

THE DETERMINANTS OF THE EUROPEAN UNION FOREIGN DIRECT INVESTMENTS IN TURKEY

Doç. Dr. Hayriye Atik
Erciyes Üniversitesi
İktisadi ve İdari Bilimler Fakültesi



Avrupa Birliği'nin Türkiye'deki Dolaysız Yabancı Sermaye Yatırımlarının Belirleyicileri

Özet

Türkiye'ye gelen dolaysız yabancı sermaye yatırımları, 1980'li yılların başında uygulanan liberalizasyon politikaları sonucunda artmaya başlamıştır. Bununla beraber, 1990'lı yıllarda yaşanan ekonomik krizler Türkiye'ye gelen dolaysız yabancı sermaye yatırımlarının yetersiz kalmasına yol açmıştır. Türkiye, dünyadan yabancı sermayeyi çekmekte başarısız olmasına rağmen, Türkiye'ye gelen yatırımların yarısından fazlası başta Hollanda ve Fransa olmak üzere Avrupa Birliği (AB) ülkelerine aittir. İş adamları ve politikacılar tarafından Türkiye-AB arasında 3 Ekim 2005'te başlayacak müzakere sürecinin Türkiye'ye yönelik yabancı sermaye yatırımlarını artırması beklenmektedir.

Bu çalışma, 1991-2003 döneminde yer alan yıllara ait verileri kullanarak, panel veri analizi yöntemiyle AB'nin bütünü, Hollanda ve Fransa'dan Türkiye'ye gelen dolaysız yabancı sermaye yatırımlarını etkileyen ekonomik faktörleri ve risk faktörlerini belirlemeyi amaçlamıştır. Ampirik analizler, kişi başına gelir, uluslar arası kuruluşlardan alınan krediler ve alt yapı yatırımlarının AB ülkelerinden Türkiye'ye gelen dolaysız yabancı sermaye yatırımlarını etkileyen önemli faktörler olduğunu ortaya koymuştur.

Anahtar Kelimeler: Doğrudan yabancı sermaye yatırımları (DYSY), DYSY'nın ekonomik belirleyicileri, DYSY ile ilgili risk faktörleri, Avrupa Birliği, Türkiye'nin DYSY politikası.

Abstract

Foreign direct investments (FDI) in Turkey started to increase at the beginning of 1980s as a result of liberalization policies. However, FDI inflow to Turkey was not sufficient during the liberalization process as a result of economic crises in 1990s. Although Turkey was not successful in attracting FDI from the world, more than fifty percents of FDI in Turkey come from the European Union (EU) countries, especially from Netherlands and France. Now, it is expected by the politicians and businessman that the commencement of the negotiations between Turkey and the EU on 3 rd October 2005 will increase this share.

This study aimed to find out the economic and risk factors of total EU- as well as the Dutch and French- FDI in Turkey by using panel data analysis for the years between 1991 and 2003. Empirical results present that per capita GDP, credit from international organizations and infrastructure investments are important determinants of FDI inflow to Turkey from the EU economies.

Keywords: Foreign direct investment (fdi), economic determinants of fdi, risk indicators of FDI, European Union, Turkish FDI policy.

The Determinants of the European Union Foreign Direct Investments in Turkey

Introduction

FDI in Turkey has experienced important increases after the economic liberalization policies of 1980s. FDI in Turkey grew slowly at the beginning of 1980s, but it increased rapidly in the late 1980s. Besides the liberalization policies, other important factors that affected FDI inflow to Turkey were general economic and political conditions of the country. While the FDI inflow decreased during economic crises in 1994, it increased during economic boom between 1995 and 2000.

In addition to economic liberalization policies after 1980, the establishment of the customs union between Turkey and the EU on 1st January 1996 was another factor that was expected to increase FDI in Turkey. It was expected that the customs union between Turkey and the EU would increase FDI investments of both the EU and other countries in Turkey.

Unfortunately, Turkey could not be successful in attracting foreign investors as a result of economic crises in the 1990s. According to the data related with FDI stock of the countries in 2002, the United States, the UK, China (including Hong Kong), Chile, and Czech Republic had 1351, 638, 880, 46, and 38 billions of dollars respectively. Turkey had only 18 billions of dollars in the same year (UNCTAD, 2003). These data indicate that Turkey has not been effective in attracting FDI so far.

Although the customs union agreement was not effective in attracting FDI from the EU, the country group that holds the largest share of FDI in Turkey has been the EU countries. According to the data from Under Secretariat of Treasury (UST) The percentage share of EU in total FDI inflow to Turkey was 64% in 2002 and 74.3 % in the first half of 2003 (UST, 2004).

A new stage in Turkey and the EU relations has started after the last EU summit on 17 December 2004. It was accepted at the summit that EU was

going to start negotiations with Turkey on 3rd October 2005. Now, most economists think that starting negotiations with the EU will attract FDI from the world, and especially from the EU as the general economic and political conditions of Turkey will be better because of the developments during full membership negotiations.

