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THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN TURKEY

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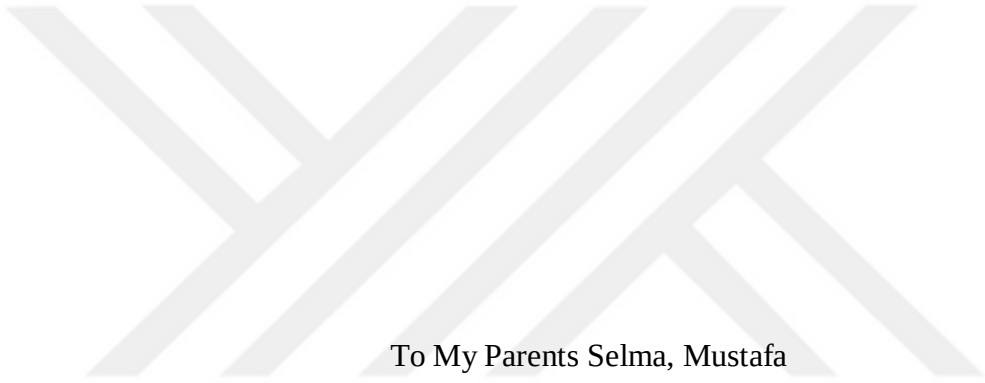
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By

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DEDICATION



To My Parents Selma, Mustafa

APPROVAL PAGE

ZIRVE UNIVERSITY
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
GAZIANTEP

The Master's Thesis, titled "The Determinants of Foreign Direct Investment In Turkey" written by Selim ÇÖREKÇİOĞLU, graduate student in the Master of Science of Economics, was accepted by the members of the jury listed below on 15 June 2016.

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AUTHOR DECLARATIONS

The material included in this thesis has not been submitted wholly or in part for any academic award or qualification other than that for which it is now submitted.

Selim ÇÖREKÇİOĞLU

June, 2016



ABSTRACT

The main objective of this thesis is to empirically analyze long run and short run causality between foreign direct investment and other factors, which are gross domestic product growth rate, trade balance, exchange rate and regulatory quality of governance in Turkey. Time interval covers 1996 to 2014. Data's are derived from World Bank, Turkish Statistical Institute, World Bank and Organization for Economic Co-operation and Development. The analysis is based on time series analysis. The Augmented Dickey Fuller test indicates that most of the variables are not stationary at levels, but they are stationary in the first difference. Johansen test showed that variables are co-integrated which means they move together. When the Vector Error Correction Model is used, error term of the equation was adjusted by 59.38 %. It was also found that gross domestic product growth rate, trade balance and regulatory quality have statistically significant positive effect on foreign direct investment, while the exchange rate has negative effect but it is not significant in the short run. In the long run, test results showed that all the variables, except exchange rate, have statistically significant positive effect on foreign direct investment. But exchange rate has a negative effect on foreign direct investment and the effect was not statistically significant. According to granger causality test results, all variable cause foreign direct investment.

Key words: Foreign Direct Investment, Gross Domestic Products, Turkey

KISA ÖZET

Bu tezin temel amacı Türkiye’de doğrudan yabancı yatırımlar ile gayri safi yurtiçi hasıla büyüme oranı, dış ticaret dengesi, döviz kuru ve devletin piyasaları düzenlemek için uyguladığı politikalar arasındaki ilişkiyi ampirik olarak görmektir. Zaman aralığı 1996’dan 2014’e kadar olan 19 yıllık bir zaman aralığını kapsamaktadır. Veriler Dünya Bankası, Türkiye İstatistik Kurumu ve Ekonomik Kalkınma ve İşbirliği Örgütü’nün veri tabanından alınmıştır. Analiz yöntemi olarak zaman serisi analizi kullanılmıştır. Genişletilmiş Dickey-Fuller birçok değişkenin durağan olmadığını ancak birinci farkları alındığında durağan olduğunu göstermektedir. Vektör hata düzeltme modeline göre hata düzeltme terimi % 59,38 bulunmuştur. Kısa dönemde gayri safi yurtiçi hâsıla büyüme oranı, dış ticaret dengesi ve düzenleyici politikaların doğrudan yabancı yatırımlar üzerinde istatistiksel olarak anlamlı ve pozitif etkisi olduğu döviz kurunun ise istatistiksel olarak anlamlı olmayan ve negatif etkisi olduğu görülmüştür. Uzun dönemde ise test sonuçları gayri safi yurtiçi hâsıla büyüme oranı, dış ticaret dengesi ve düzenleyici politikaların doğrudan yabancı yatırımlar üzerinde istatistiksel olarak anlamlı ve pozitif etkisi olduğu göstermiştir. Ancak döviz kurunun etkisinin negatif olduğu ve bu etkinin istatistiksel olarak anlamsız olduğu görülmüştür. Granger nedensellik testi sonuçlarına göre tüm değişkenlerin doğrudan yabancı yatırımlar ile nedensellik ilişkisi olduğu görülmektedir.

Anahtar Kelimeler: Doğrudan Yabancı Yatırımlar, Gayri Safi Yurtiçi Hâsıla, Türkiye

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LIST OF ABBREVIATION

ADF:	Augmented Dickey-Fuller
AIC:	Akaike Information Criterion
DFDI:	Difference Foreign Direct Investment
DER:	Difference Exchange Rate
DGDP:	Difference Gross Domestic Product
DRQ:	Difference Regulatory Quality
DTB:	Difference Trade Balance
FPE:	Final Prediction Error Test
ER:	Exchange Rate
FDI:	Foreign Direct Investment
GDP	Gross Domestic Product
GDPGR:	Gross Domestic Product Growth Rate
GMM:	Generalized Method of Moments
HQIC:	Hannah-Quinn Information Criterion
LD:	Lag 1
LFDI:	Level Foreign Direct Investment
LER:	Level Exchange Rate
LGDP:	Level Gross Domestic Product
LRQ:	Level Regulatory Quality
LTB:	Level Trade Balance
LR:	Likelihood Ratio Test
OECD:	Organization for Economic Cooperation and Development
OLS:	Ordinary Least Squares
RQ:	Regulatory Quality
SBIC:	Schwarz' Bayesian Information Criterion
UK:	United Kingdom
US:	United State
TB:	Trade Balance
TSI:	Turkish Statistical Institute

VAR: Vector Auto-regression
VECM: Vector Error Correction Modeling
WTO: World Trade Organization



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CHAPTER ONE

INTRODUCTION

Economic growth is a very important for all countries. The key of the economic growth is investment and capital is needed for investment. Capital movements are determined by risk and profit factors. But to find capital is a very hard issue for especially developing countries such as Turkey. So developing countries should handle that kind of problem such as absence of financial resources, domestic savings deficit and foreign exchange shortages. If these problem are not solved, it is clear that foreign sources is needed.

“The segmentation of the manufacturing process into multiple partial operations, which combined with the development of cheap transportation and communication networks, has brought the increasing division of production into separate stages carried out in different locations” (Bartels, Buckley, & Mariano, 2009). Multinational companies (MNE) has a very important role in foreign direct investment (FDI), because most of FDI is made by MNE's.

There are many papers on economic development and sustainable growth. For example, according to Harrod, in short term saving is only changeable variable while others are constant. So if economic growth wants to be achieved in capital accumulation has to be increased. (Harrod, 1939). In countries which have a low saving rate, FDI is, can contribute the economic development process. Neo-classical growth theories assert that FDI flows have an effect on economic growth by increasing capital accumulation (Reichert & Weinhold, 2001).

Technology transfer provided by FDI can increase the technological capacity of host countries, so it enhances productivity of production and leads to economic growth. FDI inflows cause an increase of employment, facilities, access to new markets, meeting with new technology and management skills (De Mello, 1997). So

it can be said that FDI has a lot of benefit for host countries not only financial way but also other ways.

1.1 OBJECTIVE OF THE STUDY

The main goal of this thesis is to see determinant of foreign direct investment in Turkey for the period from 1996 to 2014. The other objective of this thesis is followed:

- To analyze forces behind FDI
- To see effect of FDI on economy
- To give a recommendation based on results and literature.

1.2 RESEARCH QUESTION

Research questions in this thesis are;

- Is there any relationship and causality between FDI and GDP growth rate, trade balance, exchange rate and regulatory quality?
- What kind of policy should follow to increase FDI?

