machine choice and labour use.

Table 5.7 shows the results of this regression for 28 industries in the Turkish manufacturing industry. Because of multicollinearity between variables a few alternative combination were tried. When a collinear variable is introduced, the coefficient of the variables decrease in significance. The skill variable correlated with most of the other variables. The fitted regressions are significant at the one percent level in terms of F-statistics.

From the results, the index of technical rigidity is turns out to be the most important determinant of capital intensity. It was significant in all equations at the 1 percent level where it was tried. It means that more technically rigid industries are associated with greater capital intensity. Foreign participation has a positive and generally significant effect (except where technical rigidity and MEPS seem to overwhelm it). The minimum efficient plant scale and market size are positively and significantly associated with capital-intensity. This might show that the largest plants, in order to exhaust economies of scale in

Table 5.6.

Estimated Correlation Matrix of Variables for Double Logaritmic Model

		FP	MES	TR	MS	SI
Foreign Firm Participation	(FP)	1.0000				
Minimum Efficient Scale	(MES)	0.3967	1.0000			
Technical Rigidity Index	(TR)	0.4323	0.4972	1.0000		
Market Size	(MS)	0.2627	-0.0991	0.0287	1.0000	
Skill Intensity	(SI)	0.6993	0.4819	0.5509	0.5350	1.0000

Table 5.7.

Regression Equations for the Determination of Capital/labour Ratio

Intercept	FP	MES	TR	MS	SI	R^2	Adj. R^2	F ratio
-1.2655 (-1.8595)	0.0889 (1.2527)	0.1222 (1.4388)c	0.2589 (2.6022)a	0.0986 (1.7432)b		0.5771	0.5036	7.8479
-1.4276 (-2.1117)		0.1522 (1.8463)b	0.2941 (3.0450)a	0.1212 (2.2356)b		0.5483	0.4918	9.7106
-1.3596 (-1.7963)	0.1410 (1.8597)b	0.2069 (2.3674)b		0.0974 (1.5464)c		0.4526	0.3842	6.6158
-0.9199 (-1.4135)	0.1177 (1.6915)c		0.3138 (3.3401)a	0.0816 (1.4433)c		0.5391	0.4815	9.3566
-0.3923 (-1.4539)		0.1730 (1.8174)b			0.5811 (1.9100)b	0.3491	0.2971	6.7052

Notes : White's (1980) correction to the standart errors was implemented for all reported models because of hetero-skedasticity. Figures in parenthesis are t-values. The significance of the regression coefficients is tested using a one tail test and the significance of the coefficients of multiple determination is tested with F test, (for abbreviations see Table 5.6).
a = Coefficient is significant at 1 percent level.
b = Coefficient is significant at 5 percent level.
c = Coefficient is significant at 10 percent level.

large market size use capital intensive techniques. The coefficient of skill-intensity variable is only significant when collinear variables like the index of technical rigidly, foreign participation and market size are excluded.

This finding shows the importance of foreign ownership, scale of production, market size, technical rigidity, and skill intensity in influencing the capital intensity of the Turkish manufacturing industry.

5.6. Conclusion

In this chapter we have evaluated to what extent foreign firms adapt the technologies they transfer to Turkey's economic conditions. We have also tried to analyze the main determinants of the choice of techniques by foreign firms in Turkish manufacturing. In the last part, we have analyzed how foreign firms, technical rigidity, and other market structure variables, influence the capital intensity of Turkish manufacturing.

Foreign firms in Turkey gave priority to the adaptation of existing products due to local conditions, as a major technological activity. The adaptation of imported technologies to local conditions was indicated by only 42 firms. 27 firms engaged with developing products. We only found 7 pharmaceutical firms engaged with developing new production processes according to local conditions. However,

foreign firms described their nature of adaptation, such as process and quality control, market and sales research, test of materials and products, and inspection of tools and machinery, reducing the cost of the production process. Firms described the nature of the adaptation in soaps, cosmetics, and food products, as being to adapt to local consumers' requirements in Turkey. In agricultural machinery and equipment, they tried to redesign according to the agricultural practices of Turkey.

Technological activities of foreign firms occurring in the Turkish manufacturing industry are not responses to the introduction of new products and processes, but to the need to make use existing technology in order to produce more efficiently, and to improve technology for use in a different environment.

Technology transfer is closely connected with the import of technology-embodying inputs. One third of foreign firms' inputs are not available in Turkey. The reason for this might be that foreign firms require more sophisticated inputs which are not available in Turkey. Unavailability of inputs and the lack of an efficient and/or sufficient network of suppliers, does not promote significant linkages affects to stimulate the growth of domestic input industries and the creation of indirect employment effects. In addition, this puts more pressure on the limited supplies of foreign exchange in Turkey.

Another finding is that the major determinant of technology choice by foreign firms is the size of the local market and the quality of products, the availability of local inputs as well as the technological dependency of the foreign firm on its parent company in the Turkish manufacturing industry. Relative factor prices were not found to be the primary determinant of the technology decision. We also found that foreign firms affect the capital intensity of Turkish manufacturing industry, other things being equal.

CHAPTER 6

TRADE PERFORMANCE OF FOREIGN FIRMS

6.1. Introduction

The share of manufacturing exports of developing countries in world trade increased sharply during the late sixties and seventies (Peet 1987, p.25). These countries are no longer considered as primary product exporters. In the light of these changes, the role of multinational firms in developing countries' trade has been a subject of debate (Jenkins 1979, p.89).

The role of MNCs in developing countries' trade depends upon the industrialization policy of the host countries, the relative advantages of foreign firms over domestic firms and the comparative advantages of host countries. As a result, the extent of MNCs in developing countries' trade differs from one country to another. For example, East Asian countries such as Hong Kong, South Korea, Singapore and Malaysia instituted export-orientated industrialization policies whereby foreign direct investment played a very important role in the expansion of manufactured exports. Foreign firms were mainly attracted by low labour costs in labour intensive industries such as textiles, clothing and electrical appliances. However

in Latin American countries, like Brazil, Argentina and Mexico, MNCs have invested in domestic markets and played a lesser role in export orientated industries. This has been due to higher labour costs relative to Asia and import-substitution policies (UNCTC 1983, p.154-5).

In 1980, Turkey introduced a new economic programme aimed at shifting Turkey away from inward-orientated industrial development towards an export-orientated industrialization policy. Since then, the value of exports has grown rapidly and the share by Turkish manufacturing in the total volume of the country's exports has increased from 30 percent in 1980 to 87 percent in 1988.

This chapter investigates foreign firms' influence on the changing pattern of Turkey's trade performance. There are three main sections: the first presents a background to the issue of foreign investment with respect to trade effects on developing countries, and includes a survey of the empirical studies made concerning the impact of MNCs on exports and imports in those countries. The second section describes briefly some of the main features of Turkish trade during the 1980s. Section three discusses export performance by foreign firms in Turkish manufacturing in terms of their participation in exports and inter-sectoral differences. A comparative study analysis follows concerning the contribution by foreign and domestic firms to the structure of manufacturing exports. There is then an investigation into Turkey's changing patterns

of comparative advantage and the role of foreign firms in this process. Finally import performance by foreign firms is investigated, before ending the chapter with a summary of the main findings and a conclusion.

6.2. Trade Performance of Multinational Firms

Turkey changed its industrialization policy from import substitution to export promotion, thus encouraging foreign firms, not only to produce for the domestic market, but also to export their output. Therefore it is important to analyze the type of investment operated by foreign firms with respect to these industrialization policies.

It has been stated that MNCs invest mainly in import-substituting industries is oriented for the domestic market in host countries because of the imposition of high tariff barriers by the host government through import-substituting industrialization policies, factor cost differences and high transportation costs. Another reason to invest in developing countries instead of exporting to them has been the need to maintain or increase the firm's total market, as part of a global marketing strategy. Horizontal foreign investment, which means production by host countries of products similar to those produced by parent firms in the "home" country, has usually been undertaken by import substituting industries (Reuber 1973, p.158). Hence, foreign firms' policy is not

chiefly aimed at exporting except when there is "over-spill" from domestic production. This reflects over capacity either due to bad planning or to the conscious expectations of future domestic market expansion. In either case there is no basis for continued export development (Helleiner 1973, p.26).

Export oriented investment is mainly aimed at selling the products to the parent company or its subsidiaries. Such investment usually occurs in vertically integrated industries and labour intensive processes. The technology of production export oriented industries allows segmentation of operation, and low labour costs are the major determinant for export-orientated subsidiaries.

According to Lall, there are four types of export orientated MNC investment (1978, p.150). The first type is where MNCs initially started substitutes for imports and have gradually produced internationally competitive products in the world market. Major determinants of these activities, are a cheap and relatively skilled labour force, stable and not very sophisticated technology, TNCs' marketing channels, and their brand names. He gave the example of the German automobile firm Volkswagen in Brazil or Singer in Asia.

In the second type of investment, foreign firms participate as buying groups, retailers or small manufacturers instead of investing directly in host countries. This occurs in industries such as footwear, textiles, processed foods or sports goods. The production of these goods is usually to

export and the technology required for these goods is standardized and accessible.

The third type is defined by the way in which foreign firms invest in "modern" industries to export. The technology required in the production of these goods is sophisticated and as a consequence, the availability of local inputs is hard and, such investment is mostly controlled abroad. Labour and transport costs, sophisticated technology, and unavailability of inputs are the major determinants in this type of investment. Examples of this include the Phillips and General Electric complexes in Singapore.

The fourth type of investment by MNCs in developing countries takes place in vertically integrated international industries with the greatest potential for exports. Foreign firms transfer labour intensive parts of the production process to developing countries, in response to location-specific factors such as lower wage costs and more general tax allowances or fiscal incentives, etc. More capital intensive parts of the process which require more skilled labour, R&D facilities, and equipment remain in the home countries. Rapidly changing technology, highly competitive conditions and cost minimization characterise these industries, which include electronics, automobile components.

There are further differences between export-orientated and import-substituting MNCs. The former usually avoid joint ventures because they do not want to share high profits or

lose their bargaining power vis a vis domestic government. Import-substituting MNCs, orientated as they are towards the domestic market, prefer to invest with a local partner in order to use the guidance and funds of the host countries (Caves 1982, p.256-7).

It is also argued that in the context of exports and imports, foreign and domestic firms exhibit different trade behaviour patterns. The literature on the export performance of MNC's falls into two categories. In the first group, MNCs' subsidiaries in developing countries could have a higher export propensity than domestic firms, owing to ownership-specific advantages, such as having marketing channels in place, having better knowledge of foreign markets, producing products with internationally well known brand names and trade marks. Therefore, subsidiaries of multinational groups have comparative advantages over domestic firms, and they enjoy the benefits of monopolistic advantages allowing them to overcome the marketing barriers which are usually faced by many domestic firms in developing countries. This positive view assumes that every multinational subsidiary might be a profit maximising unit in the host country.

The opposing view asserts that multinational firms fail to promote exports from developing countries, or may even inhibit them (Lall and Streeten 1977, p.134), that MNCs do not necessarily export more than locally owned firms. A rather different assumption is being made here: that the aim of

every multinational subsidiary is to maximize the parent firm's global profits rather than their own (Morgenstern and Muller 1976, p.400). But even in this case, MNCs in developing countries play an important role, due to their ownership advantages, unless restrictions are imposed under various foreign arrangements, such as licensing, technical, and management agreements. Vaitsos showed that in Bolivia, Ecuador and Peru: "81 percent of contracts prohibited exports totally, and 86 percent had some restrictive clauses on exports" (1974, p.55). The supporting empirical work is at the industrial or firm level, and stresses the restrictive clauses in technology contracts.

This view also argues that foreign firms show higher import propensities than domestic firms within the same industry and MNC's exports have a high import content, hence the net effect of export might be less than would appear from considering export figures alone. There are several ways of explaining this hypothesis. Firstly, MNCs use more capital intensive technology, which leads to a higher propensity for import inputs than local firms. Secondly, whilst the parent and subsidiary are producing the same or similar products, the parent company takes advantage of new markets to sell its products/inputs, especially in the case of import-substituting investment. Thirdly, and in relation to the second point, intra-firm trade is an opportunity to use the mechanism of transfer pricing in order to shift profits from the host to

the home country. Finally, the necessary materials and components may either not be available locally or not of sufficient quantity or quality; or else local suppliers are unreliable and a lack of domestic market information leads foreign firms to increase their imports of inputs.

6.3. The Empirical Evidence

As we examine the empirical work, different aspects emerge as a result of differing theoretical backgrounds and different types of data used. Some of the studies show that foreign firms have "export promotion" effects in developing countries. Other studies reveal "export inhibition" effects.

In these empirical works, export performance is measured: a) as a percentage of the foreign firm's manufacturing exports in their total manufacturing sales; b) as the share of foreign firms' exports in total manufactured exports and c) as their share in total manufacturing exports compared to the value of manufacturing production (UNCTC 1983, p.158).

Morgenstern and Muller (1976, p.339-406), used a sample of 534 domestic and foreign exporting firms in 10 Latin American countries. They found that at the aggregate level of the industrial sector as a whole MNCs tended to have higher export performance than domestic firms, within Latin America, but not higher than the rest of the world. However at the industry level they showed that there is no significant

difference between foreign and domestic firms in either the level or the growth of exports or the destination of country, whether to Latin America or to the rest of the world.

Jenkins (1979, p.89-104) showed that in Mexico, at the aggregate level of the industrial sector as a whole, domestic firms exported 19.4 percent of their total sales, whist foreign firms exported only 12.6 percent. Among 19 two-digit industries, foreign firms exported more than domestic firms in just three industries: non-electrical machinery, electrical machinery and transport equipment, referred to by Jenkins as the "engineering industry". In traditional and intermediate industries, domestic firms have a higher export performance than foreign firms.

On the basis of 33 pairs of firms in Costa Rica matched with respect to size and products, Willmore found that foreign firms exported a significantly higher proportion of their output than local ones (1976, p.511).

Westphal et.al., alleged that foreign firms did not seem to have a higher general export propensity than domestic firms in the same sector in Korea (1979, p.380-2). Foreign firms had a higher proportion of manufactured exports than manufacturing output in textiles, apparel, and electrical machinery, because foreign firms were heavily involved in these main export sectors.