Even though it is known that the general conditions of the country are very important in attracting FDI, the specific determinants of FDI should be found out in order to increase FDI inflow to Turkey. Literature review has indicated that earlier studies on the determinants of FDI in Turkey have two important characteristics. Firstly, they are based on the results of surveys conducted on multinational corporations in Turkey. Secondly, there is not any specific study on the determinants of EU foreign direct investments in Turkey. So, differently from the earlier studies, the purpose of this work is to examine the factors that are important in attracting FDI from the EU countries to Turkey. Empirical analysis will be performed for the determinants of total EU FDI and for the determinants of Dutch and French FDIs in Turkey. The reason of choosing these two countries is that these countries have the highest FDI stocks in average for the period 1991- 2003 comparatively with the other EU members. Panel data analysis will be applied in the study for the years between 1991 and 2003.

The study is organized as follows. Section two gives an overview of FDI development in Turkey. Section three reviews the studies on FDI in Turkey. Section four examines both the theoretical and empirical literature on the determinants of FDI. Section five describes the data and empirical methodology. Section six presents the empirical results, and the last section concludes the paper.

1. Foreign Direct Investments in Turkey

1.1. Evaluation of Turkish Foreign Direct Investment Policy

Turkey's foreign investment legislation has been gradually liberalized since 1980. First step was the elimination of all restrictions on foreign currency movements. Restrictions on foreign currency movements were lifted with Decree N.32 concerning the "Protection of the Value of Turkish Currency" in 1985. According to the provision of Decree No.32, through banks and private finance houses, all residents are independent to export. The flow of FDI to Turkey has further been encouraged by the 1996 customs union agreement with

the European Union. Moreover, the new foreign capital regime in 1995 decreased formalities regarding foreign investments in Turkey.

Due to liberalization policies, changes in the foreign policy act and the new arrangements on foreign capital after the 1980's, Turkey had been among the liberal countries regarding the operation of foreign capital. According to the foreign capital act of Turkey, the foreign firms hold similar rights and responsibilities as the domestic firms. As long as they do not cause monopolies, the foreign firms are at liberty to act in the production of goods and services just like any other domestic private sector firms.

Until 1994, the General Directorate of Foreign Investment issued "outward investment incentive certificates". The certificate contained information on the amount of the investment, the incentives granted and the conditions to obtain incentives. Minimum participation requirement for the Turkish investors was \$250.000. Maximum credit available was 25 billion Turkish liras. The credit was repayable over five years in seven equal installments with a two year grace period with an interest rate of 30%. The incentive was lifted in 1995 except for the outward construction projects. Credit facilities are now available through the Turk Eximbank to the Turkish nationals who undertake investments and construction project abroad. Turkey has signed bilateral agreements to avoid double taxation with a lot of countries.

Another movement towards internationalization of the capital in Turkey is the establishment of "FDI Permits" issued by the General Directorate of Foreign Investment. The FDI permits declined in dollar value during the 1995-1997 period.

In 2001, another initiative has been started through launching a reform process to improve administrative procedures to make Turkey a more attractive location for foreign investment. Turkish Government has enacted a "Principle Decision on the Reform Program for Improving the Investment Climate in Turkey" on December 11, 2001. Immediately after the decision, a Coordination Council for the improvement of the investment climate has been established with the participation of Government officials and private sector organizations. The mission of the Council is to identify and remove regulatory and administrative barriers to both foreign and local private investments.

The Council started to work with 9 subcommittees concerned with; Foreign Direct Investment Legislation, Company Registration and Reporting, Employment, Sectoral Licenses, Land Acquisition and Site Development, Taxes and Incentives, Customs and Standards, Intellectual Property Rights, Promotion of Investment. After the reform process, there have been major

improvements achieved which have a direct, significant and immediate impact on the foreign investors. The major improvements are the following;

- The procedures for foreign investors to invest in Turkey have been simplified.

- Complex and time consuming administrative procedures for both local and foreign investors have been eliminated.

- Employment of foreigners in Turkey has simplified by accelerating the process of obtaining a work permit.

- Foreign companies established in Turkey have the same right and subject to the same conditions with the local companies.

Turkey's foreign investment legislation was revised most recently in 2003 through some structural reforms. The procedures for foreign investment are simplified, some bureaucratic formalities are abandoned, and the principle of equal treatment is reemphasized.

The new Law has changed Turkey's foreign investment policy from screening system to monitoring system. The foreign investors are no longer required to obtain permissions or approvals. Foreign investors will only be asked to provide some statistical information to UST for the purpose of developing an information system about foreign investments in Turkey.

The main elements of the new Law are the following;

- Foreign investors will no longer be required to obtain earlier approvals for foreign capital transfers, except for some critical sectors.

- Pre- approval requirements for certain transactions such as capital increase and the change of field of activity of foreign investment companies have also been eliminated.

- Application for the registration of license, know-how, royalty and technical assistance agreements to the General Directorate of Foreign Investment will not be required.

- The minimum capital requirement of USD 50,000 per each foreign shareholder has been eliminated.

- Foreign investors will be able to form a partnership in Turkey.

- Foreign investors have the same privileges and obligations as the domestic capital.

- Foreign capital companies established in Turkey as well as real persons may own a real estate according to the principle of reciprocity.

- Foreign capital firms can employ foreign personnel in Turkey by obtaining the permission from Ministry of Labor.

-Foreign investors may open a liaison office in Turkey by obtaining permission from General Directorate of Foreign Investment. The initial permission is given for three years and it can be extended depending on the earlier activities.

