

Determinants of Foreign Direct Investment: An Empirical Analysis for Turkey

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Abstract: *This paper aims to investigate empirically the determinants of FDI for Turkey over the annual period of 1975-2012. Our main interest is to study how different reflecting inflows of FDI in Turkey are. This study examines time series data evidence concerning empirical relevance between FDI attraction and its determinative effects. As a definition, FDI is a direct investment into production or business in a country by an individual or company of another country, either by buying a company in the target country or by expanding operations of an existing business in that country. Unit root and Johansen cointegration tests are used in order to analyze the determinants of FDI for Turkey. Our econometric model expresses foreign direct investment (FDI), as a function of market size (GDP), openness (OPEN) calculated as $\text{Export} + \text{Import} / \text{GDP}$, inflation rate (CPI), energy production (EP), labor productivity (LABOR). The major results show that there is a positive effect of GDP, OPEN, EP and LABOR on FDI. But CPI's effect on FDI is negative in the long run.*

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Introduction

Economic development of a country depends on utilization of resources for increasing productive capacity. In many developing countries, utilization of resources is rendered impossible by the scarcity of domestic capital. One of these economic problems of developing countries is that they do not have enough national savings to finance their investments. They are in constant need of foreign capital in forms of both direct and indirect investments. Foreign direct investment (FDI) is a process whereby the residents of the source country attain ownership of assets with the intention to control the production, distribution and other activities of a firm in the host country (Khachoo and Khan, 2012). Foreign direct investment (FDI) is a way of international loan, by which those countries that have better investment opportunities at the present borrow from those that have capital surplus.

FDI can be a crucial instrument to foster economic growth. FDI provides developing countries with the much needed capital for investments and enhances job creation, managerial skills and transfer of technology for less developed countries. Furthermore, FDI encourages technological development and also support the accumulation of physical capital.

FDI plays a significant role in the development of international trade, and it helps to establish direct, stable, and long-lasting links between economies. The Organization for Economic Co-operation and Development (OECD) states that; FDI can serve as an important vehicle for local enterprise development, strengthening the competitiveness of both the recipient and investor (Groh and Wich, 2012). For example, Turkey in particular is pursuing further political and monetary integration with Europe. In that case maintaining a government effectiveness that is conducive to foreign investment and increases comparative advantage is integral to its integrationist aspirations.

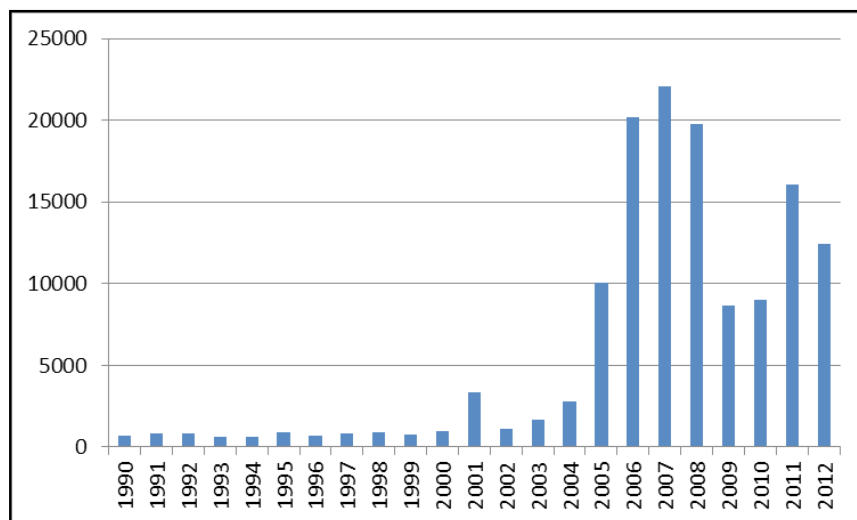
The significance of foreign direct investment (FDI) flows is well documented in literature for both the developing and developed countries. Foreign Direct Investment (FDI) inflows to developing countries have been substantially increasing and, compared to other capital flows, have remained the largest component of net resource flows to developing countries. FDI is a key element in international economic integration. FDI creates direct, stable and long-lasting links between economies. As a definition FDI is a direct investment into production or business in a country by an individual or company of another country, either by buying a company in the target country or by expanding operations of an existing business in that country. It encourages the transfer of technology and know-how between countries, and allows the host economy to promote its products more widely in international markets (Todaro, 1994).

The role of foreign direct investment in the development of Turkish economy cannot be over emphasized. Foreign direct investment provides capital for investment; it enhances job creation and managerial skills, and possibly technology transfer.

