The Intra-metropolitan determinants of Foreign Investment Firms in Istanbul

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ABSTRACT
In the context of economic globalization, there has been considerable academic interest on the understanding of location behavior of FDI firms. Generally while studies on FDI firm location focus mainly at the national and regional levels, those of the intra-urban level are limited, especially for developing countries. In developing countries, intensive studies have been carried out on the spatial impacts of foreign capital on the country city system or the regional determinants in the location choice of the foreign capital (Deichmann et al. 2003; Wei et al., 1999; Chien-Hsun, 1996). However, studies on the impacts of the foreign investments in the cities of the developing countries are limited (Wei et al. 2006; Wu and Radbone, 2005; Wu, 2000). The same situation is valid for the studies conducted in Turkey. However, studies on the spatial models at the intra-urban level are limited. The priorities in the location choice preferences of the FDI firms working in both industrial and service sectors in the Istanbul metropolitan area have been set forth by a study conducted by Berkoz (2005).

Foreign investment requires the market conditions of the area on which it would invest to be feasible for non-risky business and demands the conditions concerning the spatial quality of the area (such as the quality infrastructure, easy access, transportation-communication systems and the quality of the building and environment) to be of high standards as they are the conditions which reflect the power and prestige of the firm (Berkoz, 2005). For this reason, it is very important to know the characteristics and spatial distribution of FDI firms in Turkey.

FDIs in Turkey have been concentrated in the biggest city, Istanbul, which attracts the highest level of foreign investment in Turkey. In this study, locational determinants of foreign investment firms in Istanbul have been analyzed by using the logistic regression model.

Keywords: Foreign direct investment (FDI), Istanbul, intra-metropolitan level, central districts, suburban districts.

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1. Introduction

Turkey adopted neo-liberal policies in order to increase economic integration into international relation after 1980. As a result of these policies, foreign direct investment (FDI) inflows increased greatly. In 1980 there were 78 FDI firms in Turkey whereas the number increased to 6511 in 2003. Turkey has become a hub of vast hinterland that extends from the Balkans to Caucasus and represented a prime focus for foreign investment. For this reason, it is very important to know the characteristics and spatial distribution of FDI firms in Turkey. In the general perspective of Turkey related to FDI, Istanbul has an importance because Istanbul attracts the highest level of foreign investment in Turkey. 75.39% of Turkey's total capital investment and 63.29% of the total number of firms in Turkey are in Istanbul. Istanbul has attracted 59.63% of the firms which have made investment in industry in Turkey with 55.22% of this capital and 66.35% of the firms making investment in the service sector with 92.33% of the capital.

FDI has become a leading force in the formation of the metropolitan structure, especially after 1990 in Istanbul (Erkip, 2000). However, there is a lack of empirical studies on intra-metropolitan FDI locations. It is still not clear how FDI firms are distributed in the Istanbul metropolitan area and how location-specific factors or attributes affect decisions by foreign investors on their intra-metropolitan FDI location. Previous studies related to FDI location in Turkey have usually been made at national or regional levels. Erdilek (1982) analyzed the micro economic cause and effect relationship of FDI in the Turkish manufacturing sector in the early 1980s. Demirbağ et al. (1995) specified certain factors which influence the location choice of MNFs (multinational firms) in Turkey. The findings of Erden's study (1996) indicate that Turkey is an appealing country for multinational firms because of its market potential, geographic proximity, and low labor costs. Tatoglu and Glaister determined the characteristics of spatial choice of multinational enterprises in Turkey, using factor analysis (1998a) and binominal logit regression models (1998b). Tokatlı and Erkip (1998) discussed the increasing involvement of the foreign capital producer service firms in the Turkish economy. Deichmann, Karidis and Sayek (2003) studied the factors determining the spatial decisions of MNFs in Turkey with specific reference to policy implications. Despite some studies related to FDI firms in Istanbul, it is clear

that there is a lack of empirical studies on intra-metropolitan FDI location. Özdemir (2002) analyzed the distribution of FDI in the service sector in Istanbul. Berkoz and Eyüboglu (2005) examined spatial distribution of FDI firms in Istanbul. Berkoz (2005) examined the criteria to which foreign-owned investments in industrial and service sector attach significance in location that is set for each sector in Istanbul. Under the scope of the study, in December 2002 a questionnaire was conducted in the largest 50 service and 50 industrial companies in terms of capital; an evaluation was made in order to determine the location selection priorities in the intra-metropolitan level of the foreign companies within the service and industrial sector (Berkoz, 2005). Yet in this article, an evaluation is conducted in terms of location-specific factors in the location choice (central and surrounding regions) of the service and industrial companies within the Istanbul area by using the data of the same field study.