1.2. European Union Foreign Direct Investments in Turkey

Table 1 presents the trend and as well as the share of the EU FDI in Turkey between 1991 and 2003. FDI from the EU has increased from 1028 millions of dollars in 1991 to 3261 in 1996. The fastest increase in the value of foreign investments was in 1996 during which the customs union between Turkey and the EU was established (See Table 1). The amount of the EU foreign direct investment to Turkey decreased until 2000. It went up 1070 millions of dollars from 1999 to 2451 millions of dollars in 2000. After the year 2000, it started to go down again.

The percentage share of EU FDI in Turkey changed between 52.2% and 85% during the period from 1991 to 2003 (See Table 1). The largest share (85%) was achieved in 1996, which customs union agreement between Turkey and the EU was in force. The percentage shares in Table 1 show that more than half of the FDI which Turkey attracts comes from the EU countries.

Table 1. European Union foreign direct investments in Turkey (1991-2003)

Years	FDI From EU (In Millions of Dollars)	Percentage Increase in FDI from EU	The Share of EU in Total FDI in Turkey (%)	Total FDI in Turkey (In Millions of Dollars)
1991	1028	. .	52.2	1967
1992	1119	8.9	61.4	1820
1993	1176	5.0	57.0	2063
1994	971	-17.4	66.0	1478
1995	1873	93.0	64.0	2938
1996	3261	74.1	85.0	3837
1997	1022	-68.7	61.0	1678

1998	1085	6.1	66.0	1646
1999	1070	-1.3	63.0	1701
2000	2451	129.0	71.0	3474
2001	1805	-26.3	66.2	2726
2002	1426	-26.6	64.0	2243
2003 ^a	898	-37.0	74.3	1208

Source: UST (2004) Treasury Statistics:1980-2003, Turkish Prime Ministry, Ankara.

Note: ^a The data covers six months from January to June.

Table 2 presents total EU foreign direct investment in Turkey as well as the share of the EU countries in this total for the period between 1991 and 2003. The last row of the Table 2 shows the average FDI investments from the countries and average percentage shares for the period examined. When the average values are observed it can be said that Netherlands had the highest amount with 404.14 millions dollars in average. France had the second highest amount with 362.54 millions dollars. Germany had the third maximum amount (299.46) in average. However, the United Kingdom, Italy and Belgium/Luxembourg had lower amounts in comparison with Netherlands, France and Germany.

When the average percentage shares are examined it is also observed that Netherlands had the highest average percentage share (27.36) for the time period. Germany and France followed this country with 22.91% and 20.86% average percentage shares respectively. Other EU countries had lower shares for the period between 1991 and 2003.

As it was stated earlier, the Customs Union Agreement between Turkey and the EU increased FDI from the EU. Similarly, FDI from France had the largest increase from 476,05 millions dollars in 1995 to 2.370,35 millions dollars in 1996. After 1996, total FDI from the EU started to decrease because of the economic crises in the last part of 1990s, and it never reached the level that it was in 1996.

It is clear from the above observations that customs union was effective in attracting FDI only for 1996, but this agreement was not successful in attracting FDI from the EU after 1996 as a result of economic crises in Turkey.

2. Studies of FDI In Turkey: A Review

Numerous studies have been conducted to explain the level of FDI activity in Turkey since the reforms in early 1980s. Before 1980s, the level of FDI in Turkey was very low because of the import substitution policy. Many economists (BALASUBRAMANYAN, 1996; TATOĞLU/CLAISTER, 1996; TATOĞLU, 2000; COŞKUN, 2001; ERDAL/TATOĞLU, 2002) argued that changing development strategy from import substitution to export led development policy had positive effect on FDI activity in Turkey since 1980.

Empirical studies on the FDI in Turkey are based on the period after 1980. The existing studies of FDI in Turkey can be grouped into three categories. First, there are studies which focused on the reasons of choosing Turkey for investment (COŞKUN, 2001;TATOĞLU/GLAISTER, 1998). The results of the studies in this group are based on surveys applied to the managers of multi national firms (MNFs) in Turkey. These studies found that the most important factors that attracted FDI inflow were market size, import restrictions, the performance of Turkish economy, low input costs and low wage. Other factors (such as educational level, financial infrastructure, foreign investment law, tariffs and quotas) had low percentages.

The second category in the existing literature consists of the studies which investigated the status of some outward oriented provinces, such as İzmir, to attract foreign direct investment (BARBAROS, 1998).

The last category consists of the studies that list the problems of foreign investors in Turkey. The priority problems of the investors are determined by Foreign Investors Association, which is an association set up by foreign investors in Turkey.

3. The Determinants of FDI

3.1. An Overview of Theory

In this section, the theoretical literature dealing with the determinants of FDI is reviewed. Most of the studies in the literature emphasize the determining factors related with MNFs. The first group of the theoretical studies of FDI goes back to Adam Smith, John Stuart Mill, Torrens and Ohlin. According to OHLIN (1933), the determining factors of FDI are the possibility of receiving high profit in the markets, the necessity to overcome trade barriers and to secure sources of raw materials.

HYMER (1960) was another economist who examined MNFs. He argued that MNFs were able to compete with local firms because of some advantages. These advantages are:

-Imperfect competition in the product market because of product differentiation,

-imperfect competition in the factor market as a result of free access to patented knowledge,

-internal and external economies of scale arising from vertical integration,

With the above advantages, MNFs supply the goods by way of FDI (especially in developing countries) instead of export to these countries.