We shall present our analysis with a brief history of the Turkish economy. Today, Turkey is one of the most attractive investment destinations for foreign investors. It benefits from a unique strategic location; a young, dynamic and skilled workforce, and a stable political and economic environment. Turkey received foreign investment inflows of only US\$18m 33 years ago when it started to host foreign investors. Now, the cumulative value of foreign investments has surged to US\$138.3b. While the aggregate volume of foreign investment inflows totalled only US\$14.6b during the 80-year period from the establishment of the Turkish Republic to 2003, this figure rose to US\$123.7b during the last decade. In other words, Turkey attracted 8.5 times more foreign inward investment over the last decade than it did in the previous 80 years. Turkey now plays a significant role in the global economy and world trade, standing out as a promising emerging market alongside Brazil, Russia, India and China. This status is underpinned by its robust local market and young population. Despite the global economic crisis and the political and social issues that have afflicted neighbouring regions, Turkey exported more goods in 2012 than ever before. Total exports valued at US\$152.6b were supplied to 241 countries and regions worldwide. The well-trained and loyal workforce played a notable role in achieving this success. Turkey offers another layer of opportunity by serving as a frontier to other regions.

Figure 1 shows the total amount of FDI inflows to Turkey in US Dollar at current prices and current exchange rates in millions. FDI flows to Turkey have been increased largely after 2004. FDI flows into Turkey fell in 2009 due to the global crisis similar to most developed and developing countries. After then FDI started to increase again.

Figure 1. FDI Inflows to Turkey (US dollars in millions)



Source: Central Bank of the Republic of Turkey, own construction

Table 1. FDI Inflow to Turkey by Year (USD million)

	2010	2011	2012	2013	2014
FDI Total (Net)	9,099	16,176	13,282	12,457	12,530
Equity Investments (Net)	6,221	14,146	10,126	9,298	8,445
Inflows	6,256	16,137	10,759	9,866	8,699
Liquidation Outflows	35	1,991	633	568	254
Intra -company Loans*	384	17	520	110	-236
Real Estate (Net)	2,494	2,013	2,636	3,049	4,321

*Loans of companies with foreign capital are given by foreign partners (www.tcmb.gov.tr)

Source: Central Bank of the Republic of Turkey (TCMB), Electronic Data Delivery System, Outstanding External Debt and Balance Of Payments Statistics

According to the UNCTAD 2014 World Investment Report, Turkey has become the largest recipient of FDI in West Asia, and is among the fifteen most promising investors for 2014-2016. The country has adopted a series of legislative reforms to facilitate the reception of foreign investment, such as the creation of Investment Support and Promotion Agency of Turkey (ISPAT), a showcase effort undertaken to attract foreign operators. FDI inflows improved in light of the development of public-private partnerships for major infrastructure projects, the measures to streamline administrative procedures and strengthened intellectual property protection, the end of FDI screening and the structural reforms carried out with a view to the future accession into the EU. In 2014, Turkey announced a major national infrastructure development plan that should attract major foreign investment. In 2014, the joint venture of Koc Holding (Turkey) and Fiat (Italy) invested USD 300 million in developing automobile production. Also, a number of Chinese companies have invested up to USD 385 million in the electricity distribution company OEDAS. Finally, a Japanese group has invested USD 500 million in a steelworks plant in collaboration with a Turkish company. The countries of the European Union, the Gulf States and the United States are among the main investors in Turkey. The business climate deteriorated in 2014 according to the Doing Business report of the World Bank, the country losing 4 places (55th out of 189 countries). However, FDI amounted to USD 12.5 billion in 2014, an increase on 2013 (Central Bank of the Republic of Turkey, 2014).

There exists vast literature on determinants and effects of FDI. The issue has increased in importance due to strong globalization processes. Many developed and developing countries try to attract FDI to support their economic growth and development. Dunning's eclectic paradigm (1993) was initiating the investigation of the locational advantages of the host countries e.g., income levels, market size, skills, infrastructure, political and macroeconomic stability that determines cross-country pattern of FDI.

