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Foreign Investment and the Export Behaviour of Foreign and Local Firms: an Analysis of Turkish Manufacturing

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Abstract

This paper compares the export performance of a sample of 119 foreign and local firms in Turkey, in 1994 and 1995, using descriptive statistical techniques. It also examines the role of foreign direct investment (FDI) by multinational enterprises (MNEs) in manufacturing exports and its contribution to the changing comparative advantage of Turkish manufacturing sectors. The findings suggest that even after the implementation of liberal economic policies in 1980 foreign and local firms, exporting less than 25% of their output, are principally local market-oriented. The results show, however, that FDI plays an important role in shifting the comparative advantage of manufacturing exports from traditional to technology-intensive sectors. In the long term, this is expected to result in a greater export-orientation for Turkish manufacturing industry.

JEL Classification: F14, F21, O24

Keywords: Export Propensity, Foreign Firms, Revealed Comparative Advantage.

1. Introduction

Developing countries are no longer seen purely as producers of primary products. Their share in world manufacturing exports has increased considerably over the last three decades. A significant part of this increase is explained by the FDI activities of MNEs in these countries. As a result of the increasing level of such investment, the sources of comparative advantage for a developing country have changed. They have been affected not only by relative factor endowments or labour productivity, but also by the ability to gain access to and use effectively MNE-related products and services. This influences the host country's ability to upgrade their products, to penetrate into developed markets and to improve export performance.

It is not surprising, therefore, that the role played by MNEs in the export performance of developing countries has been the subject of empirical study. The presence of foreign firms will have affect export performance directly, either by increasing the volume of manufacturing exports and the number of exporting firms, or simply by knitting the local economy more fully into world trade activities, where foreign firms have the ability to overcome demand-related barriers. While there are a number of studies examining the export performance of foreign and local firms in developing countries, only three empirical studies have examined this issue in the context of different manufacturing sectors in Turkey (see Section 2).

In 1980, Turkey shifted the focus of its economic policy, from import substituting industrialisation (ISI) to an export orientation. Within this setting, local and foreign firms active within Turkey were encouraged to produce not only for the large domestic market, but also for the world market. As a result, not only has the value of manufacturing exports risen sharply, but so too has its share in

Turkey's total exports, from 30% in 1980 to nearly 90% just fifteen years later.

The present paper seeks to add to the limited literature on Turkey, by investigating whether foreign and local firms have different export performances. The analysis is based primarily on survey data from 119 firms. The structure of this paper is as follows. Section 2 reviews the existing theoretical literature on the export performance of foreign and local firms and provides a brief summary of the empirical evidences available so far. Section 3 discusses the survey and investigates the significance of foreign firms in ten Turkish manufacturing sectors, comparing their export performance with local counterparts. Section 4 considers whether foreign firms contribute positively to Turkey's trade balance. In section 5, Turkey's changing patterns of comparative advantage – and the role of foreign firms in this process – are investigated. Section 6 concludes.

2. Review of Theoretical and Empirical Literature

The literature on the export performance of foreign firms, summarised below in Table 1, falls into two principal categories. The first, assuming that each subsidiary of a foreign firm is a profit maximising unit in the host country, argues that foreign firms tend to have a higher export propensity than local firms. Foreign firms obtain superior production technologies at zero or low costs from their multinationals and have better management skills compared to local firms. As a result, they offset the additional costs of operating in another country by producing more efficiently than their local counterparts. In addition, foreign firms have better access to international markets through their distribution networks, and are able to respond quickly to changing demands in world markets (Hill, 1990).

The second category, by assuming that the individual subsidiary is used to maximize the parent's global profit, argues that foreign firms do not export more than locally-owned firms. Vaitsos (1972) and UNCTAD (1972) have analysed hundreds of Parent-Subsidiary relationships and found large numbers of restrictive clauses which either prohibit totally or limit significantly the subsidiary's exports. The literature shown in Table 1 includes evidence to support both categories.