Another way of thinking on FDI was presented by VERNON (1966) in product cycle model. This model explained the relationship between FDI and foreign trade.

KINDLEBERGER (1969) and CAVES (1971) modified Hymer's analysis. MARKUSEN and VENABLES (1995) developed a model, stressing the importance of MNFs for foreign trade.

Another group of studies on the determinants of FDI is based on the idea of cutting transaction costs by integrating markets through MNFs. BUCKLEY and CASSON (1976) and 1981, were the first to develop this hypothesis. They argue that intermediate product markets are imperfect and they have higher transaction costs when they are managed by different firms. So, they also argue that these costs would be minimized when markets are integrated by MNFs.

DUNNING (1993) developed a paradigm known as OLI (Ownership, Location, Internalization). This paradigm can be presented as follows:

-Foreign firms hold advantages over domestic firms in a given sector as a result of privileged ownership of certain tangible or intangible assets that are only available to foreign firms.

-Given the first argument, the foreign firm will decide whether its ownership advantage will be internalized or sold.

-Given the above arguments, the foreign firm will decide to produce in the host country if there are enough locational advantages to justify production in that country.

Dunning also outlines four reasons for a firm to invest abroad: the searches for resources, for markets, for efficiency, and for new assets. It is generally stressed in the literature that investments in developing countries are increasing for the reason of searching strategic assets, altering the nature of the locational factors.

One of the most recent theoretical studies belongs to GRAHAM (2000). He employed a game theory in order to develop a simplified two-country, one sector model to analyze the entrance of a firm in a foreign country, and to study the reaction to the entrance of a foreigner firm to the domestic market. Graham's work was important since it considers the relationship between domestic and foreign firms.

Another most recent approach is the work of CANTWELL (2000). He considers the technological accumulation as an internal process to the firm. As technology is developed by every firm in a different manner, the competition among firms is basically technological. FDI allows firms to use their knowledge and innovating potential in other environments and increases their specific advantages.

These theoretical explanations indicated that the contribution to FDI literature started with developments in international trade theory. The contributions will be made as MNFs increase their investments to other countries.

3.2. Determinants of FDI: An Overview of Empirical Studies

Empirical studies generally focused on the different determinants of FDI. The main variables normally used are the size of the market, the rate of GNP growth, economic stability, the degree of openness of the economy and several institutional variables. Empirical studies can be classified into several groups according to the countries and the factors they contained.

The first group of the studies is related with developing economies. NUNNENKAMP and SPATZ (2002) studying a sample of 28 developing countries for the period between 1987-2000, find significant Spearman correlations between FDI inflows and per capita GDP, risk factors, years of schooling, foreign trade restrictions and complementary production factors. Population, GNP growth, firm entry restrictions, post entry restrictions, and regulations related with technology were non-significant.

Another study which comprises developing countries belongs to Nair-Reichert and WEINHOLD (2001). Based on panel data for 24 developing countries between the years for 1971 and 1985, they proposed a causality test between FDI and product growth. They found that FDI efficiency was positively influenced by a country's degree of trade openness.

TSAI (1994) analyzed the decades of 1970 and 1980. In this study FDI measured as a flow and a stock. Empirical results of the study indicated that

market size was more important for FDI flows than growth. The trade surplus presents a negative sign and is significant for FDI, while the flow of FDI decreases as the nominal wage decreases. It is also observed that the impact of FDI on economic growth was limited.

The second group of studies was on the transition economies. GARIBALDI *vd.*, (2001) based on data for 26 transition economies between 1990 and 1999, analyzed a large set of variables that were divided into macroeconomic factors, structural reforms, institutional and legal frameworks, initial conditions, and risk analyses. The results indicated that macroeconomic variables such as market size, fiscal deficit, inflation and exchange regime, risk analysis, economic reforms, trade openness, availability of natural resources, barriers to investment and bureaucracy all had the expected signs and were significant. CAMPOS AND KINOSHITA (2003) analyzed 25 transition economies for the period between 1990 and 1998. They reached the conclusion that FDI is influenced by market size, the low cost of labor and abundant natural resources. In addition to these factors sound institution, trade openness and lower restrictions to FDI inflows presented significant results.

The third group of studies consists of the articles both related with a specific country or the role of specific factors on FDI. LOREE and GUISENGER (1995) studied the determinants of FDI investments by the United States in 1977 and 1982, both towards developed countries as well as toward developing countries, and concluded that variables related to host country policy were significant in developed countries. Some of the studies (SCHNEIDER/FREY, 1985; LUCAS, 1993; ENDERS/SANDLER, 1996) in this group concentrated on the effects of specific factors on FDI inflow. Some of these factors are the market size, growth rate, human capital stock and trade openness, the number of terrorist attacks and the war.

4. Methodology and Data

The literature on FDI issues in Turkey commonly used statistical analysis based on data collected through business surveys. Differently from the earlier studies about Turkey, panel data analysis and translog models will be used in this study. These models were used in the literature by DOES (1998), FUNG *vd.*, (2000), SUN *vd.*, (2002), CAMPOS and KINOSHITA (2003).

