Interactions between FDI and Real Exchange Rates: The Case of Turkey

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ABSTRACT

The purpose of this thesis is to empirically investigate the relationship between FDI and real exchange rates (RER) by using annual data over the period 1960 and 2012 for the Turkish economy based on Neo-classical theory, Heckscher-Ohlin model and OLI framework. Johansen method for Co integration was applied to test for the long run relationship as well as short run relationship between FDI and RER. Interest rates (IR) have been added as control variable to our analyses. Based on the results estimated, we found strong evidence that real exchange rate level and its volatility have significant effect on annual FDI inflows into Turkey for the examined period. In addition, the results show that interest rate has negative but significant effect on both RER and FDI. The findings also display that if central bank increase interest rates, given that due to rising interest rates there will be less possibilities of amount of foreign capital inflow into country. Therefore it will lead to less supply of foreign exchange into the country of foreign currencies. This in turn leads to a decrease in the value of the national currency.

Keywords: FDI, RER, Interest rate, Co-integration, Turkish Economy.

ÖZ

Yapılan bu tez ampirik olarak Türkiye ekonomisindeki reel döviz kuru ile doğrudan yabancı sermaye akışı arasındaki ilişkiyi ölçer. Bu ilişki teorik olarak klasik iktisat teorisi, Heckscher-Ohlin modeli and OLI çalışmasına dayanmaktadır. Bu çalışmada, çok değişkenli Johansen eş-bütünleşme ve birim kök teknikleri ile yıllık zaman serileri kullanılıp (1960-2012) reel dövüz kuru, faiz oranları ve doğrudan yabancı sermaye arasındaki uzun ve kısa dönemli ilişkiyi ölçülmeye çalışılmıştır. Çalışma, ayni zamanda kullanılan ilgili modelin doğruluğunuda ortaya koymaya çalışmaktadır. Elde edilen ampirik sonuçlar ışığında, reel döviz kuru ile ona bağlı dalgalanma ve faiz oranı arasında uzun ve kısa dönemli ilişki belirlenmiştir. Reel döviz kuru ve faiz oranının doğrudan yabancı sermaye akışı üzerinde önemli rol oynadığı tespit edilmiştir. Ayrıca, faiz oranının reel döviz kuru ve doğrudan yabancı sermaye akışı üzerinde negatif etkisi bulunmuştur. Bulgular bağlamında, merkez bankası'nın faiz borlçanma oranlarını artırdığını düşünülürse, artan faiz oranları nedeniyle bir olasilikla bu ülkeye daha az yabancı sermaye girecektir. Yabancı para birimlerinin ülkeye girmesiyle döviz arzı eksikliği meydana gelecektir. Bu da ilgili ulusal para değerinin duşmesine sebep olacaktır.

Anahtar kelimeler: Türkiye Ekonomisi, Reel Döviz Kuru, Birim kök, Eş bütünleşme analizi.

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LIST OF ABBREVIATION

ADF	Augmented Dickey and Fuller
ECT	Error Correction Term
FDI	Foreign Direct Investment
RER	Real Exchange Rate
I	Interest Rate
GDP	Gross Domestic Product
PP	Philips-Perron
VECM	Vector Error Correction Model

Chapter 1

INTRODUCTION

1.1 Introduction

Foreign direct investment (FDI) is international flow of capital from one country to another in order to get advantage of investment opportunities and to deliver positive production effect for the recipient countries. Perhaps, FDI is a significant phenomenon for international competitiveness and economic development of countries. Previous empirical research and studies like Dunning (1993) and Kosekahyaoglu (2006) pointed out that FDI increase total demand for domestic goods, initiate technology overflow through licensing agreement, aid human capital configuration, it also helps to internationalize and modernize the industrial and service sector all around the world. As Kok (2009) demonstrated that the main purpose of FDI inflow to a country is to have access to natural resources, host countries market size and geographic locations, low labour cost, accessing strategic assets like research and development, know-how. In other word the prominent aim of FDI is delivering technology spill over to the recipient countries. The extent literature exhibits the effect of FDI in economic performance of countries for example Moran & Graham (2005) argued that FDI increase demonstration effect in which the success experience of an investor will motivate other investors to start business in host country. According to Barrell & Pain (1996) the aim of moving capital out of country is to better access scarce resources unavailable at home and best use of low labour cost. Among the OECD countries as Choi (2004) imply that as

a result of bilateral FDI inflow, per capita income distribute equally among the individual of country.

According to UNCTAD (2009) foreign investment is an important element of balance of payment. FDI exist in various form e.g. Greenfield investment, merger and acquisition (M&A), portfolio investment, horizontal FDI and vertical FDI. Greenfield investment is the process of investing in new services and facilities; this kind of investment leads to the creation of new jobs as well as bringing new technologies to country. Another type of FDI is M&A; it occur when home country relocating existing assets from home country to host country for example Temiz & Gokmen (2013) claim that in 2002 much of FDI inflow in Turkey was in the form of M&A. The third type of FDI is Portfolio investment which deals with investing in firm's securities and assets. According to Jansen & Stokman (2004) investors prefer horizontal FDI because they want to be close to consumer market and due to high cost of doing business from distance. Thus vertical FDI is dispersing of direct investment in a different part of country to get advantageous of cost efficiency.

An exchange rate is defined as the domestic currency price of a foreign currency. Goldberg et al (2005) stated that exchange rate can affect both the volume of FDI and division of it across range of countries. Morrissey et al (2004) suggested that FDI inflow lead to real exchange rate appreciation as such FDI can have direct impacts on the performance of exchange rates. Previous studies have shown that firms which involve in global trading are exposed to exchange rate movement than those selling domestically. In other words, countries involved in international markets even in currency depreciation period, outpace countries that are not involved. Countries that

used exchange rate to stabilize inflation always experienced boom in economic activity like consumption, investment, and GDP expanding. Moreover countries sometimes are interested in devaluating their currency to increase export surplus, competiveness and to decrease trade deficit. The significance of exchange rate for economies was emphasized via some researchers, such as Kiguel (1992) who confirmed that, generally developed and developing countries which adjust the most proper exchange rate, adequately near to the equilibrium real exchange rate. Few economists mention that several macroeconomic outbreaks (notably in developing countries) are the results of improper exchange rate policies for example the case of Africa (devaluation of the francs), Mexico (currency crisis (1994)), and Asian crisis in Mid-1994. Similarly countries like: Argentina, Brazil and Columbia all maintained an outward-looking strategy (export) in the mid 1960 similar to Mexico in 1970. However, these countries pass-through import oriented growth (import substitution).

According to Balassa (1985) this outcome resulted from the inability to maintain a sustainable economic development or disequilibrium in balance of trade (import and export). Consequently, after the collapse of Bretton woods in 1971 and currency exchange rate where no longer pegged as such they were allowed to move according market demand and supply. High volatility has been seen in the currency of different countries; for example Goldberg (2005) stated that when a currency depreciates, it loose value against another currency. Therefore, fluctuation of exchange rate has two significant consequences for FDI, as a matter of fact when the country suffering currency depreciation FDI activity became attractive as a locational advantage to foreign investors. On the other hand the exchange rate depreciation enhance the potential rate of return to foreigner investors whose occupied direct investment in

foreign soil. According to Klein and Rosengren (1994) depreciation of the home country's currency increases the foreign investor's relative wealth and can lead multinational acquisitions among foreign firms and domestic firms. For example Japanese acquisitions in the United States prove the fact that real dollar depreciation lead to Japanese acquisitions in U.S industrial market.

However the important aspect of this studies articulating that the net inflow of foreign capital by foreign investors in proposes of investment activity lead to appreciation of home currency. On the other hand Arize et al (2000) states that high exchange rate volatility reduces foreign trade among countries. The other factors such as interest rates have significant effects on FDI activity as well. Interest rates might have direct and indirect effects on FDI For example, a change in interest rates leads to changes in credits and loans; therefore, it might effects the level of FDI secondly, since interest rates closely affect exchange rates, they are expected to impact on FDI indirectly. According Fisher (1930) neoclassical theories of interest rate any change in interest rate immediately reflect exchange rate expectation. In another words high interest rate cause depreciation of currency; on the other hand low level of interest rate lead to appreciation of currency; as it happened during economic history of Turkey[1]. According to his theory there is negative relation between interest rate and exchange rate. Comparatively Asari et al (2011) expressed rate of return to foreign investors at host country depend on interest rate and change in exchange rate.