In addition to the studies in Table 1, three studies have been undertaken that compare the trade performance of foreign and local firms in Turkey. The earliest, Kirim (1986), uses data for seven matched pairs of foreign and local firms to analyse export performance in the pharmaceutical sector. His study found clear evidence that, despite the incentives provided by the state, both the foreign and local firms in his sample were predominantly domestic market-oriented (selling, respectively, 98% and 93% of their production in the domestic market).

Karadeniz (1995), using survey data collected for 1987 and 1988, compared the export performance of foreign and local firms across manufacturing sectors. For manufacturing as a whole, local firms had a higher export orientation than foreign firms (26%, compared with 12%). The sectoral analysis, however, found that foreign firms had a higher export orientation than local firms in a few industries (beverages, iron & steel, non-ferrous metals, and industrial chemicals), with foreign and local firms both largely export oriented only in the clothing sector (exporting 92% and 84% of their output respectively).

Coskun (1996), using a sample of 285 firms, examined the export performance of foreign and local firms across eight manufacturing sectors: food & beverages, textiles & clothing, wood & paper, chemicals, stone-clay-glass, basic metals, machinery, and transportation. The null hypothesis that the average export ratios for foreign and local firms do not differ significantly was tested by ANOVA. The only sector where the null was rejected (at 5%) was stone-clay-glass – but in favour of local firms. Contrary to the findings of Karadeniz (1995), both foreign and local firms supplied mainly the local market in the selected industries – and to a similar degree.

Overall, the empirical studies found mixed export performance between foreign and local firms, across industries and countries. That said, foreign firms tend to enjoy a greater export propensity over local firms in capital and technology-intensive industries (Riedel, 1975; Jenkins, 1979; Koo, 1985; Willmore, 1976; 1986; Ghars El-Din 1986; and Lee and Ramstetter, 1991). In these industries, the technological strength and reputation of an enterprise and the breadth of products and service range plays a crucial role in market transactions. Being part of global enterprises, foreign firms enjoy a formidable edge over local firms in this respect. On the other hand, the export propensities of local firms tend to be larger either in traditional industries, or in countries where import substitution policies were emphasised (Cohen, 1975; Lall and Streeten, 1977; and Karadeniz, 1995).

Table 1: The Comparative Export Performance of Foreign and Local Firms: A summary of empirical studies

Reference	Country	Nature of Study	Results	Summary
Cohen (1975)	South Korea, Taiwan, and Singapore	Survey 24 local and 34 foreign firms	Foreign firms had a higher export-orientation than local firms only in South Korea	$F_x > L_x$ $L_x > F_x$
Riedel (1975)	Taiwan	Statistical Industry level	Foreign firms were more export-oriented than local firms in electronics	$F_x > L_x$
Willmore (1976)	Costa Rica	Statistical 33 matched pairs	Foreign firms had a significantly higher export ratio than their local counterparts	$F_x > L_x$
Lall and Streeten (1977)	India	ANOVA 33 foreign and 20 local firms	Local firms had a significantly higher export ratio than foreign firms	$L_x > F_x$
Jenkins (1979)	Mexico	Statistical Industry level	Local firms were more successful in exporting traditional and intermediate goods, while foreign firms were more successful in exporting engineering goods	$L_x > F_x$ $F_x > L_x$
Koo (1985)	South Korea	Survey	Foreign firms had a higher export propensity than local firms	$F_x > L_x$
Willmore (1986)	Brazil	ANOVA 111 matched pairs	Foreign firms exported a significantly higher proportion of their output than local firms	$F_x > L_x$
Ghars El-Din (1986)	Egypt	Statistical Industry level	Foreign firms had a higher export ratio in capital or skill intensive goods than local firms	$F_x > L_x$
Lee and Ramstetter 1991)	South Korea	Survey Industry level	Foreign firms were more export-oriented than local firms in the textiles & apparel and metals & machinery sectors	$F_x > L_x$

3. The Export Behaviour of Foreign and Local Firms

In this section, after examining the relative contribution of foreign firms to total Turkish manufacturing exports, we analyse the export performance of both foreign and local firms at the industry level. The data used draw on a survey conducted of firms selected by the authors from the largest 500 listed by the Istanbul Chamber of Industry. The data, collected through 2004, were obtained for the period 1993-1998, from 38 of 186 firms contacted. To expand the dataset sufficiently to undertake robust statistical analysis, given the limited survey response, supplementary and consistent data were obtained from publications of the Istanbul Stock Exchange Market (ISEM) and the Istanbul Chamber of Industry (ICI). The limited availability of the latter data, however, restricted the sample period to 1994 and 1995 (in some cases, to just 1995).