1.3 HYPOTHESIS

The hypothesis can be shown as it follows;

- H_0 : There is statistically significant relationship and causality between fdi and other variables which are gdp growth rate, exchange rate, trade balance and regulatory quality
- H_1 : There is not a statistically significant relationship and causality between fdi and other variables which are gdp growth rate, exchange rate, trade balance and regulatory quality

1.4 SCOPE AND LIMITATION OF THE STUDY

This study is based on the determinant of foreign direct investment in Turkey. Time period spans from 1996 - 2014 (19 years). In this study, it is also investigating that economic contribution of FDI in Turkey.

1.5 SIGNIFICANCE AND CONTRIBUTION OF THE STUDY

This thesis differs from other studies in some ways;

- This study offers suggestions on how to improve the FDI.
- Different variables were used in this thesis
- The time period spans from 1996 to 2014
- This study will be helpful for the future studies.
- The result of this thesis will give a guiding principle to investors
- This thesis will give an important result for the inquiry about determinant of FDI

CHAPTER TWO

LITERATURE REVIEW

2.1 THEORIES ON FDI

2.1.1 Product Life Cycles Theories

According to that theory, there are some steps of the product in the market.

- 1- Introduction of product with the market and consumer
- 2- The growth and maturity of product
- 3- Standardization of product.

At the first step, the producer has own production technology. The product is starting to be produced and launched to the market. The product is not widely known by the consumer. So the producer needs to do promotional activities to increase awareness of the product in the market. The scale of production is small and the product is sold in domestic market.

At the second step, awareness of the product in the market is increasing. There is demand for the product from other countries and companies started to export. Now, there is some producer which has similar production technology. This case creates competition in the market and costs begins to gain importance within this period. So production is starting to be in a developing countries such as China, India and Indonesia, where labor cost is lower than home countries (Dunning, 1981).

At the third step, the product is started to be standardized and most of producer knows production technology. The importance of cost has increased and a large part of the production shifts to developing countries.

2.1.2 Internalization Theory

Internalization theory says that a company must select one of that two options. The first one is that a company can produce in home country and export to other countries. The second choice is that instead of export, a company can make direct investment to the host country, then produce and sells their good in host countries. (Buckley, 2000). There are some reasons to make foreign direct investment.

- If there is a trade barriers, such as higher tax
- If there is an asymmetric information between buyers and sellers
- If there is a higher cost for transportation

“Multinational companies internalize these foreign markets related to their production activities to get rid of adversely affect the market and existing production processes.” (Kurtaran, 2007)

2.1.3 Eclectic Theory-OLI Model

The Eclectic theory is more comprehensive than the other FDI theories. There are three important matters in this theory which are ownership, location and internationalization.

- Ownership; MNEs has some advantages such as production technology, access to financial resources, to buy raw materials cheaply due to the large scale of the company with respect to host countries' companies.
- Location; is one of the most important matter for investment. Taxes on import, industrial infrastructure, factor cost such as labor cost of host countries are taken into consideration for investment.

- Internationalization; MNE's can give license or franchising instead of direct investment to host countries. So it will be cheaper and riskless to entrance to the market. (Dulupçu & Demirel, 2005).

Table-1 below shows that the advantage of market entry (Dunning, 1981).

Form Of Market Entry	Advantage		
	Ownership	Internalization	Location
Licensing	✓	X	X
Export	✓	✓	X
FDI	✓	✓	✓

Table 1 Advantage of Market Entry

2.2 EMPIRICAL LITERATURE

Wallis analyzed the effect of FDI on the economic growth. According to him there is positive relationship between FDI and economic growth. (Wallis, 1968)

Makki & Somwaru also found that there are positive relationship between FDI and GDP growth. They said that if trade is increased by FDI it will increase economic growth. But if the shock come up in the market it causes lack of demand. It means that The growth rate will be lower than before. (Makki & Somwaru, 2004)

Doğan examined the effect of FDI on GDP growth by using time series analysis. The paper is in Turkey and covered the period 1979-2011. The study reveals that FDI has a positive effect on GDP growth. According to granger causality test results there is bi-directional relation FDI and GDP growth. In this study, it is also recommended that FDI may be the solution for sustainable economic growth (Doğan, 2013).

(Blomstrom, Lipsey, & Zejan, studied in 78 developing countries. The paper adopted a panel data analysis to find out whether a positive or negative relationship between FDI and growth rates. The finding of the study is that there is positive relationship between FDI and economic growth for countries which has a higher income, but there is negative relationship between FDI and economic growth for countries which has lower income (Blomstrom, Lipsey, & Zejan, 1992).

Karagöz also assessed the relation of FDI inflow and employment for Turkey. He found that there is co-integration between FDI inflow and employment. The test result of empirical analysis also says that there is a relationship in the long run (Karagöz, 2007).

Axaroglou and Pournarakis analyzed that whether FDI has an effect or not on employment in the U.S.A manufacturing sector. The time period covers from 1974 to 1994. According to their paper, FDI has a positive effect on employment in some sectors such as transport equipment, while FDI has a negative effect on employment in some sectors such as leather and glass (Kostas & Pournarakis, 2007).

Sandalcılar conducted a study on FDI inflow and the employment relationship in Turkey in 1980-2011. ADF test was executed and first difference of variables found stationary. Johansen co-integration test was also applied to the equation and result showed that there was no co-integration and long run-relationship between the variable. As a result, he could not find a statistically significant relationship. In the other words FDI inflow does not have a statistically significant effect on employment in Turkey (Sandalcılar, 2012).

Aizenman analyzed FDI and exchange rate volatility, he used both fixed and flexible exchange rate regimes. For a given volatility shock, he found that the fixed exchange rate regime leads to higher domestic investment, while flexible exchange rate leads to higher foreign direct investment. He also found that nominal shocks cause a relation in a negative way between FDI and exchange rate volatility, while real shocks in a positive way (Aizenman, 1992).

Shinji Takagi and Zongying Shi analyzed exchange rate and FDI relationship in Japan for the period 1980-2011. They said if there is depreciation in the currency of host countries, it will increase FDI inflows to Japan. They also concluded that if it is hard to know the future of exchange rate FDI will take a place of exports (Takagi & Zongying, 2011).

According to Agnès Bénassy-Quéré exchange rate volatility has an effect on FDI hence for a stable financing of growth in emerging countries, especially for those countries which are close to one main investing country. They also found that exchange-rate regimes in developing countries should be defined in a global framework given the externalities they encompass. More precisely, In the paper, It is also observed that monetary regionalism can be a way of increasing FDI to developing countries as a whole, although it would likely increase competition within each zone of the country. As a result building on currency blocks can be beneficial as far as inward FDI and the related benefits of it for emerging countries (stability, technological progress) are concerned (Quéré, Fontagné, & Révil, 2001).

Patrick Crowley & Jim Lee investigated whether the exchange rate effect, FDI or not by using Panel Data Analysis Model with 18 OECD countries for 19 years covered the period 1980-1998. The results show that the effect of exchange rate varies from country to country. They observed that as stability in foreign exchange markets may be caused to capital flows and investment, some degree of exchange rate flexibility, which may generate risks and uncertainty, does not seem to

be as a crucial determinant of foreign investment as income growth and economic stability. “In other words, there may be a threshold effect in the sense that the exchange rate volatility-investment relationship is weak or absence if movements in the exchange rate are relatively small, but strong if movements in the exchange rate become excessively volatile” (Crowley & Lee, 2010).

Tsai examined the relationship between FDI and trade balance. His result showed that FDI inflow increase trade surplus, in the other words FDI inflow decrease trade deficit. He also said that FDI is a very important determinant of trade balance (Tsai, 1994).

CHAPTER THREE

DESCRIPTION AND HISTORY OF FDI

3.1 DESCRIPTION OF FDI

Foreign direct investment (FDI) is a kind of long term investment, economic, and political conditions are required to be investigated in the host country. So FDI is usually made by multinational companies which have a high capacity to access information in the host country.

“Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate).” (United Nations, 2007).

In the law, no 4875, FDI refers to,

- 1- Brought from home country of the foreign investor
 - Convertible capital in the form of cash money can be purchased and sold by The Central Bank of the Republic of Turkey
 - Company's stocks and bonds (except public securities)
 - Machinery and equipment
 - Intellectual, industrial and commercial property rights
- 2- Provided by the foreign investor in the host country
 - Profit, proceeds, pecuniary claim and other rights which have financial assets related to investment
 - Rights to the exploration and extraction of natural resources such as economic assets
 - Establishing a new company or opening a branch
 - Acquisition of shares out of securities exchanges or becoming a partner in an existing company through acquisitions that provide the right to vote or shares in the same ratio at least 10%.24.5 (Foreign Direct Investment Law-4875, 2003).

