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THE EFFECTS OF FOREIGN OWNERSHIP AND SIZE ON FIRM PERFORMANCE: EVIDENCE FROM PANEL DATA ANALYSIS OF ISE LISTED FIRMS

Çağnur Kaytmaz Balsarı[*], Yeşim Üçdoğruk[**]

ABSTRACT

The role of foreign direct investment (FDI) in economic development and its contribution to the performance of domestic firms has motivated researchers to initiate studies for analyzing the impact of FDI on economic performance. The literature on the role of FDI mainly focuses on the production, employment, economic growth, balance of payments, knowledge spillovers and general welfare of the recipient country. However, economic growth is triggered by firms that are able to transform these positive impacts of FDI into improved firm performance. Nevertheless, the impact of FDI on firm performance has not been investigated at firm level widely. The aim of this paper is to examine whether FDI and investment incentives can be justified on the basis of academic research regarding their firm performance effect. A panel data of non-financial firms listed at Istanbul Stock Exchange (ISE) for the period 1998-2007 is used to model firm performance in terms of return on assets and sales as a dynamic process. This paper contributes to the existing literature by providing firm level empirical evidence on the impact of investment incentives and foreign ownership together with size on firm performance. Our results suggest that large and foreign ISE listed firms perform better than domestic firms. Moreover, investment incentives, as both determinants of FDI decisions and as their stand alone positive impact on firm performance, can create the economic environment in which FDI inflows can be transformed into positive returns both for recipients and investors.

Keywords: *FDI, Investment Incentives, Firm Performance*

[*] Dokuz Eylül University, Izmir, Turkey, E-mail: cagnur.kaytmaz@deu.edu.tr
[**] Dokuz Eylül University, Izmir, Turkey, E-mail: yesim.ucdogruk@deu.edu.tr

Çağnur Kaytmaz Balsarı, Yeşim Üçdoğruk

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INTRODUCTION

One of the most notable developments of the 1990s has been the increased number of emerging opportunities and challenges for cross-border direct investments and cooperative ventures. Foreign direct investment (FDI), which has played a significant role in globalization, has been of growing importance to the economies of both developed and developing countries. According to the *World Investment Report* prepared by the UNCTAD in 2007, estimated inward FDI stock reached $1306 billion in 2006 with developed countries, developing countries and the transition economies of South-East Europe and the Commonwealth of Independent States, realizing continued growth. The value of FDI inflows to developing economies and economies in transition, however, has been increasing at a much higher rate than FDI inflows to developed countries (UNCTAD, 2007). This widening imbalance appears to be an indication of the increasing attractiveness of developing countries as investment locations. The success of the developing countries in attracting FDI is likely to be associated with an investment climate characterized by growing markets and increasingly liberal policy frameworks (UNCTAD, 2007: 16). These global trends have also been observed at the country level in Turkey. A few mega cross-border mergers and acquisitions (M&As) and the privatization of financial services made Turkey the largest recipient in West Asia, with inflows of $20 billion (UNCTAD, 2007: 18).

There are four main channels of international linkages discussed in the literature. These are FDI by multinational firms, learning by exporting, the role of technology embodied in intermediate material and capital imports, and foreign licensing (Yaşar & Paul, 2007a). Foreign ownership or FDI by multinational firms is often considered the strongest channel for international technology transfer and economic growth for developing countries (Blomström & Kokko, 1998). Because FDI involves significant ownership control as well as the transfer of technology, its impact on economic growth can take place through increased productivity, profitability, human capital accumulation, R&D activity as well as technological and productivity spillovers. In addition, the impact of multinational firms on economic growth can be greater if the types of FDI that the country receives stimulate domestic investment activity. Having firm specific assets, such as production technology and know-how, marketing and management skills among others,

foreign affiliates of multinational firms are expected to be more productive and profitable than local plants (Taymaz & Yılmaz, 2009).

The benefits of inward FDI for firms have been widely analyzed and empirically researched in the literature. Among them, one stream of literature focuses on the effects of FDI through productivity spillovers such as Aitken & Harrison (1999) on Venezuela, Arnold & Javorcik (2009) on Indonesia, Blomström (1986) on Mexico, Driffield & Love (2007) and Haskel et. al. (2007) on UK, Javorcik (2004) on Lithuania, Kathuria (2002) on India, Keller & Yeaple (2009) on the US, Konings (2001) on Bulgaria, Romania and Poland, and Yaşar & Paul (2007b) on five transition economies, namely Poland, Moldova, Tajikistan, Uzbekistan and the Kyrgyz Republic. The studies examining the causal link between foreign ownership and firm performance in terms of total factor productivity (TFP) have produced mixed results. While many studies found evidence in favor of positive horizontal and/or vertical spillovers, there are still many others finding no support for positive spillovers or support for negative productivity spillovers in developing countries.

The second stream assesses the importance of FDI as a channel for the transfer of technology to developing countries and its evaluation through spillovers such as imitation, demonstration effects, training local labor, vertical technology transfers, etc. (Blomström & Sjoholm (1999) on Indonesia; Lenger & Taymaz (2006) on Turkey). These empirical studies conclude that the effects of foreign firms on technological activities of local firms are ambiguous and depend on host country characteristics, such as industry and the policy environment, the level of human capital stock and the absorptive capacity of domestic firms.

Another stream emphasizes the evaluation of the performance of FDI receiving firms with financial indicators such as profitability (e.g. return on assets, sales and equity) (Barbosa & Louri (2005) on Greece and Portugal; Douma et al. (2006) on India; Kimura & Kiyota (2007) on Japan; Xu et al. (2006) on China), growth of sales and assets (Chari et al. (2009) on the US), labor productivity (Akimova & Schwödiauer (2004) on Ukraine; Globerman et al. (1994) on Canada) and capital intensity (Hallward-Driemeier et al. (2002) on Indonesia, Korea, Malaysia, the Philippines, and Thailand), and with subjective assessment of firm performance– in terms of market share, financial viability, cost efficiency, acquisition of knowledge and technology and gain access to host country market (Demirbag et al. (2007) and Tatoglu & Glaister (1998) on Turkey). Previous empirical evidence on the relationship between foreign ownership and firm performance compared with domestically owned firms is somewhat ambiguous, though it tends to suggest on balance that firms with foreign ownership outperform domestically owned firms with similar characteristics in developed countries.

