DOKUZ EYLUL UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF BUSINESS ADMINISTRATION
FINANCE PROGRAM
MASTER'S THESIS

THE RELATIONSHIP BETWEEN FOREIGN PORTFOLIO INVESTMENT TO ISTANBUL STOCK EXCHANGE AND MAIN MACROECONOMIC VARIABLES

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IZMIR-2013

DECLARATION

I hereby declare that this master's thesis titled as "The Relationship between Foreign Portfolio Investment to Istanbul Stock Exchange and Main Macroeconomic Variables" has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resourses in the reference list. I verify all these with my honour.

04 / 04 / 2013

Atakan DURU

ABSTRACT

Master's Thesis

The Relationship between Foreign Portfolio Investment to Istanbul Stock Exchange and Main Macroeconomic Variables

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This thesis analyzes the the relationship between foreign portfolio investment to Istanbul Stock Exchange and main macroeconomic variables in the period from 2006:12 to 2011:12. The factors that are examined are Budget Balance, Current Account Balance, Istanbul Stock Exchange National 100 Price Index, Nominal Exchange Rate Between TL and USD, Consumer Price Index, Average Monthly Interest Rate Between Banks and Industrial Production Index. Autocorrelation, ADF and PP Tests, Var Granger Causality Tests, Impulse Responses, Variance Decomposition are used for the purpose of examining the impacts of these variables on the level of portfolio investments to Turkey. Results of all tests are consistent with eachother and say that foreign portfolio investment affects ISE positively and affects exchange rates negatively. But FPI is not affected by all factors.

Keywords: Portfolio investment, ISE, Turkey, Capital flows, Financial flows

ÖZET

Yüksek Lisans Tezi

İstanbul Menkul Kıymetler Borsası'na Yapılan Yabancı Portföy Yatırımları ve Temel Makroekonomik Değişkenler Arasındaki İlişki

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İngilizce Finansman Programı

Bu tez 2006:12 – 2011:12 arasında İstanbul Menkul Kıymetler Borsası'na yapılan yabancı portföy yatırımları ve temel makroekonomik değişkenler arasındaki ilişkiyi incelemektedir. İncelenen faktörler Türkiye'deki bütçe dengesi ve cari denge, IMKB 100 endeksi, Türk Lirası ve Amerikan doları arasındaki kur, Tüketici Fiyat Endeksi, Bankalararası Aylık Ortalama Faiz Oranı ve Sanayi Üretim Endeksidir. Bu faktörlerin Türkiye'deki portföy yatırımlarına olan etkisini araştırmak için Autocorrelation, ADF and PP Testleri, Var Granger Nedensellik Testleri, Etki- Tepki Fonksiyonları, Varyans Ayrıştırması yöntemleri kullanılmıştır. Tüm testler birbirleri arasında tutarlıdır ve yabancı portföy yatırımlarının İMKB-100 endeksini pozitif, Türk Lirası ve Amerikan Doları arasındaki kur dengesini de negatif yönde etkilediğini göstermiştir. Fakat yabancı portföy yatırımları tüm faktörlerden etkilenmemektedir.

Anahtar Kelimeler: Portföy Yatırımı, IMKB, Türkiye, Sermaye akışı, Finansal akış

THE RELATIONSHIP BETWEEN FOREIGN PORTFOLIO INVESTMENT TO ISTANBUL STOCK EXCHANGE AND MAIN MACROECONOMIC VARIABLES

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LIST OF ABBREVIATIONS

FDI Foreign Direct Investments

DI Direct Investments

FPI Foreign Portfolio Investments

PI Portfolio Investment

FF Financial Flows

PFF Private Financial Flows

GDP Gross Domestic Product

CAB Current Account Balance

FA Financial Account

RA Reserve Assets

ISE Istanbul Stock Exchange

IMF International Monetary Fund

OECD Organization for Economic Co-operation and Development

UNCTAD United Nations Conference on Trade and Development

CBT Central Bank of The Republic of Turkey

LNFPI Natural Logarithm of Foreign Portfolio Investments to Turkey

d(LNFPI) First Difference of the LNFPI Series

BB Budget Balance

d(BB) First Difference of the BB Series

CAB Current Account Balance

d(CAB) First Difference of the CAB Series

LNISE Natural Logarithm of Istanbul Stock Exchange National 100 Price Index

d(LNISE) First Difference of the LNISE Series

LNEXC Natural Logarithm of Nominal Exchange Rate Between TL and USD

d(LNEXC) First Difference of the LNEXC Series

LNCPI Natural Logarithm of Consumer Price Index

d(LNCPI) First Difference of the LNCPI Series

LNINTRATE Natural Logarithm of Average Monthly Interest Rate Between Banks

d(LNINTRATE)	First Difference of the LNINTRATE Series
LNIPI	Natural Logarithm of International Production Index
d(LNIPI)	First Difference of the LNIPI Series

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INTRODUCTION

Capital flow, which has reached the important level at the present day, is very important for underdeveloped and developing countries to attain the development level by using them in their investments.

In recent years, globalization has become more popular in worldwide. Countries especially focus on financial globalization. Financial globalization becomes more important after using foreign financial securities.

Exporters of capital transfer their funds to countries which provide more profit to them. However, using these funds in their investments to develop their countries is the first aim of importers of capital (Adanur, 1997: 1).

Foreign capital is defined as financial, technological, know-how and service sources which are obtained from outside of the country (Erol, 2000: 72). Foreign capital has a key role for economic development. So, it is very important for underdeveloped and developing countries.

Erol (2000) and Pazarlıoglu and Gulay (2007) suggest that there are many benefits of foreign capital such as:

- Foreign capital contributes host countries‘ capital accumulation and production capacity.
- Foreign capital brings technology and knowledge of business administration.
- Foreign capital contributes to the improvement of the country's balance of payments.
- Foreign capital brings new sales and marketing techniques.
- Foreign capital affects positively to domestic competition.
- Foreign capital creates new business opportunities.
- Foreign capital contributes to source of taxation of local government.
- Foreign capital affects positively to international relationships.

Pazarlıoglu and Gulay (2007) suggest that foreign capital investments have various effects on the host country’s economics. These effects occur in production, in

employment, in income, in price, in balance of payments and in economic development.

Foreign capital investments divide into two main parts:

- Foreign direct investments (FDI) and
- Foreign portfolio investments (FPI).

There are many studies that examine the capital flows in literature. This thesis analyzes the relationship between foreign portfolio investment to Istanbul Stock Exchange and main macroeconomic variables. Also an application on Istanbul Stock Exchange (ISE) is conducted to find the relationship between FPI to ISE and main macroeconomic variables.

The study has fifth parts. In the first part of the study, definition of international financial flow and it's classification, history of these flows, history of financial flows in developing countries, reasons for foreign financial investments to countries are discussed.

In the second part of the study, definition of foreign portfolio investment, classification of portfolio investment, foreign portfolio investments to developing countries and Turkey and benefits of foreign portfolio investments are mentioned.

In the third part of the study, the relationship between foreign portfolio investment to Istanbul Stock Exchange and main macroeconomic variables is investigated step by step.

In the fourth part of the study, an application on ISE is conducted to determine the relationship between FPI to ISE and main macroeconomic variables.

In the last part of the study, conclusion and consideration about the application of study are given.

CHAPTER ONE

INTERNATIONAL FINANCIAL FLOWS

In this chapter, definiton of international financial flow and it's classification, history of these flows, history of financial flows in developing countries, reasons for foreign financial investments to countries are mentioned.

1.1. DEFINITION OF FOREIGN CAPITAL

In literature foreign capital is termed in various types.

Erol (2000: 72) defined foreign capital as *financial, technological, know-how and service sources which are obtained from outside of the country*.

In other definition, Uras (1979: 27) explained foreign capital that *financial and technological sources which can be added country's economic power from outside of the country in short term.*

It could be said that foreign capital is an external source which is obtained from other regions, other countries, other individuals, corporations, governments and investors. Foreign capital is not country's capital. It is given by way of loan against country's national assets.

Foreign capital comes into country in two main groups of investment. These are:

- Foreign direct investments (FDI) and
- Foreign Portfolio investments (FPI).

Before defining these terms, history of financial flows is mentioned. After that foreign direct investment and portfolio investment are discussed in detail.

1.2. HISTORY OF FINANCIAL FLOWS

Delice (2006: 9) divides financial flows into five main groups according to monetary systems. These are:

- Bimetallism Period
- Gold Standard Period
- Inter-war Period: Depression Period
- Bretton Woods Period
- Multiple System Period

1.2.1. Bimetallism Period

In economics, bimetallism is a monetary standard in which the value of the monetary unit is defined as equivalent both to a certain quantity of gold or to a certain quantity of silver; such a system establishes a fixed rate of exchange for the two metals.

In this period, international capital movements could be seen, but it was not in significant amount.

From the beginning of the Middle Ages to 18th century, silver coins were used in European Monetary System. After the increase in gold supply, Europe used 'Double Currency System' which was included gold and silver. (Delice, 2006: 10)

England and Holland played significant role in international capital movements because of their trade activities in bimetallism period.

1.2.2. Gold Standard Period

The gold standard is a monetary system in which the standard economic unit of account is a fixed weight of gold. Gold standard is firstly used in the second half of 19th century. This system is used seamlessly from the year 1880 to the year 1914. But the system was suffered from the First World War and was quitted in 1931.

*Section 1.2. is obtained from DELİCE, Güven. "Uluslararası Sermaye Hareketlerine Tarihsel Bir Bakış", **Banka ve Ekonomik Yorumlar**, Vol 39, No 9, November 2006.*

The free movement of capital was the most significant feature of this period. Because in gold standard, price of gold was fixed, so there were no currency risk (Eichengreen, 1991: 4). Other reason of increasing capital flows was discrepancy in domestic and abroad return.

In 1st World War Period gold standard suffered from war. In this period, in order to finance the costs of war, most belligerent countries went off the gold standard during the war, and suffered significant inflation. Because inflation levels varied between states, when they returned to the standard after the war at price determined by themselves, some countries' goods were undervalued and some overvalued (Lipsey, 1975).

At the beginning of the 20th century, gold standard ended (firstly was seen in United Kingdom). Because some countries started to disobey gold standard rules. Also some central banks intervened rate of exchange by launching currencies (Delice, 2006: 16).

1.2.3. Inter-war Period: Depression Period

Delice (2006) divided inter-war period into two main groups:

- 1919-1929 Period
- 1930-1946 Period

1.2.3.1. 1919-1929 Period

After the 1st World War, many countries in Europe needed funds to implement their development and stability program. In this period, direct investment and portfolio investment started to take root from the United States of America. First World War cutted down United Kingdom’s financial power and New York became the central of financial world (Delice, 2006: 19).

Uncertainty in public budget gave way to break down in financial system stability. The main reason in this situation was war.

1.2.3.2. 1930-1946 Period

In depression period, financial restrictions counteracted trade restrictions. Financial restrictions were seen as currency controls. Capital flows tended to less developed countries and these capital flows were seen as direct investments (Delice, 2006: 22).

1.2.4. Bretton Woods Period

After the Second World War, a system similar to a Gold Standard and sometimes described as a "gold exchange standard" was established by the Bretton Woods Agreements. Under this system, many countries fixed their exchange rates relative to the U.S. dollar. The U.S. promised to fix the price of gold at approximately $35 per ounce. Implicitly, then, all currencies pegged to the dollar also had a fixed value in terms of gold (Lipsey, 1975).

This system was based on fixed currency regime. In this new system, value of currencies fixed to the value of dollar.

In Bretton Woods Period, International Monetary Fund (IMF) and World Bank were established to provide funds to less-developed countries and countries which had financial difficulty. Also in 1961 Organization for Economic Co-operation and Development (OECD) was established to develop economic life and trade organizations and to support economic and expansion policies.

In the last years of 1960s goods restrictions and capital restrictions were cutted down. Liberal economic policies were implemented (Delice, 2006: 26).

After the big increase in oil prices, in 1973 currency market was closed for 2 weeks. So, Bretton Woods Period ended.

1.2.5. Multiple System Period

In multiple system period, currencies were free-floating. Every country implemented currency policies to protect value of their currencies.

In 1970s, fluctuations in exchange rates and interest rates caused big risk for banks and corporations. To remove these risks, financial derivatives were used. After

using financial derivatives, international capital flows were started to increase by important rates (Delice, 2006: 29).

Energy crisis and liability crisis were seen in this period. Big increase in oil prices in 1973 and 1979 was the main reason of energy crisis and large foreign debt was the main reason of liability crisis.

In 1980s, international capital movement was started to base on speculative behaviour of dealers. When we look at 1990s, we can see that international capital moved from industrialized countries, such as USA and Japan to developing regions such as Latin America, Middle East and some regions of Asia.

After the deregulation of financial system in 1990s, financial crises were seen extensively such as Mexico Crisis in 1994 and Asia Crisis in 1997. Current account deficits played significant role in both crisis.

In recent years, developing countries have current account deficits. So, they are more sensitive to speculative capital outflow. Destabilizing nature of capital flows cause to crisis in countries which are dependent financially to outside.

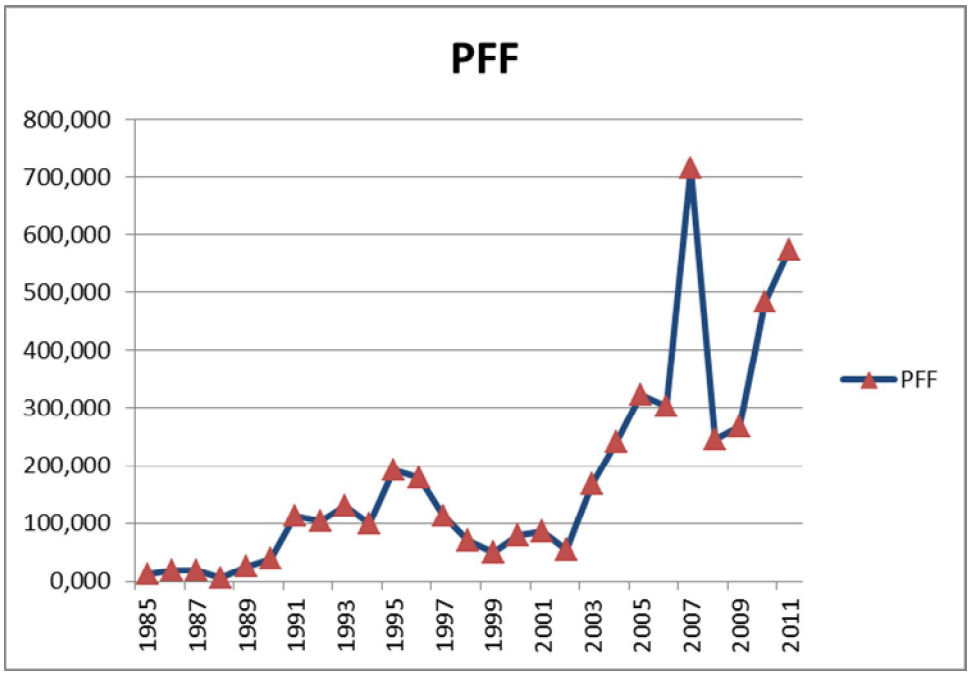
After discussing history of international capital movements, classification of foreign capital movements is mentioned.

