

FINANCIAL PERFORMANCE AND PRODUCTIVITY:
DOES FOREIGN OWNERSHIP MATTER?

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Thesis Abstract

Aysa İpek Küçükosmanoğlu, “Financial Performance and Productivity:

Does Foreign Ownership Matter?”

The internalization theory, which provides an economic rationale for the existence of foreign-owned firms, suggests that foreign-owned firms should benefit from the transfer of the firm specific assets owned by the parent firms and display better corporate performance than domestic firms. In this study, I examine whether foreign ownership has any affect on the productivity and financial performance of firms in Turkey and whether different levels of foreign ownership have differing impacts on corporate performance. Using a panel of 292 firms over the period 2004-2008, I find that firms that are majority foreign-owned and wholly foreign-owned have higher labor productivity than domestically-owned firms. The effect of being a wholly foreign owned enterprise is higher than the effect of majority foreign ownership. Furthermore, although majority foreign-owned and wholly foreign-owned firms have higher capital productivity than domestically-owned firms, there is no effect of foreign ownership on pretax profit margin and return on equity. Hence, we can say that majority foreign ownership and being a wholly foreign owned enterprise have positive effects on performance measures based on value added creation rather than profit. Because the duration of foreign ownership does not change the form of the relationship between foreign ownership variables and productivity variables, I suggest that the transfer of the firm specific assets to the majority foreign-owned firms and wholly foreign owned enterprises is realized in a certain period of time after the acquisition of shares by the foreign owners and the establishment of FOFs.

Tez Özeti

Aysa İpek Küçükosmanoğlu, “Financial Performance and Productivity:

Does Foreign Ownership Matter?”

Yabancı sermayeli şirketlerin varlığı için ekonomik bir açıklama getiren içselleştirme teorisi, yabancı sermayeli şirketlerin ana şirketlerinin firmaya özgü olan varlıklarının transferinden faydalanacağı ve yerli şirketlerden daha iyi kurumsal performans sergileyeceği beklentisini yaratmaktadır. Bu çalışmada, yabancı sermayeli olmanın Türkiye’deki şirketlerin verimlilik ve finansal performansına etkisi olup olmadığı ve farklı seviyelerdeki yabancı sermaye oranlarının kurumsal performans üzerinde farklı etkileri olup olmadığı araştırılmaktadır. 292 firmanın 2004-2008 yıllarındaki panel verisinin kullanıldığı çalışma sonucunda çoğunluk yabancı sermaye payına sahip olan şirketlerin ve tümüyle yabancı sermayeli şirketlerin yerli şirketlerden daha yüksek emek verimliliğine sahip olduğu bulunmuştur. Tümüyle yabancı sermayeli olmanın emek verimliliği üzerindeki etkisi çoğunluk yabancı sermayeli olmanın etkisinden daha yüksektir. Ayrıca, çoğunluk yabancı sermayeli şirketler ve tümüyle yabancı sermayeli şirketler yerli şirketlerden daha yüksek sermaye verimliliğine sahip olmalarına rağmen, yabancı sermayeli olmanın vergi öncesi kar marjı ve özsermaye karlılık oranı üzerinde bir etkisi bulunmamaktadır. Bundan dolayı, çoğunluk veya tümüyle yabancı sermayeli olmanın şirketin katma değer yaratma üzerine kurulu performans ölçütlerini olumlu etkilediği, fakat karlılık ölçütlerine etkisi olmadığı söylenebilir. Yabancı sermayeye sahip olma süresinin yabancı sermaye değişkenleri ve verimlilik değişkenleri arasındaki ilişkiye etkisi olmaması nedeniyle, çoğunluk ve tümüyle yabancı sermayeli şirketlere olan ana firmaya özgü varlıkların transferinin, hisselerin yabancı ortaklar tarafından alındıktan sonra veya yabancı şirketin kurulmasından sonra belirli bir dönemde gerçekleştiği tahmin edilmektedir.

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CONTENTS

CHAPTER 1 : INTRODUCTION.....	1
CHAPTER 2 : LITERATURE REVIEW.....	3
Foreign Ownership and Corporate Performance.....	3
Comparative Performances of Foreign and Domestic Firms: Evidence from Turkey...	23
CHAPTER 3 : RESEARCH DESIGN AND METHODOLOGY.....	29
Research Objectives and Hypotheses.....	29
The Sample.....	31
Research Methodology.....	33
CHAPTER 4 : EMPIRICAL FINDINGS.....	43
A Comparative Analysis of Productivity and Financial Performance of Foreign-owned Firms and Domestically-owned Firms.....	43
Foreign Ownership and Productivity.....	51
Foreign Ownership and Financial Performance.....	56
CHAPTER 5 : SUMMARY, DISCUSSION AND CONCLUSIONS.....	63
REFERENCES.....	66

ABBREVIATIONS

FDI	Foreign direct investment
FOF	Foreign-owned firm
DOF	Domestically-owned firm
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
JV	Joint venture
MNC	Multinational corporation
M&As	Mergers and acquisitions
R&D	Research and Development
WFOE	Wholly foreign owned enterprise
QIC	Quasi-Likelihood under Independence Model Criterion
QICC	Corrected Quasi Likelihood under Independence Model Criterion
VIF	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

Internalization theory, which gives insights into the reasons for FDI, argues that firms are motivated to invest abroad because they have superior exploitable assets that are not available to the local firms (Caves, 1974; Buckley & Casson, 1976; Rugman 1981). The theory suggests that these firm specific assets should compensate for the higher costs induced by operating in a foreign environment and FOFs should display higher productivity and profitability levels compared to DOFs.

Extant literature that has focused on studying the impact of foreign ownership on productivity has contradictory findings. Some of the studies find evidence showing that FOFs have higher productivity than DOFs (e.g. Kimura & Kiyota, 2007, for Japan; Yaşar & Paul, 2007, Ge & Chen, 2008, for China; Gkasis, 2009, for Greece), while others find that there is no such positive effect of foreign ownership (e.g. Globerman, Ries, & Vertinsky, 1994, for Canada; Howenstine & Zeile, 1994, for US; Zhang, Zhang, & Zhao, 2001, for China; Befretello & Sembenelli, 2006, for Italy). Some of the studies argue that parent firms permit the transfer of their firms specific assets to FOFs if how those assets are used is under their control through majority ownership (e.g. Chibber & Majumdar, 1999; Ramstetter, 1999). Eventually, they indicate that the level of foreign ownership shares may indirectly affect corporate performance through whether it permits the control of the firm specific assets. Ramstetter (1999), Djankov and Hoekman (2000), Dimelis and Louri (2004), Takii and Ramstetter (2005) and Taymaz and Yılmaz (2008) provide support for this argument and demonstrate a positive relationship between being majority foreign-owned and productivity. Studies that analyze the impact of foreign ownership on financial performance also have contradictory findings. There are studies that find evidence showing that FOFs have better financial performance than DOFs (e.g. Kimura & Kiyota, 2007; Kuntluru, Muppani, & Khan,

2008). On the other hand, there are also studies that find no relationship between foreign ownership and financial performance (e.g. Bertrand & Zitouna, 2005; Lee, 2008). However, the studies that analyze the effect of majority foreign ownership on financial performance find a positive impact (Chibber & Majumdar, 1999; Ramstetter, 1999).

In this study, I analyze the performance implications of foreign ownership for a large panel of firms in Turkey. The sample consists of 292 firms and is confined to the period of 2004-2008. I find that firms that are majority foreign-owned and wholly foreign-owned have higher labor productivity than DOFs. Additionally, WFOEs have higher labor productivity than majority FOFs. Although there is no effect of foreign ownership on pretax profit margin and return on equity, majority foreign-owned and wholly foreign-owned firms have higher capital productivity than DOFs. Therefore, we can say that majority foreign ownership and being a wholly foreign owned enterprise have positive effects on performance measures based on value added creation rather than profit. I additionally find that the duration of foreign ownership do not have a moderator affect on the relationship between foreign ownership and productivity variables. Eventually, I suggest that the transfer of firm specific assets to majority FOFs and WFOEs is realized in a certain period of time after the acquisition of shares by foreign the owners and the establishment of FOFs.

This thesis is organized as follows. Chapter 2 includes a review of the theoretical and empirical literature on comparative performances of FOFs and DOFs in terms of productivity and financial performance. Chapter 3 depicts the research objectives and the hypotheses of the study. Chapter 4 describes the data and the research methodology. Chapter 5 discusses the empirical results of the study and Chapter 6 concludes.

CHAPTER 2

LITERATURE REVIEW

Foreign Ownership and Corporate Performance

Internalization Theory of FDI (Caves, 1974; Buckley & Casson, 1976; Rugman 1981) states that direct foreign investors have certain firm-specific assets that are not available to the domestic competitors. These firm-specific assets can be tangible assets such as superior production processes and superior products, and intangible assets such as brand names, management know-how, marketing networks and technical knowledge of the employees, etc. Because firm specific assets are mostly intangible, a market may not exist for them and this will make it difficult for the firm to find a party for a licensing agreement. Therefore, the company will prefer to establish foreign based production facilities. The theory indicates that MNCs maximize profits by internalizing the intermediate markets of the firm-specific assets across national boundaries and exploiting these assets which compensate for high costs of operating in a foreign country. Intangibility characteristic of the assets enables the mobility of the asset with a low marginal cost of its use in another country.

FOFs are at a disadvantage relative to DOFs in host countries because of their inferior knowledge of business practices, consumer preferences, legal environment, etc. However, it is argued that firm specific assets of FOFs more than compensate for the disadvantages of operating in a foreign environment. Moreover, capital is cheap and labor is expensive in the developed countries. On the contrary, capital is expensive and labor is cheap in the developing world. With FDI, multinational corporations can combine cheap capital and cheap labor to improve their performance (Ertuna, 2008). As a result, FOFs are expected to enjoy higher productivity and better financial performance than the average firm in the host country.

Foreign Ownership and Productivity

To estimate the effect of foreign ownership on productivity, econometric models are used which are generally derived from the log-linear Cobb-Douglas production function. Measurement of productivity is generally done by labor productivity and it is usually calculated by the ratio of the value added to the number of employees. On the other hand, TFP, which is generally measured with the residual of the Cobb-Douglas production function in logarithmic form where value added is used as the output, is also used as a measure of productivity in some studies. Value added is the increase in wealth generated by the productive use of the firm's resources prior to its allocation among shareholders, debtholders, workers and government. The sum of the value added across all industries gives GDP in an economy. Net value added is calculated as the sum of gross wages, paid interest, paid rent and operating surplus. Gross value added is obtained by adding depreciation and indirect taxes less subsidies to net value added.

In the econometric models, certain firm specific factors (age, size, capital intensity, etc.) that are suspected to affect productivity are added as control variables in addition to the foreign ownership variable that is taken as the independent variable. Because ordinary least squares regression done on cross-sectional data do not take account of unobserved heterogeneity and simultaneity, recent studies generally use panel data models with firm fixed effects (to control for unobserved heterogeneity and time invariant determinants of productivity) and GMM estimators with panel data (to control for both unobserved heterogeneity and simultaneity). One advantage of panel data models is that they alleviate multicollinearity problems by creating more variability through combining variation across micro units with variation over time (Kennedy, 2003).

The empirical studies that analyze the effect of foreign ownership on productivity have contradictory findings. Some of them find evidence supporting a positive effect of being a FOF on productivity (e.g. Doms & Jensen, 1998, for US; Blomström & Sjöholm, 1999 for Indonesia; Girma, Greenway, & Wakelin, 2001, for UK; Griffith, Simpson, & Windmeijer, 2001, for UK; Harris, 2002, for UK; Kimura & Kiyota, 2007, for Japan; Yaşar & Paul, 2007, for Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic; Ge & Chen, 2008, for China; Gkasis, 2009, for Greece), while others find that there is no such positive effect (e.g. Globerman, Ries, & Vertinsky, 1994, for Canada; Howenstine & Zeile, 1994, for US; Zhang, Zhang, & Zhao, 2001, for China; Befretello & Sembenelli, 2006, for Italy). Ito (2004) provides evidence showing that there is a positive effect of being foreign-owned on productivity in the upper-productivity range in Thailand.

Konings (2001), Barrios and Strobl (2002) and Khawar (2003) find a positive relationship between percentage of shares held by foreign-owners and productivity. Padibandla and Sanyal (2002) find that there is no relationship between the two variables. Aitken and Harrison (1999) demonstrate that the degree of foreign ownership has a positive relationship with productivity, but this relationship is robust only for small enterprises. Greenaway, Guariglia, and Yu (2009) analyze whether there is a nonlinear relationship between degree of foreign ownership and productivity and provide evidence that shows a U-shaped pattern.

Dimelis and Louri (2004) and Takii and Ramstetter (2005) demonstrate a positive relationship between being majority foreign-owned (where the parent firm can exercise effective control) and productivity. Ramstetter (1999) provides evidence showing that FOFs have higher labor productivity than DOFs. Moreover, majority FOFs have higher labor productivity than minority FOFs. Djankov and Hoekman (2000) demonstrate that there is a positive effect being a majority FOF rather than being a JV on sales growth. Takii (2004)

find that wholly foreign-owned plants have higher productivities than other foreign-owned plants in Indonesia. Blomström and Sjöholm (1999) find that both minority and majority foreign ownership has a significantly higher effect on productivity than domestic ownership. On the other hand, Smith, Hansen, Eriksson, and Madsen (2004) provide evidence showing that being a WFOE do not have a higher effect on productivity than not being a WFOE in Denmark.

Bhaumik et al. (2007) argue that JVs with a foreign partner cannot have a technological superiority over domestic firms. They state that MNCs prefer to establish JVs with domestic firms to learn about the business environment and to develop business relationships. After reaching their targets, MNCs generally dissolve the JVs and buy out the stake of the domestic group or establish a WFOE. Therefore, MNCs do not have any motivation to transfer their technologies to the JVs. Ramachandran (1993) provides evidence supporting this argument. He finds that WFOEs receive greater technology transfer from the parent than the JVs.