The model can be presented as follows:

$$\ln FDI_t = \alpha + \sum \beta_k \ln X_{kt} + \varepsilon_t \quad (1)$$

$$(t=1,2,\dots,T), \quad (k=1,2,\dots,K).$$

The dependent variable FDI is the amount of total FDI from the EU in the first analysis, and the amount of FDI from Netherlands and France in the next two analyses. Where subscript t refers to years from 1991 to 2003, and α is the individual effect which is assumed to be constant over time t . The B s are the regression parameters to be estimated and ε is the stochastic disturbance. The value of dependent variable at time t , FDI_t , depends on K determinants, $(X_{1t}, X_{2t}, \dots, X_{Kt})$. The determinants of FDI, X_{kt} , include market size (GDP), labor cost (WAGE), high school enrolment ratio (SCHOOL), infrastructure investments (INVESTMENT), tax rate (TAX), inflation rate (INFLATION), real interest rates (INTEREST), terrorist attacks (TERRORIST), foreign debt ratio (DEPT) and credits borrowed from international organizations (CREDIT). While the first six variables are called as economic determinants of FDI, the last four variables are accepted as risk factors of FDI in the literature.

Theoretically the level of FDI is positively related to the size of the market. In empirical literature, per capita income is used as a proxy for market size. So, it is expected that the larger the market size of a country, the more FDI the country attract. Per capita income values are used for the years “ $t-1$ ” because direct investments in the year “ t ” are done by considering the per capita income values of the country in “ $t-1$ ”.

The second independent variable in the analysis is wage rate. Wage rate is used to represent labor cost. This factor should have a negative impact on the level of FDI as FDI firms want to decrease production costs by cutting down labor costs as much as possible.

Schooling of the labor force is another economic factor. Differently from the earlier studies using secondary and high school enrolment ratio, tertiary education enrolment ratio is used in this study. The reason of using tertiary enrolment ratio is that high skilled labor has become more important in productivity. There is a strong empirical evidence of the positive relation between FDI and the level of schooling of the labor force (Fung vd., 2002, UST, 2002).

Another variable used in the model is the infrastructure investments represented by transportation and energy investments. Since the infrastructure is important in the production and in the transportation of goods produced by FDI firms, high infrastructure investment will have positive effect on FDI inflow. In the empirical analysis, it is assumed that FDI in “ t ” years is a function of infrastructure investments in the year “ $t-1$ ”.

The tax rate, the fifth economic indicator in the model, has a negative effect on FDI investments as higher tax rates increase production costs of FDI firms.

The rate of inflation acts as a proxy for the level of economic stability. Considering that investors prefer investing in more stable economies, it is reasonable to expect that inflation would have a negative effect on FDI.

Real interest rate on Turkish treasury bonds is another important indicator about the performance of the economy. An increase in real interest rate on Turkish treasury bonds shows the increasing risk in the economy, because the increase in the real interest rate indicates the risk that the lenders should take. It is expected that the increasing risk decreases the FDI inflow.

Similarly, terrorism is another risk factor that decreases FDI inflow and negatively related with the amount of direct investments. The third risk indicator, the foreign debt ratio, is also negatively related with direct investment inflow because an increase in foreign debt ratio means a risk in foreign exchange reserves of the country and the limitation of transfer of FDI's profits to home country. The last risk factor is the credit borrowed from international organizations. It is expected that international organizations give credit to the countries with economic and political stability. So, differently from the other risk factors, it can be accepted that the credits provided by International Monetary Fund and The World Bank to Turkey have a positive effect on FDI inflow. It is accepted in the analysis that FDI in "t" years is effected the credits from international organizations for the years "t-1".

In the light of the above explanations, the model can be presented as follows:

$$\ln FDI_t = f\{\ln GDP_{t-1}(+), \ln WAGE_t(-), \ln SCHOOL_t(+), \ln INVESTMENT_{t-1}(+), \ln TAX_t(-), \ln INFLATION_t(-), \ln INTEREST_t(-), \ln TERRORIST_t(-), \ln DEPT_t(-), \ln CREDIT_{t-1}(+)\} \quad (2)$$

The empirical form of equation (2) for this study is presented as follows:

$$\ln FDI_t = \alpha + \beta_1 \ln GDP_{t-1} + \beta_2 \ln WAGE_t + \beta_3 \ln SCHOOL_t + \beta_4 \ln INVESTMENT_{t-1} + \beta_5 \ln TAX_t + \beta_6 \ln INFLATION_t + \beta_7 \ln INTEREST_t + \beta_8 \ln TERRORIST_t + \beta_9 \ln DEPT_t + \beta_{10} \ln CREDIT_{t-1} + \varepsilon_t \quad (3)$$

The estimates were generated with two models, random effect panel and fixed effect panel respectively. Most of the variables such as GDP per capita, wages and infrastructure investments, are converted into dollar values by multiplying average yearly dollar/Turkish Lira exchange rates. FDI from the EU is also in dollar value.

High school enrolment ratio is the ratio of high school students to the total number of population aged between 18-24. Infrastructure investment is the total value of transportation and energy investments in the year considered. While tax rate is the share of total taxes in gross national product, inflation rate is the change in consumer price index from one year to another. Real interest rate shows the real interest rates on Turkish treasury bonds issued in the capital market. Another risk indicator, terrorist attacks, is the number of terrorist attacks for the years. The last two risk indicators, foreign dept ratio and credits from international organizations. Foreign dept ratio indicates the share of total foreign debts, including their interests, in total credit items in the total amount of credits received from international organizations such as IMF and World Bank.

