

**ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL OF ARTS  
AND SOCIAL SCIENCES**

**THE IMPACTS OF FOREIGN DIRECT INVESTMENTS ON ECONOMIC  
GROWTH IN TURKEY: 1980-2015**



**M.A. THESIS**

**Sema ONARAN**

**Department of Economics  
Economics Programme**

**DECEMBER 2016**



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**DECEMBER 2016**



**İSTANBUL TEKNİK ÜNİVERSİTESİ ★ SOSYAL BİLİMLER ENSTİTÜSÜ**

**TÜRKİYE'DE DOĞRUDAN YABANCI SERMAYE YATIRIMLARININ  
EKONOMİK BÜYÜME ÜZERİNE ETKİLERİ: 1980-2015**

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## **FOREWORD**

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## **ABBREVIATIONS**

<b>ADF</b>	: Augmented Dickey Fuller
<b>CBRT</b>	: Central Bank of the Turkish Republic
<b>FDI</b>	: Foreign Direct Investment
<b>FT</b>	: Foreign Trade
<b>GDP</b>	: Gross Domestic Product
<b>IMF</b>	: International Monetary Fund
<b>IS</b>	: Import Substitution
<b>M&amp;A</b>	: Mergers and Acquisition
<b>MNC</b>	: Multinational Company
<b>OECD</b>	: Organisation for Economic Co-operation and Development
<b>OLS</b>	: Ordinary Least Squares
<b>TURKSTAT</b>	: Turkish Statistical Institute
<b>UNCTAD</b>	: United Nations Conference on Trade and Development
<b>VAR</b>	: Vector Autoregression
<b>VECM</b>	: Vector Error Correction Mechanism



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## **THE IMPACTS OF FOREIGN DIRECT INVESTMENTS ON ECONOMIC GROWTH IN TURKEY: 1980-2015**

### **SUMMARY**

Foreign direct investments in Turkey have expanded rapidly following the liberalization programme initiated in the early 1980s. Turkey has accomplished a record level in terms of its performance to attract foreign direct investments (FDI) in post-2000 era. Inflow of foreign currency, increasing capital stock, generating employment and transfer of technology are among the benefits of FDI to the host country. And the contribution of FDI to the host country's economy through realizing production is the most significant impact of the FDI to the recipient country.

The study aims to explore the impacts of the foreign direct investments on economic growth during the years 1980 to 2015 using time series analysis. The annual data of the gross domestic product (GDP), foreign direct investment (FDI) inflows, direct investments, and foreign trade announced by TURKSTAT, CBRT and Ministry of Development were employed in the study.

According to the results of the analysis, there is a positive long-run relationship between economic growth and other variables. The Augmented Dickey Fuller unit root test results suggest that the variables are non-stationary at levels, but become stationary in the first differences. Through the Johansen Co-integration test, the relationship between the variables have been explored and it has been found that there is long-run relationship between GDP and other variables, and the effect is statistically significant. Also, finding of Granger causality states that there is a bidirectional causality between FDI and GDP. The results of this study imply that a positive change in the level of foreign direct investments is likely to increase the production of goods and services in Turkey.



## **TÜRKİYE’DE DOĞRUDAN YABANCI SERMAYE YATIRIMLARININ EKONOMİK BÜYÜME ÜZERİNE ETKİLERİ: 1980-2015**

### **ÖZET**

Türkiye’de doğrudan yabancı sermaye yatırımları 1980’li yılların başlarında başlatılan liberalleşme programı sonrasında hızla genişlemiştir. Türkiye doğrudan yabancı sermaye yatırımları çekme performansı açısından 2000 sonrası dönemde rekor bir seviye yakalamıştır. Yabancı para girişi, sermaye stokunda artış, istihdam, ve teknoloji transferi, doğrudan yabancı sermaye yatırımlarının alıcı ülkeye sağladığı yararlıdır. Doğrudan yabancı sermaye yatırımlarının alıcı ülkenin ekonomisine en önemli etkisi, üretim gerçekleştirme yolu ile sağladığı katkıdır.

Bu çalışma 1980 - 2015 yılları periyodunda doğrudan yabancı sermaye yatırımlarının ekonomik büyüme üzerindeki etkilerini zaman serisi analizi ile araştırmaktadır. Ampirik analizde TÜİK, Merkez Bankası ve Kalkınma Bakanlığı tarafından yayınlanan yıllık gayri safi yurt içi hasıla verileri (GSYİH), doğrudan yabancı sermaye yatırımları girişleri (DYSY), yurtiçi yatırım verileri ve dış ticaret verileri kullanılmıştır.

Analiz sonuçlarına göre, ekonomik büyüme ile diğer değişkenler arasında uzun-dönem pozitif bir ilişki bulunmaktadır. Genişletilmiş Dickey Fuller birim kök sonuçları değişkenlerin düzey değerlerinde durağan olmadığını, ancak birinci farklarında durağan hale geldiklerini göstermektedir. Johansen eş-bütünleşme sonuçları ile değişkenler arasındaki ilişki araştırılmıştır ve GSYİH ile diğer değişkenler arasında uzun-dönem ilişki olduğu ve etkinin istatistiksel olarak anlamlı olduğu bulunmuştur. Ayrıca Granger nedensellik testi bulguları, DYSY ile GSYİH arasında karşılıklı bir ilişki olduğunu sonucunu vermektedir. Bu çalışmanın sonuçları, Türkiye’de doğrudan yabancı sermaye yatırımlarındaki pozitif bir değişimin mal ve hizmetlerin üretimi artışını desteklediğini göstermektedir.



## **1. INTRODUCTION**

International capital flows have accelerated and countries have increased their international trade relationship with the rapid globalization trend over the past decades. Foreign direct investment is one type of the international capital flows from foreign country that invests in the productive capacity of the host country.

Foreign direct investment is a way of transferring technology, knowledge, skills and other intangible advantages to the recipient country for the purpose of production (Hymer, 1976).

Foreign direct investments (FDI) have been considered as an effective way to transfer technology and enhance growth in developing countries. Developing countries try to attract more foreign direct investments on the grounds that they expect positive effects on the economy such as technology transfers, productivity gains, know-how, managerial skills and new processes in the local market (Alfaro et al., 2004).

FDI is different from portfolio investment in the way that FDI is not only a transfer of resources but also acquisition of control (Krugman and Obstfeld, 2009). And this type of investment by MNCs (multinational companies) and its contribution on the economic growth tend to be larger than the portfolio investment (Adewumi, 2006).

Foreign direct investment flows and international trade have been rapidly increasing over the past few decades. FDI in the world has increased dramatically especially after 1990s in a context of globalization, liberalization of markets and openness.

Foreign direct investments in Turkey have expanded rapidly following the liberalization programme initiated in the early 1980s. After a period of slow growth lasting until 2000, Turkey has experienced a significant increase in FDI inflows in post 2000 era. Turkey has accomplished a record level in terms of its performance to attract foreign direct investments in 2006. FDI inflows to Turkey peaked in 2007 with the amount of USD 22.03 billion thanks to restructuring in Turkish economy after 2001 financial crisis, and also the economic and global excess liquidity. Foreign

direct investment inflows to Turkey increased by 34 per cent and reached a level of USD 16.82 billion in Turkey in 2015.

In this study, the impacts of the foreign direct investment inflows on economic growth for the period of 1980-2015 is explored. The purpose of the study is to explore whether a significant positive relationship between FDI and growth exists. In this regard, firstly, the conceptual and theoretical framework of foreign direct investments including the definition, types, theories, the determinants of FDI and the global FDI trends are stated. Secondly, the economic growth concept and growth theories are summarized. Thirdly, theoretical and empirical literature review on the relationship between FDI and economic growth in the world and in Turkey is mentioned. Then, the following part consists of the overview of the FDI inflows to Turkey and economic growth trends in Turkey in a comparable manner. In the next section, the empirical analysis on the impacts of FDI on economic growth in Turkey for 1980-2015 period is stated. And finally, the conclusions are in the last section of the study.

## **2. FOREIGN DIRECT INVESTMENTS**

### **2.1 Definition and Mechanism of Foreign Direct Investment**

The concept of foreign direct investment (FDI) begins with the study by Hymer in 1960 (Dunning and Rugman, 1985). In the literature of entry to foreign market involves the selection of either exports or FDI (Buckley and Casson, 1998). The pioneering work of Hymer (1976) suggests that FDI is a way of transferring technology, knowledge, skills and other intangible advantages to the recipient country for the purpose of production.

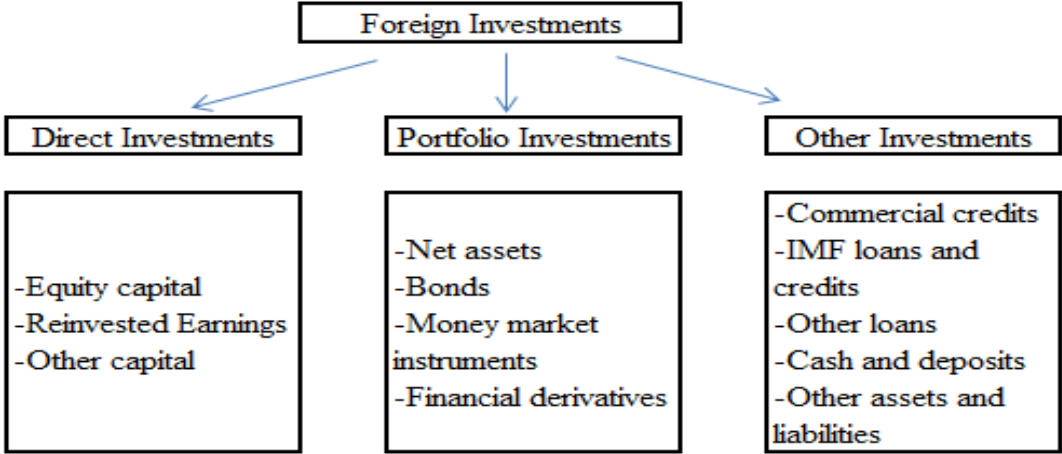
Foreign direct investment (FDI) is defined as the investment in which a company acquires a considerable interest in a foreign company or establish a subsidiary in a foreign country (Chen, 2000). Cosson et al. (2004) defines FDI as the investment in which the foreign company's share is greater than ten per cent. According to Levary and Wan (1999), FDI can be defined as the investment outside the investor company's home country and generally it is a kind of investment occurs as extension of direct exports.

In a broad definition, FDI is a combination of capital stock, technology and know-how and can raise the existing knowledge in the host country by providing training to labors and also new managerial and organizational practises (Li and Liu, 2004).

FDI is defined by IMF (Balance of Payments Manual 1993, p. 86) and OECD (1996, p.7-8) as a long term investment of a foreign entity or investor in a country outside the country of foreign direct investor. FDI is an investment of a company in another country by acquiring of control and transferring of resources through establishment of a subsidiary (Mun et al., 2008). FDI has an effect on economic development of the recipient country by increasing the total output of the country (Agiomirgianakis, 2003).

Caves (1996) defines FDI as the long-term capital flow on the basis of consideration of generating long term profit through international production. When this definition is considered, it is worth to mention about the management and control issues which are involved in definition of some of other authors. According to Mello (1997), FDI

involves a considerable equity acquisition or effective management control of the enterprises outside the home country. FDI comprises the control of tangible assets having potential of profit generation. And considering the fact that there is an ownership of the assets, FDI is distinguished from other type of investments such as license agreements. Distinctive feature of FDI from portfolio investment is that FDI not only a transfer of resources but also acquisition of control (Krugman and Obstfeld, 2009). And this type of investment by MNCs (multinational companies) and its contribution on the economic growth tend to be larger than the portfolio investment (Adewumi, 2006). The types of foreign investments are indicated in figure 2.1.



**Figure 2.1 Types of Foreign Investments**

**Source:** IMF, 1993, prepared in accordance with the balance of payments.

There are four main differences between the foreign direct investments and foreign portfolio investments:

- (i) FDI includes transfer of both financial and non-financial assets such as technology and intellectual capital while portfolio investment includes transfer of money capital.
- (ii) The ownership of the transferred assets changes in foreign portfolio investment while in FDI the decision-making over the transferred asset is controlled by the investor.
- (iii) The motivation of the foreign direct investments differs in foreign portfolio investments and FDI, higher foreign interest rates in the former one and the opportunity for a better economic performance in the latter one.

(iv) FDI can be less interchangeable and more indivisible in comparison to the foreign portfolio investments (Dunning and Dilyard, 1999, p. 4).

FDI refers to the investment of the foreign investor or parent enterprise's investment having a lasting interest on its investment including a long-term relationship involving a substantial influence on the management. This kind of investment involves all the transactions from the beginning between the two enterprises and among the foreign incorporated and unincorporated affiliates (UNCTAD, 2014).

FDI, as one of the parts of a country's national account, is defined as the net investment inflows for acquisition a lasting interest of 10 per cent or more in an entity in another country and this investment is comprised of involvement in management, joint venture, transfer of expertise and transfer of technology (Shawa, 2014). FDI has an important role in international economic integration and can be considered as the addition of capital inflows to fixed capital stock of the home country over time which is expected to increase production and output of the wider economy (Sikwila, 2015).

Technology transfer is one of the important reasons of the FDI because technology can not be sold like other goods because of the enterprises' preference to not to reveal their innovation and also because of the fact that technology and management are complement to each other (Nessabian, 2006, p.100).

### **2.1.1 Motivations for FDI**

The motivations for FDI can be categorized as resource seeking, market seeking, efficiency seeking, and strategic asset seeking (Dunning, 1993). This categorization is based on the OLI paradigm (Dunning, 1977) which explains the reason (Ownership advantage), the way (Internationalizm advantage) and the location (Location advantage) of the investment of foreign investor.

(i) In the resource seeking category, MNCs aim to acquire special types of resources which are unavailable in their home countries such as raw materials or natural resources or type of resources with lower costs compared to the costs at their homes countries like unskilled labor at cheaper prices.

(ii) In the market seeking category, the MNCs, for the purposes such as to follow customers or suppliers that have built foreign facilities, to save cost of serving a distant market, to be present on the market which cause potential competitors to

discourage from occupying in market. FDI decision depends on the cost comparison of establishing a foreign facility or accessing the market through exporting.

(iii) Efficiency seeking refers to taking advantage of costs of factor endowments and differences in availabilities, and also to taking advantage of different consumer tastes and different supply capabilities and taking advantage of economies of scale (Dunning, 1993, p.60).

(iv) Strategic asset seeking is that the firms aim to fulfill a new technological base instead of exploiting its existing assets. MNCs have long-term strategic interests and decide to purchase certain assets or enter alliances to promote their long term strategic interests.