Moreover, the conclusion of MNEs superior performance is generally achieved for developing countries once the effects of capital intensity and size are controlled for[2].

There are a few empirical studies that investigate the impact of foreign ownership on firm performance in Turkey. Two of them, namely, Tatoglu & Glaister (1998) and Demirbag et al. (2007), investigate the impact of Western FDI on affiliate performance by a questionnaire depending on the subjective assessment of CEOs under different performance criteria such as market share, sales growth, reduction of operating costs, government incentives and gaining presence in the local market. These studies concluded that the factors of input quality, comparative cost advantages and government regulations demonstrate statistically significant impact on the performance of foreign affiliates. The other two, Gunduz & Tatoglu (2003) and Aydın et al. (2007), evaluate the impact of foreign ownership on the performance of ISE listed firms for different time periods by using stock market and accounting measures of performance such as return on assets, return on equity, profit margin, price/earnings ratio, liquidity ratios and leverage. Both studies concluded that foreign owned firms perform better than domestic firms in terms of return on assets, but not in terms of other performance measures.

This study investigates the impact of FDI and investment incentives together with size on performance of non-financial firms listed at Istanbul Stock Exchange (ISE) for the 1998-2007 period. To test the effects of foreign ownership and size on firm performance, we run a dynamic regression of two performance measures (ROA and ROS) on initial foreign ownership status, size and other firm, sector and region specific characteristics such as export intensity, leverage, investment incentive status, regional and sectoral profitability, and sectoral share of foreign firms. This study can provide useful lessons because we take a first step towards filling a gap on the effects of foreign ownership and investment incentives on performance of publicly traded firms in Turkey using a panel dataset. In face of boom and burst cycles creating an instable investment environment, Turkey has strengthened its public investment policies through investment incentives to overcome the first obstacle of attracting FDI to Turkey. Moreover, as manufacturing firms constitute a substantial share (85%) of ISE listed firms, the panel dataset of non-financial ISE firms provides a fruitful experiment in analyzing the drivers of firm performance. Thus, publicly traded ISE listed firms may provide additional insights to the analysis of the drivers of profitability, including the impact of foreign ownership and investment policies.

[2] For a survey of previous empirical results, see Douma et al. (2006).

The paper consists of five sections. After the Introduction, the second section gives a brief overview of Turkish investment environment in the last two decades. Section three presents the data sources and provides a descriptive analysis on the performance of non-financial ISE listed firms by firm size (large vs. small) and ownership (domestic vs. foreign). Section four presents the findings of an econometric analysis regarding the drivers of firm performance, modeling performance as a dynamic process. The effects of size, ownership, exporting and investment incentives are also analyzed in this context. The last section of the paper summarizes main findings and discusses policy implications.

TURKISH INVESTMENT ENVIRONMENT

Turkey introduced the first legislation governing foreign investments in the early 1950s. The Foreign Capital Law, enacted in 1954, and the related Decree of the Council of Ministers remained in practice until the late 1980s. Although this early legislation provided a liberal framework designed to create a favorable environment for FDI, the cumulative FDI authorized from 1950 to 1980 remained at low levels in Turkey in the pre-1980 period (Öniş, 1994). Turkey had to abandon the import substitution industrialization strategy followed in the 1960s and 1970s after the severe balance of payments crisis in the late 1970s. On January 24, 1980, the Turkish government announced a stabilization program that was based on an outward-oriented trade strategy and foreign trade with liberalization of capital and product markets. The regulations on FDI were reorganized in the early 1980s and all discriminatory treatment of foreign investors, requirements on local equity participation, and restrictions on the transfer of earnings were gradually eliminated (Lenger & Taymaz, 2006). The major policy shift from the import substitution industrialization strategy towards a more outward oriented economy based on export development has attracted the interest of foreign investors in Turkey (for a comparative review, see Erdilek, 1986; Erdilek, 2003).

Since the mid-1980s, foreign investors have been taking an increasingly role in the Turkish economy as the recent liberal foreign investment and privatization policies began to show their results (Erdal & Tatoglu, 2002). During the period 1995-2004, FDI inflows on the average constitute only $1.4 billion annually (YASED, 2008:5). The failure of Turkey in attracting FDI inflows was mainly attributed to the political and macroeconomic instability that triggered 2001 crisis. The macroeconomic policies- tight public finance policies and independent and effective monetary policies- that were initiated, put Turkish economy back to stable economic

development trend. Together with macroeconomic policies, the negotiations with EU that had started in the end of 2004, also made Turkey a new attraction point of investment for foreign investors.

Broader measures affecting the investment climate have also been adopted. For instance, Turkey in June 2006 lowered the corporate income tax rate from 30% to 20% (UNCTAD, 2007: 52). Additionally, investment incentives are provided during part of the sample period[3]. Thanks to macroeconomic stability and the improvements in investment environment, annual FDI inflows to Turkey reached to $9.7 billion in 2005 (Yılmaz, 2007:1). While Turkey was in 53rd place in year 2003, in the raking of countries that host largest FDI inflows, FDI inflows with $22 billion in 2007 made Turkey to place in 16th (UNCTAD, 2007). In 2007, out of total FDI inflows to Turkey, the largest share (90%) was in the form of M&As. Financial services due to increasing privatization efforts, distinguished from other sectors as the sector enjoying the largest share from FDI inflows, with 60%, in 2007. Manufacturing industry, with a 22% share, ranks second in capital inflows (YASED, 2008:5).

DATA SOURCES

There are two basic data sources used in this study. The corporate-level accounting and performance information was from the ISE Financial Statements. It is an electronic database that provides information on the corporate performance and other financial indicators of all ISE listed firms. Additionally, data on the international activities of firm, its location and age is collected from ISE Company Yearbook providing information on to supplement the information from ISE Financial Statements. The FDI information was from ISE Financial Statements showing the ownership structure of each firm.