Besides the formal definitions, FDI can be described as an investment made by people or companies in a home country to get benefits, such as profit, in a host country.

3.2 FDI TYPES

3.2.1 OWNERSHIP STATUS OF FOREIGN DIRECT INVESTMENT

3.2.1.1 Full-Ownership

“The situation in which a person or organization owns all of something, or in which something is completely owned by a person or organization.” (Cambridge Dictionary, 2016).

3.2.1.2 Joint Ventures (JV)

A joint venture (JV) is a formal arrangement between two or more firms to create a new business for the purpose of carrying out some kind of mutually beneficial activity, often related to business expansion, especially new product and/or market development (Terjesen, 2014). There are some advantages of joint ventures:

- For an overseas company, it is hard to know new market conditions by comparison with existing company in the market. If foreign companies go into a partnership, the adaptation period to the new market will be shorter with the knowledge of the host country's company.
- Companies can expand their customers network by reaching current costumers of the other company.
- Total cost can be decreased by having higher capacity.

- Without any effort, firms can have experienced personnel or new technology or industrial and intellectual property rights (Islamov, 2003).

3.2.1.3 Mergers and Acquisitions (M & A)

Meaning of acquisition is that a company from foreign country buys shares of a company in the host country. The most important thing here is that the company that has been bought transfers all the assets to the buyer company and it does not exist in the market anymore.

A merger is a company from abroad from an abroad country and a company in the host country that merges and establishes a new company. Basically, this kind of investment has 2 advantages.

- Making this kind of investment has lower cost, especially if a loss maker company is purchased. In loss
- Through this investment, foreign companies can enter the market much more quickly (ARAS, 2012).

3.2.1.4 Strategic Alliances

Strategic Alliances are a kind of agreement that is carried out by two or more independent companies to achieve their strategic goals such as sharing of market or cooperation agreements against potential competitors. (Celik, 2010)

3.2.2 THE CASE IN WHICH FDI CREATES NEW BUSINESSES

3.2.2.1 Greenfield Investments

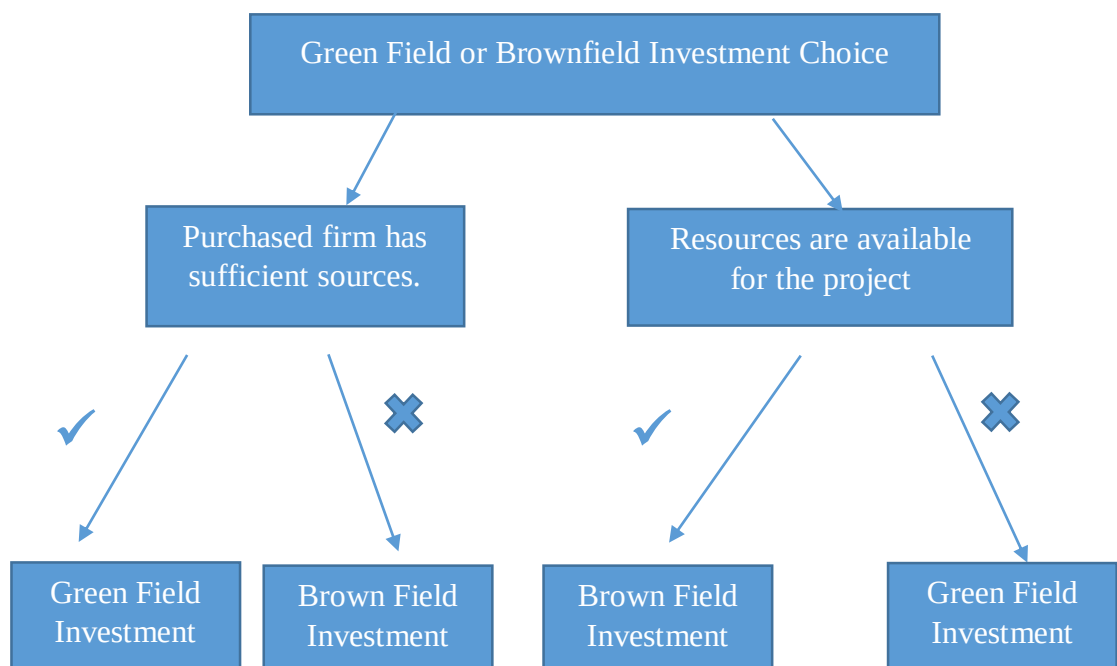
It is a kind of investment made by a foreign investor to establish a new business by using its own technology, production methods and the management

mentality, in the host country. There are no business partner and profit share in the greenfield method. So the main advantage of that method is to maximize profit as it is not shared with anyone. But the disadvantage of this method is the necessity of entering the new market immediately and the difficulties it brings, such as gathering the market data and analyzing the market behavior rapidly. A company existing in the host country is purchased by the home country's company.

3.2.2.2 Brownfield Investments

It is the opposite of greenfield investment. A company currently exists in a host country is purchased by the home country's company. In that kind of investment, purchasing company changes everything in that company and uses its own workflow and own methods such as using its own production technology, own personal the difference between greenfield investment and brownfield investment can be shown in the table below (Abubakar, 2014).

Figure 1 Choices between Greenfield and Brownfield



Source: (Altın, 2015)

3.3 HISTORY OF FDI

3.3.1 FDI World Trend

Even though FDI seems new in literature, it dates back to 2500 B.C. Sumerian merchants wanted to sell their goods in foreign countries. So they met with foreign merchants to sell their goods in other countries. Soon after Sumerian merchants settled in the countries where they had sold their goods, they established a new business by making an investment. In the 17th centuries, Dutch, English and French traders wanted to sell their goods in America. So their partners went to America and sold their goods there too by working as a branch of their company (Lipsey, 2001).

In the later years, FDI flew from developed countries to undeveloped and developing countries. The main goal of the investor was to possess natural resources in the host country such as petrol and gold, and it can be said that it is a kind of colony. So it was not fully adopted by host countries (Vural, 1999)

Technological progress shaped by the industrial revolution accelerated that kind of investment. Before the industrial revolution, there were a few multinational companies (MNE), and MNE was started to be established after the revolution (ARAS, 2012).

Until the Second World War, FDI was a portfolio investment in general. The time period between World War 2 and today is divided into 3 periods in terms of FDI: (Seyidoğlu, 1996).

- The first period (1950-1973) starts soon after World War 2 and ends with the Oil Crisis: The first foreign direct investments of multinational enterprises were originated from the United States. Those MNEs grew up very fast until 1970. American MNEs rapidly increased their investments after the establishment of the European Economic Community in Western Europe. During this period, almost 60%

of total FDI created by American MNEs and about 75% of the total investment were made to developed West European countries. The rest of the investment was made to develop or undeveloped countries which had the resources such as petrol or broad internal market such as Mexico and South Korea.

- The second period (1974-1981) includes the period after petrol crisis. Foreign companies in the oil fields were nationalized during this period and unfavorable policies were carried out against to FDI. There has been a slowdown in FDI, especially in developing and undeveloped countries during this period. However, some countries like Western Europe and Japan began to increase their foreign direct investment.
- Third period (1982- Ongoing). During this period, some developing countries faced with financial problems. Thus, that their country tried to solve these problems by attracting FDI to their countries. But 50% of total FDI in the world were made in America by countries such as England, Holland and Japan during the first ten years of this period. After 1990, China and East European Countries started attracting FDI to their countries. (Güven, 2007)

After 2000, countries made a legislative change for FDI. Table 2 shows this change made between 2000 and 2014. There were 46 countries introduced to change in 2000. It almost increased two times to 80 countries in 2004. Before the 2008 crisis, there were decreases number of countries that introduced to change and after the crisis, there were a fluctuation in that number. In the table, it is seen that most of regulatory changes are towards attracting FDI. For instance, 81 changes made in 2000 were for attracting FDI and restricting policies were not followed so much. In that 14 year period, the restrictive policy was applied the most in 2005; 25 restrictive policies.