Table 2 illustrates the share of total manufacturing exports accounted for by foreign firms and the export-sales ratios of foreign firms. The share of foreign companies in total manufacturing exports are seen to increase steadily from 1977, rising from 3.6% in 1977 to 8.6% in 1988, and then to 10.6% in 1995. Foreign firms have thus played a less important role in expanding manufacturing exports in Turkey than in many developing countries. For example, the share of foreign firms in total Korean exports was 24.6% in 1978 (Koo, 1985), whilst foreign subsidiaries accounted, respectively, for 17% and 35% of Taiwanese and Singaporean manufacturing exports in 1994 (UNCTAD, 2002, p.31-2). The share of Malaysian manufacturing exports accounted for by foreign firms rose significantly, from 18% in 1985 to 49% in 1995 (*ibid*, p.32). The share of foreign firms in total Chinese exports increased from 3% in 1987 to 12% in 1990, then to 31% in 1995 (Chunlai, 1997, p.14). Foreign subsidiaries explained 36% of Mexican manufacturing exports in 1992 (Calderon *et al*, 1996). Only in India

has the contribution of foreign firms to manufacturing exports been fairly small – 3% in 1991 (UNCTAD, 2002, p.32). This is explained by restrictive FDI policies and regulations.

Table 2: The Share of Manufacturing Exports and the Export-Sales Ratios of Foreign Firms

Years	Exports (Million $)	Shares of Foreign Firms in Manufacturing Exports	Export/Sales Ratios of Foreign Firms
1973	26	2.3	2.7
1974	40	3.0	3.5
1975	41	2.8	3.0
1976	45	2.8	2.6
1977	49	3.6	2.9
1987	536	6.0	12.0
1988	885	8.6	17.2
1994	1571	10.1	25.6
1995	2031	10.6	24.4

Sources: 1973-1977 and 1987-1988: Karadeniz (1995), the former quoted by Karadeniz from a 1980 study by Alpar; 1994-1995: authors' survey.

Although the contribution of foreign firms to Turkish manufacturing exports is low compared to most developing countries, there is a significant difference in the export behaviour of foreign firms between the 1970s and 1980s. As Table 2 shows, foreign firms had a very low export-sales ratio in the earlier decade, averaging around 3%. After economic liberalisation in 1980, however, foreign firms increasingly turned their attention to export markets. As a result, the export propensity of foreign firms increased substantially from 2.9% in 1977 to 17.2% in 1988, then to 24.4% in 1995.

Tables 3 and 4 give the sectoral distribution of exports by foreign and local firms, the export shares of foreign and local firms in each

sector, and the export performance coefficients of foreign and local firms respectively. Foreign firms are seen to be concentrated in the export of basic metals, road vehicles, electric & electronic equipment, and rubber & plastic products. Local firms are concentrated in the export of electric & electronic equipments, metal products, textiles & clothing, and chemical products. Thus, other than the electrics & electronics sector, foreign and local firms are concentrated primarily in different sectors over the study period. Overall, these sectors account for 60.3% and 64.5% of foreign firms' exports in 1994 and 1995, respectively and 68.3% and 69.2% of local firms' exports.

Moreover, the export shares of foreign and local firms are particularly significant in the more technology-intensive industries, while their shares are insignificant in less technology-intensive industries.[1] The relatively less significant role of foreign firms in the export of textiles & clothing and chemical products and of local firms in the export of basic metals, textiles & clothing, non-metallic minerals, and food & beverages can be attributed either to the limited number of respondents in the survey or to the size of the firms in the given sectors.