1.3. HISTORY OF FINANCIAL FLOWS TO DEVELOPING COUNTRIES

In the last years, the level of the capital flows to developing countries has increased significantly. This can be explained by the declining level of interest rates globally. Another explanation might be the surplus generated by the growing economies of the advanced countries at that time which enabled them to increase their investments to developing countries (Günayer, 2009: 2).

In Figure 1 net private financial flows comprises net private direct investment, net private portfolio flows and net other private financial flows.

Figure 1: Net Private Financial Flows to Developing Countries (1985-2011)



Source: IMF World Economic Outlook Database, September 2011

As we can see from the Figure 1, private financial flow to developing countries was only $12 billion in 1985. After the beginning of 1990s, private financial flow started to increase seriously and reached the $100 billion level. After the short decreasing trend, private financial flows gained increasing trend in 2002. Private financial flow reached the highest level in 2007 which was approximately $715 billion. However it had huge decrease in 2008 and falled to $245 billion because of global financial crisis. Nowadays, negative impact of global financial crisis decreases and it effect private financial flows positively.

Private financial flows are influenced by economic situation of advance economies which generate financial flows and economic situation of developing countries which attract financial flows. Gross Domestic Product (GDP) Growth and Current Account Balance indicates are two of the main indicates of economic situation in countries.

Table 1: GDP of Developed Countries and PFF to Developing Countries

YEAR	GDP (%)	PFF (Billion $)
1985	3,872	11,926
1986	3,324	18,228
1987	3,589	19,398
1988	4,739	5,154
1989	4,006	26,657
1990	3,141	39,174
1991	1,466	112,100
1992	2,145	102,756
1993	1,475	129,363
1994	3,410	99,425
1995	2,841	192,287
1996	2,966	178,099
1997	3,476	112,371
1998	2,585	71,345
1999	3,669	50,038
2000	4,162	79,116
2001	1,436	85,868
2002	1,723	54,474
2003	1,931	167,878
2004	3,110	241,391
2005	2,662	323,455
2006	3,064	302,529
2007	2,755	715,111
2008	0,092	245,638
2009	-3,717	267,446
2010	3,072	482,256
2011	1,613	574,663

Source: IMF World Economic Outlook Database, September 2011

As we can see from the Table 1, GDP growth of developed countries and amount of private financial flows to developing countries have same trend in most years. GDP growth of advanced economies is in a big decreasing trend from 2007 to 2009. GDP growth reaches the negative level (-3,7%) in 2008 which is seen firstly in 1985-2011 period. In the same years private financial flow has huge decrease in 2008 and falls to $245 billion because of global financial crisis. We can say easily that financial flows to developing countries depend on global economic situation such as crisis.

Current Account Balance (CAB) is the other indicate of economic situation in countries.

Current account balance and private financial flows to developing countries are given in Table 2.

Table 2: CAB and PFF to Developing Countries (1985-2011)

YEAR	CAB (Billion $)	PFF (Billion $)
1985	-32,363	11,926
1986	-65,489	18,228
1987	-33,370	19,398
1988	-44,127	5,154
1989	-32,743	26,657
1990	-16,970	39,174
1991	-98,663	112,100
1992	-82,010	102,756
1993	-120,642	129,363
1994	-78,939	99,425
1995	-92,149	192,287
1996	-69,037	178,099
1997	-68,272	112,371
1998	-105,019	71,345
1999	-10,109	50,038
2000	95,245	79,116
2001	49,646	85,868
2002	80,003	54,474
2003	145,145	167,878
2004	214,476	241,391
2005	407,943	323,455
2006	639,299	302,529
2007	628,055	715,111
2008	679,767	245,638
2009	287,769	267,446
2010	422,308	482,256
2011	592,292	574,663

Source: IMF World Economic Outlook Database, September 2011

As we can see from the Table 2, current account balance is in negative level until 2000. However after the year 2002, private financial flows to developing countries gain increasing trend and reaches important level. In same years, current account balance changes its direction positive from negative level in developing countries. But from 2006 to 2009, private financial flows and current account balance are in opposite direction. In these years, private financial flows is in increasing trend when current account balance is in decreasing trend in developing countries.

History of private financial flows to developing countries in last six years by region are given in Table 3.

Table 3: Net PFF to Developing Countries, by Region (2006-2011)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**
Central and eastern Europe	117.480	182.578	153.147	26.561	79.472	99.635
Commonwealth of Independent States	51.652	129.190	-97.900	-62.678	-25.909	-18.935
Developing Asia	94.878	212.456	79.530	196.065	319.526	320.690
Latin America and the Caribbean	38.021	108.916	66.270	34.430	99.297	160.375
Middle East and North Africa	-9.603	63.510	31.105	62.053	10.528	-20.034
Sub-Saharan Africa	10.101	18.462	13.486	11.015	-1.659	32.931
Emerging and developing economies (TOTAL)	**302.529**	**715.111**	**245.638**	**267.446**	**482.256**	**574.663**

Source: IMF World Economic Outlook Database, September 2011

Share of private financial flows to developing countries in last six years by region are given in Table 4.

Table 4: Share of Net PFF to Developing Countries, by Region

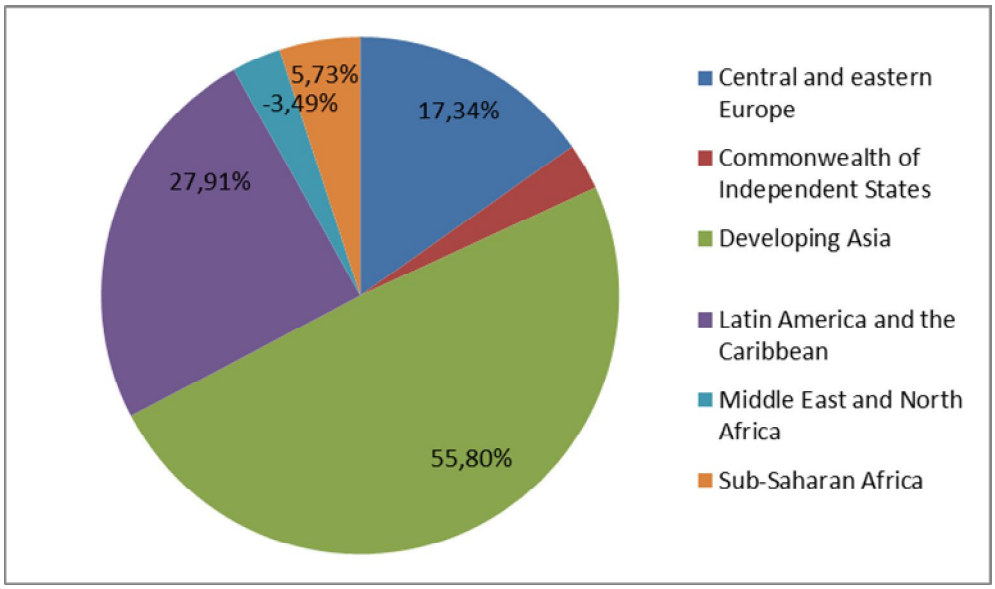
	2006	2007	2008	2009	2010	2011
Central and eastern Europe	38,833 %	25,531 %	62,347%	9,931%	16,479%	17,338%
Commonwealth of Independent States	17,073 %	18,066 %	-39,855%	-23,436%	-5,372%	-3,295%
Developing Asia	31,362 %	29,710 %	32,377%	73,310%	66,257%	55,805%
Latin America and the Caribbean	12,568 %	15,231 %	26,979%	12,874%	20,590%	27,908%
Middle East and North Africa	-3,174%	8,881%	12,663%	23,202%	2,183%	-3,486%
Sub-Saharan Africa	3,339%	2,582%	5,490%	4,119%	-0,344%	5,730%
Emerging and developing economies (TOTAL)	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: IMF World Economic Outlook Database, September 2011

As we can see from the Table 3 and Table 4, commonwealth of independent states has negative share in developing countries in last years. It means that private financial outflow is higher than private financial inflow in commonwealth of independent states. In the last 6 years, central and eastern Europe, developing Asia and Latin America and the Caribbean regions have big share in private financial flows to developing countries. But, we can easily say that developing Asian countries' share is increasing against Central and Eastern Europe countries.

Share of private financial flows to developing countries by their regions in 2011 is shown in Figure 2. It shows that developing Asian countries has the biggest share in 2011. The second is Latin America and the Caribbean countries and Central and Eastern Europe countries are the third. Because they are more developed and steady financial markets. This is the main reason of this distribution.

Figure 2: Share of PFF to Developing Countries, by Region in 2011



Source: IMF World Economic Outlook Database, September 2011

1.4. CLASSIFICATION OF FOREIGN FINANCIAL FLOWS

1.4.1. Classification of Financial Flows in IMF Statistics

Financial flows are divided in 3 main groups in World Economic Outlook Database (IMF). These are:

- Direct investments,
- Portfolio investments,
- Other financial flows

In this classification net private financial flows comprises net private direct investment, net private portfolio flows, and net other private financial flows.

Net other financial flows is the difference between net other investment and net other official investment.

Classification of financial flows for developing countries in IMF Statistics is given in Table 5.

As we can see from the Table 5, direct investments have the biggest share in private financial flows. Direct investments have positive values in all years. It shows that amount of foreign direct investment inflow is bigger than amount of foreign

direct investment outflow. Foreign portfolio investment and other financial flows have had negative or positive values in the last 25 years.

Table 5: Classification of FF for Developing Countries in IMF Statistics

YEAR	PFF	PI	DI	OTHER PFF
1985	11,926	3,655	9,947	-1,475
1986	18,228	3,941	9,433	4,854
1987	19,398	6,903	10,268	2,228
1988	5,154	1,146	16,934	-12,926
1989	26,657	14,285	17,852	-5,480
1990	39,174	-10,396	21,817	27,754
1991	112,100	33,259	29,917	48,924
1992	102,756	23,399	36,082	43,275
1993	129,363	64,889	55,236	9,237
1994	99,425	51,019	79,578	-31,172
1995	192,287	23,466	93,215	75,606
1996	178,099	57,703	119,008	1,388
1997	112,371	0,395	151,765	-39,788
1998	71,345	4,772	154,819	-88,246
1999	50,038	-20,409	166,399	-95,952
2000	79,116	-7,958	148,303	-61,229
2001	85,868	-46,461	169,094	-36,764
2002	54,474	-48,755	149,008	-45,780
2003	167,878	-1,837	147,567	22,148
2004	241,391	14,860	187,789	38,742
2005	323,455	32,054	292,508	-1,108
2006	302,529	-45,168	303,629	44,068
2007	715,111	81,091	441,429	192,591
2008	245,638	-66,068	467,023	-155,316
2009	267,446	98,831	310,599	-141,983
2010	482,256	197,539	324,768	-40,051
2011	574,663	127,055	429,256	18,352

Source: IMF World Economic Outlook Database, September 2011

1.4.2. Classification of Financial Flows in Turkey

In Turkey financial flows are followed in financial account in balance of payments statistics.

According to this classification financial flows are divided into four main groups. These are:

- Direct investments,
- Portfolio investments,
- Other investments,
- Reserve assets

In this classification financial account (FA) comprises direct investment (DI), portfolio investment (PI), other investment (OI) and reserve assets (RA).

Classification of financial flows in Turkey is given in Table 6.

As we can see from the Table 6, like other developing countries, direct investments and portfolio investments have the biggest share in financial account and it affects the financial account positively because of its positive values in most years.

Table 6: Classification of Financial Flows in Turkey (Million $)

YEAR	FA	DI	PI	OI	RES
1985	1850	99	0	1391	360
1986	1583	125	146	1475	-163
1987	1312	106	282	1060	-136
1988	-2111	354	1178	-2922	-721
1989	-1932	663	1386	-1509	-2472
1990	3093	700	547	2742	-896
1991	-1198	783	623	-3803	1199
1992	2164	779	2411	458	-1484
1993	8595	622	3917	4364	-308
1994	-4463	559	1158	-5634	-546
1995	-93	772	237	3903	-5005
1996	938	612	570	4301	-4545
1997	3625	554	1634	4753	-3316
1998	-1287	573	-6711	5067	-216
1999	-377	138	3429	1782	-5726
2000	12581	112	1022	11801	-354
2001	-1633	2855	-4515	-2667	2694
2002	1384	939	-593	7191	-6153
2003	3065	1222	2465	3425	-4047
2004	13360	2005	8023	4156	-824
2005	19485	8967	13437	14928	-17847
2006	32064	19261	7415	11502	-6114
2007	37272	19941	833	24530	-8032
2008	37465	16955	-5014	24467	1057
2009	9274	6858	227	2300	-111
2010	43961	7574	16093	33103	-12809
2011	64648	13420	22079	27336	1813

Source: CBT Electronic Data Delivery System.

1.5. FOREIGN DIRECT INVESTMENTS

Foreign direct investment, in its classic definition, is defined as a company from one country making a physical investment in another country (Graham and Spaulding, 2005:1).

Several ways of FDI inflows are:

- By purchasing firms which are in another country,
- By taking over a company,
- By consolidating with another company,
- By supplying capital to new-establishing firms,
- By increasing another company's capital (Seyidoğlu, 2007: 599).

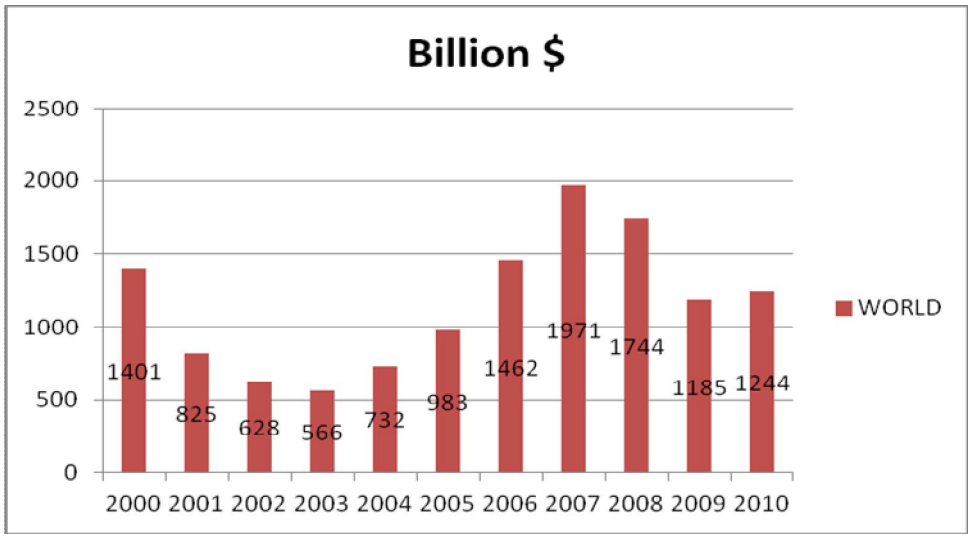
FDI inflows in the world and FDI inflows in Turkey is given in Table 7. We can see from FDI Inflows' tables and figures that FDI inflows gain an increasing trend in 2005 in the world, also in Turkey. But increasing trend ends after the year 2007 in both region, because of global financial crisis.