The determinants of FDI have been analyzed in the literature in many studies. Numerous theoretical and empirical studies (Agarwal, 1980; Brainard, 1993;1997; Gastanaga et. al., 1998; Ekholm, 1998; Zhang and Markusen, 1999; Barros and

Cabral, 2001; Chakrabarti, 2001; Moosa, 2002) on the determinants of FDI lead us to select a set of explanatory variables that are widely used and found to be significant determinants of FDI. For example Markusen and Maskus (1999), Love and Lage-Hidalgo (2000), Lipsey (2000), Lim (2001), and Moosa (2002), Asiedu (2006), Cleeve (2008), Mhlanga et al. (2010), Vijayakumar et al. (2010), Wang and Swain (1995), Liu (1997), Dees (1998) and Cheng and Kwan (1999) highlight how the domestic market size can relate to the location of FDI.

Mainardi (1992) emphasizes the level of importance and growth prospectus of the real per capita GDP in taking investment decisions in a region. Lunn (1980), Schneider and Frey (1985), Culem (1988), Cheng and Gastanaga (2001) and Cleeve (2008), Mohammed and Sidiropoulos (2010) discuss the positive effects of GDP growth rate proxy of market growth. To foreign investors who operate in industries characterized by relatively large economies of scale, the importance of the market size and its growth is magnified. This is because they can exploit scale economies only after the market attains a certain threshold size. The most widely used measures of market size are GDP, GDP/capita and growth in GDP. The coefficients are usually positive.

One of the determinants of FDI is labour cost. Labour cost is one of the major components of the cost function, it is mentioned that high nominal wage, other things being equal, deters FDI. This is true for labour-intensive production sectors. Therefore, conventionally, the expected sign for this variable is negative. The studies that find no significant or a negative relationship of wage and FDI are: Goldsbrough (1979), Saunders (1982), Kravis and Lipsey (1982), Flamm (1984), Wheeler and Mody, (1990), Sader (1993), Lucas (1993), Tsai (1994), Wang and Swain (1995), Barrell and Pain (1996), Cheng and Kwan (1999) and Botric and Skuflic (2006) sign that lower wages attract FDI positively. Nonetheless, there are other researchers who have found out that higher wages do not always deter FDI in all industries and have shown a positive relationship between labour costs and FDI (Moore, 1993; and Love and Lave-Hidalgo, 2000). Because higher wages indicate higher productivity, hi-tech research oriented industries in which the quality of labour matters, prefer high-quality labour to cheap labour with low productivity. Coughlin and Segev (2000) and Cheng and Gastanaga (2001), by the OLS method, indicate that labour productivities and rate of capable labours have positive impact on FDI.

Recently, a few researchers have also studied the impact of specific policy variables on FDI in host countries. One of these policy variables is openness of trade. Gastanaga, Nugent, and Pashamova (1998) and Asiedu (2002) focus on policy reforms in developing countries as determinants of foreign direct investment inflows. They find corporate tax rates and degree of openness to foreign direct investment to be significant determinants of FDI. Kravis and Lipsey (1982), Culem (1988), Edwards (1990), Sun (2002), Kuo and Huang (2003), Asiedu (2006), Cleeve (2008), Mhlanga et al. (2010) find significant positive effects on FDI also. Schmitz and Bieri (1972) and Wheeler and Mody find insignificant effects of openness on FDI.

For foreign investors, economic stability of home country is very important. The economic stability conditions affect the profitability of investment projects. Therefore, foreign investors seek countries which have economic stability. One of the economic stability proxies is inflation rate. Low inflation policies are often offered to multinationals as an incentive to attract FDI inflows. Empirical studies (Schneider and Frey, 1985; Asiedu, 2006; Mohammed and Sidiropoulos, 2010) indicated a negative relationship between inflation and FDI.

Likewise the effect of infrastructure on FDI flows is a fairly well-studied topic although the direction and magnitude of influence is generally positive. Biswas (2002) claimed that quality of infrastructure should increase FDI into the host country. He used phone lines per 1000 inhabitants for proxy of infrastructure. Similarly, Vijayakumar et al. (2010) also acknowledge that infrastructure index effects FDI positively.

Looking at the fundamental determinants, Markusen (2002) argues that there are two factors that turn out to be crucial for the existence of horizontal FDI: the size of the local markets and the marginal production cost in the case of producing directly in the host market. The first factor is evident: firms invest abroad to serve the local host market. Therefore, the size of the local demand (known also as market size or market potential) will be a determinant for the firm's investment decision. The second factor, the level of local production costs, will determine whether the firm produces locally to sell locally or it supplies the host market by exporting its home-based production.

A large number of studies have been conducted to identify the determinants of FDI but no consensus view has emerged in the sense that there is now idely accepted set of explanatory variables that can be regarded as the "true" determinants of FDI. Chakrabarti (2001) attributes the lack of consensus to "the wide differences in perspectives, methodologies, sample-selection and analytical tools".