### **2.1.2 Impacts of FDI**

FDI provides many benefits both the home country and the host country as well. In order to gain the benefits of FDI, almost all countries, both developed and developing, make an effort to attract FDI (Hojabr kiani, 2006, 163). The countries apply different promotional policies or they offer incentives to foreign investors for the purpose of attracting FDI (Mottaleb, 2007, 2). Many countries believe that FDI has a positive impact on poverty trap and helps to get over the stagnation (Brooks et al., 2010).

Foreign direct investments provide several benefits to the host country such as inflow of foreign currency, increase capital stock, generate employment and transfer of technology (Seyidoğlu, 2003, p.139). The most significant impact of the foreign direct investments to developing countries is that it contributes to the national economy through realizing production in the recipient country (Karluk, 2007, p.101). The main effect of the well planned and efficiently oriented foreign direct investment to the host country's economy is the net contribution to its economy (Görgün, 2004, p.4). FDI is important for developing countries for long-term economic development by raising productivity, offering new jobs, transferring technology and enhancing exports (United Nations, 2003, p.iii).

According to Erdal (2002), FDI has effects on the production, balance of payments, income, employment, prices, foreign trade and general welfare of the economy of the host country.

Besides the direct capital formation, FDI also provides technology and know-how to the recipient country (Pradhan, 2006; Grossman and Helpman, 1991; Chao and Yu, 1994; Barro and Sala-I-Martin, 1995; Borensztein et al., 1998) and promotes growth (Alfaro, 2003). FDI is a driver of economic growth (Asheghian, 2004; Smith, 1997; Baskaran and Muchie, 2008; Wang, 2009; Shawa, 2014; Quazi, 2007) through improvements in productivity, employment, and technological progress. Transferring knowledge and other assets is the driver of the positive effect of FDI on economic growth (Sethi et al., 2003; Hermes and Lensink, 2003). Kok and Ersoy (2009) mentioned that FDI has contributions on the general welfare of the economy of the developing countries in terms of production, employment, income, prices, and development.

On the other hand, competition effect which results from MNCs entering the host country can discourage the domestic companies to take place in the market eventually causing reduction in the growth of domestic companies (Jones, 1996). According to Seyidoğlu (2003), foreign direct investments may have negative effects on the economy such as

- (i) increasing control of the foreign investors on the economy,
- (ii) deterioration in economic integrity by using high technology in some part of the industry while using low technology in some other parts in the industry,
- (iii) cancellations in custom tariffs and import quotas,
- (iv) unfair competition for small sized domestic companies.

### **2.1.3 Types of FDI**

Foreign direct investments mainly can take form as the following types: Joint ventures and full ownership, mergers and acquisitions (M&A's), greenfield and brownfield investments, horizontal and vertical investments.

#### *2.1.3.1 Joint ventures and full ownership*

A joint venture is defined as a partnership or cooperation formed by two or more entities with usually equal shares in ownership and without and absolute dominance by one of them for conducting a new and profit generating business with a permanent duration (Young and Bradford, 1977, p.11). Full ownership is the type of ownership with 100 per cent which is called a wholly owned subsidiary (Hill, 2005, p. 494).

### *2.1.3.2 Mergers and acquisitions*

Mergers and acquisitions involve takeovers, corporate control or corporate restructuring resulting in change of structure of the companies (Durga and Kumar, 2013). Direct investment in a host country can take form of either M&A's or greenfield investments depending on the way it occurs; transfer of existing assets to domestic companies in M&A's or new established assets in greenfield investments.

### *2.1.3.3 Greenfield and brownfield investments*

Greenfield investments can be defined as investments of firms through a new production facility and transfer of their capabilities to produce abroad (Calderón et al, 2004; Cavusgil, et al, 2013:444; Harzing, 2002; Keegan, Green, 2013:287; Nocke, Yeaple, 2007; Qiu, Wang, 2011). Brownfield investments are investments between greenfield investments and acquisitions in which the investor purchases and leases existing production facilities which means the production factors of the company in host country are effective rather than the production factors of the investor company (Demirel, 2006).

### *2.1.3.4 Horizontal and vertical investments*

In horizontal FDI, the foreign investor has the similar products or services in the host country as in its home country, while in vertical FDI the aim of the foreign investor is to save costs in which the transportation costs are very high in exports or there are trade barriers (Protsenko, 2003).

## **2.1.4 The factors affecting FDI**

The factors that affect FDI or in other words FDI determinants can be classified in two main groups: First is the economic factors including size of the market, monetary and fiscal policies, natural resources (Morisset, 2000; Asiedu, 2002) and the second is the institutional variables which include political stability, good governance, and investment environment (Lin, 2013).

The motivations of the host country on location can be classified in two groups: First is Ricardian-type endowments including proximity to markets, natural resources, and second is the environmental variables such as the recipient country's legal, political factors (Maclayton, Smith, and Hair, 1980; cited from Erdal, 2002).

The size of the market is measured by GDP per capita and considered to be an important factor affecting the FDI (Artige and Nicolini, 2005). According to the market-size hypothesis, for efficient usage of resources and economies of scale, a large market is needed. Rapidly growing economy can provide opportunities to make profits (Charkrabarti, 2001). Trade openness is considered to be one of the determinants of FDI with the fact that it promotes efficient resource allocation through comparative advantage and allows easy technology and knowledge transfer (Onyeiwu and Shrestha, 2004).

Economic stability and growth can affect FDI since foreign investors prefer always to invest in less risky and more stable economies and in which sustained growth rates are caught. FDI can also be affected by exchange rates since it affects the cost of production in the host country. Labor cost is a significant factor because higher labour cost can limit inflows of FDI due to higher production costs (Narender, 2015).

## **2.2 FDI Theories**

### **2.2.1 Product cycle theory**

The product cycle theory by Raymond Vernon (1966) explains ‘the life cycle of a product’ and its effect on international trade by identifying three stages for the life of a product, which are the new product, the maturing product and the standardized product. The first stage is that the product is produced at home country is not standardized (p. 195). In the second stage, the standardization starts, the demand for the product increases and economies of scale are achieved and investors start to question to set up production in other countries. In the third stage, the product is standardized and companies start investing in less-developed regions where labor costs are lower than advanced countries (p. 203). Vernon (1979) argued that the theory had strong predictive power in explaining the composition of trade in United States (US) and the patterns of FDI by US firms (p. 265) (Ekinci, 2009).

### **2.2.2 Internationalism theory**

This theory is primarily based on the research of Johanson and Wiedersheim-Paul (1975) and Johanson and Vahlne (1977), and widely known as the Uppsala School. Internationalization is defined as a process in which the companies increase their international involvement gradually (Johanson and Vahlne, 1977, p. 23). Johanson

and Vahlne (1977) suggest that internationalization results from a process of incremental adjustments to changing conditions of the firm and the environment (p. 26). According to Meyer (1998), the internationalization theory tells us three main ideas; firstly, firms take small steps rather than large foreign production investments, secondly, firms enter markets which have similarities to their home countries with regard to politics, geography, culture and language, and as third idea, investments in a country provide brand loyalty of customers which allow options for further FDI opportunities (p.72).

### **2.2.3 The eclectic paradigm of Dunning**

The eclectic theory of Dunning can be considered as a mix of three direct foreign investments (O-L-I):

(i) 'O: Ownership': Ownership advantages refer to intangible assets that are exclusive possesses of the company and can be transferred among transnational companies at low costs which result in lower costs or higher profitability. (Dunning, 1973, 1980, 1988).

(ii) 'L': Location: Supposing the first condition is met, location advantages are the key factors to determine the host country and can be classified in three categories, first is economic benefits such as market size, factors of production, second is political advantages which are government policies affecting FDI, and third is social advantages which are cultural diversity, distance between the home and host countries.

(iii) 'I': Internalization: When the first and second conditions are fulfilled, the company can use these advantages in collaboration with at least some factors outside the country of origin (Dunning, 1973, 1980, 1988).

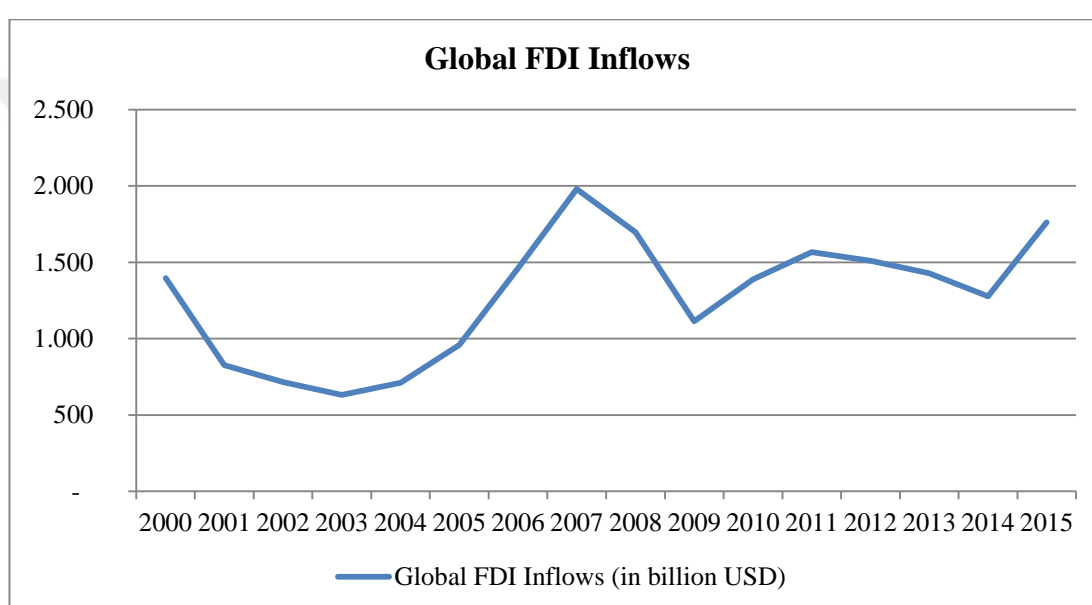
In eclectic theory, Dunning attempts to answer the company's decision to either produce in a foreign market rather than exporting or making license agreements with a domestic company (Lim, 2001, p.10).

### **2.3 FDI in the World**

Foreign direct investment flows and international trade have been rapidly increasing over the past few decades. FDI in the world has increased dramatically especially after 1990s in a context of globalization, liberalization of markets and openness. As

concerned the destination, FDI was primarily concentrated in highly developed economies (Nunnenkamp, 2001) which turned to be concentrated more on developing countries recently. According to the World Bank (2002), FDI inflows to the developing countries increased almost by tenfold during the period 1990 - 2003. (UNCTAD, 2011, cited from Lin, 2013). Since 2009, the share of FDI inflows to developing countries have been over 40 per cent of global FDI flows, and in 2015 the share is 43 per cent.

Global FDI flows data issued by UNCTAD (United Nations Conference on Trade and Development) is indicated for post 2000 era in figure 2.2.



**Figure 2.2 Global FDI inflows (2000–2015) (billion USD)**

**Source:** UNCTAD (Data are drawn from UNCTAD - World Investment Reports 2008-2016)

Global FDI inflows have increased gradually over the years and reached a peak level of USD 1.978 billion in 2007, with a 35 per cent increase (UNCTAD, 2009). However, then with the effect of the global financial and economic crisis, global FDI inflows declined by 14 per cent in 2008, and fell a further 34 per cent to USD 1.114 billion. Global FDI flows rose by 38 per cent to USD 1.762 billion in 2015, their highest level since the global economic and financial crisis years of 2008-2009, however, they still remain some 10 per cent short of the 2007 peak (figure 2.2).



### **3. ECONOMIC GROWTH**

#### **3.1 The Concept of Economic Growth**

Economic growth refers to the development in the capacity of the production of goods and services (Parasız, 1997, p.4). In another definition, economic growth is the increase in the production level in a long period of time such as twenty or twenty five years (Ünsal, 2007, p.13). Economic growth is expressed by the increase in gross domestic product.

#### **3.2 Economic Growth Models**

The models of economic growth are summarized in this section which are the Classical growth model, Schumpeterian growth model, Keynesian and Neo-Keynesian growth model, Solow model, Schumpeterian growth model and Endogenous growth model.

##### **3.2.1 Early thoughts of economic growth**

Economic growth theories root back to 15th-17th centuries and originate from representatives of mercantilism who considered accumulation of wealth as the main source of the growth and the main purpose of the state and the economic actors. Early mercantilists considered precious metals and coins as absolute liquid materials while later representatives of mercantilism considered the total amount of good produced as result of developments in manufacturing. In the late 18th century, physiocracy was developed with the idea mainly depending on land development which means the wealth of nations depends on land agriculture.

##### **3.2.2 The classical growth theory**

The first elements of the Classical Growth Theory belong to Adam Smith's "The Wealth of Nations" (1776). The foremost representatives of classical theory are: Adam Smith (1723-1790), David Ricardo (1772-1823), Thomas Malthus (1766-

1834), Karl Marx (1818-1883), John Stuart Mill (1808-1873), Jean-Baptiste Say (1767-1832) and others.

Adam Smith thought that the increase in wealth of people can be achieved with the improvement of the output of the factors of production which are land, labor and capital. This is reflected in increase in the size of functioning capital and the growth of labor productivity. Smith argued that productivity can be increased by labor division and technology improvement. According to Smith, competition is very important in an economy and drivers of the economic growth are advances in technology and labor division. From the view of Thomas Malthus, in case the proportions between the growth in population and means of subsistence remains, when population grows exponentially and means of subsistence grow arithmetically. David Ricardo, with his comparative advantage theory, suggested that a nation should concentrate its resources to industries that it has internationally competitiveness and trade others not produced nationally. John Stuart Mill completed the classical theory of economic dynamics and the main idea of his assertions is the continuous accumulation of capital (Sharipov, 2015).

### **3.2.3 The Schumpeterian growth theory**

Schumpeterian growth theory is based on the views of Joseph Alois Schumpeter (1883-1950) published on his work 'Theory of Economic Development' in 1911 in which 'innovation' entered the economic growth theory with the importance of the entrepreneur with regard to economic growth (Lavrov and Kapoguzov, 2006). Description of economic development by Schumpeter was 'carrying out new combinations' which he defined widely as follows: (i) introduction of new goods; (ii) opening a new market; (iii) introduction of new methods of production; (iv) new supply of raw materials; (v) new organization of an industry. He viewed these forms of economic changes as development (Sharipov, 2015).