Table 7: FDI Inflows in World & Turkey (Billion $)

YEAR	WORLD	TURKEY	SHARE OF TURKEY (%)
2000	1401	1	0,07
2001	825	3,4	0,41
2002	628	1,1	0,18
2003	566	1,7	0,30
2004	732	2,8	0,38
2005	983	10	1,02
2006	1462	20,2	1,38
2007	1971	22	1,12
2008	1744	19,5	1,12
2009	1185	8,4	0,71
2010	1244	9,1	0,73

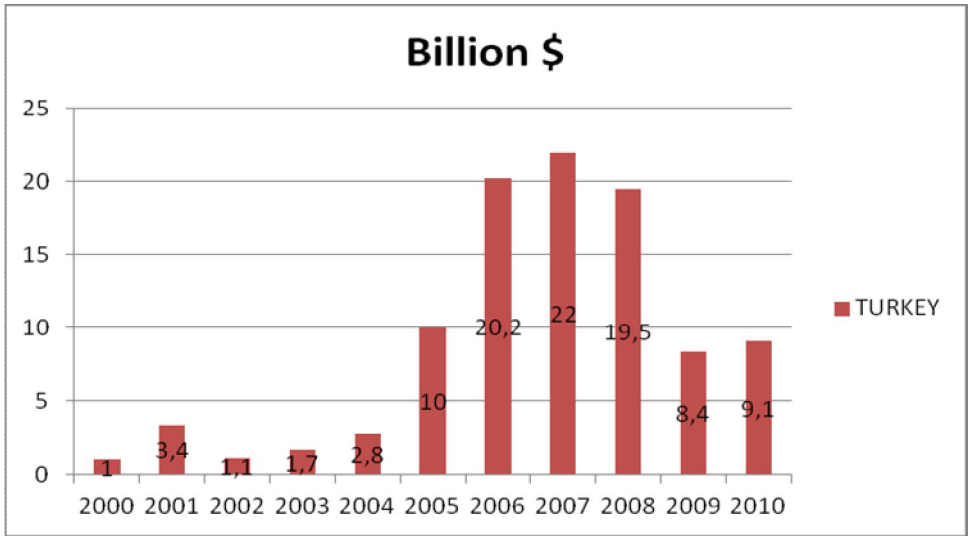
Source: YASED (International Investors Association of Turkey)

Figure 3: FDI Inflows in the World



Source: YASED (International Investors Association of Turkey)

Figure 4: FDI Inflows in Turkey



Source: YASED (International Investors Association of Turkey)

FDI Inflows Ranking, FDI Outflow Ranking and FDI Stock Ranking are given in following tables.

Table 8: FDI Inflows Ranking in 2010 (Billion $)

2010	2009	COUNTRIES	FDI INFLOW ($ Billion)
1	1	USA	228,3
2	2	CHINA	105,7
3	4	HONG KONG,CHINA	68,9
4	16	BELGIUM	61,7
5	14	BRAZIL	48,4
6	5	GERMANY	46,1
7	3	ENGLAND	45,9
8	6	RUSSIA	41,2
9	20	SINGAPORE	38,6
10	9	FRANCE	33,9
27	**30**	**TURKEY**	**9,1**

Source: YASED (International Investors Association of Turkey)

In 2010, USA attracted more foreign direct investment in all countries as well as in 2009. China reached the highest rank (2) in developing countries. It is the historical record of China.

Table 9: FDI Outflows Ranking in 2010 (Billion $)

2010	2009	COUNTRIES	FDI OUTLOW ($ Billion)
1	1	USA	328,9
2	3	GERMANY	104,9
3	2	FRANCE	84,1
4	5	HONG KONG,CHINA	76,1
5	6	CHINA	68
6	10	SWITZERLAND	58,3
7	4	JAPAN	56,3
8	8	RUSSIA	51,7
9	9	CANADA	38,6
10	209	BELGIUM	37,8
44	**45**	**TURKEY**	**1,8**

Source: YASED (International Investors Association of Turkey)

In 2010; USA, Germany and France are countries which make more foreign investment in the world. Turkey got behind in 2009 and 2010 which is ranked in 44.

Table 10: FDI Stock Ranking in 2010 (Billion $)

2010	2000	COUNTRIES	FDI STOCK ($ Billion)
1	1	USA	3451,4
2	2	HONG KONG,CHINA	1097,6
3	3	ENGLAND	1086,1
4	4	FRANCE	1008,4
5	5	GERMANY	674,2
6	*	BELGIUM	670
7	10	SPAIN	614,5
8	6	HOLLAND	589,8
9	9	CHINA	578,8
10	7	CANADA	561,1
23	**43**	**TURKEY**	**181,9**

Source: YASED (International Investors Association of Turkey)

In 2010, foreign direct investment stock reached to $34,5 trillion. USA, Hong Kong, France and England have the most foreign direct investment stock in the world.

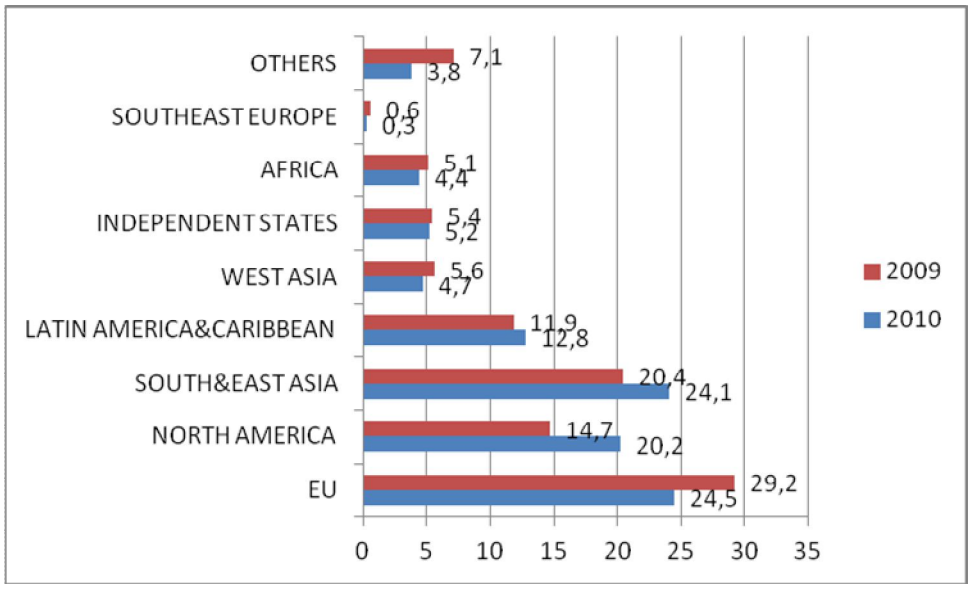
Share of FDI by region is given in Table 11 and shown in Figure 5.

Table 11: Share of Regions in FDI

REGION	2010	2009
EU	24,5	29,2
NORTH AMERICA	20,2	14,7
SOUTH&EAST ASIA	24,1	20,4
LATIN AMERICA&CARIBBEAN	12,8	11,9
WEST ASIA	4,7	5,6
INDEPENDENT STATES	5,2	5,4
AFRICA	4,4	5,1
SOUTHEAST EUROPE	0,3	0,6
OTHERS	3,8	7,1
TOTAL	**100**	**100**

Source: YASED (International Investors Association of Turkey)

Figure 5: Share of Regions in FDI



Source: YASED (International Investors Association of Turkey)

As we can see from the Table 11 and Figure 5 share of advance economies in FDI is decreasing, however share of developing countries in FDI is increasing.

1.6. FOREIGN PORTFOLIO INVESTMENTS

In the database of Central Bank of Turkey, foreign portfolio investments are defined as the purchase of stocks, bonds, and money market instruments by foreign investors. The main purpose of foreign portfolio investment is to realize a financial return, which does not result in foreign management, ownership, or legal control.

Some examples of portfolio investment are:

- purchase of shares in a foreign company.
- purchase of bonds issued by a foreign government.
- acquisition of assets in a foreign country.
- purchase of stocks in a foreign company.

Foreign portfolio investment, which is the main subject of this thesis, is investigated in detail in following chapters.

1.6.1. Comparison of Foreign Direct Investment and Foreign PortfolIo Investment

1.6.1.1. Similarities of Foreign Direct Investment and Foreign Portfolio Investment

1. They are middle or long-term international financial flow (Seyidoğlu, 1994: 577).
2. Both serve to boost investment and economic activity in the domestic economy (Evans, 2002:2).
3. Both foreign direct and portfolio investment bring a range of benefits for economic growth (Evans, 2002:2).

1.6.1.2. Differences of Foreign Direct Investment and Foreign Portfolio Investment

1. Foreign direct investments provide know-how and production technologies. But portfolio investment provides only capital.
2. Foreign direct investments provide management and control of company, but portfolio investment does not.
3. There are policy differences between two investments.

1.7. OTHER INVESTMENT

Other investment is a residual category that includes all financial transactions not covered in direct investment, portfolio investment or reserve assets.

According to its' sectors, other investments are divided into two main groups. These are monetary authorities and general government.

Also, it is classified as investments' maturity. These are short term and long term investments. Short term is defined as original maturity of one year or less and long term is defined as maturity of more than one year.

In the last classification of other investment, it is divided into three main groups according to instrument. These are trade credits, loans and deposits. The definitions in this category are as follows:

1.7.1.Trade Credits

Trade credits consist of claims and liabilities arising from the direct extension of credit by suppliers and buyers for transactions in goods and services and advance payments for work in progress that is associated with such transactions. Accordingly, the following types of payments in the foreign trade statistics are classified as trade credit:cash against goods, deferred payment letter of credit, acceptance creditand advance payments by buyers.

1.7.2.Loans

Loans consist of funds directly lent by a non-resident creditor to a resident debtor, principal and interest repayments of which are predetermined on contractual terms.

1.7.3.Deposits

Deposits consist of foreign exchange and TRY stock of funds within the Banks.

1.8. RESERVES

Reserve assets consist of those external assets that are readily available to and controlled by monetary authorities for meeting balance of payments financing needs, for intervention in exchange markets to affect the currency exchange rate and for other related purposes such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing.

1.8.1. Classification of Reserves

Reserves are divided into three main groups according to instrument. These are monetary gold, special drawing rights, reserve position in the fund and foreign exchange. The definitions in this category are as follows:

i)Monetary Gold: Monetary gold is gold to which the monetary authorities have title and is held as reserve assets.

ii) Special Drawing Rights: International reserve asset created by the IMF to supplement other reserve assets that is allocated to Turkey in proportion to its respective quota.

iii) Reserve Position in the Fund: Turkey's reserve position is the sum of the reserve tranche purchases that Turkey may draw upon and any indebtedness of the Fund (under a loan agreement) that is readily repayable to Turkey.

iv) Foreign Exchange: The CBRT's claims on nonresidents that can readily be available for repayments in the forms of foreign currency, deposits and securities.

1.9. REASONS FOR FOREIGN FINANCIAL INVESTMENTS

Akdis (1979) confines these reasons in four main groups. These are:

- Economic Reasons,
- Political Reasons,
- Psychological Reasons and
- Ethic and Moral Reasons

1.9.1. Economic Reasons

Economic reasons are the main reason of attracting foreign investments. These reasons can be classified as market size, economic growth, wage, tax rates, inflation rate, devaluation rate, development rate, balance of payments, foreign debt burden and evaluation of international finance environment (Akdis, 1979).

1.9.2. Political Reasons

Political stability and positive environment (to not being in war or no subversion of country…) are the main political reasons for financial investments.

1.9.3. Psychological Reasons

The idea of public opinion on foreign investment and the negative idea about countries' historical economic performance (Akdis, 1979).

1.9.4. Ethic and Moral Reasons

Social structure and traditional characteristics affect positively or negatively to financial flows from a country to another country.

CHAPTER TWO

FOREIGN PORTFOLIO INVESTMENTS

In this chapter, definition of foreign portfolio investment, classification of portfolio investment, foreign portfolio investments to developing countries and Turkey and benefits of foreign portfolio investments are mentioned.

2.1. DEFINITION OF FOREIGN PORTFOLIO INVESTMENTS

Foreign portfolio investments are defined as the purchase of stocks, bonds, and money market instruments by foreign investors. The main purpose of foreign portfolio investment is to realize a financial return, which does not result in foreign management, ownership, or legal control.

Some examples of portfolio investment are:

- purchase of shares in a foreign company.
- purchase of bonds issued by a foreign government.
- acquisition of assets in a foreign country.
- purchase of stocks in a foreign company.

Portfolio investment includes equity and debt securities. Unlike FDI, with the acquisition of less than 10 per cent of the shares, the non-resident investor does not have an effective voice in the management.(http://www.tcmb.gov.tr ;11.01.2012).

Biglaiser, Hicks and Huggins (1997: 1095) are defined portfolio investors as purchasers of bonds and corporate stock in open markets without acquisition of a controlling interest by the investor whose goal is to earn high returns usually in a short period of time.

Portfolio investments are defined as taking risks in international capital markets such as political risk, country risk, foreign exchange and currency risk and economic risk to obtain capital gains, interest and dividend income by taking financial instruments such as stocks, bonds and other capital market investment tools (ISE, 1994:8).

2.2. CLASSIFICATION OF FOREIGN PORTFOLIO INVESTMENTS

Portfolio investments are classified in two ways:

1- *According to financial instruments;*

A- Stocks

B- Debt securities

2- *According to sectors;*

A- Governments

B- Banks

C- Other sectors

2.3. FOREIGN PORTFOLIO INVESTMENTS TO DEVELOPING COUNTRIES

In all chapters developing countries are emphasized in evaluations. So, in this section portfolio investments to developing countries is given.

In developing countries, especially after the first half of 1980, financial liberalization programs were based on the effect of financial development on economic growth. Thus, interest rates incerased with the financial liberalization. So, savings run from non-productive assets to banking sector. Rapid economic growth could have been provided by using these funds in productive investments.

Short-term capital beared to developing countries with the effect of financial liberalization programs in last years. Loose monetary policy and the decline in international interest rates in advance countries are the main reasons. (Eser, 1995: 13).

Low interest rates in developed countries is push factor and financial liberalization programs in developing countries is pull factor for increasing international portfolio investments (Basoglu, 2000: 92).