Bhaumik et al. (2007) also suggest that MNCs generally use their foreign affiliates in the developing countries for two purposes: producing unsophisticated inputs for their products, and producing and selling their products that are in the decline stage in the product cycle. In both cases, we do not expect that the technology transferred from the parent will be superior. Mansfield and Romeo (1980) find that the mean age of the technologies transferred to the affiliates in the developing countries (10 years) is higher than the mean age of technologies transferred to the developed countries (6 years).

The extent of technology transfer to a foreign affiliate and whether high value-adding activities are performed in the affiliate also depends on why a country is selected for FDI and what role the foreign affiliate will have in the MNC's value added channel (Vahter, 2004). If the reason for the selection of the country is lower factor costs, then it is highly probable that

high value-adding activities like R&D will not be performed in that affiliate and the extent of technology transfer will be low.

Globerman et al. (1994) show that although productivity is higher for FOFs in Canada, this productivity advantage is caused by higher capital intensity and larger firm size (which allows a firm to realize scale economies), not foreign ownership.

Davies and Lyons (1991) suggest that FOFs can have higher productivity because they are concentrated in high productivity industries. Therefore, productivity comparisons should control for industry differences. Davies and Lyons also argue that productivity differences can be the result of transfer pricing of foreign affiliates which artificially inflates measured productivity.

Several studies suggest that productivity comparisons between FOFs and DOFs should control for differences in R&D intensity and innovativeness of the firms. It is generally expected that R&D in the affiliates just facilitates implementation of technology generated by the parent firm, and adaptation and modification of technological assets in response to demand conditions. Because major R&D activities are expected to be concentrated in the parent firm, it is argued that we should not expect a higher R&D intensity and innovation intensity for FOFs than DOFs. However, there are a number of studies that shows that FOFs are more R&D intensive and are more likely to introduce innovations. Baldwin and Gu (2005) indicate that FOFs have higher R&D intensity and are more likely to perform R&D on an ongoing basis in Canada. Sadowski and Sadowski (2006) find evidence supporting that FOFs are more innovative and they are more likely to introduce imitative as well as real innovations compared to domestic firms in the Netherlands. Cantwell (1995) and Cantwell and Janne (1999) indicate that FOFs can even utilize the local expertise gained to develop innovations that are entirely new to the firm. Frenz and Ietto-Gillies (2007) find that companies that belong to an MNC are more likely to exhibit innovation propensity and engage in innovation

activities on a continuous basis. Balcet and Evangelista (1994) demonstrate that although innovation intensity is higher for FOFs in Italy, this advantage is caused by concentration in science-based industries and larger size. Additionally, Ebersberger and Lööf (2005) find that the tendency to engage in R&D and innovation activities does not differ between FOFs and DOFs in the Nordic region.

Rasiah and Malakounthu (2009) analyze the determinants of productivity for FOFs and DOFs in Malaysia and find that the higher coefficient of technological intensity for DOFs compared to that of the FOFs shows that productivity in local firms is driven much more from in-house technological effort than in foreign firms who can have access to technology from their parents. Size has a negative coefficient for DOFs suggesting that smaller local firms were more productive than larger ones. Additionally, export intensity is positively related with productivity in DOFs.

A major concern of some of the studies in the literature is that the higher productivity of FOFs can be the result of the cherry-picking of above average productivity firms by foreigners in M&As. Thus, comparing the productivities of FOFs and DOFs can be misleading. These studies try to find out whether foreign firms tend to cherry pick the most productive firms and whether foreign acquisitions have a positive effect on the productivity of acquired firms. Gioia and Thomsen (2004) find that foreign firms tend to acquire firms with lower productivity than domestic acquirers. On the other hand, Salis (2008) demonstrate that foreign firms tend to cherry pick the most productive firms in Slovenia and there is no effect of foreign acquisitions on the productivity of the Slovenian firms. Arnold and Javorcik (2005), Karpaty (2007) and Girma and Görg (2007) find that there is a positive effect of foreign acquisition on productivity in Indonesia, Sweden and UK respectively. Arnold and Javorcik indicate that foreign acquisitions also promote the integration of plants into the global economy through increased export and import intensity in Indonesia. Karpaty

demonstrate that productivity improvement starts between 1-5 years post acquisition in Sweden. Girma and Görg provide evidence showing that the productivity improvement is predominantly due to technical efficiency rather than scale effect.

Conyon (2002) analyzes domestic and foreign acquisitions in UK and find that being a foreign acquired firm has a significantly higher effect on productivity than being a domestically acquired firm. Bertrand and Zitouna (2005) find that both domestic acquisitions and foreign acquisitions improve the productivity of the acquired firms. However, productivity gains are stronger for foreign acquisitions.

A summary of the recent empirical studies that analyze the relationship between foreign ownership and productivity is given in Table 1.

Table 1. Relationship between Foreign Ownership and Productivity (Summary of Papers Reviewed)

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Barrios and Strobl (2002)	the relationship between degree of foreign ownership and productivity	2100 firms in Spain (1990-1998)	Multiple regression with panel data	a firm is a FOF if foreign owner has $\geq 10\%$ of equity	TFP ²	% of shares held by foreign owners	Share of sales of FOFs in total industry sales (proxy for foreign presence), industry dummies, time dummies	Degree of foreign ownership has a positive relationship with productivity.
Canyon et al. (2002)	the relationship of foreign acquisitions with productivity	331 domestic and 129 foreign acquisitions in UK (1989-1994)	Multiple regression with panel data		Output per worker ¹	Dummy for foreign acquisitions, dummy for domestic acquisitions	Capital intensity, time dummies	Being a foreign acquisition has a significantly higher effect on productivity than being a domestic acquisition.
Harris (2002)	the relationship between foreign ownership and productivity	289, 210, 347, 357 firms from pharmaceuticals, electronic data processing equipment, aerospace and miscellaneous food industries respectively in UK (1974-1995)	GMM estimator with panel data (weighted system estimates, done separately for each industry)		Gross output ¹	Dummy for US ownership, dummy for EU ownership, dummy for Old Commonwealth ownership, domestic ownership dummy	Gross output lagged one period, capital input, capital input lagged one period, labour input, labour input lagged one period, intermediate inputs, intermediate inputs lagged one period, time dummies	There is a positive effect being foreign-owned rather than domestically-owned on productivity.
Khawar (2003)	the relationship between foreign ownership and productivity	2362 firms in Mexico (1991)	Multiple regression with cross-sectional data	a firm is a FOF if foreign owner has $\geq 5\%$ of equity	Labor productivity	Share of a firm's foreign assets in total assets, share of foreign assets in the industry's total assets	Capital intensity, size, exports, Herfindahl Index, the tariff on exports as a measure of protection, industry dummies	Foreign ownership has a positive relationship with productivity.
Dimelis and Louri (2004)	the relationship between degree of foreign ownership and productivity	3742 firms in Greece (1997)	Multiple regression with cross-sectional data		Net sales/number of employees ¹	% of shares held by foreign owners, majority foreign ownership dummy, minority foreign ownership dummy, domestic ownership dummy	Capital intensity, total assets (proxy for size), debt to equity ratio, working capital/total assets, dummy variable for having less than 50 employees, industry dummies	There is a positive effect being majority foreign-owned rather than domestically-owned on productivity.

Table 1. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Gioia and Thomsen (2004)	whether foreign buyers or domestic buyers acquire better performing firms (Hypothesis: Firms acquired by foreign buyers have lower financial performance than firms that are acquired by domestic buyers [because of the information asymmetries that are magnified for international acquisitions])	2760 acquisitions in Denmark (1990-1997)	Logistic regression with cross-sectional data		Binary variable of international acquisition (=1 if the firm is acquired by a foreign buyer, =0 if the firm is acquired by a domestic buyer)		Age, TFP ⁴ , total assets, net sales/total assets, debt/total assets, market share, profit margin, year dummies, industry dummies	Foreign firms tend to acquire firms with lower productivity.
Ito (2004)	the relationship between foreign ownership and productivity (Hypothesis: Foreign ownership has a positive relationship with productivity)	8952 and 3974 plants from automobile industry in Thailand (1996 and 1998 respectively)	Quantile regression with cross-sectional data (for 1996 and 1998)	a plant is a foreign-owned one if foreign owner has ≥ 10% of equity	Labor productivity ¹ , TFP ⁴	Foreign ownership dummy, domestic ownership dummy	For labour productivity: Capital intensity, ratio of non-production workers to production workers, age, dummy for exporting, dummy for importing, output of the plant, dummy for size (=1 if the output is 25 million baht or more, =0 otherwise), industry dummies. For TFP: age, dummy for exporting, dummy for importing, output of the plant, dummy for size (=1 if the output is 25 million baht or more, =0 otherwise), industry dummies.	Foreign ownership has a significantly higher effect on productivity than domestic ownership in the upper-productivity range.
Takii (2004)	the relationship between foreign ownership and productivity	16682 plants in Indonesia (1995)	Multiple regression with cross-sectional data		Value added ¹	Dummy for being a wholly foreign-owned plant, majority foreign ownership dummy, minority foreign ownership dummy, dummy for being a recently established foreign-owned plant, dummy for domestic ownership	Capital stock divided by the average of all plants, number of employees divided by the average of all plants, output/average output for industry (proxy for relative size), export intensity divided by industry average, imports/total materials costs divided by industry average (as a proxy for import intensity), dummy variable for recent foreign takeovers of locally owned plants, industry dummies, time dummies	Wholly foreign-owned plants have higher productivities than other foreign-owned plants. Relatively new foreign-owned plants have relatively low productivity levels.

Table 1. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Javorcik and Arnold (2005)	the effect of foreign acquisition on productivity	185 acquisitions in Indonesia (1983-1996)	Propensity score matching to create an appropriate control group of non-acquired firms, difference-in-difference regression	a firm is a FOF if foreign owner has $\geq 20\%$ of equity	TFP ² , export intensity, imported inputs/total inputs (proxy for import intensity)		causal effect of foreign acquisition	Foreign acquisitions improve the productivity of the acquired plants. Foreign acquisitions also promote the integration of plants into the global economy through increased export intensity and import intensity.
Takii and Ramstetter (2005)	the relationship between degree of foreign ownership and productivity	plants in Indonesia (1975-1985, 1986-1991, 1992-1994, 1995-1997, 1998-1999 and 2000)	Multiple regression with cross-sectional data (averages for time periods are taken)	a plant is a foreign-owned one if foreign owner has $\geq 10\%$ of equity	Labor productivity ¹	Majority foreign ownership dummy, dummy variable for being heavily foreign-owned, minority foreign ownership dummy, domestic ownership dummy	electric power consumption/number of employees (proxy for capital intensity), dummy variable for output of plant compared to the industry's average output (= if larger, =0 otherwise), time dummies	Being heavily foreign-owned and majority foreign-owned have a significantly higher effect on productivity than domestic ownership. Being minority foreign-owned do not have such an effect.
Benfretello and Sembenelli (2006)	the relationship between foreign ownership and productivity	2026 firms in Italy (1992-1999)	System GMM estimator with panel data		Output ¹	Foreign ownership dummy, domestic ownership dummy	Output lagged one period, capital, capital lagged one period, labour, labour lagged one period, materials, materials lagged one period, industry dummies, time dummies	Foreign ownership do not have a significantly higher effect on productivity than domestic ownership.
Girma and Görg (2007)	the effect of foreign acquisition on productivity	269 acquisitions in electronics industry and 97 acquisitions in food industry in UK (1981-1994)	Productivity growth decomposition into technology and scale effects, propensity score matching to create an appropriate control group of non-acquired firms, difference-in-difference regression		TFP growth ¹ , technical change, scale effect		causal effect of foreign acquisition, plant size, age, industry dummies, time dummies	Foreign acquisitions improve the productivity of the acquired UK firms. The positive impact of acquisitions is essentially due to improvements in technical efficiency.

Table 1. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Hale and Long (2006)	whether there is a difference between FOFs and DOFs in terms of productivity	1500 firms in China (2001)	T-test on cross-sectional data	a firm is a FOF if foreign owner has $\geq 5\%$ of equity	TFP ²			FOFs have higher TFP.
Karpaty (2007)	the effect of foreign acquisition on productivity (Hypothesis: Cherry picking hypothesis [more productive domestic firms are acquired])	311 acquisitions in Sweden (1990-1999)	Propensity score matching to create an appropriate control group of non-acquired firms, difference-in-difference regression	a firm is a FOF if foreign owner has $>50\%$ of equity	TFP ³		Treatment status dummy (=1 for firms that is acquired sometime during the period, =0 otherwise), number of employees (proxy for size), event dummy that may affect both the control and treatment groups, R&D expenditures, region dummies, industry dummies, time dummies	Foreign acquisitions improve the productivity of the acquired firms. This productivity change starts between 1–5 years post acquisition. Cherry picking hypothesis is rejected.
Kimura and Kiyota (2007)	the relationship between foreign ownership and productivity growth	22000 firms in Japan (1994-1998)	Multiple regression on panel data	a firm is a FOF if foreign owner has $\geq 10\%$ of equity	TFP growth ⁵ , labor productivity growth	Foreign ownership dummy, domestic ownership dummy	Capital intensity, number of domestic regular workers, age, R&D intensity, value added productivity, ROA, ROE, average wage, industry dummies, time dummies	There is a positive effect being foreign-owned rather than domestically-owned on productivity growth.
Yaşar and Paul (2007)	the relationship between foreign ownership and productivity	66, 55, 57, 85 and 66 firms from Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic respectively (2002)	Multiple regression with cross-sectional data	a firm is a FOF if foreign owner has $\geq 10\%$ of equity	Labor productivity ¹ , TFP ²	Foreign ownership dummy, domestic ownership dummy	number of employees (proxy for size), country dummies, industry dummies	There is a positive effect being foreign-owned rather than domestically-owned on productivity.