### **3.2.4 The Keynesian and neo-Keynesian (post Keynesian) theory**

The basis of the Keynesian growth theories is the study of Keynes; 'The General Theory of Employment, Interest and Money'. The representatives of Keynesian and neo-Keynesian growth theories are large including John Maynard Keynes (1883-1946), Roy Harrod (1900-1978), Evsey Domar (1914-1997), Joan Robinson (1903-1983), Nicholas Kaldor (1908-1986), Luigi Pasinetti (1930-till now), James Meade

(1907-1995). The main idea of the Keynesian model economic growth is the effective demand, especially the increase in aggregate effective demand should lead economic growth. The investment is considered to be significant in the Keynesian economic growth theory that affects the income positively and increases with the income growth.

Post Keynesian, in other words Neo-Keynesian economic growth theory has been introduced by Evsey Domar and Roy Harrod. They are known as Harrod-Domar because of reaching similar results. Domar supported theory of Keynes and considered investment as not only factor of income but also factor of development in production capacities. Harrod's theory is based not only the income, savings and investments relationships, but also analysis of entrepreneurs' expectations. Harrod's theory explains the growth rate with growth rates in capital productivity and labor. Limitations of the theory of Harrod-Domar can be summarized as; economic growth depends on investments, does not depend on labor, and technological progress is not involved in their theory (Sharipov, 2015).

### **3.2.5 Neoclassical growth theory and Solow's exogenous theory**

The main representatives of neoclassical school are Alfred Marshall (1842-1924), Carl Menger (1840-1921), Friedrich von Wieser (1851-1926), Leon Walras (1834-1910), John Bates Clark (1847-1938), William Stanley Jevons (1835-1882), Irving Fisher (1867-1947) and others.

Solow (1924-present) with other scholars objected the intervention of the state in the economy and argued for allowing large companies to achieve their growth potential in a competitive market, by using most of the resources available to them. Their theories were based on classical theory of the factors of production, regarding capital, labor and land as independent factors of the formation of national product, also on the theory of marginal productivity. The theory of Robert Solow was introduced in an article entitled "A Contribution to the Theory of Economic Growth" (1956), and then developed in the "Technical Change and Aggregate Production Function" (1957). According to the theory, higher savings rate provides a greater stock of capital, i.e., growth of investments, and a higher level of production. In Solow's theory, population growth is also one of the reasons for continued economic growth in the stable condition of the economy. After investments and increase in the number of employees, technical progress is the third source of economic growth.

Thus, according to the theory of Solow, technological progress is the sole basis for sustainable growth of welfare (Sharipov, 2015).

### **3.2.6 The endogenous economic growth**

New growth theory occurred in 1980-1990s which focused on the technical and scientific progress as an endogenous factor of growth. Paul Romer (1955-till now) and Robert Lucas (1937-till now) asserted about the endogenous character of the most important technological innovations based on investment in human capital and in technological development. In endogenous growth theory, technological progress is not the only possible cause of economic growth in the long term. The value of high-quality, intensive determinants of economic growth are the quality of human capital depending on human development (health and education), state support for technology and science, government's role for attracting new technologies, formation of needed conditions for protection of intellectual property rights in conditions of imperfect competition. Thus, state's intervention is important in endogenous growth theory which is different than neoclassical theory. Romer and Lucas consider human capital as an important factor in economic growth. Knowledge or information is the variable put by Romer in endogenous growth theory. R&D as a determinant of growth is considered in the endogenous growth theory by J. Grossman (1953-till now) and E. Helpman (1946-till now) who describe effect of high-tech innovations on economic growth (UN, 2011).

## **4. LITERATURE REVIEW ON THE IMPACT OF FDI ON ECONOMIC GROWTH**

### **4.1 Theoretical Literature**

In the theoretical literature, the reason for positive impact of FDI on economic growth can be explained with two main theories: theory of capital formation and theory of technological spillovers.

In the theory of capital formation, the key point is the role of FDI as capital. The neoclassical growth model by Solow (1956) argues that the increase in available capital stock raises production and correspondingly the growth rate. Increase in FDI should result in increase in overall capital stock for production as FDI is a source of physical capital to the recipient country. Thereby, when foreign owned capital stock increases, higher growth is achieved under the neoclassical model. In regard to contribution on the economic growth of the host country, FDI is considered to be better in comparison to capital inflows like direct portfolio investments. Lipsey (1999) suggests that FDI is a more reliable capital inflow source in terms of reversals. Compared to other alternatives, FDI flows tend to be more stable, as it is expected to be more costly to reverse and less sensitive to global shocks than foreign portfolio investment (Lipsey, 1999). In neoclassical models, due to diminishing rate of returns, FDI only has a short-run effect on economic growth. On the other hand, the assumed effect of FDI on the economic growth is positive in short and long-run (Herzer et al., 2008: 794).

The effect of FDI on economic growth through the channel of knowledge or technological spillovers is that FDI has a role of diffuser knowledge and technology and affects directly the growth (Borensztein et al., 1998). Endogenous growth theory lays emphasis on the knowledge accumulation for economic growth. As companies in developed countries establish factories or subsidiaries in developing countries, they can bring advanced technologies to market which can be adapted through copying by the local companies. Foreign investors can train local workers to use advanced technologies which increases stock of knowledge in the recipient country. Finally, when foreign investments enter local markets, this leads increase in the

competition and when this increased competition forces domestic companies to produce more efficiently the competition effect on the growth takes place.

Foreign direct investments are specifically important for transition economies since these economies have insufficient technology and reserves and the capital are needed to stimulate economic growth. (Billington, 1999, Bevan and Estrin, 2000). According to Blomstrom et al. (1994) and Choe (2003), the country must have achieved a level of development that enables it to take advantage of the benefits of high productivity for FDI to have a positive impact on economic growth.

The positive effect of FDI inflows on growth is discussed to be conditional on some factors, such as human capital, the degree of trade openness, the level of per capita income, and the depth of the financial market (Herzer et al., 2008: 795-796; Aizenman and Noy, 2006).

#### **4.2 Empirical Literature**

There are many studies conducted on the effect of the foreign direct investments on economic growth. Firstly, an overview to the some of the empirical studies carried out outside Turkey is presented and then some of the studies carried out in Turkey are summarized.

Numerous studies analyzing the link between FDI and growth have identified growth stimulating effects, at least under certain circumstances (e.g. Alfaro et al., 2004, 2010; Basu and Guariglia, 2007; Borensztein, De Gregorio, & Lee, 1998; Hansen and Rand, 2006). A positive effect of FDI on emerging economies has been found by many researchers (Schneider and Frey, 2005 Carkovic and Levine, 2002, Garibaldi et al. 2002, Neuhaus, 2006). However, a number of studies do not report significant unqualified statistical relations between FDI and economic growth (Grilli and Milesi-Ferretti 1995; Aitken et al. 1997; Aitken and Harrison 1999; Mencinger 2003). So, despite there are mostly positive results, in the FDI-growth literature, the empirical studies have so far yielded mixed results on whether FDI contributes positively to economic growth.

In a early study by Wallis (1968), the economic growth of the recipient economies is found to be positively affected from FDI flows from United States to European Union.

Blomstrom et al. (1992) explored the relationship between FDI and growth by dividing 78 developing countries into two groups as low-income and high-income countries, and exert that there is no tie between FDI and economic growth (GDPGR) in the low-income countries although there is a positive effect of FDI on GDPGR in the high-income countries.

Balasubramanyam et al. (1996) found a positive impact of FDI on economic growth in the countries applying inward looking development strategies by using panel data analysis data for 46 countries for the period 1970 to 1985.

In the study of Borensztein and et al. (1998), examining the impact of FDI on economic growth rate in case of 69 developing countries for the period of 1970-1989, it was revealed that there is a positive relationship between FDI and economic growth only when the host country has satisfactory absorptive competence and high level of educational sectors for progressive technologies.

De Mello (1999), using the panel data model, also finds a positive effect of FDI on economic growth, both in developed countries and in developing ones with the conclusion that the long-term growth in recipient countries is driven by technology and knowledge spillovers from the investing countries in the host countries.

Bosworth and Collins (1999) examine 85 countries (62 developing and 23 developed countries) for the years of 1978-1995, and expose a positive relationship between FDI and GDPGR.

Xu (2000) studies the effect of FDI on GDPGR for 40 undeveloped and developing countries to where FDI flows from United States, and concludes that FDI positively impact the growth if the minimum amount of human capital exists.

Ericson & Irandoust (2001) apply the Granger causality test on several countries over the period 1970 through 1997, state a unidirectional causality from FDI to growth in most countries.

In another study, Zhang (2001) also analyses the impacts of FDI on economic growth rate of China, over the period 1984-1998 using a cross-section data, panel data and growth model. The result of the study shows that the foreign direct investments appear to support China's economic growth.

Nair-Reichert and Weinhold (2001) have found that FDI on average has a significant and positive impact on economic growth in a sample of 24 developing countries.

Based on panel cointegration and causality tests, Basu et al. (2003) found that there is a bidirectional causality between economic growth and FDI in 23 developing

countries over the period between 1978 and 1996. Basu et al. (2003) further argued that for relatively open economies causality runs in both directions, while for relatively closed economies long-run causality mainly runs from growth to FDI.

In another study conducted by Assanie and Singleton (2002) using panel data method including 67 countries, growth is found to be positively affected by FDI in middle-income countries, while no significant effect is found for the low income countries.

Carkovic and Levine (2002), in their panel data analysis using data from developing and developed 72 countries, do not find a significant effect of FDI on economic growth if the host and foreign countries are at different levels of trade-openness.

Carkovic and Levine (2005) have found that FDI does not exert a significant, positive impact on economic growth in developing countries. Carkovic and Levine's (2005) study, however, was based on the unlikely assumption of the homogeneity on the coefficients of the lagged dependent variables.

Choe (2003) examines the FDI growth relationship including 80 countries for the period of 1971-1995 and finds out a positive relationship between foreign direct investments and growth with the conclusion that the causality effect from FDI to growth is weaker than the causality from growth to FDI.

Another empirical study conducted by Balamurali and Bogahawatte (2004) using the Engle and Granger error correction approach in order to consider the causality and long run and short run relationship between economic growth and foreign direct investment of Sri Lanka over the period of 1977-2003, finds that economic growth rates are significantly affected by foreign direct investment; the result indicates that there is bidirectional causality between economic growth and FDI.

In a heterogeneous panel data context, Hansen and Rand (2006) tested for Granger causality between FDI and GDP in a sample of 31 developing countries, finding that FDI has a positive impact on GDP in the long run.

Chakraborty and Nunnen Kamp (2006) studied on the effect of foreign direct investment and economic reforms in India by using Granger causality and panel co-integration approach. The results showed that the growth effects of FDI vary widely across different sectors. There was no casual relationship found in the primary sector. While only a transitory effect of FDI on output was found in the service sector.

Fortanier (2007) studied the role of the investor country in the event of foreign investment and growth with panel data approach comprising of six major investor and 71 host countries for the period of 1989-2002. The results showed that the

growth consequence of FDI differs by country of origin, and the effect on the origin country also varies depending upon the host country characteristics.

Alfaro and Charlton (2007) examine the effect of FDI on economic growth for 22 OECD countries for the period of 1990-2001 by using sectoral data, in their panel data study they find a positive effect of FDI on growth.

Baharumshah and Almasaied (2009) explore the impact of foreign direct investment on economic growth in Malaysia in timeframe between 1974 and 2004 including the economic crises of 1997 to find out the long-run relationship. This study finds that economic growth rates can be affected by FDI, domestic capital formation, financial deepening and human capital.

Umoh et al. (2012) investigate the empirical relationship between economic growth rate and FDI in Nigeria between 1970 and 2008. Their results suggest that there is a positive causal from growth rate to FDI and from FDI to growth rate. Additionally, the result acquired demonstration that economic growth rate in Nigeria and FDI inflow are jointly determined.

Bhattarai and Ghatak (2010) estimate a model using the panel data for 30 OECD countries for the years 1990-2004, and argue that FDI inflow positively affects GDPGR.

Study by Öztürk and Kalyoncu (2007) investigate the impacts of FDI on economic growth in both Turkey and Pakistan over the periods of 1975-2004 by using Granger causality and Engle-Granger cointegration tests and find a positive causality relationship between FDI and economic growth in the case of Turkey whereas in Pakistan case only economic growth that causes foreign direct investment.

Zafar (2013) examines the impact of a variety of factors market size, trade openness and cost of capital among others on FDI inflows into India, Pakistan and Bangladesh by using time series data over the period 1991 to 2010 and concludes that there is a strong and positive relationship between FDI flows and economic growth in these countries. Antwi et al. (2013) find that FDI contributed to economic growth in Ghana over the period 1980 through 2010.

Falki (2009) used data from 1980 to 2006 and examined the effect of FDI on economic growth of Pakistan and concluded that there is negative statically insignificant relationship between GDP and FDI inflows in Pakistan.

Umeora (2013) does not find FDI to have any effect on GDPGR in a case study of Nigeria over the period 1986-2011.

Another study on foreign direct investments and economic growth relationship is the study of Erçakar and Yılgör (2010) in which they use data of 19 developing countries for 1980-2005 period. In this study where panel data analysis and unit root tests are applied, it is found that FDI flows affect the GDPs of the countries in the long run.

Aslanoğlu (2002) finds there is no causality relationship between FDI and GDPGR of Turkey applying the Granger causality test in the period of 1975 and 1995.

Alıcı and Ucal (2003) perform vector autoregression (VAR) model and the Toda-Yamamoto causality test and reveal that no significant connection between FDI and GDPGR exists for Turkey case.

Örnek (2008) finds a positive effect of foreign direct investments on economic growth in Turkey in the study using time-series method with 4Q1996-1Q2006 quarterly data.

Kahramanoğlu (2009) investigates the relationship of FDI and GDPGR for Turkey case in two separated periods of 1970-2002 and 2002-2008, and concludes that a bi-directional causality occurs between FDI and GDPGR along the second period, whereas there is a one-way causality from GDPGR to FDI in the first period.

Yılmaz et al. (2011) apply a time-series methods on the presence of linkage between FDI and GDPGR for Turkey in the period of 1980-2008, and find that both series are co-integrated and have a long-run relationship.

Ekinci (2011) also reveals that there is a two-way causality between GDPGR and FDI applying time-series techniques over the period 1980 through 2010 in Turkey.

Alagöz et al. (2008) do not find a linkage between the variables employing the Granger causality test over the period 1992 through 2007 for Turkey.

Arısoy (2012) investigates the effects of FDI on total factor productivities and economic growth for Turkey for the period 1960-2005 and the empirical results reveal that FDI positively participates in economic growth rate and total factor productivities through technological spillovers and capital accumulations.