Lall and Mohammed (1983b, p.56-65), employed OLS regression in log-linear form and found that there was a

positive relationship between foreign presence and export propensities at the industrial level in India. However, the statistical significance of these results is low. Due to lack of other data, the authors measured foreign presence by the share of dividends paid abroad.

Cohen (1975), studied the export performance of 4 local and 9 foreign firms in Singapore, 12 local and 10 foreign firms in South Korea, and 8 local and 15 foreign firms in Taiwan. He showed that compared with their domestic counterparts, foreign firms exported a higher proportion of output in South Korea, a lower proportion in Singapore and about the same proportion in Taiwan.

Chen (1983, p.129-31), studied the export performance of foreign and domestic firms within 4 industries in Hong Kong, and found that foreign firms do better in textiles, equally well in garments, and worse in plastics, toys, and electronics, compared with their local counterparts.

Import dependence is measured by the import/sales ratio. This ratio can be misleading "... unless it is specified whether and to what extent the local economy is capable of supplying inputs into manufacturing, and what the cost is of providing inputs, relative to the cost imports" (Lall and Streeten 1977, p.143). The literature shows that MNCs tend to have higher import propensities than domestic firms in developing countries.

Cohen (1975), showed that foreign firms had a higher

propensity for imports than domestic firms in South Korea, a lower propensity in Taiwan, and a similar propensity in Singapore.

Riedel (1975, p.521-2), employed an analysis of variance test and found that in his study of six industries in Taiwan, electronics is the only industry in which foreign firms exported a higher proportion of their output than local firms. There is a conflict between Riedel's and Cohen's work on Taiwan. However Riedel used a larger sample than Cohen.

Jenkins (1979, p.104), looked at the Ministry of Industry and Commerce comparison of 10 foreign with 26 local firms in the automobile parts and components industry in Mexico. The data showed that the export of the foreign firms had an import content of 30.5 percent while the corresponding figure for local firms was 11 percent.

Willmore (1976, p.512), found that in Costa Rica foreign firms had a larger proportion of raw materials and intermediate goods in total purchases than domestic firms but there was no statistically significant difference.

Lall and Streeten (1977, p.145), alleged that there was no significant difference between the propensities to import of MNCs and non-MNCs in the Kenyan, Jamaican, Indian, Iranian, Columbian and Malaysian firms of their sample.

Ahiakpor employed the technique of one way analysis of variance on 297 manufacturing industry firms in Ghana. Import dependency was measured by the value of imported raw materials

as a proportion of total raw materials purchased during the year. He found that at the aggregate level of the industrial sector as a whole foreign sector firms had higher import dependency than local firms. However, at the industrial level, only in one industry (rubber and plastic) out of 11 was the difference statistically significant, with private local firms more dependent than foreign firms.

This review of a number of studies shows that it is difficult to drawn clear-cut conclusion. Although some cases foreign firms played a positive role in developing countries to contribute the structure of trade, there are mixed results across the industries and countries. However, they do not, in general, significantly perform than domestic firms.

6.4. The Trade Performance of Turkish Manufacturing Industry

Turkey's industrialization started at the beginning of the 1960s. Until 1980 economic policy involved import substitution (IS) and a "protectionist" policy towards foreign trade. These strategies, together with little emphasis on exports, combined with the general performance of the world economy to have an adverse effect on the structure of Turkey's trade. Rising oil prices, the increasing significance of imports, a high investment rate and stagnating exports all resulted in a balance of trade deficit that climbed from 200 million dollars in the 1960s to 3 billion by the late 1970s.

This presented the Turkish economy with serious foreign payments problems and an increased dependence on foreign resources.

On the 24th January 1980 Turkey implemented an outward-looking development policy that increased her activity in international markets from which the country had been so long protected. To assist in the shift, the exchange rate regime was relaxed and based on maintaining a realistic exchange rate, and foreign currency transactions were liberalized. By a similar token, restrictions on imports were lifted and hitherto prohibited goods allowed to enter the country, whilst more effective incentives to exporters were made available. Substantial support was also given to export trading companies (Sonmez, 1982).

In this section, the impact of these new policies on export performance, imports development and the balance of payments, will be reviewed.

6.4.1. Export Performance

One of the main objectives of the new economic policy was to increase export revenues. In fact, the total exports and manufactured exports grew very rapidly, at an annual average rate of 21.45 percent and 23.15 percent respectively in 1980-1988.exports increased sharply during the 1980s.

The other basic indicator, the share of exports in GNP,

shows that Turkey has export-led growth. In 1980, exports constituted only 4.99 percent of GNP, and in 1988 as a consequence of the new trade policy, exports constituted 16.52 percent of GNP.

Table 6.1.

Growth Rate of Exports and the Share of Exports in GNP,
(1980-1988)

Years	Growth Rate of Total Exports	Growth Rate of Manuf. Exports	Exports/ GNP
	(% change from previous year)		
1980	28.70	28.40	4.99
1981	61.61	59.65	8.09
1982	28.18	27.02	10.73
1983	-0.32	-0.07	11.30
1984	24.54	33.08	14.16
1985	11.56	16.11	14.84
1986	-6.30	-8.15	12.70
1987	36.66	41.45	14.93
1988	14.44	10.88	16.52
Average	21.45	23.15	-

Source: Own computation based on State Planning Organisation,
    Prior Development of Sixth Five Year Development Plan,
    1972-83, 1984-88.

There is a striking change in the composition of manufacturing exports. A remarkable upward shift in the share of other industrial exports from 29.54 percent in 1980 to 69.10 percent in 1988, can also be observed, as well as a big downward shift in the share of processed agricultural products, from 46.90 percent in 1980 to 7.59 percent in 1988 (see Appendix III., Table A.III.1).

The most important sectors are textiles, clothing, and

iron and steel according to the share by manufacturing sectors in total manufacturing exports (see Table A.III.3). Textiles has been a leading sector for the past 10 years. Clothing has remained the second most important sector. Iron and steel's share has seen a dramatic leap since 1980. These sectors combined accounted for 22.97 percent in 1980, and 49.64 percent in 1988.

There has also been a sustained growth in chemical fertilizers, petrochemical products, other chemical products, refined petroleum products, non-ferrous metals, non-electrical and electrical machinery. These sectors accounted for 6.54 percent of total manufacturing in 1980, and 22.48 percent in 1988.

The findings suggest that the Turkish economy has experienced a remarkable export growth, particularly in manufacturing exports and in the basic heavy industry.

Such expansion can be explained partly by the influence of preceding import-substitution policies. Major import-substituting sectors from 1974-78 consisted of paper, chemicals, glass and ceramics, iron and steel, non-ferrous metals, metal goods, machinery, electrical appliances and motor vehicles. During 1979-1980, it was rubber and plastics, petroleum products, iron and steel, non-ferrous metals and motor vehicles (Korum 1977, p.127). It is clear that growth in manufacturing exports occurs in existing industries that experience considerable import substitution (Baysan and

Blitzer 1990, p.25).

After 1980, domestic demand and incomes were restricted by the use of austerity policies. This induced accumulation of stocks and a shift in production from domestic to foreign markets (ibid., p.25-35).

Promotional measures could be one explanation for export expansion. Tax refunds, amounting from 5-30 percent of export price receipts, and a credit policy offering very low interest, were adopted. Imports of intermediates and raw materials used for exports were exempted from tax-payments. All these incentives increased the profits of exporting companies, so encouraging them to expand their activities. In fact, all of these direct subsidies amounted to about 20 percent of the value of manufacturing exports between 1980 and 1986 (ibid., p.13).

The new flexible exchange rate policy, which led to the depreciation of the real effective rate of exchange of the Turkish lira in order to ensure Turkish exports international competitiveness, contributed to export growth in the 1980s.

Another factor behind this is the dynamism of exports successfully directed to the Middle Eastern and North African markets. The share of these markets in total exports increased from 16.9 percent to 43.1 percent between 1979 and 1983. From 1984, declining oil prices and the continuing Iran-Iraq war caused a decrease in the export share of these markets. On the other hand, OECD countries' share rose above its former level

of 41 percent.

6.4.2. The Development of Imports

In line with stabilization policy measures in 1980, the import system has been changed substantially in order to open up the economy and improve the competitiveness of industry.

Since the beginning of industrialization, the import regime in Turkey has been controlled by import programs mainly comprising two lists (Togan et.al 1987, p.30): the liberalized list and the quota list. Goods not mentioned on either list could not legally be imported. After 1980, this regime was simplified. Reforms initiated in January 1981, further extended this liberalization process by 1983. Notably, the quota list was invalidated. The economy-wide rate of nominal tariff protection rate went down from 76.3 percent to 48.9 percent while the weighted average effective protection rate went down from 228.3 percent to 65.0 percent in 1984.

As shown in Table 6.2, total imports in current dollars increased at an average annual rate of 13.44 percent between 1980-88. There was a sharp increase in imports for 1980, 1984 and 1987. These developments were mainly due to new foreign lending and rapid export growth in 1981, stemming from the implementation of an import liberalisation system in 1984, and a surge in domestic demand, in particular increased public investments in 1987. Decreasing import growth was mainly due

to fluctuations in oil prices, depreciation of the Turkish lira, and austerity policies (Baysan and Blitzer, 1990, p.24). Trade liberalization did not result in a sharp increase in imports over the 1980s, but it was enough to keep increased capacity utilization in the economy (ibid., p.24), whereas imports of consumer goods have risen rapidly (see Table 6.2).

Table 6.2.
_____
Growth Rate of Total Imports and Composition of Imports
by Type of Goods, (%)

Year	Growth Rate of Imports	Investment Goods	Intermediate Goods	Consumption Goods
1979	-	19.12	40.44	1.14
1980	56.02	11.38	44.31	1.22
1981	12.95	14.42	42.79	1.17
1982	-1.02	15.49	42.25	1.21
1983	4.44	14.79	42.61	1.55
1984	16.46	14.85	42.58	2.44
1985	5.46	14.24	42.88	4.98
1986	-2.11	20.65	39.67	5.68
1987	27.50	17.18	41.41	5.23
1988	1.25	17.75	41.12	4.94
Average	13.44	-	-	-

Source: Same as Table 6.1.

As we analyze the composition of total imports (See Appendix III., Table A.III.2), in spite of a decrease in oil's price, the share of mining and quarry products (oil accounts for almost 99 percent of this industry) in total imports reduced from 39.12 percent in 1980 to 19.95 percent in 1988; oil has always accounted for a substantial proportion of total imports. Industrial products' share increased from 59.94

percent in 1980 to 76.56 in 1988 and imports were dominated by industrial goods. The high percentage of manufacturing imports consisted of other chemicals products, iron and steel, non-electrical machinery, electrical machinery, and other transport equipment (see Table A.III.4).

6.5. Foreign Firms and Trade Performance

This part of the study aims to examine the role of export behaviour by foreign firms in Turkey, by comparison with the behaviour of domestic firms. There is also a look at the way in which foreign firms have affected Turkey's comparative advantages in world trade, as well as the value of imports and the share by different manufacturing sectors in total imports.

6.5.1. Export Performance

This section will analyze export performance by foreign firms in Turkish manufacturing. The analysis will concentrate on the inter-sectoral differences in export performance by foreign firms and the extent of their participation, for years the 1987 and 1988.

As is shown in Table 6.3, foreign firms had low participation in Turkish manufacturing exports. It was estimated that 6.0 percent and 8.6 percent of manufacturing

exports were by foreign firms in 1987 and 1988 respectively.

Table 6.3.

Exports Values of Foreign Firms, Foreign Firms' Share of
Manufactured Exports and Exports/Sales Ratios
(1973-1988)

Years	Exports (000. $)	Share of Manufac.export	Exports/Sales of for.Firm
1973	25677	2.3	2.70
1974	40078	3.0	3.50
1975	40580	2.8	3.00
1976	44997	2.8	2.60
1977	48802	3.6	2.90
1987	536399	6.0	12.01
1988	884707	8.6	17.19

Source: Data between 1973-1977 from Alpar (1980), for the
years 1987 and 1988 the data are collected by the
questionnaire designed by the researcher.

The share of exports by foreign firms in total exports is
indeed quite low compared to the share of exports by foreign
firms in other developing countries. In Mexico for instance,
the share in exports by foreign firms in the manufacturing
sector was 34.1 percent in 1974 (Jenkins 1979, p.94); in
Argentina it was at least 30% in 1969, in Brazil it was 43
percent in the same year and in Colombia it was 30 percent or
more in 1970 (Nayyar 1978, p.62). Although participation by
foreign firms in Turkey is low by international comparison
there is a difference in the export behaviour by the foreign
firms during the 1970s and 1980s(Table 6.3). Generally,
foreign firms had a very low propensity to export between

1973-77, an average of 3 percent of foreign firms' exports accounted for total manufacturing exports and total their sales. A change in industrial policy after 1980 affected export performance of foreign firms and their export participation in the manufacturing and export/sales ratio increased.

Regarding export participation, detailed information can be gathered from an inter-sectoral analysis. Tables 6.4 and 6.5 show the distribution of exports by sector of origin, the share of foreign firms in the exports of each sector and the export performance coefficient for the period 1987-1988.

The first columns of both Table 6.4 and 6.5 show that a small number of sectors account for a significant proportion of foreign firms exports: iron and steel, electrical machinery, transport equipment, tyres, non ferrous basic metals, and glass, these alone accounting for 70.04 percent and 72.02 percent of exports in 1987 and 1988 respectively.

The second columns of Tables 6.4 and 6.5 show the share of foreign firms in manufacturing sectors. In 1988 in particular, foreign firms' exports account for more than 50 percent of total sectors; in tyres (71.44), transport equipment (63.90), electronics (61.72), and electrical machinery (49.98). There is a significant increase in the percentage of foreign exports from 1987 to 1988. This could mean that exports by foreign firms have increased faster than those of domestic firms, as a result of new foreign firms

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joining these sectors, and/or some domestic firms having joint venture with foreign firms or expanding their capacity. For example, the share of foreign firms' exports in the tyre sector increased from 30 percent to 71 percent. This could be due to the joint-venture of one big domestic firm (Lassa) with one Japanese firm (Bridgestone), the second biggest tyre firm in the world accounting for 40 percent of tyres exports in Turkey. Firms in these sectors were set up before 1980 in import-substituting industries and gradually moving into export industries.