Table 1. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Rasiah and Malakounthu (2009)	the determinants of productivity for FOFs and DOFs	110 electronics firms in Malaysia (2003)	Multiple regression with cross-sectional data (run separately for FOFs and DOFs)	a firm is a FOF if foreign owner has >50% of equity	Labor productivity		Size, technological intensity (represents human resources practices, R&D practices and process technology practices), export intensity, average monthly wage, age, industry dummies	The higher coefficient of technological intensity in DOFs compared to the FOFs shows that productivity in local firms is driven much more from in-house technological effort at host-sites than in foreign firms who can access technology from their parent plants. Size has a negative coefficient for DOFs suggesting that smaller local firms were more productive than larger ones. Export intensity is positively related with productivity in DOFs.

R&D Intensity: R&D expenditures/Total Sales

Export Intensity: Exports/Net Sales

Labor productivity: Value Added/Number of employees

Capital Intensity: Book value of capital stock/Number of employees

¹The equation is derived from the log-linear Cobb-Douglas production function.

²TFP is the the residual of the Cobb-Douglas production function in logarithmic form.

³TFP is the residual of the translog production function.

⁴The Tornqvist-Theil translog index approach is applied for the measurement of TFP.

⁵TFP is estimated with multilateral TFP index number formula.

Foreign Ownership and Financial Performance

Internalization theory suggests that firm-specific advantages may compensate for the higher costs of doing business abroad and assist FOFs to display superior financial performance. Moreover, FOFs are expected to have lower costs as a result of economies of scale because they are larger than DOFs. Also they can create more flexibility in their activities and lower their costs. Access of FOFs to the international marketing networks of MNCs facilitates better export performance (Ramstetter, 1999; Ngoc & Ramstetter, 2004). Therefore, they may operate more profitably on a larger scale (Globerman et al, 1994).

In the empirical studies that analyze the relationship between different foreign ownership variables and financial performance, econometric models are derived by the addition of certain control variables that are suspected to affect financial performance. Recent studies use panel data models with firm fixed effects and GMM estimators with panel data.

Kimura and Kiyota (2007, for Japan) and Kuntluru et al. (2008, for India) provide evidence that shows that there is a positive relationship between foreign ownership and financial performance. Barbosa and Louri (2005) find such an affect only for firms in the upper quantiles of gross profits in Portugal and Greece.

Kimura and Kiyota (2007) find that FOFs have higher return on assets and return on equity than DOFs in Japan. FOFs also achieve faster growth in terms of these variables. Kimura and Kiyota also find that foreign investors invest in firms that may not be immediately profitable. But they select the firms that are potentially the most profitable in the future.

Empirical studies that analyze the relationship between percentage of shares held by foreign owners and financial performance have contradictory result. Shapiro (1983) finds a positive relationship between the two variables in Canada. Pawlik (2005) demonstrates that the relationship between degree of foreign ownership and financial performance is positive in

the expansion stage, but it is negative in the uncertainty and maturity stages in Poland. Ramaswamy, Gomes, and Veliyath (1998) provide evidence showing that the relationship between degree of foreign ownership and financial performance approximates a U shaped curve in India. On the other hand, Greenaway et al. (2009) find an inverted U shaped pattern and show that JVs are the top performers in China. Zeitun and Tian (2007) and Lee (2008) demonstrate that there is no relationship between degree of foreign ownership and financial performance in Jordan and in Korea.

Chibber and Majumdar (1999) find that there is a positive effect being majority foreign-owned on financial performance. Ramstetter (1999) provide evidence showing that heavily and wholly FOFs have higher profit margins than other groups of FOFs in Indonesia.

Several studies argue that the superior performance of FOFs might be due to their choice to operate in high profitability industries (Saunders, 1982; Benfratello & Sembenelli, 2006). Daems and Van de Weyer (1993) find that return on assets and return on equity of FOFs are higher than those of DOFs in Belgium. They also demonstrate that the difference between FOFs and DOFs in terms of financial performance is lower within industries. This means that foreign owners invest in industries that have better financial performance.

FOFs are also concentrated in sectors where advertising intensity is high. Morgan and Wakelin (2003) suggest that firm-specific assets such as brand names and innovative products increase the advertising intensity of FOFs. As a result, advertising intensity is seen as an important factor that may positively affect the performance of FOFs.

Bellak (2004) indicates that higher labor productivity that results from higher capital intensity can cause higher profitability in FOFs. He adds that profit shifting by MNCs to understate the profits with the purpose to minimize the tax burden may make the profits of foreign affiliates unreliable.

Shleifer and Vishny (1986) indicate that foreign owners tend to be large shareholders, who can internalize the costs of monitoring and tend to devote greater efforts to monitoring. Therefore, it is expected that FOFs incur lower agency costs (Boardman, Shapiro and Vining, 1997). Khanna and Palepu (1999) find that foreign investors serve an important monitoring function in India and the incentive of managerial discretion, shirking and perquisites tends to decrease with an increase in foreign ownership. Eventually, this has a positive effect on the performance of the firm. Boardman et al. (1997) find that performance advantage of FOFs over DOFs diminishes when they control for differences in agency costs. Anderson, Jandik and Makhija (2001) show that foreign investors prefer to invest in firms where domestic insiders do not control large block of shares so that they can exert influence on corporate governance.

Mata and Portugal (2002) analyze whether foreignness accounts for significant differences in the survival of new FOFs and DOFs in Portugal and find that the two groups of firms do not exhibit different chances of survival. Pan and Chi (1999) demonstrate that survival rate of WFOEs did not differ from those of JVs in China. On the other hand, Li and Guisinger (1991) find that FOFs encounter business failures (filing for bankruptcy protection, being involuntarily liquidated or ceasing operations due to poor financial performance) less often than DOFs in US.

Fosfuri and Motta (1999) argue that laggard MNCs may undertake FDI in the countries from where they can benefit from location specific knowledge such as technology. Affiliates established with this purpose may be unprofitable and costly, but profit from the application of the knowledge learned in the parent company and in the other affiliates may offset the costs. Thus, FDI becomes the source rather than the consequence of firm-specific advantages. Performance gaps will be reversed in such a situation. One finding supporting Fosfuri and Motta comes from Kogut and Chang (1991). Kogut and Chang find that during

the period 1976-1987, Japanese FDI to the US was concentrated in industries that were intensive in R&D and was mainly composed of JVs where Japanese would learn from the technological capabilities of the American firms.

Chari, Chen, and Dominguez (2009) examine the effect of foreign acquisitions on financial performance and find that foreign acquisitions improve the financial performance of the firms in US. On the other hand, Bertrand and Zitouna (2005) find that neither domestic acquisitions nor foreign acquisitions improve the financial performance of the acquired firms in France.

A summary of the recent empirical studies that analyze the relationship between foreign ownership and financial performance is given in Table 2.

Table 2. Relationship between Foreign Ownership and Financial Performance (Summary of Papers Reviewed)

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Mata et al. (2002)	whether foreignness accounts for significant differences in the survival of new FOFs and DOFs (Hypothesis: FOFs are less likely to exit during their early infancy)	1203 firms established in Portugal in 1983-1989	Semi-parametric hazard model		The hazard rate (the probability that a firm exits during 1983-1991, given that it has survived until the beginning of that period)	Dummy for >50% foreign ownership (dummy for $\geq 90\%$ foreign ownership), dummy for domestic ownership	Number of employees (proxy for size), limited liability dummy, the share of college graduates among the firm's labour force, Herfindahl Index, employment growth rate in the industry (proxy for industry growth), share of employment in new firms in the industry (proxy for entry into the industry), share of employment in FOFs in the industry (proxy for foreign presence), dummy for age group of the firm	FOFs and DOFs do not exhibit different chances of survival.
Gioia and Thomsen (2004)	whether foreign buyers or domestic buyers acquire better performing firms. (Hypothesis: Firms acquired by foreign buyers have lower financial performance than firms that are acquired by domestic buyers [because of the information asymmetries that are magnified for international acquisitions])	2760 acquisitions in Denmark (1990-1997)	Logistic regression with cross-sectional data		Binary variable of international acquisition (=1 if the firm is acquired by a foreign buyer, =0 if the firm is acquired by a domestic buyer)		Age, ROA, total assets, net sales/total assets, debt/total assets, market share, profit margin, year dummies, industry dummies	Foreign firms tend to acquire firms with lower financial performance.
Barbosa and Louri (2005)	the relationship between foreign ownership and financial performance	523 firms in Portugal (1992), 2652 firms in Greece (1997)	Quantile regression with cross-sectional data	A firm is a FOF if the foreign owner has $\geq 10\%$ of equity	ROA	Foreign ownership dummy, domestic ownership dummy	Industry growth rate (the average of annual rate of growth of employment in the industry over the past 3 years), the share of employees contained in the industry's four largest firms (proxy for industry concentration), the ratio of employment accounted for by FOFs to the total number of employees in the industry (proxy for the intensity of foreign firms in the industry), total number of employees (proxy for size), age, debt/total assets	Foreign ownership has a significantly higher effect on financial performance only for firms in the upper quantiles of gross profits.

Table 2. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Bertrand and Zitouna (2005)	the effect of acquisition on financial performance	371 acquisitions in France (1993-2000)	Propensity score matching to create an appropriate control group of non-acquired firms, difference-in-difference regression		EBITDA (Earnings before Interest, Taxes, Depreciation and Amortization)		Causal effect of acquisitions, causal effect of domestic acquisitions, causal effect of foreign acquisitions, vector of firm characteristics	Neither domestic acquisitions nor foreign acquisitions improve the financial performance of the acquired firms.
Pawlik (2005)	the relationship between degree of foreign ownership and financial performance (Hypothesis: Larger foreign control is related to higher profitability)	Industries in which 150 FOFs operate in Poland (1993-2002)	Multiple regression with panel data	A firm is a FOF if the foreign owner has $\geq 10\%$ of equity	ROS, ROE	Foreign equity share as a part of total equity in the industry (proxy for foreign control in the industry)	Share of real salaries in the number of employees in the industry, fixed asset expenditures/net sales in the industry, export intensity in the industry, total sales divided by the number of companies in the industry (proxy for scale economies), time dummies	The relationship between degree of foreign ownership and ROE is positive in the expansion stage, but it is negative in the uncertainty and maturity stages.
Kimura and Kiyota (2007)	the relationship between foreign ownership and financial performance	22000 firms in Japan (1994-1998)	Multiple regression with panel data	a firm is a FOF if the foreign owner has $\geq 10\%$ of equity	ROA growth, ROE growth	Foreign ownership dummy	Capital Intensity ² , age, number of domestic regular workers, R&D intensity, labour productivity, ROA, ROE, average wage, time dummies, industry dummies	Foreign ownership has a significantly higher effect on ROA and ROE growth than domestic ownership.
Zeitun and Tian (2007)	the relationship of equity ownership structure and financial performance (Hypothesis 1: Foreign ownership has a positive relationship with financial performance. Hypothesis 2: Institutional ownership has a positive relationship with financial performance)	59 firms in Jordan (1989-2002)	Multiple regression with panel data		ROA, ROE, Tobin's Q, market value of equity/book value of equity	% of shares held by foreign owners, % of shares held by largest five shareholders, % of shares held by government, % of shares held by institutions	total assets (proxy for firm size), age, debt to equity ratio, long term debt/total assets, debt/total assets, net income/capitalization, Herfindahl Index, industry dummies, time dummies	There is a positive relationship between ownership concentration and ROA and ROE. There is a negative relationship between government ownership and ROA and ROE. Foreign ownership and institutional ownership has a positive relationship with Tobin's Q.

Table 2. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Kuntluru et al. (2008)	the relationship between foreign ownership and financial performance (Hypothesis: Foreign	102 pharmaceutical firms in India (1998-	Multiple regression with panel data		ROA	Dummy variable is 1 if FDI exists, otherwise 0.	FDI dummy, export intensity, ratio of imports to total operating expenses, advertising intensity ² , age, quick ratio, sales growth, debt to equity ratio, capital turnover ratio.	Existence of FDI has a significantly higher effect on financial performance than its nonexistence.
Lee (2008)	the relationship of equity ownership structure and financial performance (Hypothesis 1: Ownership	579 firms in Korea (2000-2006)	Multiple regression with panel data		ROA	% of shares held by foreign owners, % of shares held by a	net sales (proxy for size), equity to total assets ratio, debt to equity ratio, quick ratio, beta coefficient of CAPM, inventory to total assets ratio, industry dummies, business	There exists an inverted U shaped relationship between ownership concentration and firm
Chari et al. (2009)	the effect of foreign acquisition on financial performance	259 acquisitions in US (1980-2007)	Propensity score matching to create an appropriate control group of non-acquired firms, difference-in-difference regression		ROA		causal effect of foreign acquisition	Foreign acquisitions improve the financial performance of the firms.
Greenaway et al. (2009)	the relationship between the degree of foreign ownership and financial performance	21582 firms in China (2000-2005)	Difference GMM estimator with panel data		ROA, ROS	% of shares held by foreign owners	Lagged dependent variable, debt/total assets, ratio of tangible fixed assets to total assets (proxy for collateral), total assets (proxy for size), dummy for whether the firm is an exporter or not, collateral ratio (tangible assets/total assets), time dummies, industry dummies	The relationship between foreign ownership and financial performance exhibits an inverted U-shaped pattern. Joint ventures are the top performers.