Research on FDI has been one of the most crucial areas of international economics. Although there is sizeable research on the determinants of FDI, empirical studies on FDI in developing countries such as Turkey are relatively scarce.

This study is important because Turkey had experienced declining and fluctuating foreign investment inflows. Besides, Turkey alone cannot provide all the funds needed to invest in various sectors of the economy. The objective of this study, therefore, is to identify the long run relationship between FDI and some macroeconomic variables. To accomplish this purpose, in this work we have reviewed empirical evidence on the relationship between FDI and other economic variables. This study has modelled FDI with macroeconomic variables in Turkey. The objective of this paper has been to focus solely on the relationship between FDI inflows and macroeconomic variables for Turkey. Cointegration technique, proposed by Engle and Granger (1987) and extended by Johansen (1988), has been applied to evaluate the long-run hypothesis that our variables are cointegrated. The basic idea is that individual time series wander considerably but economic forces tend to make these series stationary. Given the basic economic model, FDI has been hypothesized to be cointegrated with the economic growth, openness, inflation and electricity consumption.

Finally, we employed cointegration approach to determine the long-run factors contributing to FDI in Turkey. It is important to use this approach in our cointegration test as, during the sample period, the Turkish economy has been subject to serious economic developments.

This paper is organized as follows: Section 2 begins by illustrating the inherently multivariate nature of cointegration analysis: several variables must be involved, and this determines the form of the statistical tools required. Section 3 explains econometric methodology. Section 4 presents empirical result. Section 5 concludes.

Model Specification and Data

The determinants of FDI have been analyzed in the literature in many studies using different models. In order to investigate empirically, the determinants of FDI for Turkey following empirical models were used:

$$FDI_t = \beta_0 + \beta_1 GDP_t + \beta_2 OPEN_t + \beta_3 CPI_t + \beta_4 E_t + u_t \quad (1)$$

$$FDI_t = \beta_0 + \beta_1 GDP_t + \beta_2 OPEN_t + \beta_3 CPI_t + \beta_4 LABOR_t + u_t \quad (2)$$

where t denotes time, and the variables are defined as:

- FDI denotes the net foreign direct investments in flows as % of GDP,
- GDP is gross domestic product (US\$) (proxy of market size) ,
- OPEN is openness index (total trade -export+ import / GDP),
- CPI is consumer price index (annual % - proxy of inflation-as an indicator of macro economic instability)
- EP is electricity production (kWh-proxy of availability of infrastructures)
- LABOR is labour productivity (real output divided by total labour input)

The data obtained from the World Development Indicators is in yearly format and spans a period of 1975-2012 except labour productivity data. This data has been taken from the OECD online database. The time span allows us to use 38 observations for our time series analysis. E Views 8 is used for all estimations. All data are expressed in real terms.

As a first step, we estimate a VAR system for Turkey. We use the Schwarz' Information Criteria statistics to choose the lag-length. As a general check of our specification we always checked whether the residuals follow a normal distribution, and whether there is any heteroscedasticity or serial correlation. We moved to the cointegration test only after the residuals were homoscedastic and normally distributed. As for the form of the cointegration vector, we preferred to assume that our data is difference stationary and there is no linear deterministic trend in our data.

Methodology

By bridging the gap between domestic savings and investment and bringing the latest technology and management know-how from developed countries, foreign direct investment (FDI) can play an important role in achieving rapid economic growth in developing countries (Mottaleb and Kalirajan, 2010). To shed light on the potential drivers of FDI to Turkey, we perform cointegration methods. Before modelling the data, we consider its basic stationary properties. The preliminary step of our analysis is to check the time series variables are stationary or non-stationary. Most of the time series data generally have trend, cycle, and/or seasonality. By removing these deterministic patterns, the remaining series must be stationary. Therefore, a test of the null hypothesis of non-stationarity is conducted via the well-known Dickey-Fuller procedure. Stationarity in a time series implies to a condition where the series has a constant mean and constant variance. This implies that the mean and variance of stationary time series do not vary over time. We first study the stationarity property of the time-series variables used in the study.

The first step in statistical testing the non-stationarity of time series data is to test for random walk. Testing this means to find out whether the variables contain unit root. This is also called the Unit Roots Test.

As discussed earlier using the non-stationary series in estimating relations may give spurious results. In case the first difference is stationary (has no unit root) then the series is described having integration of order 1 and is denoted $I(1)$. If two time series are integrated of order or $I(1)$, it is well known that the correlation coefficient between them will tend towards plus or minus unity, whether an economic relationship between them exists or not. One important property of variables having $I(1)$ property is that their linear combination can be $I(0)$. This means the linear combination non-stationary series of $I(1)$ can be stationary. These variables are described as cointegrated variables.