Table 3: The Export Performance of Foreign Firms, by Sector

	Distribution of Foreign Firms (%)		Foreign Share of Man. Exports (%)		Export Performance Coefficient	
Sectors	**1994**	**1995**	**1994**	**1995**	**1994**	**1995**
Food & Beverages	10.0	9.1	9.1	8.9	0.90	0.84
Textiles & Clothing	9.9	8.2	4.5	4.0	0.44	0.37
Non-metallic Minerals	7.1	6.4	19.3	18.8	1.91	1.77
Basic Metals	14.5	11.9	9.8	10.5	0.97	0.99
Metal Products	7.8	7.5	15.7	14.4	1.55	1.36
Paper Products	1.4	1.1	21.1	18.2	2.09	1.72
Rubber & Plastics	16.3	14.7	72.9	59.2	7.21	5.58
Road Vehicles	14.8	24.1	38.6	51.8	3.82	4.88
Electrics & Electronics	14.7	13.8	36.5	33.5	3.61	3.16
Chemicals	3.5	3.2	5.7	5.6	0.56	0.52
Total/Average	100	100	10.1	10.6	---	---

Source: Own calculations, based on data from authors' survey.

Table 4: The Export Performance of Local Firms, by Sector

	Distribution of Foreign Firms (%)		Foreign Share of Man. Exports (%)		Export Performance Coefficient	
Sectors	**1994**	**1995**	**1994**	**1995**	**1994**	**1995**
Food & Beverages	9.3	8.7	5.1	5.2	0.84	0.81
Textiles & Clothing	19.8	17.6	5.5	5.3	0.90	0.81
Non-metallic Minerals	3.2	2.4	5.2	4.3	0.85	0.66
Basic Metals	5.7	7.1	2.3	3.9	0.37	0.60
Metal Products	14.9	17.0	18.2	20.3	2.98	3.12
Paper Products	3.0	1.8	26.9	16.9	4.36	2.60
Rubber & Plastics	3.9	3.4	10.4	8.4	1.70	1.29
Road Vehicles	6.6	7.4	10.5	9.8	1.70	1.50
Electrics & Electronics	20.2	22.3	30.6	33.5	4.96	5.11
Chemicals	13.4	12.3	13.3	13.3	2.18	2.04
Total/Average	100	100	6.2	6.5	---	---

Source: Own calculations, based on data from authors' survey.

The Export Performance Coefficient, EPC (see Karadeniz, 1995), is defined as the ratio of the share of foreign (or local) firms in the export of each manufacturing sector to the share of total foreign (or local) firms in total manufacturing exports. When the value of the EPC is greater than one in a given sector, in that sector foreign (or local) firms perform better than the average export performance. The EPC is formulated as:

$$\frac{x_i^f / x_i^t}{\sum_i x_i^f / \sum_i x_i^t}$$

where i represents industries and superscripts f and t represent the exports of foreign (or local) firms and total firms respectively in these industries.

Foreign firms are found to have significantly higher EPCs for the road vehicles, electrics & electronics, and rubber & plastics industries, while local firms have significantly higher EPCs for electrics & electronics, metal and paper products industries, compared to other industries. The high EPCs of foreign firms in the road vehicles and rubber & plastics industries and the high EPCs of local firms in the electrics & electronics, metal products, and chemical industries mirror industrial structure, with large firms prevalent in those sectors.

A key finding from these results is that foreign firms account for a large proportion of Turkish manufacturing exports in the road vehicles, electrics & electronics, and rubber & plastics industries, compared with other sectors. This reflects the capital and technology-intensive nature of these industries and suggests relative advantages for large multinational enterprises. Furthermore, since production within these industries is

characterized by labour-intensive processes and component specialization within vertically integrated industries (for example, automobile parts, electrical appliances, and machine tools and parts), the findings strongly suggest growing importance of this type of manufacturing for exports. Thus the increasing share of manufacturing exports in total Turkish exports appears to be influenced heavily by MNEs who relocate the labour-intensive processes of manufacturing activities to this lower-wage developing country.