Table 2. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Love et al. (2009)	the determinants of the financial performance of foreign-owned plants and domestically-owned plants	1494 plants in Ireland (1994-2002)	Quantile regression with panel data		Profit (sales less the cost of materials, labour and capital inputs), Profit/Net Sales	Dummy variables representing foreign-owned plants with headquarters in the UK, US and elsewhere	Number of employees, vintage (years), capital investment per employee (proxy for capital intensity), percentage of staff with degree, export intensity, market share, Herfindahl Index, industry innovation intensity, dummy for introducing any new or improved product or process during the previous three years, proportion of plants' total sales derived from products newly introduced during the previous three years, industry dummies, location dummies, time dummies.	Financial performance of foreign-owned plants and domestically-owned plants depend on different factors. For foreign-owned plants, export intensity rather than domestic market share affects financial performance. Innovation is a competitive weapon for domestically-owned plants.

ROA: Return on Assets

ROE: Return on Equity

ROS: Return on Sales

Leverage Ratio=Total Liabilities/Total Assets

Quick Ratio:(Current Assets-Total Inventories)/Current Liabilities

R&D Intensity: R&D expenditures/Total Sales

Export Intensity: Exports/Net Sales

Advertising Intensity: Advertising Expenditures/Sales

Profit Margin: Net Profit/Net Sales

Comparative Performances of Foreign and Domestic Firms: Evidence from Turkey

Foreign Ownership and Productivity

There are a limited number of studies that analyze the relationship of foreign ownership and productivity in Turkey (see Table 3). In these studies, which use State Institute of Statistics data, it is found that there is a positive effect being foreign-owned rather than domestically-owned on productivity. Lenger and Taymaz (2006) find that FOFs are more innovative and more productive than DOFs and have a greater tendency to transfer technology from abroad (mostly from their parent companies). Yaşar and Paul (2007) find that degree of foreign ownership and international linkages (whether the plant imported machinery and equipment, and whether the plant acquired international technology through licensing) have a positive relationship with productivity. Taymaz and Yılmaz (2008) demonstrate that majority foreign ownership has a higher effect on productivity than domestic ownership.

Foreign Ownership and Financial Performance

To the best of my knowledge, there is only one study that analyzes the relationship of foreign ownership and financial performance in Turkey (see Table 4). Gürsoy and Aydoğan (2002) demonstrate that foreign ownership, which is in the form of 10% or more foreign share, has a higher effect on return on assets than domestic ownership. There are certain other studies that make a univariate comparison of the financial performances of FOFs and DOFs in Turkey. Karataş and Birgili (2004) find that FOFs have higher return on assets and return on sales than DOFs, although the two groups do not differ in terms of return on equity. Gündüz and Tatoğlu (2003) and Aydın, Sayım, and Yalama (2007) also find that in terms of return on assets,

Table 3. Relationship between Foreign Ownership and Productivity (Summary of Papers from Turkey)

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Lenger and Taymaz (2006)	whether foreign ownership has an association with technology transfer, innovativeness and productivity	State Institute of Statistics surveys. First survey covers the period 1995-1997 and second survey covers 1998-2000.	Logistic regression with panel data (for technology transfer and innovativeness) and multiple regression with panel data (for real output)	a firm is a FOF if foreign owner has $\geq 10\%$ of equity	technology transfer, innovativeness and real output ¹ . Binary variable of technology transfer (=1 if the firm transferred a technology through licence/know-how agreement, =0 otherwise), binary variable of innovation (=1 if the firm is innovative, =0 otherwise, innovation occurs when a firm implements a new or improved product or process)	Foreign ownership dummy	For innovativeness and technology transfer: market share of FOFs in the industry (proxy for horizontal spillovers), ratio of FOFs' R&D expenditures to total output in the province in which the firm operates, ratio of FOFs' R&D expenditures to total output in the industry, the proportion of firms' inputs produced by FOFs (proxy for backward linkages), proportion of firms' output used by FOFs (proxy for forward linkages), number of separations (quits and fires) from FOFs to the total number of employees in the industry (proxy for labour spillovers), R&D intensity, R&D intensity of firms operating in the same province, R&D intensity of the firms operating in the same industry, number of employees (proxy for size), industry dummies, time dummies. For productivity: electricity consumption, number of employees, inputs, depreciation allowances, real product wage (proxy for labour quality), ratio of skilled employees to total employees (proxy for labour quality), dummy for innovation, dummy for technology transfer, time dummies	FOFs are more innovative and more productive than DOFs, and transfer technology from abroad (mostly from their parent companies).
Yaşar and Paul (2007)	the relationship of degree of foreign ownership and international linkages with productivity	1556 plants in Turkey (1990-1996)	Quantile regression on panel data		Output ³	% of shares held by foreign owners	Capital, labour, materials, export intensity, dummy for whether imported any machine and equipment (proxy for international linkages), dummy for whether the plant purchased any international technology through licensing (proxy for international linkages), ratio of technical workers to total workers, ratio of administrative workers to total workers, ratio of female workers to total workers, advertising expenditures, size dummies (small, medium, large), industry dummies, time dummies	Degree of foreign ownership and international linkages have a positive relationship with productivity.

Table 3. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Taymaz and Yilmaz (2008)	the relationship between foreign ownership and productivity	approximately 30000 plant level observations in Turkey (1990-1996)	Multiple regression with panel data		Output ²	Majority foreign ownership dummy, minority foreign ownership dummy	Export intensity, share of imported machinery and equipment in total machinery and equipment stock, amount spent on imported license purchases/net sales, share of skilled labour in production, agglomeration at the provincial level, incorporated plant dummy, size dummies (measured by number of employees).	Unless foreign owners have the majority stake, foreign ownership do not have a significant relationship with productivity.

Export Intensity: Exports/Net Sales

Labour productivity: Value Added/Number of Employees

¹The equation is derived from the log-linear Cobb-Douglas production function.

²The equation is derived from the log-linear Cobb-Douglas production function estimated with Olley and Pakes

³The equation is derived from the translog production function.

Table 4. Relationship between Foreign Ownership and Financial Performance (Summary of Papers from Turkey)

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Gürsoy and Aydoğan (2002)	the relationship of equity ownership structure and financial performance	194 firms quoted in ISE (1992-1998)	Newey-West GMM estimator with panel data	a firm is a FOF if the foreign owner has \geq 10% of equity	ROA, ROE	Foreign ownership dummy, family ownership dummy, cross ownership dummy, government ownership dummy, , dummy for conglomerate affiliation	size, leverage ratio	Foreign ownership has a positive relationship with ROA. Government ownership has a negative relationship with ROA and ROE.
Gündüz and Tatoğlu (2003)	whether there is a difference between FOFs and DOFs in terms of financial performance	202 firms quoted to ISE (1999)	ANOVA and Kruskal-Wallis with cross-sectional data		ROA, ROE, Operating Profit Margin			FOFs have higher ROA. Two groups do not differ in terms of ROE and Operating Profit Margin.
Karataş and Birgili (2004)	whether there is a difference between FOFs and DOFs in terms of financial performance (Hypothesis:FOFs perform better than DOFs in terms of ROA, ROE and ROS)	24 randomly selected firms quoted in ISE (1997-2002)	T-test with 6 year averages	a firm is a FOF if the foreign owner has \geq 10% of equity	ROA, ROE and ROS			FOFs have a higher ROA and ROS. Two groups do not differ in terms of ROE.
Özler and Taymaz (2004)	whether there is a difference in the survival probabilities of FOFs and DOFs	11181 firms in Turkey (1983-1996)	Cox proportional hazard model	a firm is a FOF if the foreign owner has \geq 10% of equity	Binary variable (survival and exit)	% of shares held by foreign owners	Establishment level variables: Profit margin, number of employees (proxy for size), annual employment growth rate, capital intensity ¹ , subcontracted input share, subcontracted output share, technology transfer dummy, interest payments/net sales, share of imported machinery, R&D intensity, exporter dummy, export intensity, advertising intensity, market share of foreign establishments in the industry, entry rate in the industry, output growth rate of the industry, time dummies	FOFs and DOFs do not have different survival probabilities.

Table 3. continued

Author	Purpose is to Analyze ...	Sampling	Statistical Method	Definition of a Foreign-owned Firm (FOF)	Dependent Variable	Ownership variables	Independent Variables (other than the ownership variables)	Result
Aydin et al. (2007)	whether there is a difference between FOFs and DOFs in terms of financial performance (Hypothesis: FOFs perform better than DOFs)	300 firms quoted in ISE (2003 and 2004)	T-test with cross sectional data		ROA, ROE, Operating Profit Margin	Firms with foreign ownership levels 0%-100%, 25%-100%, 50%-100%		FOFs have higher ROA. Two groups do not differ in terms of ROE and Operating Profit Margin.
Bastı and Bayyurt (2008)	the relative efficiencies of FOFs and DOFs	185 firms quoted in ISE (2006)	Data envelopment to calculate the efficiency scores (outputs: gross profit and market value, inputs: operating expenses, number of employees and total assets) and t test with the efficiency scores	a firm is a FOF if the foreign owner has $\geq 10\%$ of equity	Efficiency scores (calculated with data envelopment methodology, gross profit and market value are taken as outputs and operating expenses, number of employees and total assets are taken as inputs)			FOFs are more efficient than DOFs.

JV: Joint Venture

WFOE: Wholly Foreign Owned Enterprise

ROA: Return on Assets

ROE: Return on Equity

ROS: Return on Sales

Leverage Ratio=Total Liabilities/Total Assets

R&D Intensity: R&D expenditures/Total Sales

Export Intensity: Exports/Net Sales

Advertising Intensity: Advertising Expenditures/Sales

Operating Profit Margin: Operating Profit/Net Sales

Profit Margin: Net Profit/Net Sales

Capital Intensity: Book value of capital stock/Number of employees

FOFs perform better than domestic firms. However, FOFs and DOFs do not differ in terms of return on equity and operating profit margin.

Bastı and Bayyurt (2008) apply data envelopment methodology to calculate the efficiency scores of FOFs and DOFs. In their application, gross profit and market value are taken as outputs and operating expenses, number of employees and total assets are taken as inputs. When the efficiency scores of FOFs and DOFs are compared, it is found that FOFs have higher scores.

Özler and Taymaz (2004) analyze whether there is a difference in the survival probabilities of FOFs and DOFs and find no difference in the survival probabilities of the two groups.

After reviewing the studies that analyze the relationship of foreign ownership and corporate performance in Turkey, we continue the thesis by explaining our research design and methodology.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Research Objectives and Hypothesis

In this study, I analyze whether there are performance gaps between FOFs and DOFs in terms of productivity and financial performance and whether different levels of foreign ownership have differing affects on performance outcomes. The firms that are analyzed are among the biggest 500 firms in Turkey. To the best of my knowledge, biggest 500 firms data provided by İstanbul Chamber of Industry has never been used to address my research questions.

A shortcoming of the limited number of studies on Turkey, caused by unavailability of data, is that they do not analyze the effect of different levels of foreign ownership on corporate performance. With biggest 500 firms data, we are able to focus on the relationship of both minority foreign ownership and majority foreign ownership with performance.

Teece (1981) suggest that firms possessing superior assets will prefer to retain tight control over foreign operations in order to protect the value of these assets. Chibber and Majumdar (1999) and Ramstetter (1999) state that parent firms will not permit the transfer of their firm specific assets to their foreign affiliates unless how those assets are used is under their control through majority ownership. Ramstetter (1999) argue that if they cannot control the use of the assets, there is the danger that the technologies can be sold to the third parties or products related to these technologies can be sold in certain markets to compete with the parent. Chibber and Majumdar (1999) demonstrate that technology transfer from the parent company is positively related to the degree of control of the foreign owner. In summary, unless foreign investors have the majority control over the company's decisions, they are not motivated to transfer the firm specific assets that will boost corporate performance.

Eventually, I expect to find that foreign ownership only in the form of majority ownership,

where the parent firm can exercise effective control, positively affects corporate performance in Turkey, following a number of other studies in the literature that supports my assertion (Chibber & Majumdar, 1999; Djankov & Hoekman, 2000, Dimelis & Louri, 2004; Takii & Ramstetter, 2005; Taymaz & Yilmaz, 2008).

Productivity and financial performance provide different gauges of corporate performance. Productivity shows the total economic value created by the capital and labor employed within the firm. On the other hand, financial performance is a measure of the return to the shareholder. Consequently, productivity and financial performance can both be affected by foreign ownership. I hypothesize that:

Hypothesis 1: There is a no relationship between minority foreign ownership and productivity.

Hypothesis 2: There is no relationship between minority foreign ownership and financial performance.

Hypothesis 3: There is a positive relationship between majority foreign ownership and productivity.

Hypothesis 4: There is a positive relationship between majority foreign ownership and financial performance.

Nitsch, Beamisch and Makino (1996) indicate that knowledge transfer is least costly in WFOEs and the more tacit, less teachable and more complex firm specific knowledge is, the more likely it will be transferred abroad via a WFOE. Marketing and technology intensive companies with greater reliance on difficult-to-transfer knowledge will prefer the wholly owned mode. Additionally, Moran (2001) demonstrates that in terms of proximity of technology and quality control procedures to the international frontier, rapidity in upgrading the technology and quality control procedures and the introduction of newer business practices and products, affiliates that are tightly integrated into the parent firm's strategy of

engagement in fierce international competition perform better than domestic market-oriented affiliates. Because WFOEs are more tightly linked with the parent firms than merely majority foreign owned firms, I hypothesize that:

Hypothesis 5: The effect of being a WFOE on productivity is higher than the effect of majority foreign ownership.

Hypothesis 6: The effect of being a WFOE on financial performance is higher than the effect of majority foreign ownership.

Because the level of foreign ownership shares may affect corporate performance, I hypothesize that:

Hypothesis 7: There is a positive relationship between the degree of foreign ownership and productivity.

Hypothesis 8: There is a positive relationship between the degree of foreign ownership and financial performance.

The Sample

My sample is composed of foreign-owned and domestically-owned private firms that are among the biggest 500 companies in Turkey. The empirical analyses will be conducted with panel data analysis techniques and the unbalanced panel covers the period of five years from 2004 to 2008. Financial data is provided by İstanbul Chamber of Industry and data on patents and trademarks are provided by Turkish Patent Institute.