[3] While there have been some changes in the provision of investment incentives over time, there are three types of tax based investment incentives application in Turkey. To be eligible to these incentives an investment subsidy document had to be taken from Under-Secretariat of Treasury until 2004. In order to be eligible, the applicant generally had to show that the project required financial assistance has an adequate equity capital base and has an advanced technological nature. Firms with qualified investment projects could benefit from tax based incentives such as investment allowance, and exemptions from indirect taxes. A new incentive system is introduced on 2004 which eased taking advantage of investment incentives. According to the new systems firms with positive net income and minimum investment value of 200000 TL became eligible to benefit from these incentives.

The data on investment incentives are gathered from financial statements of firms. While there have been some changes in the provision of investment incentives over time, firms with qualified investment projects could benefit from tax based incentives such as investment allowance and exemptions from indirect taxes that provide a rate of capital investment to be deducted from taxable income. These deductions from taxable income provide cost reductions for investment and R&D related expenses of firms and are stated in the financial statements of ISE firms.

The main variables of interest are firm size and ownership in this study. The primary form of foreign investment has been international joint ventures (IJVs). While there are a number of issues regarding the definitions of international joint ventures, following the usual convention, an equity-based international joint ventures (foreign firms afterwards), which constitutes the focus of this study, are defined as those joint ventures in which foreign ownership is 10% or more. If the foreign share is less than 10%, it is considered to be portfolio investment. Joint ventures with more than 50% foreign ownership are "majority-owned" foreign firms. In this study, FDI is measured as a dummy variable taking value of 1 if there is foreign ownership in the firm and 0 otherwise. The second variable of interest, size, is measured by number of employees.

Table 1 presents the data on the number of firms in the database presented for four categories of firms that are defined by size (LSE vs. SME) and ownership (domestic vs. foreign)[4].

Table 1: Number of Non-financial Firms Listed at ISE (1998–2007)

	Domestic firms			Foreign firms		
	All	LSE	SME	All	LSE	SME
1998	161	115	46	37	29	8
1999	168	111	57	39	29	10
2000	180	113	67	39	29	10
2001	180	106	74	40	31	9
2002	179	108	71	40	30	10
2003	178	112	66	41	33	8
2004	183	117	66	41	36	5
2005	186	129	57	44	37	7
2006	177	127	50	49	42	7
2007	171	116	55	53	46	7

Note: SME employ fewer than 250

[4] Establishments employing fewer than 250 people are classified as "small and medium-sized enterprise" (SME). Large-scale enterprises (LSE) employ 250 or more people. "Foreign firms" are those joint ventures where foreign ownership is 10% or more.

The domestic firms constitute the majority of firms that are publicly traded in ISE (close to 80%) whereas only 19% of ISE listed firms are foreign firms. The share of foreign firms increased from 18% to 24% in 2007. 70% of ISE listed firms can be classified as LSEs and the share of LSEs remained unchanged over the period 1998-2007. The share of small firms increased from 27% in 1998 to 38% in 2001 but there after, there was a slow down in the share of SMEs reaching back to 27% in 2008. 80% of foreign firms can be classified as LSEs and the share of LSEs in domestically owned firms is smaller than their share among foreign firms (on average, 66% all domestic firms). Moreover, the share of SMEs among domestic firms (on average, 34%) is much higher than their share among foreign firms (on average, 20%).

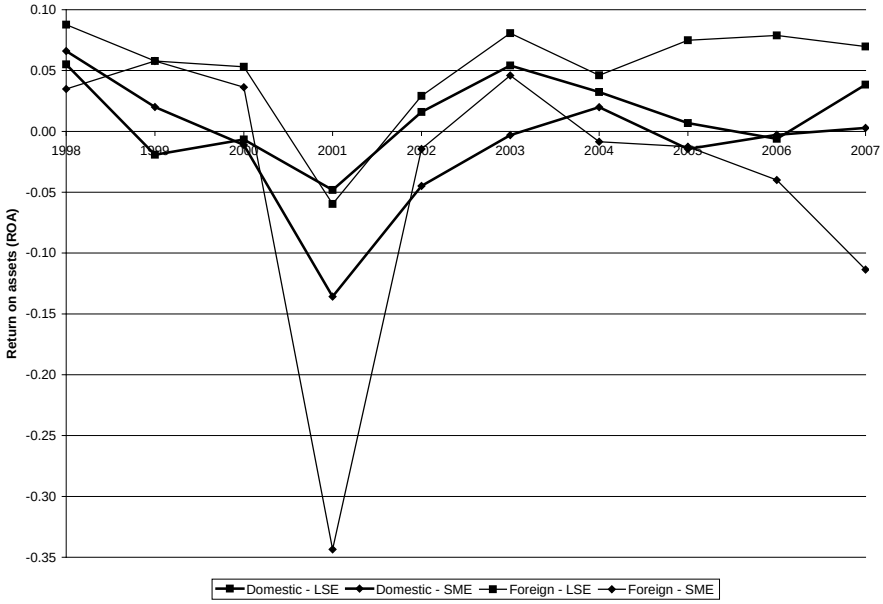

Figure 1: Return on Assets (ROA) of Non-financial ISE Firms by Size and Ownership (1998–2007)

The evolution of return on assets (ROA), by firm size and ownership is depicted in Figure 1. The return on assets for all firms decreased until 2003 and ROA was hit the hardest in 2001. There after, average ROA has recovered and reached 3% in 2007 (Table 2). Return on assets of domestic firms trapped into boom and bust cycles as all ISE listed firms with a sharp decrease until 2001, a recovery up to 2003, a decrease until 2006 and then a

recovery in 2007. Foreign firms had a higher ROA value compared to domestic firms following the same trend seen in domestic firms until 2004. Among four categories of firms, the return on assets for foreign LSEs had the highest value. Moreover, ROA of foreign LSEs and SMEs were higher than their value for domestic firms, respectively. Although ROA of foreign LSEs increased after 2004 and reached to 7% in 2007, this value for foreign SMEs decreased and became negative in 2007 (-11%). Thus, foreign SMEs were more sensitive to rising instability in economy as return on assets of foreign SMEs was the lowest in 2001 crisis (-34%) (see Table 2).