3.1. Firm Size and Export Performance

Some of the above results have suggested that there may be connections between firm size and export performance. To explore this link further, for both foreign and local firms, the sample firms are divided into three categories based on sales. Firms with sales over 7,500 billion Turkish lira are considered large; sales between 2,500 and 7,500 are medium; and sales less than 2,500 are small. Table 5 shows the breakdown of foreign firms by sales and exports in 1995. This shows that the large firms account for 64% of sales and 62.9% of exports, although they have an average export ratio of 23.8%. A further examination of the large foreign firms also reveals that they are mainly concentrated in the technology-intensive and import-substituting sectors (for example road vehicles) where Turkey has no comparative advantage, because of higher production costs and lower product quality.

The medium-sized firms account for 28.5% of sales and 27.8% of exports, with an average export propensity of 23.6%, more or less the same as the average ratio of the large (foreign) firms. Small firms, although accounting for just 7.5% of sales and 9.3% of exports, have the highest average export ratio – 30.3% – across the groups of firms. This relatively high export propensity is

explained by their concentration in traditional sectors such as textiles & clothing and food & beverages, where Turkey has a comparative advantage.

Table 5: The Distribution of Foreign Firms by Sales and Exports, 1995

Sales (bn TL)	No. of firms	Sales (bn TL)	% of Sales	Exports (bn TL)	% of Exports	Export/Sales Ratio
10,000 & over	11	203462	53.0	42217	45.5	0.207
9,999-7,500	5	42239	11.0	16207	17.4	0.383
'large' total	16	245701	64.0	58424	62.9	0.238
7,499-5,000	8	48162	12.6	14224	15.3	0.295
4,999-2,500	17	61218	15.9	11597	12.5	0.189
'medium' total	25	109380	28.5	25821	27.8	0.236
Less than 2,500	19	28536	7.5	8645	9.3	0.303
Total	60	383617	100	92890	100	0.242

Source: Own calculations, based on data from authors' survey.

Table 6 presents the results of this analysis, conducted to examine the export performance of local firms in relation to firm size. The large firms account for 50.3% of sales and 39.7% of exports, but have the lowest export ratio (15.2%) across the three groups. The medium-sized firms, on the other hand, account for 37.1% of sales and 43.8% of exports, and have an average export propensity of 22.8%. Small firms account for 12.6% of sales and 16.5% of exports and, as with the foreign firm data, have the highest average export ratio, in this case 25.3%.

Thus, contrary to expectation, large (foreign and local) firms tend to have lower export ratios than do medium and small-sized firms. That said, many of these firms are operating in import-substituting

industries, such as road vehicles and electrics & electronics, where Turkey has no comparative advantage in the international market.

Table 6: The Distribution of Local Firms by Sales and Exports, 1995

Sales (bn TL)	No. of firms	Sales (bn TL)	% of Sales	Exports (bn TL)	% of Exports	Export/Sales Ratio
10,000 & over	6	116637	39.2	19589	34.1	0.168
9,999-7,500	4	33158	11.1	3155	5.5	0.095
'large' total	10	149795	50.3	22744	39.7	0.152
7,499-5,000	10	59902	20.1	13006	22.7	0.217
4,999-2,500	15	50473	17.0	12130	21.2	0.240
'medium' total	25	110375	37.1	25136	43.8	0.228
Less than 2,500	24	37403	12.6	9457	16.5	0.253
Total	59	297573	100	57337	100	0.193

Source: Own calculations, based on data from authors' survey.

3.2. The Export Performance of Foreign and Local Firms: a statistical analysis

In order to compare the export performance of foreign and local firms, a common technique used in the extant literature is the t-statistic. A two-tailed t-test is employed on the average export-sales ratios of foreign and local firms, with the results reported in Table 7. This shows the average export-sales ratios for foreign and local firms to be 24% and 19%, respectively. Thus although foreign and local firms produce mainly for the local market, local firms are slightly more local market-oriented than foreign firms. Note, however, that this difference is not statistically significant. This result contradicts the findings of Karadeniz (1995), who argued that foreign firms were more local market-oriented than their local counterparts.