In the sample, FOFs in which the foreign owners have the controlling interest are labeled as the majority FOFs. WFOEs are firms which have 100% foreign ownership. Minority FOFs are firms with foreign ownership of 10% or more but less than the controlling interest. Firms with majority domestic ownership (and certainly without a minority foreign ownership) are labeled as DOFs.

Firms included in the sample are chosen according to the criteria that the owner of the controlling interest has not changed from a domestic owner to a foreign owner and vice versa during 2001-2003 and 2004-2008 so that the effect of ownership change in the three years prior the analysis years and during the analysis years will be removed. For the same reason, firms whose minority interest is acquired by foreign owners during the same period are not included in the analysis.

After their establishment, firms can underperform the existing firms due to the lack of experience and knowledge about the market. It might take some time before firms fully overcome these obstacles. Therefore, the firms that are established during 2001-2008 are not included in the analysis.

Because outliers can distort any statistical test based on sample means and variances, the sample of firms is analyzed for outlier detection with univariate and multivariate detection procedures (Hair, Black, Babin & Anderson, 2009). The results of the multivariate methods applied are also analyzed to identify the observations that become outliers in that specific application.

In univariate detection, the cases that have standard scores of ± 2.5 or greater are selected as distinctive observations. In multivariate detection, the position of each observation is compared with the center of all observations through its Mahalanobis D^2 value. Observations that are identified as significantly different are selected as distinctive observations. The observations that are selected as distinctive by both the univariate and multivariate detection procedures are visually examined and the ones that are truly aberrant are labeled as outliers. As a result, I see that two DOFs are selected as outliers for each year for the period 2004-2008. The remaining sample is composed of 28 WFOEs, 23 majority FOFs, 14 minority FOFs, 12 firms with equal domestic and foreign ownership and 215 DOFs.

The distribution of my sample according to ownership type and industry is presented in Table 5.

Table 5. Distribution of the Sample according to Ownership Type and Industry

	DOF	WFOE	Majority FOF (excluding WFOEs)	Minority FOF	Equal Domestic and Foreign Ownership
Mining and Quarrying	3				
Food, Beverages and Tobacco	42	5	1	2	1
Textile, Wearing Apparel, Leather and	30				
Forest Products and Furniture	9	1			
Paper, Paper Products and Printing	7		1		2
Chemicals, Petroleum Products, Rubber	28	10	2	3	2
Non-Metal Mineral Products	20	1	4		1
Basic Metal	38		2	4	
Metal Products and Machinery	17	4	6	1	3
Automotive Industry	11	7	7	4	3
Other	3				
Electricity	7				
Total	215	28	23	14	12

Research Methodology

A Comparative Analysis of Productivity and Financial Performance of FOFs and DOFs

Before analyzing the effect of different levels of foreign ownership on corporate performance variables, I compare the productivity and financial performance of DOFs and groups of FOFs. For this purpose, I apply repeated measures ANOVA and repeated measures logistic regression. The SPSS 18.0 software package is used to conduct the analysis.

Variables that are found to affect group membership in previous research and variables that are intuitively selected and are thought to be logically related to predicting the groups are used as independent variables in logistic regression (Hair et al, 2009). In addition to a set of discriminating variable candidates, I take the corporate performance variables as independent variables and try to find out whether they do discriminate between DOFs and FOFs with

different levels of foreign ownership. Repeated measures ANOVA is also applied to the same independent variables.

Two of the financial performance variables that I use as an independent variable are:

- Pretax Profit Margin (PPM) = Net Profit before Taxes/Net Sales
- Return on Equity (ROE) = Net Profit before Taxes/Stockholders' Equity

The stakeholder view of the firm maintains that firms have stakeholders rather than just shareholders to account for (Donaldson & Preston, 1995). The groups that have a “stake” in the firm include shareholders, employees, customers, suppliers, lenders, government and society. The stakeholder view suggests that the value added, which is the increase in wealth generated by the productive use of the firm’s resources prior to its allocation to the stakeholders, is a more accurate measure of firm performance than accounting profit (Meek & Gray, 1988). Eventually, I also use capital productivity ratio as a financial performance measure.

- Capital Productivity (CP) = Gross Value Added/Total Assets

Gross value added is calculated as the sum of gross wages, paid interest, operating surplus, depreciation and indirect taxes less subsidies by İstanbul Chamber of Industry.

I additionally include labor productivity as an independent variable in the analysis.

- Labor Productivity (LP) = Gross Value Added/ Number of Employees (million YTL, 2004 prices. Inflation adjustment is done by calculating the change in wholesale price index, 2003=100)

Because FOFs are generally found to be larger in size compared to DOFs, a size variable is included in the model.

- Size = Total Assets (TA, million YTL, 2004 prices)

It is indicated that FOFs are more capital intensive than DOFs as a result of their access to the tangible assets of the foreign direct investors and have higher export intensity because of the access to the international marketing networks. Accordingly, I include capital intensity and export intensity variables in the analysis.

- Capital Intensity (CI) = Total Assets/Number of Employees (million YTL, 2004 prices)
- Export Intensity (EI) = Exports/Net Sales

Knowledge and resources of the parent firm can enable a FOF to innovate more easily and to yield a higher turnover from these innovations. As a result, FOFs can have a higher innovation tendency than DOFs. Innovation tendency of FOFs and DOFs is generally evaluated by whether the firm introduced new products and services or use processes that were technologically new or improved during a specified time period (Ebersberger & Lööf, 2005; Sadowski & Sadowski, 2006; Frenz & Ietto-Gillies, 2007). Because I do not have access to such kind of an information, I use patent intensity as a proxy for innovation tendency.

Patent Intensity (PI) = (Number of patents granted whose applications are made in the last four years/Total Assets)×1,000,000. (2004 prices)

The ratio shows us the number of applications per 1 million YTL of assets. For the calculation of the ratio, patent applications data is collected from the web site of Turkish Patent Institute which provides information on yearly applications.

Because FOFs generally adopt a non-price mode of rivalry based on product differentiation (Caves, 1974; Aswicahyono & Hill, 1995; Hill, 2003), they are expected to have higher marketing intensity and advertising intensity. To proxy for marketing intensity (generally measured with the marketing expenses/total operating expenses ratio) and

advertising intensity (generally measured with the advertising expenses/sales ratio), I include trademark intensity in my analysis.

Trademark Intensity (TI) = Number of trademarks registered whose applications are made in the last four years/(Total Assets×1,000,000). (2004 prices)

The ratio shows us the number of applications per 1 million YTL of assets. Data on trademark applications is also hand collected from the web site of Turkish Patent Institute.

I have three estimations where three different categories of foreign ownership are introduced as the dependent variable. The internal value of three categories of foreign ownership is 1 and the value for DOFs is 0. Logistic regression analysis is firstly done for all FOFs (including both majority FOFs and minority FOFs) and DOFs. Another analysis is done for majority FOFs and DOFs so that we can see whether the assumed advantages of majority FOFs are reflected in the independent variables. In the third estimation, I take WFOEs and DOFs as the groups that represent the dependent variable.

My repeated measures binary logistic regression model is in the following form:

$$\ln \left(\frac{P_{it}}{1-P_{it}} \right) = \beta_0 + \beta_1 PPM_{it} + \beta_2 ROE_{it} + \beta_3 CP_{it} + \beta_4 LP_{it} + \beta_5 TA_{it} + \beta_6 CI_{it} + \beta_7 EI_{it} + \beta_8 PI_{it} + \beta_9 TI_{it} + \sum \gamma_m ID_{im} \quad (1)$$

for $i=1, \dots, I$ and $t=1, \dots, T$. P_{it} is the probability of being a FOF (being a majority FOF and being a WFOE for the other two estimations) for participant i at time t and $1-P_{it}$ is the probability of being a DOF for participant i at time t .

Description of the variables used in logistic regression is given in Table 6.

Table 6. Description of the Variables Used in Logistic Regression Analysis

Dependent Variable		
Two groups categorical variable. The groups are: FOFs and DOFs Majority FOFs and DOFs WFOEs and DOFs		
Independent Variable	Name	Description
Pretax Profit Margin	PPI	Net Profit before Taxes/Net Sales
Return on Equity	ROE	Net Profit before Taxes/Stockholders' Equity
Capital Productivity	CP	Gross Value Added/Total Assets
Labor Productivity	LP	Gross Value Added / Number of Employees (million TL, 2004 prices)
Size	TA	Total Assets (million TL, 2004 prices)
Capital Intensity	CI	Total Assets/Number of Employees (million TL, 2004 prices)
Export Intensity	EI	Exports/Net Sales
Patent Intensity	PI	(Number of patent applications made in the last four years/Total Assets)×1,000,000. *(2004 prices)
Trademark Intensity	TI	(Number of trademark applications made in the last four years/Total Assets)×1,000,000. *(2004 prices)

* The ratio shows us the number of applications per 1 million TL of assets.

Foreign Ownership and Productivity

In this part of the paper, I analyze the affect of foreign ownership on productivity with econometric models. The econometric equations are derived from the following logarithmic form of the two input Cobb Douglas production function (Cobb & Douglas, 1928) augmented by other firm characteristics:

$$\ln Y_i = \gamma_0 + \alpha \ln K_i + \beta \ln L_i + \sum \gamma_j X_{ji} + e_i \quad (2)$$

where Y_i stands for value added, K_i and L_i stand for the capital and labor inputs of firm i , and e_i is an unobserved influence on firm productivity. α and β are the elasticities of output with respect to capital and labor. X_{ji} variables represent other firm characteristics that affect Y_i .

Equation (2) is transformed to obtain its labor intensive form:

$$\ln(Y_i/L_i) = \gamma_0 + \alpha \ln(K_i/L_i) + \sum \gamma_j X_{ji} + e_i \quad (3)$$

where (Y_i/L_i) is labor productivity.

Based on Equation (3), the following econometric equation is constructed for panel data:

$$\ln(Y_{it}/L_{it}) = \gamma_0 + \alpha \ln(K_{it}/L_{it}) + \sum \gamma_j X_{jit} + h_t + e_{it} \quad (4)$$

where h_t captures the time fixed effects.

When total assets proxy capital input and the number of employees proxies labor input, model 1 is in the following form:

$$\ln(Y_{it}/L_{it}) = \gamma_0 + \alpha \ln(CI_{it}) + \gamma_1 TA_{it} + \gamma_2 AGE_{it} + \gamma_3 EI_{it} + \gamma_4 PI_{it} + \gamma_5 TI_{it} + \sum \beta_m ID_{im} + \gamma_6 FOD_{it} + h_t + e_{it}, \quad (5)$$

where AGE is firm age. In this model, foreign ownership (including minority foreign ownership and majority foreign ownership) is introduced with the dummy variable FOD. The dummy is equal to 1 if the firm is a FOF and 0 otherwise. Because several studies argue that the superior productivity of FOFs might be due to their choice to operate in high productivity industries, industry dummies are also included in the estimation.

Firm size (TA) is expected to positively affect productivity because larger size allows realizing scale economies. Age is also expected to have a positive effect on productivity because of the effects of learning by doing. Since export intensive firms may have a stronger incentive to improve their productivity as a result of facing international competition and can learn about more sophisticated technologies through trading partners, export intensity (EI) is expected to have a positive relationship with productivity. Patent intensity (PI) should also positively affect productivity because patents are indicators of innovation. Trademarks are an

indicator of marketing activity and a product differentiation strategy. Eventually, trademark intensity (TI) should positively affect productivity.

To analyze the effect of minority foreign ownership and majority foreign ownership on productivity, another model, which is model 2, is estimated where we have two dummy variables. The first dummy is equal to 1 if the firm is a minority FOF, and 0 otherwise. The other dummy is equal to 1 if the firm is a majority FOF, and 0 otherwise. The dummy variable that is not included in the model is equal to 1 if the firm is a DOF, and 0 otherwise. My third model, which is labeled model 3, differs from the second model in the sense that another dummy variable is included which is equal to 1 if the firm is a WFOE, and 0 otherwise. In this model, the dummy that represents majority FOFs is 1 if the firm is a majority FOF, but not a WFOE. To test the impact of degree of foreign ownership on productivity, foreign ownership is introduced as a continuous variable ranging between 0 and 100% in model 4.

It is reasonable to assume that a progressive performance improvement can be seen as the number of years under foreign ownership increases because the transfer of proprietary assets does not happen all at once. Eventually, I also check whether the duration of foreign ownership can have a moderator effect on the relationship between foreign ownership and productivity.

I obtain estimates of the parameters of interest using the least squares panel data estimator with period fixed effects. Eviews 6.0 software package is used to conduct the analysis. Period fixed effects are included in the models because they are jointly significant. The Hausman test shows that estimation of the models with a random effects estimator is not suitable. Parks coefficient covariance estimator method (Period SUR) is used for the analysis which simultaneously allows period heteroskedasticity and general correlation of observations within a given cross-section.

The Central Limit Theorem (Polya, 1920) implies that with a large sample, the regression solution and associated tests will be robust to departures from normality. As a result, I do not perceive any problem that can arise from the violation of the normality assumption. I do not include any variable that causes multicollinearity in my estimation because presence of high multicollinearity among the independent variables inflates standard errors.

Foreign Ownership and Financial Performance

This part of the paper analyzes the affect of foreign ownership on financial performance with econometric models. Model 1 is in the following form:

$$Y_{it} = \gamma_1 CI_{it} + \gamma_2 TA_{it} + \gamma_3 DR_{it} + \gamma_4 AGE_{it} + \gamma_5 EI_{it} + \sum \beta_m ID_{im} + \gamma_6 FOD_{it} + h_t + e_{it}, \quad (4)$$

where Y_i stands for the financial performance measure, h_t captures the time fixed effects and e_i is an unobserved influence on financial performance. DR represents debt ratio (debt to total assets). In this model, foreign ownership (including minority foreign ownership and majority foreign ownership) is introduced with the dummy variable FOD.