[1] See CBRT.COM

1.2 Scope and Objective of this Study

This study attempts to empirically investigate the relationship between FDI and RER, as well as FDI and IR by using annual data over the period 1960 and 2012 for Turkish economy. We adopted Heckscher-Ohlin Model Heckscher (1919) in our studies; the model suits our research since it deals with effect of FDI on market risk factors referring to interest and exchange rate. Regarding the importance of the research the purpose of this study is to search for the relationship between FDI and real exchange rates and interest rate in the case of Turkey; all of which are important economic indicators. In another word the prominent goal of this study is to explore the volatility of domestic currency driven from FDI inflow and find the effect of it on national and domestic economic development of country. Turkey has suffered from mainly current account deficits over many years and Turkish Lira has depreciated all the time in the history of the Turkish economy. Therefore, in addition to vast importance given to exporting and tourism activities by governments, a strong emphasis has been also given to attracting FDI to the country in order to transfer technology, know-how, entrepreneurship, and even to finance persistent deficits in current account balance. However, it has been seen that FDI trend in the Turkish economy has been highly volatile and couldn`t reach at targeted levels. Therefore, studying the relationship between FDI and exchange rates in such a developing economy would be interesting to researchers.

1.3 Methodology of this Study

First unit root procedures of Augmented Dickey Fuller (1981) and Phillips-Perron (1987) have been carried out for testing stationary of data. Secondly For data analysis Co-integration Johansen test was applied to measure the long run and short

run relationship between FDI and the other factors. Finally, vector error correction model (VECM) has been estimated for short term coefficients and error correction term in the case of co-integration.

1.4 Thesis Structure

The stated study is organized in six (6) chapters. The first chapter is the introduction, which provides information about the thesis topic. The second chapter explains the thesis topic in detail with the support of previous empirical literatures and findings. Chapter three provides brief history of Turkish economy and its exchange rate policy. The fourth Chapter consists of data used and methodologies adopted. Chapter five present the findings of our study. Finally, chapter six consists of conclusion based on our findings as well as limitations and implications of the study.

Chapter 2

LITERATURE REVIEW

Exchange rates can affect total amount of FDI flow in a given country in different ways. Exchange and interest rates are among the several factors that influences the FDI activity. Analysing the relationship between FDI, exchange and interest rate has been the concern of researchers for many years; particularly after the collapse of Bretton woods in 1971. Various studies have been concluded, Aliber (1970) was the first person who came up with concept of FDI and exchange rate. Aliber (1970) theory stated that change in exchange rate stimulates FDI movement he argued that exchange rate is one of the crucial factors that determines the location of a firm. Although other researcher's disagree with this theory because numerous practitioners believe that FDI affect RER in conjunction with other macroeconomic variables. The assumption that other economic factors which affect the flow of FDI, determines whether a country is likely to be a source country or a host country. A higher borrowing rate is expected to decrease FDI. On the other hand the appreciation of the Turkish Lira (or depreciation of US dollar) has a negative effect on FDI, as it increases the cost of investing in Turkey.

2.1 Impact of FDI on Real Exchange Rate

After 1990, the modern literature of FDI inflow and exchange rate movement consist of work done by famous researchers like Fischer (1998); Edwards (2000) the studies investigates perfect capital mobility approach and encouraging foreign direct investment and the capital account liberalization. Moreover another study conducted

by Cavallari & Daddona (2013) about flowing bilateral FDI among 24 (OECD) countries due to country economic characteristic for example: country's specific property, interest rate and exchange rate volatility for attracting FDI by using standard gravity test. Thus their finding result in strong negative relationship between FDI, and related explanatory variables in account of imperfect financial market and sunk cost faced foreign investors. However Bahmani-Oskooee & Kara (2003) used error-correction model for nine industrial countries states that depreciation improves exports for developed countries thus, stimulate FDI inflow of host country. These phenomena motivate investors because not only they better used of low production cost and wage rate but also led to foreign acquisition due to diminishing wealth of domestic investors. The idea underscore the finding of Blonigen (1997) states that the real depreciation of the US $ against Japanese yen lead to considerable increase in acquisition of US industrial firm with Japanese firm which more likely have firm-specific asset. These phenomena occur during (1975-1992) led boom in FDI acquisition between foreign countries and japan in United States due to depreciation of dollar therefore makes foreign investors to be able buy and use US asset and technology cheaply (Kogut and Chang, 1991).

Another study of the effect of FDI upon exchange rate volatility is conducted by Chaudhary et al (2012) who applied the vector autoregressive model and found positive relation between FDI and real exchange rate in the long run. Busse et al (2010) proved Chaudhary et al (2012) idea that FDI, is a long-run investment activity thus, investors should take their decisions in order long run currency movement than short run. Herzer (2012) imply that market-looking FDI or (horizontal FDI) might replace for exports of the commodities that were manufactured in the investor's

home country because Horizontal FDI is interested by market access. Feder (1983) and Ram (1985) added that bilateral foreign investments are likely to ease foreign-exchange limitations and in this manner enable importation of better technologies and production methods. Frankel (1997) found a complementary impact of FDI on trade, meaning that trade stimulate FDI, particularly after Uruguay round liberalized bilateral FDI flow among countries. Narula & Wakelin (1998) declared change in export of intermediate goods to manufactured goods particularly after 1990 is due to increasing flow of FDI in Turkey on the other hand Agenor et al (1997) used VAR model and find that government spending and capital inflow in Turkey bring about appreciation of the domestic currency. There is immense empirical literature that exhibits the effect of FDI on exchange rate particularly in developing countries. Most of the researches have determined that depreciation of home country's currency stimulate FDI activity. In addition researcher like Froot & Stein (1991) and Klein & Rosengren (1994) have found interrelation between depreciation of $ and FDI expansion, by definition to their idea currency movements raise acquisition FDI by increasing wealth of enterprises thru countries. Cushman (1985) says that" devaluation of domestic currency declines the production and labour cost of foreign investors, so stimulates FDI. From another point of view researchers like Chen at al (2006) declared devaluation of home countries currency encourage FDI of firms searching low cost-looking countries, however depreciation be likely to discourage FDI for market-looking firms. Rehman et al (2010) used Johansen co-integration model in order to test impact of FDI inflow on equilibrium real exchange rate of Pakistan. His time series research studies concluded that large FDI inflow and worker remittances appreciated real exchange rate of Pakistan. Similarly, Biswas & Dasgupta (2012) take parallel quarterly time series data and used Johansen co-

integration test, they found that FDI and worker remittances affect real exchange rate positively in India. Their estimation based on an idea that depreciation of domestic currency stimulates FDI inflow and leads to use cheap intermediary good in production of traded and non-traded good. Foreign capital inflow cause current account deficit and real exchange rate appreciation and cuse price of import to decrease and also export to increase. To the extent that appreciation of the home currency against the host currency encourages FDI, in other word strong home currency attract out-ward FDI as Klein & Rosengren (1994); Blonigen (1997); Chakrabarti & Scholnick (2002) stated in their outstanding time series studies. Subsequently Wang & Wong (2007) used ordinary least squares and panel regressions in their studies; they declared that high business-cycle volatility between OECD countries diminish FDI activity among them. Shah & Bagram (2012) examined the effect of real exchange rate fluctuation upon FDI inflow; he studied 14 countries on a country by country base, dividing countries to the time series data research approach. His result based on VAR Co-integration test and VECM, the outcome also indicates strong co-integration between short run and long run volatility of exchange rate and FDI for 7 countries among 14 countries. However, for the other countries significant relationship was not found.