By the 1990s, after the removal of restrictive regulations in domestic financial markets and removal of restrictions on international financial processing, more financial crises started to happen around the world. Increased opportunities for profitable arbitrage and speculation consisted of a large quantity and sudden movements in portfolio investments. These sudden movements are threatening the

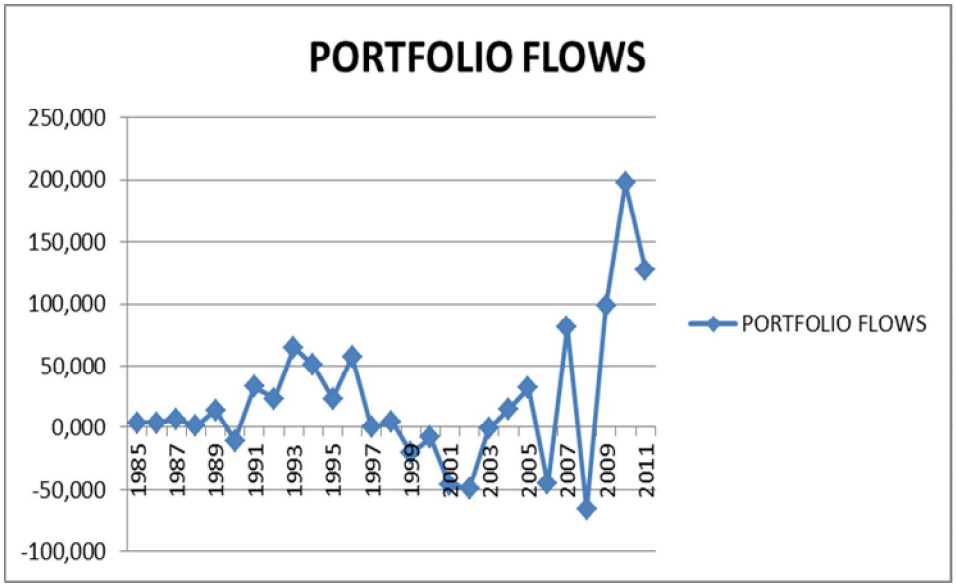
stability of monetary and exchange rate policies and decrease the resistance against financial crisis in many countries (Delice, 2002: 43).

High real interest rates and low exchange rate policies are applied in Turkey. In last years, speculative short-term portfolio investments increased more rather than foreign direct investments due to these policies. Investments in the economy can be moved out because of small instability in the economy. This situation cause financial crisis in Turkey like other developing countries (Oztekin, Eratas, 2009: 9).

Net potfolio flows to developing countries in 1985-2011 period are given in Figure 6.

As we can see from the Figure 6, coefficients of net portfolio flows are positive in most years. It means that the amount of portfolio inflow is bigger than the amount of portfolio outflow in these years. In last years, fluctuation of portfolio flows are higher than history's average because of instability of financial markets due to global financial crisis.

Figure 6: Net Portfolio Flows to Developing Countries



Source: IMF World Economic Outlook Database, September 2011

Net portfolio flows to developing countries are classified by their regions in Table 12. We can understand from the Table 12 that Developing Asian countries are the main importer of portfolio flows in last years. Central and Eastern Europe and

Latin America regions are the other importers of portfolio flows. But in most years, portfolio outflow is higher than portfolio inflow in Commonwealth of Independent States and Middle East and North Africa countries.

Table 12: Net Portfolio Flows to Developing Countries, by Region (Billion $)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**
Central and eastern Europe	0,783	-4,130	-10,100	9,212	27,024	42,063
Commonwealth of Independent States	4,861	19,471	-31,483	-9,541	10,380	7,596
Developing Asia	-44,462	68,707	20,861	58,160	92,698	76,960
Latin America and the Caribbean	16,561	40,240	-11,955	35,479	70,818	34,243
Middle East and North Africa	-29,861	-43,678	-3,859	9,961	3,235	-29,636
Sub-Saharan Africa	6,950	0,480	-29,532	-4,441	-6,616	-4,171
Emerging and developing economies (TOTAL)	-45,168	81,091	-66,068	98,831	197,539	127,055

Source: IMF World Economic Outlook Database, September 2011

2.4. FOREIGN PORTFOLIO INVESTMENTS TO TURKEY

In this chapter, history of portfolio investments to Turkey, literature review on portfolio flows to Turkey and effects of foreign portfolio investments to Turkish economy are mentioned.

2.4.1. History of Foreign Portfolio Investments to Turkey

Liberalisation process firstly initiated in Turkey with the decisions of 24 January 1980. By 1988, the process of structural adjustment which is made after 1980, lost it's momentum in Turkey and the economy also entered into an obstruction. After that, the priority of expansion is changed from real production sector to finance and foreign exchange services. (Yeldan, 2001: 39).

According to Sonmez (2003), there were three processes of Turkey's financial liberalisation,

1- Regulation and development of financial markets

- Removal of the Capital Market Law (July 1981)
- The establishment of Capital Markets Board of Turkey (February 1982)

- Structure of financial intermediaries and diversification of financial instruments

2- Liberalisation in deposit rates (October 1988)

3- Libaralisation in capital flows and exchange services

- Joint determination of exchange rates by the Central Bank and other banks by establishing the Foreign Exchange Market which is the part of Central Bank of Turkey and applicating seance of exchange rate determination.

In Turkey, after the liberalisation in financial markets, economic fluctations started to increase. Turkey faced four big crisis in 1994, 1999, 2000 and 2001. These were based on domestic and foregn factors. After the first half of 1990s, Turkey lost the power of the autonomous monitoring of economic policies.

Liberalisation program and other economic factors affect portfolio investments in Turkey. Table 13 is given to see the history of portfolio investments to Turkey in the last 25 years.

Table 13: History of Portfolio Investments to Turkey (Million $)

YEAR	NET PI	ASSETS	LIABILITIES	EQUITY SEC.	DEBT SEC.
1986	146	0	146	0	146
1987	282	-25	307	0	307
1988	1178	-6	1184	0	1184
1989	1386	-59	1445	17	1428
1990	547	-134	681	89	592
1991	623	-91	714	147	567
1992	2411	-754	3165	350	2815
1993	3917	-563	4480	570	3910
1994	1158	35	1123	989	134
1995	237	-466	703	195	508
1996	570	-1380	1950	191	1759
1997	1634	-710	2344	8	2336
1998	-6711	-1622	-5089	-518	-4571
1999	3429	-759	4188	428	3760
2000	1022	-593	1615	489	1126
2001	-4515	-788	-3727	-79	-3648
2002	-593	-2096	1503	-16	1519
2003	2465	-1386	3851	905	2946

2004	8023	-1388	9411	1427	7984
2005	13437	-1233	14670	5669	9001
2006	7415	-3987	11402	1939	9463
2007	833	-1947	2780	5138	-2358
2008	-5014	-1244	-3770	716	-4486
2009	227	-2711	2938	2827	111
2010	16093	-3524	19617	3468	16149
2011	22079	2552	19527	-986	20513

Source: CBT Electronic Data Delivery System.

In Table 13 net portfolio investments divide two main parts. These are assets and liabilities. The sum of the value of assets and the value of liabilities equal to the value of net portfolio investments. Also liabilities divide two main parts. These are equity and debt securities. The sum of the value of equity securities and debt securities equal to liaiblities.

As we can see from the Table 13, portfolio investment was started with selling debt securities to foreigners whose value was $146 million. Foreign investor started to buy equity securities in 1989 whose value was $17 million. In 1990, net portfolio investments were only $0,5 billion. But this value was increased to $4 billion in 3 years. Because of crisis in 1994, net portfolio investments decreased to $1 billion level. Decrease in the value of debt securities was the major factor of this situation. The biggest portfolio outflow (-$6,7 billion) was seen in 1998 because of crisis in Russia and Asia. However, the biggest portfolio inflow was seen in 2011, which was about $22 billlion and the second was $16 billion which was seen in 2010. Good ecenomic conditions in last two years was the major factor of this situation. In conclusion, we can say that net portfolio investments are based on economic conditions in Turkey and also in the world. .

Net portfolio investments are fluctuating like equity and debt securities. When we compare the investment on debt securities to investment on equity securities, we can easily say that fluctuation on debt securities is higher than fluctuation on equities. Because foreigners prefer debt securities to equities and debt securities are more liquid.

Capital inflows to Turkey effect to the public and private consumption expenditure which are the components of GDP. Capital inflows also effect to exports

and imports. With these effects, their positive impact on growth is generally seen in Turkey (Akyüz and Boratav, 2002: 37).

Foreign capital investments have various effects on the Turkey's economy. These effects occur in production, in employment, in income, in price, in balance of payments and in economic development. (Pazarlıoglu and Gulay, 2007:1).

Foreign portfolio investments into developing countries cause the increases in country's foreign exchange reserves and country's credit rating increases. So it provides cheap and easy loan (Korkmaz, 2001: 74).

2.5. BENEFITS OF FOREIGN PORTFOLIO INVESTMENTS

Evans (2002) classified benefits of foreign portfolio investments as follows:

1- Foreign portfolio investment increases the liquidity of domestic capital markets, and can help develop market efficiency as well. As markets become more liquid, as they become deeper and broader, a wider range of investments can be financed. New enterprises, for example, have a greater chance of receiving start-up financing. Savers have more opportunity to invest with the assurance that they will be able to manage their portfolio, or sell their financial securities quickly if they need access to their savings. In this way, liquid markets can also make longer-term investment more attractive.

2- Foreign portfolio investment can also bring discipline and know-how into the domestic capital markets. In a deeper, broader market, investors will have greater incentives to expend resources in researching new or emerging investment opportunities. As enterprises compete for financing, they will face demands for better information, both in terms of quantity and quality. This press for fuller disclosure will promote transparency, which can have positive spill-over into other economic sectors. Foreign portfolio investors, without the advantage of an insider's knowledge of the investment opportunities, are especially likely to demand a higher level of information disclosure and accounting standards, and bring with them experience utilizing these standards and a knowledge of how they function.

3- Foreign portfolio investment can also help to promote development of equity markets and the shareholders' voice in corporate governance. As companies compete for finance the market will reward better performance, better prospects for future performance, and better corporate governance. As the market's liquidity and functionality improves, equity prices will increasingly reflect the underlying values of the firms, enhancing the more efficient allocation of capital flows. Wellfunctioning equity markets will also facilitate takeovers, a point where portfolio and direct investment overlap. Takeovers can turn a poorly functioning firm into an efficient and more profitable firm, strengthening the firm, the financial return to its investors, and the domestic economy.

4- Foreign portfolio investors may also help the domestic capital markets by introducing more sophisticated instruments and technology for managing portfolios. For instance, they may bring with them a facility in using futures, options, swaps and other hedging instruments to manage portfolio risk. Increased demand for these instruments would be conducive to developing this function in domestic markets, improving risk management opportunities for both foreign and domestic investors.

5- In the various ways outlined above, foreign portfolio investment can help to strengthen domestic capital markets and improve their functioning. This will lead to a better allocation of capital and resources in the domestic economy, and thus a healthier economy. Open capital markets also contribute to worldwide economic development by improving the worldwide allocation of savings and resources. Open markets give foreign investors the opportunity to diversify their portfolios, improving risk management and possibly fostering a higher level of savings and investment.

CHAPTER THREE

THE RELATIONSHIP BETWEEN FOREIGN PORTFOLIO INVESTMENT TO ISTANBUL STOCK EXCHANGE AND MAIN MACROECONOMIC VARIABLES

In this chapter the relationship between foreign portfolio investment to Istanbul Stock Exchange and main macroeconomic variables is investigated step by step.

There are more macroecomic variables which effect to FPI to Istanbul Stock Exchange. Based on the other studies in literature, factors are determined as follows:

- Market Size
- Interest Rates
- Exchange Rates
- Inflation Rates
- Economic Growth
- Government Finance (Balance of Payments)
- Tax Rates on Interest or Dividends
- Country Risk
- Credit Rating of Securities
- Openness
- Transaction Cost
- Rate of Return on Stock Market
- Disclosure of Information

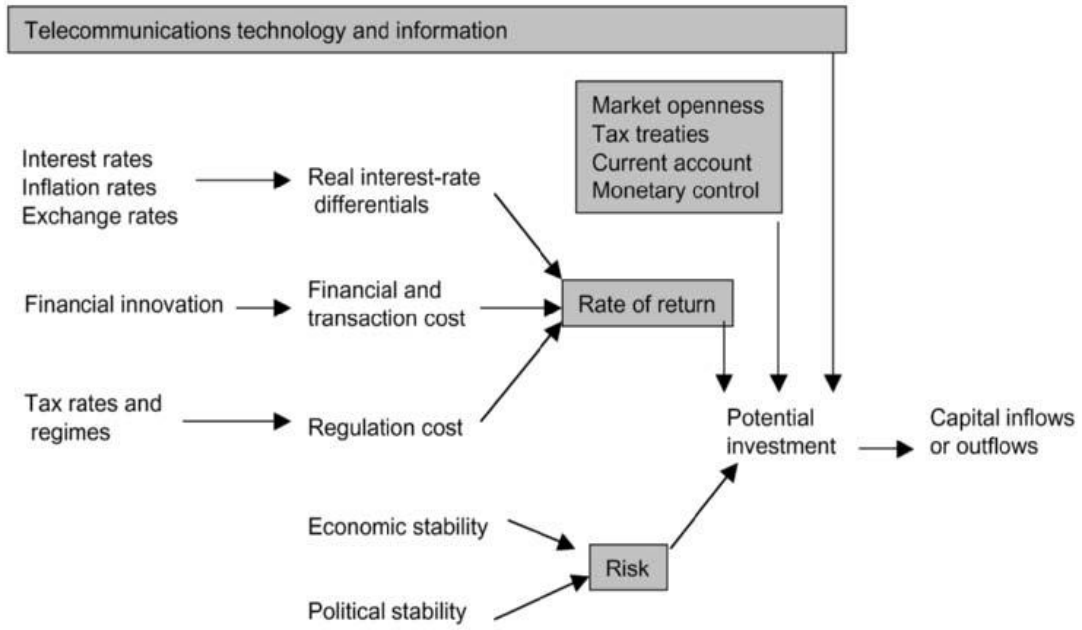
Factors which effect to foreign portfolio investments and where they are obtained from are given in Table 14.

Table 14: Factors & Sources

FACTORS	**SOURCES**
Market Size	Amaya and Rowland, 2004 Shamsuddin, 1994 Erdal and Tataloglu, 2002
Interest Rates	Pazarlıoglu and Gulay, 2007 Eratas and Oztekin, 2009 Brink and Viviers, 2003
Exchange Rates	Brink and Viviers, 2003
Inflation Rates	http://www.svmmba.com/downloads/28.pdf
Economic Growth	Duasa and Kassim, 2009
Government Finance	Amaya and Rowland, 2004
Tax Rates on Interest or Dividends	Chen and Tang, 1986 Kim, 1999
Country Risk	Jepma et al, 1998
Openness	Erdal and Tataloglu, 2002 Amaya and Rowland, 2004 Morisset, 2000
Transaction Cost	Osei, 1998
Rate of Return on Stock Market	Yalçıner, 2001
Disclosure of Information	Brink and Viviers, 2003

Determinants of international capital flows and their relationships are shown in Figure 7.

Figure 7: Determinants of International Capital Flows



Source: Adapted from Kim (1999: 60).

3.1. MARKET SIZE

Market size variables are expected to affect capital flows in a positive way, since larger countries should receive more flows than smaller countries (Amaya and Rowland, 2004: 24).