I employ three different variables to measure financial performance: pretax profit margin (PPM), return on equity (ROE) and capital productivity (CP). Capital intensity (CI) is expected to have a positive relationship with financial performance. Firm size (TA) is expected to positively affect financial performance because larger size allows realizing scale economies. Chibber and Majumdar (1999) suggest that size may also reflect market power.

A part of the literature suggests that debt ratio (DR) has a negative impact on financial performance due to the debt overhang problem (Myers, 1977). On the other hand, there are studies that indicate that companies prefer debt financing when they anticipate higher returns (Champion, 1999; Hadlock & James, 2002). These studies suggest that because increasing debt would also increase bankruptcy and liquidation costs, only managers who expect good

future performance choose to issue debt. There are also studies that ascribe a signaling or disciplinary role for debt (Ross, 1977; Heinkel, 1982). Eventually, I do not prognosticate on whether debt ratio is positively or negatively related to financial performance.

Age is expected to have a positive effect on financial performance because of the effects of learning by doing. Exposure to foreign trade exerts competitive pressure on firms to attain superior performance. Firms have to be efficient and produce high quality output to be effective competitors (Chibber and Majumdar, 1999). Exposure to foreign trade also leads to a greater range of experiences and skills acquisition. These experiences and skills gained should lead to a superior performance as a whole. As a result, export intensity (EI) is expected to positively affect financial performance.

Labor productivity (LP) is expected to have a positive impact on financial performance. Patent intensity (PI) should also positively affect financial performance because patents are indicators of innovation. Trademarks are an indicator of marketing activity and a product differentiation strategy. Eventually, trademark intensity (TI) should positively affect financial performance.

To analyze the effect of minority foreign ownership and majority foreign ownership on financial performance, another model, which is model 2, is estimated where we have dummy variables for minority foreign ownership and majority foreign ownership. The third model, which is labeled model 3, also includes a dummy for being a WFOE. To test the impact of degree of foreign ownership on financial performance, foreign ownership is introduced as a continuous variable ranging between 0 and 100% in model 4.

I obtain estimates of the parameters of interest using the least squares panel data estimator with period fixed effects. Eviews 6.0 software package is used to conduct the

analysis. Period fixed effects are included in the models because they are jointly significant. Parks coefficient covariance estimator method (Period SUR) is used for the analysis.

CHAPTER 4

EMPIRICAL FINDINGS

A Comparative Analysis of Productivity and Financial Performance of FOFs and DOFs

Summary Statistics

Group statistics of DOFs, FOFs (including firms with foreign ownership of 10% or more) and majority FOFs for the independent variables that are included in logistic regression are presented for 2004 and 2008 in Table 7. Significance of mean differences of FOFs and DOFs and of majority FOFs and DOFs is also evaluated in a univariate context. Univariate normality of the variables is tested with normal probability plots, statistical tests based on Skewness and Kurtosis, and Shapiro Wilks test. Because the variables are all non-normally distributed, I apply Mann-Whitney U test, in addition to t test, to assess the equality of the central tendency of the populations in terms of the medians.

For 2004 and 2008, t tests show that compared to DOFs, FOFs have a higher mean value for:

- Capital Productivity

Mann-Whitney U tests show that compared to DOFs, FOFs have higher median values for:

- Return on Equity
- Capital Productivity
- Labor Productivity

On the other hand, compared to FOFs, DOFs have a higher median value for:

- Trademark Intensity

Table 7. Summary Statistics and Univariate Tests of Equality

	DOFs			FOFs (including majority FOFs and minority FOFs)			Majority FOFs			Tests of Equality for FOFs and DOFs		Tests of Equality for majority FOFs and DOFs	
	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.	Median	t test(Sig.)	Man Whitney U test (sig.)	t test(Sig.)	Man Whitney U test (sig.)
Pretax Profit Margin													
2004	0,07	0,10	0,05	0,09	0,09	0,07	0,09	0,10	0,06	0,087	0,034	0,189	0,182
2008	0,03	0,12	0,03	0,04	0,09	0,04	0,03	0,11	0,03	0,515	0,234	0,919	0,710
Return on Equity													
2004	0,17	0,33	0,13	0,21	0,28	0,20	0,20	0,29	0,20	0,368	0,015	0,633	0,119
2008	0,04	1,43	0,08	0,13	0,28	0,17	0,13	0,32	0,18	0,403	0,022	0,410	0,062
Capital Productivity													
2004	0,26	0,18	0,22	0,41	0,37	0,35	0,45	0,45	0,35	0,002	0,000	0,011	0,000
2008	0,22	0,17	0,20	0,36	0,56	0,27	0,42	0,70	0,30	0,039	0,000	0,067	0,001
Labor Productivity													
2004	0,10	0,14	0,05	0,14	0,26	0,08	0,16	0,32	0,08	0,157	0,000	0,192	0,002
2008	0,08	0,14	0,04	0,13	0,39	0,07	0,17	0,50	0,07	0,279	0,002	0,255	0,011
Size													
2004	288	529	143	306	324	199	244	245	151	0,891	0,439	0,286	0,802
2008	336	567	173	280	329	163	250	237	182	0,581	0,808	0,102	0,409
Capital Intensity													
2004	0,43	0,65	0,27	0,34	0,25	0,27	0,35	0,30	0,25	0,090	0,961	0,185	0,695
2008	0,43	0,56	0,26	0,35	0,34	0,24	0,36	0,39	0,23	0,205	0,806	0,344	0,596
Export Intensity													
2004	0,30	0,27	0,24	0,31	0,27	0,22	0,32	0,26	0,24	0,764	0,590	0,529	0,369
2008	0,32	0,26	0,26	0,37	0,28	0,34	0,39	0,28	0,38	0,231	0,283	0,138	0,159
Patent Intensity													
2004	0,002	0,010	0,000	0,005	0,015	0,000	0,003	0,011	0,000	0,182	0,478	0,616	0,544
2008	0,006	0,018	0,000	0,006	0,018	0,000	0,005	0,015	0,000	0,820	0,385	0,779	0,186
Trademark Intensity													
2004	0,076	0,164	0,011	0,069	0,185	0,003	0,050	0,151	0,000	0,753	0,014	0,328	0,003
2008	0,105	0,243	0,023	0,110	0,325	0,005	0,065	0,180	0,000	0,908	0,004	0,202	0,000

For 2004 and 2008, t tests also show that compared to DOFs, majority FOFs have a higher mean value for:

- Capital Productivity

Mann-Whitney U tests show that compared to DOFs, majority FOFs have higher median values for:

- Capital Productivity
- Labor Productivity

On the other hand, compared to majority FOFs, DOFs have a higher median value for:

- Trademark Intensity

Calculation of summary statistics and univariate tests of equality are not done for industry groups because statistical tests done with such small sample sizes of FOFs in each industry will have a low power.

Repeated Measures Univariate Tests of Equality

At this step, significance of the mean difference for the variables that are included in logistic regression is evaluated with repeated measures ANOVA for the panel of 2004-2008. Using the General Linear Model, repeated measures ANOVA enables us to analyze whether there is a between-subjects main effect of foreign ownership (whether the marginal means are different between FOFs and DOFs). In General Linear Model, between-subjects factors are modeled as fixed effects.

Before the analysis, univariate normality of the variables is tested with statistical tests based on Skewness and Kurtosis, and Shapiro Wilks test. Statistical tests show that the variables are all nonnormally distributed. Because repeated measures ANOVA test is

considered to be robust to the violation of the assumption of normality, we continue our analysis without making any data transformation to achieve normality.

The result of repeated measures ANOVA for each of the variables is presented in Table 8.

Table 8. Repeated Measures ANOVA Results

	Estimated Marginal Means			Repeated Measures ANOVA for DOFs and FOFs (sig.)*	Repeated Measures ANOVA for DOFs and majority FOFs (sig.)*
	DOFs	FOFs (including majority FOFs and minority FOFs)	Majority FOFs		
Pretax Profit Margin	0,06	0,08	0,07	0,358	0,730
Return on Equity	0,15	0,18	0,17	0,596	0,786
Capital Productivity	0,25	0,40	0,45	0,000	0,000
Labor Productivity	0,09	0,15	0,18	0,037	0,012
Total Assets	321	307	256	0,842	0,455
Capital Intensity	0,42	0,35	0,35	0,231	0,373
Export Intensity	0,31	0,33	0,36	0,542	0,229
Patent Intensity	0,004	0,005	0,004	0,327	0,688
Trademark Intensity	0,087	0,080	0,058	0,297	0,783

*test of between subjects effect

Repeated measures ANOVA shows that compared to DOFs, FOFs have a higher estimated marginal mean for:

- Capital Productivity (0.40 for FOFs and 0.25 for DOFs)
- Labor Productivity (0.15 for FOFs and 0.09 for DOFs)

Repeated measures ANOVA also show that compared to DOFs, majority FOFs have a higher estimated marginal mean for:

- Capital Productivity (0.45 for majority FOFs and 0.25 for DOFs)
- Labor Productivity (0.18 for majority FOFs and 0.09 for FOFs)

We see that repeated measures ANOVA results are different from cross-sectional ANOVA results in the sense that labor productivity is added as a discriminating variable.

Repeated Measures Binary Logistic Regression Analysis

When predicting the category of outcome on the basis of the independent variables, logistic regression assesses the explanatory power of a single independent variable while holding constant the explanatory power of the other independent variables. Consequently, binary logistic regression is a suitable method for testing whether two groups differ in terms of an independent variable while controlling for the other variables that affect both the independent variable and group membership. For example, univariate analysis can show that FOFs have higher labor productivity. However, size may have a positive relationship with productivity and FOFs have higher productivity because they are larger in size. In logistic regression, we have the chance to hold constant the explanatory power of size and see whether the two groups really differ in terms of labor productivity. We can also control for the industry effects in logistic regression. Eventually, to test group differences, logistic regression results are more reliable for us than the univariate analysis results.

Logistic regression analysis does not face the assumptions of multivariate normality and equal variance covariance matrices across groups. However, it assumes that there is little or no multicollinearity in the data. For Logistic Regression, VIF values above 2.5 indicate multicollinearity (Allison, 1999). Because none of the independent variables have a VIF value above this cutoff value, there is no problem of multicollinearity in the data.

Repeated measures binary logistic regression result for DOFs and FOFs is presented in Table 9. In the logistic regression application, I have identified two outliers using the plot of Pearson residuals versus the corresponding predicted values. Because the classification accuracy of the model that excludes the outliers is not higher than that of the model that is used to detect the outliers, I continue the analysis with the overall sample.

Table 9. Repeated Measures Logistic Regression Results for DOFs and FOFs

Dependent Variable: DOF=0, FOF=1			
Goodness of Fit Measures			
	Chi-Square	Sig.	
Hosmer and Lemeshow Test	20	0,01	
	Value		
QIC	1305		
QICC	1208		
Parameter Estimates			
	B	Wald Chi-Square	Sig.
Intercept	25,26	1149,46	0,000
Pretax Profit Margin	-0,31	0,04	0,832
Return on Equity	-0,04	0,06	0,799
Capital Productivity	-3	3,15	0,076
Labor Productivity	1,51	0,61	0,435
Total Assets	0,0003	1,39	0,238
Capital Intensity	-0,69	1,07	0,300
Export Intensity	-0,44	0,34	0,559
Patent Intensity	8,55	0,93	0,334
Trademark Intensity	-0,2	0,08	0,771

We see that Hosmer Lemeshow test is significant at 0.05 level indicating a significant difference in the distribution of the actual and predicted dependent values. Because we will not use the logistic regression model for prediction purposes, we can continue with the interpretation of the coefficients.

The estimated coefficient for only one independent variable, capital productivity, is statistically significant at 0.10 level. The coefficient indicates that everything held constant, the odds of being a FOF is decreased by a factor of 2 ($e^3 \times 0.10$) for a 10% increase in capital productivity. Because capital productivity has a negative association with the dependent variable, DOFs have higher capital productivity than FOFs. This result is contradictory to the result of repeated measures ANOVA, which says that FOFs have higher capital productivity than DOFs. I also find that FOFs and DOFs do not differ in terms of labor productivity, pretax

profit margin and return on equity. FOFs are also not larger in size and they do not have higher capital intensity, export intensity, patent intensity and trademark intensity than DOFs.

Repeated measures binary logistic regression result for DOFs and majority FOFs is presented in Table 10.

Table 10. Repeated Measures Logistic Regression Results for DOFs and majority FOFs

Dependent Variable: DOF=0, majority FOF=1			
Goodness of Fit Measures			
	Chi-Square	Sig.	
Hosmer and Lemeshow Test	16	0,04	
	Value		
QIC	971		
QICC	875		
Parameter Estimates			
	B	Wald Chi-Square	Sig.
Intercept	28,33	980,24	0,000
Pretax Profit Margin	0,82	0,28	0,598
Return on Equity	-0,04	0,06	0,814
Capital Productivity	-3,56	3,14	0,077
Labor Productivity	1,91	0,65	0,418
Total Assets	0,001	2,77	0,096
Capital Intensity	-1,04	1,91	0,167
Export Intensity	-0,74	0,73	0,394
Patent Intensity	18,33	2,18	0,140
Trademark Intensity	0,8	0,36	0,550

We again see that Hosmer Lemeshow test is significant at 0.05 level indicating a significant difference in the distribution of the actual and predicted dependent values.

The estimated coefficient for capital productivity and total assets is statistically significant at 0.10 level. Everything held constant, the odds of being a majority FOF is decreased by a factor of 3.51 ($e^{3.56} \times 0.10$) for a 10% increase in capital productivity. Because capital productivity has a negative association with the dependent variable, DOFs have higher

capital productivity than FOFs. This result is also contradictory to the finding of repeated measures ANOVA. On the other hand, everything held constant, the odds of being a majority FOF is increased by a factor of 0,10 ($e^{0,001} \times 0.10$) for a 10% increase in total assets. Because total assets have a positive association with the dependent variable, majority FOFs are larger in size than DOFs. I also find that DOFs and majority FOFs do not differ in terms of the other candidate discriminating variables.