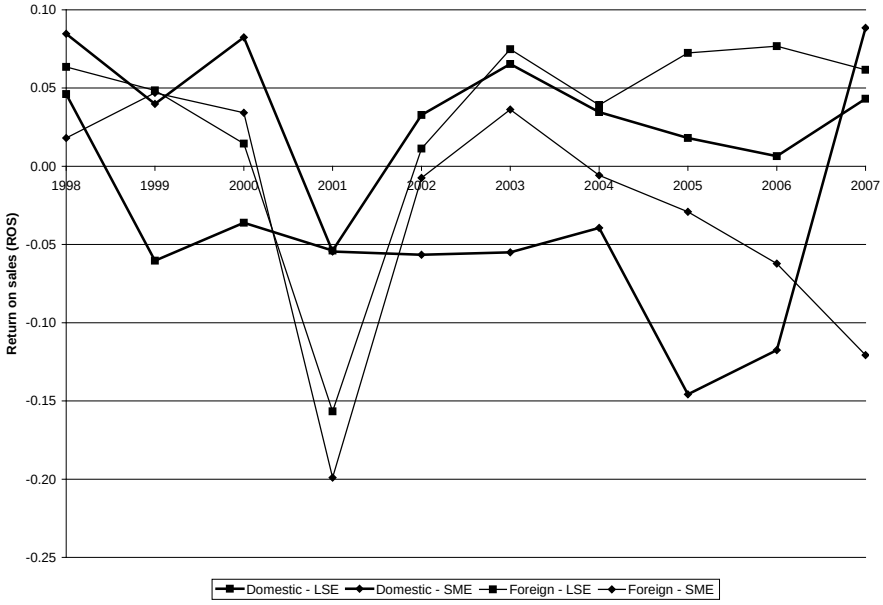

Figure 2: Return on Sales (ROS) of Non-financial ISE Firms by Size and Ownership (1998–2007)

The evolution of return on sales (ROS), by firm size and ownership is depicted in Figure 2. The return on sales for all firms decreased until 2003 and ROS was hit the hardest in 2001, reaching -7% (Table 2). Average ROS has recovered in 2003 and with exceptions of 2005 and 2006, has increased and reached 5% in 2007. Return on sales of domestic firms trapped into boom and bust cycles as all ISE listed firms with a sharp decrease until 2001, a recovery up to 2003, a decrease until 2005 and then a recovery. Foreign firms had a higher ROS value compared to domestic firms following the same

trend seen in domestic firms until 2004. However, as return on sales of domestic firms decreased and became negative, ROS for foreign firms has increased. Among four categories of firms, the return on sales for domestic LSEs had the highest value until 2002. In 2003, ROS of foreign LSEs recovered and became the highest value of all categories. Moreover, ROS of both domestic and foreign LSEs were higher than their value for SMEs, respectively. Although ROS of both domestic and foreign SMEs had negative values after 2001, domestic SMEs had recovered in 2007 and their return on sales value reached 8% at the end of the period. On the other hand, the decrease in the ROS value of foreign SMEs continued (-12% in 2007). Thus, SMEs and especially foreign firms were more sensitive to rising instability in economy as return on sales of foreign SMEs was the lowest in 2001 crisis (-20%) (see Table 2).

Table 2: Return on Assets (ROA) and Sales (ROS) of Non-financial ISE Firms by Size and Ownership (1998–2007)

Return on Assets (ROA)

	All firms	Domestic firms			Foreign firms		
		All	LSE	SME	All	LSE	SME
1998	0.062	0.058	0.055	0.066	0.076	0.088	0.035
1999	0.006	-0.006	-0.019	0.020	0.058	0.058	0.058
2000	0.002	-0.008	-0.007	-0.011	0.049	0.053	0.036
2001	-0.092	-0.084	-0.048	-0.136	-0.124	-0.060	-0.344
2002	-0.003	-0.008	0.016	-0.045	0.018	0.029	-0.014
2003	0.041	0.033	0.054	-0.003	0.074	0.081	0.046
2004	0.030	0.028	0.032	0.020	0.039	0.046	-0.008
2005	0.012	0.000	0.007	-0.014	0.061	0.075	-0.013
2006	0.009	-0.005	-0.006	-0.003	0.061	0.079	-0.040
2007	0.031	0.027	0.038	0.003	0.045	0.070	-0.114

Return on Sales (ROS)

	All firms	Domestic firms			Foreign firms		
		All	LSE	SME	All	LSE	SME
1998	0.057	0.057	0.046	0.085	0.054	0.064	0.018
1999	-0.013	-0.027	-0.060	0.040	0.048	0.048	0.047
2000	0.009	0.007	-0.036	0.082	0.020	0.014	0.034
2001	-0.076	-0.054	-0.054	-0.054	-0.166	-0.157	-0.199
2002	0.000	-0.001	0.033	-0.057	0.007	0.011	-0.007
2003	0.031	0.022	0.065	-0.055	0.067	0.075	0.036
2004	0.014	0.009	0.035	-0.039	0.034	0.039	-0.006
2005	-0.012	-0.029	0.018	-0.146	0.056	0.072	-0.029
2006	-0.007	-0.025	0.006	-0.118	0.056	0.077	-0.062
2007	0.052	0.057	0.043	0.089	0.037	0.062	-0.121

THE EFFECTS OF FOREIGN OWNERSHIP AND SIZE ON FIRM PERFORMANCE

The descriptive analysis presented in the preceding section showed that there are substantial differences between performance of large and small firms, and domestic and foreign firms. We will analyze the drivers of firm performance for ISE listed firms by using econometric methods to understand if size and ownership matter for profitability measured in terms of return on assets and sales.

We measure the performance of non-financial ISE listed firms using two accounting-based measures, return on assets (ROA) and return on sales (ROS). For measuring profitability, *return on assets (ROA)* defined as income to total assets and *return on sales (ROS)* defined as income to total sales are used. Thus, to test the effects of foreign ownership and size on firm performance, we run a dynamic regression of two performance measures (ROA and ROS) on initial foreign ownership status, size and other firm, sector and region specific characteristics as follows:

$$\begin{aligned} ROA_{it} &= \alpha + \beta ROA_{it-1} + \delta_1 Z_{1it} + \varepsilon_{it} \\ ROS_{it} &= \theta + \gamma ROS_{it-1} + \delta_2 Z_{2it} + \nu_{it} \end{aligned} \qquad (1)$$

where Z_1 and Z_2 represent the vectors of explanatory variables including foreign ownership and size for determining performance (ROA and ROS) respectively, and δ_1 and δ_2 the corresponding vectors of parameters.