In Shamsuddin's paper which is about "Economic Determinants of Foreign Direct Investment in Less Developed Countries", affects of market size on foreign direct investments are explained as '*Market size hypothesis postulates that FDI is a positive function of the market size of the host country. The market size is usually measured by the GDP of the host country. Most empirical studies support the market size hypothesis. Reuber et al. (1973) observed that flows of per capita FDI into the LDCs were positively correlated with their GDP. Edwards (1991) investigated the distribution of the OECD foreign direct investment across 58 LDCs for the period 1971-1981. They found that the higher the real GDP of a country, the larger was its share in the total OECD foreign direct investment in the LDCs. It is worth noting that the size of the market in the host country is likely to influence the FDI undertaken to produce importables rather than exportables*' (Shamsuddin, 1994: 44).

The host country market size is measured by gross domestic product (GDP) (Erdal and Tataloglu, 2002: 4).

3.2. INTEREST RATES

Portfolio flows to developing countries are extremely sensitive to interest differentials.

Money tends to flow to countries with high interest rates because of the differences between the current interest rates in international markets. In Turkey's economy real interest rates are kept in high level. So, Turkey attract more foreign capital flows.

The studies show that volatility in interest rates between major industrial and developing countries cause to increase in international capital flows.

Pazarlıoglu and Gulay (2007)'s study show that there is a significant significant relationship between real interest rates and net foreign portfolio investments in Turkey.

Also, Eratas and Oztekin (2009)'s results support Gulay and Pazalıoglu's findings. They reach the same solution for Turkey.

Interest rate differentials influence the expected rates of return on the investments of international investors. The interest rate structures in an economy should also be such that they compensate investors for the risks taken in investing in an economy. The most obvious indicator of interest rate structure is the real interest rate in an economy. Real interest rates are an indication of the real return that depositors would receive on savings, as well as the real cost of borrowed funding (Brink and Viviers, 2003: 224).

3.3. EXCHANGE RATES

Sudden and unexpected changes in exchange rates affect international investors' returns in their own currencies. If the risk of such changes in the exchange rate is high, foreign investors would expect a similarly high rate of return to reward them for the additional risk emanating from changes in the exchange rate. This, in

turn, reduces the number of investment opportunities offering high enough rates of return. For this reason, sharply fluctuating exchange rates, or sudden revaluations or devaluations in fixed exchange rates, pose an obstacle to foreign investment. Such exchange rate volatility will attract speculative capital flows rather than productive and sustained foreign investment (Brink and Viviers, 2003: 225).

Exchange rate risk is a risk that a business' operations or an investment's value will be affected by changes in exchange rates. For example, if money must be converted into a different currency to make a certain investment, changes in the value of the currency relative to the American dollar will affect the total loss or gain on the investment when the money is converted back. Exchange rate risk usually affects businesses, but it can also affect individual investors who make international investments.

Exchange rate risk is increased if the exchange rate changes in sudden, sharp bouts. It is the unpredictability as much as the extent of exchange rate changes that deters non-speculative foreign investors. (Brink and Viviers, 2003: 226).

Foreign investors may be attracted if the local currency is expected to strengthen.

3.4. INFLATION RATES

Inflation represents one of the major threats to stock investors. When the inflation rates start to rise, investors get really nervous in expectation of the potentially negative consequences.

However, the rising prices and the higher interest rates don't lead to positive effects on the investment portfolios of investors. Since the revenues and earnings of companies tend to rise at the same pace as inflation, then stocks provide protection to inflation to a significant degree.

Inflation has another negative impact, namely the prices rise but no additional value is added. This means that investor’s money lose purchasing power and as a result investors buy less with the money they have than before.

Section 3.4 is obtained from http://www.svmmba.com/downloads/28.pdf (21.02.2012)

Since revenues and earnings of companies rise at the same pace as inflation, their financials are overstated, since no additional value is created.

However, when the inflation starts to fall to its normal levels, the overstated earnings and revenues will decline as well. These ups and downs lead to blurring the actual state of value.

Most susceptible to rising inflation rates are retirees that have fixed income. This is so since inflation decreases the purchasing power of money and retirees will be able to purchase less with their money than before. So, many financial advisors recommend the inclusion of stocks as part of their investment portfolios since they protect against inflation.

3.4.1. Effects of Inflation

3.4.1.1. Effects on Production: When prices start rising, production is encouraged. Producers earn wind fall profits in the future. They invest more in anticipation of higher profits in the future. This rends to increase employment, production and income. But this is only possible up to the full employment level. Further increase in investment beyond this level will lead to severe inflationary pressures within the economy because prices rise more than production as the resources are fully employed. So inflation adversely affects production after the level of full employment. The adverse effects of inflation on production are discussed below.

i) Misallocation of resources: Inflation causes misallocation of resources when producers divert resources from the production of essential to non-essential goods from which they expect higher profits.

ii) Changes in the system of transactions: Inflation leads to changes in transactions pattern of producers. They hold a smaller stock of real money holdings against unexpected contingencies than before. They devote more time and attention to converting money into inventories or other financial or real assets.

iii) Reduction in production: Inflation adversely affects the volume of production because the expectation of rising prices along with rising costs of inputs brings uncertainty. This reduces production.

iv) Fall in quality: Continuous rise in prices creates a seller's market . In such a situation, producers produce and sell sub-standard commodities in order to earn higher profits. They also indulge in adulteration of commodities.

v) Reduction in saving: When prices raise rapidly, the propensity to save declines because more money is needed to buy goods and services than before, Reduced saving adversely affects investment and capital formation. As a result, production is hindered.

vi) Hinders foreign capital: Inflation hinders the inflow of foreign capital because the rising costs of materials and other inputs make foreign investment less profitable.

vii) Encourages speculation: Rapidly rising prices create uncertainty among producers who indulge in speculative activities in order to make quick profits. Instead of engaging themselves in productive activities they speculate in various types of raw materials required in production .

3.4.1.2. Distributional Effects: Inflation redistributes income, because prices of all factors do not rise in the same proportion. Since the effect of inflation on the incomes of different classes of earners varies, there are serious social consequences. During inflation, the distributive share accruing to the profiteers increases more then that of wage earners or fixed income earners, such as their renters' class . All producers, traders and speculators gain during inflation because of the emergence of windfall profits which arise, because prices rise at a faster and greater rate than the cost of production; wages, interest and rent do not increase rapidly, and are more or less fixed.

i) Debtors and creditors: Debtors generally gain and creditors lost during inflation. Gain accrues to a debtor because he repays loans at a time when the purchasing power of money is lower than when it was borrowed. The creditor, on the other hand, is a loser during inflation, since he received, in effect, less in goods and services than he would have received in times of low prices. Thus, borrowers who borrowed funds prior to inflation stand to gain by inflation, and creditors who lent funds lose.

ii) Business community: Inflation is welcomed by entrepreneurs and businessmen because they stand to profit by rising prices. They find that the value of

their inventories and stock of goods is rising in money terms. They also find that prices are rising faster than the costs of production, so that their profit margin is greatly enhanced. The business community, therefore, gets supernormal profit during periods of inflation, and those profits continue to increase as long as prices rise.

iii) Fixed income groups: Inflation hits wage earners and salaries people very hard. Although wage earners, by the grace of trade unions, can chase galloping prices, they seldom win the race. Since wages do not rise at the same rate, and at the same time, as the general price level, the cost of living index rises, and the real income of the wage earner decreases. Moreover, in trying to push up wages to sustain their real income wage earners bring about cost-push inflation, and in the process worsen their position.

Those who depend exclusively on fixed salaries for a living are severally affected by inflation. Among these people are teachers, clerks, government servants, pensioners and persons living on past savings.

iv) Investors: Those who invest in debentures and fixed interest bearing securities, bonds, etc. lose during inflation. However, investors in equities benefit because more dividend is yielded on account of high profits made by joint –stock companies during inflation.

v) Farmers : Farmers are benefited during inflation because of two factors.

a) the prices of farm products increase and

b) Increase in the cost of production lags behind the rise in the prices

Farmers who produce food grains and other highly inflation sensitive products are benefited the most. Farmers in debts repayments repay their old debts along with the rate of interest as they get profits due to rising prices. They are further benefited as debtors as they pay back lower purchasing power to the creditors, inflation, thus provides double advantages to the farmers.

3.4.1.3. Other Effects: Inflation leads to a number of other effects which are discussed as under :

i) Government: Inflation affects the government in various ways. It helps the government in financing its activities through inflationary finance. As the money income of the people increases, the government collects that in the form of taxes on

incomes and commodities. So the revenues of the government increase during rising prices. Moreover, the real burden of the public debt decreases when prices are rising.

ii) Balance of payments: Inflation involves the sacrificing of the advantages of international specialization and division of labor. It adversely affects the balance of payments of a country. When prices rise more rapidly in the home country than in foreign countries, domestic products become costlier compared to foreign products. This tends to increase imports and reduce exports, thereby making the balance of payments unfavorable for the country.

iii) Exchange rate: When prices rise more rapidly in he home country than in foreign countries, it lowers the exchange rate in relation to foreign currencies.

iv) Collapse of the monetary system: It hyperinflation persists and the value of money continues to fall many times in a day, it ultimately leads to the collapse of the monetary system, as happened in Germany after world war I.

v) Social: Inflation is socially harmful. By widening the gulf between the rich and the poor, rising prices create discontentment among the masses. Pressed by the rising cost of living, workers, resort to strikes which lead to loss in production. Lured by Profit, people resort to hoarding, black-marketing, adulteration, manufacture of substandard commodities, speculation, etc. Corruption spreads in every walk of life. All this reduces the efficiency of the economy.

vi) Political: Rising prices also encourage agitations and protests by political parties opposed to the government. And if they gather momentum and become unhandy they may bring the downfall of the government. Many government have been sacrificed at alter of inflation.

3.5. ECONOMIC GROWTH

Economic growth causes changes in the foreign portfolio investment. Economic performance is the major pull factor in attracting FPI into the country (Duasa and Kassim, 2009).

High growth rates, especially in developing countries, is another factor to head the foreign capital flows to these countries. Foreign investors make portfolio investments where the country's economies show an economic improvement. Foreign

investors invest in a developing country to benefit these country's growth potential and growth opportunities. High growth rates in Turkey attract foreign investors to make investment there.

GDP growth and real GDP growth are good proxies for understanding the level of economic growth.

3.6. GOVERNMENT FINANCE (BALANCE OF PAYMENTS)

Government finance is an important issue that is expected to affect portfolio flows.

High fiscal deficits imply increasing government liabilities. More liabilities could lead to the necessity to increase taxes and might in an extreme case lead to the eventual default on international debt. Hence, large fiscal deficits increase the country risk and therefore, hold back potential investment flows.

Different indicators, such as fiscal balance, government debt to GDP and to revenues, and government expenditure to GDP should be good proxies for understanding government finance (Amaya and Rowland, 2004: 25).

In literature, variables to measure government finances are:

- Tax revenues / GDP
- Fiscal balance / GDP
- Government debt / GDP
- Government debt / Revenues

3.7. TAX RATES ON INTEREST OR DIVIDENDS

Firms find funds to finance their activities by two ways. These are:

- issuing new shares or
- issuing debt.

Taxation of income is very important factor for firms to choice of financing way.

People and corporates determine their financial and investment decision from tax rates on income. Taxes show diversification for different financial instruments.

These differences may also effect individual's investment decisions which are making deposits and investing in securities.

The nature of a country's tax laws have an important affects to attract and retain foreign investors (Chen and Tang, 1986).

Investors base their investment decisions on the expected after-tax return on an investment with a perceived level of risk. A lower tax rate is a powerful incentive for attracting foreign investment, as it increases the expected after-tax return on an investment. This is one of the key policy instruments available to developing countries to attract foreign investment. Empirical research has proven that it is also one of the most effective instruments (Kim, 1999).

Low tax rates catalyst for foreign investment. Investors will normally prefer countries where the tax rates are on interest rates or dividends relatively low.

3.8. COUNTRY RISK

Country risk is the risk that a debtor country may not be able or willing to honour his financial obligation to a foreign lender or investor. Country risk is not an easily measurable aspect of risk, because inherent risks cannot always be measured or predicted by historical trends. Country risk encompasses issues such as the risk of war, revolution, expropriation of foreign property, or confiscation of property (Jepma et al, 1998: 290).

A sovereign credit rating is the credit rating of a sovereign entity such as national government. The sovereign credit rating indicates the risk level of the investing environment of a country and is used by investors looking to invest abroad. It takes political risk into account.

The Table 15 shows the ten least-risky countries for investment as of March 2010. Ratings are further broken down into components including political risk, economic risk.

Investors prefer countries which have minimal country risk.

Table 15: Country Risk Rankings, Least risky countries, Score out of 100

Rank	Previous	Country	Overall Score
1	1	Norway	94.05
2	2	Luxembourg	92.35
3	3	Switzerland	90.65
4	4	Denmark	88.55
5	6	Finland	87.81
6	5	Sweden	86.81
7	7	Austria	86.50
8	11	Canada	86.09
9	8	Netherlands	84.86
10	9	Australia	84.16

Source: Euromoney Country Risk, March 2010

3.9. CREDIT RATING OF SECURITIES

In investment, the bond credit rating assesses the credit worthiness of a corporation's or government debt issues. The credit rating is a financial indicator to potential investors of debt securities such as bonds. These are assigned by credit rating agencies such as Moody's, Standard & Poor's, and Fitch Ratings to have letter designations (such as AAA, B, CC) which represent the quality of a bond.

Credit ratings are not based on mathematical formulas. Instead, credit rating agencies use their judgment and experience in determining what public and private information should be considered in giving a rating to a particular company or government. The credit rating is used by individuals and entities that purchase the bonds issued by companies and governments to determine the likelihood that the government will pay its bond obligations.

A poor credit rating indicates a credit rating agency's opinion that the company or government has a high risk of defaulting, based on the agency's analysis of the entity's history and analysis of long term economic prospects.

A sovereign credit rating is the credit rating of a sovereign entity, i.e., a national government. The sovereign credit rating indicates the risk level of the investing environment of a country and is used by investors looking to invest abroad. It takes political risk into account.

The Big Three credit rating agencies are Standard & Poor's (S&P), Moody's, and Fitch Group. S&P and Moody's are US-based, while Fitch is dual-headquartered in New York City and London, and is controlled by the France-based FIMALAC.

Investors prefer securities which have good indicator of credit rating to avoid more risks.

The Standard & Poor's rating scale is as follows, from excellent to poor: AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, CC, C, D. Anything lower than a BBB- rating is considered a speculative or junk bond.

The Moody's rating system is similar in concept but the naming is a little different. It is as follows, from excellent to poor: Aaa, Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3, B1, B2, B3, Caa1, Caa2, Caa3, Ca, C.

Fitch rating scale is similar with Standard & Poor's rating system. It is as follows, from excellent to poor: AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC, DDD, DD, D.

3.10. OPENNESS

Openness of the economy to foreign trade (X/M) is computed by the ratio of exports to imports (Erdal and Tataloglu, 2002: 4).

Additionally, the ease with which investors can move capital in and out of a country (the openness of the economy) is also an important determinant of FDI flows (Chakrabarti, 2001: 91-92). That is, countries with capital controls and restrictive trade policies discourage inflows of FDI, compared to countries with liberal policies. Most of the studies on FDI in developing countries have identified a positive relationship between openness and FDI (Morisset, 2000).