## 5. FOREIGN DIRECT INVESTMENTS AND ECONOMIC GROWTH IN TURKEY

### 5.1 Foreign Direct Investments

Foreign direct investment inflows to Turkey prior to 1980 were very low because of the economic policies restricting foreign direct investments and trade such as high tariff rates, quantitative restriction, rationing exchange rates and overvalued exchange rates. Turkey then introduced economic reforms on foreign direct investments and trade such as removing trade restrictions, liberalization of foreign exchange market, the encouragement of FDI (Ilgun et al., 2010). One of the main causes of the low level of FDI in Turkey was the import substitution (IS) strategy of development continued until the early 1980s. The importance of foreign capital in Turkey came to the fore with the practices after the Decisions of January 24, 1980. Turkey switched from import substitution programs to outward-oriented growth models with these decisions which resulted an increase in foreign investment flow into Turkey (Tapşın, 2016). The change in the policy from the import substitution strategy to a more outward oriented economy and export development provided higher interest of foreign investors in Turkey (Erdal, 2002).

During the period between the enactment of the Law Concerning Foreign Capital in 1954 until 1980 which marks the opening of Turkey's economy to foreign capital, the FDI inflows to Turkey remained at very low levels which reached USD 75 million by 1979 (Table 5.1).

**Table 5.1 : FDI Inflows to Turkey in pre 1980 period (million USD)**

Year	1950	1960	1970	1975	1976	1977	1978	1979
FDI Inflows	5	24	58	114	10	27	34	75

**Source:** Undersecretariat of Treasury

A relative increase in FDI inflows is seen after the reforms in 1980s. However, Turkey was not able to obtain the desired level of FDI in the period of 1980-1990

and the volume of foreign direct investment inflows remained below USD 1 billion until 2001. In the historical development of FDI in Turkey, net FDI inflows exceeded USD 1 billion for the first time in 2001.

FDI flows to developing countries increased significantly in 1990s. In Turkey, similar trends as other developing countries have been observed (Erdal, 2002). The factors preventing the FDI inflows before the year of 2000 can be summarized as high inflation, economic and political instability, high credit costs, insufficiency of competition, unproductive intellectual rights, excessive bureaucratic implementations and government interventions to economic order (Ok, 2004; Togan, 2005).

Main legal framework was formed by the Foreign Capital Framework Decree Law No. 8/168 and “The Legislation Number 32 on the Protection of the Value of Turkish Currency” enacted in 1989. FDI kept on rising until the economic instability of 1992. During the 1994 economic crisis FDI showed a falling tendency and this decrease was aggravated by the 1997 Asia and 1998 Russia crises as well as by the 1999 Marmara earthquake (Güven, 2008:79).

Despite the economic crisis, rise in FDI in 2000 and 2001 is closely related to the privatization acts of that time. Following the crisis times, Foreign Direct Investment Law No. 4875 was enacted on 17 June 2003. This law redefined the concepts of FDI and investor in international standards (Şimşek and Behdioğlu, 2006:58).

FDI in Turkey is governed since June 2003 by Law 4875 that replaced Law 6224 enacted in 1954. The objectives of this law can be summarized as

- (i) to regulate the principles to encourage FDI,
- (ii) to define investment and investor in line with international standards,
- (iii) to protect the rights of foreign investors,
- (iv) to increase FDI through established policies and
- (v) to establish a notification-based system for FDI instead of screening and approval. (UNCTAD, 2012).

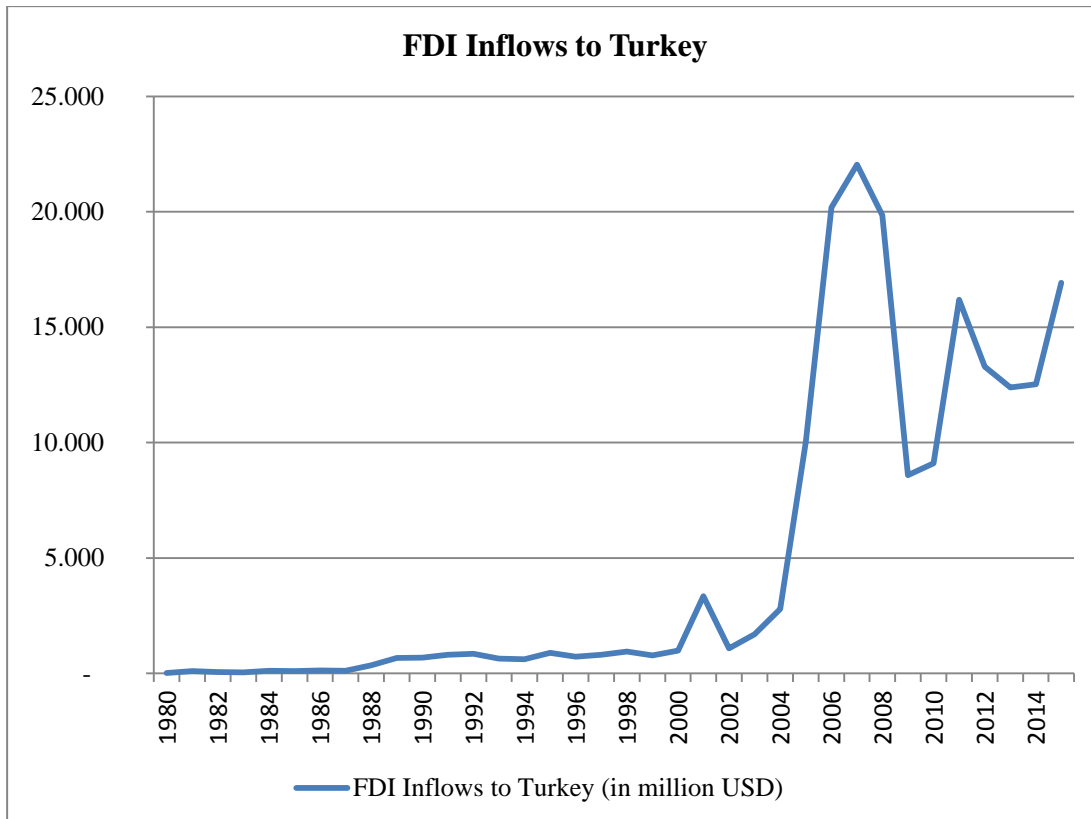
The new law of FDI has an essential role in promoting FDI since it does not require the foreign investors to take official permissions for investments in most sectors in Turkey (Aktar and Ozturk, 2009).

Turkey’s attractiveness of foreign direct investments increased after adoption the IMF program in 2001 because of positive expectations. In 2002, with a new growth regime in the Turkish economy, besides full EU membership, the government had

two main targets in the agenda which are economic development and expansion and deepening of democratic principles. Stabilisation in the economy was aimed with the program with high growth rate and low unemployment. Besides the geostrategic position of Turkey among three continents, the government makes structural and legal arrangements to provide incentives for foreign investors. These efforts were effective and Turkey achieved to attract high FDI inflows which have been received especially after 2002 mostly in terms of privatisation (Ilgun, 2010).

Turkey started to improve its attractiveness with new reforms and regulations after 2005. Turkey has achieved a record level in terms of its performance to attract foreign direct investments in 2006, during which, the FDI total inflows were realized as USD 20.17 billion. Again, as of the end of 2006, the number of companies with foreign capital operating in Turkey has reached 14,955. FDI inflows reached its peak point in 2006 which was around 4 per cent of GDP as a result of economic and political stability (World Bank, 2011). According to Sayek (2007), EU membership negotiation process started for Turkey in 2005 which helped to attract more foreign investors to Turkey especially from the European countries.

The FDI inflows to Turkey over the period of 1980 to 2015 is shown in figure 5.1.

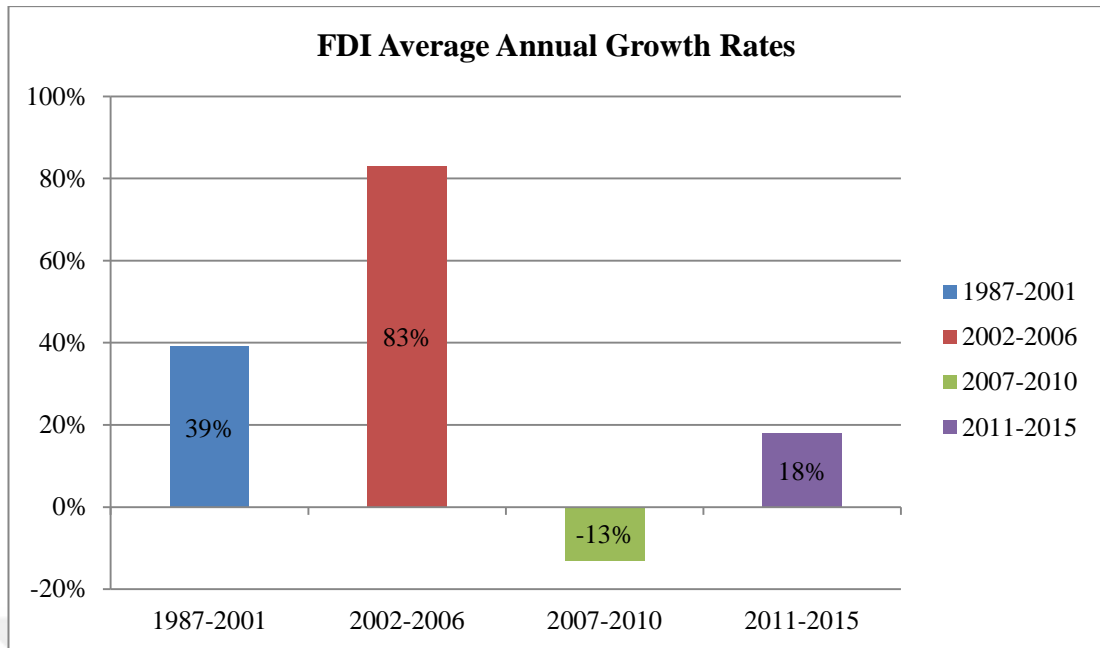


**Figure 5.1 : FDI Inflows to Turkey (1980-2015) (million USD)**

**Source: CBRT**

FDI inflows to Turkey peaked in 2007 reaching USD 22 billion, and Turkey ranked among the five developing countries and took its place in first 20 countries in the world with 16th rank Turkish Treasury. Despite the decline in FDI inflow by 10 per cent in 2008, it was still one of the highest inflows in Turkey, USD 19.85 billion. After recovery years, there was again decrease in 2012-2013 period in FDI inflows to Turkey. 2015 year was another rapid growth year after 2007. FDI inflows to Turkey increased by 34 per cent and reached a level of USD 16.82 billion in 2015 (Figure 5.1). The number of companies with foreign capital operating in Turkey reached 46,800 in 2015.

In figure 5.2, average annual FDI growth rates for the periods starting from 1987 to 2015 is indicated. The reason behind examining the growth rates starting from 1987 is that the FDI inflows remained at very low levels until 1990s, after the process of liberalization starting in 1980, trade liberalization and financial openness proceeded well after 1987.



**Figure 5.2 : FDI Average Annual Growth Rates (1987-2015)**

**Source:** Calculated based on the data drawn from CBRT.

As seen from figure 5.2 above, the high growth rate in FDI inflows during 2002-2006 draws attention. The FDI inflows accelerated during this period with an average growth rate of 83 per cent. The driver of the rapid growth in FDI inflows to Turkey in this period were economic and political stability (World Bank, 2011), EU membership negotiation process started for Turkey in 2005 (Sayek, 2007), the structural and legal arrangements by the government to provide incentives for foreign investors yielding increase in FDI inflows mostly in terms of privatisations (Ilgun, 2010). As occurred in the global arena, the Turkey also had decreases in FDI inflows during the global crisis period 2008-2009. The effect of this crisis is seen also in FDI inflows to Turkey which decreased during these years, in the period of 2007-2010 the FDI flows shrank by 13 per cent. During 2011-2015 the average annual growth rate realized as 18 per cent.

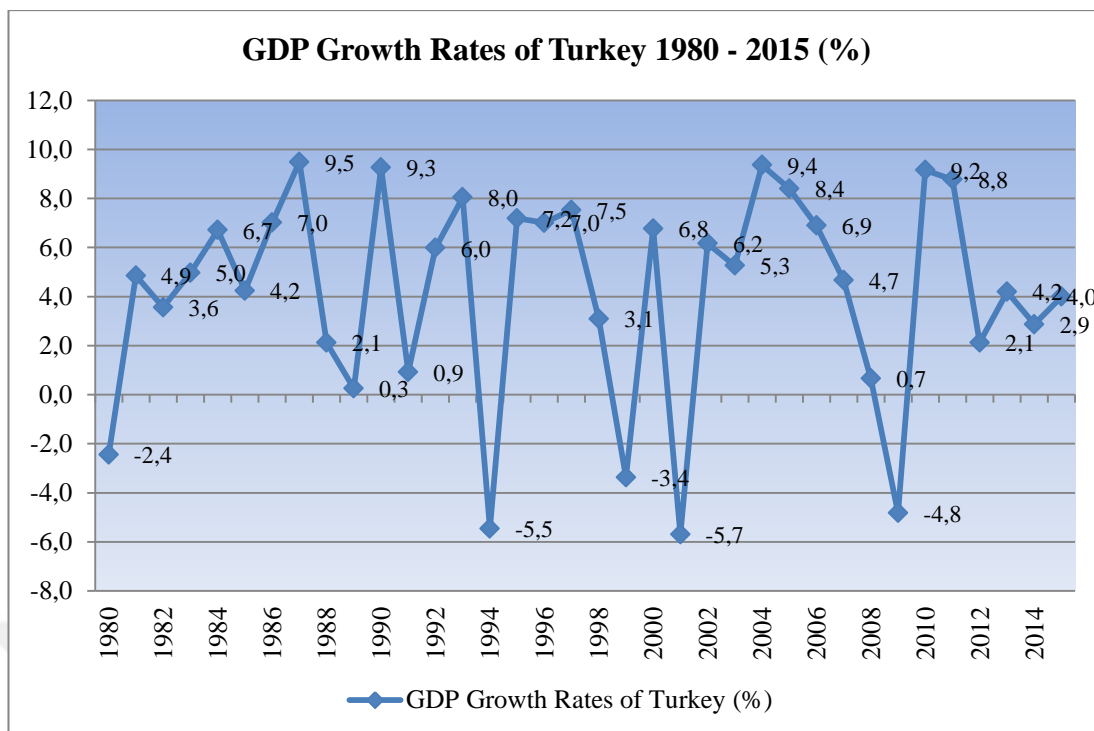
## 5.2 Economic Growth

Turkey has experienced a liberalization in its economy and balance of payments transactions after 1980s. In parallel to these liberalization attempts, the Turkish economy has had many fluctuations since the 1980s.