2.2 Impact of FDI on Real Interest Rate

The interest rate more precisely is the cost of borrowing money, hence Fisher (1930) the famous American economist and statistician further elaborated on real interest rate; arguing that real interest rate is approximately the nominal interest rate minus the inflation rate. Payaslioglu & Polat (2013) analysed GARCH and Markow switching models for Turkey on monthly time series data from 2004-2012 to

determine causal relationship between FDI, real exchange rate, interest rate and other determinant factors like inflation. They concluded that the real exchange rate and its fluctuation do not have significant effect on FDI inflow of Turkey whereas interest rate and other determinant factor have positive and significant effect on FDI. Their result determined that the main factor attracting FDI into Turkey particularly from European countries is just high level of interest rate in Europe and low level of interest rate in Turkey which attract immense level of FDI in Turkey. Vitaa & Abbott (2007) adopted GMM estimation techniques using panel data from 1975 to 2000, their results estimated that exchange rate volatility has a negative and insignificant impact on FDI Activity in UK but the real interest rate found to be negative and significant impact upon FDI. Their estimation based on idea that high level of borrowing rate discourage flowing FDI in UK because according to them FDI financed by firms s and if cost of borrowing are high, the least foreign investors get motivated over investing in UK. Furthermore, Uygur (2005) found out that the real interest rate of official treasury department and consolidated budget balance are the main determinants of FDI for Turkey. Similarly, Ismail and Burak (2007) pointed out that FDI is related positively with interest rate, taking Turkey as point of reference; they used data from 1989 to 2006. According to Gross and Trevino (1996) a relatively high interest rate in a host country has a positive impact on inward FDI. Tapfuma (2011) mentions that interest rates are reported to be high enough to attract FDI but their effect is not clear. Further, Chingarande et al (2011) mentioned that rising discounted rate lead to lowering investment opportunities, as such there is a negative relationship between investment and interest rate.

Chapter 3

THE TURKISH ECONOMY

3.1 The Republic of Turkey

Modern Turkey was founded in 1923 from the Anatolian remnants of the Ottoman Empire by Mustafa Kemal Ataturk. Turkey's geography located in a region where Asia connected to Europe, The European area is called Thrace, while the Asian part named as Anatolia. The neighbours of Turkey from northwest are Greece and Bulgaria, from east are the Georgia, Armenia, and Azerbaijan Republics and Iran, and from south are Iraq and Syria, with a population of 75.63 million in 2012 Turkstat (2013). Turkey has a democratic form of government and is intensely committed to retaining that form. The parliament (equivalent to the U.S. Congress) is the Grand National assembly. Turkey is formal member of council of European community since 1949 and member of NATO, OECD countries and World Trade Organization (WTO). Turkey characterized as an emerging market economy by Economist and World Bank. For this reason Turkey is the European Union 6th largest trade partner and the world seven major developing economies.

Turkish economy is constrained by industrial and service sector (tourism). Textile is one of the successful industries but automotive, construction, and electronics, banking and agricultural play significant roles as well. According to (Turkstat, 2013) Turkey's major export consist of fruit, textile, manufactured goods and import consist of equipment, biochemical, row martial energy. Additionally the tourism sector in Turkey is considerably robust and accelerating, as a result few numbers of

world famous hotels have invested in Turkey. Ministry of culture and tourism of Turkey (2012) declared that the number of visitors rose to 31.5 million, contributing about $23.5 billion to Turkey's GNP. Moreover according to Turkstat (2013) FDI stock of Turkey in 2012 was around 12.4 billion$ and external debt was 337 billion.

3.2 Brief Summary of Economic History in Turkey

The Turkish economy has developed steadily in the last fifty years (see Table 3.1). The Gross Domestic Product (GDP) has increased of 14 billion US-$ in 1960 to 789 billion US-$ in 2012. During half-century the Turkish economy was hit by severe recessions.

Table 3.1: GDP in Turkey in Billion Current US-$

Year	1960	1970	1980	1990	2000	2011	2012
GDP	14	20	65	151	267	774	789

Source: World Bank (2013).

After 1950 the Turkish government had witnessed to series of economic distractions. During 1970's Turkey economy experienced import surplus, and made the country suffer from balance of payments crisis. Although the military interventions of 1960 and 1971 lead to chaos, prohibiting timely economic recovery implemented via IMF guideline. By the late 1970, Turkey's economy experienced difficult era of its time after collapse of Ottoman Empire, increasing in global oil prices in 1973-74 made Turkey turned on external funding for economic growth as result, in 1979 inflation had risen to the highest levels, unemployment had reached its severe condition, and made government incapable of paying its debt. In 1980, Prime Minister Süleyman Demirel allotted the program of transferring economy through export-led growth to

Turgut Özal, a latter prime minister and president. The Özal strategy which was named as liberalization of market economy made country to be able to borrowing from foreign countries again, conquering balance of payment problem and promote free trade economy and led to improved economic growth. Financial liberalisation also brought new illnesses to potential growth, such as currency crises in 1994 ended up with banking crises and caused central bank to lose half of its reserve. As Bahmani-Oskooee & Domaç (2003) stated that the obvious increase in foreign currency deposits in mid-1980 due to the liberalization of the financial system along with the capital account liberalization caused dollarization in the economy of Turkey. We can see from (figure 3.1) that average growth rate and capital inflow acting in positive manner during 1988 to 2011 as capital inflow increase GDP is also increase as well Görmez & Yiğit (2009).

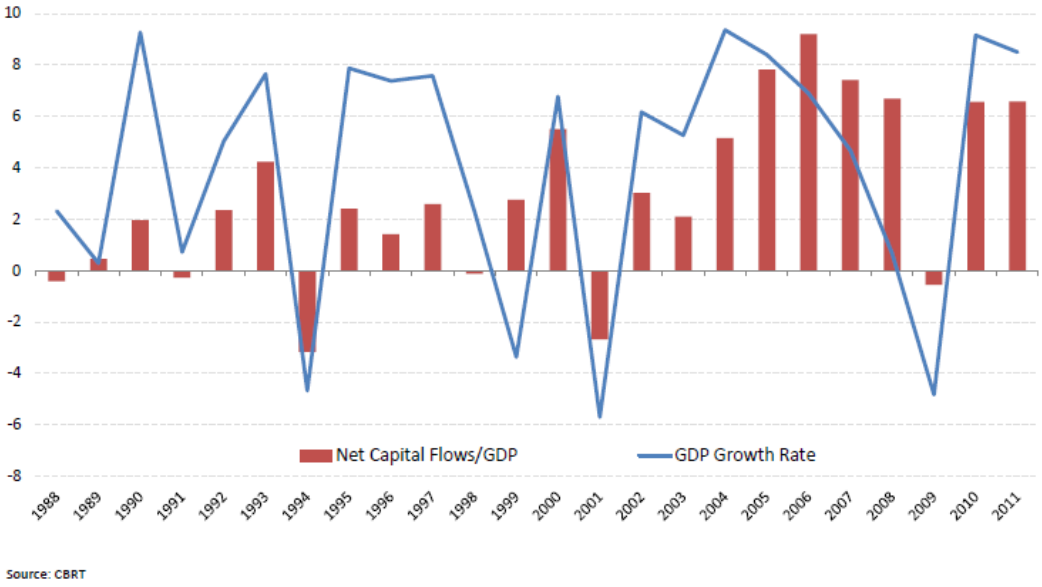

Figure 3.1: Capital Flow and GDP Growth. Source: CBRT (2013).

As (Figure 3.1) have shown us the stability in Turkish economic reform from 1990 to 1995; Capital flow increased as a short term capital, portfolio investment and FDI. Over years beteen 1987-1989 FDI level of Turkey was around 700 milion $ but it grow steadily in coming years and FDI got high level share in 2005 and 2006 around 10 billion US $. In an amount several times higher than historical averages and it covers 80% of current account deficit (Turkstat, 2013). In addition after severe crises which Turkey experienced during its history particularly after liberalization program Turkey implemented IMF program in 2001 and improved economic performance basically. Nevertheless, the program lost its efficiency and make the Turkish lira depreciate strongly consecutively another crisis was experienced in February 2001.