The data on EU FDI is derived from UST (2004), *Treasury Statistics:1980-2003*. The data for GDP per capita, high school enrolment ratio and inflation rate is obtained from Turkish Prime Ministry State Institute of Statistics (SIS), *Statistical Yearbook* (2003). The number of terrorist attacks is from <http://www.teror.gen.tr>. The data on the last six variables- tax rate, interest rate, foreign dept ratio, credit from international organizations, wage rate and infrastructure investment- is from Under Secretariat for Foreign Trade (USFT), *Main Economic Indicators* (2003).

5. Empirical Results

Several hypotheses related with the variables used in the empirical analysis were tested. These hypotheses are presented in Table 3.

Table 3. Hypotheses tested in empirical analysis

Hypothesis Number	Hypothesis Related with Economic Factors
1	The larger the market size in a country, the greater the inflow of FDI that country would attract.
2	A high wage rate in a country discourages foreign investment and thus has a negative influence on the level of inward FDI.
3	The higher the schooling levels of the population, the greater the inflow of FDI.
4	High infrastructure investment will have positive effect on FDI inflow.
5	The higher the tax rate, the lower the inflow of FDI.
6	Higher inflation rate has negative effect on direct investments.

	Hypothesis related with Risk Factors
7	The higher the interest rate, the lower the FDI.
8	The increase in the number of terrorist attacks decreases FDI inflow.
9	A higher foreign dept ratio will decrease FDI inflow to the country.
10	There is a positive relationship between the level of credits obtained from international organizations and FDI inflow.

5.2. Test for Choosing Between Random Effects and Fixed Effects Models

The generally accepted way of choosing between fixed and random effects models is the application of Hausman test (HSIAO, 1986:48). The test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results. The Hausman test (1978) is essentially a χ^2 test for the difference between the variance-covariance matrices of the two estimators with the number of degrees of freedom equal to the number of explanatory variables. Before presenting the results of equation three for total EU, Dutch and French FDI in Turkey, it should be tested whether a fixed effects or random effects formulation is more appropriate.

This test can be reduced to a test of

Ho: Random effects are available,

against

H₁: Random affects are not available.

The necessary statistics for Hausman test are presented in Table 4.

Table 4. Necessary Statistics for Hausman Test

Dependent Variable: Total EU FDI in Turkey The chi-square statistic	17.7609
Dependent Variable: Dutch FDI in Turkey The chi-square statistics	12.2612
Dependent Variable: French FDI in Turkey The chi-square statistics	11.6353
The critical value for 1% significance level	23.2093

It is clear from the statistics in Table 4 that the critical value for the one percent significance level at 10 degrees of freedom is 23.2093. This value is higher than the chi-square statistics in Table 4. As chi-square test values are lower than the critical value, the null hypothesis is accepted. So, the results of random effects model will be presented in the article.

5.3. Analysis Results

The results of equation three for total EU FDI are reported in Table 5 from 1991 to 2003. In Table 5, the first column shows the variables used in the model, the second column show the results of random effects. The major findings from the estimates are summarized as follows.

The results of equation three for total EU FDI are reported in Table 5 from 1991 to 2003. In Table 5, the first column shows the variables used in the model, the second column shows the results of random effects. The major findings from the estimates are summarized as follows.

Table 5. Estimation Results for the European Union FDI in Turkey (Random Effects Model)

Independent Variables	Coefficient ^b
Economic Factors	
LGDP ^a _{t-1}	1.2203 (0.000)
LWAGE ^a	-1.1102 (-2.7717)
SCHOOL ^a	0.01661 (0.0011)
INVESTMENT ^a _{t-1}	0.3922 (3.2901)
TAX ^a	-0.2662 (-3.2851)
INFLATION	-0.0001 (0.6441)
Risk Factors	
INTEREST	-0.0002 (0.5333)
TERRORIST ^a	0.5558 (2.3171)
DEBT ^a	-0.0015 (-3.1116)

CREDIT ^a _{t-1}	1.8700 (2.5376)
CONSTANT	-5.6662 (0.3008)
R ²	0.7811
Adjusted R ²	0.7211
F-Statistic	5.5332

Note: ^a shows the statistically significant variable in 5% and lower than this.

^bThe “t” statistics are given in parentheses.

The level of GDP (market size) is found to have statistically significant and positive effect on the magnitude of inward investment in Turkey. The coefficient for market size is 1.2203 for random effect, indicating that a %1 increase in market size of Turkey in the year t-1 would cause the stock of FDI to rise more than %1 (1.2203%) in the year “t”. Wage rate is another important factor that affects FDI inflow to Turkey. %1 increase in the labor cost would decrease FDI stock more than %1. It is also observed from Table 5 that high school enrolment ratio, infrastructure investment in the year t-1, tax rate, foreign dept ratio and credit from international organizations in year t-1 are found to have statistically significant effect on FDI from the EU. The coefficients of these variables also have the expected signs. However, the coefficient of terrorist attacks has unexpected sign. The coefficient of the credits from international organizations indicates that this variable is the most important factor which determines the EU FDI in Turkey. These empirical results present that per capita GDP, credit from international organizations and infrastructure investments are important determinants of FDI inflow to Turkey from the EU economies. It is also observed that inflation rate is insignificant in the model.