Table 7: Significance Tests on the Export Performance of Foreign and Local Firms, 1995

Sectors	Number of Firms	Foreign Firms	t-test (two-tail)
Food & Beverages	14	0.28 (7)	-0.85 (0.40)
Textiles & Clothing	14	0.43 (7)	-2.29 (0.04)**
Non-metallic Minerals	9	0.24 (4)	0.18 (0.86)
Basic Metals	8	0.45 (4)	-1.14 (0.29)
Metal Products	10	0.52 (4)	-0.74 (0.48)
Paper Products	8	0.16 (3)	-0.35 (0.74)
Rubber & Plastics	10	0.28 (6)	-1.14 (0.31)
Road Vehicles	15	0.17 (8)	0.82 (0.42)
Electrics & Electronics	15	0.22 (8)	-0.15 (0.87)
Chemicals	16	0.09 (9)	0.92 (0.37)
All manufacturing	119	0.24 (60)	-1.27 (0.20)

Source: Own calculations, based on data from authors' survey.

Note: ** indicates 5%statistical significance. Numbers in parentheses in the third and fourth columns show the number of firms in each industry. Numbers in parentheses in the last column show the probability associated with the two tailed t-test.

The analysis of the average export ratios for foreign and local firms at the industry level provides contrasting results. Foreign firms

exhibit better export performance than local firms in all sectors except chemicals. Second, foreign and local firms are relatively more export market-oriented in the less technology-intensive sectors than in technology-intensive sectors, where Turkey lacks comparative advantage. For example, foreign firms export 43% of their output in textiles & clothing, 45% in basic metals and 52% in metal products, with local firms exporting 29%, 36% and 35% of their outputs in these respective sectors. This leads to the further observation that neither foreign nor local firms are set up entirely for export purposes, even in less technology-intensive sectors. That said, among the technology-intensive sectors foreign firms export 9% of their output in chemicals, 17% in road vehicles and 22% in electrics & electronics, with local firms exporting 15 %, 11% and 15% of their output in these respective sectors. Consistent with the aggregate analysis, significance tests at the industry level also reveal no statistically significant difference in the export performance of foreign and local firms, with the exception of textiles & clothing.

4. Foreign Firms and Turkey's Trade Balance

There are two important viewpoints concerning the contribution of FDI to the trade balance of a host country. The first argues that the increased level of investment by foreign firms tends to injure the trade balance of the host country, by increasing demand for foreign intermediate and capital goods (Graham and Krugman, 1995). There is a strong reason for foreign firms to have a higher import propensity than local firms. Importing inputs from a parent company allows for transfer pricing. Thus even if the prices of foreign inputs are higher than the prices of local inputs, foreign firms will continue to import those inputs from their parent companies.

The second viewpoint, in contrast, suggests that foreign firms will improve the trade balance of the host country by increasing its international competitiveness, and hence the level of exports by domestic firms (Lutz, 1987; Orr, 1991). This improvement in the export performance is anticipated, in part, as a result of the firm level supply-side activities associated with foreign investment, such as increased productive capacity and improved operating efficiency. Foreign firms are also expected to provide industry-wide competitive enhancements associated with the dissemination of technology and managerial innovations (Orr, 1991).

The trade balance of foreign firms is shown in Table 8. Foreign firms operating within Turkish manufacturing as a whole had a surplus of $US 104 million in 1994, but a deficit of $US 168 million in 1995. The positive trade balance in 1994 can be attributed mainly to the significant devaluation of Turkish currency that occurred in that year. At the industry level it is found that six industries, basic metals, metal products, textiles & clothing, non-metallic minerals, rubber & plastics, and food & beverages, had positive trade balances in 1994 and 1995. When compared with the findings of Karadeniz (1995) for the years 1987 and 1988, the data indicate that Turkey gained export competitiveness in almost all traditional and less technology-intensive sectors, in particular basic metals, metal products, food & beverages, in addition to textiles & clothing and non-metallic minerals. Moreover, one technology-intensive sector, rubber & plastics, also gained competitiveness in export markets.