Although it is found that FOFs and majority FOFs do not have better corporate performance than DOFs, I still expect that WFOEs are better than DOFs in terms of the performance variables. Repeated measures binary logistic regression result for DOFs and WFOEs is presented in Table 11.

Table 11. Repeated Measures Logistic Regression Results for DOFs and WFOEs

Dependent Variable: DOF=0, WFOE=1			
Goodness of Fit Measures			
	Chi-Square	Sig.	
Hosmer and Lemeshow Test	25	0,002	
	Value		
QIC	718		
QICC	636		
Parameter Estimates			
	B	Wald Chi-Square	Sig.
Intercept	27,713	618,78	0,000
Pretax Profit Margin	1,093	0,214	0,644
Return on Equity	-0,052	0,105	0,746
Capital Productivity	-3,022	1,615	0,204
Labor Productivity	1,178	0,12	0,729
Total Assets	0,001	1,74	0,187
Capital Intensity	-0,134	0,009	0,924
Export Intensity	-1	1,138	0,286
Patent Intensity	11,343	1,01	0,315
Trademark Intensity	0,469	0,155	0,694

This time, Hosmer Lemeshow test is significant at 1% level indicating a significant difference in the distribution of the actual and predicted dependent values.

We see that the estimated coefficient for none of the independent variables is statistically significant. Eventually, WFOEs do not have better financial performance and higher productivity than DOFs. WFOEs are also not larger in size and they do not have higher capital intensity, export intensity, patent intensity and trademark intensity than DOFs. We again see that Hosmer Lemeshow test is significant at 5% indicating a significant difference in the distribution of the actual and predicted dependent values.

Foreign Ownership and Productivity

In the previous section, we find that there is not a significant difference in the labor productivities of FOFs and DOFs, majority FOFs and DOFs, and WFOEs and DOFs. However, this does not mean that there is no effect of foreign ownership on productivity. In this section, I analyze the effect of foreign ownership on productivity with econometric models where I can also control for other firm characteristics.

Table 12 presents the coefficient estimates of my equations. Column 1 presents the result of the model with one dummy variable that represents foreign ownership (including both minority foreign ownership and majority foreign ownership). Column 2 shows the result of the model with two dummy variables where one of them represents minority foreign ownership and the other represents majority foreign ownership. Column 3 presents the model with three dummy variables where the dummies represent minority foreign ownership, majority foreign ownership and being a WFOE. Column 4 provides the model where foreign ownership is introduced as a continuous variable ranging between 0 and 100%.

I have identified four outliers for each model using the criteria of studentized residuals greater than ± 3.0 . Because excluding the outliers does not change the results of the significance tests, I continue my analysis with the overall sample.

Table 12. Panel Data Estimation Results: Effect of Foreign Ownership on Productivity

Dependent Variable: $\ln(Y_i/L_i)$				
Independent Variables	[1]	[2]	[3]	[4]
Constant	-2,08*** (-10,33)	-2,08*** (-10,24)	-2,08*** (-10,26)	-2,09*** (-10,38)
$\ln(K_i/L_i)$	0,73*** (15,90)	0,73*** (15,67)	0,74*** (15,76)	0,75*** (16,20)
Foreign Ownership Dummy	0,41*** (5,20)			
Minority Foreign Ownership Dummy	0,22 (1,50)		0,22 (1,50)	
Majority Foreign Ownership Dummy	0,47*** (4,96)		0,36*** (2,63)	
Dummy for being a WFOE	0,55*** (4,70)			
Foreign Holding (%)	0,005*** (5,36)			
Size	0,00005 (0,75)	0,00004 (0,61)	0,00004 (0,63)	0,00005 (0,84)
Age	0,003* (1,72)	0,003* (1,73)	0,003* (1,74)	0,003* (1,65)
Export Intensity	-0,25* (-1,83)	-0,27* (-1,95)	-0,27** (-1,98)	-0,26* (-1,89)
Patent Intensity	2,13 (0,99)	2,47 (1,03)	2,29 (0,95)	2,24 (0,30)
Trademark Intensity	-0,11 (-0,64)	-0,04 (-0,23)	-0,04 (-0,21)	-0,05 (0,77)
R^2	0,58	0,56	0,58	0,58
F-Statistic	79	73	69	79
Prob(F-Statistic)	0,000	0,000	0,000	0,000
Total panel (unbalanced observations)	1327	1327	1327	1327

All estimates include industry dummies.

The null hypothesis that each coefficient is equal to zero is tested. T-values in brackets.

*** Significant at 1% level.

** Significant at 5% level.

* Significant at 10% level.

The R^2 value of the first, third and fourth models, which is 0.58, shows that 58% of the variation in the dependent variable is explained by the regression models. Moreover, the second model explains 56% of variation in the dependent variable.

In all of the models, we see that the coefficient of capital intensity is significant at 0.01 level and the coefficients of age and export intensity are significant at 0.10 level. The positive coefficients for capital intensity and age are in line with the expectations. We see that a 10%

increase in capital intensity produces an approximately 8% increase in labor productivity in all of the models. The coefficients of age indicate that a 10% increase in age produces a 0.03% increase in labor productivity.

Counter to my expectation, export intensity is found to have a negative relationship with productivity. The coefficients of export intensity show that a 10% increase in export intensity produces an approximately 3% decrease in labor productivity. The negative relationship may be the result of the domination of the effects of lower markups caused by intense price competition in export markets over the effects of higher markups due to higher value-added productivity. Hiep and Nishijima (2009) indicate that in countries that have a comparative advantage in exporting labor-intensive commodities, lower labor costs may lower markups and export prices, which implies lower labor productivity.

The significantly positive coefficient of foreign ownership dummy (including both minority FOFs and majority FOFs) that is reported in column 1 indicates that there is a positive effect of being foreign-owned rather than domestically-owned on productivity. The coefficient shows that expected labor productivity of FOFs is 0.41 higher than the average of DOFs.

Column 2 shows that only majority foreign ownership dummy has a statistically significant coefficient, while minority foreign ownership dummy is not significant. This indicates that there is a positive effect of only being majority foreign-owned rather than domestically-owned on productivity. This result confirms Hypothesis 1 and Hypothesis 3. The coefficient for the majority foreign ownership dummy shows that expected labor productivity of majority FOFs is 0.47 higher than the average of DOFs.

The results presented in column 3 shows that majority foreign ownership dummy and dummy for being a WFOE have significant coefficients. This suggests that firms that are

majority foreign-owned and wholly foreign-owned have higher productivities than domestically-owned firms. Because the coefficient of the dummy of being a WFOE is higher than that of the dummy for being majority foreign-owned, we can say that the effect of being a WFOE is higher than the effect of majority foreign ownership. This result confirms Hypothesis 5. The coefficient for the majority foreign ownership dummy shows that expected labor productivity of majority FOFs is 0.36 higher than the average of DOFs and the coefficient for the dummy of being a WFOE indicates that expected labor productivity of WFOEs is 0.55 higher than the average of DOFs.

The results presented in column 4 indicate that the degree of foreign ownership has a positive relationship with productivity. This result confirms Hypothesis 7. The coefficient of the degree of foreign ownership shows that a 10% increase in the percentage of shares held by foreign owners produces a 0.05% increase in labor productivity.

Table 13 presents the coefficient estimates of the equations where I check whether the duration of foreign ownership, which is the number of years under foreign ownership, has a moderator effect on the relationship between foreign ownership and productivity. Addition of interaction effects creates multicollinearity in the model with three dummy variables where the dummies represent minority foreign ownership, majority foreign ownership and WFOEs. Eventually, I add interaction affects to my other three models and check whether they are significant.

We see that the interaction effect is insignificant in all three models. This indicates that the duration of foreign ownership does not change the form of the relationship between foreign ownership variables and productivity. No change in R^2 from the models without interaction effects also reflect nonsignificant moderator effects. Eventually, we see that a progressive performance improvement cannot be seen as the number of years under foreign

Table 13. Panel Data Estimation Results: Testing for the Duration of Foreign Ownership

Dependent Variable: $\ln(Y_i/L_i)$			
Explanatory Variables	[1]	[2]	[4]
Constant	-2,077*** (-10,33)	-2,08*** (-10,26)	-2,06*** (-10,38)
$\ln(K_i/L_i)$	0,74*** (15,94)	0,74*** (15,70)	0,75*** (16,19)
Foreign Ownership Dummy	0,33*** (2,94)		
Foreign Ownership Dummy \times Duration of	0,004 (1,03)		
Minority Foreign Ownership Dummy		0,01 (0,05)	
Minority Foreign Ownership Dummy \times		0,01 (1,20)	
Majority Foreign Ownership Dummy		0,47*** (3,25)	
Majority Foreign Ownership Dummy \times		0,0004 (0,07)	
Foreign Holding (%)			0,005*** (3,59)
Foreign Holding (%) \times Duration of Foreign			0,00002 (0,05)
Size	0,00004 -0,66	0,00004 (0,56)	0,00005 (0,83)
Age	0,003 (1,56)	0,003* (1,67)	0,003 (1,61)
Export Intensity	-0,25* (-1,86)	-0,28** (-1,98)	-0,26* (-1,89)
Patent Intensity	2,31 (1,07)	2,48 (1,03)	2,25 (1,04)
Trademark Intensity	-0,07 (-0,43)	-0,01 (-0,06)	-0,05 (-0,28)
R^2	0,58	0,57	0,58
F-Statistic	79	73	79
Prob(F-Statistic)	0,000	0,000	0,000
Total panel (unbalanced observations)	1327	1327	1327

All estimates include industry dummies.

The null hypothesis that each coefficient is equal to zero is tested. T-values in brackets.

*** Significant at 1% level.

** Significant at 5% level.

* Significant at 10% level.

ownership increases. Because there are only three FOFs that are in the age range of 5-10 in our sample and all other FOFs are older than 10 years, we can say that the transfer of

proprietary assets that positively affects productivity is realized in a certain period of time after the acquisition of shares by foreign owners and the establishment of FOFs.

In short, the findings provide support for the suggestion of the standard internalization theory (Caves, 1974; Buckley & Casson, 1976; Rugman 1981) which says that FOFs should benefit from the transfer of proprietary assets and display higher productivity compared to DOFs. However, I also find support for my argument that says that parent firms will permit the transfer of their firm specific assets to FOFs if how those assets are used is under their control through majority ownership. This result is in line with the findings of the previous studies (Ramstetter, 1999; Djankov & Hoekman, 2000; Dimelis & Louri, 2004; Takii & Ramstetter, 2005; Taymaz & Yilmaz, 2008) that demonstrate that the level of foreign ownership shares may affect productivity through whether it allows the control of the firm specific assets.

Table 14 provides a summary of the hypotheses and the results.

Table 14: Results of Hypothesis Tests on Foreign Ownership and Productivity

Hypothesis	Result
H1: There is a no relationship between minority foreign ownership and productivity.	Supported
H3: There is a positive relationship between majority foreign ownership and productivity.	Supported
H5: The effect of being a WFOE on productivity is higher than the effect of majority foreign ownership.	Supported
H7: There is a positive relationship between the degree of foreign ownership and productivity.	Supported

Foreign Ownership and Financial Performance

Logistic regression results show that DOFs and FOFs (also majority FOFs) do not differ in terms of two of my financial performance variables, which are pretax profit margin and return on equity. Capital productivity is found to be a discriminating variable and the coefficient of the variable in the logistic regression equation shows that DOFs have higher capital

productivity than FOFs (and majority FOFs). In this section, I analyze the affect of foreign ownership on the financial performance variables. Table 15 presents the coefficient estimates of the equations.

In line with my expectation, capital intensity is positively and significantly related to pretax profit margin. The coefficients of capital intensity shows that a 10% increase in the variable produces an approximately 0.02% increase in pretax profit margin in all of the models.

Capital intensity does not have a significant relationship with return on equity and it has a negative relationship with capital productivity. The coefficients of the variable shows that a 10% increase in capital intensity produces an approximately 2.7% decrease in capital productivity in all of the models. The negative effect of capital intensity on capital productivity may reflect the fact that an increase in capital productivity caused by a certain percentage of increase in total assets is followed by a lower percentage increase in gross value added.

Labor productivity is positively and significantly related to all three measures of financial performance. The coefficients of the variable shows that a 10% increase in the labor productivity produces a 1.1% increase in pretax profit margin, approximately a 1.4% increase in return on equity and a 13% increase in capital productivity. Size, age, export intensity, patent and trademark intensity do not have a significant effect on the performance measures.

I do not evaluate the coefficients of debt ratio because it has a highly significant result for a miniscule effect on pretax profit margin, return on equity and capital productivity.