Reforms obtained after 2002 exhibit satisfactory and financial stability, thanks to measures taken, the sector has improved rapidly, resilient growth increased more than 6% annually until 2008. Following recession in 2008 Turkey started to

experience steady economic and financial growth by 2009, therefore banking system had grown internationally, export reached its equilibrium level with import, public debt declined approximately forty percent and GDP rose to 9.2 percent in 2010 (Turkstat, 2013)

3.3 History of FDI in Turkey between 1960 And 2012

During 1900's particularly during Ottoman Empire share of FDI were noticeable. Most of railways, tramways, ports, mines, even energy were all operated by foreign firms, moreover railroads were to third of all FDI in 1914 operated by British, French, and German firms (Dumludag, 2010). In 1924 Ataturk gave a speech about openness of country for foreign direct investment and paved a way for attracting foreign firms into country. Since 1924 Turkey had considerable amount of foreign firms to invest in country consisting of banks, railroads, mines, and municipal affairs, industrial and commercial firms (Yavan, 2003). Therefore after great depreciation and World War II so many laws have enacted to encourage FDI but most of those laws were with restriction behind that. Until 1954-1958 the share of FDI in the economy was nearly nothing because of unstable economy. By the end of 1960 total FDI stock increased around 17.3milion $ (Ilkin, 1974). Therefore as a result of economic development and FDI growth Turkey enacted five year development plan strategy between 1963 and 1967 (Snyder, 1969). However, large flow of workers' remittances mainly from Germany led economy to be dependent on import substitution industrialization (ISI). Furthermore, in 1970 Turkey suffered from the disruption between political parties and ideologies. Consequently this led to instability in economy therefore cause foreign investors to avoid investing in Turkey.

Since 1980s and 1990s or after globalization age, in an account of the custom union with EU, and Turkeys free market economy, level of FDI increased but still limited. Subsequently Balasubramanyam & Corless (2001) stated that the amount of FDI inflow in comparable with Turkey's rival countries is very low; this means that FDI role for 1980 was positive but not significant. Indicating a gradual shift from a nationalist trading system to exporting, the outcome leads to increase in FDI. CBRT (2007) also specified that annual FDI inflows in spite of series of severe depressions and economic instability in Turkey reached $500 million and $1 billion in the 1990s and 2000s. The year 2001 FDI inflow increased $3.2 billion due to macroeconomic sustainability built on the agreements with IMF and world bank after 2001, but more than half of this amount was get by Telecomm Italia and HSBC acquisitions. By definition according to CBRT (2007) a total number of foreign companies respectively in manufacturing and non-traded good sector have noticeably increased after the mid-1980s reaching from Only 400 in 1985 to 5,300 and 6.500 in 2000 and 2003. According to Loewendahl (2001) most FDI projects done in the year 2000 in Turkey by foreign investors accounted for (information technology and mobile telecommunication) however following the arrival of AKP, Turkey's (Justice and Development Party) in 2002, and Turkey's European Union's accession in October 2005 Turkey has attracted more FDI. Figure below shows the inflow of FDI into Turkey due to sectorial breakdown.

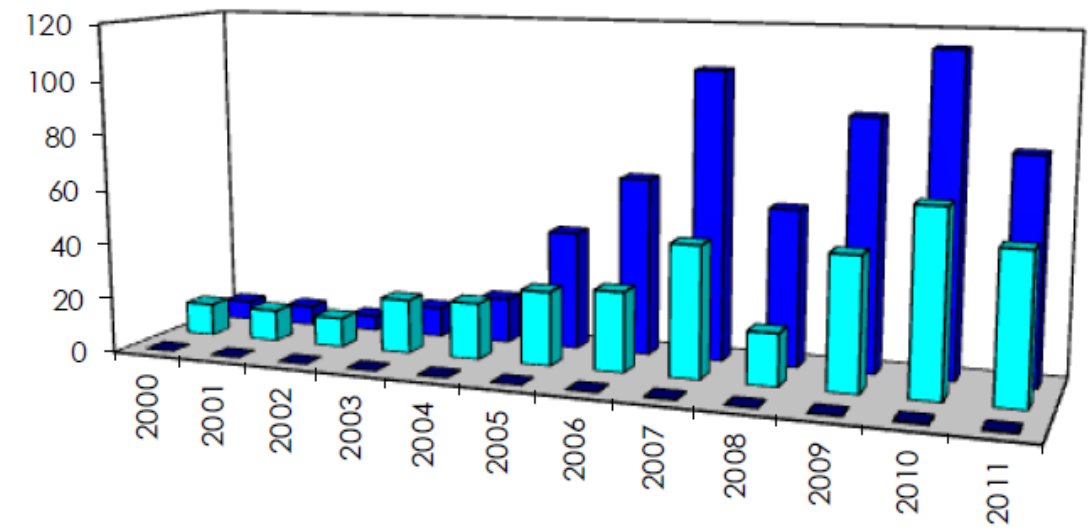

Figure 3.2 FDI in Turkey by sectorial breakdown (billion USD)
Source: CBRT

By analysing the balance of payment statistics according to CBRT (2007) FDI in Turkey declined in consequence of financial crises in 2008 and 2009. Accordingly, the net FDI inflow, which was 14.7 billion $ in 2008, declined to 6.2 billion USD $ in 2009 and 2010 and started to rise in 2011 and reached 13.9 billion $. Based on analyses countries like: Netherlands, Germany, Australia, UK, and France dominates the total FDI in Turkey, by which the largest amount of investment located in north part of Turkey by Netherlands firms. By definition as the graph result shows the role of FDI inflow in service sector is more than industrial sector (see figure 3.2). Furthermore the three important service sectors attracting the largest amount of FDI inflow consist of: information and communication service, insurance and financial activities particularly banks are dominating (CBRT, 2007)

3.4 History of Exchange Rates in Turkey between 1960 And 2012

Exchange rate of a country simulates real value of currency. After collapse of Bretton wood the determination of currency in industrial countries depends on market demand and supply. On the other hand most of developing countries exchange rate was determined by monetary authorities or currency peg. Before period of 1980, Turkey administered the fixed exchange rate policy. And due to the foreign trade deficit this regime made Turkish Lira to appreciate consequently Turkey had to devaluate its currency in 1970, as such Turkish Lira was devaluated by 40% disrupting growth in capital Metz (1995) and Ertekin (2007). Following period after 1980, real exchange rate role get significant by implementing export-oriented growth model, in this respect, the real exchange rates were devaluated in order to make Turkish exports more competitive; with collapse of fixed exchange rate regime, and Turkey adopted various regimes during past 2 decades. Following liberalization and during period between 1980 and 1989 Turkey implemented structural stabilization adjustment moreover The broad aim of adopting crawling peg regime was to make the Turkish currency exchangeable since this period were accompanying balance of payments crisis and inflation, more stable and robust exchange rate regime was needed to applied, to balance inflation and to make country execute its globalization plan completely CBRT (2009). Therefore after 1989 Turkey implemented managed float exchange rate regime in order to prevent continuously depreciating TL against other currencies along with allowing banks to intervene in exchange rate policy. This system of exchange rate regime made intervene of government indirectly upon exchange rate. According to Asıkoglu (1995) this system of controlling exchange rate by banks caused inflation to fall and lessen the volatility of TL against other currencies therefore foreign capital inflows

to country during this year cause appreciation of TL. Consequently in 2001 Turkey had to change from fix to floating exchange rate policy. With this program, the Turkish lira was fixed to a US dollar- German mark basket through a crawling peg regime. Following the economic crisis in February 2001 and New Stand-by Agreement with IMF on May 28, 2001 Turkey prevent CBRT interference in exchange rate market to control volatility in financial market. Hence, Turkey changed from fix exchange regime to floating exchange rate ragtime in order to guarantee the effectiveness in the foreign exchange market and to consolidate foreign currency in the banking system. According to government experts, Turkey's exchange rate is driven by demand and supply situations in the market. However, the main aspects influencing it are the monetary and financial policies adapted by government expert, international growths, and economic principal (CBRT, 2009).