The last columns of Tables 6.4 and 6.5 show the export performance coefficient in these industries. The coefficient is defined as the ratio between the share of foreign firms in the exports of each industry and the share of foreign firms in total exports. When the export performance coefficient is more than one it indicates that these industries perform better than the average in terms of exports. Industries with a high coefficient include beverages, tyres, ceramics, glass, iron and steel, non-ferrous metals, electrical machinery, electronics, and transport equipment.

When we looked at the establishment of the firms in those industries, 77 percent of foreign firms were established before 1980. Hence, foreign firms involved were initially import-substitutors and have gradually moved into the export market, following the changing industrialization policy. Another point is that, foreign firms have better export

Table 6.4.

Export by Foreign Firms by Sector of Origin, 1987

	DE (%)	FFSTE	EPC
Less Technology Intensive Sectors			
Food products	6.45	2.28	0.36
Beverages	1.22	39.63	6.31
Tobacco	4.50	7.38	1.18
Textile	4.90	1.51	0.24
Wearing apparel	1.76	0.96	0.15
Paper & paper products	0.06	0.37	0.06
Ceramic	1.24	16.95	2.70
Glass & glass products	5.02	18.28	2.91
Iron & steel	35.08	23.49	3.74
Non-ferrous metals	8.29	36.33	5.78
Fabricated metal products	1.05	2.61	0.41
More Technology Intensive Sectors			
Industrial chemicals	1.84	9.16	1.46
Other chemicals	2.36	5.24	0.83
Plastic products	0.45	4.92	0.78
Tyres	3.84	29.93	4.77
Fertilizers	0.61	2.52	0.40
Agricultural machinery	0.02	0.29	0.05
Non-electrical machinery	0.31	0.25	0.04
Electrical machinery	7.05	11.16	2.25
Electronics	3.16	41.45	6.61
Transport equipment	10.76	31.12	4.96
Total/Average	100.00	6.28	1.00

Source: Own elaboration from data provided by my
questionnaire,
Industries are distinguished into two main groups on
the basis of the Dunning (1981, p.82) classification,

Note : DE; Distribution of foreign firms,
FFSTE; Foreign firms' share of total export,
EPC; The export performance coefficient.

Table 6.5.

Exports by Foreign Firms by Sector of Origin, 1988

	DE (%)	FFSTE	EPC
Less Technology Intensive Sectors			
Food products	4.90	3.17	0.30
Beverages	0.69	24.88	2.35
Tobacco	2.23	7.48	0.75
Textile	2.19	0.93	0.09
Wearing apparel	1.46	1.19	0.11
Paper & paper products	0.18	2.21	0.21
Ceramic	0.92	25.04	2.36
Glass & glass products	3.28	17.71	1.67
Leather footwear	0.13	4.75	0.45
Iron & steel	35.92	23.58	2.22
Non-ferrous metals	5.72	22.25	2.10
Fabricated metal products	1.53	7.83	0.74
Other industrial products	0.01	0.46	0.04
More Technology Intensive Sectors			
Industrial chemicals	1.21	8.50	0.80
Other chemicals	3.01	11.36	1.07
Plastic products	0.58	16.01	1.51
Tyres	7.31	71.44	6.74
Fertilizers	1.37	5.25	0.50
Agricultural machinery	0.16	3.76	0.36
Non-electrical machinery	0.51	1.54	0.15
Electrical machinery	10.81	49.98	4.72
Electronics	6.90	61.72	5.82
Transport equipment	8.98	63.90	6.03
Total/Average	100.00	10.61	1.00

Source: Same as Table 6.4.

performance in more technology intensive sectors. This should come as no surprise since they have the advantage of superior technology which is part of the monopolistic advantage they enjoy over domestic firms.

It should also be noted that in the iron-steel sector, where Turkey has increasing comparative advantage, exports by foreign firms are about 23 percent of the total. The role of foreign firms, especially in tyres, transport equipment, electronics, and electrical machinery, increased in 1988 to account for 55 percent of all exports by these industries.

Although some foreign firms have increased exports, most are directed to the local market. In order to observe the extent of their export performance Table 6.6 examines the export to sales ratio for the year 1987. The table shows 63 firms out of 168 export nothing. Export orientated firms, which may be defined as those that export more than 50 percent of their sales, account for just 24 of the 168 foreign firms.

Table 6.7 shows the breakdown of foreign firms by sales, and export values of these firms in 1988. The table shows that the largest ten firms in terms of sales accounted for 60.2 percent of all foreign firms' sales, and 52.0 percent of foreign firms' exports were done by these firms. Although 16 of the largest firms export, the proportion of sales abroad accounted for only 15 percent of their sales. When we examine the export to sales ratio of these firms, only two out of 16 firms (one is in the iron-steel industry , the other one is in

Table 6.6.

Exports of Foreign Firms as (%) of Their Sales in 1987

	0	1-20	21-50	51-70	71-90	91-100	tot.
Less Technology Intensive Sectors							
Food products	5	5	3	2	3	3	21
Beverages	-	2	1	-	-	-	3
Tobacco	-	-	-	1	-	1	2
Textile	3	3	2	1	1	-	10
Apparel	4	-	1	-	-	1	6
Leather	1	-	-	-	1	-	2
Paper	3	1	-	-	-	-	4
Ceramic	2	2	-	1	-	-	5
Glass	-	-	1	2	-	-	3
Iron & steel	2	2	4	-	-	-	8
Non-ferrous metals	-	1	-	-	-	1	2
Metal products	5	4	-	-	-	1	10
More Technology Intensive Sectors							
Ind. chemicals	5	6	-	-	-	-	11
Other chemicals	13	7	-	1	2	-	23
Plastic products	1	2	-	-	-	-	3
Tyres	1	2	-	-	-	-	3
Fertilizers	-	1	-	-	-	-	1
Agr. machinery	3	1	-	-	-	-	4
Non-electrical mac.	6	4	-	-	-	-	10
Electrical mach.	5	5	1	-	1	1	13
Electronic	1	9	-	-	-	-	10
Transport equipment	1	6	-	-	-	-	7
Other transport equ.	2	3	2	-	-	-	7
Total	63	66	15	8	8	8	168

Source: Own calculation from data provided by the
questionnaire.

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Table 6.7.

Distribution of Foreign Firms by Size of Sales in 1988

Sales Million $	(1) No of Firms	% of Firm	Sales Million $	% of Sales	Exports Million $	% of Exports	Export Sales Ratio	(2) No of Firms	(2/1)
100 & Over	16	8.9	3087.6	60.2	467.8	52.9	15.2	16	100.0
99-75	5	2.8	425.8	8.3	85.4	9.7	20.1	4	80.0
74-50	6	3.4	362.9	7.1	91.4	10.3	25.2	6	100.0
49-25	17	9.5	579.5	11.3	81.6	9.2	14.1	15	88.2
Less than 25	135	75.4	674.1	13.1	158.4	17.9	23.5	85	63.0
Total	179	100.0	5129.9	100.0	884.7	100.0	17.2	126	70.4

Source: Same as Table 6.12.

Table 6.8.

Distribution of Foreign Firms by Size of Exports in 1988

Exports Million $	No o Firm	% of Firms	Exports Mil. $	% of Exports
100 & Over	1	0.8	196.0	22.2
99-75	-	-	-	-
74-50	2	1.6	103.0	11.6
49-25	6	4.8	196.0	22.2
Less than 25	117	92.9	389.7	44.0
Total	126	100.0	884.7	100.0

Source: Same as Table 6.12.

the non-ferrous metal) export approximately 50 percent of their sales. One firm in electronics exports 20 percent of its sales, 4 firms do exports with their sales between 10 percent and 20 percent, and 9 firms fall with their export to sales ratio under 10 percent. The proportion of firms with no exports is quite high with firms sales under 25 million. Almost one third of firms did no exports in 1988. Exports accounted for 17.2 percent of total foreign firms' sales.

In terms of total exports, the distribution of foreign firms was shown in Table 6.8. The table conveys that a few firms accounted for more than 60 percent of foreign firm's exports and a large number of foreign firms (92.9 % of the number of foreign firms) contribute only 44 percent to total exports.

In conclusion, one third of foreign firms do not export, the rest have a very low share in total exports. Although all large firms (16) do export, and accounted for 52 percent of foreign firms' exports, their export/ sales ratio is quite low (15.2 %). However, they still contributed to the total exports in the corresponding sectors significantly.

6.5.2. A Comparison of Export Performance Between Domestic and Foreign Firms

This comparison can only be made with two indices (Simoes 1985, p.365) using the available data. The first index is the relative export intensity, which is defined as the ratio

between the share of foreign firms in the total exports of each industry, and the share of foreign firms in the total sales of each industry. It can be used to compare the exports to sales ratio of foreign firms and of all (domestic as well as foreign) manufacturing firms operating in Turkey. The second index shows the foreign firms' sectoral export concentration coefficient. This is the ratio between foreign firms' exports in the total exports of each industry, and the manufacturing exports of foreign firms in the nation's manufacturing exports. A high ratio means that firms have better export performance than firms whose export activities contribute proportionally less to their revenue.

Relative export intensity for 1988 has not been calculated due to a lack of data on manufacturing sales. Hence industries are classified on the basis of manufacturing sales data for 1987.

As can be seen from Table 6.9, foreign firms in food, leather, paper, other chemicals, and agricultural machinery have a low relative export intensity as well as a low concentration index. From analysis, it can be observed that foreign firms do not have higher export propensity than domestic firms and they have been set up mainly to supply the local market. Domestic firms contribute a large share of total exports.

Textile, apparel , plastics, and metal products industries have a higher than average relative export

Table 6.9.

Comparison of Domestics Firms and Foreign Firms

	Export* Intensity All Firms	Foreign Firms	Relative Exports Intensity	Exports Concen- tration
Less Technology Intensive Sectors				
Food products	31.30	9.97	0.32	0.36
Beverages	6.31	15.79	2.50	2.38
Tobacco	25.16	100.00	4.03	1.15
Textile	34.89	17.27	0.49	0.24
Wearing apparel	92.23	84.26	1.02	0.15
Leather wearing	30.01	1.79	0.05	0.04
Papers	9.14	1.55	0.17	0.06
Ceramic	9.61	11.90	1.24	2.64
Glass	27.53	29.50	1.07	2.85
Iron & steel	21.97	30.39	1.38	3.67
Non-ferrous metals	12.89	29.16	2.26	5.67
Fabri. metal prod.	17.97	11.79	0.66	0.4
More Technology Intensive Sectors				
Industrial chemical	3.89	6.19	1.59	1.92
Other chemicals	14.00	3.85	0.27	0.82
Plastic products	10.44	9.70	1.03	0.77
Tyres	10.69	7.15	0.67	4.67
Machinery	38.57	1.13	0.03	0.04
Electrical mach.	14.06	6.52	0.46	2.77
Transport equipment	6.35	5.45	0.86	6.19
Average	26.61	12.03	0.45	1.00

Source: Own elaboration from data provided from the questionnaire.

Note : (*)Share of exports in the sales of foreign firms, and share of total exports in the total sales of all firms.

intensity but low export concentration. This may indicate that foreign firms are much more inward than export-orientated although foreign firms exhibit some exports. Therefore, in these industries domestic firms exhibit better export performance than foreign firms.

In beverage, tobacco, industrial chemicals, tyre, ceramic, glass, iron-steel, non-ferrous metal, electrical machinery, and transportation industries both indices are significantly above the average, indicating that foreign firms have a higher capacity than domestic firms for exporting manufacturing goods.

In other words, foreign firms are mainly concerned with the supply of domestic markets as shown by the fact that the proportion of exports in their sales is 12.03 percent. But they have made a more positive contribution than domestic firms to exports in beverages, tobacco, industrial chemicals, tyres, ceramics, glass, iron-steel, non-ferrous metal, electrical machinery, and transport equipment.

6.5.3. Foreign Firms and the Changing Patterns of Comparative Advantage

Observations on export performance lead us to another interesting question: to what extent has Turkey's pattern of comparative advantage changed and do foreign firms have any impact on that change?

The net export index is used for revealed comparative

advantage (RCA)[1] and is defined as

$$RCA = \frac{X_{it} - M_{it}}{X_{it} + M_{it}}$$

Where X_{it} is exports value of year (t), industry (i) and M_{it} is the value of imports (Globerman 1985, p.204).

In Table 6.10, two RCA indices were calculated for 40 manufacturing industries. The RCA coefficient refers to the arithmetical average of 1978-79 and 1987-88. This index ranges between two extreme values of -1 (characterizing items that are imported but not exported) and 1 (for products exported but not imported). Taking exports and imports together, a positive (negative) trade balance may reflect a comparative advantage (disadvantage) in international trade. It can be seen that in the period 1978-79 there were on the whole 16 traditional industries with positive RCA: slaughtering products, canned/preserved fruits and vegetables, grain mill products, sugar, other food products, beverages, tobacco, ginned cotton, textile, apparel, hide and skin product,

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[1] RCA is also defined as the ratio of country's export performance in a particular commodity with its share in total merchandise exports:

$$RCA_{ij} = \frac{X_{ij}}{\Sigma_i X_{ij}} \Big/ \frac{\Sigma_j X_{ij}}{\Sigma_i \Sigma_j X_{ij}}$$

where X_{ij} is exports of commodity i by country j to the rest of the world. The use of the net export index is superior to the above index on trade-theoretical grounds (Balassa, 1989, p.81) Because the net export index shows the effects of comparative advantage on the relationship between exports and imports rather than on exports alone (ibid).

leather footwear, wooden furniture, glass, and cement. However, in the period 1987-88 slaughtering products, sugar, ginned cotton, hide and skin product, and cement lost their comparative advantages in international trade. In spite of this soft drinks, refined petroleum and tyres had a positive net trade balance. The findings shows in broad terms that although the RCA indices have declined in processed agricultural products, Turkey still appears with a strong competitive position in those sectors. Turkey seems to be particularly competitive with regard to the following other industrial manufacturing sectors: textile, apparel, leather footwear, wooden furniture, and glass products.

The third column of Table 6.10 calculates changing RCA values for each sector between 1978-79 and 1987-88 sector as an index of dynamic comparative advantages.