There are some break points in economic growth of Turkey in years of crisis. The first major one was the 1994 crisis with an unsustainable budget deficit and very high

inflation and interest rates. Also the crisis in Asia and Russia affected the Turkish economy adversely in 1999 as well. As a result, Turkish GDP fell by 3.4 per cent in 1999. After this crisis, the government started applying a structural reform package with support of the IMF programs which were mainly based on an exchange rate peg policy which was expected to control very high inflation by reducing tradable goods prices. In Turkish economy, the most remarkable development in terms of growth is that, Turkey achieved high and continuous growth rates during 2000s except the crisis periods. Economy shrank after the November 2000 and February 2001 crisis. (Alpaydın ve Tunalı, 2011, 238). There has been a rapid growth in Turkish economy after the 2001 economic crisis as result of the comprehensive reform agenda and favorable investment environment. There has been several economic reforms such as monetary and fiscal policies, tax policy, labor market regulations, regulations in financial markets, foreign direct investments, privatisations and infrastructure (European Commission, Economic Papers, 2009). Overall, following the reforms in the banking sector, there has been a significant entry of foreign capital into the sector, triggering a gain of productivity and efficiency for most of the banks (Aysan and Ceyhan, 2007).

Turkish economy lastly had a decrease in economic growth in because of the global crisis which began in the third quarter of 2008 and affected the economy adversely until the last quarter of 2009. The global crisis caused negative GDP growth and increases in unemployment rate in Turkey and in many other developing countries. In 2008, the annual growth of the Turkish economy was a very low level at 0.7 per cent, and it shrank by 4.8 percent in 2009. (Cömert and Çolak, 2014). GDP growth rates during 1980-2015 is shown in figure 5.3.

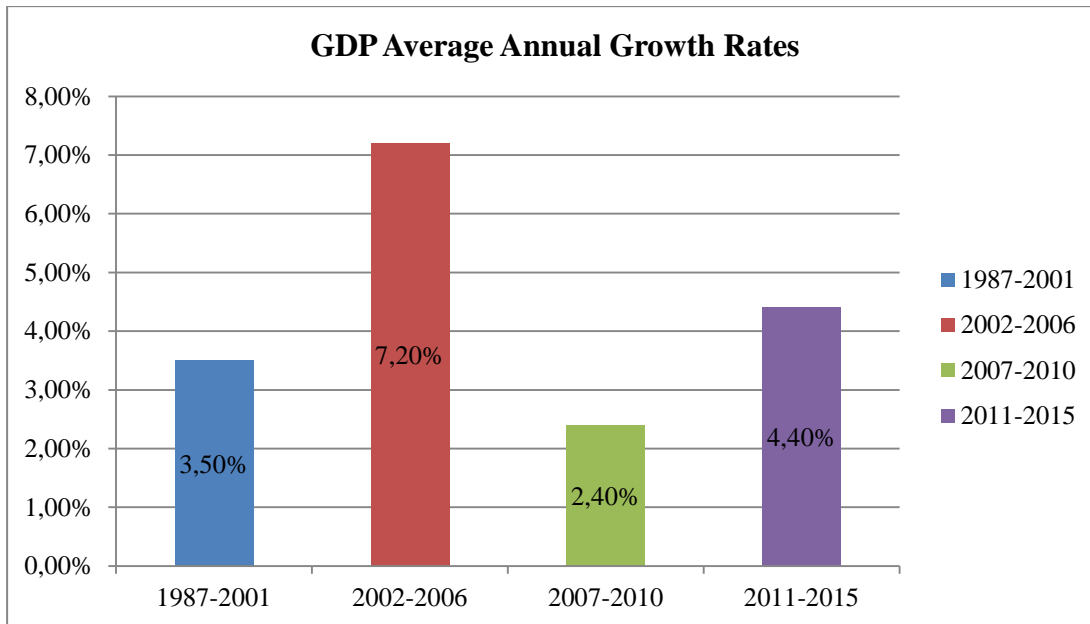


**Figure 5.3 : GDP Growth Rates of Turkey (1980-2015) (%)**

**Source:** TURKSTAT, GDP at constant (1998) prices.

Over the period 1980-2015, Turkey has shown a continuous growth except the years 1980, 1994, 1999, 2001 and 2009 (Figure 5.3) with average annual growth rate of 4.2 per cent. The narrowing in the Turkish economy is in those years of crisis, 1980 and 1994 petroleum crisis, 2001 banking crisis, and lastly the 2008 global financial and economic crisis causing very limited growth in 2008 and narrowing in 2009.

Average GDP growth rates for the periods between 1987 to 2015 by dividing into four periods; 1987-2001 period, 2002-2006 period, 2007-2010 period and 2011-2015 period is indicated in figure 5.4.



**Figure 5.4 : GDP Average Annual Growth Rates (1987-2015)**

**Source:** Calculated based on the data drawn from TURKSTAT.

The GDP growth rates in average peaked during the 2002-2006 period with an average growth rate of 7.2 per cent as result of economic and political stability. Economic growth slowed down during the 2007-2010 period with 2.4 per cent annual average growth rate since Turkey was also affected from the global crisis as other developing countries. Growth has been maintained with 4.4 per cent annual average growth rate during the 2011-2015 period (Figure 5.4).

## 6. EMPIRICAL STUDY ON THE IMPACTS OF FOREIGN DIRECT INVESTMENTS ON ECONOMIC GROWTH IN TURKEY

### 6.1 The Empirical Study

In the study, time series techniques are used to analyse the effect of foreign direct investment on economic growth in Turkey. In this regard, the purpose of the study, the research questions, the time period, and the restrictions are indicated below.

*Purpose of the study:* To explore whether there is a statistically significant relationship between the foreign direct investment inflows and economic growth.

*The research questions:* What is the impact of FDI inflows on economic growth in Turkey? Is there a statistically significant relationship?

*The time period:* The period between 1980 to 2015.

*Purpose of the selected time period in the study:* In this study, the impacts of FDI on economic growth is explored for 1980-2015. The purpose of selecting the period post 1980 is that with the introduction of the liberalization programme started in early 1980s, FDI in Turkey has increased rapidly thereafter especially after 2000s.

For explaining the relationship between the dependent variable and independent variables for Turkey case using 1980-2015 data, ordinary least squares (OLS) regression is done with the dependent variable as the gross domestic product (GDP) and the independent variables of foreign direct investment (FDI), foreign trade (FT), domestic investments (DI). The regression equation (1) is stated as following.

$$GDP = \beta_0 + \beta_1 FDI + \beta_2 FT + \beta_3 DI + u \quad (1)$$

where GDP is gross domestic product, FDI is foreign direct investment inflows, FT is foreign trade which is sum of exports and imports, DI is domestic investments,  $\beta_0$  is constant,  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  are coefficients of regression (expected signs of the coefficients  $\beta_1 > 0$ ,  $\beta_2 > 0$ ,  $\beta_3 > 0$ ), and  $u$  is normally distributed error term.

Descriptive statistics of the variables are shown in table 6.1.

**Table 6.1 : Descriptive Statistics of the Variables**

Variables	Mean	Standard deviation	Maximum	Minimum
GDP (\$ million)	341,842	254,952	823,044	78,825
FDI (\$ million)	5,011	6,982	22,047	18
FT (\$ million)	131,347	134,704	403,464	10,819
DI (\$ million)	71,295	52,418	171,144	15,205

Descriptive statistics of the variables in logarithms are shown in table 6.2.

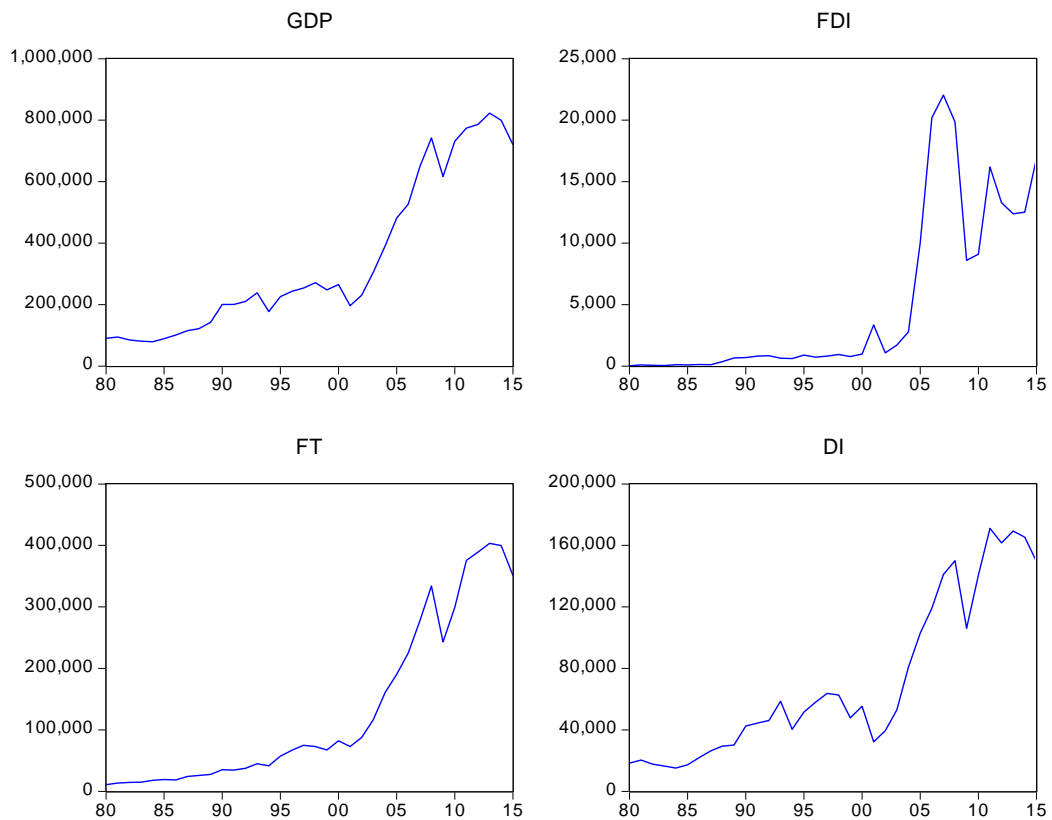
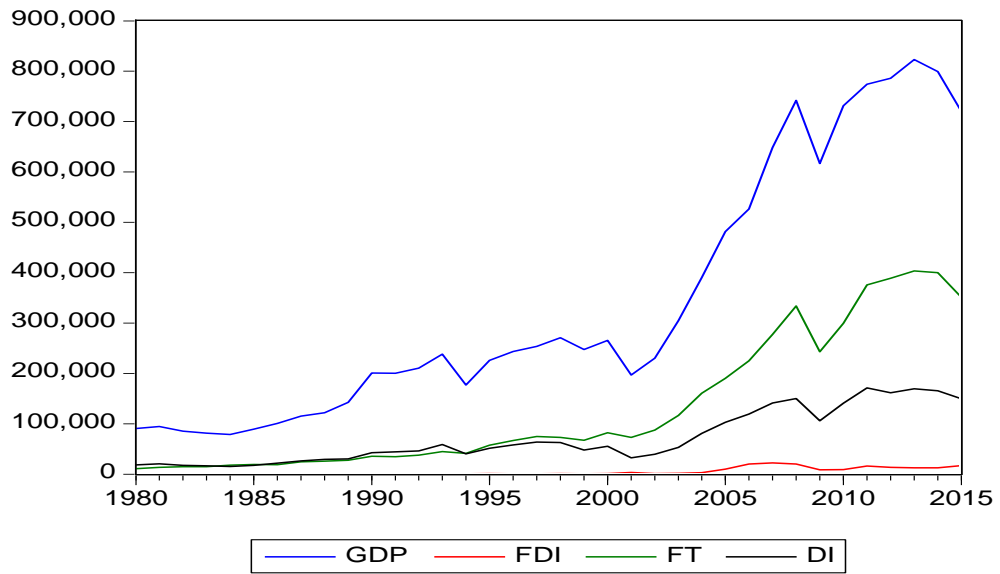
**Table 6.2 : Descriptive Statistics of the Variables in Logarithms**

Variables	Mean	Standard deviation	Maximum	Minimum
LGDP	12.46	0.78	13.62	11.27
LFDI	7.09	1.99	10.00	2.89
LFT	11.19	1.16	12.91	9.29
LDI	10.90	0.78	12.05	9.63

### 6.1.1 The data and the methodology

The data used in the study are the annual time series at current prices for real gross domestic product (GDP), total net inflows of foreign direct investments (FDI), foreign trade (FT) which is sum of exports and imports, and domestic investments (DI) covering the period of 1980-2015 in 36 observations for all of the variables in order to examine cointegration relationship between GDP and FDI in the long run for the case of Turkey. EViews 6.0 statistical package is used in the study. In order to represent the economic growth, GDP is commonly used. The GDP data is drawn from TURKSTAT and in U.S. dollars. The FDI data is drawn from the CBRT and in TL, converted to U.S. dollars. FT data is obtained from TURKSTAT database in U.S. dollars. And DI data is obtained from Ministry of Development database in U.S. dollars.

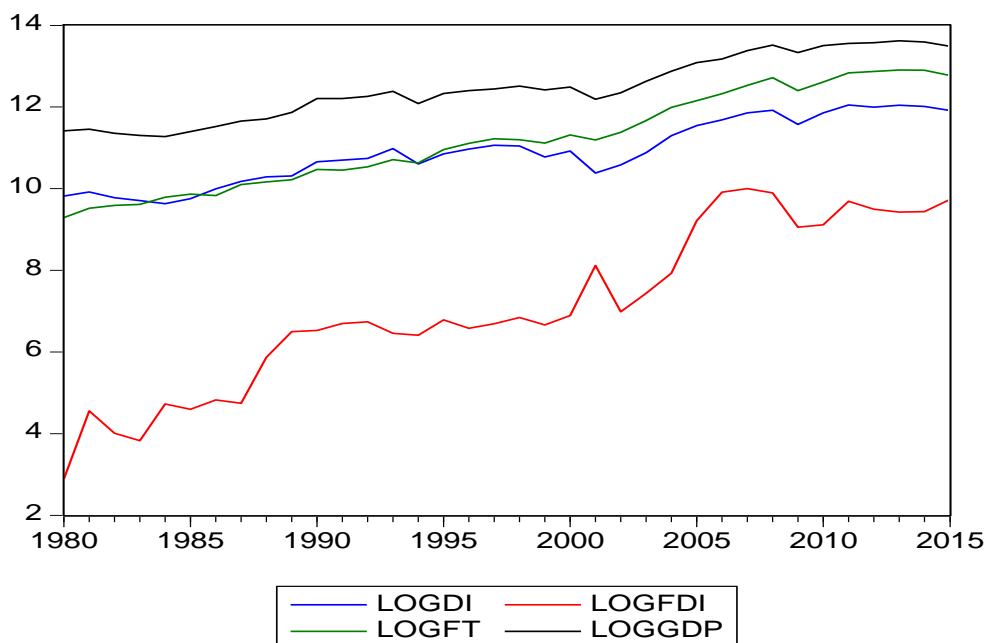
The trends of GDP, FDI, FT, DI between 1980 to 2015 are shown in figure 6.1.