3.5 History of Interest Rates in Turkey between 1960 And 2012

Turkish financial market is liberal and developing with high pace, due to free or less regulated movement of foreign exchange and interest rates. This leniency allows us to assess the effect of monetary policy and the economic outcomes associated with Turkey in a reasonable fashion (Berument, 2007). CBRT was actively involved in monetary policy manipulations during 1960 to 2012, these objectives were achieved by influencing interbank interest rates. CBRT uses interest rate and exchange rate policies to achieve their objectives, by moving them in the opposite directions. As pointed out by Berument (2007) "that an increase in the interbank interest rate depreciates the local currency likewise a decrease in the interbank interest rate appreciates the value of the local currency. From a pragmatic point of view it is obvious that the republic of Turkey has been experiencing persistent level of

inflation during the last decades. Surprisingly the country did not fall into hyperinflation; as such the average annual inflation is approximately 52.3% for the period that is considered in this study (Berument, 2007). Therefore interest rate volatility influences the FDI inflow, for example Russ (2007) elaborated that an increase in interest rate volatility may increase or decrease the total amount of FDI, depending on whether the FDI originates in the domestic or the foreign country. The activities of multinational firms, causes a natural hedge against currency risks generated by interest rate changes in the host country. On the other hand national reserves increase as domestic interest rates increase due to capital inflows (FDI) and decrease as the return on foreign exchanges decrease. Hence, CBRT may reduce liquidity availability to the public by increasing the interest rates at a given level of depreciation. CBRT may decide to purchase domestic currency from the public by selling foreign currency at a lower rate and by stabilizing domestic interest rates.

Consequently, back to history during 1993 former Turkish Prime Minister Ms Ciller "publicly adopted a macroeconomic strategy by maintaining a loose monetary policy and at the same time decreasing interest rates in order to boost the economy"

Chapter 4

DATA AND METHODOLOGY

4.1 Types and Sources of Data

Data set used in this thesis is based on annual figures consisting of 1960 - 2012 time series framework for Turkey. Variables used in this study are foreign direct investment (FDI), real exchange rate (RER) and interest rate (I). Data are derived from the official website of the CBRT (2013) and TURKSTAT (2013). Real exchange rate for Turkey has been computed as the product of the nominal exchange rate and relative price levels of foreign countries. The variable of FDI is in percentage of GDP. All variables are converted to the natural logarithm form for econometric analysis to capture growth effects among series (Katircioglu, 2010).

4.2 Methodology

Before carrying out econometric analysis and estimations, unit root procedures of Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) [2] test have been carried out to test the stationary of data Dickey (1981) and Phillips (1988). Secondly, Johansen & juselius (1990) trace tests were used to test for co-integration (long run relationship) among variables and long run coefficients. Finally, vector error correction model (VECM) has been estimated for short term coefficients and error

[2] The PP approach allows for the existence of unknown forms of autocorrelation with a structural break in the time series and conditional heteroscedasticity in the error term.

correction term in the case of co-integration. The error correction term is needed in order to see how fast discrepancy between long run and short run values of dependent variable is eliminated every period through the channels of its repressors; this is also to say how fast dependent variable reacts to its long run path by the contribution of its independent variables (Katircioglu, 2010).

4.2.1 Theoretical and Empirical Model

In the literature, many theoretical models explaining FDI and a wide range of factors that can be tested in the empirical studies for the determinants of FDI. Three are the most useful models to explaining FDI, these are: (1) Neoclassical Trade Theory and (2) the Heckscher-Ohlin model see Markusen & Venables (1998) (3) Determinants of FDI in Dunning's (1977 and 1979) OLI framework which brought together traditional trade economics, ownership advantages and internalization theory.

In analysing the relationship between FDI and exchange rate in Turkey, we modified a framework using the three models for identifying the effect of FDI inflow on real exchange and interest rate in line with Neoclassical Trade Theory and the Heckscher-Ohlin model or risk expansion model in which return on investment is different for every single countries; in other words, according to Aliber (1970) every single country will exhibit different return on investment. Interest rates have been added as control variable to our empirical models.

Under this structure, depreciation of the home countries currency stimulates foreign investment under stabilized political and economic condition. In other part of our research we examine long-term discounted rate. In other words, interest rate is the

price of lending or borrowing money. Interest rates are typically fixed by central banks, for maintaining price stability and controlling inflation and currency transaction.

According to Cushman (1988); Klein & Rosengren (1994) and Yang (2000) higher exchange rate volatility and interest rate leads to decreases in FDI. A higher interest rate is likely to decrease FDI where the depreciation of the currency against other currencies is likely to increase FDI as it reduces the investment cost in source country. According to the Heckscher-Ohlin theory there are other variables affecting FDI but due to time limit and lack of adequate data for variables we just choose two explanatory variables which consist of interest rate and exchange rate in order to expand our research.

Thus, two basic models are defined as follows:

1) FDI=*f* (RER, I)
2) RER=*f* (FDI, I)

Where in first model foreign direct investment (FDI) is a proxy for real exchange rate (RER) and discounted rate of bank (I), thus in our second model real exchange rate (RER) is proxy for foreign direct investment (FDI) and discounted rate of bank (I). The functional relationship in both two equations can be state in logarithmic form stand for growing impact in the long-run economic period. (Katircioglu, 2010)

3) $\text{Ln } FDI_t=\beta_0+\beta_1+\ln RER_t+\beta_2 \ln i+\varepsilon_t$
4) $\text{Ln } RER_t=\beta_0+\beta_1+\ln FDI_t+\beta_2 \ln i+\varepsilon_t$

Where at period t Ln FDI is the log of foreign direct investment; Ln RER is the log of the real exchange rate; Ln İ is the log of the interest rate of bank of Turkey; and Ɛ is the error term. The coefficient of β1 and β2 give us elasticity's of FDI and RER variables specifically in the long term period. Katircioglu (2010) Implying that development in foreign direct investment, have significant impact on interest rate of Turkey.

4.2.2 Unit Root Test

The starting step in time series analysis is unit root tests. Two popular approaches have been adapted in this research: Augmented Dickey and Fuller (1981) ADF test and Phillips-Perron (1988) PP test. The advantage of the PP test over the ADF test is that the PP making adjustments to the *t*-statistics of the coefficients of the lagged variables, while proving existence of any serial correlation without adding lagged differenced term (Adhikary, 2012). In other words, (PP) test account for residual variance that is dynamic to autocorrelation, the unit root test has been directed both at trend and intercept, at the intercept alone and none regression forms. According Katircioglu (2010) series must be examined if they are stationary at level I (0), or at their first differences I (1), or at second difference I (2). But the probable presence of co-integration is proved if the relationship between variables were in the same order I (d). A progression which is not stationary at level termed integrated of order one, signified as I (1) which means series has unit root. However if series are stationary at level termed as integrated of order zero I (0). Stationary time series has a perpetual mean, and variance. Stationary of series is vital for avoiding spurious result (Gujarati 2003). Three model had been used for (ADF) and (PP) test from most general model

including intercept and time trend, with time trend and finally with restricted model without trend and intercept (Enders, 1995)

In the ADF and PP unit root test processes, the null and alternative hypotheses are as follows:

H1: (there is unit root)

H0: (there is no unit root)

If null hypotheses rejected it imply that data series is stationary. In other words, if series are non-stationary at level we accept H1; then, we take the difference of variables to make them stationary.

4.2.3 Johansen Co-integration Analysis

There are numerous approaches to run co integration tests in the literature of econometrics. The expression “co integration” indicates “co-movement” on the other hand, long term relationship among the data series. After approving the stationary of the variables by differencing them with first order, then, short term and long term coefficients as well as deviation from long term equilibrium route should be predicted (Gujarati, 2003). The study continues to investigate co-integration between variables by employing the Johansen & Juselius (1990) test. But, Johansen methodology requires the series to be integrated of the same order, I (d) at the same time. Unlike Engle (1987), the Johansen (1988) co-integration estimation method realized to be beneficial and superior because it is based on maximum likelihood co-integration technique that provide test statistic to regulate number of co-integration vector along with their estimates (Maysami & Koh, 2000). Based on the Cheung & Lai (1993) idea the trace test is beneficial to find co-integration test among variables

the (λ trace) tests are used to identify a co integrating vector. These are computed as follows:

$$\text{ʎ trace} = \frac{\text{r}}{n+1} + t\log(1 - \text{ʎ})$$

Where r stands for the number of co-integrating vectors, T stands for sample size and n states the number of variables, which is n = 3 in this thesis. Trace statistics investigate the how many co-integrating relation exist in specific number of variables (Kumar, 2012). By definition ,the null hypothesis H0 indicate that there is no any co-integrating association exist among variable at 5 percent and 1 percent .thus, the second null hypothesis H1 stated that there is one co-integration equation and third null hypothesis declared there is at least two co-integrated model.