From a dynamic perspective, the result is more interesting. While observing changing RCA values, some improvement is seen in other manufacturing industries but not in hide and skin products, wood and cork products, wooden furniture, and cement. There is a decrease in RCAs for processed agricultural products with the exception of vegetable and animal oils and fats, and soft drinks. In other words, traditional industries which had positive RCA values in 1978-79 are losing advantages in production and marketing conditions compared to industries located abroad, while more technology intensive sectors are gaining comparative

Table 6.10.

Revealed Comparative Advantage Indices of Turkey

ISIC CODE COMMODITY GROUP	RCA 1978/79	RCA 1987/88	CHANGE of RCA
A.PROCESSED AGRICULTURAL PRODUCTS	0.88	0.43	-0.46
11.SLAUGHTERING PRODUCTS	0.69	-0.30	-0.99
12.CANNED & PRESERVED FRUITS & VEGET.	1.00	0.98	-0.02
13.VEGETABLE & ANIMAL OILS & FATS	-0.30	-0.20	0.11
14.GRAIN MILL PRODUCTS	0.30	0.08	-0.22
15.SUGAR	0.98	-0.15	-1.13
16.OTHER FOOD PRODUCTS	0.98	0.90	-0.07
17.ALCOHOLIC BEVERAGES	0.96	0.26	-0.70
18.SOFT DRINKS & CARBONATED WATER	0.00	0.21	0.21
19.TOBACCO & CIGARETS	1.00	0.25	-0.75
20.GINNED COTTON	1.00	-0.10	-1.10
B.OTHER INDUSTRIES	-0.72	-0.13	0.59
21.TEXTILE OTHER THAN WEARING APPAREL	0.84	0.90	0.06
22.WEARING APPAREL EXC.KNITTED PROD.	1.00	1.00	-0.00
23.HIDE & SKIN PROD.& LEATHER SUBST.	0.23	-0.21	-0.45
24.LEATHER FOOTWEAR	0.55	0.71	0.16
25.WOOD & CORK PRODUCTS	-0.08	-0.11	-0.03
26.WOODEN FURNITURE	0.98	0.66	-0.32
27.PAPER PULP, PAPER & PAPERBOARD	-0.93	-0.48	0.46
28.PRINTING AND PUPLISHING PRODUCTS	-0.76	-0.31	0.45
29.CHEMICAL FERTILIZER	-1.00	-0.48	0.52
30.DRUGS AND MEDICINES	-0.91	-0.62	0.29
31.PETROCHEMICAL PRODUCTS	-0.93	-0.22	0.71
32.OTHER CHEMICAL PRODUCTS	-0.87	-0.55	0.32
33.REFINED PETROLEUM PRODUCTS	-1.00	0.07	1.07
34.OTHER PETROLEUM & COAL PRODUCTS	-0.96	-0.56	0.40
35.TYRES & TUBES & OTHER RUBBER PROD.	-0.93	0.09	1.02
36.PLASTICS	-0.33	-0.12	0.21
37.GLASS & GLASS PRODUCTS	0.58	0.66	0.07
38.CEMENT	1.00	-0.76	-1.76
39.OTHER NON-METALIC PRODUCTS	-0.74	-0.27	0.46
40.IRON & STEEL	-0.87	-0.15	0.72
41.NON-FERROUS METALS	-0.58	-0.39	0.19
42.METAL PRODUCTS	-0.89	-0.33	0.55
43.NON ELECTRICAL MACHINERY	-0.97	-0.64	0.34
44.AGRICULTURAL MACHINERY	-0.97	-0.06	0.91
45.ELECTRICAL MACHINERY	-0.96	-0.55	0.41
46.MARINE TRANSPORT EQUIPMENTS	-1.00	-0.82	0.17
47.RAILWAY TRANSPORT EQUIPMENTS	-0.99	-0.99	0.00
48.OTHER TRANSPORT EQUIPMENTS	-0.89	-0.60	0.29
49.AIR TRANSPORT EQUIPMENT	-1.00	-1.00	0.00
50.OTHER INDUSTRIAL PRODUCTS	-0.86	-0.75	0.12
ALL MANUFACTURING INDUSTRY	-0.37	-0.06	0.30

Source: Own computation based on State Planning Organization Prior Development
of Sixth Five Year Devepment Plan, 1972-1983, and 1984-88.

advantages slowly. There was a decline in RCA for total processed agricultural products from 0.88 percent to 0.43 percent. Hence there has been a growth in RCAs for total other manufacturing products.

Turkey appears to be losing its competitive position in processed agriculture products though it retains its influence and seems to be getting particularly competitive in the following manufacturing industries: chemical fertilizer, petrochemical products, refined petroleum, tyres, iron and steel, and metal products.

Comparing the indices of RCA between the period 1978-79 and 1987-88 leads us to ask to what extent foreign firms affect this changing pattern. We measured the correlation between the share of foreign firms in exports at the industry level, and the revealed comparative advantage index. We found that the Spearman rank correlation coefficient (+0.1609) between these variables is positive which may show that, on the whole, foreign firms' exports had a positive effect on the changing patterns of comparative advantages during the 1980s. The difference in the export behaviour by the foreign firms during the 1970s and 1980s confirms this result. Between 1973-1977, foreign firms accounted for an average of 2.9 percent of total manufacturing exports, while between 1987-1988, average foreign firms' share in total exports increased to 7.3 percent (see, Table 6.3).

Comparing the indices of RCA between the period 1978-79

and 1987-88 in the industries (except beverages) in which foreign firms' exports were concentrated such as tyres, glass, ceramic, iron-steel, non-ferrous metals, electrical machinery, and transport equipment, these saw improvement. This was especially true of tyres and iron-steel which ranked 29 and 24 respectively in the period 1978-79 and 12 and 19 in the period 1987-88.

To sum up, since 1978-79 Turkey's pattern of comparative advantage has been changing towards more technology intensive industries. Although there is no strong correlation between RCA and foreign firms' exports, there is some evidence that foreign firms affect the changing patterns of comparative advantage.

6.5.4. Import Performance

In the last section, it was observed that foreign firms' exports have made some contribution but this should be considered alongside their import performance.

Before we start analyzing this it should be mentioned that the data on imports are the sum of imports of inputs for production plus imports of capital goods for expanding the production of or investment in new products.

Foreign firms accounted for 12.00 percent of total imports in Turkish manufacturing in 1987 and 15.31 percent in 1988 (see Table 6.11 and 6.12). The share of total imports

varies across industries, hence, a sectoral break down is given for the years 1987 and 1988. Foreign firms' share of total imports seems to be higher especially in other chemical products, tyres, iron and steel, electrical machinery, electronics, and transportation.

It can be observed from Tables 6.11 and 6.12 that import participation dramatically increases in food, industrial chemicals, ceramics, iron and steel, electrical machinery, and electronics, mainly because new firms were set up in the industry and some domestic firms had joint-ventures with foreign firms. As a result, more capital goods for new investment were imported. However there was a decrease in the share of total imports by foreign firms in beverages, textile. In these industries there was a increase in total imports and also a decline in foreign firms' export revenue. As a consequence of production their need to import goods was reduced.

In these industries, the import performance coefficient is used in order to observe the weight of foreign firms' imports on total imports in each sector with the corresponding weight for manufacturing. Column 2 in Table 6.11 and 6.12 shows that the sectors mentioned above have the highest coefficient and that foreign firms tend to have significantly higher imports in technology intensive industries possibly reflecting their high level of penetration in these industries. Therefore, inter-sectoral differences in the

Table 6.11.

Share of Foreign Firms in Turkish Manufacturing Imports
and Coefficients of Imports (1987)

	Share of FFs in total imports	Coefficient of imports
Less Technology Intensive Sector		
Food products	9.22	0.77
Beverages	38.99	3.25
Tobacco	0.11	0.01
Textile	14.59	1.22
Wearing apparel	19.25	1.60
Leather footwear	-	-
Paper & paper products	5.22	0.43
Ceramics	21.07	1.76
Glass & glass products	1.18	0.10
Fertilizers	4.72	0.39
Iron & steel	15.97	1.33
Non-ferrous metals	13.65	1.14
Fabricated metal products	4.11	0.34
More Technology Intensive Sectors		
Industrial chemicals	17.84	1.49
Other chemicals	11.96	1.00
Plastic products	7.39	0.62
Tyres	93.00	7.75
Agricultural machinery	7.11	0.59
Non-electrical machinery	0.30	0.02
Electrical machinery	17.23	1.44
Electronics	21.94	1.83
Transport equipment	37.23	3.10
Average	12.00	1.00

Source: Data provided by own questionnaire.

Table 6.12.

Share of Foreign Firms in Turkish Manufacturing Imports and Coefficients of Imports (1988)

	Share of FFs in total imports	Coefficient of imports
Less Technology Intensive Sectors		
Food products	22.58	1.48
Beverages	14.16	0.92
Tobacco	0.39	0.03
Textile	9.53	0.62
Wearing apparel	24.99	1.63
Leather footwear	14.45	0.94
Paper & paper products	6.57	0.43
Ceramic	29.97	1.96
Glass & glass products	2.79	0.18
Iron & Steel	21.56	1.41
Non-Ferrous Metals	13.77	0.90
Fabricated Metal Products	6.57	0.43
Measurement	1.26	0.08
More technology intensive sectors		
Industrial chemicals	24.76	1.62
Other chemicals	12.08	0.79
Plastic Products	9.55	0.62
Tyres	97.76	6.39
Fertilizers	5.12	0.33
Agricultural Machinery	7.33	0.48
Non-Electrical Machinery	2.25	0.15
Electrical Machinery	21.87	1.43
Electronics	26.67	1.74
Transport equipment	33.23	2.17
Average	15.31	1.00

Source: Data provided by own questionnaire.

import coefficients vary.

Table 6.13 illustrates the concentration of foreign firms' import values at the firm level. The table shows that imports are highly concentrated at the firm level. Only 11 firms in 1987 and 13 firms in 1988 accounted for more than 50 percent of total import of all foreign firms. Among them, 11 percent of imports by foreign firms in 1987 and 14 percent in 1988 were made by one firm in the steel industry. It may be that a relatively small number of firms carry out the investments which depend on imported goods. It was found that from the questionnaire that most foreign firms would aim to be less import substituting because of the unreliablity of local

Table 6.13.

Concentration of Foreign Firms According to Import Values
1987

Range of imports (Million $)	Number of Firms	Total imports Million $	% of Imports
1 - 10	116	188.6	16
10 - 30	18	388.5	33
30 - 50	6	225.9	19
50 - 100	4	240.9	21
100 + over	1	124.5	11

(1988)

1 - 10	146	356.4	25
10 - 30	17	322.6	22
30 - 50	8	317.7	22
50 - 100	4	237.4	16
100 + over	1	207.9	14

Source: Data obtained from own questionnaire.

suppliers and require more sophisticated inputs which are not available in Turkey.

Any contribution made by exports of such companies to the balance of payments must take into account imports by foreign firms. Table 6.14 shows their trade balance, being the difference between exports and imports. On the industrial level we find that 6 industries in 1987 and 7 in 1988 had a positive trade balance. This occurred mainly in traditional sectors, namely beverages, tobacco, textiles, apparel, ceramics, and glass. These had positive trade propensities for both years, while electrical machinery had for 1988. Trade deficits decreased in tyres, fertilizers, iron-steel, non-ferrous metals and agricultural machinery due to increased export revenues.

In terms of the manufacturing industry as a whole, foreign firms had trade deficits of 604 million dollars in 1987, and of 556.5 million dollars in 1988. Although there was a small decline the total trade deficit of foreign firms, it accounted for more than half the entire manufacturing trade deficit, which was 1117 million dollars in 1987 and 1045 million dollars in 1988. One must therefore consider their contribution to the balance of payments as negative.

Table 6.14.

Trade Balance of Foreign Firms
(Million $)

	(X-M) 1987	(X-M) 1988
Less Technology Intensive Sectors		
Food products	-39.6	-47.2
Beverages	2.7	4.0
Tobacco	23.0	19.2
Textile	8.5	9.5
Wearing apparel	7.2	12.1
Hide and skin products	-0.09	-
Leather & footwear	-	0.7
Paper & paper products	-8.7	-16.3
Ceramic	1.5	3.1
Glass & glass products	25.5	28.4
Iron & steel	-42.8	-1.5
Non-ferrous metals	-11.6	-3.2
Fabricated metal products	-4.3	-12.5
Other industrial products	-	-4.8
More Technology Intensive Sectors		
Industrial chemicals	-45.6	-58.8
Other chemicals	-98.5	-105.7
Plastic products	-1.0	-6.0
Tyres	-41.5	-0.7
Fertilizers	-20.8	-12.7
Agricultural machinery	-3.0	-1.4
Non-electrical machinery	-5.2	-42.7
Electrical machinery	-41.4	1.8
Electronics	-106.9	-120.6
Transport equipment	-201.1	-200.4
Total	**-604.0**	**-556.5**

Source: Data provided by own questionnaire.

6.6. The determinants of Foreign Firms Export Performance

This section will examine the factors which determine the export performance of foreign firms in the manufacturing sector. Our research for the determinants of this covers both the variable indicated by the theory of international trade and by the field of industrial organization.

The export performance of foreign firms is determined by capital intensity, skill-intensity, advertising-sales ratio, firm size, market concentration and export credits. Analysis is based on cross-section data for the year 1987. The data set is taken from surveys of 21 manufacturing industries by the three-digit standard industrial classification of the Prime Ministry State Institute of Statistics and State planing organization, and my questionnaire.

The dependent variable was defined as the share of foreign firms in the total exports of each industry.