Openness considers the relation of host economies with the rest of the world. The empirical literature has ascertained that open economies attract more flows than heavily protected economies (Amaya and Rowland, 2004: 25). Amaya and Rowland use exports plus imports to GDP and exports plus imports as varibles.

Blocks to entry are anything that gets in the way of starting a business or entering a capital markets. For some capital markets, barriers to entry can become

somewhat more complicated because of a natural process and government mandate. If investors come across many barriers to entry, they won't be willing to make investment.

3.11. TRANSACTION COST

Osei (1998:76) said that transaction costs include:

- underwriting fee
- Legal and accounting expenses
- Brokerage commissions
- Cost of printing and advertising prospectus
- Fees for the stock exchange (including listing fees, application fees, and annual fees)

Investors want to maximize their returns and minimize their costs. Therefore, high transaction costs affect foreign investors' choice negatively. Investors will normally prefer countries where the transaction costs are relatively low.

In conclusion, we can say that there is a negative relationship between high transaction costs and foreign portfolio investments. Investors prefer regions which provide low transaction and regulation costs.

3.12. RATE OF RETURN ON STOCK MARKET

Portfolio investments are expected to decline in low return period of stock markets. However, portfolio investments are expected to increase in high return period of stock markets.

In this regard, Yalcıner (2001) finds that there is a strong relationship between current year's rate of return and portfolio investments. However, Yalcıner finds that there is no effect of previous years' rate of returns on portfolio flows (Yalçıner, 2001: 12).

3.13. DISCLOSURE OF INFORMATION

Investors need information to determine which financial instruments should be bought or sold. But asymmetric information prevents them to make decision. This factor brings about more problems such as volatility in prices and low management of financial instruments.

Lack of information has two detrimental effects on foreign investment. Firstly, potential investors find it difficult to assess the risk and return factors that would determine their investment decisions. Secondly, the unavailability of information per se increases investors' perceived risk of a country. (Brink and Viviers, 2003: 230-231)

Consequently, disclosure of information provides pricing efficiency and market confidence. It is very important for capital market development.

CHAPTER FOUR

EMPIRICAL ANALYSIS

In this chapter, an application on ISE is conducted to determine the relationship between FPI to ISE and main macroeconomic variables by using EViews 5 program.

4.1. THE DATA AND METHODOLOGY

This study uses monthly data for the period 2006:12 – 2011:12. 61 observations are used in application to determine the relationship between all variables.

Sources are shown in Table 16. All data are obtained from Database of Central Bank of the Republic of Turkey except FPI variable. It is obtained from Central Registry Agency Electronic Platform.

4.1.1. Model and Variables

First difference of all series are taken to provide stationary. Model and variables of the model are as follows:

$$\mathbf{LNFPI} = C_1 + C_2\,\mathbf{BB} + C_3\,\boldsymbol{CAB} + C_4\,\mathbf{LNISE} + C_5\,\mathbf{LNEXC} + C_6\,\mathbf{LNCPI}$$
$$C_7\,\mathbf{LNINTRATE} + C_8\,\mathbf{LNIPI}$$

Dependent Variable:

LNFPI: Natural Logarithm of Foreign Portfolio Investments (Only Stocks) to Turkey

d(LNFPI) : First Difference of the LNFPI Series

Independent Variables:

BB: Budget Balance

CAB: Current Account Balance

d(CAB) : First Difference of the CAB Series

LNISE: Natural Logarithm of Istanbul Stock Exchange National 100 Price Index

d(LNISE) : First Difference of the LNISE Series

LNEXC: Natural Logarithm of Nominal Exchange Rate Between TL and USD

d(LNEXC) : First Difference of the LNEXC Series

LNCPI: Natural Logarithm of Consumer Price Index

d(LNCPI) : First Difference of the LNCPI Series

LNINTRATE: Natural Logarithm of Average Monthly Interest Rate Between Banks

d(LNINTRATE): First Difference of the LNINTRATE Series

LNIPI: Natural Logarithm of Industrial Production Index

d(LNIPI) : First Difference of the LNIPI Series

$C_{1....8}$ **:** Coefficient of Variables

Table 16: Variables and Sources

VARIABLES	DEFINITION	SOURCES
FPI	Foreign Portfolio Investments to Turkey	Central Registry Agency Electronic Platform
BB	Budget Balance	Database of Central Bank of Turkey
CAB	Current Account Balance	Database of Central Bank of Turkey
ISE	Istanbul Stock Exchange National 100 Price Index	Database of Central Bank of Turkey
EXC	Nominal Exchange Rate Between TL and USD	Database of Central Bank of Turkey
CPI	Consumer Price Index	Database of Central Bank of Turkey
INTRATE	Average Monthly Interest (Credit) Rate Between Banks	Database of Central Bank of Turkey
IPI	Industrial Production Index	Database of Central Bank of Turkey

4.1.2. Statistical Information of Series

Statistical information of series are given in Table 17.

Table 17: Statistical Information of Series

	LNFPI	BB	CAB	LNISE	LNEXC	LNCPI	LNINTRATE	LNIPI
Mean	10.82249	-1589.610	-3604.557	10.75492	0.373014	5.099560	2.890638	4.740188
Median	10.88703	-1933.447	-3292.000	10.81679	0.397346	5.095528	2.972772	4.753590
Maximum	11.28611	4888.509	451.0000	11.13877	0.619958	5.302558	3.268192	4.950107
Minimum	10.01906	-10153.18	-9552.000	10.09055	0.157380	4.901490	2.466956	4.438289
Std. Dev.	0.303472	3120.838	2122.703	0.280085	0.120768	0.112277	0.242178	0.101864
Skewness	-1.002149	-0.222214	-0.475282	-0.815412	-0.175197	-0.129001	-0.381947	-0.671451
Kurtosis	3.462450	3.072372	3.045816	2.947111	2.356088	1.917026	1.823918	3.690566
Jarque-Bera	10.75397	0.515334	2.301914	6.766891	1.365888	3.150136	4.998703	5.795679
Probability	0.004622	0.772852	0.316334	0.033930	0.505128	0.206994	0.082138	0.055142
Sum	660.1718	-96966.19	-219878.0	656.0502	22.75386	311.0731	176.3289	289.1515
Sum Sq. Dev.	5.525725	5.84E+08	2.70E+08	4.706854	0.875095	0.756367	3.519021	0.622572
Observations	61	61	61	61	61	61	61	61

4.2. GRAPHS OF THE SERIES

4.2.1. Foreign Portfolio Investment

Figure 8: Graph of FPI Series

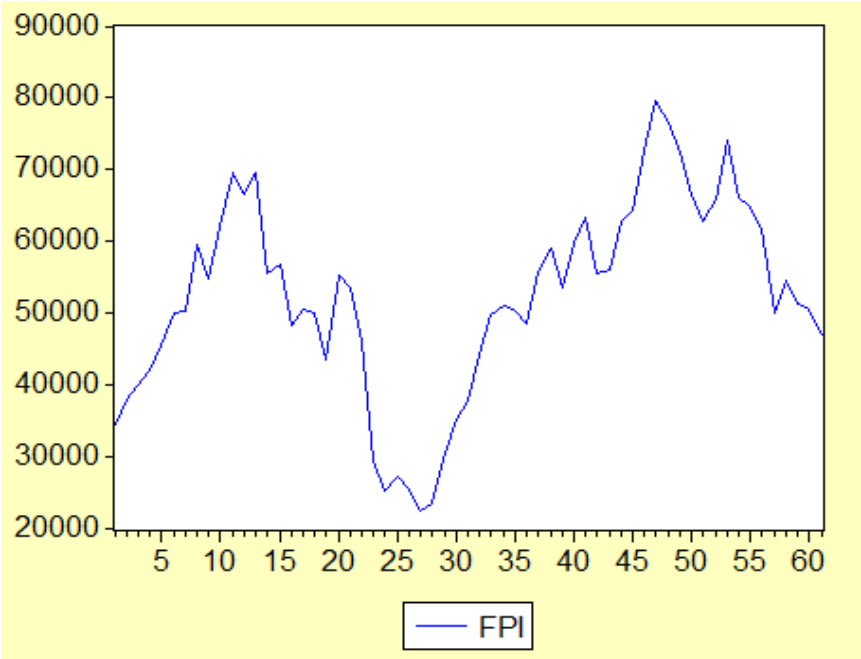
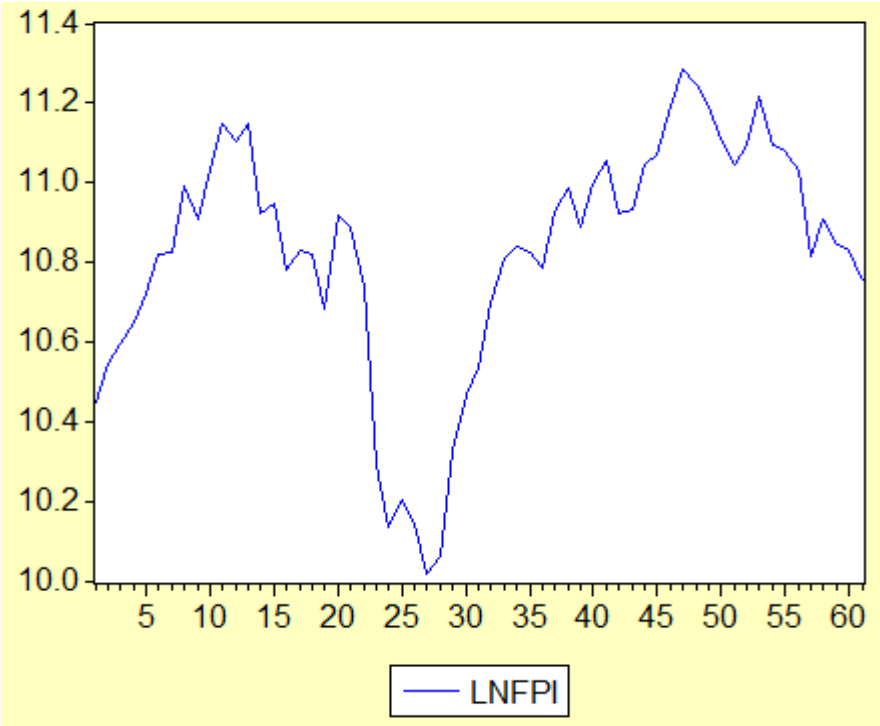
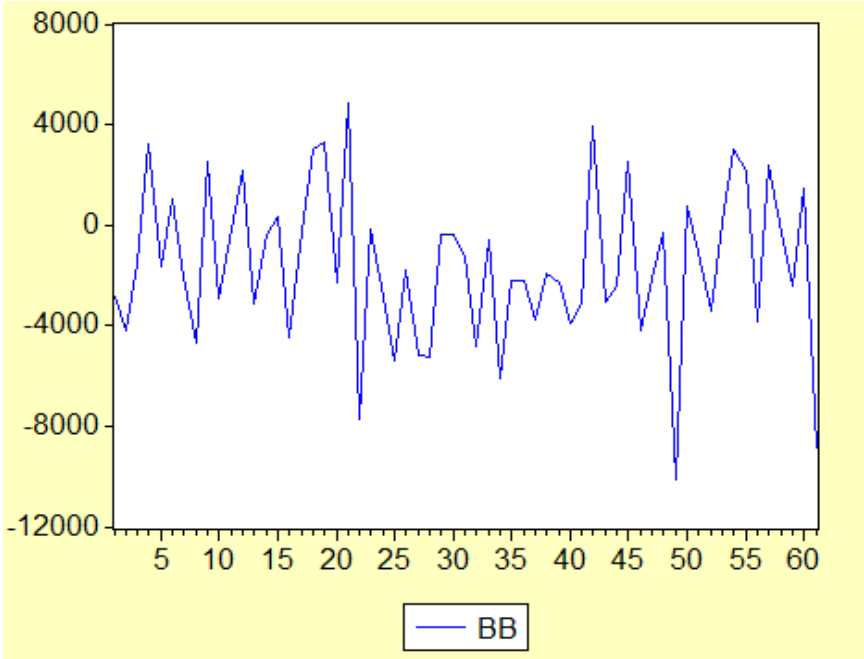