H0: r=0 there is no co-integrating vector

H1: r <_ 1 there is at most one co-integrating vector

H2: r <_ 2 there is at most two co-integrating vector

4.2.4 Vector Error Correction Model

If co-integrating vector is confirmed in the proposed models, then error correction models are estimated as mentioned earlier. Then, two vector error correction models are proposed as followings in this study:

$$\Delta \ln FDI_t = \beta_0 + \beta_1 \sum_{i=1}^{n} \Delta \ln FDI_{t-i} + \beta_2 \sum_{i=1}^{n} \Delta \ln RER_{t-i} + \beta_3 \sum_{i=1}^{n} \Delta \ln I_{t-i} + \beta_4 ECT_{t-1} + \varepsilon_t$$

$$\Delta \ln RER_t = \beta_0 + \beta_1 \sum_{i=1}^{n} \Delta \ln RER_{t-i} + \beta_2 \sum_{i=1}^{n} \Delta \ln FDI_{t-i} + \beta_3 \sum_{i=1}^{n} \Delta \ln I_{t-i} + \beta_4 ECT_{t-1} + \varepsilon_t$$

Where in both two short run equation Δ estimate change in FDI, β0 is indicate intercept, β1 is the short run elasticity coefficient of lagged RER variable, β2 is the short run elasticity coefficient of FDI, β3 is the short run elasticity coefficient of I, and μt is white noise error term. Therefore β4 is ECt-1 = error-correction term with one lagged period and its expected sign is negative (Katircioglu, 2010). Notably, in this study the parameter ECT indicates the long-run association in the variables being studied, and also the speed of adjustment of dependent variable between short-run and the long-run equilibrium being state (Adhikary, 2012).

Chapter 5

EMPIRICAL RESULTS

5.1 Unit Root Test for Stationary

(ADF) and (PP) Unit root tests has directed to the entire variable that has been used in this theses. Tests have been done for foreign direct investment (Ln FDI), exchange rate (Ln RER) and interest rate (Ln I) separately at their levels and first differences in order to determine if they are stationary or non-stationary series. As we mentioned before the null hypothesis, H(0), express the non-stationary form of variable or in other word series have unit root. And alternative hypothesis, H(1), states the stationary nature of variable.

As a result of unit root tests which are exhibited in Table 5.1, it is seen that all the three variable were non stationary at their levels, thus, we accept the null hypothesis of a unit root; however, after taking first difference I(1) we can see that all the variables are found to become stationary and said to be series are integrated of order one. As a result this rationalizes the standard for estimating long run relationship through co-integration technique since all of the series are integrated of the same order, I(1).

Table 5.1 ADF and PP Tests for Unit Root

Statistics (Level)	LN FDI	Lag	LN REER	Lag	LNI	lag
τ_T (ADF)	-2.8397	(0)	0.09773	(0)	-1.2036	(0)
τ_μ (ADF)	-0.0743	(1)	-1.0814	(0)	-1.3893	(0)
τ (ADF)	1.1428	(1)	-0.0218	(0)	-0.2312	(0)
τ_T (PP)	-2.5825	(3)	-0.1075	(3)	-1.3634	(2)
τ_μ (PP)	-0.3036	(7)	-1.2469	(4)	-1.6397	(3)
τ (PP)	1.6020	(17)	-0.1185	(4)	-0.2213	(2)
Statistics (Difference)	LNFDI	Lag	LN REER	Lag	LNI	lag
τ_T (ADF)	-9.8613*	(0)	-6.6316*	(0)	-6.7215*	(0)
τ_μ (ADF)	-9.6882*	(0)	-6.2372*	(0)	-6.6423*	(0)
τ (ADF)	-9.5882*	(0)	-6.2828*	(0)	-6.7047*	(0)
τ_T (PP)	-13.295*	(11)	-6.6443*	(3)	-6.7208*	(1)
τ_μ (PP)	-10.206*	(6)	-6.3985*	(4)	-6.6600*	(2)
τ (PP)	-9.8671*	(3)	-6.4417*	(4)	-6.7206*	(2)

Note: Source: FDI is real foreign direct investment; REER is real exchange rate, I represent interest rate (discounted rate). All of the series are at their natural logarithms. τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. Numbers in brackets are lag lengths used in ADF test (as determined by AIC set to maximum 10) to remove serial correlation in the residuals. When using PP test, numbers in brackets represent Newey-West Bandwidth (as determined by Bartlett-Kernel). Both in ADF and PP tests, unit root tests were performed from the most general to the least specific model by eliminating trend and intercept across the models (See Enders, 1995: 254-255). *, ** and *** denote rejection of the null hypothesis at the 1%, 5% and 10% levels respectively. Tests for unit roots have been carried out in E-VIEWS 6 (Katircioglu, 2010).

5.2 Co-integration Analysis

After proving the stationary of data by taking their first difference in unit root test we employed (Johansen, 1988) test to estimate long run relationship between FDI, Real exchange rate and interest rate for both of our models proposed earlier. The result are shown in table 5.2 .1 and 5.2.2. Consisting for our two models which we developed Johansen (1988) co-integration test.

Table 5.2.1 Johansen test for co-integration of the first model

Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**5 Percent Critical Value**	**1 Percent Critical Value**
None **	0.444241	46.05573	29.68	35.65
At most 1 *	0.197305	17.27212	15.41	20.04
At most 2 *	0.124282	6.502852	3.76	6.65

Note: Trace test indicates 3 co-integrating equation(s) at the 5% level
Trace test indicates 1 co-integrating equation(s) at the 1% level
*(**) denotes rejection of the hypothesis at the 5%(1%) level

In the first model of FDI=*f* (RER, I) FDI is dependent variable where real exchange rate and interest rate are independent variables. Optimum lag levels have been selected based on Akaike information criterion and linear deterministic trend has been included in both models. Johansen test results show that, trace statistics is greater than critical values at alpha 5 per cent and 1 per cent; therefore, the first hypothesis (for the first model where FDI is dependent variable) can be rejected which indicates the existence of co integrating vector. Johansen test consequence suggests that there is single co-integration among the variables therefore a long run

equilibrium model of the variables can be derived in the first model. The outcomes show that FDI is elastic with respect to explanatory variables and it is positively related to real exchange rate, Nevertheless, FDI is inelastic with respect to interest rate. This phenomena approve the (Keynes, 1933) theory. According to his idea, higher interest rates increase the cost of investment and therefore planned capital investment projects does not become worthwhile. A firm will only invest if the discounted yield exceeds the cost of the project.

On the other hand, in the second model where real exchange rates are dependent variable, the null hypothesis of no co-integrating vector is again rejected. Therefore, another co-integrating and long run relationship has been confirmed from FDI towards real exchange rates in Turkey.

Table 5.2.2 Johansen test for co-integration of the second model

Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**5 Percent Critical Value**	**1 Percent Critical Value**
None **	0.444241	46.05573	29.68	35.65
At most 1 *	0.197305	17.27212	15.41	20.04
At most 2 *	0.124282	6.502852	3.76	6.65

Trace test indicates 3 co-integrating equation(s) at the 5% level
Trace test indicates 1 co-integrating equation(s) at the 1% level
*(**) denotes rejection of the hypothesis at the 5%(1%) level

Results in table 5.2.2 reveal that no matter which series are dependent variable but co integrating relationship exists between FDI and RER in the case of the Turkish economy. Therefore, long run and short run models can be estimated in our study in addition to error correction models.