A necessary condition for testing for a long-run relationship between variables is that these variables are $I(1)$, i.e., stationary in first differences. We, therefore, use the classical unit root tests, namely, the Augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1981; Said and Dickey, 1984). ADF test is based on the null hypothesis that a unit root exists in the time series.

The null hypothesis is that the variables in question contain unit root and the alternative hypothesis is that the variables are trend stationary. The ADF statistics suggests that all variables are $I(1)$.

To determine whether a long-run relationship exists foreign direct investment, economic growth, openness, inflation rate and electricity production are considered. We must not only test whether both variables are integrated of the same order, but we need to find evidence for a cointegration. Here we apply the JJ (1990) procedure to test for the presence of a cointegration.

Once it is established that series are $I(1)$, we can proceed to test for a long-run relationship between the series. If such a relationship exists, series are cointegrated. To achieve this, we start out with the vector auto regression approach of Johansen (1988) and Johansen and Juselius (1990).

In the JJ method, two tests are used to determine the number of cointegrating vectors (r): the trace test and the maximum eigenvalue test. In the trace test, the null hypothesis is that the number of cointegrating vectors is less than or equal to r , where r is 0, 1, or 2. In each case, the null hypothesis is tested against a general alternative. In the maximum eigenvalue test, the null hypothesis $r = 0$ is tested against the alternative that $r = 1$, $r = 1$ against the alternative $r = 2$, etc.

Empirical Results

We first perform unit root tests in levels and first differences in order to determine univariate properties of the series used in this study. We, therefore, use the classical unit root tests, namely, the Augmented Dickey-Fuller (ADF) test. The ADF test is based on the null hypothesis that a unit root exists in the time series.

The null hypothesis is $H_0: \phi = 0$ and the alternative hypothesis is $H_1: \phi \neq 0$. First order integrated series can present stationary linear combinations ($I(0)$). In these cases, we say variables are cointegrated. It means there is a long-run equilibrium linking the series, generating a kind of coordinated movement over time.

In the light of econometric setting presented in the previous section, the empirical results are discussed in this section. The analysis is started by the test of the stationarity properties of the data series. This is the prime requirement for cointegration causality test. The results are presented in Table 1. It is evident from the table that the calculated ADF statistics are less than their critical values in all cases, suggesting that the variables are not level stationary.

The results indicate that for Turkey, all the variables are non-stationary in their levels but stationary in their first differences. This means that we can proceed with the Johansen cointegration tests for these countries.

However, they are stationary in their first differences. The values in brackets indicate the lag structure in ADF. The Schwarz's Information Criterion (SIC) was used to determine the number of lags for the cointegration tests. These results indicate that the cointegrating technique has to be applied in order to analyse the long-run relationship between these variables. Johansen and Juselius (JJ) (1990) cointegrating method is utilized for this purpose.

Table 2. Unit Root Test Results

<i>Series</i>	<i>Level</i>		<i>First Difference</i>	
	τ_{μ}		τ_{μ}	
	τ_{τ}	τ_{μ}	τ_{τ}	τ_{μ}
FDI	-0.548250 (0)	2.915183 (0)	-5.352229 (5)*	-3.912278 (0)*
GDP	-1.170291 (0)	1.763019 (0)	-5.987356 (0)*	-5.330377 (0)*
OPEN	-2.763083 (0)	-1.052409 (0)	-5.417465 (0)*	-5.497118 (0)*
CPI	-2.390373 (0)	-1.973490 (0)	-7.225054 (0)*	-7.080614 (0)*
LABOR	-2.441679 (6)	-2.449072 (6)	-7.004778 (1)*	-7.127342 (1)*
EP	-2.301159 (0)	0.545275 (0)	-6.302344 (0)*	-6.109945 (0)*

Source: Author's own calculations.

Note: The t statistics refer to the ADF tests. The subscripts μ and τ indicates the models that allow for a drift term and both a drift and a deterministic trend, respectively. Asterisk (*), shows significance at 5% level. Figures in parentheses indicate the lag length. The critical values are obtained from MacKinnon (1991) for the ADF test. ADF test examines the null hypothesis of a unit root against the stationary alternative.