The essential purpose of this article is to examine the relationship between the FDI firms in service sector and access to various urban facilities. For this reason, two different types of testing have been applied. The first one aims to determine whether there is a correlation between the process of decision making when FDI firms in service sector choose one particular area over another (central districts – suburban districts) and accessibility distance to different urban facilities. And the second one tries to test the correlation between the size of service FDI firms and access distance to different urban facilities.

2. Literature Review

The regional determining factors are effective in the decision of which location to choose for settling within the host country by the investor. These factors include: existence of agglomeration effects (Cheng and Kwan, 2000; Head et al., 1995; Smith and Florida, 1994; Ondrich and Wasylenko, 1993), market size and market demand characteristics (Hood and Young, 1983; Dunning and Norman, 1987; Friedman et al., 1992; Wheeler and Mody, 1992; Cheng and Kwan, 2000; Coughlin and Segev, 2000; Smith and Florida, 1994), labor market characteristics (Dunning and Norman, 1987; Couglin et al., 1991; Friedman et al., 1996), quality and capacity of infrastructure (Little, 1978; Dunning and Norman, 1979 and 1987; Glickman and Woodward, 1988; Friedman et al., 1992), information cost (Mariotti and Piscitello, 1995), existence of industry cluster (Head et al., 1995; Belderbos and Sleuwaegen, 1996; Cheng and

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Kwan, 2000), and government incentives towards foreign investment (Hood and Young, 1983; Hill and Munday, 1992; Cheng and Kwan, 2000).

Some empirical analyses were conducted at both city and provincial level in China. At the city level, transportation and communication infrastructure, market size, and policy incentives have been identified as important location determinants for foreign investors (Gong, 1995; Head and Ries, 1996; Qu and Green 1997; Zhou et al. 2002). Infrastructure, market potential and labor quality were determined to be the positive locational effects at province level (Broadman and Sun, 1997; Sun et al., 2002; Wei et al., 1999; Wei et al., 2006).

Studies of intra-metropolitan patterns of FDIs - what types of FDIs are located where - are fundamental to an understanding of the urban social and spatial transformations that result from economic globalization.

The results of the studies at the intra-metropolitan level suggest that FDIs intra-metropolitan location can be explained in terms of the economic and policy factors prevailing at locations. Wu (1999 and 2000) highlighted that government regulation and policy were important locational advantages at the intra-metropolitan scale.

Distance to the CBD, access to population and labor markets, and access to major high-ranking hotels are the other important determinants of intra-metropolitan FDI firm location. FDIs prefer the areas with better access to comprehensive services, including amenity at the worksite (Wu, 1999 and 2000). Wu's empirical studies in Shanghai suggest that the areas with better local infrastructure and endowed with incentives from the central government attracted more FDIs.

According to Wu's study (2000), the traditional location choice factors such as highway accessibility, access to major high-ranking hotels, the status of the Economic and Technological Development Zone, access to railway terminals, agglomeration economies, and labor markets are effective for the FDI location choice within the Guangzou metropolitan area. According to another study (Wu and Radbone, 2005), the intra-urban determinants of FDI investment in Shanghai city were set out as political investments (especially the presence of the regions established in order to attract FDI), the density of the economical output and the presence of the airport.

Wu and Radbone (2005) emphasize that the location of different patterns of FDIs is sensitive to different local factors. Service FDIs tend to aggregate in the areas

that already have a high density of service activities, while manufacturer FDIs prefer to locate in the central government-designated areas where incentives and preferential treatment were available.

However, studies on the spatial models at the intra-urban level are limited. The priorities in the location choice preferences of the FDI firms working in both industrial and service sectors in the Istanbul metropolitan area have been set forth by a study conducted by Berkoz (2005). This study (2005) shows that the similarity between the factors that had been attached greatest importance in site selection both by industrial and services sector firms with foreign capital, in spite of their different structure, was due to their primary need for government support and reliability. In addition, whereas industrial firms with foreign capital tend to prefer areas with first-rate infrastructural conditions, with a fine location and high accessibility, services sector firms prefer areas with a fine location, high accessibility, and buildings in good physical condition. Berköz and Eyüboğlu (2005 and 2007) have assessed the data related to the characteristics of FDI firms that have invested in Istanbul in GIS medium, and they have also determined the spatial distribution of industry and service sectors that have invested in Istanbul at intra-metropolitan level.