**Figure 6.1 : Trends of GDP, FDI, FT, DI of Turkey (1980-2015) (million USD)**  
**Source:** TURKSTAT, Ministry of Economy - Undersecretariat of Treasury, Ministry of Development

### 6.1.1.1 Augmented Dickey-Fuller test

The most commonly used test of the unit root in time-series analysis is the Augmented Dickey Fuller (ADF) test. The unit root test is applied to examine empirically whether a time-series contains a unit root. If the series has a unit root, the series is considered as non-stationary, otherwise, the series is said to be stationary. According to Enders (2004), stationary variable is observed when the mean, variance, and auto-covariance of the time-series are constant along time. When the variables are non-stationary, Granger and Newbold (1974) state that one is likely to get a spurious regression which has a high  $R^2$  (goodness of fit) and statistically significant coefficients although these series are actually unrelated. The ADF unit root test is used due to the analysis of the multivariate time series and also for intention to prepare evidence about when the variables are integrated (Dritsaki et al., 2004). Dickey and Fuller (1979) stated that the null hypothesis  $H_0$  representing a unit root can be rejected when the series is stationary, the null hypothesis representing a unit root cannot be rejected if the series is non-stationary. Therefore, the first difference or greater differencing has to be taken due to eradicate the unit root. Because of including the vital effect of time series, all variables are stated in logarithms and represented by L preceding the respective variables name. The trends of the variables in logarithms during 1980-2015 is shown in figure 6.2.



**Figure 6.2 : Trends of LGDP, LFDI, LFT, LDI of Turkey (1980-2015)**

In the figure 6.2, non-zero mean and trend over time are clearly seen. This signs that variables contain a unit root; however, a statistical test has to be done to prove it is the actual case. One of the most popular methods is the Augmented Dickey-Fuller (ADF) unit root test (Dickey & Fuller, 1979) to finalize whether the series are stationary or not. The ADF unit root test takes the following form (2):

$$\Delta X_t = \alpha + \beta X_{t-1} + \sum_{i=1}^k \lambda_i \Delta X_{t-i} - i + \gamma T + \varepsilon_t \quad (2)$$

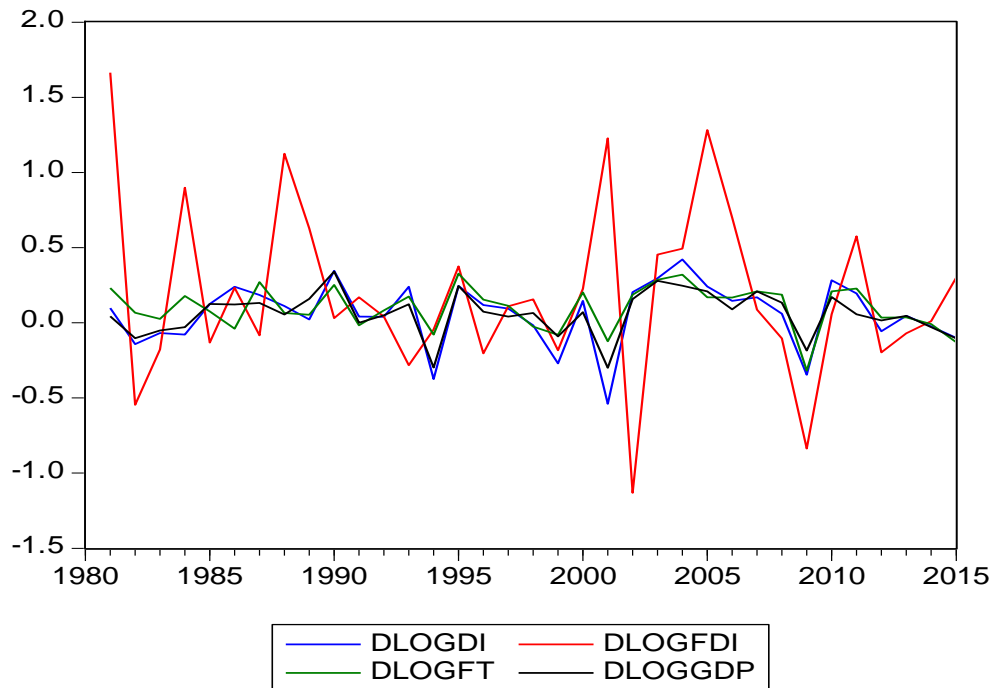
The ADF test concludes whether there is a unit root in all variables, which are log of GDP (LGDP), log of FDI (LFDI), log of FT (LFT) and log of DI (LDI). In the regression,  $\varepsilon_t$  is a normally distributed white noise error term, T represents for a deterministic time trend,  $X_{t-1}$  are the lagged values of the mentioned variables,  $\gamma, \lambda, \beta, \alpha$  are the estimated parameters, and  $\Delta X_{t-i}$  is the lagged values of the first differences.

The null hypotheses in table 6.3 are that all variables LGDP, LFDI, LFT and LDI have a unit root. And the alternative hypotheses are that none of them has a unit root. The results of ADF test is shown in the table 6.3. The t-statistics and p-values yield that LGDP, LFDI, LFT and LDI have a unit root, because the null hypothesis is not rejected at 5% level of significance as it falls within the acceptance interval. Hence, all variables are said to be non-stationary.

**Table 6.3 : ADF Unit Root Test Results for Variables at Levels**

Variables	ADF test statistic	5% critical value	p-value for t-statistic	Decision
LGDP	-0.578	-2.948	0.863	Not rejected
LFDI	1.723	-2.948	0.411	Not rejected
LFT	0.978	-2.948	0.750	Not rejected
LDI	-0.859	-2.948	0.789	Not rejected

Using first differences in an econometrics study simplifies the results analysis, subsequently the rate of change of initial variables represented by the first differences of logarithms of these variables and represented as DL before the variables name. The trends of the variables in logarithms at their first differences for the period of 1980-2015 is shown in figure 6.3.



**Figure 6.3 : First Differences of LGDP, LFDI, LFT, LDI of Turkey (1980-2015)**

From the figure 6.3 above, the observations seem to show mean-reverting behavior and have constant variances over time which implies that the variables are likely to have no unit root; however, again ADF unit root test is done to make it statistically meaningful. The null hypotheses and the alternative hypotheses in the table 6.4 are set in the same way just as in the previous process. The null hypotheses of having a unit root are rejected for all of the four series, the variables now become stationary and are integrated in order one  $I(1)$ .

**Table 6.4 : ADF Unit Root Test Results for Variables at the First-Differences**

Variables	ADF test statistic	5% critical value	p-value for t-statistic	Decision
DLGDP	-5.570	-2.951	0.000	Rejected
DLFDI	-7.234	-2.951	0.000	Rejected
DLFT	-6.253	-2.951	0.000	Rejected
DLDI	5.971	-2.951	0.000	Rejected

According to Tari (2005), two or more time-series data could be co-integrated if they are integrated in the same order, and these variables at levels do not cause a spurious

regression. Thus, co-integration techniques are applied onto LGDP, LFDI, LFT and LDI since all of the time-series are integrated in order one I (1).

#### *6.1.1.2 Johansen co-integration test*

Co-integration is defined when more than one series variable share a common stochastic trend. In other words, if the same stochastic trend is driving a set of integrated variables jointly, these variables are called cointegrated. According to Studenmund (2006) when the long run equilibrium relationship occurs between a number of variables, it could be said as cointegrated. Cointegration is a statistical explanation between unstable variables in terms of long run relationship between them. Furthermore, it is the prerequisite for building causality regression of variables. Co-integration explains that one or more linear combinations of time-series variables are stationary even though they are individually non-stationary according to Dickey et al. (1991). In other words, if two or more series are individually integrated in the same order but some linear combination of them have lower order of integration, then the series are said to be co-integrated. Granger and Newbold (1974) report that a possible presence of co-integration has to be taken into account when one select a method to make a hypothesis on the relationship between two non-stationary variables.

In the cointegration test, the null hypothesis is that no variable is cointegrated. If the probability value of trace test is less than 5% percentage significant level, then null hypothesis is rejected meaning that there is a cointegration between variables. In contrast, according to this test, when probability value is greater than 5% for trace value tests, then the null hypothesis of 'no co-integration' is not rejected. In this case there is no cointegration between the variables (Granger, 1969).

*Optimal Lag Order Selection:* Before moving to co-integration test, the optimal lag-length using the criteria such as AIC (Akaike Information Criterion), SIC (Schwarz Bayesian Criterion), and HQC (Hannan-Quinn Information Criterion) have to be determined. The optimum lag-length is shown in the following output in the table 6.5.

**Table 6.5 : Lag Length Selection Criteria**

Variables : LGDP, LFDI, LFDI, LFT, LDI						
Lag	LogL	LR	FPE	AIC	SIC	HQC
0	-14.750		3.79e-05	1.172	1.355	1.233
1	85.539	169.238*	1.98e-07*	-4.096*	-3.180*	-3.793*
2	95.643	14.524	3.01e-07	-3.728	-2.079	-3.181
3	105.368	11.549	5.10e-07	-3.336	-0.954	-2.546
4	125.892	19.241	5.12e-07	-3.618	-0.504	-2.586

In the table, LR is sequential modified likelihood ratio test statistic (each test at 5% level) and FPE is final prediction error.

The stars show that the lag-length is one, because the asterisks in below table indicate the best, that is, minimized values of the respective information criteria. *Johansen Co-integration Test:* After finding out the right lag-length, the Johansen co-integration test by Johansen (1988, 1991) is used to determine whether the variables LGDP, LFDI, LFT, and LDI are co-integrated. The Johansen multivariate co-integration test involves the proof of relationship between the time-series, takes the following vector auto-regression (VAR) model equation (3):

$$\Delta \ln Y_t = \sum_{i=1}^k \Gamma_i \Delta \ln Y_{t-i} + \Pi \ln Y_{t-i} + \varepsilon_t \quad (3)$$

where  $Y_t$  represents  $n \times 1$  vector of  $I(1)$  variables LGDP, LFDI, LFT, and LDI. Parameter  $\Gamma$  and  $\Pi$  represent for  $n \times n$  matrix of coefficients to be tested. If the rank ( $r$ ) is zero, there will be no co-integrating relationship. If the rank is one there will be one co-integrating relation, if it is two there will be two co-integrating relations and so on. The existence of a co-integration between two time-series indicates a long-run relation between the variables and these variables cannot move too far away from each other.

This test is based on maximum likelihood estimation and two statistics: maximum eigenvalue ( $\lambda_{\max}$ ) and a trace-statistics ( $\lambda_{\text{trace}}$ ). The  $\lambda_{\text{trace}}$  statistic tests the null hypothesis that  $r$  is equal to zero (no co-integration) against a general alternative hypothesis of  $r > 0$  (co-integration). The  $\lambda_{\max}$  statistic tests the null hypothesis that the

number of co-integrating vectors is  $r$  co-integrating vectors versus the alternative of  $r+1$  co-integrating vectors.

The results of Johansen co-integration test for the four variables LGDP, LFDI, LFT, and LDI are indicated in table 6.6.

**Table 6.6 : Johansen Co-integration Test Results for LGDP, LFDI, LFT, LDI**

Hypothesized number of CE(s)	Trace statistics	5% critical value	Prob**	Maximum eigenvalue statistics	5% critical value	Prob**
None* ( $r=0$ )	46.425	47.856	0.068	28.636	27.584	0.037
At most 1 ( $r\leq 1$ )	17.789	29.797	0.582	9.189	23.132	0.817
At most 2 ( $r\leq 2$ )	8.599	15.495	0.404	8.107	14.265	0.368
At most 3 ( $r\leq 3$ )	0.493	3.841	0.483	0.493	3.841	0.483

\* Trace test indicates no cointegrating eqn(s) at the 0.05 level, while Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level.

\*\*MacKinnon-Haug-Michelis (1999) p-values.

According to the results of the Johansen Co-integration test shown in table 6.6, since the trace statistics is smaller than the 5% critical value for rank of zero, the null hypothesis of ‘there is no co-integration’ is not rejected. The maximum eigenvalue statistics is greater than the 5% critical value for rank of zero, the null hypothesis of ‘there is no co-integration’ is rejected. In general, there is no contradiction between the trace statistic and maximum eigenvalue statistics results, however, in case of contradiction, maximum eigenvalue result is preferred due to providing more precise results (Tari, 2014, 427). Accordingly, it is concluded that there exists a long run relationship among four variables.

The fact that there is one co-integrating equation allows us to identify vector error correction mechanism.

*Vector Error Correction Mechanism:* Once a co-integrating relationship is detected, then a Vector Error Correction Mechanism (VECM) which adjusts both short run changes in variables and deviations from equilibrium. Vector error correction

mechanism is used to differentiate the dynamics of equilibrium in short and long run and to identify the dynamics of the short run (Örnek, 2008:9). The estimated parameter of ‘equation one’ in VECM is expected to be negative and statistically significant if VECM is a correct technique to go with. The negative sign of the estimated parameter of cointegrating equation one guarantees that deviations in the short-run make the long-run equilibrium exist over time.

The results of the VECM for the four variables LGDP, LFDI, LFT and LDI are shown in table 6.7.