The first explanatory variable included in the firm performance model (Model 1) is the "*size*" variable that is measured by the (log) number of employees. The theory is inconclusive about the relationship between size and firm performance. Large firms may perform better as they are more prone to exploit economies of scale and scope and they may organize their activities more efficiently (Barbosa & Louri, 2005; Xu et al., 2006). On the other hand, monitoring costs and extensive hierarchies may prevent large firms from achieving higher performance and thus adopting less flexible methods of production and managerial organizations. If large firms are more likely to have higher return on assets and sales, the coefficient of the size variable is expected to be positive. Ownership variable, "*FDI*", is used to test the effects of ownership on firm performance. In addition to the gain from the simple movement of capital, foreign ownership is accompanied with the movement of firm specific assets such as technology, managerial ability, corporate governance and access to the network connecting foreign markets (Kimura & Kiyota, 2007). Once foreign firms set up a certain level of

ownership in the equities of a firm, the utilization of firm-specific assets may generate superior performance in static and dynamic corporate activities. Thus, firms with foreign ownership are expected to perform better compared to domestically owned firms. In order to control the cash position of the firm that can be associated with firm dependency in the capital market affecting firm's financial risk and hence profitability, firm's "*leverage*" in terms of debt over total assets is used in the model (Barbosa & Louri, 2005).

There are numerous theoretical and empirical studies that suggest that exporting is the first step to entering international markets serving for competitiveness (see Lu & Beamish, 2006 for a literature review). Therefore, access to foreign markets through exporting could be an important determinant of profitability achieved from larger volumes of sales and production. We use the "*export intensity*" variable, the percent of firm sales that are derived from export revenues, to test if this is the case for ISE listed firms. If international expansion through exporting contributes to higher performance, this variable will have a positive coefficient. The last firm-level variable is the "*investment support*" defined as a binary variable that takes the value 1 if the firm used investment incentives in the form of investment allowances or tax deductions, 0 otherwise. Until recently, empirical studies evaluating the performance criteria of foreign firms concluded that government incentives have interpreted to be important performance criteria (see Blomström & Kokko, 2003; Demirbag et al, 2007; Tatoglu & Glaister, 1998). However, investment incentives were still seen as relatively minor determinants of FDI decisions. While they might tilt the investment decision in favor of one of several otherwise similar investment locations, their effects on firm performance were not analyzed together with FDI. Thus, we included investment support receiving status in the model to check if investment support recipients have higher return on assets and sales compared to non-recipients.

There are also regional and sectoral variables included in the Model 1[5]. In order to control regional and sectoral spillover effects of firm profitability, "*regional ROA*" and "*sectoral ROA*", calculated as the average ROA of all firms that operate in the same region and in the same sector respectively, are included in the model (see, Blomström & Kokko, 1998). Finally, the model is defined as a dynamic equation by including the lagged value of the return on assets in order to account for the adjustment and persistence in profitability.

We further included the "*share of foreign firms in sectoral output*" to the original model (Model 2). The market share of foreign firms is used to

[5] Sector is defined at the ISIC (revision 2) 2-digit level. Region is defined at the NUTS-2 (Nomenclature of Territorial Units for Statistics) regional level.

check if sectoral presence of foreign firms stimulates other firms to have higher profitability through knowledge spillovers or by competitive pressures. Model 3 uses the same set of variables and also includes the lagged value of the return on assets interacted with size variable. It is used as an explanatory variable in the model because adjustment and persistence could depend on firm size.

We use the same set of variables in the estimation of return on sales (ROS) equation. In order to control regional and sectoral spillover effects of profitability, "*regional ROS*" and "*sectoral ROS*" that measure the average ROS of all firms that operate in the same region and sector respectively, are included in the model. Moreover, the model is defined as a dynamic equation by including the lagged value of the return on sales in order to account for the adjustment and persistence in profitability. We again included the share of foreign firms in sectoral output in Model 2 and the lagged value of the return on sales interacted with size variable in Model 3.

Descriptive statistics for the variables used in the econometric analysis are presented in Table 3. The data are presented for all firms, foreign and domestic firms and SMEs and LSEs separately.

Table 3: Descriptive Statistics, Mean Values for the Period 1998–2007

	All firms	Domestic firms			Foreign firms		
		All	LSE	SME	All	LSE	SME
ROA (income/total assets)	0.009	0.003	0.013	-0.016	0.036	0.054	-0.035
ROS (income/net sales)	0.005	0.001	0.010	-0.018	0.022	0.034	-0.026
FDI	0.194	0	0	0	1	1	1
Size (log employment)	6.052	5.936	6.758	4.440	6.542	6.936	4.975
Leverage (debt/total assets)	0.550	0.553	0.555	0.550	0.539	0.517	0.634
Export intensity	0.257	0.264	0.299	0.193	0.231	0.263	0.091
Investment support recipient	0.441	0.435	0.506	0.299	0.470	0.497	0.358
Regional ROA	0.023	0.021	0.017	0.029	0.029	0.031	0.021
Sectoral ROA	-0.001	-0.007	-0.005	-0.009	0.021	0.020	0.027
Regional ROS	0.019	0.018	0.009	0.036	0.022	0.023	0.014
Sectoral ROS	-0.006	-0.006	-0.004	-0.009	-0.006	-0.007	-0.003
Sectoral FDI's share	0.192	0.174	0.164	0.193	0.269	0.275	0.244
Number of observations	2186	1763	1154	609	423	342	81

In the empirical work on the economics of FDI investment incentives, it is important to recognize that as the investment support receipt is correlated with investment capacity and hence with current profitability, the public funding becomes an endogenous variable and its inclusion in the list of independent variables will result in inconsistencies (Blomström & Kokko,

2003). Thus, we estimated the profitability model by GMM-System method to take this potential endogeneity problem into account. The GMM-System model assumes unobserved firm-specific effects and controls the endogeneity of explanatory variables and the lagged value of the dependent variable. The Arellano & Bond (1991) estimation- called "*Difference GMM*"- starts by transforming all regressors by differencing and uses the Generalized Method of Moments (GMM). The Arellano & Bover (1995)/Blundell & Bond (1998) estimator augments Arellano & Bond (1991) by making an additional assumption that first differences of instrument variables are uncorrelated with the fixed effects. This allows the introduction of more instruments and can dramatically improve efficiency. This builds a system of two equations- the original equation as well as the transformed one- and is known as "*System GMM*". Thus, in System GMM, the instrumental variables that have lagged values are used for the difference equations and first differences are used in level equations (for a detailed discussion, see Roodman, 2006).