Table 2 Change in National Investment Policies, 2000-2014

Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of countries that introduced changes	46	52	44	60	80	78	71	50	41	47	55	49	54	59	37
Number of regulatory change	81	97	94	125	164	144	126	79	68	88	121	80	86	87	63
Liberalization /Promotion	75	85	79	113	142	118	104	58	51	61	80	59	61	61	47
Restriction/ Regulation	5	2	12	12	20	25	22	19	15	23	37	20	20	23	9
Neutral Indeterminate	1	10	3	-	2	1	-	2	2	4	4	1	5	3	7

Source: (United Nations, 2015)

FDI inflows, outflows, inward stock and outward stock are shown in Table 3. FDI inflow was 205 billion dollars in 1990. In fifteen years, it increased almost 7 times to 1397 billion dollars. After the 2008 crisis, there was not so much increase in FDI. There was even decrease in FDI, which was almost 5 percent in 2014 with respect to 2013. FDI outflow also followed a similar path with FDI inflow in that period. FDI outflow increased from 1990 to 2008 and in the last 3 years, 2012-2013-2014, growth trend continued in FDI outflow.

Table 3 Selected Indicator of FDI and International Production, 2000-2014

	1990	2005–2007 (pre-crisis average)	2012	2013	2014
FDI Inflow	205	1397	1403	1467	1228
FDI Outflow	244	1423	1284	1306	1354
FDI Inward Stock	2198	13894	22073	26035	26039
FDI Outward Stock	2254	14883	22527	25975	25875
Income on Inward FDI	82	1024	1467	1517	1575
Rate Of Return on FDI	4.4	7.6	7.0	6.1	6.4
Income on Outward FDI	128	1 105	1 445	1 453	1 486
Rate Of Return on FDI	5.9	7.6	6.6	5.8	5.9
Cross Border M&As	98	729	328	313	399
Sales of Foreign Affiliates	4 723	21 469	31 687	33 775	36 356
Value-added (product) of foreign affiliates	881	4 878	7 105	7 562	7 882
Total assets of foreign affiliates	3 893	42 179	88 536	95 230	102 040
Exports of foreign affiliates	1 444	4 976	7 469	7 688	7 803
Employment by foreign affiliates (thousands)	20 625	53 306	69 359	71 297	75 075

Source: (Güven, 2007)

FDI flows by region are shown in Table-4. In 2012, 2013 and 2014 FDI inflow is nearly the same amount; almost 650 billion dollars in developed countries and developing countries. But in 2014, while FDI inflows of developed countries decreased 15 percent compared to 2013 and it became 499 billion dollars. FDI inflows of developing countries followed a stable trend in 3 years and it became 681 billion dollars.

When it comes to FDI outflows, 20 percent of FDI came from developing countries, while more than 75 percent of the FDI came from developed countries. Although FDI outflows in developing countries had less percentage than developed countries, it caught an upward trend and increased 25 percent in 2 years.

Table 4 Selected Indicator of FDI Inflow and Outflow, 2012-2014

Region	FDI Inflow			FDI Outflow		
	2012	2013	2014	2012	2013	2014
World	1 403	1 467	1 228	1 284	1 306	1 354
Developed Countries	679	697	499	873	834	823
Europe	401	326	289	376	317	316
North America	209	301	146	365	379	390
Developing Countries	639	671	681	357	381	468
Africa	56	54	54	12	16	13
Asia	401	428	465	299	3355	432
Latin America and the Caribbean	178	186	159	44	28	23
Oceania	4	3	3	2	1	0
Transition economies	85	100	48	54	91	63

Source: (United Nations, 2015)

As it is seen from table-5, there was a great monetary movement in these years. It can be said that liberalization policies had a great effect on the expand of FDI. Because the liberalization policies, both removed the blocks on financial operations and accelerated capital movements. During this period, many developing countries softened their rigid policies on FDI, removed restrictions, accelerated privatized policy and enlarged FDI market (Güven, 2007).

Table 5 Selected Indicator of FDI and Inflow, 1990-2000-2014

Region	FDI Inflow			FDI Outflow		
	1990	2000	2014	1990	2000	2014
World	2 197 168	7 202 348	26 038 824	2 253 944	7 298 188	25 874 757
Developed Countries	1 687 652	5 476 613	17 003 802	2 114 508	6 535 722	20 554 819
Europe	932 579	2 263 007	10 049 259	1 053 382	3 215 429	11 787 347
North America	652 444	2 995 951	6 041 200	816 569	2 931 653	7 033 195
Developing Countries	510 107	1 669 812	8 310 055	139 436	741 924	4 833 046
Africa	60 678	153 745	709 174	20 252	38 888	213 486
Asia	340 242	1 052 754	5 679 670	67 066	597 220	3 948 830
Latin America and the Caribbean	107 187	460 991	1 893 554	52 050	105 533	663 970
Oceania	2 001	2 321	27 657	68	283	6 759
Transition economies	.	55 924	724 967	.	20 541	486 892

Source: (United Nations, 2015)

10 countries attracting most FDI in the world in 2012, 2013 and 2014 are shown in Table-6 shows. Although America was the most attractive country considering FDI in 2012 and 2013, after a sharp fall, it lost the first place in China and came in third after China and Hong Kong. FDI inflow to China was 128.5 billion dollars, to Hong Kong 103.3 billion dollars and to America 92.4 billion dollars in 2014. During this three year period, Singapore, Australia and Brazil also achieved a steady FDI growth.

Foreign investment in developing countries is growing faster than the investments in developed countries, but developed countries still maintain their superiority in investments abroad in absolute terms (Teşvik Uygulama ve Yabancı Sermaye Genel Müdürlüğü, 2015).

Table 6 The Most Attractive 10 Countries for FDI

	2012		2013		2014	
Rank	Country	FDI Stock	Country	FDI Stock	Country	FDI Stock
1	U.S.A	169.7	U.S.A	230.8	China	128.5
2	China	121.1	China	123.9	Hong Kong	103.3
3	Luxembourg	79.6	Hong Kong	74.3	U.S.A	92.4
4	Hong Kong	70.2	Canada	70.6	England	73.2
5	Brasil	65.3	Russia	69.2	Singapoure	67.5
6	England	59.4	Singapoure	64.8	Brasil	62.5
7	Singapoure	56.7	Brasil	64	Canada	53.9
8	Australia	55.8	Australia	54.2	Australia	51.9
9	Russia	50.6	England	47.7	India	34.4
10	Ireland	45.2	Mexico	44.6	Netherlands	30.3

Source: (Teşvik Uygulama ve Yabancı Sermaye Genel Müdürlüğü, 2015)

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 MODEL SPECIFICATION

In this study, while analyzing determinant of foreign direct investment, independent variables are chosen as gross domestic product growth rate (GPDGR), trade balance (TB), exchange rate (ER) and regulatory quality (RQ) and foreign direct investment (FDI) chosen as the dependent variable. The model can be shown as it below:

$$FDI = f \{ GDPGR, TB, ER, RQ \}$$

Mathematically, this model also can be shown as it follows:

$$FDI = \alpha_1 + \alpha_2 GDPGR_t + \alpha_3 TB_t + \alpha_4 ER_t + \alpha_5 RQ_t + \varepsilon_t$$

In this equation, $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ is constant, t is time trend and ε_t represents an error term.

4.2 DEFINITION OF VARIABLES

GDP growth rate is one of the most important indicators of economic stability. In general, main indicator of economic growth is the GDP growth rate.

The trade balance is a result of the ongoing economic and financial policies. Positive trade balance or an improvement in the negative trade balance shows the strength of the economy.

Host country's exchange rate policy is also important in terms of foreign investors. Multinational Enterprise's (MNEs) use a large number of currency, because they have activities in many countries. Therefore uncertainties in the exchange rate influence both profitability and investment choices (Kar & Tatlısöz, 2008).

“Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Data sources have been rescaled to run from 0 (low) to 100 (high)” (The Worldwide Governance Indicators, 2016).

In this study FDI and TB were expressed in billion dollar and the exchange rate was expressed as U.S.A dollar.

4.3 SOURCES OF DATA

Reliable sources are very important process for all the studies. In this thesis, FDI, GDPGR, ER data's were derived from the Organization for Economic Cooperation and Development (OECD) web site, TB data's were derived from the Turkish Statistical Institute (TSI) web site and RQ data's were derived from world bank (WB) web site.

4.4 ESTIMATION TECHNIQUES

Time series analysis was used as an estimation technique in this thesis to get good result for short run and long run estimation. Respectively, stationary test, lag order selection, Johansen test, vector error correction model and granger casualty test were applied to get healthy result.