Berkoz and Turk (2007) has investigated how FDI firms are distributed at the intra-metropolitan level and how locational factors affect the decisions of foreign investors when locating industrial and service sector FDI firms, using Istanbul as a case study. The study was based on a sample of 100 companies that were surveyed in Istanbul at the end of 2002. Locational determinants of foreign investment firms in Istanbul were analyzed using factor analysis and logistic regression techniques.

3. Spatial Structure of Istanbul and the spatial distribution of FDI in Istanbul

The population of Istanbul was 1 million in 1950, 7.3 million in 1990 and reached over 10 million in 2000. Istanbul is the largest metropolis having one fifth of the nationwide population as well as being the socio-economic and cultural centre of the country. Istanbul is experiencing a rapid transformation for the last two decades. Such rapid transformation arises partly from globalization trends (Erkip, 2000). As a result of the outward-oriented development strategy implementation in Turkey since 1980's, Istanbul has become a city where the increase in the number of foreign firms and the changes in the production and consumption models within economy have intensively

been experienced. The number of foreign capital firms in Istanbul, which was 74 in 1981, increased to 6174 in 2003. An important change in the sectoral distribution of the foreign capital firms was also observed in Istanbul in parallel to Turkey in general. While the share of the industrial sector was 76% and the share of the services sector was 20% in 1981, in 1990 the share of the industrial sector decreased to 26.7% and the share of the services sector increased to 71.6%. In 2001, the share of the industrial sector decreased to 25.8% and the share of the services sector increased to 73%. This change shows the trend of both domestic and foreign capital's focusing on low productivity sectors (Erkip, 2000).

The economic, cultural, and social leadership of Istanbul has great influence over the entire country. Istanbul had a mono-centric structure until the end of the 1970s; this structure started to change upon the opening of the Bosporus Bridge and the construction of ring roads in 1973. One of the most important spatial changes is the development of the central business district (CBD) of the city from Eminönü and Beyoğlu towards Şişli and Beşiktaş, and the development of Kadıköy on the Asian side and Bakırköy on the European side as sub-centers of the 1st level. The borders of the metropolitan area have been extended with the opening of new highways. In addition, low land prices within the suburban districts and the increase in private vehicle ownership have accelerated the decentralization process. The decentralization of the industrial sector in the central districts to the peripheral districts was supported with the decisions of the 1995 Istanbul Metropolitan Area Master Plan. However, this plan was not implemented by the central government. In the absence of an approved plan, the city continued to develop on the basis of informal local investment plans; a process, which 'guided' the development of the new commercial districts (Kocabaş, 2006, p. 119). The polycentric structure within the Istanbul metropolitan area may be considered in two groups of central districts and suburban districts (Figure 1).

The distribution of the population, population growth, and the workforce between 1990 and 2000 within the districts of Istanbul are given in Table 1. As can be observed in this table, while a population loss within the traditional central business district (CBD) is observed, population increases within the other central and peripheral districts are observed between 1990 and 2000.

Similar trends are also observed within the workforce. While a decrease is observed in the number of the workforce in the traditional central business district

(CBD) (Beyoğlu, Eminönü, and Fatih), increases in the other central districts and peripheral districts are observed between 1990 and 2000. Especially the increase in the workforce in peripheral districts is relatively more than in the central districts. When the sectoral distribution of the workforce is considered, an increase in the share of the services sector within the central districts and a decrease in the share of industrial sector is observed. The sectoral distribution of the workforce within the peripheral districts is different from the central districts. The shares of the services sector and industrial sector are fairly close to each other.

According to the report of YASED, Istanbul held 6174 foreign capital investments at the end of 2003. Looking at the years of establishment of foreign capital investment companies, it is observed that 1.25% of the companies were established during the period of 1961-1980, 24.13% during the period of 1981-1990, and 74.62% started their operations during the period of 1991-2003 (Berkoz and Eyüboglu, 2005).