The GMM-System estimation results are presented in Table 4 and Table 5. We employed the dependent variable itself, size and investment support variables in lags as GMM-style instruments both for first differences and levels equations. The choice of these instruments has been made to assess the endogeneity of previous firm performance and public funding. The two tests of the validity of the estimator indicate both the absence of serial correlation (as seen in both estimations, AR(1) is significantly negative while AR(2) is not significant). Furthermore, the validity of the instruments (the Sargan's over-identification test) does not reject the null hypothesis of joint validity of the instruments. Time dummies are also included in all models to control for exogenous changes in FDI movements and other macroeconomic shocks.

Estimation results evaluating the effects of foreign ownership and size on ROA for three models are presented in Table 4. The results indicate that the lagged values of the dependent variable have statistically significant coefficients (model 1-3 in Table 4). This finding indicates persistence and slow adjustment in firm performance. When the lagged values of the dependent variable are interacted with the size variable, it is found that persistence is lower (or adjustment is faster) for large firms in the case of return on assets (Model 3).

The coefficient of the size variable is statistically significant in all three models. In all models, it is found that among ISE listed firms, large firms tend to outperform small firms. This finding supports the preliminary findings of descriptive analysis and shows the importance of including size into the estimation of profitability model. It seems that, monitoring costs and extensive hierarchies may well be compensated by the advantages of exploiting economies of scale and scope that are available to large firms.

Moreover, the effect of size can also be interpreted as indicating firms' market power and its positive impact on performance.

Table 4: The Effects of Foreign Ownership and Size on Firm Performance (ROA) (1998–2007), GMM-System Model Estimation Results

	Model 1	Model 2	Model 3
ROA (lag)	0.1597 **	0.1567 **	0.4154 **
	(0.025)	(0.025)	(0.074)
Size (log employment)	0.0100 **	0.0103 **	0.0094 *
	(0.004)	(0.004)	(0.004)
FDI	0.0485 **	0.1231 **	0.1288 **
	(0.018)	(0.033)	(0.033)
Investment support	0.0358 **	0.0337 **	0.0366 **
	(0.006)	(0.006)	(0.006)
Leverage	-0.2678 **	-0.2697 **	-0.2699 **
	(0.011)	(0.011)	(0.011)
Export intensity	-0.0625 **	-0.0578 **	-0.0590 **
	(0.022)	(0.022)	(0.023)
Regional ROA	0.0567 *	0.0571 *	0.0562 *
	(0.023)	(0.023)	(0.023)
Sectoral ROA	0.0309	0.0321	0.0351
	(0.019)	(0.020)	(0.020)
Sectoral FDI's share		-0.0752 **	-0.0725 *
		(0.029)	(0.029)
Size * ROA (lag)			-0.0514 *
			(0.014)
N. of observations	1714	1710	1710
Wald chi(2)	1718.68 **	1706.90 **	1683.15 **
AR(1)	-16.83 **	-16.53 **	-16.77 **
AR(2)	-3.66 **	-3.74 **	-3.89 **
Sargan test	505.04 **	493.05 **	468.51 **

Note: Standard errors in parentheses.

** (*) Means statistically significant at the 1% (5%) level

Ownership variable, FDI, has positive and statistically significant coefficients in all three models. In other words, after controlling for all other variables, foreign ownership affects firms' profitability and foreign firms have a superior performance than domestic firms. This finding is consistent with those of the previous empirical studies like Aydın et al. (2007); Barbosa &

Louri (2005); Douma et al. (2006); Gunduz & Tatoglu (2003); Kimura & Kiyota (2007). Export intensity has a negative and statistically significant coefficient in all models[6]. It seems that exporting together with foreign ownership affect negatively firms' profitability. Thus, exposure to international trade does not enhance profitability if we control for foreign ownership.

The estimation results for the investment support variable suggest that investment support has positive impact on profitability of ISE listed firms. The public investment incentives have a direct impact on firm performance: investment support increases the recipient's profitability. Moreover, the leverage variables have negative and significant coefficients in all models. The financial constraints faced by firms appear to be negatively associated with the performance of firms.

For sectoral and regional level variables, there exist regional spillovers in profitability, indicating that firms tend to operate in regions where the overall return on assets is higher. However, the coefficients of sectoral ROA are positive but insignificant in all models. It seems that there is no competitive pressure at work in different sectors. When the foreign firms' share in sectoral output is included in the model (Model 2), it has a negative and significant impact on firm performance. If the market share of foreign firms increases, other firms' profitability worsens through spillover effects and possible competitive pressures exerted. Thus, the relative superior performance of foreign firms may be a consequence of damaging effect seen on domestic profitability.

Estimation results evaluating the effects of foreign ownership and size on ROS for three models are presented in Table 5. The results indicate that the lagged values of the profitability have statistically significant coefficients (model 1-3 in Table 5). This finding suggests persistence and slow adjustment in firm performance. When the lagged values of the return on sales are interacted with the size variable, it is found that persistence is lower (or adjustment is faster) for large firms (Model 3).