4.4.1 Stationarity (Augmented Dickey Fuller) Test

The main goal of executing unit root test is to understand whether the model is stationary or not. If there is a unit root in the model, it shows that it is not stationary. Non-stationary model causes statistically significant R^2 (goodness of fit) even though there are not any causality among the variables. So there would be a spurious result of the model (Gujarati, 2003). Therefore, all the variable in the model has to be checked whether they are stationary or not to get reliable result. In this study, the Augmented Dickey Fuller method was used to see stationary of variables (Dickey & Fuller, 1979). There are three different ADF equation as seen below. First one is a random walk process which has no trend and no intercept, the second one is a random walk with drift which has only intercept, and finally the third one is a random walk with drift around a stochastic trend which has both trend and intercept (Gujarati, 2003).

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

$$\Delta Y_t = \beta_1 + \theta_t + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad (3)$$

Δ is a first difference operator, α , β , θ is constant, ε_t is a pure white noise error term and where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = \Delta(Y_{t-2} - Y_{t-3})$, etc. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term is serially uncorrelated (Gujarati, 2003). Those three equations must give the same decision that variables are stationary or not. There are two hypotheses. H_0 = Variable has unit root or variable is not stationary, H_1 = Variable does not have unit root, Variable is stationary. If H_0 hypothesis is accepted, the first difference of variable is needed to make variable stationary. When

the absolute value of test statistics is more than the critical value, H_0 hypothesis will be rejected and H_1 hypothesis will be accepted, on the contrary, when the absolute value of test statistics is less than the critical value H_0 hypothesis will be accepted and H_1 hypothesis will be rejected.

4.4.2 Lag Order Selection Criteria

Lag selection is a very important process for co-integration test, Vector Autoregressive Model and Vector Error Correction Model to obtain reliable result. There are many studies on this issue. In one of study, it is emphasized on that if the lag is chosen wrong, there will be mean square problem and auto correlated errors. (Lütkepohl, 1993). In another study, It is pointed out that lag selection mistake causes inconsistent impulse response function (Braun & Mittnik, 1993).

4.4.3 Johansen Test for Co-integration

For running Johansen Test, variables must be stationary at level, but when they are converted into first difference they must be stationary (Sandalcılar, 2012). According to Augmented Dickey Fuller test results variables are stationary and Johansen Co-Integration test can be run for the model.

Co-Integration test shows that if there is a long run relationship among the variables or not (Granger & Engle, 1987). In the other words, in the long run, so as to avoid spurious regression Johansen test can be applied.

The Johansen multivariate co-integration test can be mathematically shown as it below (Johansen S. , 1988).

$$\Delta Y_t = \mu + \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-1} + \varepsilon_t$$

In the equation, Y_t shows $n \times 1$ vector of variables which are integrated of order one, Π and Parameter show that $n \times n$ matrix of coefficients to be tested. Then, rank must be checked. If the rank is zero, it means that there is no co-integrating among variables. If the rank is one there is one co-integrating relationship, if it is two there are two co-integrating relations and so on. Then, two hypothesis can be created. H_0 = There is no co-integration among the variables. H_1 = There is co-integration among the variables. If trace statistic more than %5 critical values, H_0 will be rejected and H_1 will be accepted. It means that there is co-integration among the variables. If trace statistic less than %5 critical values, H_0 will be accepted and H_1 will be rejected. If two time series are co-integrated, there is a long run relationship between them. So they cannot move separately and they move together (Doğan, 2013).

4.4.4 Vector Error Correction Model

Pre-condition of the running vector error correction model is that there must be co-integration among the variable (Granger & Engle, 1987). If variables are co-integrated vector error correction model can be run for this model. The model indicates long run and short run relationship among the variables.

The equation can be written as it below: (Gujarati, 2003)

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_t + \alpha_2 u_{t-1} + \varepsilon_t$$

Δ = usual denotes the first difference operator,

ε_t = a random error term,

u_{t-1} = the one period lagged value of the error from the co-integrating regression.

4.4.5 Granger Causality Test

If there is co-integration among the variables, There must be a causality at least one direction. (Granger & Engle, 1987) Granger test shows that causality and stationary is not important but co-integration. In previous, Johansen Co-Integration test showed that there is one co-integration. So Granger Causality test can be run for this model to check whether there is causality or not.

If there are two variable, It refers to there may be bilateral causality among the variable. For instance, there are two variable, which are Y_t and X_t . For causality following regression can be written (Johansen & Juselius, 1988).

$$Y_t = \sum_{i=1}^m (\alpha_i X_{t-i}) + \sum_{j=1}^m (\beta_{1j} Y_{t-j}) + \delta_{1j} ECT_{t-j} + \varepsilon_{1t} \quad (1)$$

$$X_t = \sum_{i=1}^m (\lambda_i X_{t-i}) + \sum_{j=1}^m (\beta_{2j} Y_{t-j}) + \delta_{2j} ECT_{t-j} + \varepsilon_{2t} \quad (2)$$

$\varepsilon_1, \varepsilon_2$ = Uncorrelated Disturbance

δ_1, δ_2 = Adjustment Speed

Under the $\varepsilon_1 + \varepsilon_2 > 0$ constraint, these equations show that there is co-integration and causality between Y_t and X_t , when the error correction term eliminated. So equation can be written as it below.

$$Y_t = \sum_{i=1}^m (\alpha_i X_{t-i}) + \sum_{j=1}^m (\beta_{1j} Y_{t-j}) + \varepsilon_{1t} \quad (1)$$

$$X_t = \sum_{i=1}^m (\lambda_i X_{t-i}) + \sum_{j=1}^m (\beta_{2j} Y_{t-j}) + \varepsilon_{2t} \quad (1)$$

CHAPTER FIVE

ESTIMATION AND RESULTS

The main aim of table-7 is to give brief information about a variable that is used in the further analysis. As it is seen from the table, there are 19 observation which is started from 1996 to 2014. Variables are foreign direct investment (FDI), gross domestic product growth rate, trade balance, exchange rate and regulation quality. While FDI is used as a dependent variable, other variables, which are gross domestic product growth rate, trade balance, exchange rate and regulation quality, are used as an independent variable. Observations, mean, standard deviation, minimum value and maximum value of each variable can also be seen in table. For example, minimum value, maximum value, standard deviation and mean of growth rate is -5.69 %, 9.36%, 4.64, 4.14 respectively.

Table 7 Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	19	2005	5.63	1996	2014
FDI	19	8.26	7.49	0.72	22
GDPGR	19	4.14	4.65	-5.70	9.36
TB	19	-47.53	31.6	-110	-10
ER	19	1.22	0.61	0.08	2.18
RQ	19	61.72	3.45	54.9	67.6

By giving figures below related to variables, it is aimed to having more information about variables.

Figure 2 FDI level of Turkey (1996-2014)

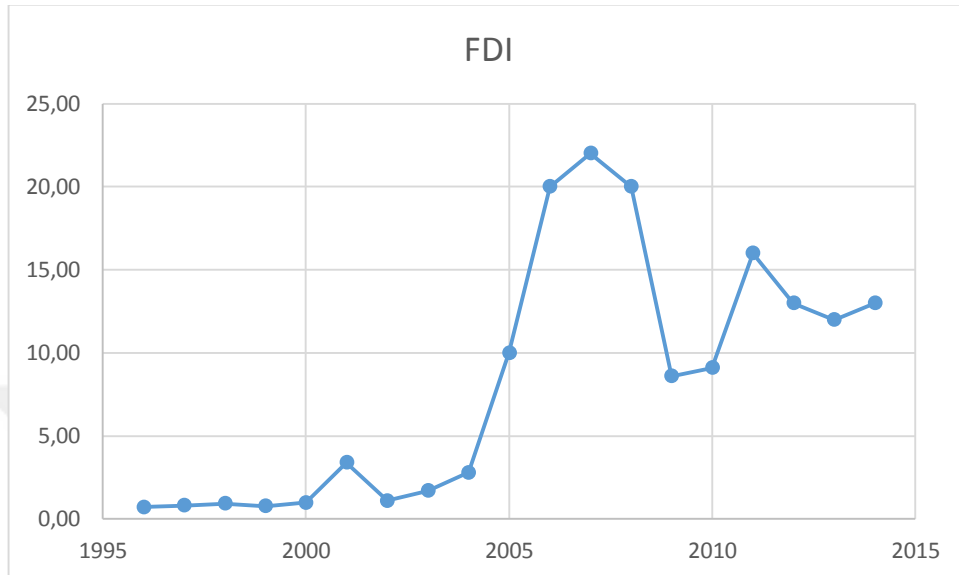


Figure 3 GDP Growth Rate of Turkey (1996-2014)