When the distribution of the FDI firm numbers per year and district is observed, it can be seen that the 74% of foreign capital firms in Istanbul in the 1954-1980 period were located in the central districts and 26% in the peripheral districts, whereas these figures were 82% and 18% respectively in the 1981-1990 period. In the 1991-2000 period, 76% of foreign capital firms were located in the central districts and 24% in the peripheral districts. In the period of 2001-2003, it was observed that 75% of the foreign capital firms are located in central districts and the 25% are in peripheral districts.

When the distribution of foreign investments in the services sector per districts is observed, it is seen that the 82.5% of the firms are located in central districts and 17.50% of the companies in peripheral districts. When the distribution of foreign investments in industrial sector per districts is observed, it is seen that 59.94% of the firms are located in central districts and 40.06% of the companies are located in peripheral districts. The primary emphasis is on the peripheral districts in terms of location choice of the foreign investors in industry, and the emphasis of the location choice of the foreign investors in the services sector is determined to be in the central districts (Table 2).

4. Data and Model Specification

4.1. Data

The FDI service sector data in the Istanbul metropolitan area encompassing the period between 1954 and 2003 are used in the model. The data resource is the Undersecretariat of the Treasury. The Treasury Ministry has collected data related to multinational firm activity in Turkey since 1954. This resource is published every year, which gives information related to FDI firms, including the origin of the firm, the location of the firm, the sector of investment, the value of investment, the firm's initial year, and the share of foreign ownership. The other data used in the study are obtained from the State Office of Statistics in Turkey.

4.2. Model Specification

Two different models have been developed within the scope of this study. The first model tests whether the following criteria of accessibility are influential in locational preferences of service FDI firms at intra-metropolitan level: accessibility distance to the airport, accessibility distance to the major gathering areas of the city, accessibility distance to hotels region, accessibility distance to the congress center, and accessibility distance to highways. In the second model, on the other hand, the correlation between the size of service FDI firms and all these accessibility distances is tested.

In the first model, the location choice of central districts over the peripheral ones, which is the major locational preference of a foreign investor in the Istanbul Metropolitan area, is tested. To this end, binomial logistic regression has been applied. Binomial (or binary) logistic regression is a form of regression which is used when the dependent is a dichotomy and the independents are of any type. Logistic regression can be used to predict a dependent variable on the basis of continuous and/or categorical independents and to determine the percent of variance in the dependent variable explained by the independents, to rank the relative importance of independents, to assess interaction effects, and to understand the impact of covariate control variables.

The logistic model is written as:

$$\text{Prob(event)} = \frac{1}{1+e^{-z}}$$

(1)

where z is b0 + b1x1 + b2x2 + ... bpxp   (2)

The logistic equation can be rearranged into a linear form by converting the probability into a log odds or logit.

log [Prob(event)/Prob(no event)] = b0 + b1x1 + b2x2 + ... bPxP   (3)

Here the dependent variable has either "1" or "0" value. The value of "1" for the dependent variable signifies that an FDI firm has chosen central districts, while the value of "0" for the dependent variable indicates that an FDI firm has chosen peripheral districts. XJ , is the vector of independent variables for the jth observation, B0 is the intercept and b is the vector of coefficient parameters. On condition that other variables remain constant, the logistic coefficient (B) denotes the change in log odds related to one-unit change in the independent variable (Akgül, 2005; Chadee, Qui, Rose, 2003). In this model, the ratio of odds indicates the ratio pertaining to the probability of FDI firms' locational choice in central districts to the probability of FDI firms' locational choice in peripheral districts. A positive and significant estimated coefficient implies that an increase in the value of the explanatory variable is associated with an increased probability of an FDI firm's is being located in central districts. In this model, the following independent variables have been determined respectively: accessibility to airports, accessibility to the biggest gathering areas of the city, accessibility to the congress center of the city, accessibility to the hotels region, and accessibility to highways.

In the second model, the size of assets belonging to FDI firms in service sector has been taken as the dependent variable. However, since the firms have high assets values, the "Ln" value of these values has been used in the model. The independent variables of the first model have been used as the independent variables of this model. The following independent variables have been determined respectively for the second model: accessibility to airports, accessibility to the biggest gathering area of the city, accessibility to the congress center of the city, accessibility to hotels region, and accessibility to highways.