The Johansen cointegration test identified cointegrating relationship between FDI inflows and explanatory variables. To find which variables adjust to the long run cointegrating relations, we focus on cointegration in the Vector Autoregressive model (VAR). The VAR model will provide a feasible empirical system for the analysis of our integrated economic time series.

Before undertaking cointegration tests, let us first specify the relevant order of lags (p) of the vector autoregression (VAR) model. The Schwarz's information criterion (SIC) is used to determine the optimal lag length. The SIC criterion yield a VAR (3) for two models.

Having confirmed the existence of unit roots for all the data series, the next step is to check possibility of long run equilibrium relationship between them. The cointegration test is applied for the same at the individual level as well as panel level. The Johansen's maximum likelihood test has been applied. The estimated results of Johansen's test are reported in Table 2. The results from the trace and max-eigenvalue test are reported in the tables below together with the normalized cointegration vector:

Table 3. Johansen-Juselius Maximum Likelihood Cointegration Tests

Model I: $FDI_t = \beta_0 + \beta_1 GDP_t + \beta_2 OPEN_t + \beta_3 CPI_t + \beta_4 E_t + u_t$

Trace Test				Maximum Eigenvalue Test			
Null	Alternative	Statistic	95 % Critical Value	Null	Alternative	Statistic	95 % Critical Value
$r = 0$	$r \geq 1$	136.02	69.81	$r = 0$	$r = 1$	53.05	33.87
$r \leq 1$	$r \geq 2$	82.96	47.85	$r \leq 1$	$r = 2$	40.41	27.58
$r \leq 2$	$r \geq 3$	42.55	29.79	$r \leq 2$	$r = 3$	24.90	21.13
$r \leq 3$	$r \geq 4$	17.65	15.49	$r \leq 3$	$r = 4$	17.63	14.26
$r \leq 4$	$r \geq 5$	0.012	3.84	$r \leq 4$	$r=5$	0.01	3.84

Source: Author's own calculations.

Model II: $FDI_t = \beta_0 + \beta_1 GDP_t + \beta_2 OPEN_t + \beta_3 CPI_t + \beta_4 LABOR_t + u_t$

Trace Test				Maximum Eigenvalue Test			
Null	Alternative	Statistic	95 % Critical Value	Null	Alternative	Statistic	95 % Critical Value
$r = 0$	$r \geq 1$	176.0855	69.81889	$r = 0$	$r = 1$	82.56708	33.87687
$r \leq 1$	$r \geq 2$	93.51844	47.85613	$r \leq 1$	$r = 2$	47.27528	27.58434
$r \leq 2$	$r \geq 3$	46.24316	29.79707	$r \leq 2$	$r = 3$	26.15473	21.13162
$r \leq 3$	$r \geq 4$	20.08843	15.49471	$r \leq 3$	$r = 4$	18.41811	14.26460
$r \leq 4$	$r \geq 5$	1.670316	3.841466	$r \leq 4$	$r=5$	1.670316	3.841466

Source: Author's own calculations.

Notes: We have employed the Schwarz's information criterion (SIC), in the determination of lag length in the VAR model.

The cointegration tests confirm our initial hypothesis regarding the long-run relationship between FDI and other variables. For the first model, the implementation of the JJ procedure indicates that there is a long-run equilibrium relationship among

FDI, GDP, OPEN, CPI and EP. Also there is a long-run equilibrium for the model two.

Table 4. Estimates of Long-Run Cointegrating Vectors

FDI	GDP	OPEN	CPI	EP
1.000	732,5 (243,1)	8.66E-10 (1,6E-09)	-73,96 (33,8)	0,265 (0,57)

FDI	GDP	OPEN	CPI	LABOR
1.000	624.19 (128.36)	1.30E-09 (6.9E-10)	-45.68 (26.12)	5.74 (20.92)

Source: Author's own calculations.

Note: Numbers in parentheses are standard errors.

Estimates of long-run cointegrating vectors are given in Table 8. Our econometric estimates of FDI functions for Turkey suggest that GDP as a proxy of market size related to location of FDI and most effective determinants in model one and two. This means that foreign investors prefer big market size because of scale economies. There is a positive relationship between openness and FDI but this is a small relationship in case of Turkey. There is a negative relationship between FDI and CPI. For foreign investors, home country's economic stability is important. As CPI is the used proxy of economic stability, results of models are as expected. Energy production is used as a proxy of infrastructure and we found that EP affects FDI positively. Labour productivity is related to FDI positively. High labour productivity means low labour cost. Low labour cost attracts FDI for labour-intensive production sectors. Labour productivities and rate of capable labours have positive impact on FDI.