In addition to the above analysis for total EU FDI in Turkey, empirical analysis was repeated for the two EU countries (Netherlands and France), which had the highest FDI investments in Turkey as well. Instead of the total EU investments in Turkey, direct investments of Netherlands and France were used as dependent variable. The purpose of this analysis is to find out whether the factors determining the FDI of these two countries are the same with that of the total EU.

The results of these last two analyses are presented in Table 6. The important results from the Table 6 can be summarized as follows. It is clear that the results related with French and Dutch FDI in Turkey are similar to the results of total EU FDI. All coefficients of the factors determining French and

Dutch FDI have the same signs with the coefficients of the factors determining EU FDI in Turkey.

Table 6. Panel data analysis of Dutch and French FDI in Turkey (Random Effects Model)

Dependent Variable: Dutch and French Foreign Direct Investments in Turkey		
The Period Covered: 1991-2003		
Independent Variables	Dependent Variable: Dutch FDI in Turkey ^b	Dependent Variable: French FDI in Turkey ^b
Economic Factors		
GDP ^a _{t-1}	1.5503 (0.0001)	1.6501 (0.0001)
WAGE ^a	-2.1103 (-3.7715)	-3.1104 (-4.7881)
SCHOOL ^a	0.8163 (0.7811)	0.9252 (0.8810)
INVESTMENT ^a _{t-1}	0.4921 (3.1900)	0.5822 (3.2255)
TAX ^a	-0.3552 (-2.2551)	-0.4552 (-3.2251)
INFLATION	-0.0002 (0.6331)	-0.0003 (0.7341)
Risk Factors		
INTEREST	-0.0001 (0.4332)	-0.0002 (0.4334)
TERRORIST ^a	0.6658 (3.1178)	0.7566 (4.1188)
DEBT ^a	-0.0025 (-4.1115)	-0.0033 (-5.1105)
CREDIT ^a _{t-1}	1.9660 (2.6377)	1.9885 (2.7734)
CONSTANT	-6.5532 (0.3000)	-6.5483 (0.4000)
R ²	0.8011	0.8211
Adjusted R ²	0.7700	0.7900
F-Statistic	6.5332	6.6655

Note: “^a” shows the statistically significant variable in 5% and lower than this.

“^b”The “*t*” statistics are given in parentheses.

The level of GDP (market size) has positive effect on both French and Dutch FDI. The coefficient for market size is 1.55 (random effect) for Netherlands, and 1.65 (random effect) for France. These coefficients indicate that GDP is more important for French direct investments than Dutch direct investments.

6. Conclusion

FDI investments in Turkey started to increase after economic liberalization policies of 1980s. In addition to these policies general economic and political conditions of the country was very effective on FDI inflow as well. For example, FDI inflow decreased during economic crises in 1994 and increased in 1996, when customs union agreement between Turkey and the EU commenced. However, customs union agreement was not effective as much as expected in the next years as a result of economic crises after 1996. Statistical data indicates that Turkey is not a good recipient of FDI from the world in comparison with other countries. As a developing country, Turkey needs capital inflow, especially direct investments in order to complete industrialization policies.

When the share of the countries in total FDI in Turkey is examined, it is clear that the share of the EU countries is more than 50%. Within the EU economies Netherlands, France and Germany have important amounts in the total FDI from the EU.

If Turkey would like to attract FDI from the EU during the full membership negotiations, the determining factors of the FDI inflow should be pointed out. Therefore, the purpose of this article was to examine the important factors in order to attract the FDI from the EU countries. Ten variables, namely GDP per capita, wage rate, high school enrolment ratio, the amount of infrastructure investments, tax rate, inflation rate, interest rate, foreign debt ratio, credit from international organizations, the number of terrorist attacks were used in panel data analysis.

Empirical analysis was repeated three times. In the first analysis, total FDI from the EU for the period 1991-2003 was used as dependent variable. In the second analysis FDI from the Netherlands was used as dependent variable, and in the third analysis FDI from France was used as dependent variables.

Empirical results for the years between 1991 and 2003 indicated that market size, wage rate, high school enrolment ratio, infrastructure investments, tax rate, foreign debt ratio and credit from international organizations have

significant effects on the FDI inflow to Turkey from both the total EU and from the specific countries (Netherlands and France). Empirical results also present that per capita GDP, credit from international organizations and infrastructure investments are important determinants of FDI from the EU economies. So, Turkey should try to increase per capita GDP and infrastructure investments in order to attract FDI from the EU.