**Table 6.7 : Vector Error Correction Model Results for LGDP, LFDI, LFT, LDI**

Cointegrating equation	CointEq1			
LGDP(-1)	1.000			
LFDI(-1)	-0.112			
	(0.026)			
	[-4.329]			
LFT(-1)	-0.215			
	(0.044)			
	[-4.876]			
LDI(-1)	-0.416			
	(0.058)			
	[-7.171]			
C	-4.720			
Error Correction:	D(LGDP)	D(LFDI)	D(LFT)	D(LDI)
CointEq1	-1.130	-0.249	-0.382	-0.810
	(0.402)	(1.450)	(0.456)	(0.638)
	[-2.812]	[-0.171]	[-0.838]	[-1.270]

D(LGDP(-1))	0.606 (0.450) [ 1.345]	-2.415 (1.625) [-1.487]	0.092 (0.510) [ 0.181]	0.947 (0.715) [ 1.326]
D(LFDI(-1))	-0.037 (0.050) [-0.741]	-0.179 (0.180) [-0.994]	0.001 (0.057) [ 0.013]	-0.029 (0.079) [-0.366]
D(LFT(-1))	-0.376 (0.298) [-1.259]	-0.1941 (1.076) [-0.180]	-0.237 (0.338) [-0.702]	-0.476 (0.473) [-1.005]
D(LDI(-1))	-0.207 (0.338) [-0.612]	2.707 (1.219) [ 2.222]	0.015 (0.383) [ 0.040]	-0.383 (0.536) [-0.715]
C	0.081 (0.033) [ 2.428]	0.187 (0.120) [ 1.551]	0.114 (0.038) [ 2.998]	0.079 (0.053) [ 1.486]
$R^2$	0.287	0.258	0.050	0.129
Adjusted $R^2$	0.160	0.126	-0.120	-0.027
F-statistic	2.257	1.948	0.295	0.829
Akaike AIC	-0.996	1.569	-0.747	-0.073
Schwarz SC	-0.727	1.839	-0.478	0.196

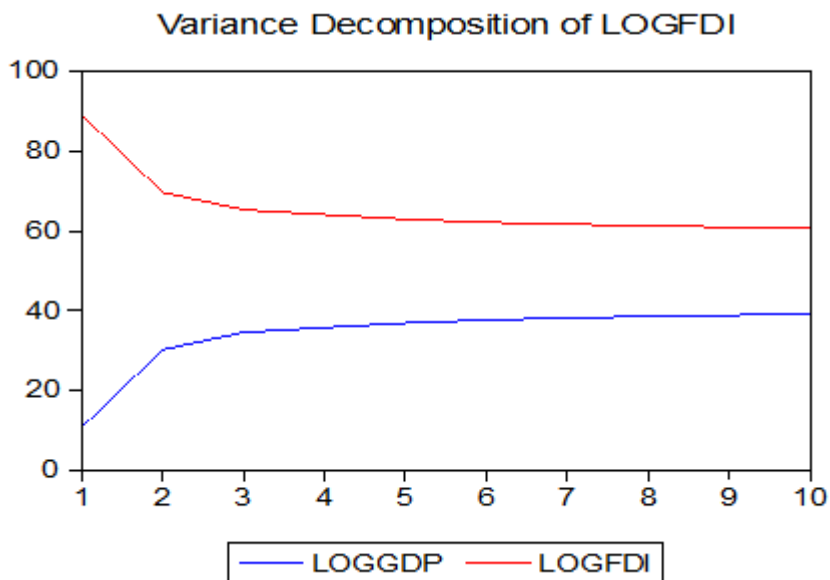
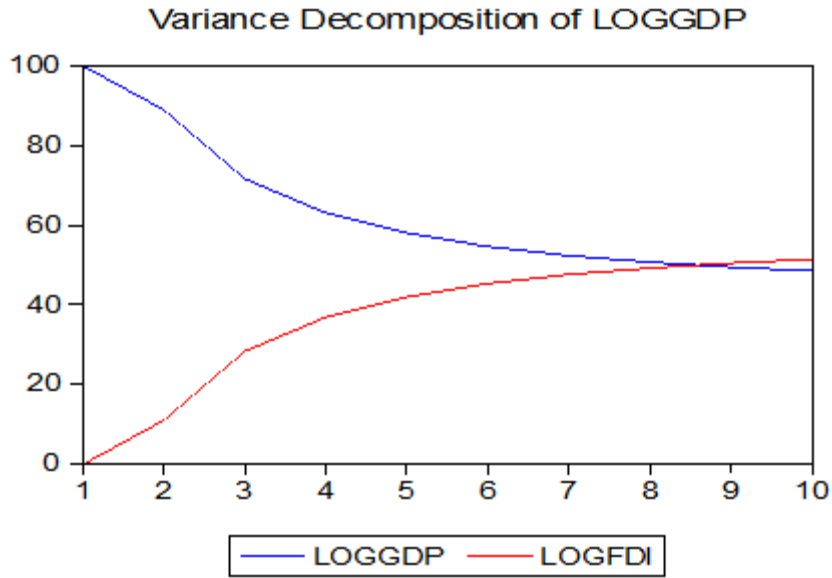
In the table 6.7, the long run relationships are seen in the upper part. All the coefficients in cointegrating equation one is negative and between zero and minus one and according to their t-statistic values, all are statistically significant at 5% level which means the VECM technique works which supports the long run positive relationship among the variables. Since the purpose of the study is to explore the relationship between FDI and economic growth, depending on the result that the coefficient of LFDI(-1) in the cointegrating equation in the upper part of the table is -0.112, it can be concluded that the error correction mechanism works and any short-term fluctuations between the time series of GDP and FDI lead to a stable positive long run relationship. The same is valid for other variables as well since the value of coefficients of LFT(-1), LDI(-1) in the cointegration equation in the upper part of the table lie down between zero and minus one, -0.215 and -0.416 respectively. The coefficient of the error correction term is found to be -1.13. The coefficient of the error correction term can be used for further testing of cointegration. A negative and significant coefficient of the error correction term indicates that any short term fluctuations between the dependent variable and independent variables will give rise a stable long run relationship between the variables. According to the general view of authors, the error correction term must be negative and between zero and minus one. There are also view for error correction term not to be lower than minus 2. The existence of a long-run relationship among the variables required the coefficient of the error-correction term to be negative and not lower than -2 (Samargandi et al., 2013). The error correction term found in the study is -1.13 and statistically significant at 5% level meaning that any short term fluctuations between LGDP and FDI, FT, and DI will give rise a stable long run relationship among the variables.

*Variance Decomposition:* After finding a stable positive long run relationship between LGDP and LFDI, variance decomposition analysis is used to interpret the each variable's contribution to the other. The results are shown in table 6.8.

**Table 6.8 Variance Decomposition Results for LGDP and LFDI**

Variance Decomposition of LGDP				Variance Decomposition of LFDI			
Period	S.E.	LGDP	LFDI	Period	S.E.	LFDI	LGDP
1	0.13	100.00	0.00	1	0.49	89.07	10.93
2	0.17	88.91	11.09	2	0.67	69.67	30.33
3	0.23	71.64	28.36	3	0.79	65.33	34.67
4	0.28	63.04	36.96	4	0.89	64.10	35.90
5	0.33	58.03	41.97	5	0.99	62.99	37.01
6	0.37	54.66	45.34	6	1.09	62.21	37.79
7	0.41	52.36	47.64	7	1.17	61.70	38.30
8	0.45	50.72	49.28	8	1.25	61.31	38.69
9	0.48	49.49	50.51	9	1.32	61.00	38.99
10	0.51	48.55	51.45	10	1.39	60.76	39.24

The table 6.8 above shows the variance decompositions for LGDP and LFDI for ten periods in the left and right parts of the table respectively. In the first period, all changes in LGDP is explained by itself and in the second period, LFDI can explain 11.09% of the change in LGDP, and as of 10th period, the ratio is 51.45%. And for the LFDI, in the first period, LGDP can explain 10.93% of the change in LFDI and as of 10th period, the ratio is 39.24%. These results mean that the changes in LFDI is an important source of LGDP, while the changes in LFDI resulted from the changes in LGDP is lower than that. Variance decomposition graphs are shown in figure 6.4.



**Figure 6.4 : Variance Decomposition Graphs of LGDP and LFDI**

In the figure 6.4, it is clearly seen from the patterns of the LGDP and LFDI lines in both graphs that the contribution of LFDI to LGDP is higher than the contribution of the LGDP to LFDI since in the 10th period the over half of LGDP is explained by LGDP while in the same period around 40 per cent of LFDI is explained by LGDP, i.e., as seen in table 6.8, the percentages are 51% and 39% respectively.

Granger (1988) argues that if two series are co-integrated, there must be a Granger-causality in at least one direction. In order to examine the direction of the relationship between FDI and economic growth, the Granger causality test is done

for LGDP and LFDI in the next section. Granger causality for LGDP and LFT and LGDP and LDI are also done.

### 6.1.1.3 Granger Causality Analysis

The co-integration test confirms the long-term equilibrium relationship between variables. Moreover the form of the relationship is determined. According to Studenmund (2006), Granger causality is a circumstance in which one series consistently changes before another series variable, and also testing for causality in both ways or directions through testing the hypothesis, if the F-statistic is significant, then the Granger cause exists. Additionally, this test is very important because it provides opportunity to analyse which series leads to the other series, as well as, such leading series variables are enormously beneficial for estimating purpose.

Granger (1988) reports that the Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another. It can be relevant only when the variables are either stationary or non-stationary but co-integrated, can be written as:

$$\ln\text{GDP}_t = \alpha_1 + \beta_1 \ln\text{GDP}_{t-1} + \beta_2 \ln\text{GDP}_{t-2} + \dots + \delta_1 \ln\text{FDI}_{t-1} + \delta_2 \ln\text{FDI}_{t-2} + \dots + \varepsilon_{1t} \quad (4)$$

$$\ln\text{FDI}_t = \alpha_2 + \gamma_1 \ln\text{FDI}_{t-1} + \gamma_2 \ln\text{FDI}_{t-2} + \dots + \lambda_1 \ln\text{GDP}_{t-1} + \lambda_2 \ln\text{GDP}_{t-2} + \dots + \varepsilon_{2t} \quad (5)$$

where  $\varepsilon_{1t}$  and  $\varepsilon_{2t}$  are white noise error terms and  $\beta$ ,  $\delta$ ,  $\gamma$ ,  $\lambda$  are the parameters which tell how much the past values of the variables can explain the current value of either series. The null hypothesis in general is variable X does not Granger cause variable Y.

In the Granger causality test there are two null hypotheses: Foreign direct investment does not Granger cause economic growth (GDP), and economic growth does not Granger cause FDI. The null hypothesis of no Granger causality cannot be rejected if and only if no lagged value of an explanatory variable is retained in the regression (4) and or in the regression (5).

The results of Granger causality tests for LGDP and LFDI is indicated in the table 6.9.

**Table 6.9 : Granger Causality Test Results for LGDP and LFDI**

H <sub>0</sub> hypothesis	F-statistic	Prob.	Decision
LGDP does not Granger cause LFDI	8.16431	0.0074	Rejected
LFDI does not Granger cause LGDP	8.17849	0.0074	Rejected

The results in the table 6.9 indicate that the null hypotheses are rejected since the probability values are lower than 5% and the F-statistics are statistically meaningful for both cases. Hence, LGDP Granger causes LFDI just as LFDI Granger causes LGDP at 5% significance level, meaning that there is a two-way causality effect between foreign direct investment and economic growth.

Also, pairwise Granger causality tests for other variables are done and results are shown in table 6.10 and 6.11. In table 6.10, the results for Granger causality between LGDP and LFT is indicated.

**Table 6.10 : Granger Causality Test Results for LGDP and LFT**

H <sub>0</sub> hypothesis	F-statistic	Prob.	Decision
LGDP does not Granger cause LFT	0.18769	0.3814	Not rejected
LFT does not Granger cause LGDP	4.44932	0.0428	Rejected

From table 6.10, it is concluded that there is a unidirectional causality from LFT to LGDP, since the probability is lower than 5%. The null hypothesis that LFT does not Granger cause LGDP is rejected.

And in table 6.11, Granger causality test findings between LGDP and LDI is shown.

**Table 6.11 : Granger Causality Test Results for LGDP and LDI**

H <sub>0</sub> hypothesis	F-statistic	Prob.	Decision
LGDP does not Granger cause LDI	5.79852	0.0220	Rejected
LDI does not Granger cause LGDP	3.13378	0.0862	Not rejected

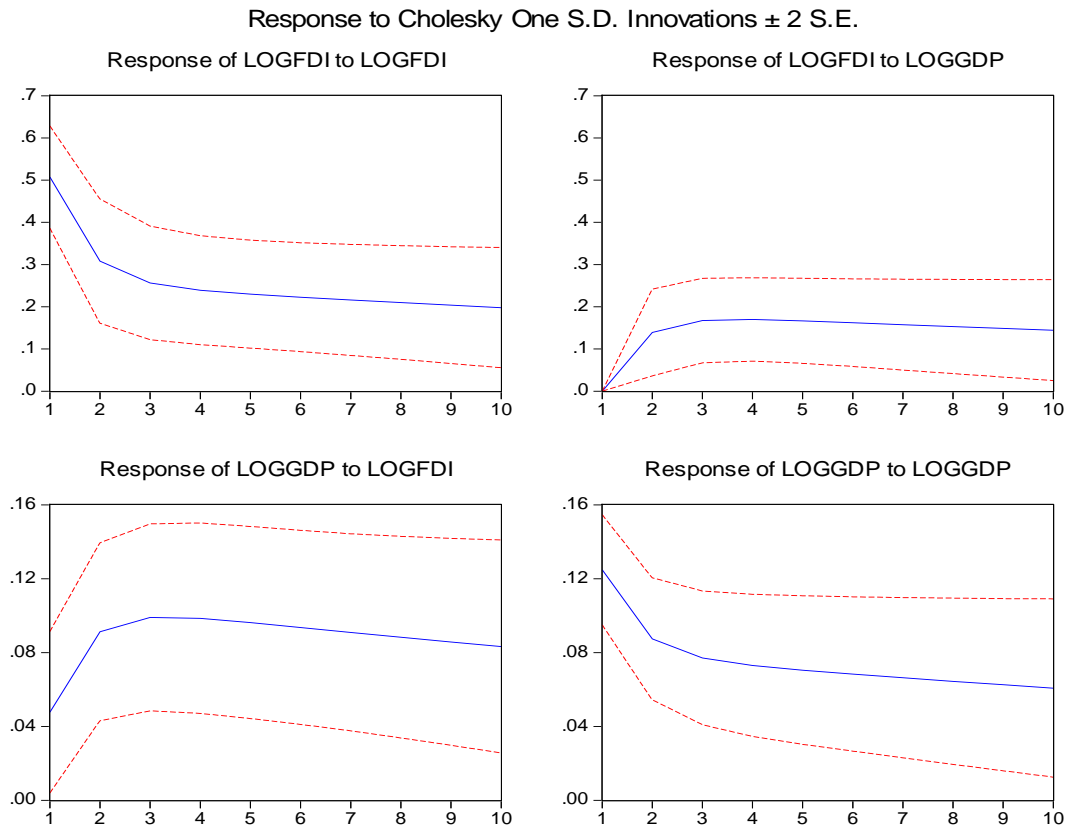
From table 6.11, it is concluded that the null hypothesis that LDI does not Granger cause LGDP is not rejected. On the other hand, there is a unidirectional causality from LGDP to LDI, since the probability is lower than 5% and the null hypothesis that LGDP does not Granger cause LDI is rejected.