Table 8: The Trade Balance of Foreign Firms (million $US)

Sectors	**1987**	**1988**	**1994**	**1995**
Food & Beverages	-36.9	-51.2	62.4	57.3
Textiles & Clothing	15.7	21.6	110.7	116.6
Non-metallic Minerals	27.0	31.5	66.9	64.2
Basic Metals	-54.4	-4.7	80.7	51.3
Metal Products	-4.3	-12.5	78.0	99.8
Paper Products	-8.7	-16.3	-3.4	-23.7
Rubber & Plastics	-42.5	-6.7	101.6	75.2
Road Vehicles	-201.1	-200.4	-202.9	-392.2
Electrics & Electronics	-148.3	-122.4	-122.3	-110.9
Chemicals	-144.1	-164.5	-68.0	-105.6
Balance	-597.6	-525.6	103.7	-167.9

Source: Own calculations, based on data provided by Karadeniz (1995, p.224) for 1987 and 1988 and by authors' questionnaire for 1994 and 1995.

5. Foreign Firms and Turkey's Changing Comparative Advantage

So far, we have seen that foreign firms in Turkey have played a significant role in promoting exports of technology-intensive products over the study period. This finding leads to further questions: to what degree has Turkey's comparative advantage changed; and did foreign firms contribute to manufacturing exports at the expense of shifting domestic trade patterns away from traditionally comparatively advantaged sectors? As foreign investment is a product of market imperfections, foreign firms might also transfer products and processes to developing countries with the prime objective of maintaining monopolistic or oligopolistic positions there. Moreover, while foreign investment might be trade-creating in more industrialised countries, it might harm the trade balances of less developed countries by shifting production techniques and, hence, comparative advantage.

The primary objective of this section is to examine whether a relationship can be established between the changing pattern of comparative advantage and the level of foreign involvement. Note that whilst there is a notable literature on the impact of FDI on host-country firms, relatively little work has been conducted for developing countries (see, inter alia, Blomström and Kokko, 1998 for a general survey; Greenaway *et al*, 2004, for a UK study).

There are several indices available to investigate the changing pattern of comparative advantage and the role of foreign firms in this process. This study adopts the net export index of Revealed Comparative Advantage, RCA (see, *inter alia*, Globerman, 1985):

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

where X_{it} and M_{it} represent export and import values respectively at year t, with subscript i denoting industry.

The value of the RCA index varies between two extreme points, $(-1 \leq RCA \leq +1)$. -1 indicates that a country has comparative disadvantage in sector X in international trade and should, therefore, import all goods demanded from this sector. +1 indicates that a country has a comparative advantage in sector X in international trade and should export all the goods produced in this sector. The RCA index, calculated for ten manufacturing sectors, is shown in Table 9 (as RCA 94 and RCA 95). The RCA index for 1987 and 1988, taken from Karadeniz (1995), is provided for comparison.

Table 9: Sectoral Revealed Comparative Advantage Indices for Turkey

Sectors	RCA 87	RCA 88	RCA 94	RCA 95
Food & Beverages	0.33	0.66	0.25	0.07
Textiles & Clothing	0.88	0.87	0.73	0.67
Non-metallic Minerals	0.02	0.03	0.45	0.33
Basic Metals	-0.25	0.03	-0.15	-0.11
Metal Products	-0.03	-0.16	-0.22	-0.22
Paper Products	-0.11	-0.38	-0.57	-0.76
Rubber & Plastics	-0.24	-0.08	0.00	-0.05
Road Vehicles	-0.60	-0.56	-0.35	-0.37
Electrics & Electronics	-0.57	-0.54	-0.42	-0.36
Chemicals	-0.56	-0.45	-0.57	-0.67
All Manufacturing	-0.21	-0.16	-0.10	-0.22

Sources: Own calculations, using data provided by the State Institute of Statistics.