Independent variables:

Capital and Skill Intensity

Most economic theory to do with determinants of trade originally dwelt on a country's relative endowments of labour and capital. By definition, developing countries had little accumulated capital. Apart from certain resource-based industries, their comparative advantage was thought to be in activities requiring large amounts of unskilled labour but

sparing in their use of capital. Neo-factor proportion theory extends the simple version of the Hecksher-Ohlin model by including not only physical capital and labour but also skilled labour or human capital as factors of production. A country's endowments of human capital i.e., the capital invested in education and labour training, was seen to influence trade patterns. Another refinement was introduced by the neo-technology theory which states that countries have competitive edge in exporting commodities whose production requires a high degree of research and development, and product differentiation. Balasa (1979) argues that a country's comparative advantage will systematically change as a result of the accumulation of physical and human capital and increasing technological sophistication in production. Thus, with the passage of time the competitive advantage of more advanced developing countries will be lost in those processes that require a relative abundance of cheap skilled labour, and will shift instead to processes and products which require more capital and skill input, and are technologically more sophisticated. The developing countries can expect, in this model, to move along a ladder of comparative advantages as development proceeds.

In the previous part, we showed that Turkey's pattern of comparative advantage has been changing towards more technology-intensive industries, while foreign firms have a high percentage of exports in technology-intensive sectors. We

also found that capital and skill-intensity positively related to foreign direct investment in Turkey. Therefore, we shall expect the export performance of foreign firms to be positively related to the capital and skill-intensity of the industry.

Firms Size

Export marketing is likely to be more costly and risky that domestic marketing, and large firms are likely to be better equipped than small ones to take advantage of economies of scale in production, marketing, finance and the adaptation of product for foreign markets as well as to bear the risks involved in new product development, exchange rate fluctuation, and other risks facing business. However, Glejser et al., (1980) argues that if firms export in order to achieve scale economies, then a negative correlation is likely to occur between firm size and export propensity. This is because large firms may find it easier to reap benefits from scale economies via domestic sales than via exporting without incurring the extra costs associated with exporting. More over, if large firms can enjoy monopoly power in the domestic market, especially when they are protected from foreign competition, they may have no intention to look for highly competitive foreign markets. In the case of the Turkish economy, which is exposed to foreign trade competition, a positive relation between firm size and export performance is

expected. The measurement if the size variable is the average sales per firm in each industry.

Market Concentration

The relationship between exports and market structure has been analyzed by White (1974) and Caves and Jones (1993). The following conclusion can be drawn from their work. In a monopolistically organized market, given the existence of trade restrictions which allow the monopolist to implement price discrimination, export performance would be higher than in a competitively organized market, while positive relationship between concentration and export performance would be expected. Despite the higher rate of protection, if exports cannot be increased, this show either that the monopolist is unable to implement price discrimination, or there is severe inefficiency. In this case, reducing concentration might well improve the export performance of these industries.

In an economy which is exposed to foreign trade competition, export behaviour may differ according to the degree of openness in the industry. If the economy is open, the monopolist cannot discriminate with prices. In this case, exports would either diminish or remain at level equal to that of the competitive market. Therefore, in the case of Turkey since 1980, there should be a negative relation between export performance and market structure due to trade liberalization.

Product Differentiation

Product differentiation and marketing may be the important ownership-advantages of foreign firms. Product differentiation activity (colouring, appearance, performance, advertising) play an important role in the export of goods. Foreign firms have an advantage in exporting goods characterized by product differentiation, thorough brand or trade names, and where advertising and sales promotion plays an important role. The degree of product differentiation is measured by the share of advertising in total sales. A positive relationship between export performance and advertising intensity is expected.

Export Credits

Turkish governments attempted to promote exports through various financial incentives. One of these is export credits. The aim in providing preferential credits at reduced interest costs was to enable exporters to finance the physical inputs required during the manufacturing stage so that they would be able to compete on world markets. Credits are expressed as a percentage of total export receipts for 1987, and are expected to have a positive influence on the export performance of foreign firms.

Empirical Analysis

Regression results are presented in Table 6.16. Because of multicollinearity (Table 6.15) between variables, a few alternative combinations were tried. The fitted regressions are significant at the five percent level in terms of F statistics.

Average firms size always has a positive and significant relationship with the export performance of foreign firms. Exporting involves significant economies of scale in setting up a marketing network abroad, gathering market information, etc.(Caves et., 1979). Further, exporting is riddled with a high degree of uncertainty and risk. Therefore, large firms are better equipped to venture into international trade.

The high collinearity between capital and skill-intensity robs both variable of significance. When we drop the capital intensity variable, the skill-intensity variable becomes significant. The export performance of foreign firms is positively related to skill-intensity, and foreign firms appear to be at an advantage in skill-intensive industries.

The capital variable has the expected sign and significance at the five percent level when we tried without skill-intensity and export credits. This finding confirms the hypothesis that foreign firms are exporting capital-intensive products. Capital-intensive manufacturing industries (chemicals, iron and steel, engineering goods, machinery and

Table 6.15.

Estimated Correlation Matrix of Variables

		FS	ADV	CR4	K/L	EC	SI
Firm Size	(FS)	1.0000					
Advertising-sale Ratio	(ADV)	-0.2085	1.0000				
4-Firm Concentration Ratio	(CR4)	0.8133	-0.2880	1.0000			
Capital-labour Ratio	(K/L)	0.4829	-0.1533	0.5498	1.0000		
Export Credits	(EC)	0.2974	-0.2294	0.3466	0.7075	1.0000	
Skill Intensity	(SI)	0.6421	-0.4015	0.5950	0.6785	0.6456	1.0000

Table 6.16.

Explaining Export Performance of Foreign Firms

Intercept	FS	ADV	CR4	K/L	EC	SI	R^2	Adj. R^2	F ratio
-1.3819 (-0.6436)	0.5147 (1.5674)c	0.1973 (0.5376)	-1.1253 (-1.1448)	0.6203 (0.4389)	0.1736 (0.6578)	1.4747 (1.2578)	0.5670	0.3814	3.0556
-1.3221 (-0.6343)	0.5023 (1.5877)c	0.2322 (0.6665)	-1.0227 (-0.9626)		0.2234 (0.9754)	1.6160 (1.4736)c	0.5611	0.4147	3.8345
-2.04477 (-1.1493)	0.6604 (2.2334)b	-0.0266 (-0.0797)	-1.2268 (-1.1282)	2.3772 (2.3645)b			0.4648	0.3389	3.6916
-0.3849 (-0.1872)	0.7077 (2.3628)b	0.0713 (0.2080)	-1.0198 (-0.9751)		0.3942 (1.9198)b		0.4975	0.3719	3.9603
-2.8670 (-1.6421)	0.3409 (1.6482)c	0.0587 (0.1730)		1.8699 (1.9194)b			0.3968	0.2963	3.9475
-1.2533 (-0.6128)	0.5450 (1.7640)b		-1.1116 (-0.7001)		0.2334 (1.0125)	1.3869 (1.3432)c	0.5481	0.4351	4.8506
-1.3110 (-0.6207)	0.3741 (1.7748)b	0.1370 (0.3884)		0.5598 (0.5071)	0.2991 (1.3429)c		0.4538	0.3173	3.3236

Notes : White's (1980) correction to the standart errors was implemented for all reported models because of hetero-skedasticity. Figures in parenthesis are t-values. The significance of the regression coefficients is tested using a one tail test and the significance of the coefficients of multiple determination is tested with F test, (for abbreviations see Table 6.15).
a = Coefficient is significant at 1 percent level.
b = Coefficient is significant at 5 percent level.
c = Coefficient is significant at 10 percent level.

transport, etc), which are set up largely for the purpose of import substitution, have also entered into export markets over time. Given that initial technology was often provided by foreign firms, a relatively high degree of foreign participation in exports is not surprising.

The product differentiation variable is unstable in the sign and always insignificant. Foreign firms, therefore, either do not export differentiated products from Turkey, or there are problems of mis-specification.

The concentration ratio has a negative and insignificant relationship with the export performance of foreign firms. Negative values indicate that the decrease in concentration has induced the export performance of foreign firms. Exposing the economy to foreign competition through the gradual abandonment of custom tariffs, has covered the economy into becoming more effective in foreign trade. These changes have exerted a competitive pressure on domestic markets, leaving little capability of price discrimination to foreign firms. As a result, it can be asserted that the effect of market power on export performance became insignificant.

Export credits have positive sign and reached significant level when multicollinearity taken into consideration. Export credits may stimulate foreign firms' exports. This finding is only suggestive, and much more detailed research is needed into effective incentive structure before a conclusion can be drawn.

6.7. Conclusion

This chapter has sought to analyse the contribution of direct foreign investment to Turkey's trade structure, particularly its manufacturing exports.

Changes in import-substitution policy towards export-orientation has increased manufacturing exports in Turkey. Foreign firms' shares of manufactured exports have also changed significantly and new policies lead them to increase their exports. But their contribution to export performance in Turkey is still low by comparison with other developing countries, albeit not negligible at the sectoral level.

Manufacturing exports are concentrated in those sectors, such as textiles, apparel and footwear, where foreign participation is quite low. Otherwise foreign firms have a high percentage of exports industries such as beverages, tyres, iron-steel, non-ferrous metals, electronics, and transport equipment. They mainly contribute to exports in technology-intensive industries. This should come as no surprise, since they have the advantage of superior technology which is part of the monopolistic advantage they enjoy over domestic firms.

When we compared export performance between domestic and foreign firms, we found that domestic firms exhibited better export performance than foreign firms in textile, apparel, plastics and metal products industries. Foreign firms have a higher capacity than domestic firms for exporting manufactured

goods in beverage, tobacco, industrial chemicals, tyre, ceramic, glass, iron-steel, non-ferrous metal, electrical machinery, and transportation industries.

In addition, their exports involved high levels of imports. As a result, the net effect on foreign exchange earnings was negative. The total trade deficit of foreign firms accounted for more than half the entire manufacturing trade deficit in 1987 and 1988.

The findings show in broad terms that although the RCA indices have declined in processed agricultural products, Turkey still appears with a strong competitive position in those sectors. Turkey seems to be particularly competitive with regard to the following industrial manufacturing sectors: textile, apparel, leather footwear, wooden furniture, and glass products. With the exception of glass products, foreign firms' participation is quite low in those sectors.

From a dynamic point of view, Turkey is losing its strong competitive position in processed agricultural products and seems to be getting competitive in the following sectors: industrial chemicals, tyres, iron and steel, metal products, agricultural machinery, electrical machinery, and transport equipment. Changing patterns of comparative advantages result from the import substituting process which operated from 1960 to 1980, resulting in industrialization, and the expansion of export capacity in the post 1980's.

Foreign firms with relatively high export performance,

contribute to the changing pattern of comparative advantage in Turkey. The difference in the export behaviour by foreign firms during the 1970s and 1980s, and the positive relationship between RCA and foreign firms' exports, confirms this result. Between 1973-1977, foreign firms accounted for an average of 2.9 percent of total manufactured exports, while between 1987-1988, foreign firms' share in total exports increased to 7.3 percent. Although there is no strong correlation between RCA and foreign firms' exports, there is some evidence that foreign firms affect the changing patterns of comparative advantage.

The major factors which explain the export performance of foreign firms are capital-intensity, labour-intensity and firm size. Foreign firms in the manufacturing industry appear to have the advantage of exporting capital and skill-intensive products. Large foreign firms can reap more benefits from economies of scale than small ones, and can therefore compete better in international markets. Market concentration has a negative and insignificant effect on the export performance of foreign firms. The policies followed by the government seem to be affecting the exports of foreign firms. In our model we used the only one form of exports incentive in Turkey because of the availability of data at the sectoral level. The statistical significance of the variable is low; therefore, more detailed research is needed into export incentive structure before a strong conclusion can be drawn.

CHAPTER 7

CONCLUSION

The main purpose of this study is to examine the performance of foreign firms in Turkish manufacturing. At the centre of our analysis has been the role of foreign firms in industrial concentration, technological choice and trade behaviour.

In the first chapter we outlined the main issues which were to be analyzed in this study, and explained the method of collecting and processing data from foreign firms operating in the Turkish manufacturing industry. The second chapter looked at theories and empirical evidence concerning the determinants of foreign direct investment and we also analyzed the industrial distribution of foreign direct investment in Turkish manufacturing. In the third chapter we undertook an overview of the historical background of foreign firms and the legislation covering foreign investment in Turkey. At the beginning of the following three main chapters we analyzed the performance of foreign firms in terms of those basic issues in the literature, and later on we investigated the performance of foreign firms in Turkish manufacturing using our own data.

In this study a substantial amount of information has been provided by our survey. Before any discussion on policy implications, it may be useful to summarize the main findings of this study.

Turkey followed an inward oriented development strategy during three decades 1950-1979. From 1963, this policy was based on the implementation of three five years plans. This succeeded in attracting some foreign manufacturing investment in chemicals, tyres, iron-steel, non-ferrous metal products, electronics, and motor vehicles.

The essential characteristics of this economic policy were protectionism, and the increasing subsidisation of an expanding national industry. As a result of a long standing, inward looking development strategy, manufacturing investment was unable to induce export earnings and hence maintain production and growth when primary exports decreased. This caused severe foreign exchange constraints, significant underutilization of capacity in import dependent industries, problems in serving foreign investments and difficulties in repatriating profits. All of this discouraged the inflow of new foreign capital, in addition to the promotion of national ownership, mainly by setting up the State Economic Enterprises (SEEs), which generally created a hostile environment for foreign investors. SEES generally lacked technological/ managerial skills, and were hampered by excessive political interference. This mixture of protected, nationalistic and public-sector led policies with their deficient, indigenous technological/managerial capabilities, had three detrimental effects on the inflow of foreign capital.

Social and political unrest and economic difficulties

brought three military interventions, in 1960, 1971 and 1980.
In addition to the political uncertainties, lengthy
bureaucratic procedures were disincentives which affected the
inflow of direct investment.

In 1977, with the outbreak of a foreign exchange crisis,
it also became practically impossible to transfer profits. The
inflow of foreign direct investment slowed to a trickle,
stagnating by the end of 1979 when it reached a cumulative
total of US $228 million.

After 1980, a relatively liberal environment and
welcoming attitude towards foreign firms provided greater
incentives. During 1980-1989, authorized foreign capital
increased 19 times, to reach 4633.7 million dollars by the end
of 1989.

Although the inflow of foreign capital has increased
remarkably since 1980, the realized level of foreign capital
is quite a way below the authorized level. However, while
changing from year to year, it averages just half of the
authorized amount, although this gap has narrowed in the
period 1980-1989.

The majority of foreign capital in Turkey was from
developed countries, led by Germany, Switzerland, the United
States, and the United Kingdom. Recently the number of foreign
firms from Arab countries has been increasing.