Conclusion

During the past ten years we have seen a tremendous growth of foreign direct investment. Further economic development of Turkey depends to a large extent on continuous FDI and policy-making that will facilitate inward investment. The modelling strategy adopted in this study involves two steps:

- determining the order of integration of the variables by employing unit-root tests;
- if the variables are integrated in the same order, we apply the Johansen – Juselius(1990, 1992, 1994) maximum likelihood method of cointegration 3 to obtain the number of cointegrating vector(s).

The long-run relationship between FDI, GDP, OPEN, CPI, EP and LABOR is tested

by conducting cointegration test over the period 1975 to 2012. In the first place, the intention of the study is to examine the long-run linear relationship between FDI and explanatory variables. The empirical results at the first phase proved that none of the series is stationary and has to be differenced in order to convert the series into stationary. All these series are statistically significant at first difference order and are integrated in the same order. The next test of cointegration established that the FDI inflows are said to have long run linear relationship with GDP, openness, consumer price index, electricity production and labour productivity. Based on the cointegration analysis, stability of these macroeconomic variables will expectedly attract more FDI into Turkey for sustainable economic growth. The above-findings have important policy implications. Firstly, since the market size of the host country has significant effect on FDI, there is need for continuous increase and growth of the nation's Gross Domestic Product. Secondly, the major results show that there is a positive effect of market size, openness, energy production and labour productivity on FDI. But CPI as a proxy of market stability affects FDI negatively in the long run. At the same time, we provide evidence that is complementary to Açıkalın, Gülve Yaşar (2006), as well as Düzgün (2007) in one important respect.

These empirical findings have important key policy implications for Turkish economy. FDI inflows of Turkey can be used to predict the decisions of foreign residents who want to invest in this host economy in the long run with these empirical findings. The scope of this study could be much broader in terms of analyzing the effect of differences in FDI inflows, combined market size, openness, consumer price index, electricity production and labour productivity. This would perhaps give a much broader and clear picture of the determinants of FDI inflows to Turkey.

There are many other questions that we should take into consideration in further development of this study. However, it is worth mentioning that the determinants of the FDI and effects on growth in the cointegration framework seem to offer new suggestions for future research.

References

- Açıkalın, S., Gül, E., & Yaşar, E. (2006). Ücretler ve Büyüme ile Doğrudan Yabancı Yatırımlar Arasındaki İlişkinin Ekonometrik Analizi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 16, 271-282.
- Agarwal, J. P. (1980). Determinants of foreign direct investment: A survey. *Weltwirtschaftliches Archiv*, 116(4), 739-773.
- Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: is Africa different? *World Development*, 30, 107-119.
- Asiedu, E. (2006). Foreign direct investment in Africa: the role of natural resources, market size, government policy, institutions and political instability. *World Economy*, 29(1), 63-77.

- Barrell, R., & Pain, N. (1996). An econometric analysis of US foreign direct investment. *The review of economics and statistics*, 78, 200-207.
- Barros, P.P., & Cabral, L.M.B. (2001). Government subsidies to foreign direct investment, *CEPR Working Paper*, February.
- Biswas, R. (2002). Determinants of foreign direct investment. *Review of Development Economics*, 6(3), 492-504.
- Botrić, V., & Škuflić, L. (2006). Main determinants of foreign direct investment in the southeast European countries, *Transition Studies Review*, 13(2), 359-377.
- Brainard, S.L. (1993). An empirical assessment of the factor proportions explanation of multinationals sales, *NBER Working Paper* No. 4580. Cambridge, MA: National Bureau of Economic Research.
- Brainard, S.L. (1997). An empirical assessment of the proximity–concentration trade-off between multinational sales and trade. *American Economic Review*, 87(4), 520–544.
- Chakrabarti, A. (2001). The determinants of foreign direct investment: sensitivity analyses of cross-country regressions. *Kyklos*, 54(1), 89-114.
- Cheng H., & Gastañaga V. (2001). Factors affecting foreign direct investment — with an analysis of the disparity between the coastal and western regions of China. *Review of Pacific Basin Financial Markets and Policies*, 4(4), 479-493.
- Cheng, L. K., & Kwan, Y. K. (1999). FDI stock and its determinants. In: Wu, Y. (Ed.), *Foreign Direct Investment and Economic Growth in China*, Chapter 3. Edward Elgar, Cheltenham, 42-56.
- Cleeve, E. (2008). How effective are fiscal incentives to attract FDI to Sub-Saharan Africa? *The Journal of Developing Areas*, 42(1), 135-153.
- Coughlin, C. C., & Segev, E. (2000). Foreign direct investment in China: a spatial econometric study. *World Economy*, 21(1), 1-23.
- Culem, C. G. (1988). The locational determinants of direct investments among industrialized countries. *European Economic Review*, 32, 885-904.
- Dees, S. (1998). Foreign direct investment in China: determinants and effects. *Economics of Planning*, 31, 175-194.
- Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 49, 1057-1072.