From these results, some important observations can be made. First, until the late 1980s Turkey had a comparative advantage in only a few traditional industries, specifically food & beverages and textiles & clothing, despite the implementation of liberal trade policies since 1980. Second, Turkey improved its comparative advantage significantly in non-metallic minerals, while its international competitiveness declined further in the food & beverages and the textile & clothing sectors in the 1990s. Third, three technology-intensive sectors, rubber & plastics, electrics & electronics and road vehicles, started slowly to move from comparative disadvantage to comparative advantage in the 1990s, whilst Turkey's comparative disadvantage in chemicals worsened in the 1990s.

Changes in the comparative advantage of Turkish manufacturing since 1988, are associated with the presence and trade performance

of foreign firms within these industries. In order to elaborate more formally this association, a Spearman Rank Correlation test is conducted for the years 1994 and 1995 across ten manufacturing sectors. The variables used in this analysis are the share of foreign firms in exports from each manufacturing sector; and the corresponding RCA index value for each manufacturing sector.

The Spearman's rank correlation tests show that the null hypothesis of no correlation between the two variables is rejected for both years at the 1% significance level (the coefficients are calculated as 0.9985 for 1994 and 0.9989 for 1995). The industries with higher shares of exports from foreign-owned firms will either have a higher comparative advantage or will improve their comparative advantage over time. For instance, the rubber & plastic and non-metallic mineral products sectors gained competitive positions in export markets, whilst electrics & electronics and road vehicles industries are seen to improve their comparative advantage gradually. Thus although an improvement is seen in the export performance of some technology-intensive industries, it will take time for Turkey to develop its comparative advantage in sectors led by foreign firms.

6. Conclusions

This paper has investigated empirically the export behaviour of foreign and local firms in the Turkish economy and the role of foreign firms in the changing patterns of manufacturing exports. Statistical analyses have shown that export-oriented growth policies implemented after 1980 changed the export patterns of both foreign and local firms. Although the contribution of foreign firms to Turkey's manufacturing exports appears modest if compared with other developing countries, their contribution in some manufacturing sectors is quite considerable and there is a general upwards trend in export shares.

The analysis of the export performance of foreign firms shows that even though foreign firms account for a significant share of exports in the road vehicles, electrics & electronics, and rubber & plastics sectors, with nearly half of output exported from the basic metals, metal products, and textiles & clothing sectors, none of the ten manufacturing sectors are found to be primarily export-oriented. The analysis of the export performance of local firms over the same period indicates that although local firms explain a significant percentage of exports by the electrics & electronics sectors, with nearly one third of output exported in basic metals and metal products, they also are not primarily export-oriented.

The dominant position of foreign firms in the export of technology-intensive products, along with the higher export-orientation of these firms in traditional product sectors, is as expected *a priori*, with these firms having the advantages of superior technology, better knowledge of overseas markets and higher managerial skills, all of which contribute to the advantage they enjoy over local firms.

The examination of the Revealed Comparative Advantage of Turkish manufacturing has shown that although the RCA index declined in most traditional labour-intensive industries through the 1980s and 1990s, Turkey still held a competitive edge in these sectors by the end of the period under analysis. In addition, Turkey has started to improve its comparative advantage in three more technology-intensive industries, rubber & plastics, electrics & electronics, and road vehicles.

The contribution of foreign firms to the changing pattern of manufacturing industries has also been investigated by the use of the Spearman Rank Correlation test. A positive and highly

significant correlation coefficient between the RCA indices and the export shares of foreign firms in ten manufacturing industries suggests that the higher the share of foreign firms' exports in these industries, the more likely a rise in the comparative advantage of Turkish manufacturing industries will result.

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Endnotes

[1] In this study, road vehicles, electrics & electronics, rubber & plastics, and chemicals are categorised as industries requiring more technology-intensive production techniques, whilst basic metals, food & beverages, non-metallic mineral products, textiles & clothing, metal products, and paper products are categorised as industries with less technology-intensive production techniques.