In our sample, about 91 percent of the foreign affiliates
in Turkish manufacturing operated as joint ventures. More than

half of these joint ventures had foreign investors as their minor shareholders, and more than three quarters as their majority shareholders. Although there is no obligation to undertake joint ventures with domestic firms, the capital share by all domestic firms in the DFI firms in manufacturing is 55.52 percent.

Our analysis shows that foreign firms seen to enter concentrated industries requiring a high level of general skills, scale-intensity, and a strong position where capital availability is important. They concentrate on the more profitable sectors of manufacturing.

The sectoral distribution of foreign firms' sales and employment showed that there is a high concentration in a few sectors, namely food, other chemicals, tyres, iron-steel, electrical machinery and transport, which together accounted for 75.41 percent of total sales of foreign firms, and for 67.37 percent of total employment levels. The share of all firms (including foreign as well as domestic firms) in the sales of industries mentioned above is 45.29 per cent, and the share of all firms in the employment of the above-mentioned industries is 38.73 percent. The most concentrated sectors which are capital-intensive, (such as transport, electronics, and iron & steel in particular), account for 54.32 percent of all foreign firms' sales, and the concentration in these sectors is much higher than in manufacturing sales for all firms, which account for 24.28 percent of all manufacturing

sales. The above concentration is further confirmed by observing employment levels.

However, all foreign firms' sales and employment cover just 13.70 and 8 percent of all manufacturing sales and employment respectively, which is very low compared with other less developed countries at the aggregate level.

The size structure of foreign firms in terms of total sales, employment, and paid-up capital confirmed our findings. It showed that there is significant concentration of activity in the hands of a few large firms in a few industries. The largest 16 firms accounted for 60 percent of total sales, 40 percent of total employment, and 47 percent of paid-up capital of foreign firms. The distribution of the 16 largest firms in terms of sectors is as follows; transport (4 firms), tyres (3 firms), iron-steel (3 firms), electronics (3 firms), non-ferrous basic metal (1 firm), machinery (1 firm), and the food industry (1 firm).

Foreign firms tend to concentrate in those industries which are different from those of local firms. The role of large domestic firms has been particularly significant where foreign penetration is low or non- existent. Local firms are especially concentrated in the food and textile industries.

The estimate of the 5-firm concentration ratio according to a 3-digit classification has shown that there is a wide variation in degree of concentration in the Turkish manufacturing industry.

Considering the level of concentration CR>70, which may be accepted as heavily concentrated, we counted 3 industries, which are petroleum refineries, tobacco and tyres. Petroleum refineries and tobacco are dominated by public enterprises. By contrast there are three foreign firms among the leading five firms in the tyre industry. Sectors where foreign firms' participation is high, such as other chemicals, petroleum derivatives, tyres, iron-steel, electrical machinery, transport, glass, pottery, and the non-ferrous basic metal industries are highly concentrated, with the exception of other chemicals, and each sector has at least one foreign firm among the first five leading firms of the industry.

The structure of the Turkish manufacturing sector is quite diverse. Most of the sectors have a high level of concentration. In other words, a few firms have a monopoly or oligopolistic power. But some industries are highly competitive. This arises from the fact that there is greater variability in the "mix" of types and scale of operation these enterprises.

When we tested the major factors affecting the level of concentration in the Turkish industrial structure, including foreign investment, empirical evidence has shown that MEPS, which is a proxy of economies of scale, capital intensity of production, market growth, and foreign participation, are the main determinants of concentration in Turkish manufacturing. The effect of foreign presence is exercised through other

independent variables which determine the industrial market structure and partly independently of them. Foreign investment increases concentration by introducing more capital intensive techniques and by operating at a MEPS and also by influences not captured by other industrial variables.

When we analyzed the impact of some of the major market structure elements and foreign direct investment on aspects of performance (price-cost margins) in the manufacturing industry, the results of our statistical analysis showed that foreign direct investment, concentration, MEPS and capital intensity of production have a significant influence. This finding is consistent with the hypothesis that foreign direct investment tends to take place in industries characterized by oligopoly, and to have the expected effect on industry profitability. The import ratio rate has significant and negative effect on industry profits. The evidence is consistent with the hypothesis that less restrictive trade policies after 1980 encourage more competitive pricing behaviour in domestic industries.

Our survey showed that, foreign firms in Turkey gave priority to the adaptation of existing products due to local conditions as a major technological activity. The adaptation of imported technologies to local conditions was indicated by only 42 firms. 27 firms engaged with developing products. We only found 7 pharmaceutical firms engaged with developing new production processes according to local conditions.

However, foreign firms described the nature of their adaptation as being related to process and quality control, market and sales research, tests of materials and products, and inspection of tools and machinery. Firms described the nature of the adaptation in soaps, cosmetics, and food products, as being to adapt to local consumers' requirements in Turkey. In agricultural machinery and equipment, they tried to redesign according to agricultural practices in Turkey. Hence technological activities revolve mainly around changing products in respect to local demand patterns. Foreign firms did not engage in an extended search for alternative techniques when planning their Turkish operations. They depended on the experience of their parent companies.

Technology transfer is closely connected with the import of technology-embodying inputs. 85 foreign firms out of 179 imported half of their inputs. The continued inflow of foreign technology would lead to continued imports of inputs. Thus, the country's production structure may become more dependent on foreign technology, and this puts additional pressure on the limited supplies of foreign exchange in Turkey.

We found that only 13 foreign firms could purchase all inputs locally. 62 foreign firms could not purchase their inputs because they were not available in Turkey. The reason for this might be that foreign firms use relatively more advanced technologies and require more sophisticated inputs. 104 foreign firms could get some of their inputs. The decision

to buy inputs from domestic producers instead of importing them is strongly influenced by uneven standards and poor quality of products, while the high cost of inputs was a second important reason for not buying locally available materials. High inflation and sudden changes in prices discourage foreign firms from depending on domestic producers. The limited variety of inputs, inability to respond to changes in orders in the short term, and delays in deliveries create other problems for purchasing inputs in Turkey. This shows that local suppliers are initially inefficient at meeting foreign producers' needs. Therefore, unavailability of local inputs and/or inefficient local suppliers do not allow extensive use of domestic materials by foreign firms. As a result, there are no significant linkages affects to stimulate the growth of domestic input industries, create indirect employment, and save foreign exchange earnings.

The most important factors influencing the choice of technique are market size, quality of product, and availability and quality of local inputs. Another important factor regarding technology choices by foreign firms is the degree of technological dependence by the subsidiary on its parent company.

Concerning the determinants of the choice of technique according to neoclassical economies, factor prices are the main determinants of choice of techniques. Those who believe in the price of labour and capital as being the main

determinants of this choice, are not supported by the results of my questionnaire.

This finding also confirms that foreign firms do not make major adaptations to suit the Turkish market, or to take advantage of differences in labour cost. Minor adaptation has been made to suit local conditions, but they do not specialize in labour intensive products which can be adapted to the factor endowments of Turkey.

Our findings also showed the importance of foreign ownership, scale of production, market size, technical rigidity, and skill intensity in influencing the capital intensity of the Turkish manufacturing industry.

The introduction of a new economic program in 1980 aimed at shifting Turkey away from inward-orientated industrial development towards an export-orientated industrialization policy. Since then, the value of exports has grown rapidly and the share by Turkish manufacturing in the total volume of the country's exports has increased from 30 percent in 1980 to 87 percent in 1988.

Foreign firms' participation in Turkish manufacturing exports has also increased from 2.3 percent in 1973 to 8.6 percent in 1988. However this is really quite low compared to the share of exports by foreign firms in other developing countries at aggregated level.

At the sectoral level, foreign firms account for a significant proportion of total export in a few sector: tyres

(71.44), transport equipment (63.90), electronics (61.72), and electrical machinery (49.98), iron and steel (23.58), non ferrous basic metals (22.25), ceramics (25.04) and beverages (24.88). This shows that foreign firms contribute significantly to the total exports significantly where the foreign participation is quite high.

When we looked at the establishment of the firms in those industries, 77 percent of foreign firms were established before 1980. Hence, foreign firms involved were initially import-substitutors and have gradually moved into the export market, following the changing industrialization policy.

At the firm level, the export to sales ratio of foreign firms for the year 1987 showed that 63 firms out of 168 exported nothing. Export orientated firms, which may be defined as those that export more than 50 percent of their sales, accounted for just 24 of the 168 foreign firms. Foreign firms are mainly concerned with the supply of domestic markets as shown by the fact that the proportion of exports in their sales was 12.03 percent and 17.19 percent in 1987 and 1988 respectively.

We found that the largest 16 firms in terms of sales accounted for 60.2 percent of all foreign firms' sales, and 52.9 percent of foreign firms' exports were done by these firms. Although 16 of the largest firms do export, the proportion of sales abroad accounted for only 15 percent of their sales. When we examine the export to sales ratio of

these firms, only two out of 16 firms (one is in the iron-steel industry , the other is in non-ferrous metals) exports accounted for approximately 50 percent of their sales. One firm in electronics exports 20 percent of its sales, 4 firms exports of their sales between 10 percent and 20 percent, and 9 firms fall with their export to sales ratio under 10 percent.

A large number of foreign firms (92.9 % of the number of foreign firms) contribute only 44 percent to their exports while 6.2 % of the foreign firms accounted for more than 60 percent of MNC's exports.

When we compared export performance between domestic and foreign firms, foreign firms made a more positive contribution than domestic firms to exports in beverages, tobacco, industrial chemicals, tyres, ceramics, glass, iron-steel, non-ferrous metals, electrical machinery, and transport equipment. Domestic firms exhibited better export performance than foreign firms in textiles, apparel, plastics and metal products.

Turkey appears to be losing its competitive position in agriculture although it retains its influence, and seems to be getting particularly competitive in the following manufacturing industries: chemicals, fertilizer, petrochemical products, refined petroleum, tyres, iron and steel, and metal products in which the contribution of foreign firm's export is substantial. We measured the correlation between the share of

foreign firms in exports at the industry level, and the revealed comparative advantage index. We found that the Spearman rank correlation coefficient between these variables is positive. This may show that, on the whole, foreign firms' exports had a positive effect on the changing patterns of comparative advantages during the 1980s.

The major factors which explain the export performance of foreign firms are capital-intensity, labour-intensity and firm size. Foreign firms in the manufacturing industry appear to have the advantage of exporting in capital-intensive and skill-intensive industries. Large foreign firms can reap more benefits from economies of scale than small ones, and can therefore compete better in international markets.

Foreign firms accounted for 12.00 percent of total imports in Turkish manufacturing in 1987, and 15.31 percent in 1988. Foreign firms' share of total imports seems to be higher, especially in other chemical products, tyres, iron and steel, electrical machinery, electronics, and transport equipment.

The concentration of foreign firms' import values is high. For example, 11 percent of imports by foreign firms in 1987 and 16 percent in 1988 were made by one firm in the steel industry.

On the industrial level we find that 6 industries in 1987 and 7 in 1988 had a positive trade balance. This occurred mainly in traditional sectors, such as beverages, tobacco,

textiles, apparel, ceramics, and glass. These had positive trade propensities for both years, while electrical machinery had them for 1988.

In terms of the manufacturing industry as a whole, foreign firms had negative trade deficits of 604 million dollars in 1987, and of 556.5 million dollars in 1988. Although there was a small decline in the total trade deficit of foreign firms, it accounted for more than half the entire manufacturing trade deficit, which was 1117 million dollars in 1987 and 1045 million dollars in 1988. One must therefore consider their contribution to the balance of payments as negative.

As we have seen, the inflow of direct foreign investment into Turkey is still low compared with other developing countries. Hence, the important issue is how Turkey can increase the inflow of direct foreign investment. The next issue should be how foreign firms foster the country's best interest, i.e.,improvement of the competitiveness of the economy, expanding of national product, creation of employment opportunities, and improvement of the balance of payment deficit.

The main factor attracting foreign direct investment is the economic situation in Turkey, which offers stable and promising economic conditions. Apart from economic conditions, the government should pay attention to the regulatory framework and procedures applied to foreign investors. The

transparency of foreign direct investment regulations is important. There should not be a high degree of variability in the interpretation of these regulations. Stability in these regulations is also important to investors. A framework of clear and consistent policies with respect to FDI, regardless of changes in government can be important to investors. Simplifying, speeding up administrative procedures, and the government's general attitude towards foreign firms are all very important factors. Strong nationalism and the antagonistic attitude of the general public towards foreign firms pose a great barrier to foreign firms.

The government should undertake the investment promotion policy to make investors aware of opportunities in the country and to facilitate the investment process. Image-building and public relations are important because Turkey's image has been discredited by nationalisations, civil unrest, and frequently changing policies towards foreign firms. Effective promotion programmes should be carefully directed toward firms that are likely candidates to respond to the promotion efforts. Empirical research has shown that investment promotion is likely to be effective for firms that will manufacture for exports (Wells, 1993, p.48).

Fiscal incentives are important, but should be used selectively. For example, fiscal incentives should be tendered to export-oriented types of projects. Fiscal incentives may be less essential for import-substitution projects. However, all

fiscal incentives should be provided for a limited period.

Government policies relating to forms of protectionism such as tariffs and quotas encourage foreign investment. Such policies may be bargaining tools for the host country when dealing with foreign firms. However, they should be used selectively over a period. Long lasting protectionism may cause inefficiency problems and create an oligopolistic structure within the industry.

The technological capacity should develop for the following reasons; first, local technological capacity is necessary to adapt imported technology to local conditions so that it becomes more efficient in use. Second, the imported technology from developed countries tends to be capital intensive and large scale and often produces over sophisticated high income products. LDCs need to develop the technologies that are appropriate to them which require technological capability. Third, LDCs should try to create indigenous technological capacity in order to reduce technological dependency on industrialized countries. By reducing technological dependency firms/countries can have local control over many aspect of production (Stewart, 1984).