#### *6.1.1.4 Impulse - Response Analysis*

In order to make impulse-response analysis, there have to be Granger causality between the variables. If a variable 'x' is not a cause for variable 'y', one unit change in x will not have any effect on y (Bozkurt, 2007, p.95).

Therefore impulse-response analysis is made after the finding that there exists a bidirectional Granger causality between LGDP and LFDI. The impulse-response functions between LGDP and LFDI are shown in figure 6.5.

In the impulse-response functions, in the vertical axis, the magnitude and direction of the response of variable to the one unit shock in other variable is seen, and in the horizontal axis the periods until 10th period. The solid line signifies the impulse-response function. The dashed lines indicate 2 standard error bands and play an important role to determine the statistical significance of the results. The convergence of impulse-response functions to zero over the periods shows the stability of the model.



**Figure 6.5 Impulse Response Functions**

In figure 6.5, the impulse-response functions are within the confidence bands in all results. The increase in FDI have positive effect on the economic growth. The results show that both the variables, LGDP and LFDI have positive impact on each other. The convergence of impulse-response functions to zero over the periods shows the stability of the model meaning that foreign direct investments have positive impact on the growth and growth has positive impact on foreign direct investments. The results are compatible with the theoretical literature. Hence, developing countries possessing economic stability are more attractive for the foreign investors.

## 6.2 Results and Discussions

The aim of the study is to explore the impact of foreign direct investments on economic growth in Turkey for the period of 1980-2015 using annual data of Gross domestic product (GDP) and net FDI inflows (FDI). For explaining the relationship between the dependent variable and independent variables for Turkey case using 1980-2015 data, OLS regression is done with the dependent variable as the gross

domestic product (GDP) and the independent variables of foreign direct investment (FDI), foreign trade (FT), domestic investments (DI). The data have been drawn from TURKSTAT, CBRT, and Ministry of Development databases. For economic analysis the variables are used in logarithms to stabilize the variance of series and represented by L preceding the respective variables name. The results of Augmented Dickey Fuller unit root test for the variables imply that the variables are non-stationary at levels, but become show a mean-reverting behavior and become stationary in their first differences. Through the Johansen Co-integration test, the relationship between the variables have been explored and it has been found that there is long-run relationship among the variables LGDP, LFDI, LFT, and LDI, and the effect is significant. According to vector error correction model (VECM) results, the coefficients in cointegrating equation one is negative and between zero and minus one for all variables and according to their t-statistic values, all are statistically significant at 5% level. These results mean that the VECM technique supports the long run positive relationship among the variables. So, for the main purpose of this study, it can be concluded that any short-term fluctuations between the time series of GDP and FDI lead to a stable positive long run relationship. In overall, VECM mechanism results indicate that any short term fluctuations between LGDP and LFDI, LFT, and LDI will give rise a stable long run relationship among the variables. Since the aim is to explore the impact of FDI on growth, variance decomposition is done for these two variable which implies that the changes in foreign direct investments is an important source of gross domestic product, while the changes in foreign direct investments resulted from the changes in gross domestic product is lower than that; on the 10th periods, the contribution of LFDI to LGDP is 51% while the contribution of LGDP to LFDI is 39%. Also, finding of Granger causality states that there is a bidirectional causality between LFDI and LGDP. In the Granger causality tests for other variables, a unidirectional causality between foreign trade (LFT) and economic growth (LGDP) has been found from foreign trade to economic growth. For the other explanatory variable, direct investments, again a unidirectional causality has been found between from economic growth (LGDP) to direct investments (LDI). The impulse response functions results for LFDI and LGDP has shown that the impulse respnse functions converged to zero showing the stability of the model which means that foreign direct investments have positive impact on the growth and growth has positive impact on foreign direct investments. The results of

this study show that there is a positive long-run relationship between foreign direct investments and economic growth and a positive change in the level of foreign direct investments is expected to increase the production of goods and services in Turkey. Theoretical studies reveal that foreign direct investments have a positive impact on the growth in GDP of the host-country. Obtained results from the empirical study with the co-integration test and the Granger causality analysis indicating long-term relationship between the variables for the period of 1980 to 2015 in Turkey are coherent with the theoretical expectations.



## 7. CONCLUSION

Foreign direct investment (FDI) is one of the most important factors in international economic integration and refers to at least ten percent of the company shareholding in a domestic firm undertaken by an investment from a foreign country. FDI is the category of international investment that reflects the objective of a resident entity in one economy to obtain a lasting interest in an enterprise resident in another economy. Foreign direct investment is the investment made by a company outside its home country. It is the flow of long-term capital based on long term profit consideration involved in international production (Caves, 1996).

There are many benefits of FDI both to the host country and the home country. FDI is a driver of economic growth (Asheghian, 2004; Smith, 1997; Baskaran and Muchie, 2008; Wang, 2009; Shawa, 2014; Quazi, 2007) through improvements in productivity, employment, and technological progress. The importance of FDI to the developing economies can be summarized as follows 'With the enormous potential to create jobs, raise productivity, enhance exports and transfer technology, foreign direct investment is a vital factor in the long-term economic development of the developing countries' (United Nations, 2003, p. iii). Despite the benefits that can be derived from FDI, it should be noted that it can also bring about some negative impacts. For instance activities of MNCs can displace local firms that can not cope with the competition from foreign firms, thereby reducing the growth of the local firms (Jones, 1996). Since foreign direct investments have been considered as an effective way to transfer technology and enhance growth in developing countries, with expectation of transferring technology and know-how, enhance productivity and new managerial skills and processes, developing countries try to attract more FDI (Alfaro et al., 2004).

On the home country side, the drivers of the foreign direct investments can be summarized in four ways, resource seeking, market seeking, efficiency seeking and strategic asset seeking which is based on OLI paradigm of Dunning (1977). The foreign investors aim to acquire resources that are not available in their home countries or those they can find at lower costs outside their countries, or they aim to

access new markets, or they target to take advantage of economies of scale or they aim to fulfill a new technological base.

The determinants of the foreign direct investments can be broadly summarized as, the economic factors including size of the market, monetary and fiscal policies, natural resources (Morisset, 2000; Asiedu, 2002) and the institutional variables which include political stability, good governance, investment environment (Lin, 2013).

In the past few decades, international trade and foreign direct investment (FDI) flows have become the fastest-growing economic activities. Global FDI flows rose by 38 per cent to USD 1.76 trillion in 2015, their highest level since the global economic and financial crisis of 2008-2009.

Foreign direct investment in Turkey has expanded rapidly following the liberalization programme initiated in the early 1980s. Substantial improvements in FDI inflows to Turkey were achieved after 2000s. The importance of foreign capital in Turkey became evident with the practices following the Decisions of January 24, 1980. With these decisions, Turkey switched from import substitution programs to outward-oriented growth models, and as a result there occurred an increase in foreign investment flow into Turkey. Main legal framework was formed by the Foreign Capital Framework Decree Law and “The Legislation on the Protection of the Value of Turkish Currency” enacted in 1989. FDI kept on rising until the economic instability of 1992. During the 1994 economic crisis FDI showed a falling tendency and this decrease was aggravated by the 1997 Asia and 1998 Russia crises as well as by the 1999 Marmara earthquake (Güven, 2008:79). In Turkey, FDI is governed since June 2003 by Law 4875 that replaced Law 6224 enacted in 1954. The new law of FDI has an essential role in promoting FDI since it does not require the foreign investors to take official permissions for investments in most sectors in Turkey (Aktar and Ozturk, 2009).

FDI inflows reached the top point in history in 2007 to USD 22 billion then decreased dramatically during 2009 with the effect of the global crisis to USD 8.6 billion, and recovery was seen in 2011 to reach a volume of USD 16.2 billion. In 2015, FDI growth was over 30 per cent and net FDI inflows reached USD 16.8 billion.

The average growth rates of foreign direct investments and gross domestic product between the period from 1987 to 2015 have also been examined taking the growth

rates into account for the periods of 1987-2001, 2002-2006, 2007-2010 and 2011-2015 in order to see the developments comparably. The beginning of the period is taken as 1987 since trade liberalization and financial openness have proceeded well after that year. It is clearly seen that during the 2002-2006 period, the GDP growth accelerated and reached 7.2 per cent in average when foreign direct investment inflows were at high levels with 83 per cent growth rate in average. The driver of the rapid growth in FDI inflows to Turkey in this period were economic and political stability (World Bank, 2011), EU membership negotiation process started for Turkey in 2005 (Sayek, 2007), the structural and legal arrangements by the government to provide incentives for foreign investors yielding increase in FDI inflows mostly in terms of privatisations (Ilgun, 2010). As occurred in the global arena, the Turkey also had decreases in FDI inflows during the global crisis period 2008-2009. The effect of this crisis is seen also in FDI inflows to Turkey which decreased during these years, in the period of 2007-2010 the FDI flows shrank by 13 per cent. And average annual GDP growth rate during this period slowed down to at 2.4 per cent. In the latest period of 2011 to 2015, the recoveries in the foreign direct investments resulted in 18 per cent average growth, average growth rate in GDP has been 4.4 per cent during the same period.

The impact of the inflows of the foreign direct investments to Turkey on the economic growth during the period of 1980 to 2015 have been explored by using time series method with annual data of FDI inflows obtained from the CBRT and the GDP data obtained from TURKSTAT. OLS regression is employed with the dependent variable as the gross domestic product (GDP) and the independent variables of foreign direct investment (FDI), foreign trade (FT), domestic investments (DI). FT data has been drawn from TURKSTAT database and DI data has been obtained from Ministry of of Development database. Logarithmic values are used in the study for the purpose of stabilize the variance of series in the empirical analysis. Firstly the Augmented Dickey Fuller unit root tests have been done for all variables to see whether the variables are stationary. According to the results of the unit root tests, the variables have found to be non-stationary at levels, then at first differences they have become stationary. Then after finding the optimal lag order for the co-integration test, Johansen cointegration test for the four variables LGDP, LFDI, LFT, and LDI have been done and the results show that long run relationship has been found among the variables for the examined periods. Vector

error correction mechanism VECM technique supports the long run positive relationship among the variables. According to the results of the variance decompositions, a strong contribution from FDI to GDP and a slightly weaker contribution from GDP to FDI in Turkey have been found. Since the main purpose of this study is to examine the FDI effect on GDP growth, Granger causality test is done for these two variables. The results of Granger causality test have shown a two-sided causality between FDI and GDP. Obtained results of the study comply with the theoretical expectations. For other variables, unidirectional Granger causality have been found between foreign trade and economic growth from LFT to LGDP and a unidirectional Granger causality between domestic investments and GDP from LGDP to LDI have been found. Impulse-response functions for foreign direct investments and economic growth have been found to be within the confidence bands and the convergence of impulse-response functions to zero over the periods supported the stability of the model and long run relationship between the variables. Hence, the study results demonstrate that the increase in foreign direct investments is conceivably to increase the gross domestic product in Turkey. Turkey has a large domestic market and a significant geographical position. According to the data by UNCTAD published in 2016, Turkey has become the 20th top host economies for foreign direct investment inflows in 2015 rising from 22nd from 2014. Foreign direct investment plays a major role in the Turkish economy. In conclusion, Turkey should try to attract more foreign direct investment inflows to support the economic growth and to make structural reforms in the economy to sustain foreign direct inflows in the long run.

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## APPENDICES

### APPENDIX A: Tables of the data used in the study

**TABLE A.1 : Gross Domestic Product (GDP) Data During 1980-2015 (million USD)**

Year	GDP	Year	GDP	Year	GDP
1980	90,679	1992	210,584	2004	390,387
1981	94,642	1993	238,377	2005	481,497
1982	85,354	1994	176,955	2006	526,429
1983	81,134	1995	225,941	2007	648,754
1984	78,825	1996	243,412	2008	742,094
1985	89,263	1997	253,706	2009	616,703
1986	100,873	1998	270,947	2010	731,608
1987	115,097	1999	247,544	2011	773,980
1988	121,667	2000	265,684	2012	786,283
1989	142,635	2001	196,736	2013	823,044
1990	200,555	2002	230,494	2014	799,370
1991	200,502	2003	304,901	2015	719,967

**Source:** TURKSTAT (<http://www.tuik.gov.tr/>), At Current Prices.

**TABLE A.2 : Foreign Direct Investments (FDI) Data During 1980-2015 (million USD)**

Year	FDI	Year	FDI	Year	FDI
1980	18	1992	844	2004	2,785
1981	95	1993	636	2005	10,031
1982	55	1994	608	2006	20,185
1983	46	1995	885	2007	22,047
1984	113	1996	722	2008	19,851
1985	99	1997	805	2009	8,595
1986	125	1998	940	2010	9,099
1987	115	1999	783	2011	16,182
1988	354	2000	982	2012	13,284
1989	663	2001	3,352	2013	12,384
1990	684	2002	1,082	2014	12,523
1991	810	2003	1,702	2015	16,921

**Source:** CBRT database (<http://www.tcmb.gov.tr/>)

**TABLE A.3 : Foreign Trade (FT) (Sum of Exports and Imports) Data During 1980-2015 (million USD)**

Year	FT	Year	FT	Year	FT
1980	10,819	1992	37,586	2004	160,707
1981	13,636	1993	44,773	2005	190,251
1982	14,589	1994	41,376	2006	225,111
1983	14,963	1995	57,346	2007	277,354
1984	17,891	1996	66,851	2008	333,991
1985	19,301	1997	74,820	2009	243,071
1986	18,561	1998	72,895	2010	299,428
1987	24,348	1999	67,258	2011	375,749
1988	25,997	2000	87,278	2012	389,007
1989	27,417	2001	72,733	2013	403,464
1990	35,261	2002	87,613	2014	399,787
1991	34,640	2003	116,593	2015	351,051

**Source:** TURKSTAT (<http://www.tuik.gov.tr/>)

**TABLE A.4 : Direct Investments (DI) Data During 1980-2015 (million USD)**

Year	DI	Year	DI	Year	DI
1980	18,408	1992	46,118	2004	80,849
1981	20,291	1993	58,641	2005	102,999
1982	17,617	1994	40,346	2006	119,059
1983	16,462	1995	51,514	2007	141,123
1984	15,205	1996	57,932	2008	149,970
1985	17,228	1997	63,680	2009	106,167
1986	21,889	1998	62,638	2010	140,709
1987	26,357	1999	47,825	2011	171,144
1988	29,444	2000	55,276	2012	161,670
1989	30,096	2001	32,321	2013	169,425
1990	42,518	2002	39,487	2014	165,341
1991	44,311	2003	53,079	2015	149,560

**Source:** Ministry of Development Database (<http://www.kalkinma.gov.tr/>)

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