4.3 Empirical Findings

4.3.1. Descriptive statistics

In the study, service sector firms that have made investments in Istanbul have been taken as samples. In Istanbul, there are 4,426 FDI firms that have operations in the city. 25.1% of these firms possess a capital rate less than 25%, and 31.7% bear 26%-50% of the capital rate. Finally, 41.88% of the sample firms have 51-100% of the capital rate. 32.5% of the sample firms have a capital size of 10,001-100,000 YTL, 20.3% have a capital size of 100,001-1,000,000 YTL, and 18.9% have a capital size of 1,001- 10,000 YTL. OECD and Middle East countries are the country groups that have the biggest share among the foreign investments in the service sector in Istanbul with 45.5% and 19.3% share rates respectively. When the sub-sectors of service firms with a capital size above 10,000 YTL are examined, it is seen that there are 27 investments in Banking and other Finance Services, 17 Insurance companies, 17 Trade companies, 16 Communication companies, 11 Hotel and Accommodation companies, and 10 Investment Finance companies.

4.3.2. Logistic regression results

Table 3 displays the correlation coefficient between the independent variables. As it can be seen in Table 3, there is no correlation coefficient multicollinearity problem between the independent variables. Table 4 demonstrates the logistic regression results. The model performs reasonably well based on fit statistics (e.g., $\chi 2$, Cox & Snell - R^2).

According to the results of logistic regression model, all the variables, except the one related to hotels region, are statistically meaningful. In other words, there is a correlation between the locational preferences of service sector FDI firms in the Istanbul Metropolitan area (central areas and peripheral areas) and accessibility to urban facilities.

- According to the results of logistic regression model, service sector FDI firms prefer peripheral areas rather than central areas in terms of accessibility distance to the airports. The reason for this finding is that both airports in Istanbul are located in areas far away from the central areas of the city.

- The same finding is valid for the accessibility distance to highways. In terms of accessibility distance to highways, service sector FDI firms prefer peripheral areas rather than central areas since accessibility to highways is provided more easily from peripheral areas. Whereas there are a lot of connection points to highways from peripheral areas, the number of connections to highways from central districts is rather low.

- In Istanbul, the most important gathering area is Taksim Square, which is a major focal point where underground and public transportation facilities intersect. Besides, Taksim Square is surrounded by culture buildings and five-star hotels. For this reason, accessibility to Taksim Square is important to service FDI firms because Istanbul represents a multi-centered structure. On the other hand, foreign investment firms in service sector do not attach importance to the accessibility to Taksim Square as the area is not a business center.

- No statistically meaningful correlation has been found between accessibility distance to hotels region and the locational choice of service sector FDI firms. However, when the direction of the indicator is examined, it could be stated that service sector FDI firms show a tendency to prefer central areas in terms of accessibility distance to hotels region.

- There is a statistically meaningful relationship between accessibility distance to the congress area and the locational preference of service sector FDI firms in central areas.

- When the Wald values are examined in the logistic regression, it is seen that accessibility distance to Taksim Square bears the highest Wald value. Accessibility to the airports has the other highest values.

4.3.3. Linear Regression Results

The correlation coefficient values between the independent variables are shown in Table 3. As it can be followed from Table 3, the correlation coefficients between the independent variables indicate that there is no multicollinearity problem. Table 5 indicates the linear regression results. The model performs reasonably well, based on fit statistics (e.g.,$R2$, F,t).

According to linear regression results, the established models is statistically meaningful. F value corresponding to the model is 27.160 (Sig. 0.00). All the independent variables in the model have been found statistically meaningful. According to the regression results, there is a statistically meaningful correlation between the capital assets of service sector firms and accessibility.

There is an inverse proportion between the assets of service sector FDI firms and accessibility distance to the airports. The direction of the indicator shows this proportion. In other words, the higher the accessibility distance to the airports is, the lower the assets of companies become, which implies that FDI firms with big assets prefer locations near the airports. A similar result is also valid for Taksim Square, which is the biggest gathering point of Istanbul. Companies with big assets also prefer to establish their business near Taksim Square. In this result, concentration of five-star hotels and congress centers around Taksim Square has a decisive influence. There is a direct proportion between accessibility distance to the congress center and a company's assets size

There is an inverse proportion between service sector FDI firms and accessibility distance to the hotels region. In other words, the closer the firms are to hotels region, the bigger assets they posses. Service sector FDI firms with big capitals prefer to be close to hotels region. There is a direct proportion between the size of assets of service sector FDI firms and accessibility to highways. The more the accessibility distance is to highways, the bigger capitals firms have.