Figure 9: Graph of LNFPI Series



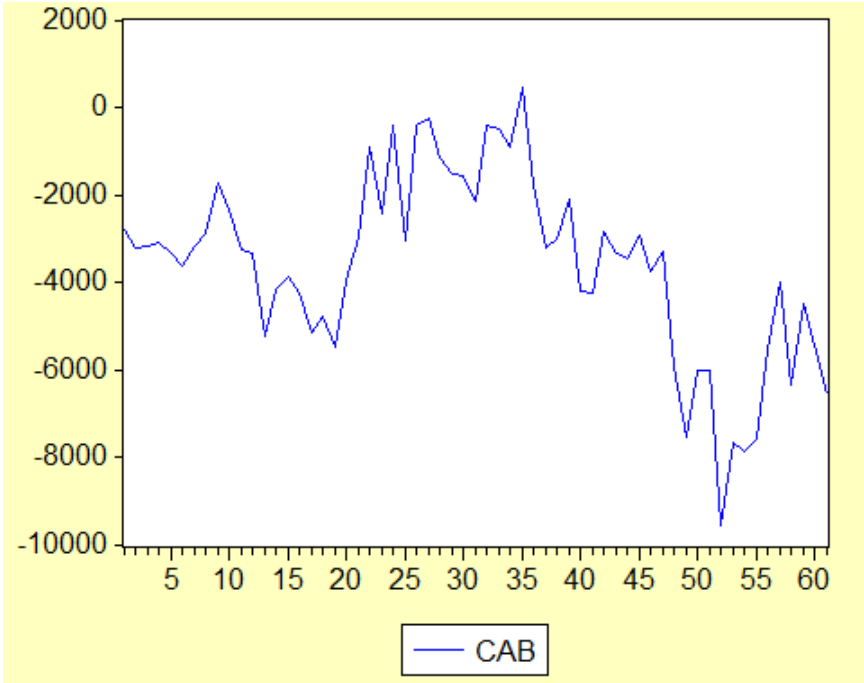
4.2.2. Budget Balance

Figure 10: Graph of BB Series



4.2.3. Current Account Balance

Figure 11: Graph of CAB Series



4.2.4. Istanbul Stock Exchange Price Index

Figure 12: Graph of ISE Series

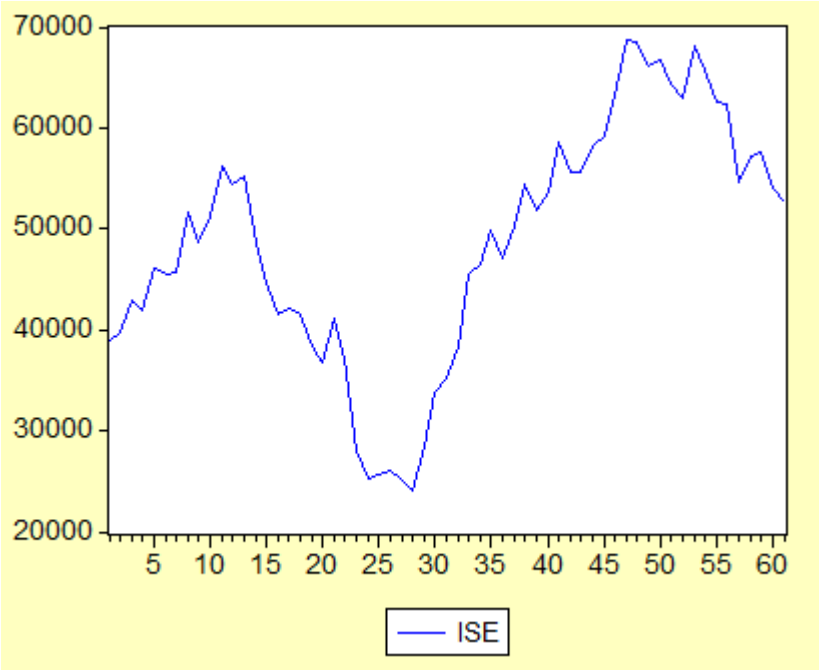
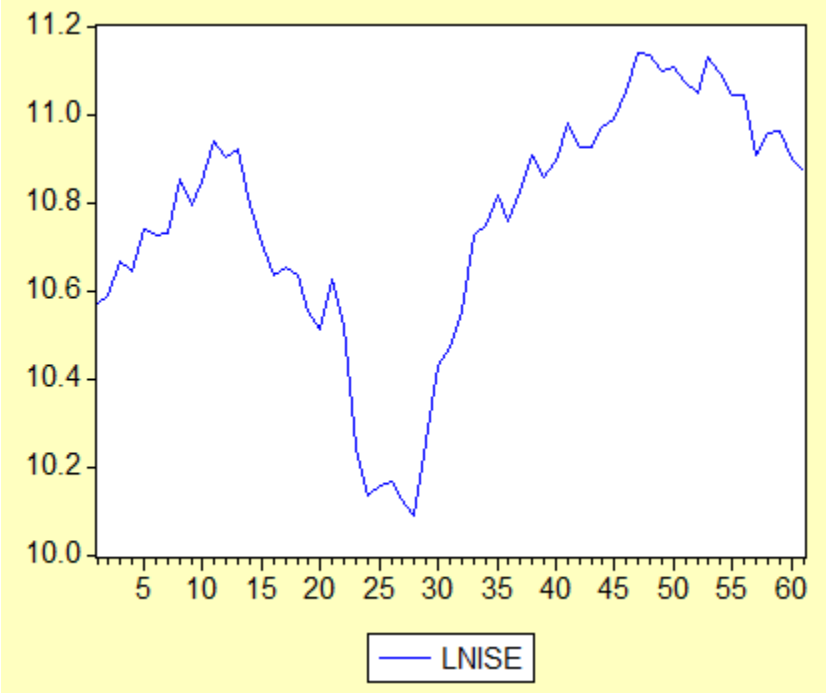


Figure 13: Graph of LNISE Series



4.2.5. Nominal Exchange Rate

Figure 14: Graph of EXC Series

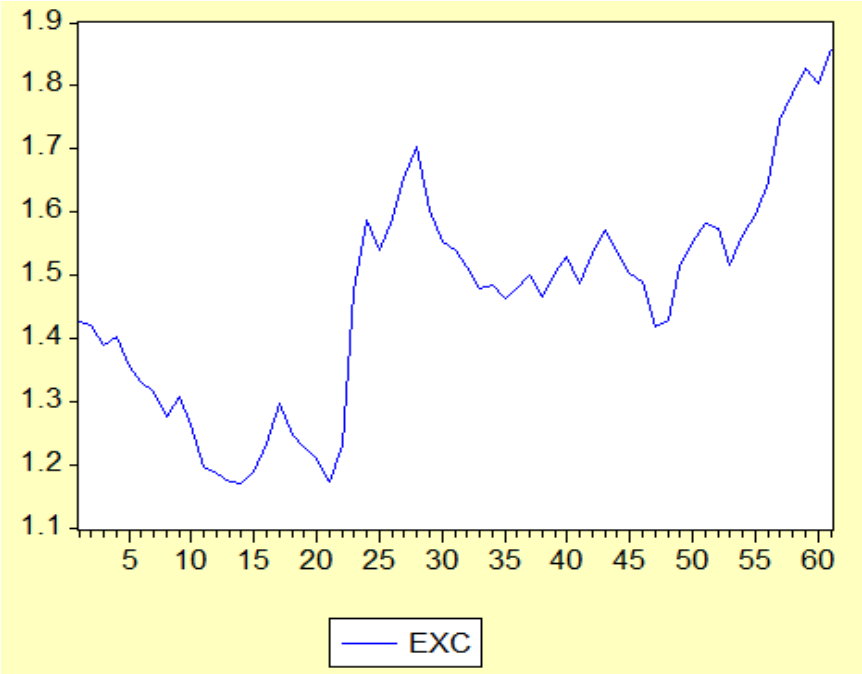
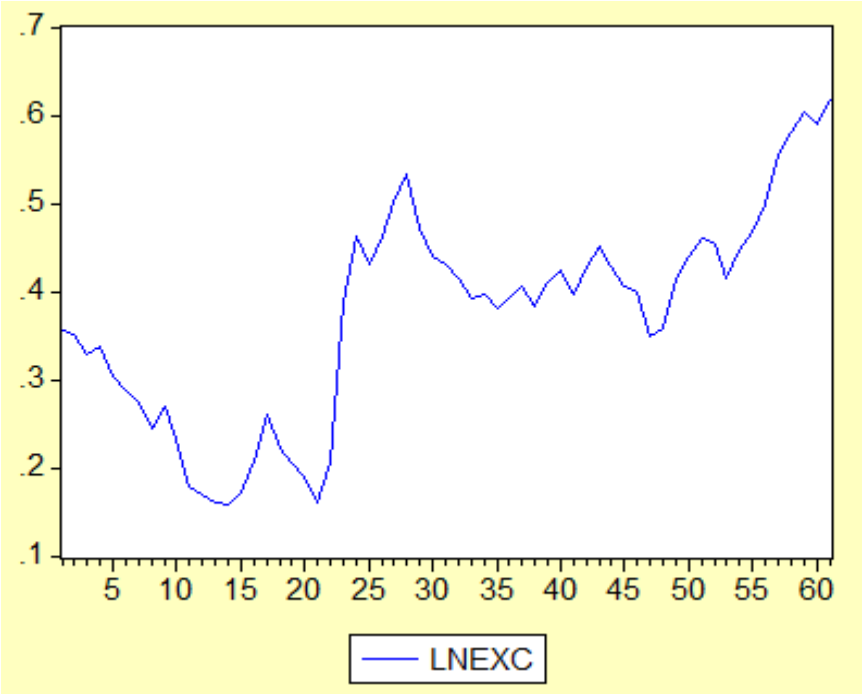


Figure 15: Graph of LNEXC Series



4.2.6. Consumer Price Index

Figure 16: Graph of CPI Series

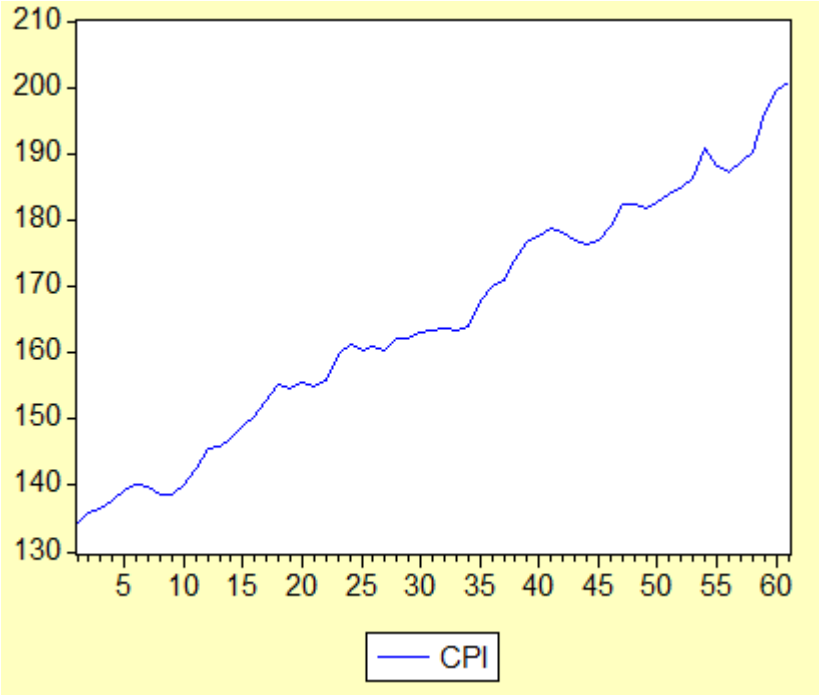
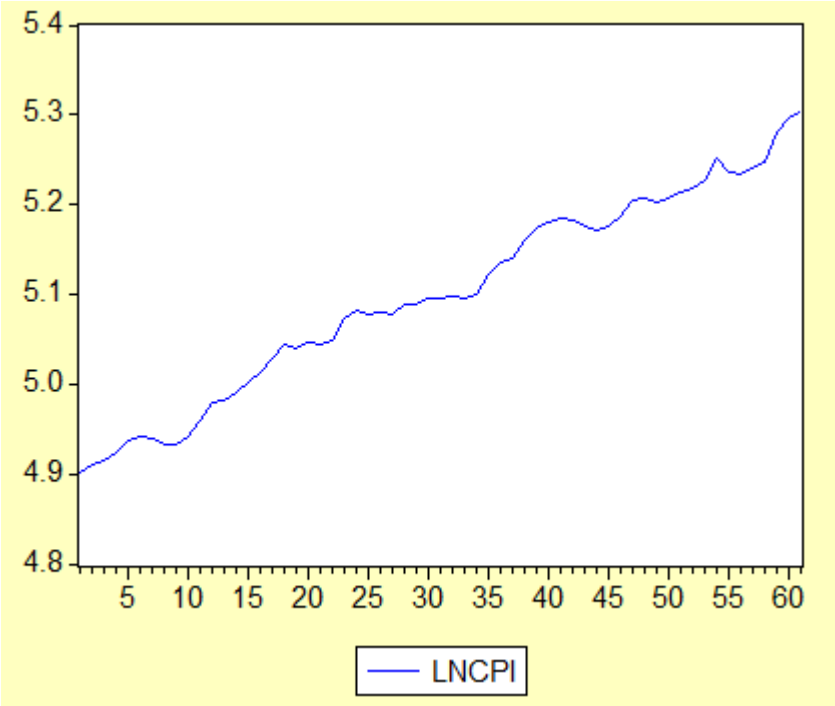


Figure 17: Graph of LNCPI Series



4.2.7. Interest Rate

Figure 18: Graph of INTRATE Series

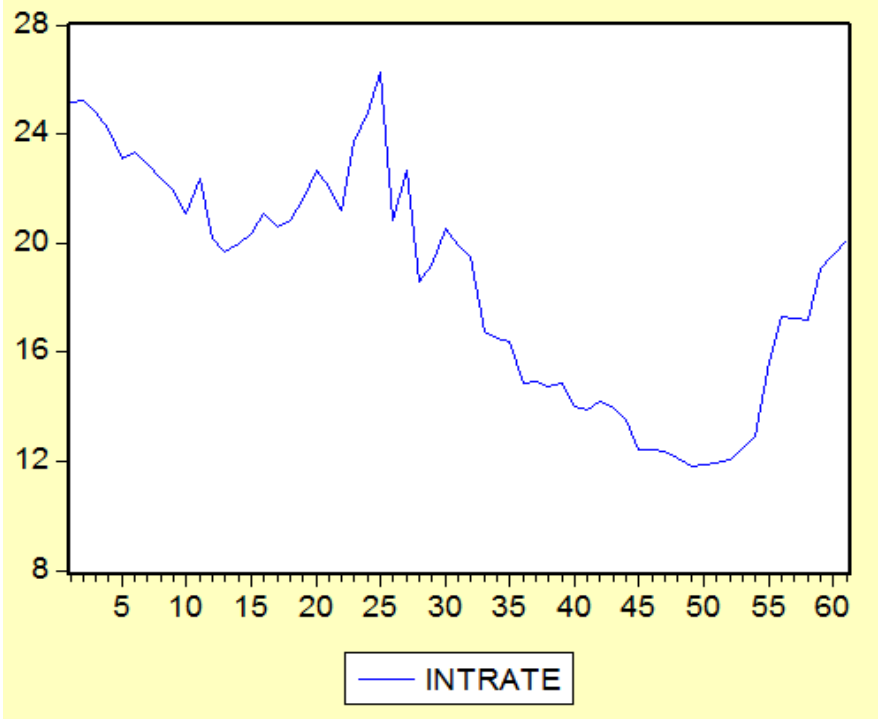
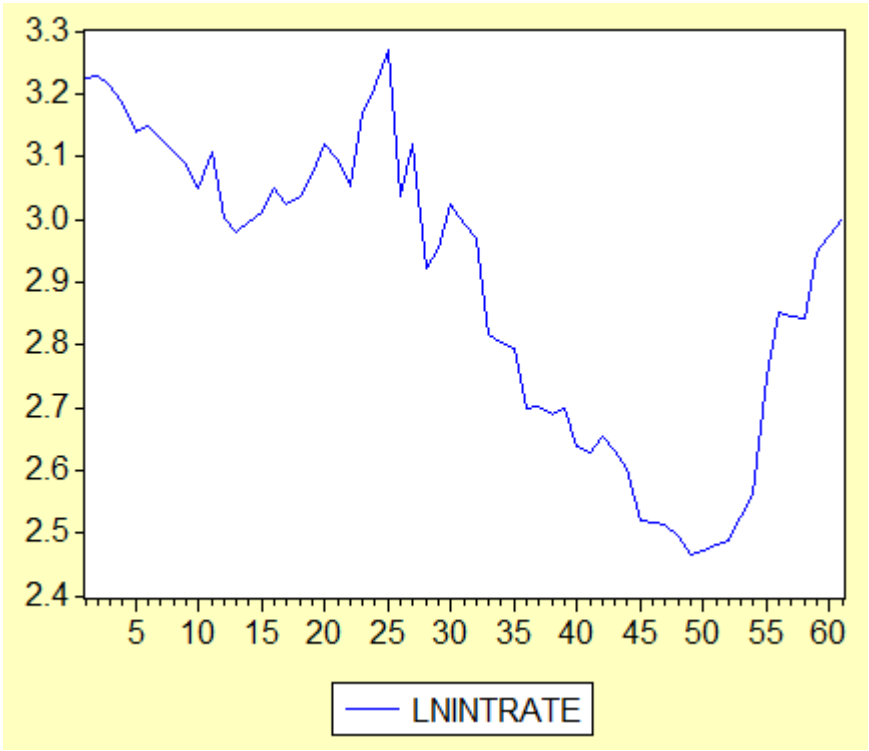