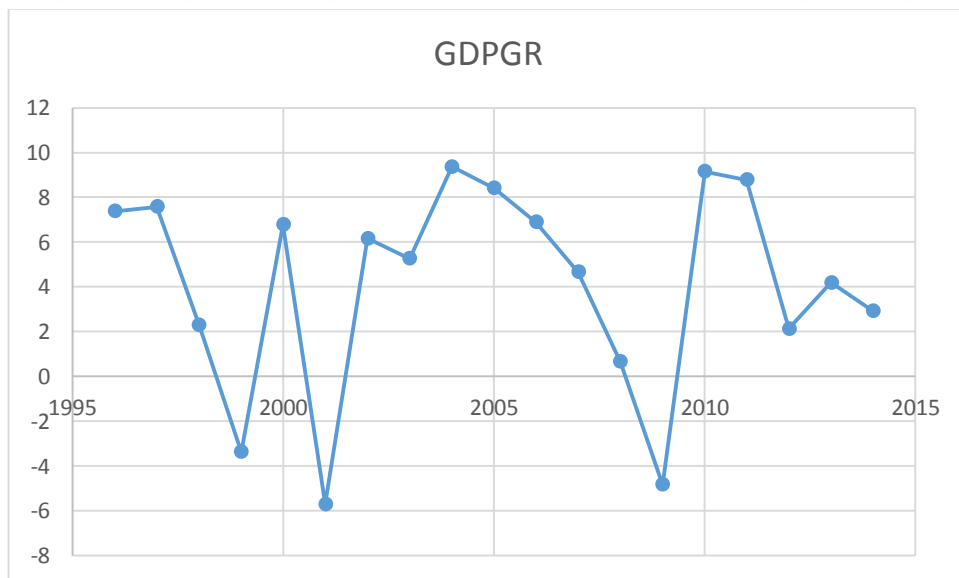


Figure 4 Trade Balance of Turkey (1996-2014)

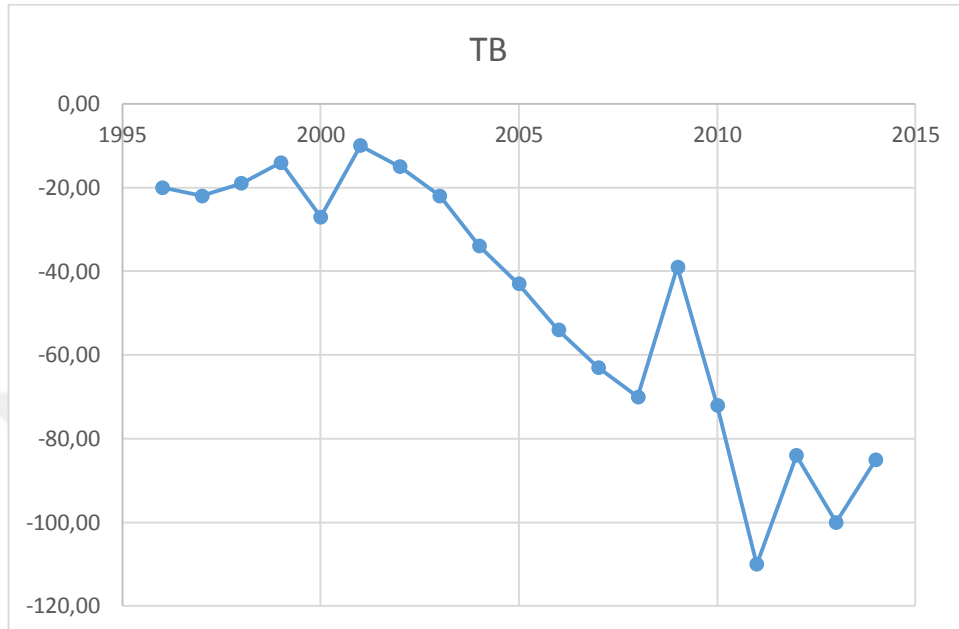


Figure 5 Exchange Rate of Turkey (1996-2014)

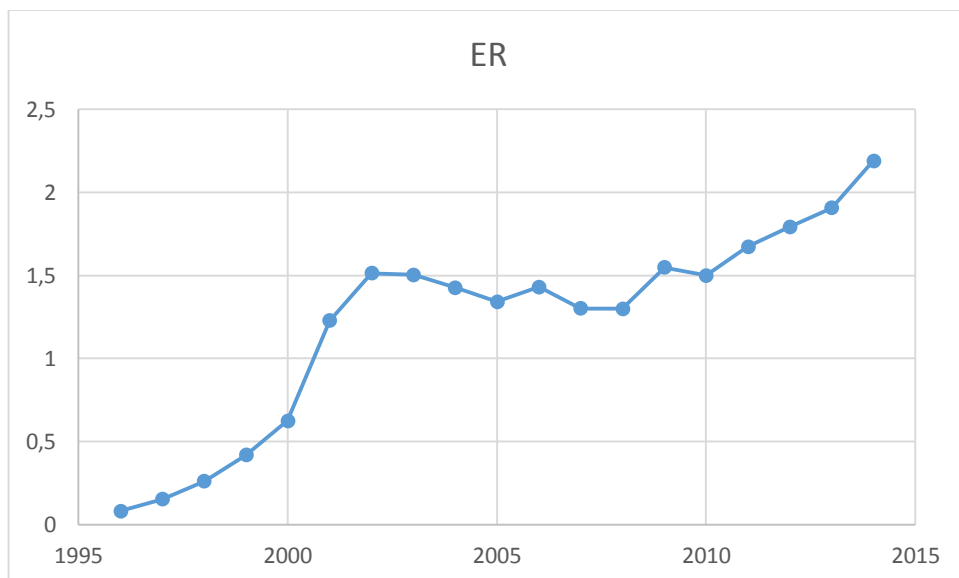
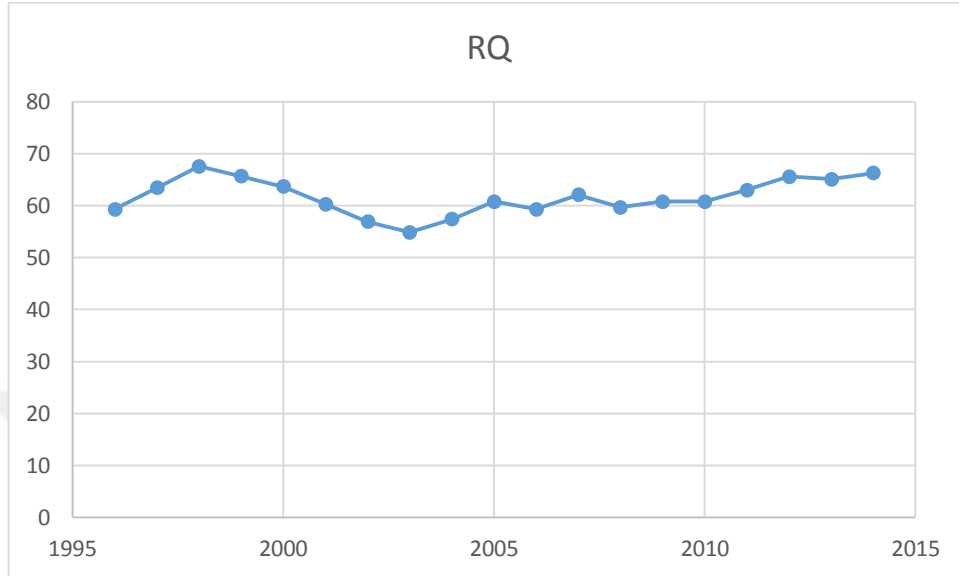


Figure 6 Regulatory Quality in Turkey (1996-2014)



5.1 UNIT ROOT TEST

When the absolute value of test statistics is more than the critical value, H_0 hypothesis will be rejected and H_1 hypothesis will be accepted, on the contrary, when the absolute value of test statistics is less than the critical value H_0 hypothesis will be accepted and H_1 hypothesis will be rejected, test results can be seen in the table 8 one below.