References

- BALASUBRAMANYAN, V. (1996), "Foreign Direct Investment in Turkey," TOGAN, Subidey/ BALASUBRAMANYAN, V.N. (eds.), *The Economy of Turkey since Liberalization* (London:Macmillan):112-130.
- BARBAROS, Funda (1998) "Turkey in the Process of Globalization: An Analysis from the Perspective of FDI," *Globalization at the Crossroads:The Next Millennium Conference* (Istanbul): 28-31.
- BUCKLEY, Peter/CASSON, Mark (1976), *The Future of the Multinational Enterprise* (London: Mac Millan).
- BUCKLEY, Peter/CASSON, Mark (1981), "The Optimal Timing of a Foreign Direct Investment," *Economic Journal*, 91/ 2: 75-88.
- CAMPOS, Nauro/ YUKO, Kinoshita (2003), "Why does FDI go where it goes? New evidence from the Transition Economies," *IMF Working Paper*, IMF Institute.
- CANTWELL, John (2000), "A Survey of Theories of International Production," PITELIS, Christos/ SUGDEN, Roger (eds.), *The Nature of the Transnational Firm* (London: Routledge):10-56.
- CAVES, Richard (1971), "International Corporations: The Industrial Economics of Foreign Investment," *Economica*, 38/1: 1-27.
- COŞKUN, Recai (2001), "Determinants of Foreign Direct Investment in Turkey," *European Business Review*, 13/ 4: 221-226.
- DEES, Stephane (1998), "Foreign Direct Investment in China: Determinants and Effects," *Economics of Planning*, 31/ 2-3: 175-194.
- DUNNING, John (1993), *Multinational Enterprise and the Global Economy* (Wokinghan: Addison-Wesley).
- ENDERS, Walter / SANDLER, Todd (1996), "Terrorism and Foreign Direct Investment in Spain and Greece," *Kyklos*, 49/3:331-352.
- ERDAL, Fuat/ TATOĞLU, Ekrem (2002), "Locational Determinants of Foreign Direct Investment in An Emerging Market Economy: Evidence from Turkey," *Multinational Business Review*, 10/ 3: 21-27.
- FUNG, KC/ LIZAKA, Hitomi/ LIN Chelsea/ SIU Alan (2002), *An Econometric Estimation of Locational Choices of Foreign Direct Investment: The Case of Hong Kong and USA Firms in China* (Asian Development Bank Institute).
- GARIBALDI Pietro/ MORA, Nada/ SAHAY, Ratna / ZETTELMAYER, Jeromin (2001), "What Moves Capital to Transition Economies," *IMF Staff Paper* (Washington, D.C.: International Monetary Fund).
- GRAHAM, Edward (2000), "Strategic Management and Transnational Firm Behavior: A Formal Approach,"PITELIS, Christes/SUGDEN, Roger (eds.), *The Nature of the Transnational Firm* (New York: Routledge): 162-173.
- HAUSMAN, Jerry A. (1978), "Specification Tests in Econometrics," *Econometrica*, 46/6:1251-1271.
- HSIAO, Cheng (1986), *Analysis of Panel Data* (New York: Cambridge University Press).

<http://www.teror.gen.tr>

- HYMER, Stephen (1960), *The International Operation of National Firms: A Study of Direct Foreign Investment* (Cambridge Mass (Dissertation): MIT Press).
- KINDLEBERGER, Charles (1969), *American Business Abroad: Six Lectures on Direct Investment* (New Haven: Yale University Press).
- LOREE, David / GUISSINGER, Stephen (1995), "Policy and Non-Policy Determinants of U.S Equity Foreign Direct Investment," *Journal of International Business Studies*, 26/3: 281-299.
- LUCAS, Robert (1993), "On The Determinants of Foreign Direct Investment: Evidence from East and Southeast Asia," *World Development*, 21/3: 391-406.
- MARKUSEN, James/ VENABLES, Antony (1995), "Multinational Firms and New Trade Theory," *National Bureau of Economic Research Working Paper*.
- NAIR, Reicheid/ WEINHOLD, Diana (2001), "Causality Tests for Cross-Country Panels: New Look at FDI and Economic Growth in Developing Countries," *Oxford Bulletin of Economics and Statistics*, 63/2:151-171.
- NUNNENKAMP, Peter/ SPATZ, Julius (2002), "Determinants of FDI in Developing Countries: Has Globalization Changed the Rules of Game?," *Transnational Corporations*, 11/2:1-34.
- OHLIN, Bertil (1971), *Comercio Interregional e Internacional* (Barcelona: Oikos).
- SCHNEIDER, Friedrich/ FREY, Bruno (1985), "Economic and Political Determinants of Foreign Direct Investment," *World Development*, 13/2:161-175.
- SUN, Qian/ WILSON, Tong/QIAO, Yu (2002), "Determinants of Foreign Direct Investment Across China," *Journal of International Money and Finance*, 21/1:79-113.
- TATOĞLU, Ekrem/ GLAISTER, Keith (1996), "Trends and Patterns of Foreign Direct Investment in Turkey," *European Business Review*, 96/6:11-21.
- TATOĞLU, Ekrem/GLAISTER, Keith (1998), "Western MNCs' FDI in Turkey: An analysis of Location Specific Factors," *Management International Review*, 38/2:133-159.
- TATOĞLU, Ekrem (2000), "Western Joint Ventures in Turkey: Strategic Motivates and Partner Selection Criteria," *European Business Review*, 12/3: 137-147.
- TSAI, Pan-Long (1994), "Determinants of Foreign Direct Investment and Its Impact on Economic Growth," *Journal of Economic Development*, 1971:137-163.
- SIS (2003), *Statistical Yearbook* (Ankara).
- USFT (2003), *Main Economic Indicators* (Ankara).
- UNCTAD (2004), *2003 World Investment Report*.
- UST (2004), *Treasury Statistics: 1980-2003* (Ankara).
- VERNON, Ray (1966), "International Investment and International Trade in the Product Cycle," *Quarterly Journal of Economics*, 80/3:190-207.