The development of local technological capabilities may have been effected by the entry of foreign firms into developing countries. In the case of Turkey, the evidence shows that foreign firms have transferred the skill-intensive and high technology process to Turkish manufacturing industry

and they have attempted to adapt their technology to local conditions. The effect of foreign firms on know-how (production engineering) development within the firm is positive. As far as know-why development is concerned, their effect might be limited. We found that foreign firms depended on the experience of their parent companies. However, they have good economic reasons to centralize their basic design and development work at home because of significant economies of scale and of communication and various externalities. So in order to progress to the higher stage of technological development, protection of learning is required. The protection of local learning can take several forms (Lall, 1982, p.82): limiting foreign participation in some sectors, screening the licensing process, limiting the types of periods of agreements and prohibiting licences for technologies which can be developed locally, subsidizing local firms engaged in technological work, investing directly in R&D facilities.

The history of the Turkish manufacturing industry up to 1980 is characterised by heavy protectionism with respect to products and services as well as the imports of technology. The attitude of the governments towards the direct investment was hostile and over negotiated in the case of non-equity forms of technology transfers (Kirim,1988, p.4). Within this protective environment, local firms (including the subsidiaries of TNCs) developed substantial technological capabilities in production engineering, project execution, and

to a limited extent, in innovation (ibid). However this long lasting protectionist strategy gave rise to inefficiencies and caused local technologies to become outdated and uncompetitive. The protection of domestic learning must not be a continuous policy. There are large areas of industry where local enterprises cannot master the requisite technology or, having mastered it, cannot keep pace with its development. In this case there must be a continuous inflow of technology from abroad, complemented by local efforts to absorb and reproduce it.

The industries with relatively stable technologies and/ or undifferentiated products, may do better licensing foreign technologies rather than allowing the entry of foreign affiliates (Lall, 1985, p.71). In more complex area of industry, some leading-edge technologies are simply not so available on licence or the transfer may be less efficient, slower and less continuous under a series of licensing agreements than with an affiliate (ibid). The correct strategy then should be a mixture of permitting foreign firms entry, licensing and encouraging of local technological effort.

Research and development activities locally are underdeveloped in Turkey. Turkey spent 0.2 percent of its gross national product on research and development in 1986 (SPO, p.382). This percentage is much lower than that spent by other OECD countries. There must be an increase in research and development expenditures as well as in scientific and

technological activity. Expenditure on scientists and engineers must be regarded as an investment and not as a consumption item, in order to contribute to the development of domestic technical capacity. General scientific and education policies should be provided. Governments should provide tax incentives, institutional support, funding and direct guidance in the R&D process. However promotion programmes for industrial R&D should be selective, not just promoting infant industries, but also investing in specific technologies, setting up research establishments in chosen activities, sponsoring particular research projects (Wade, 1988, quoted in Lall, 1991, p.145)

Finally, the main engine of growth in Turkey was its internal market, while exports have tended to have a marginal effect on economic growth, until 1980. Since then trade liberalization in Turkey has been followed by the liberalization of regulations and restrictions related to FDI.

More liberal attitudes to foreign firms do not mean that their operations do not need to be controlled. In the highly concentrated and imperfect markets in which MNCs prosper, government intervention can often increase the benefits to the Turkish economy.

The department of DFI should collect all the necessary data on the operations of foreign firms and form a data bank. The data should be processed annually to assess foreign firms' net benefits to the Turkish economy.

APPENDIX I.

Table A.I.1.

Number of Firms and Total Capital Covered by this Study (1987)

	Total no of Firms	No of firms in the Sample	Total Capital (Million TL)	Total Capital in the Sample (Million TL)	Coverage Rate of no of Firms %	Coverage Rate of Total Capital %
Food, beverage & tobacco	38	27	68015	59252	71.1	87.1
Textile, apparel & leather	35	19	23259	14789	54.3	63.6
Forestry products	5	1	2983	260	20.0	8.7
Paper products & printing	7	5	8696	7056	71.4	81.1
Chemicals	49	36	84651	66779	73.5	78.9
Plastic products	10	3	3477	1700	30.0	48.9
Tyres	3	3	4977	4977	100.0	100.0
Fertilizers	2	1	7565	2065	50.0	27.3
Pottery	9	6	8577	5036	66.7	58.7
Glass	2	1	32200	27000	50.0	83.9
Cement	1	–	5400	–	–	–
Iron-steel	9	9	127900	127900	100.0	100.0
Non-ferrous metal products	4	2	13760	10160	50.0	73.8
Fabricated metal products	16	11	13390	8008	68.8	59.8
Non-electrical machinery	12	11	33465	20342	91.7	60.8
Electrical-electronic	24	23	76760	67760	95.8	88.3
Transport equipment	9	8	66976	50789	88.9	75.8
Transport related industry	10	7	31795	30795	70.0	96.9
Measur. & optical equip.	2	1	455	175	50.0	38.5
Aircraft	2	2	500	500	100.0	100.0
Other	14	6	8934	4982	42.9	55.8
TOTAL	263	182	623735	510325	69.2	81.8

Source: The State Planning Organization, Foreign Firms Report 1987-1989, (1990,p.20), and my own questionnaire.

Table A.I.2.

Number of Firms and Total Capital Covered by this Study (1988)

	Total no of Firms	No of firms in the Sample	Total Capital (Million TL)	Total Capital in the Sample (Million TL)	Coverage	
					Rate of no of Firms %	Rate of Total Capital %
Food products	46	26	81800	59733	56.5	73.0
Beverages	3	3	19100	19100	100.0	100.0
Tobacco	3	3	6413	6413	100.0	100.0
Textile	16	13	80989	76962	81.3	95.7
Apparel	26	12	9505	3393	46.2	35.7
Leather	5	4	3318	2751	80.6	82.9
Forestry products	7	2	3891	3011	28.6	77.4
Paper & paper products	7	5	86996	59750	71.4	68.7
Printing & publishing	2	2	10222	10222	100.0	100.0
Industrial chemicals	15	13	55550	55205	86.7	99.4
Other chemicals	36	25	41922	23901	69.4	57.0
Petroleum products	1	1	24420	24420	100.0	100.0
Plastics	12	4	3507	1922	33.3	54.8
Tyres	4	4	39963	39963	100.0	100.0
Fertilizer	2	1	22085	2065	50.0	9.4
Pottery	10	6	12277	8276	60.0	67.4
Glass	5	3	63100	47678	60.0	75.6
Cement	1	-	10075	-	0.0	0.0
Iron & steel	9	9	44490	44490	100.0	100.0
Non-ferrous metal	6	2	13930	10170	33.3	73.0
Fabricated metallic produc	18	12	17397	9717	66.7	55.9
Non-electrical machinery	16	13	39623	25231	81.3	63.7
Electrical machinery	20	15	48134	43420	75.0	90.2
Electronic	16	13	94355	92550	81.3	98.1
Transport equipment	9	8	76976	60156	88.9	78.1
Transport related ind.	9	7	38295	36979	77.8	96.6
Measuring & cont.equipment	4	3	1215	935	75.0	77.0
Aircraft	2	2	500	500	100.0	100.0
Others	13	5	8039	5382	38.5	66.9
TOTAL	323	216	958195	798928	66.9	83.4

Source: The State Planning Organization, Foreign Firms Report 1987-1989, (1990,p.22), and
my own questionnaire.

Table A.I.3.

New Foreign Firms Distribution According to Sectors

Sectors	1987	1988
Food products	3	4
Tobacco	-	1
Textiles	1	2
Apparel	4	6
Leather	-	1
Footwear	1	1
Wood and cork prod.	-	1
Paper & paper prod.	1	1
Printing	-	-
Chemical	2	2
Other chemicals	4	1
Tyres	-	-
Plastic	1	2
Pottery	2	1
Glass	-	-
Iron and steel	3	2
Fabricated metal prod.	1	1
Machinery	2	2
Electrical machinery	1	3
Electronic	3	2
Transport related equ.	2	-
Scientific related equipment	-	2
Others	4	-
TOTAL	35	34

Source: Own questionnaire

Table A.I.4.

The Ratio of Equity of Foreign Firms

Ratio of Equity	Number of Firms	1988 (%)
100	19	9
99-91	23	11
90-81	8	4
80-71	14	6
70-61	12	6
60-51	22	10
50-41	51	24
40-31	26	12
30-21	11	5
20-11	16	7
10-1	14	6
TOTAL	216	100

Source: Own questionnaire

Table A.I.5.

Years of Establishment of Foreign Firms

	Number of Firms	1988 (%)
1988-1980	161	74.5
1980-1971	5	2.3
1970-1961	33	15.3
1960-1951	15	6.9
1950-1940	2	0.9
TOTAL	216	100

Source: Own questionnaire

Table A.I.6.

The Breakdown of Foreign Firms by Countries (1988)

	Germany	Switzerland	U.S.A.	U.K.	Netherland	Italy	France	S. Arabia	Japan	Iran	Belgium	Syria	Austria	Sweden	Canada	Denmark	Others	Total
Food	7	2	2	3	3	-	1	2	-	-	1	-	-	-	-	-	5	5
Beverages	1	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-
Tabacco	-	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-
Woven, Kniteted Yarns	3	1	2	3	-	1	-	1	-	1	-	-	-	-	1	-	1	1
Apparel	5	1	-	1	-	2	-	-	-	-	-	2	1	-	-	-	-	-
Leather	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Forestry Products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Paper	-	3	3	1	-	-	-	1	1	1	-	-	-	-	-	1	1	1
Printig & Publishing	5	4	2	1	-	1	2	-	-	-	-	-	-	2	-	-	-	-
Industrial chemicals	7	-	-	3	-	-	1	-	1	-	-	-	-	-	-	-	2	2
Other Chemicals	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1
Petroleum Products	-	1	1	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-
Plastics	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-
Tyres	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Fertilizer	2	-	1	1	1	1	-	1	-	1	-	1	1	-	-	-	6	6
Pottery	1	2	-	2	1	-	-	1	-	-	-	1	1	1	-	-	-	-
Glass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron & Steel	2	2	2	2	-	1	-	1	1	-	-	1	-	1	-	-	-	-
Non-Ferrous Metal	4	-	-	2	-	1	-	-	-	-	-	1	1	1	-	-	-	-
Metallic Products	3	4	2	2	1	1	3	1	1	1	-	-	-	-	2	-	1	1
Non-Electrical Machine	1	3	2	2	2	1	2	-	1	-	-	-	-	1	-	-	2	2
Electrical Machinery	3	1	1	-	1	1	1	1	1	-	-	-	-	1	-	-	-	-
Electronic	5	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Transport Equipment	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-
Transport Related Ind.	2	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Measurem. control equ.	1	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Airplane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Others	1	-	-	1	-	1	-	1	1	-	-	-	1	4	2	3	5	5
Total	54	27	24	21	10	11	9	8	6	5	5	4	4	4	4	3	17	27

Source: My own questionnaire

APPENDIX II.

Capital-Labour Ratios Foreign Firms

In the literature, the capital-labour ratios were used to observe whether the technologies adapted in developing countries were suitable to the factor endowments in the respective counties. They compared the capital-labour ratios in foreign and domestic firms or in multinational firms in developed countries and/or their subsidiaries in developing countries (Leipziger 1976, and Chung & Lee 1980).

Our comparison at industry level is to aggregated. Unfortunately, the data required for a broader based are available. In our calculation of the capital-labour ratios in the sample of 136 firms, we have taken net fixed assets as capital, i.e., total value of fixed assets less depreciation. The data on net fixed assets were collected from the balance sheets of the respective companies. Usually, the data from balance sheets are not necessarily reliable. Different companies in the sample might have followed different accounting systems and different ways of calculating depreciation. As far as data on labour are concerned, we assumed that they were homogeneous and did not consider the differences in skill. On the basis of the data on capital and labour, we calculated the ratio of net fixed assets per employee for both foreign firms, and all firms in the manufacturing industry in year 1987. The results are presented

in Table A.II.1. While interpreting the ratios, on should keep

in mind the data limitations explained above. Foreign firms as

a whole are recorded as having a higher average capital ratio

than all firms, 21.28 versus 10.44 million Turkish lira.

Table A.II.7

Capital/Labour Ratios of Foreign Firms and All Firms in
Manufacturing Industries in Turkey 1987.

	Foreign firms	All firms
Food products	9.31	6.32
Beverages	65.10	16.04
Tobacco	4.34	1.29
Textile	6.49	9.17
Wearing and apparel	4.41	2.47
Paper & paper products	9.40	23.61
Industrial chemicals	15.50	9.04
Tyres	17.23	9.38
Plastic products	11.93	10.50
Pottery	11.91	19.52
Glass & glass products	24.80	14.22
Iron & steel	55.36	21.87
Non-ferrous metals	34.08	10.96
Fabricated metal products	5.67	10.27
Non-electrical machinery	10.99	8.92
Electrical machinery	13.35	8.19
Transport equipment	25.25	10.93
Others	6.47	7.19
AVERAGE	21.28	10.44

Source: Foreign firms' fixed assets are from the balance
sheet, employment figures are from the questionnaire,
all firms' data provided by Prime Ministry State
Institute of Statistics.

Foreign firms had a higher capital-labour ratio in 13

industries out of 18. Among those with a relatively large gap

between the two groups' capital-ratio are beverages, glass,

other chemical, tyre, iron-steel, non-ferrous metal, electrical machinery and transport. This shows that the concentration of foreign firms in more capital intensive sectors contributes to a higher average ratio among foreign firms than all firms. In those industries, the participation of foreign firms is quite high. The industries with a relatively small difference between the respective capital-labour ratio of foreign and all firms are those labour-intensive industries, namely food, textiles, wearing, plastic products, fabricated metal products, and non-electrical machinery.

APPENDIX III.

Table A.III.1.

The Composition of Turkish Exports (%)

	1980	1981	1982	1983	1984	1985	1986	1987	1988
I. AGRICULTURE AND LIVESTOCK	17.01	20.39	18.46	18.01	24.52	21.61	25.29	18.18	20.08
II.MINING AND QUARRY PRODUCTS	6.55	4.09	3.03	3.29	3.36	3.06	3.31	2.67	3.23
III.MANUFACTURING INDUSTRY	76.44	75.51	78.51	78.70	72.12	75.33	71.40	79.15	76.69
A.PROCESSED AGRICULTURAL PROD.	46.90	34.46	27.33	24.63	11.33	8.13	8.94	9.36	7.59
B.OTHER INDUSTRIES	29.54	41.06	51.17	54.07	60.79	67.20	63.46	69.79	69.10
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Own computation based on State Planning Organisation, Prior Development of Sixth Five Year Development Plan 1972-83, 1984-88.