Table 8 Augmented Dickey Fuller Test Results at Level

Order of integration	Variables	Intercept	Trend and intercept	None
Level	L FDI	-1.398	-1.775	-0.455
Level	L GDPGR	-4.103***	-3.988**	-2.752***
Level	L TB	-1.042	-3.279*	0.133
Level	L ER	-1.074	-1.507	1.888*
Level	L RQ	-1.407	-1.390	0.560

NOTES:

Values with * indicates significant only at 10%

Values with ** indicates significant at 5% and 10%

Values with *** indicates significant at 1%, 5% and 10%

According to ADF test results, all the variable, except GDPGR, are not stationary at level and they have unit root. It means that H_0 hypothesis which is variable has unit root or variable is not stationary will be rejected. So the first difference of the variable must be taken. ADF test results for first difference of variables can be seen in the table-9 below.

Table 9 Augmented Dickey Fuller Test Results at First Difference

Order of integration	variables	intercept	Trend and intercept	None
First Difference	D FDI	-3.041**	-2.956	-3.077***
First Difference	D GDPGR	-6.648***	-6.447***	-6.848***
First Difference	D TB	-5.387***	-5.244***	-5.191***
First Difference	D ER	-2.647*	-2.562	-1.977**
First Difference	D RQ	-3.307**	-3.368*	-3.422***

NOTES:

Values with * indicates significant only at 10%

Values with ** indicates significant at 5% and 10%

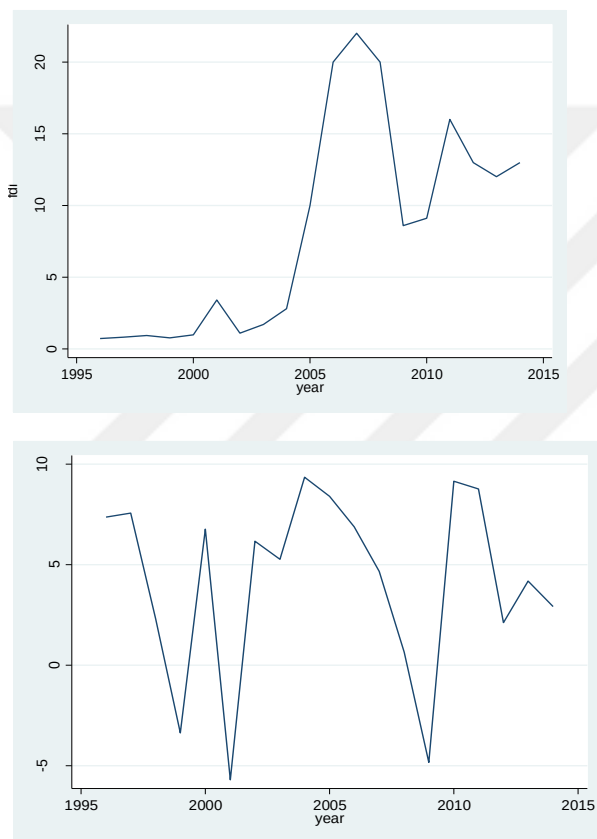
Values with *** indicates significant at 1%, 5% and 10%

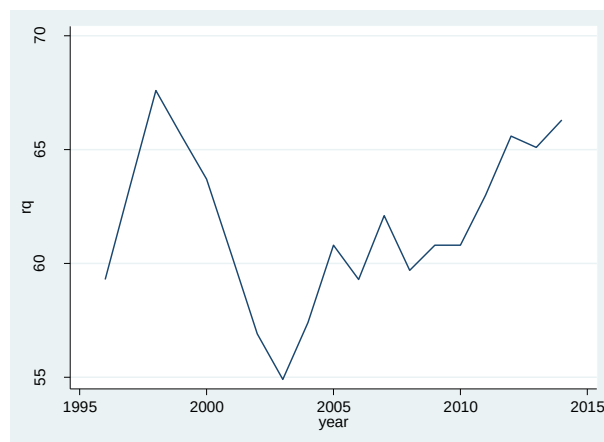
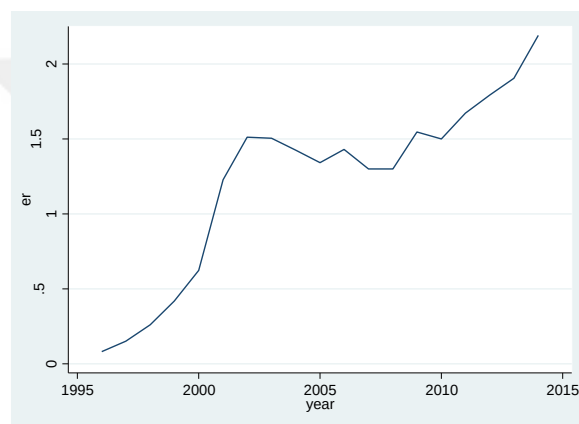
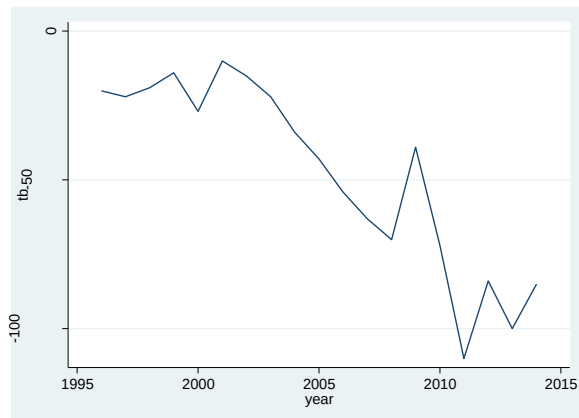
According to ADF test results, all first difference of the variables are stationary at a level and they do not have unit root. It means that H_0 hypothesis which is variable has unit root or variable is not stationary will be rejected and H_1 hypothesis which is variables do not have unit root, variables are stationary will be

accepted. Decision of three models shows that the first difference of FDI does not have unit root, which means the models are stationary at least 5%.

Graphically, these result are shown below. As it seen, variables are not stationary at level.

Figure 7 Plot of Variables between 1996 2014 (At level)

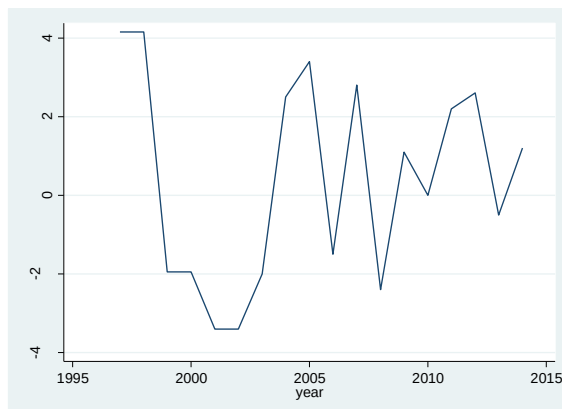
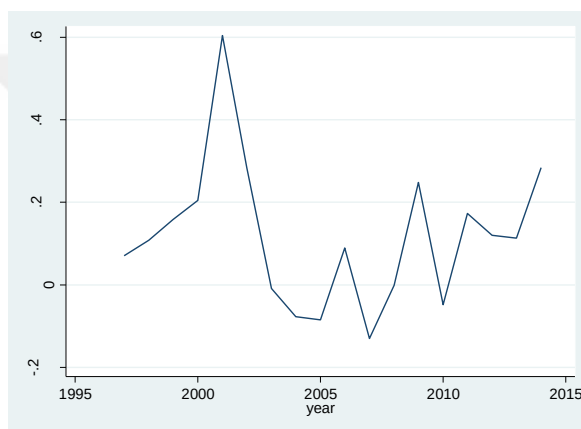
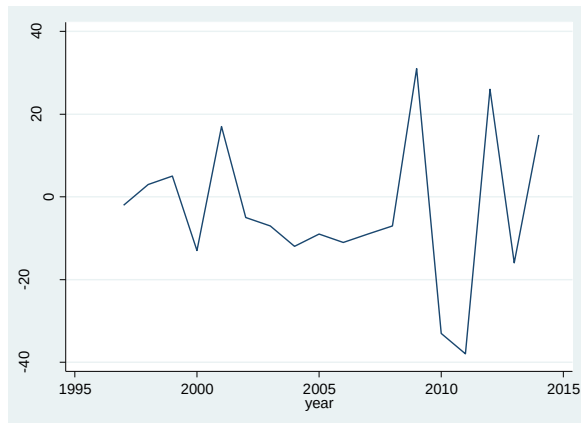




Graph below shows that first difference of the variables which will be used for analysis are stationary.