5. CONCLUSION

The Istanbul metropolitan area is an essential center of focus within the changing world balances in the region formed by the Balkans, the Middle East, and the Turkic Republics. There are also economical potentials in addition to the natural and geopolitical location of Istanbul. These are the advantages of being a large market, the presence of a qualified and cheap workforce, and a dynamic liberal economy. Despite this advantageous situation, the political and economical instabilities within the country and failure to conduct long-term plans concerning the matter of foreign investment have caused investments to remain lower than expected and develop in the form of partnerships with domestic investments. Such a situation arises from the

inability of the foreign investors to take risks. However, the contribution of the foreign investment inflows into the developing countries to the development of the country shall be achieved via increases in the amount of production factors and the introduction of new technologies.

As is the case within other developing countries, the foreign capital instability has been distributed within the area and heaped on Istanbul, the biggest city throughout the country and in Şişli, the new central area. Such instability has increased more, as the area in which the foreign capital would make investments was not identified on national, regional, and local scales because foreign capital settles in the cities with optimal infrastructure and even in the districts again with optimal infrastructure for itself. The foreign capital firms in Istanbul have chosen the new central area where the spatial quality, infrastructure, and access-communication standards are high for their operations. However, spatial transformation in Istanbul, which has been occurring since the 1990's, represent a tendency towards peripheral districts.

In this study, the correlation between accessibility distance to the airports, gathering areas, congress centers, hotels region, and highways and the locational preference of service sector FDI firms has been tested using two methods. In the first method, the correlation between accessibility distance and the locational preference of service sector FDI firms in central areas rather than peripheral areas has been tested. In the second method, the correlation between capital assets of service sector FDI firms and accessibility distance has been tested. According to the results of both models, the FDI firms in service sector show precision in terms of accessibility distance to urban facilities. This finding supports the reasons why service sector FDI firms are concentrated especially in central areas. Again, there is a connection between capital assets and proximity to urban facilities. This connection is statistically very strong meaningful.

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Table 1. The distribution of population, population growth and workforce between 1990-2000 within the districts of Istanbul.

	Population 1990	Labor force	Services	Industry	Percentage of higher educated people (%)	Population 2000	Growth rate $\%_0$	Labor force
Central districts								
Beyoğlu	229000	83426	45111	30585	3.1	231900	1.26	76941
Eminönü	83444	40400	24259	12674	5.3	55635	-40.53	25458
Fatih	462464	153671	93949	50380	5.4	403508	-13.63	127298
Şişli	250478	90566	49921	28372	7.9	270674	7.75	103351
Beşiktaş	192210	70961	49807	13364	16.8	190813	-0.73	78253
Kadıköy	648282	212179	145989	43112	14.6	663299	2.29	228469
Bakırköy	1328276	452992	226378	177778	5.0	208398	-36.98	77497
Üsküdar	395623	127613	81049	31101	6.7	495118	22.43	160129
Peripheral districts								
Zeytinburnu	165679	63411	27154	30877	2.2	267669	40.19	84278
Kağıthane	269042	90957	43388	36073	1.9	345239	24.93	116224
Bayrampaşa	212570	72459	30840	36338	2.0	246006	14.60	79592
Beykoz	142075	43421	22237	15825	2.8	172891	19.28	51071
K.Çekmece	469431	163698	71974	70998	0.3	593520	52.19	189344
Silivri	26049	9085	5032	1595	1.8	44530	53.60	14469
Pendik	289380	86127	39988	30028	3.4	384668	66.32	107703
Kartal	506477	160571	88302	50524	4.9	337390	29.09	104527
B.Çekmece	22394	9107	4800	1472	5.3	35860	47.07	11767
Sarıyer	160075	52693	32258	13066	5.2	219032	31.35	76558
Eyüp	200045	68168	31856	31043	2.0	235116	16.15	73926
Ümraniye	242091	72622	37152	22189	2.0	440859	59.92	128666
Gaziosmanpaşa	354186	117706	47851	56812	1.6	658756	64.76	200019
Çatalca	11550	3923	2099	996	1.8	15779	31.19	5203
Güngören	-	-	-	-	-	272950	24.74	87721
Avcılar	-	-	-	-	-	233749	61.39	77143
Bağcılar	-	-	-	-	-	556519	64.66	167428
Bahçelievler	-	-	-	-	-	478623	47.30	153293
Maltepe	-	-	-	-	-	355384	33.48	119262
Esenler						380709	53.10	115537
Tuzla	-	-	-	-		107883	16.76	33766