Table A.III.2.

The Composition of Turkish Imports (%)

	1980	1981	1982	1983	1984	1985	1986	1987	1988
I. AGRICULTURE AND LIVESTOCK	0.94	1.53	2.10	1.64	3.88	3.31	4.12	5.53	3.48
II.MINING AND QUARRY PRODUCTS	39.12	39.03	42.17	37.16	33.88	31.97	19.32	21.43	19.95
III.MANUFACTURING INDUSTRY	59.94	59.43	55.74	61.20	62.24	64.72	76.56	73.04	76.56
A.PROCESSED AGRICULTURAL PRODUCTS	3.33	2.09	1.39	1.33	4.03	4.30	4.32	5.08	5.15
B.OTHER INDUSTRIES	56.60	57.34	54.35	59.86	57.21	59.43	72.25	67.96	71.41
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Same as Table A.III.1.

Table A.III.3.

The Share by Manufacturing Sectors in Total Manufacturing Exports (%)

		1980	1981	1982	1983	1984	1985	1986	1987	1988
	A.PROCESSED AGRICULTURAL PRODUCTS									
1	SLAUGHTERING PRODUCTS	1.53	2.84	3.76	3.33	2.59	1.49	1.43	0.99	0.83
2	CANNED & PRESERVED FRUITS & VEGET.	12.99	7.81	5.63	5.15	4.19	3.53	5.19	5.87	5.00
3	VEGETABLE & ANIMAL OILS & FATS	0.31	2.28	0.98	2.00	1.31	1.18	1.57	1.21	1.31
4	GRAIN MILL PRODUCTS	0.80	1.01	1.04	1.31	1.33	0.68	0.49	0.29	0.54
5	SUGAR	0.51	0.18	1.88	2.29	2.22	0.82	0.03	0.25	0.12
6	OTHER FOOD PRODUCTS	19.70	10.11	6.95	7.25	7.35	6.29	10.05	7.58	6.09
7	ALCOHOLIC BEVERAGES	0.23	0.23	0.14	0.15	0.12	0.21	0.09	0.16	0.23
8	SOFT DRINKS & CARBONATED WATER	0.00	0.00	0.00	0.00	0.01	0.04	0.02	0.02	0.02
9	TOBACCO & CIGARETS	10.51	11.13	7.72	5.28	3.62	4.74	4.25	3.49	2.68
10	GINNED COTTON	14.77	10.04	6.71	4.53	3.03	2.59	2.29	0.31	1.51
	B.OTHER INDUSTRIES									
11	TEXTILE OTHER THAN WEARING APPAREL	16.53	17.16	17.20	19.91	19.38	18.34	20.03	20.78	22.51
12	WEARING APPAREL EXC.KNITTED PROD.	5.20	7.92	8.17	12.93	18.39	13.51	12.70	15.87	13.56
13	HIDE & SKIN PROD.& LEATHER SUBST.	0.01	0.06	0.05	0.05	0.08	0.45	0.79	0.59	0.27
14	LEATHER FOOTWEAR	0.02	0.03	0.05	0.17	0.12	0.23	0.25	0.28	0.27
15	WOOD & CORK PRODUCTS	0.26	0.65	1.05	0.87	0.60	1.62	0.87	0.38	0.30
16	WOODEN FURNITURE	0.08	0.31	0.38	0.40	0.51	0.40	0.39	0.19	0.15
17	PAPER PULP, PAPER & PAPERBOARD	0.09	0.39	0.38	0.40	0.59	0.53	0.69	0.94	0.72
18	PRINTING AND PUPLISHING PRODUCTS	0.06	0.07	0.05	0.12	0.30	0.32	0.08	0.11	0.09
19	CHEMICAL FERTILIZER	0.00	0.00	0.99	0.32	0.59	1.02	2.00	1.27	2.04
20	DRUGS AND MEDICINES	0.13	0.17	0.25	0.20	0.13	0.21	0.21	0.34	0.45
21	PETROCHEMICAL PRODUCTS	0.93	1.60	2.65	2.99	2.32	2.44	3.92	4.33	5.41
22	OTHER CHEMICAL PRODUCTS	1.99	2.02	1.84	1.86	2.10	2.63	2.95	3.60	3.57
23	REFINED PETROLEUM PRODUCTS	1.73	3.01	7.61	5.15	6.81	5.34	2.78	2.57	3.30
24	OTHER PETROLEUM & COAL PRODUCTS	0.81	0.19	0.01	0.05	0.07	0.08	0.08	0.07	0.04
25	TYRES & TUBES & OTHER RUBBER PROD.	0.48	0.63	0.26	0.69	0.89	0.78	0.87	0.73	0.91
26	PLASTICS	0.19	1.22	0.63	0.35	0.29	0.28	0.28	0.34	0.27
27	GLASS & GLASS PRODUCTS	1.18	2.16	1.79	1.81	1.58	1.53	1.89	1.57	1.70
28	CEMENT	1.78	5.59	4.58	1.79	0.93	0.63	0.42	0.08	0.07
29	OTHER NON-METALIC PRODUCTS	0.45	0.73	0.53	0.61	0.86	1.19	0.60	0.73	0.66
30	IRON & STEEL	1.24	2.06	6.90	7.91	8.88	12.47	11.28	8.51	13.57
31	NON-FERROUS METALS	0.75	0.61	0.80	1.42	1.30	1.42	1.61	1.30	2.27
32	METAL PRODUCTS	0.76	1.59	2.09	1.92	1.19	2.88	2.60	1.95	1.75
33	NON ELECTRICAL MACHINERY	0.62	1.25	1.26	1.40	1.28	4.35	2.73	7.38	2.73
34	AGRICULTURAL MACHINERY	0.18	0.41	0.72	2.08	1.05	1.05	0.35	0.39	0.37
35	ELECTRICAL MACHINERY	0.52	0.74	2.15	1.66	1.88	1.79	2.15	3.28	3.16
36	MARINE TRANSPORT EQUIPMENTS	0.00	0.22	0.14	0.07	0.28	0.13	0.01	0.08	0.04
37	RAILWAY TRANSPORT EQUIPMENTS	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
38	OTHER TRANSPORT EQUIPMENTS	2.44	3.28	2.51	1.41	1.73	2.03	1.44	1.52	1.22
39	AIR TRANSPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	OTHER INDUSTRIAL PRODUCTS	0.22	0.31	0.14	0.15	0.09	0.79	0.64	0.68	0.28

Source: Same as Table A.III.1.

Table A.III.4.

Share by Manufacturing Sector in Total Manufacturing Imports (%)

		1980	1981	1982	1983	1984	1985	1986	1987	1988
	A.PROCESSED AGRICULTURAL PRODUCTS									
1	SLAUGHTERING PRODUCTS	0.37	0.37	0.40	0.51	0.74	1.28	1.31	1.89	1.07
2	CANNED & PRESERVED FRUITS & VEGET.	0.00	0.00	0.00	0.04	0.13	0.05	0.06	0.09	0.02
3	VEGETABLE & ANIMAL OILS & FATS	2.25	1.69	1.78	1.36	3.14	2.66	1.52	1.34	1.98
4	GRAIN MILL PRODUCTS	0.06	0.20	0.20	0.08	0.44	0.38	0.26	0.36	0.28
5	SUGAR	2.74	0.99	0.00	0.00	0.00	0.00	0.00	0.44	0.00
6	OTHER FOOD PRODUCTS	0.09	0.27	0.10	0.10	0.46	0.45	0.32	0.34	0.27
7	ALCOHOLIC BEVERAGES	0.00	0.00	0.01	0.05	0.01	0.01	0.08	0.07	0.13
8	SOFT DRINKS & CARBONATED WATER	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01
9	TOBACCO & CIGARETS	0.00	0.00	0.00	0.00	0.39	0.76	1.35	1.68	1.58
10	GINNED COTTON	0.00	0.00	0.00	0.03	0.03	0.03	0.35	1.60	0.45
	B.OTHER INDUSTRIES									
11	TEXTILE OTHER THAN WEARING APPAREL	0.85	0.96	0.99	0.80	0.82	0.89	0.96	1.04	1.02
12	WEARING APPAREL EXC.KNITTED PROD.	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.02
13	HIDE & SKIN PROD.& LEATHER SUBST.	0.01	0.01	0.01	0.03	0.08	0.22	0.29	0.69	0.46
14	LEATHER FOOTWEAR	0.00	0.00	0.00	0.00	0.02	0.06	0.06	0.05	0.03
15	WOOD & CORK PRODUCTS	0.06	0.05	0.13	0.05	0.10	0.17	0.18	0.50	0.24
16	WOODEN FURNITURE	0.00	0.00	0.00	0.00	0.01	0.16	0.04	0.03	0.03
17	PAPER PULP, PAPER & PAPERBOARD	1.50	1.66	1.70	0.92	1.56	1.30	1.22	1.64	2.45
18	PRINTING AND PUPLISHING PRODUCTS	0.05	0.09	0.10	0.12	0.10	0.12	0.14	0.16	0.17
19	CHEMICAL FERTILIZER	11.74	9.83	4.72	7.12	7.36	4.89	3.48	4.33	4.07
20	DRUGS AND MEDICINES	1.26	1.05	1.00	0.98	0.97	1.03	1.23	1.50	1.50
21	PETROCHEMICAL PRODUCTS	6.14	7.03	8.54	8.49	9.15	8.09	6.78	6.57	6.94
22	OTHER CHEMICAL PRODUCTS	8.66	8.91	9.40	9.49	8.65	9.17	10.13	10.77	11.24
23	REFINED PETROLEUM PRODUCTS	19.19	11.69	4.38	7.42	3.91	3.92	2.32	2.19	2.32
24	OTHER PETROLEUM & COAL PRODUCTS	0.11	0.12	0.15	0.11	0.03	0.16	0.14	0.19	0.14
25	TYRES & TUBES & OTHER RUBBER PROD.	0.40	0.51	0.42	0.32	0.43	0.41	0.48	0.62	0.59
26	PLASTICS	0.05	0.08	0.18	0.10	0.17	0.22	0.33	0.31	0.38
27	GLASS & GLASS PRODUCTS	0.12	0.22	0.19	0.15	0.12	0.17	0.23	0.32	0.28
28	CEMENT	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.47	0.45
29	OTHER NON-METALIC PRODUCTS	0.69	0.63	0.60	1.06	1.09	0.81	1.04	1.01	1.13
30	IRON & STEEL	8.56	9.00	11.03	10.92	12.04	13.79	10.94	13.19	13.65
31	NON-FERROUS METALS	1.76	2.51	2.22	3.30	3.21	2.91	2.60	3.75	3.59
32	METAL PRODUCTS	5.03	4.24	4.61	3.24	2.71	2.03	3.12	2.77	3.72
33	NON ELECTRICAL MACHINERY	14.24	20.52	22.02	21.83	20.98	18.68	24.30	20.74	18.61
34	AGRICULTURAL MACHINERY	1.05	1.00	1.48	1.18	1.01	0.76	0.66	0.41	0.35
35	ELECTRICAL MACHINERY	5.94	6.51	7.74	7.54	9.04	9.72	11.48	9.53	10.19
36	MARINE TRANSPORT EQUIPMENTS	0.62	1.52	2.62	2.63	1.49	1.39	0.72	0.57	0.47
37	RAILWAY TRANSPORT EQUIPMENTS	0.21	0.72	0.28	0.58	0.48	0.60	0.82	0.18	0.17
38	OTHER TRANSPORT EQUIPMENTS	4.88	5.79	9.20	7.07	6.68	7.38	6.08	5.05	4.61
39	AIR TRANSPORT EQUIPMENT	0.01	0.14	1.58	0.07	0.04	2.75	2.07	0.72	2.56
40	OTHER INDUSTRIAL PRODUCTS	1.35	1.69	2.21	2.32	2.39	2.55	2.82	2.88	2.79

Source: Same as Table A.III.1.

APPENDIX IV.

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QUESTIONNAIRE

1. Name of firm :——
——

2. Address of the firm :———————————————————————————————————
——
——
————————————————————————— Tel. no:—————————————————————

3. Year of establishment of company :——————————————————————

4. Year of association with the Turkish company :———————————

5. The type of activities of your company :—————————————————
——
——
——

6. Please name the major products :—————————————————————————
——
——
——
——

7. Amount of paid-up capital in 1987 ————————————————————————
                                    1988 ————————————————————

8. Proportion of total foreign partner share (%)———————————————

9. Please indicate the distribution of ownership based on
   capital invested:

Name of partner	Country origin	% share of capital
—————————————	—————————————	—————————————
—————————————	—————————————	—————————————
—————————————	—————————————	—————————————
—————————————	—————————————	—————————————
—————————————	—————————————	—————————————
—————————————	—————————————	—————————————

10. Total Sales in 1987 ------------------------------------TL

1988 ------------------------------------TL

11. Value of exports in 1987 ----------------------------$

in 1988 ----------------------------$

12. Value of imports in 1987 --------------------------$

in 1988 --------------------------$

13. Number of employment in 1987 -------------------------

in 1988 -------------------------

14. What value percentage of total requirement of inputs

was imported in your production:_____(%).

15. What is the availability of your inputs requirements

locally;

_____ All   _____ Some   _____ None

16. Which kind of problems do you have in purchasing inputs

from Turkish market;

_____ High cost

_____ Poor quality and uneven standards

_____ Delays in deliveries

_____ Limited variety of products

_____ Difficulties in responding to sudden changes

in orders

_____ Other reasons (specify) --------------------

----

17. What kind of technological activities take placein your
    company?

    _____ The adaptation of existing products to local
               conditions

    _____ The adaptation of existing production
               techniques to local conditions

    _____ Developing new products

    _____ Developing new production process according
               to conditions

18. Please describe the nature of the adaptation :-----------

    ----

    ----

19. Please rank three main factors in term of their
    importance that influence your choice of techniques:

    _____ Labour cost

    _____ Shortage of skilled labour

    _____ Capital availability

    _____ Market size

    _____ Quality of product

    _____ Technological dependency on the parent
               company

    _____ Availability and quality of local inputs

               Other factors (specify)----------------------

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