The coefficients of size, leverage, foreign ownership, export intensity, investment support, regional and sectoral return on sales are similar to those found with the return on asset (ROA) estimation in Model 1. The profitability, measured in terms of ROS, of ISE listed firms, is higher for large, foreign owned and investment support recipient firms that are operating in regions where ROS is high. Moreover, firms that face with financial obstacles and

[6] We also included an interaction variable for export intensity and FDI in the model to search for whether foreign ownership leads to an increase in the performance of firms with higher export intensity or not. However, the coefficient of this interaction variable turned out to be insignificant.

that export, have inferior performance. When the market share of foreign firms is included in the model (Model 2), the results change. The coefficient of export intensity is negative again but turned out to be insignificant. Firms operating in sectors that have higher ROS, have higher profitability. Thus, sectoral and regional competitiveness exert pressure and induce firms to be more profitable in the case of return on sales. The foreign firms' share in sectoral output has a negative and significant impact on firm's return on sales. It seems that the relative superior performance of foreign firms may be a consequence of damaging effect seen on domestic profitability through sales as well.

Table 5: The Effects of Foreign Ownership and Size on Firm Performance (ROS) (1998–2007), GMM-System Model Estimation Results

	Model 1	Model 2	Model 3
ROS (lag)	0.4224 **	0.3995 **	0.6867 **
	(0.029)	(0.029)	(0.095)
Size (log employment)	0.0233 **	0.0231 **	0.0171 *
	(0.007)	(0.007)	(0.008)
FDI	0.4224 *	0.3992 **	0.4183 **
	(0.032)	(0.061)	(0.062)
Investment support	0.0402 **	0.0299 **	0.0324 **
	(0.011)	(0.011)	(0.011)
Leverage	-0.2762 **	-0.2901 **	-0.3023 **
	(0.018)	(0.019)	(0.019)
Export intensity	-0.0830 *	-0.0660	-0.0672
	(0.039)	(0.040)	(0.041)
Regional ROS	0.0882 **	0.0851 **	0.0802 **
	(0.030)	(0.031)	(0.031)
Sectoral ROS	0.0606	0.0852 **	0.0975 **
	(0.032)	(0.032)	(0.033)
Sectoral FDI's share		-0.3456 **	-0.3494 **
		(0.055)	(0.055)
Size * ROS (lag)			-0.0609 **
			(0.019)
N. of observations	1678	1675	1675
Wald chi(2)	1009.00 **	1020.61 **	1005.86 **
AR(1)	-16.69 **	-15.26 **	-15.41 **
AR(2)	-0.98	-1.24	-1.39
Sargan test	653.24 **	596.29 **	571.62 **

Note: Standard errors in parentheses.

** (*) Means statistically significant at the 1% (5%) level

CONCLUSION AND DISCUSSION

Foreign direct investment by multinational firms has been advocated as a primary source of technology diffusion and economic growth for developing countries. The increasing attractiveness and success of the developing countries as investment locations in attracting FDI are likely to be associated with an investment climate characterized by growing markets and increasingly liberal policy frameworks. These global trends have also been observed at the country level in Turkey. Turkey has taken steps to liberalize its economy since 1980s. This process has gained pace since early 2000s. But the economy has slowed down with two big economic crises in 2001 and 2004. The impact of these crises has showed itself both in performance of and the internationalization process of Turkish companies. Although Turkey has comparative advantage in geographic location, low labor cost, abundance of resources and apply FDI promotions and incentives to stimulate investment environment recently, FDI inflows are not at the required level. Even though FDI inflows to Turkey grow at a high rate in recent years, its impact on firm performance has not yet been as expected.

There are studies in the literature that examine the factors which motivate MNEs to engage in FDI in Turkey by means of location-specific and transaction-related motives. However, the effect of inward FDI on firm performance has not been investigated thoroughly in literature. In this respect, this study investigates the impact of FDI and investment incentives together with size on performance of non-financial firms listed at Istanbul Stock Exchange for the 1998-2007 period. To test the effects of foreign ownership and size on firm performance, we run a dynamic regression of two performance measures (ROA and ROS) on initial foreign ownership status, size and other firm, sector and region specific characteristics such as export intensity, leverage, investment incentive status, regional and sectoral profitability, and sectoral share of foreign firms. Our findings suggest that the profitability of ISE firms, both in terms of ROA and ROS, increases with firm size, foreign ownership and being an investment support recipient. Moreover, as firms that are financially fragile have lower profitability, the existence of investment incentives help firms to attract FDI and to have higher profitability. Sectoral and regional profitability, especially in ROS, induce firms to increase their return on assets and sales through spillover effects and competitive pressures. On the other hand, the presence of foreign firms in a sector deters other firms to enter into the sector and this can interpreted as a consequence of damaging effect faced by domestic firms.

Our analysis on the effect of foreign ownership, size and investment incentives on firm performance provides a number of policy-relevant findings. There is strong evidence that foreign firms outperform domestically owned

firms and this effect is even stronger for large firms. Firms that face with liquidity constraints have lower return on assets and sales, but when they receive investment support their capacity to invest and hence their profitability increase. These findings altogether show that the public support could play a critical role in helping firms to overcome the obstacles they face in receiving FDI. Moreover, if the market shares of FDI receiving firms increase, other firms tend to have profitability proportionally less. Thus, sectoral spillover effects exert competitive pressures for ISE listed firms that receive FDI. Our empirical findings provide strong support for public policies that are essential to raise competitive advantage of firms that face with financial obstacles in engaging FDI activities, especially in developing countries like Turkey. Investment incentives as both determinants of FDI decisions and as their stand alone positive impact on firm performance can create the economic environment in which FDI inflows can be transformed into positive returns both for recipients and investors.

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REFERENCES

Aitken, B.J., & Harrison, A.E. (1999). Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela. The American Economic Review, 89(3), 605–618.

Akimova, I., & Schwödiauer, G. (2004). Ownership Structure, Corporate Governance and Enterprise Performance: Empirical Results from Ukraine. International Advance in Economic Research, 10(1), 28–42.

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. Review of Economic Studies, 58, 277–297.

Arellano, M., & Bover, O. (1995). Another Look at the Instrumental Variables Estimation of Error Components Models. Journal of Econometrics, 68, 29–51.