Dunning, J.H. (1993). *Multinational Enterprises and the Global Economy*, Harrow: Addison-Wesley.

Düzgün, R. (2008). Doğrudan Yabancı Sermaye Yatırımları ve Yurtiçi Yatırımlar Arasındaki Eşbütünleşim İlişkisi: Türkiye Örneği, *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi*, 9(1), 187-204

Edwards, S. (1990). Capital flows, foreign direct investment and dept. equity swaps in developing countries, *National Bureau of Economic Research* (Cambridge, M.A.), Working Paper No: 3497.

Ekholm, K. (1998). Proximity advantages scale economies, and the location of production. In: *The geography of multinational firms*, Springer US, 59-76.

Flamm, K. (1984). The volatility of offshore investment. *Journal of Development Economics*, 16(3), 231-248.

Gastanaga, V. M., Nugent, J.B., & Pashamova B. (1998). Host country reforms and FDI inflows: how much difference do they make? *World Development*, 26(7), 1299-1314.

Goldsbrough, D.G. (1979). The role of foreign direct investment in the external adjustment process. *International Monetary Fund Staff Papers*, 26, 725-754.

Groh, A. P., & Wich, M. (2012). Emerging economies' attraction of foreign direct investment. *Emerging Markets Review*, 13(2), 210-229.

Huang, J. T., Kuo, C. C., & Kao, A. P. (2003). The inequality of regional economic development in China between 1991 and 2001. *Journal of Chinese Economic and Business Studies*, 1(3), 273-285.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, 52(2), 169-210.

Khachoo, A. Q., & Khan, M. I. (2012). Determinants of FDI inflows to developing countries: a panel data analysis. MPRA Paper No. 37278

Kravis, I. B., & Lipsey, R. E. (1982). The location of overseas production and production for export by US multinational firms. *Journal of International Economics*, 12(3), 201-223.

Lim, M. E. G. (2001). *Determinants of, and the Relation Between, Foreign Direct Investment and Growth: A Summary of the Recent Literature* (No. 1-175). International Monetary Fund.

- Lipsey, R. E. (2000). Interpreting developed countries' foreign direct investment, National Bureau of Economic Research, *Working Paper* 7810, 1–24.
- Liu, X., Song, H., Wei, Y., & Romilly, P. (1997). Country characteristics and foreign direct investment in China: A panel data analysis. *Weltwirtschaftliches Archiv*, 133(2), 313-329.
- Love, J. H., & Lage-Hidalgo, F. (2000). Analysing the determinants of US direct investment in Mexico. *Applied Economics*, 32(10), 1259-1267.
- Lucas, R. E. (1993). On the determinants of direct foreign investment: evidence from East and Southeast Asia. *World Development*, 21(3), 391-406.
- Lunn, J. (1980). Determinants of US direct investment in the EEC: Further evidence. *European Economic Review*, 13(1), 93-101.
- Mainardi, S. (1992). Foreign direct investment in Latin America and South East Asia: relevance of macroeconomic and policy-related factors. *Giornale degli Economisti e Annali di Economia*, 51(5-8) 259-279.
- Markusen, J. R., & Maskus, K. E. (1999). *Discriminating among alternative theories of the multinational enterprise* (No. w7164). National Bureau of Economic Research.
- Meyer, K. E. (2003). FDI spillovers in emerging markets: A literature review and new perspectives. *Copenhagen Business School (Mimographed.)*.
- Mhlanga, N., Blalock, G., & Christy, R. (2010). Understanding foreign direct investment in the southern African development community: an analysis based on project-level data. *Agricultural Economics*, 41(3-4), 337-347.
- TCMB (Central Bank of the Republic of Turkey), (2014). Outstanding External Debt and Balance Of Payments Statistics. *Electronic Data Delivery System*, Retrieved May 7, 2014, from: <http://www.tcmb.gov.tr/wps/wcm/connect/TCMB+EN/TCMB+EN/Main+Menu/STATISTICS/Statistical+Data+%28EDDS%29>
- Todaro, M.P. (1994). *Economic Development (5th Edition)*. New York and London: Longman.