Figure 8 Plot of Variable Between 1996 2014 (At the first difference)





5.2 LAG ORDER SELECTION CRITERIA

Lag order selection is very important for time series analysis. According to table-10, While LR, AIC, HQIC SBIC recommend lag 4, FPE recommends lag 2.

Because of lag 4 did not give appropriate results for estimation, Lag 2 was used to run the model.

Table 10: Lag Order Selection Criteria Result

lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-815.088				2.1e+41	109.345	109.343	109.581
1	-746.992	136.19	25	0.000	8.6e+38	103.599	103.584	105.015
2	-444.203	605.58	25	0.000	4.2e+23*	66.5604	66.5327	69.1566
3	1544.18	3976.8	25	0.000	.	-195.891	-195.928	-192.35
4	1601.61	114.87*	25	0.000	.	203.548*	-203.586*	-200.008*

LR Likely Hood Ratio Test

FPE = Final Prediction Error Test

AIC = Akaike Information Criteria

HQIC = Hannah-Quinn Information Criteria

SBIC = Schwarz Bayesian Information Criteria

5.3 JOHANSEN CO-INTEGRATION TEST

As it is seen in the table 11 below, for rank zero, H_0 hypothesis will be rejected because trace statistics more than % 5 critical value. It means that there is no co-integration. When rank zero is rejected, rank one must be checked. For rank one, trace statistics.1485 is less than 5% critical value 47.21. It means that the variables are co-integrated, there is one co-integration, and they move together in the long run. The result can also be crosschecked in the table 12. As it is seen on the rank 1, max statistics are lower than %5 critical value. It means there is one co-integration relationship among the variables.

Table 11 Johansen Tests Results for Co-integration Trace Statistics

Max rank	parms	LL	eigenvalue	trace statistic	%5 critical value
0	30	-865.03208		72.7093	68.52
1	39	-841.25167	0.93905	25.1485*	47.21
2	46	-834.11972	0.56788	10.8846	29.68
3	51	-829.25932	0.43550	1.1638	15.41
4	54	-828.67743	0.06617	0.0000	3.76
5	55	-828.67743	0.00000		

Table 12 Johansen Tests Results for Co-integration Max Statistics

Max rank	parms	LL	eigenvalue	Max statistic	%5 critical value
0	30	-865.03208		47.5608	33.46
1	39	-841.25167	0.93905	14.2639	27.07
2	46	-834.11972	0.56788	9.7208	20.97
3	51	-829.25932	0.43550	1.1638	14.07
4	54	-828.67743	0.06617	0.0000	3.76
5	55	-828.67743	0.00000		

5.4 VECTOR ERROR CORRECTION MODEL

Table 13 below reports vector error correction model test results for short run relationship. Coefficient of Ce1 (co-integrated equation, one) is called as an error correction term or speed of adjustment. An error correction term, which is -.5938211, has a negative sign means that there is long run causality. Whenever there is deviation from equilibrium point, speed of adjustment back to the equilibrium point is at 59.38211%. In the other words, almost 59% of deviation will be fixed in a year. This coefficient is also statistically significant because t-statistics value is more than 5% of 19 years t table value which is 1.729 (Gujarati, 2003). While GDPGR, the trade balance and regulation quality have a positive effect on FDI, the exchange rate has a negative effect on FDI. Co-efficient and standard error of GDPGR, ER, RQ and

cons was expressed in billion. Co-efficient, for examples, trade balance, shows that a 1 unit change in trade balance will change 0.325 units of FDI.

Table 13 Vector Error Correction Model Test Result (Short Run)

	Co- efficient	Std. Err.	t- statistics
D FDI			
ECT _{t-1}	-0.5938211	0.113276	-5.24
D FDI	2.142904	0.3265918	6.56
D GDPGR	1.77	0.242	7.30
D TB	0.325	0.061	5.30
D ER	-15.1	4.77	-3.17
D RQ	2.23	0.392	5.68
Cons	-1.08	0.902	-1.20

Table 14 below shows that long run causality among the variables. Coefficient of all variable except exchange rate are also statistically significant because t-statistics value is more than 5% of 19 years t table value which is 1.729. In the long run, while any change in GDPGR, the trade balance and regulation quality have a positive effect on FDI exchange rate has a negative effect on FDI. Co-efficient and standard error of GDPGR and RQ was expressed in billion. Co-efficient, for examples, trade balance, shows that if the trade balance increases 1 unit FDI will increase 0.268 unit.

Table 14 Vector Error Correction Model Test Result (Long Run)

	Co- efficient	Std. Err.	t- statistics
Cons	-119	.	.
D FDI	1.000		
D GDPGR	4.42	0.330	13.40
D TB	0.268	0.0163	16.44
D ER	-139.7626	.	.
D RQ	1.63	0.163	9.96

5.5 GRANGER CAUSALITY TEST

The null hypothesis is H_0 X (independent variable) does not cause Y (dependent variable). The alternative hypothesis is H_1 : X (independent variable) cause Y (dependent variable). If Prob > chi2 value is more than 5% H_0 will be accepted and it means there is no causality between variables. If Prob > chi2 value is less than 5% H_0 will be rejected and H_1 will be accepted. It means there is causality between the variables. According to Granger Causality Wald test results in table 15 GDPGR, TB, RQ ER cause FDI both individual and total.

Table 15 Granger Causality Tests Results

Equation	Excluded	chi2	df	Prob > chi2
FDI	GDPGR	39.044	2	0.000
FDI	TB	20.351	2	0.000
FDI	ER	25.224	2	0.000
FDI	RQ	41.031	2	0.000
FDI	ALL	133.15	8	0.000

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 SUMMARY OF FINDING

This thesis attempts to explain that determinant of FDI in Turkey for the period 1996-2013. FDI was used as dependent variable and GDPGR, TB, ER and RQ were used as independent variables. The relationship and causality between these variables were tested by using time series analysis.

First, Augmented Dickey Fuller test was executed to see whether there is unit root or not among the variables. According to test results most of the variables have a unit root which means that they are not stationary at level. But when the first difference of variables was checked it was seen that all the variables are stationary. It means that finding will not give spurious results.

Precondition of executing tests such as VECM, Granger causality is co-integration. If there is co-integration these kind of test can be used. According to Johansen Co-integration test results there are on co-integration among the variables. It showed that variables move together.

To see long run and short run relationship, VECM was applied in this study. In the long run there is a significant and positive relationship between FDI and GDPGR, TB and RQ. Even though there is negative relationship between FDI and ER, it is not statistically significant. When the long run result was checked it was seen similar results with short-term relationship. There is a positive and significant relationship between FDI and GDPGR, TB and RQ. But there is a negative relationship between FDI and ER, and statistically significant.

Granger causality test shows whether there is causality among the variables or not. According to test results all independent variables causes FDI and the results are statistically significant.

6.2 CONCLUSION

In recent years, the importance of FDI began to rise with increasing globalization in the world. Developing countries such as Turkey faces inadequate amount of the savings rate, which leads inability for investment. Meanwhile, the foreign trade deficit, which causes a shortage of foreign cash is also one of the biggest problems in these countries.

Foreign investment inflow to Turkey plays an important role in solving investment problems arising from the domestic savings shortage. In an economy, increasing of investment make a significant contribution to economic development and growth.

MNEs want to sell their product not only the markets of the countries in which they invest, but also they want to export to other countries. Export made by foreign investors enables currency inflow to Turkey and it provides an improvement in the trade balance. So it prevents the crisis arising from the foreign currency shortage.

Fiscal policies have a kind of objectives such as ensuring economic stability, economic growth and equitable distribution of income. The quality of fiscal policy will make Turkey more attractive from the point of the investor as well as foreign investors.

In sum, there are many benefits of FDI, such as it ensures economic growth, helps to reduce the trade deficit and unemployment rate, increases welfare for host countries.

6.3 RECOMMENDATIONS

The performance of the policies on attracting FDI to Turkey was not reached the desired level. FDI, which has an important contribution to the economic growth and development of Turkey, it is needed to implement some policies:

- Foreign currency brought by foreign investors to Turkey should be used for investment rather than luxury consumption.
- Production technology used by foreign investors should be also used by domestic producers, so efficiency in production will increase. This case enables host country producers more competitive both domestic markets and foreign markets.
- Legislative regulation, such as tax exemption, should be made for foreign investors so that they can carry out their activities easily.
- Due to encountered problems in the market, consultancy service should be provided for foreign investors.

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