We see that foreign ownership dummy (which represents both minority FOFs and FOFs) do not have a significant coefficient for pretax profit margin and return on equity. This means that there is no effect of being foreign-owned rather than domestically-owned

Table 15. Panel Data Estimation Results: Effects of Foreign Ownership on Financial Performance

Dependent Variable	Pretax Profit Margin				Return on Equity				Capital Productivity			
	[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]
Constant	-0,08** (-2,51)	-0,09** (-2,3)	-0,09** (-2,50)	-0,08** (-2,50)	-0,01 (-0,14)	-0,02 (-0,17)	-0,01 (-0,18)	-0,01 (-0,15)	0,36*** (7,02)	0,36*** (6,95)	0,36*** (6,93)	0,36*** (7,03)
Capital Intensity	0,02* (1,85)	0,02* (1,83)	0,02* (1,76)	0,02* (1,81)	0,003 (0,10)	0,004 -1,13	0,004 (0,13)	0,004 (0,12)	-0,27*** (-16,34)	-0,27*** (-16,11)	-0,27*** (-16,01)	-0,26*** (-16,29)
Size	0,000009 (1,00)	0,000007 (0,77)	0,000007 (0,74)	0,000008 (0,93)	-0,00002 (-0,71)	-0,00003 (-1,06)	-0,00003 (-1,06)	-0,00002 (-0,66)	-0,00002 (-1,55)	-0,00002 (-1,54)	-0,00002 (-1,52)	-0,00002 (-1,40)
Foreign Ownership Dummy	0,01 (0,62)				0,04 (1,52)				0,05*** (3,08)			
Minority Foreign Ownership Dummy		0,02 (1,00)	0,02 (0,99)			0,002 (0,05)	0,0002 (0,04)		-0,01 (-0,34)	-0,01 (-0,33)		
Majority Foreign Ownership Dummy		-0,008 (-0,58)	0,006 (0,30)			0,02 (0,57)	0,02 (0,34)		0,07*** (3,62)	0,05* (1,76)		
Dummy for being a WFOE			-0,02 (-1,05)				0,02 (0,50)				0,09*** (3,60)	
Foreign Holding (%)				-0,00003 (-0,22)				0,0006 (1,51)				0,0008*** (3,76)
Debt Ratio	-2×10^{-10} *** (-4,42)	-2×10^{-10} *** (-4,37)	-2×10^{-10} *** (-4,40)	-2×10^{-10} *** (-4,46)	1×10^{-9} *** (15,03)	1×10^{-9} *** (14,93)	1×10^{-9} *** (14,93)	1×10^{-9} *** (15,02)	-8×10^{-11} (-1,43)	-8×10^{-11} (-1,46)	-8×10^{-11} (-1,44)	-8×10^{-11} (-1,43)
Age	0,00 (0,68)	0,0002 (0,88)	0,0002 (0,92)	0,0002 (0,76)	0,0005 (0,74)	0,0006 (0,84)	0,0005 (0,84)	0,0005 (0,69)	0,0003 (0,90)	0,0003 (0,80)	0,0003 (0,78)	0,0003 (0,76)
Export Intensity	-0,02 (-1,30)	-0,02 (-1,23)	-0,023 (-1,20)	-0,02 (-1,27)	-0,01 (-0,25)	-0,003 (-0,05)	-0,002 (-0,05)	-0,01 (-0,28)	0,003 (0,12)	-0,003 (-0,11)	-0,004 (-0,13)	0,001 (0,03)
Labor Productivity	0,11*** (4,61)	0,11*** (4,72)	0,11*** (4,81)	0,11*** (4,73)	0,13* (1,76)	0,14* (1,82)	0,14* (1,80)	0,13* (1,70)	1,30*** (36,19)	1,29*** (35,86)	1,29*** (35,61)	1,30*** (35,98)
Patent Intensity	0,01 (0,03)	0,06 (0,17)	0,08 (0,24)	-0,005 (-0,02)	0,65 (0,67)	0,20 (0,17)	0,18 (1,17)	0,67 (0,69)	0,45 (0,97)	0,54 (1,06)	0,50 (0,97)	0,48 (1,03)
Trademark Intensity	0,01 (0,32)	0,007 (0,30)	0,007 (0,29)	0,007 (0,31)	0,05 (0,63)	0,07 (0,89)	0,07 (0,89)	0,05 (0,69)	0,45 (0,97)	0,07* (1,87)	0,07* (1,88)	0,05 (1,58)
R ²	0,34	0,34	0,34	0,34	0,18	0,19	0,19	0,18	0,79	0,79	0,79	0,79
F-Statistic	28	28	28	28	9,6	9,7	9,8	9,6	204	194	188	207
Prob(F-Statistic)	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Total panel (unbalanced observations)	1327	1327	1327	1327	1327	1327	1327	1327	1327	1327	1327	1327

All estimates include industry dummies.

The null hypothesis that each coefficient is equal to zero is tested. T-values in brackets.

*** Significant at 1% level.

** Significant at 5% level.

* Significant at 10% level.

on these financial performance variables. Moreover, minority foreign ownership dummy and majority foreign ownership dummy included in Model 2 for both of the financial performance measures are not significant. This result confirms Hypothesis 2 and but does not confirm Hypothesis 4. Majority foreign ownership dummy and dummy for being a WFOE included in Model 3 also do not have significant coefficients for pretax profit margin and return on equity. This result does not confirm Hypothesis 6. Additionally, percentage of foreign ownership is not significantly related to these financial performance measures. This result does not confirm Hypothesis 8.

When we analyze the results for capital productivity, we see that the coefficient of foreign ownership dummy that is reported in column 1 indicates that there is a positive effect of being foreign-owned rather than domestically-owned on this financial performance measure. The coefficient shows that expected capital productivity of FOFs is 0.05 higher than the average of DOFs.

Column 2 shows that only majority foreign ownership dummy has a statistically significant coefficient, while minority foreign ownership dummy is not significant. This indicates that there is a positive effect of only being majority foreign-owned rather than domestically-owned on capital productivity. This result confirms Hypothesis 2 and Hypothesis 4. The coefficient of majority foreign ownership dummy indicates that expected capital productivity of majority FOFs is 0.07 higher than the average of DOFs.

The results presented in column 3 shows that majority foreign ownership dummy and dummy for being a WFOE have significant coefficients. This indicates that firms that are majority foreign-owned and wholly foreign-owned have higher capital productivities than domestically-owned firms. Because the coefficient of the dummy for being a WFOE is higher than that of the dummy for being majority foreign-owned, we can say that the effect of being

a WFOE is higher than the effect of majority foreign ownership. This result confirms Hypothesis 6. The coefficient for the majority foreign ownership dummy shows that expected capital productivity of majority FOFs is 0.05 higher than the average of DOFs and the coefficient for the dummy of being a WFOE indicates that expected capital productivity of WFOEs is 0.09 higher than the average of DOFs.

The results presented in column 4 show that the degree of foreign ownership has a positive effect on capital productivity. The coefficient of the degree of foreign ownership shows that a 10% increase in the percentage of shares held by foreign owners produces a 0.008% increase in capital productivity. This result confirms Hypothesis 8.

Table 16 presents the coefficient estimates of the equations where I check whether the duration of foreign ownership has a moderator effect on the relationship between foreign ownership and capital productivity. Addition of interaction effects creates multicollinearity in the models with one dummy variable and three dummy variables. Eventually, I add interaction effects to the model with dummy variables for minority foreign ownership and majority foreign ownership and to the model with continuous foreign ownership variable.

We see that the interaction effect is not significant in the models. This indicates that the duration of foreign ownership does not change the form of the relationship between foreign ownership variables and capital productivity. Eventually, we can suggest that the transfer of proprietary assets that positively affects capital productivity is realized in a certain period of time after the acquisition of shares by foreign owners and the establishment of FOFs.

The overall findings suggest that foreign ownership does not have an effect on performance measures based on profit, but majority foreign ownership and being a WFOE have positive effects on capital productivity which measures performance of the firm in terms

Table 16. Panel Data Estimation Results for Capital Productivity: Testing for the Duration of Foreign Ownership

Dependent Variable	Capital Productivity	
	[2]	[4]
Explanatory Variables		
Constant	0,35*** (6,81)	0,35*** (6,85)
Capital Intensity	-0,26*** (-16,16)	-0,26*** (-16,31)
Size	-0,00002 (-1,53)	-0,00002 (-1,36)
Minority Foreign Ownership Dummy	-0,04 (-0,88)	
Minority Foreign Ownership Dummy × Duration of Foreign Ownership	0,002 (0,80)	
Majority Foreign Ownership Dummy	0,08*** (2,70)	
Majority Foreign Ownership Dummy × Duration of Foreign Ownership	-0,0004 (-0,43)	
Foreign Holding (%)		0,0009*** (2,71)
Foreign Holding (%) × Duration of Foreign Ownership		-0,000003 (-0,27)
Debt Ratio	-8×10^{-11} (-1,41)	-8×10^{-11} (-1,38)
Age	0,0003 (0,81)	0,0003 (0,80)
Export Intensity	-0,005 (-0,16)	-0,00009 (-0,00)
Labor Productivity	1,29*** (36,54)	1,29*** (36,58)
Patent Intensity	0,45 (0,89)	0,42 (1,43)
Trademark Intensity	0,06* (1,83)	0,05 (1,43)
R ²	0,79	0,79
F-Statistic	194	207
Prob(F-Statistic)	0,000	0,000
Total panel (unbalanced observations)	1327	1327

All estimates include industry dummies.

The null hypothesis that each coefficient is equal to zero is tested. T-values in brackets.

*** Significant at 1% level.

** Significant at 5% level.

* Significant at 10% level.

of value added creation rather than profit. Eventually, the findings provide support for the suggestion of the standard internalization theory (Caves, 1974; Buckley & Casson, 1976;

Rugman 1981), which says that FOFs should benefit from the transfer of proprietary assets and display better performance than DOFs, only if the performance measure taken is the increase in wealth generated by the productive use of the firm's resources prior to its allocation to the stakeholders. This result is not in line with the findings of the previous studies that demonstrate that foreign ownership, especially majority foreign ownership, has a positive effect on performance measures based on profit.

Table 17 provides a summary of the hypotheses and the results.

Table 17: Results of Hypothesis Tests on Foreign Ownership and Financial Performance

Hypothesis	Result
H2: There is a no relationship between minority foreign ownership and financial performance.	Not supported for Pretax Profit Margin and Return on Equity, supported for Capital Productivity
H4: There is a positive relationship between majority foreign ownership and financial performance.	Not supported for Pretax Profit Margin and Return on Equity, supported for Capital Productivity
H6: The effect of being a WFOE on financial performance is higher than the effect of majority foreign ownership.	Not supported for Pretax Profit Margin and Return on Equity, supported for Capital Productivity
H8: There is a positive relationship between the degree of foreign ownership and financial performance.	Not supported for Pretax Profit Margin and Return on Equity, supported for Capital Productivity

CHAPTER 5

SUMMARY, DISCUSSION AND CONCLUSIONS

In this study, I analyze whether foreign ownership has any impact on productivity and financial performance of firms in Turkey and whether different levels of foreign ownership have differing affects on performance outcomes. The data consists of a panel of 292 firms that are among the biggest 500 companies in Turkey over the period 2004-2008. To the best of my knowledge, biggest 500 firms data provided by İstanbul Chamber of Industry has never been used to address my research questions.

The tests of group differences show that FOFs are not larger in size and they do not have higher capital intensity, export intensity, patent intensity and trademark intensity than DOFs. Majority FOFs are larger in size than DOFs, but the two groups of firms does not have any difference in terms of capital intensity, export intensity and trademark intensity. WFOEs and DOFs do not differ in terms of any of these variables.

In the study, productivity is measured with labor productivity. Financial performance is measured using three different variables: pretax profit margin, return on equity and capital productivity. The difference of capital productivity variable from the other two financial performance variables is that value added, instead of accounting profit, is used as a measure of firm performance.

The basic argument in the study is that unless foreign investors can exercise effective control, they are not motivated to transfer the firm specific assets that will boost corporate performance. Eventually, I expect to find that foreign ownership only in the form of majority ownership, where the parent firm can exercise effective control, should positively affect corporate performance.

The results show that there is a positive effect of majority foreign ownership and being a WFOE on labor productivity. Minority foreign ownership does not have such an effect. Additionally, the effect of being a WFOE on labor productivity is higher than the effect of mere majority foreign ownership. I also find that the degree of foreign ownership has a positive relationship with productivity. Our findings are in line with the findings of the previous studies that find a positive relationship between majority foreign ownership on productivity (Ramstetter, 1999; Djankov & Hoekman, 2000; Dimelis & Louri, 2004; Takii & Ramstetter, 2005; Taymaz & Yılmaz, 2008).

When we analyze the effect of foreign ownership variables on pretax profit margin and return on equity, we see that neither majority foreign ownership nor being a WFOE does have a positive effect on these financial performance measures. Certainly, minority foreign ownership also does not have such an effect. Moreover, percentage of foreign ownership is not significantly related to pretax profit margin and return on equity. However, majority foreign ownership and being a WFOE does have a positive relationship with capital productivity. Moreover, the effect of being a WFOE on capital productivity is higher than the effect of mere majority foreign ownership. I also find that the degree of foreign ownership does have a positive effect on capital productivity. As a result, we see that majority foreign ownership have a positive effect on financial performance if the performance measure taken is the increase in wealth generated by the productive use of the firm's resources prior to its allocation to the stakeholders rather than profit. This result is not in line with the findings of the previous studies that demonstrate that majority foreign ownership has a positive effect on performance measures based on profit (Chibber & Majumdar, 1999; Ramstetter, 1999).

In the study, we demonstrate that a progressive performance improvement in labor productivity and capital productivity cannot be seen as the number of years under foreign ownership increases. Eventually, we can say that the transfer of firm specific assets that has a

positive impact on these performance measures is realized in a certain period of time after the acquisition of shares by foreign owners and the establishment of FOFs.

In short, our findings provide support for the suggestion that the level of foreign ownership shares may affect corporate performance through whether it allows the control of the firm specific assets.

I have to note that this study has certain limitations caused by the panel data covering a short period of time. I would like to apply Arellano-Bond GMM estimator, which is a dynamic panel model, to take account of simultaneity. Because our data set covers a short period of time, it was not appropriate to apply such a dynamic panel model.

FDI has the potential to benefit DOFs by the spillover of their technological know-how, innovation capability, marketing and management skills, etc. to DOFs and increase their productivity levels. An important direction for future research in this area is whether the existence and magnitude of spillovers from FOFs depend on the degree of foreign ownership. We do expect that there can be positive spillovers from majority FOFs because parent firms will permit the transfer of their intangible assets to their majority-owned affiliates.

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