Figure 3.3 and 3.4 and 3.5 shows the annual FDI inflow interest rate and real exchange rate movement between 1960 and 2012 in Turkey and the result of all three graphs is based on our estimation. So we can see from graphs that the highest amount of FDI inflow was in 2006 around 22 billion $. As a result by appreciation of the RER after year (2000) FDI demonstrate highly increasing pattern therefore by increasing volatility of exchange rate FDI increased but still limited. On the other hand by increasing interest rate after the year (1977) the level of FDI still very low however by reducing interest rate by government after 2001 the level of FDI increased simultaneously.

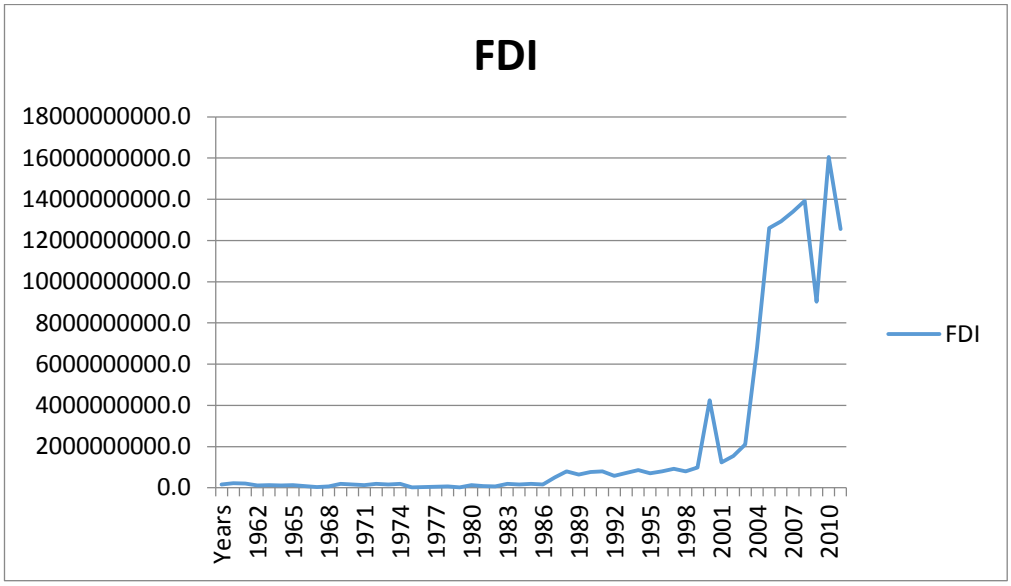

Fig 5.1: Trend of FDI inflows in Turkey (1960– 2012).

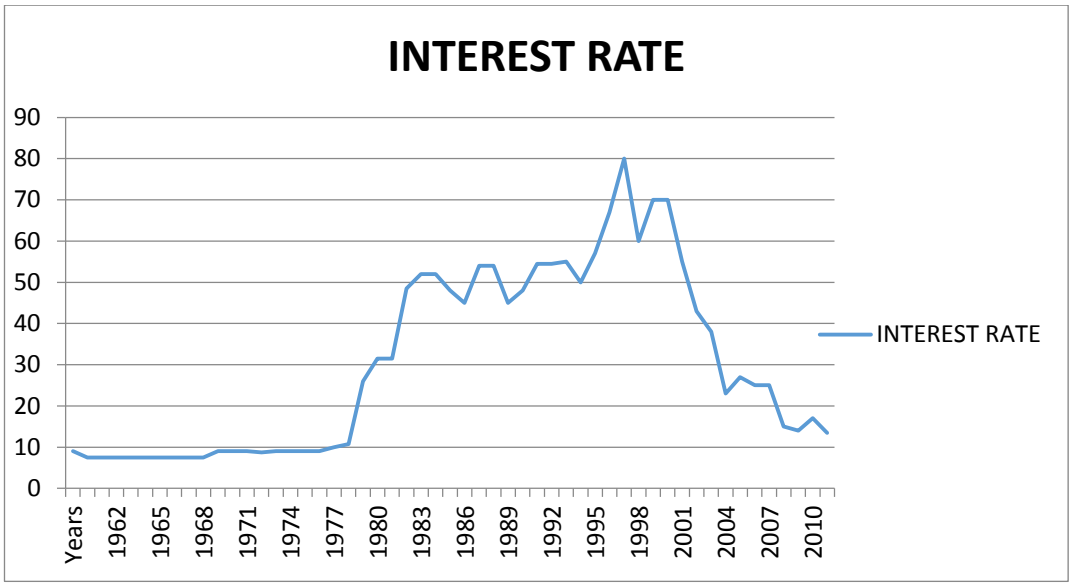

Fig 5.2: Trend of interest rate in Turkey (1960– 2012)

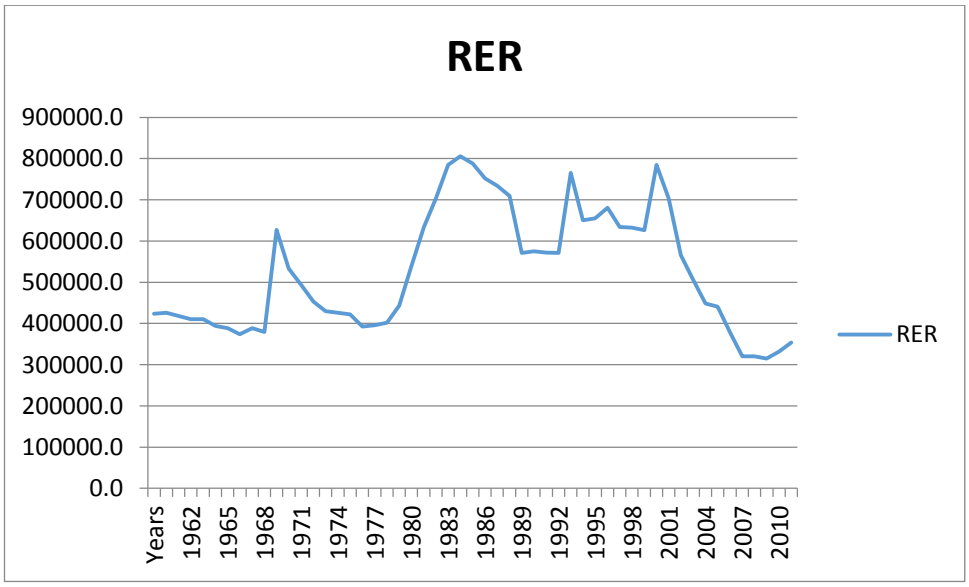

Fig 5.3: Trend of exchange rate in Turkey (1960– 2012).

5.3 Vector Error Correction Model

As Nasiruddin (2001) indicate, the key aspect of the Error Correction Model (ECM) is its ability to correct for any disequilibrium that may result from non-stationary time series variable of the system, and direct them back to equilibrium. As a result of co-integration equation among dependent variables and it's repressors we need to investigate the long term coefficient of our two models and its ECM in order to estimate short term coefficient and error correction term (ECT). According to Gujarati (2003) theory, we start from highest lag criteria therefore optimum lag 5 have selected for first model FDI=*f* (RER, I) simultaneously we did same procedure with optimum lag 1 for our second model RER=*f* (FDI, I).