Arnold, J.M., & Javorcik, B.S. (2009). Gifted Kids or Pushy Parents? Foreign Direct Investment and Plant Productivity in Indonesia. Journal of International Economics, 79, 42–53.

Aydın, N., Sayım, M., & Yalama, A. (2007). Foreign Ownership and Firm Performance: Evidence from Turkey. International Research Journal of Finance and Economics, 11, 103–111.

Barbosa, N., & Louri, H. (2005). Corporate Performance: Does Ownership Matter? A Comparison of Foreign- and Domestic-Owned Firms in Greece and Portugal. Review of Industrial Organization, 27, 73–102.

Blomström, M. (1986). Foreign Investment and Productive Efficiency: The Case of Mexico. Journal of Industrial Economics, 15, 97–110.

Blomström, M., & Kokko, A. (1998). Multinational Corporations and Spillovers. Journal of Economic Surveys, 12(2), 1–31.

Blomström, M., & Kokko, A. (2003). The Economics of Foreign Direct Investment Incentives. NBER, Working Paper No. 9489.

Blomström, M., & Sjoholm, F. (1999). Technology Transfer and Spillovers: Does Local Participation with Multinationals Matter?. European Economic Review, 43, 915–923.

Blundell, R., & Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, Journal of Econometrics, 78(1), 115–143.

Chari, A., Chen, W., & Dominguez, K. (2009). Foreign Ownership and Firm Performance: Emerging-Market Acquisitions in the United States. NBER, Working Paper No. 14786.

Demirbag, M., Tatoglu, E., & Glaister, K.W. (2007). Factors Influencing Perceptions of Performance: The Case of Western FDI in an Emerging Market. International Business Review, 16, 310–336.

Douma, S., George, R., & Kabir, R. (2006). Foreign and Domestic Ownership, Business Groups, and Firm Performance: Evidence from a Large Emerging Market. Strategic Management Journal, 27(7), 637–657.

Driffield, N., & Love, J.H. (2007). Linking FDI Motivation and Host Economy Productivity Effects: Conceptual and Empirical Analysis. Journal of International Business Studies, 38, 460–473.

Erdal, F., & Tatoglu, E. (2002). Locational Determinants of Foreign Direct Investment in an Emerging Market Economy: Evidence from Turkey. Multinational Business Review, 10(1), 1–7.

Erdilek, A. (1986). Turkey's New Open-door Policy of Direct Foreign Investment: A Critical Analysis of Problems and Prospects. METU Studies in Development, 13, 171–191.

Erdilek, A. (2003). A Comparative Analysis of Inward and Outward FDI in Turkey. Transnational Corporations, 12(3), 79–105.

Globerman, S., Ries, J., & Vertinsky, I. (1994). The Economic Performance of Foreign Affiliates in Canada. Canadian Journal of Economics, 27, 143–156.

Gunduz, L., & Tatoglu, E. (2003). A Comparison of the Financial Characteristics of Group Affiliated and Independent Firms in Turkey. European Business Review, 15(1), 48–54.

Hallward-Driemeier, M., Iarossi, G., & Sokoloff, K. (2002). Exports and Manufacturing Productivity in East Asia: a Comparative Analysis with Firm-level Data. NBER, Working Paper No. 8894.

Haskel, J.E., Pereira, S.C., & Slaughter, M.J. (2007). Does Inward Foreign Direct Investment Boost the Productivity of Domestic Firms?. The Review of Economics and Statistics, 89(3), 482–496.

Javorcik, B.S. (2004). Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages. The American Economic Review, 94(3), 605–627.

Kathuria, V. (2002). Liberalisation, FDI and Productivity Spillovers- An Analysis of Indian Manufacturing Firms. Oxford Economic Papers, 54, 688–718.

Keller, W., & Yeaple, S.R. (2009). Multinational Enterprises, International Trade, and Productivity Growth: Firm Level Evidence from the United States. The Review of Economics and Statistics, 91(4), 821–831.

Kimura, F., & Kiyota, K. (2007). Foreign-owned versus Domestically-owned Firms: Economic Performance in Japan. Review of Development Economics, 11(1), 31–48.

Konings, J. (2001). The Effects of Direct Foreign Investment on Domestic Firms: Evidence from Firm Level Panel Data in Emerging Economies. Economics of Transition, 9, 619–633.

Lu, J.W., & Beamish, P.W. (2006). SME Internationalization and Performance: Growth vs. Profitability. Journal of International Entrepreneur, 4, 27–48.

Öniş, Z. (1994). Liberalization, Transnational Corporations and Foreign Direct Investment in Turkey: The Experience of the 1980s. In F. Şenses (eds.), Recent Industrialization Experience of Turkey in a Global Context (pp. 91–109). Westport, Connecticut: Greenwood.

Roodman, D. (2006). How to do xtabond2: An Introduction to "Difference" and "System" GMM in Stata. Center for Global Development, Working Paper No. 103.

Tatoglu, E., & Glaister, K.W. (1998). Performance of International Joint Ventures in Turkey: Perspectives of Western Firms and Turkish Firms. International Business Review, 7, 635–656.

Taymaz, E., & Yılmaz, K. (2009). Foreign Direct Investment and Productivity Spillovers: Identifying Linkages through Product-based Measures, mimeo.

Xu, D., Pan, Y., Wu, C., & Yim, B. (2006). Performance of Domestic and Foreign-invested Enterprises in China. Journal of World Business, 41, 261–274.

UNCTAD (2007), World Investment Report, United Nations, New York and Geneva.

YASED (2008). International Direct Investments Report, Retrieved April 18, 2010, from: http://yased.org.tr/webportal/English/Yayinlar/Pages/RaporlarveYayinlar.aspx.

Yaşar, M., & Paul, C.J.M. (2007a). International Linkages and Productivity at the Plant Level: Foreign Direct Investment, Exports, Imports and Licensing. Journal of International Economics, 71, 373–388.

Yaşar, M., & Paul, C.J.M. (2007b). Firm Performance and Foreign Direct Investment: Evidence from Transition Economies. Economics Bulletin, 15(21), 1–11.

Yılmaz, K. (2007). Türkiye için Doğrudan Yabancı Yatırım Stratejisi'ne Doğru, YASED.