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Table 2. Distribution of FDI firms according to three zones of Istanbul by sectors

	TOTAL	SERVICES	INDUSTRY	AGRICULTURE
Central districts				
Şişli	23,79	25,36	19,69	22,06
Beşiktaş	16,38	16,29	16,56	17,65
Beyoğlu	11,15	11,72	9,31	19,12
Kadıköy	8,81	8,66	9,19	8,82
Eminönü	6,34	7,94	2,19	4,41
Fatih	3,95	4,95	1,44	0
Bakırköy	3,69	4,41	1,56	8,82
Üsküdar	2,99	3,17	2,38	5,88
Peripheral districts				
Bahcelievler	2,56	2,61	2,44	2,94
K.Çekmece	2,18	1,53	3,94	1,47
Güngören	1,75	1,31	3	0
Bağcılar	1,64	1,15	3	0
B.Çekmece	1,55	1,03	3	0
Ümraniye	1,42	0,73	3,25	1,47
Tuzla	1,4	0,77	3,06	1,47
Maltepe	1,38	1,17	2	0
Kartal	1,37	0,75	3,06	0
Kağıthane	1,21	0,96	1,94	0
Zeytinburnu	1,1	0,96	1,5	0
Bayrampaşa	1	0,49	2,31	1,48
Beykoz	0,91	1,06	0,5	2,94
Avcılar	0,86	0,85	0,94	0
Pendik	0,84	0,52	1,69	1,47
Sarıyer	0,56	0,68	0,25	0
Eyüp	0,39	0,35	0,5	0
Gaziosmanpaşa	0,32	0,16	0,75	0
Çatalca	0,19	0,16	0,25	0
Silivri	0,15	0,21	0	0
Esenler	0,12	0,05	0,3	0

Table 3. ==Pearson correlation coefficient==

	Airport 1	Airport 2	Abdiipek	Hotel-Region	Highway (E5)	Highway (E6)	Taksims
Airport 1	1,000						
Airport 2	-,574**	1,000					
Congress	,671**	-,136	1,000				
Hotel-Region	-,020	-,018	-,103**	1,000			
Highway (E5)	,071**	-,072**	,078**	-,146**	1,000		
Highway (E6)	-,018	,101**	,077**	-,027	-,061**	1,000	
Taksims	,266**	,190**	,661**	-,230**	,016	,123**	1,000

** Correlation ==is meaningful at 0.01 level== (2-tailed).* ==Correlation is meaningful at 0.05== (2-tailed).

Table 4.a. Central districts versus suburban districts for service sector FDI firms

Dependent Variable is Choice
Central districts :1
Suburban districts:0
LR=1504,251

Variable	Coefficient (Wald stat)
Airport 1	-0.0009 (344.0346)***
Airport 2	-0.0005 (365.8910)***
Congress	0.0010 (310.8414)***
Hotel-Region	0.0050 (0.0622)
Highway(E5)	-0.0012 (33.1907)***
Highway(E6)	-0.0130 (19.9496)**
Taksims	-0.0010 (430.9297)***
Constant	28.5039 (460.9460)***

Notes: *** Significant at 0.1 level, ** Significant at the 0.5 level, * Significant at 0.10 level

Table 4.b. Model Summary

Step	-2 Log likelihood	Cox&Snell R Square	Nagelkerke R Square
1	1504,251	1,000	1,000

Table 4.c. Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.

Step	2539,386	7	0,000
Block	2539,386	7	0,000
Model	2539,386	7	0,000

Table 4.d. Classification Table

	Predicted		
	0	**1**	**Percentage Correct**
Observed			
0	579	197	74,61%
1	176	3307	94,95%
Overall Percentage			91,24%

The cut value is, 500

Table 5. Regression analysis results

	Model
Constant	24,859 (54,018)***
Airport 1	-1,450E-04 (-5,809)***
Airport 2	-2,883E-05 (-3,012)**
Congress	-8,630E-05 (7,959)***
Hotel-Region	2,848E-04 (-3,186)**
Highway(E5)	-8,318E-04 (2,226)**
Highway(E6)	3,557E-04 (2,837)**
Taksims	1,861E-03 (-4,710)***
Observations	4226
R^2	0.043
Adjusted R^2	0.041
F	27.160***

Note: * $p <=.10$; ** $p< 0.05$;*** $p<0.01$. T statistics are given in parentheses.