Table 5.3.1 Error correction model

Dependent Variable: FDI

Regressor	Coefficient	Standard Error	T-Statistic
Ln RER	7.544247	0.96743	7.79827
Ln I	-2.659992	0.26991	-9.85516
ECT_{t-1}	-0.811341	0.22434	-3.61657
Δlny_{t-1}	0.356692	0.23350	1.52761
Δlny_{t-2}	0.474732	0.23935	1.98344
Δlny_{t-3}	0.455487	0.22629	2.01285
Δlny_{t-4}	0.683015	0.20849	3.27606
Δlny_{t-5}	0.296999	0.18015	1.64864
$\Delta lnRER_{t-1}$	5.019128	1.77223	2.83210
$\Delta lnRER_{t-2}$	4.765263	1.50582	3.16456
$\Delta lnRER_{t-3}$	3.709632	1.23560	3.00230

$\Delta lnRER_{t-4}$	2.688053	1.05612	2.54522
$\Delta lnRER_{t-5}$	2.531385	1.02188	2.47719
ΔlnI_{t-1}	-1.966670	0.97363	-2.01993
ΔlnI_{t-2}	-3.956962	0.91510	-4.32406
ΔlnI_{t-3}	-2.595905	0.91346	-2.84183
ΔlnI_{t-4}	-1.721646	0.78642	-2.18922
ΔlnI_{t-5}	-1.267353	0.68636	-1.84648
Intercept	0.179997	0.10610	1.96640

Adj. R^2= 0.546081, S.E. of Regr. = 0.593148

AIC = 0.583654

F-stat. = 52.851

*Note: * denotes p lag structures in the model.*

According to table 5.3.1 VEC result for first equation, it is seen that Ln RER demonstrate positive and significant long term impact on Ln FDI; it suggests that one percent change in real exchange rate would lead to a 7.54 percent change in FDI in the same direction. On the other hand, long term elasticity coefficient of Lni is negative and statistically significant; it suggests that one percent change in interest rate would lead to a 2.65 percent change in FDI in the opposite direction. in our first model a result of numerous lag selection we find out that error correction term in this level which account for -0.811341 is negative and also statistically significant at α=0.01. This coefficient for the first model means that 81.1341 percent of discrepancies between long and short run values of FDI are eliminated each year by the contribution of real exchange rates and interest rates in other word FDI converges to its long term equilibrium path by 81.1341 percent speed of adjustment through the channels of real exchange rate and interest rate. This means that FDI may diverge

from its long run equilibrium briefly, nevertheless, the deviation are adjusting towards equilibrium level in the long run. In addition to our ECM in first model short term coefficient of FDI is elastic and significant and its t-value is significant. So as we mentioned earlier from level equation, long run coefficient of FDI is positive and significant as well as exchange rate. Interest rate and error correction coefficient is negative but significant according to their t-values. On the other hand, if interest rate increases by 1%, FDI will decrease by 2.65% in the long term therefore according to Keynes (1933) economic point of view this phenomena is as expected. The idea behind Keynes (1933) is that as borrowing rate decline incentive for investment augmenting as result domestic saving increase this cause investment incentive to increase both domestically and nationally. On the other hand as we experienced negative correlation of interest rate and exchange rate in final result of co-integration test and VECM test it can be concluded that the negative relation may source from change in money supply or change in expected inflation rate (Engell and Frankell, 1984). This procedure is the same as for our second model which real exchange rate is dependent variable. Table 5.32 shows the result of VECM.

Table 5.3.2 Error correction model

Dependent Variable: RER

Regressor	Coefficient	Standard Error	T-Statistic
LnFDI	0.126122	0.01845	6.83563
LnI	-0.314409	0.03430	-9.16614
ECT_{t-1}	-0.511394	0.10373	-4.92998
Δlny_{t-1}	0.065709	0.13396	0.49051
$\Delta lnFDI_{t-1}$	0.053052	0.02305	2.30118
ΔlnI_{t-1}	-0.013556	0.08795	-0.15413

Intercept	-0.007946	0.01417	-0.56058

Adj. R^2= 0.407970, S.E. of Regr. = 0.099468

AIC = 0.092976

F-stat. = 7.924684

*Note: * denotes p lag structures in the model.*

All the variables have written according to VECM table in e-views 6

According to the results, ECT is again negative and statistically significant; it reveals that real exchange rate in Turkey converges to its long term equilibrium path significantly by 51.13 percent through the channels of FDI and interest rates. It can be concluded that in long run 1% change in FDI result in 0.126% increase in real exchange rate and on the other hand 1% change in real interest rate cause 0.314% change in real exchange rate in opposite direction. In empirical results illustrate existence of short run causal linkage from FDI, real exchange rate and interest rate.

Empirical findings indicate that, exchange rate, and interest rate play critical role in determining the FDI of Turkey. Long run and EC models have shown that exchange rates in Turkey exert higher impact on FDI than vice versa. This means the impact of FDI on real exchange rates are lower. This major finding is consistent with macroeconomic principles and the case of Turkey. It is important to emphasize that the period we were analysed can be divided into two parts because liberalization in Turkey was launched in 1980 so empirical analysis can be conducted before and after 1980 in order to get insights of the periods as well as data. However, due to time

limitation and lack of time series data, we confined to empirically investigate this case within these periods.

Chapter 6

CONCLUSION

Over the decades, international trade and FDI becomes an important subject for both developed and developing countries like Turkey. Turkey as a developing country with rich natural resources and low labour cost was not successful in achieving it targeted level of FDI for many years. Previous studies disclosed that foreign capital inflows have various effects on real exchange rate, interest rate and growth of economy. As mentioned earlier the main objective of this study to surge for capital inflow in form of FDI and its effect on equilibrium real exchange rate and interest rate. In order to see the existence of these economic phenomena the annual period has identified between the years of 1960 and 2012 of FDI inflow, real exchange rate and interest rate in Turkey which used in constant US dollar per GDP. Therefore, we employed unit root test procedures and Johansen methodology for Co integration in order to investigate the empirical relationship between FDI and exchange rates in Turkey. We found strong evidence of a long term equilibrium relationship between real exchange rates and FDI inflows into Turkey for the examined period. Two long run models have been proposed and estimated in this study: In the first research projection, FDI is a dependent variable. Both long and short run impacts of FDI on exchange rates are higher in the first model than the impacts of FDI on exchange rates in the second model; our result is based on our estimation and is in line with Heckscher-Ohlin framework because our findings illustrate a positive relationship between FDI and RER, and negative relationship among FDI and RER With IR in

the long run and short run. Therefore we concluded that an increase in FDI inflow will lead to the appreciation of Turkish currency.

In our second research projection real exchange rate is the dependent variable. Our result is based on our estimation and not in line with what as expected because there is a negative relationship between FDI and interest rate. Therefore we concluded that an increase in IR causes depreciation of currency and thus affect (decrease or increase) FDI inflow in the long run.

6.1 Implication

The outcome of this thesis determines the significances of exchange and interest rate for both international and domestic firms doing business within Turkish borders. Moreover, the result of this study can be important for International traders, international banks, and financial intermediaries. Turkish currency has experienced several fluctuation back its history and continuing to fluctuate for current financial years. FDI as major source of financing of capital account and is playing a significant role in stabilizing domestic currency and interest rate. In addition the econometric results of this study reflect the reality of long-run relationship between FDI and RER and IR which all lead economic growth. Therefore government should bear the responsibility of stabilizing economic and political conditioning of country, balance the growth and inflation in order to prevent further currency devaluation. Stabilizing Turkey's politics and currency value will encourage foreign investors, because investors are afraid to invest in unstable environment. Furthermore, this study has shown that exchange rates exert positive impact on FDI inflows to Turkey.

Remembering persistent current account deficits in Turkey, which have been a major threat for economic crises and instability in the country, depreciation of Turkish Lira against the other currencies contribute to the closure of these deficits. Results of this study have also shown that depreciation of Turkish Lira would positively relate to foreign direct investments. Therefore, although currency depreciation would bring higher inflation rates due to foreign dependency of Turkey for raw materials and energy, on the other side, it would be beneficial for not only current account deficits but also for attracting foreign direct investments. Depreciation of Turkish currency will cause domestic goods/services to be cheaper; therefore, results of this study have shown that this will have positive effects for doing investments in Turkey out of foreigners' point of view. Another important finding of this study is that interest rates relate to foreign direct investments negatively, this also sends important messages to policy makers. In order to attract more FDIs as well as domestic investments, central bank needs to keep interest rates for borrowing at reasonable rates. Furthermore, these findings signals that over many years, especially during 1960 and 2002, the Turkish economy experienced high interest rates, high financial risks and high country risk; as a result this factors led to high uncertainty for foreign investors. Therefore this uncertainty along with high interest rate was another reason for low level of FDI in Turkey. Data used in this study are based on estimations and this result does not apply to countries. Future research should add other factors like inflation, tax rates, trade openness and trade barriers. More research is needed in other developing countries.

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