Figure 19: Graph of LNINTRATE Series



4.2.8. Industrial Production Index

Figure 20: Graph of IPI Series

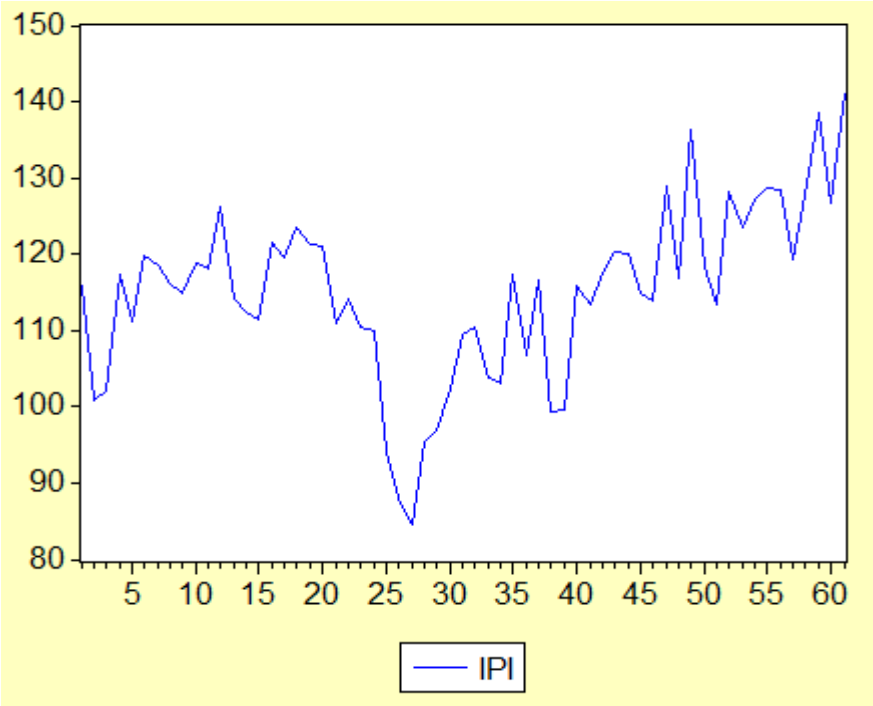
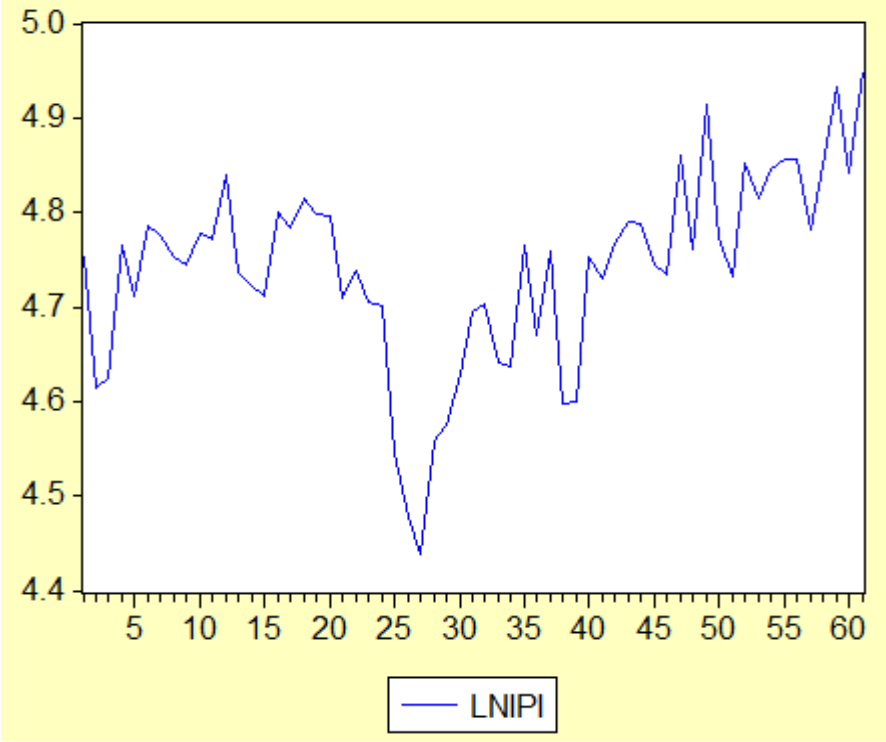


Figure 21: Graph of LNIPI Series



4.2.9. Interpretation About Graphs and Series

Before the interpretation of graphs, correlation matrix is given to evaluate the relationship between series easily.

Table 18: Correlation Matrix

	LNFPI	BB	CAB	LNCPI	LNEXC	LNINTRATE	LNIPI	LNISE
LNFPI	1.000000	0.152411	-0.571072	0.297054	-0.236076	-0.629316	0.658599	0.938894
BB	0.152411	1.000000	-0.120688	-0.068348	-0.198435	0.019903	0.105207	0.130613
CAB	-0.571072	-0.120688	1.000000	-0.428221	-0.108420	0.418766	-0.665850	-0.628295
LNCPI	0.297054	-0.068348	-0.428221	1.000000	0.734816	-0.732989	0.335566	0.447633
LNEXC	-0.236076	-0.198435	-0.108420	0.734816	1.000000	-0.348643	0.000946	0.038167
LNINTRATE	-0.629316	0.019903	0.418766	-0.732989	-0.348643	1.000000	-0.281587	-0.700380
LNIPI	0.658599	0.105207	-0.665850	0.335566	0.000946	-0.281587	1.000000	0.676024
LNISE	0.938894	0.130613	-0.628295	0.447633	0.038167	-0.700380	0.676024	1.000000

Interpretation about FPI and other series are given in this section. These are only forecast before tests.

4.2.9.1. Interpretation About Relationship Between LNFPI and BB Series

When we compare Figure 9 and Figure 10, it is easy to say that there isn't any negative or positive relationship between the foreign portfolio investment and budget balance in Turkey.

Correlation coefficient between LNFPI and BB series is 0,152. It represents us that there is a positive relationship between these series, but it is not strong.

4.2.9.2. Interpretation About Relationship Between LNFPI and CAB Series

When we compare Figure 9 and Figure 11, we can see that there is a negative relationship between the foreign portfolio investment and current account balance in Turkey.

Correlation coefficient between LNFPI and CAB series is -0,571. It represents us that there is a medium strong negative relationship between these series.

4.2.9.3. Interpretation About Relationship Between LNFPI and LNISE Series

When we compare Figure 9 and Figure 13, we can easily see that there is a positive relationship between the foreign portfolio investment and Istanbul Stock Excange Index in Turkey.

Correlation coefficient between LNFPI and LNISE series is 0.94. It represents us that there is a very strong positive relationship between these series.

These results say that ISE Index has strong effects on foreign portfolio investors' decisions.

4.2.9.4. Interpretation About Relationship Between LNFPI and LNEXC Series

When we compare Figure 9 and Figure 15, we can say that there is a negative relationship between the foreign portfolio investment and nominal exchange rate between TL and USD in Turkey.

Correlation coefficient between LNFPI and LNEXC series is -0.23. It represents us that there is a negative relationship between these series. But it is not strong.

4.2.9.5. Interpretation About Relationship Between LNFPI and LNCPI Series

When we compare Figure 9 and Figure 17, we can say that there isn't any negative or positive relationship between the foreign portfolio investment and inflation (consumer price index) in Turkey.

Correlation coefficient between LNFPI and LNCPI series is 0.30. It represents us that there is a positive relationship between these series. But it is not strong.

4.2.9.6. Interpretation About Relationship Between LNFPI and LNINTRATE Series

When we compare Figure 9 and Figure 19, we can say that there is a negative relationship between the foreign portfolio investment and interest rates in Turkey.

Correlation coefficient between LNFPI and LNINTRATE series is -0,63. It represents us that there is a strong negative relationship between these series.

4.2.9.7. Interpretation About Relationship Between LNFPI and LNIPI Series

When we compare Figure 9 and Figure 21, we can see that there is a positive relationship between the foreign portfolio investment and international production index in Turkey.

Correlation coefficient between LNFPI and LNIPI series is 0,66. It represents us that there is a strong positive relationship between these series.

4.3. AUTOCORRELATION TEST

Correlogram diagram shows us that there is a autocorrelation or not. If the autocorrelation bar isn't in the confidence interval, there is a autocorrelation. It means that variance is not static and this series doesn't show stationary.

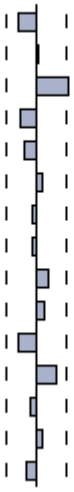
Correlogram diagram of series are given in from Table 19 to Table 26.

Table 19: Correlogram of LNFPI

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.908	0.908	52.768	0.000
		2	0.796	-0.157	94.059	0.000
		3	0.679	-0.083	124.65	0.000
		4	0.548	-0.149	144.92	0.000
		5	0.420	-0.055	157.03	0.000
		6	0.280	-0.164	162.50	0.000
		7	0.166	0.069	164.46	0.000
		8	0.059	-0.092	164.72	0.000
		9	-0.040	-0.041	164.83	0.000
		10	-0.126	-0.071	166.04	0.000
		11	-0.197	-0.001	169.02	0.000
		12	-0.248	-0.034	173.86	0.000
		13	-0.295	-0.061	180.83	0.000
		14	-0.335	-0.079	190.03	0.000
		15	-0.346	0.080	200.05	0.000

Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. LNFPI series doesn't show stationary.

Table 20: Correlogram of BB

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.155	-0.155	1.5347	0.215
		2	0.047	0.023	1.6763	0.433
		3	0.262	0.279	6.2234	0.101
		4	-0.208	-0.140	9.1324	0.058
		5	-0.017	-0.108	9.1531	0.103
		6	0.106	0.053	9.9433	0.127
		7	-0.148	-0.029	11.498	0.118
		8	0.015	-0.028	11.513	0.174
		9	0.136	0.104	12.879	0.168
		10	-0.047	0.061	13.042	0.221
		11	-0.086	-0.149	13.609	0.255
		12	0.245	0.170	18.335	0.106
		13	-0.164	-0.050	20.492	0.084
		14	0.048	0.041	20.685	0.110
		15	0.036	-0.094	20.795	0.144

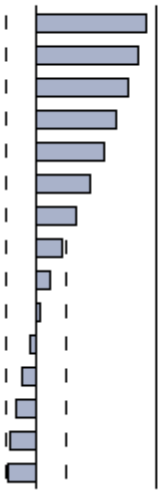
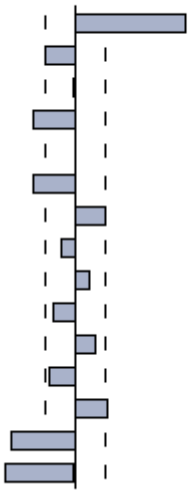
Autocorrelation bar is in confidence interval, so there is no autocorrelation. BB series show stationary.

Table 21: Correlogram of CAB

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.769	0.769	37.899	0.000
		2	0.685	0.228	68.459	0.000
		3	0.622	0.103	94.096	0.000
		4	0.466	-0.215	108.73	0.000
		5	0.337	-0.149	116.52	0.000
		6	0.281	0.068	122.04	0.000
		7	0.116	-0.206	123.00	0.000
		8	0.106	0.204	123.80	0.000
		9	0.065	-0.007	124.11	0.000
		10	0.042	0.109	124.25	0.000
		11	0.032	-0.051	124.32	0.000
		12	0.041	-0.015	124.46	0.000
		13	-0.007	-0.096	124.46	0.000
		14	-0.013	-0.092	124.48	0.000
		15	-0.015	0.098	124.50	0.000

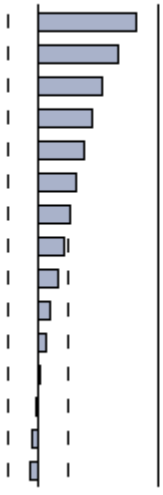
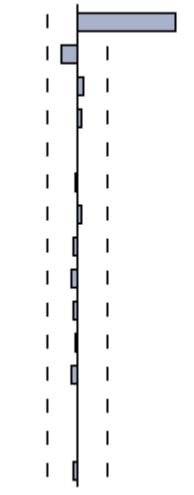
Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. CAB series doesn't show stationary.

Table 22: Correlogram of LNISE

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.951	0.951	57.918	0.000
		2	0.879	-0.269	108.19	0.000
		3	0.804	-0.010	150.97	0.000
		4	0.700	-0.363	184.02	0.000
		5	0.589	0.006	207.86	0.000
		6	0.459	-0.363	222.60	0.000
		7	0.337	0.262	230.67	0.000
		8	0.230	-0.119	234.50	0.000
		9	0.123	0.129	235.62	0.000
		10	0.026	-0.181	235.67	0.000
		11	-0.056	0.177	235.91	0.000
		12	-0.125	-0.230	237.14	0.000
		13	-0.176	0.276	239.61	0.000
		14	-0.226	-0.561	243.77	0.000
		15	-0.248	1.482	248.93	0.000

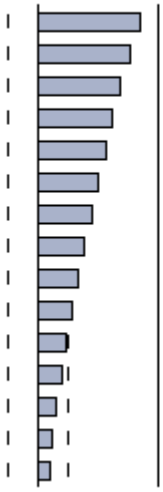
Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. LNISE series doesn't show stationary.

Table 23: Correlogram of LNEXC

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.854	0.854	46.707	0.000
		2	0.690	-0.146	77.690	0.000
		3	0.563	0.050	98.726	0.000
		4	0.473	0.034	113.78	0.000
		5	0.397	-0.007	124.62	0.000
		6	0.327	-0.023	132.10	0.000
		7	0.276	0.035	137.50	0.000
		8	0.227	-0.033	141.23	0.000
		9	0.170	-0.055	143.35	0.000
		10	0.110	-0.039	144.27	0.000
		11	0.060	-0.017	144.54	0.000
		12	0.012	-0.045	144.55	0.000
		13	-0.022	0.003	144.59	0.000
		14	-0.046	-0.004	144.76	0.000
		15	-0.069	-0.037	145.16	0.000

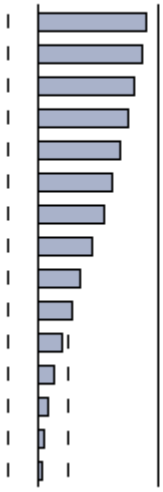
Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. LNEXC series doesn't show stationary.

Table 24: Correlogram of LNCPI

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.889	0.889	50.616	0.000
		2	0.796	0.028	91.895	0.000
		3	0.719	0.032	126.18	0.000
		4	0.646	-0.017	154.31	0.000
		5	0.584	0.016	177.69	0.000
		6	0.526	-0.007	197.02	0.000
		7	0.466	-0.037	212.47	0.000
		8	0.403	-0.053	224.22	0.000
		9	0.348	0.000	233.19	0.000
		10	0.294	-0.033	239.71	0.000
		11	0.243	-0.024	244.25	0.000
		12	0.199	-0.003	247.37	0.000
		13	0.161	-0.002	249.46	0.000
		14	0.131	0.012	250.85	0.000
		15	0.107	0.011	251.80	0.000

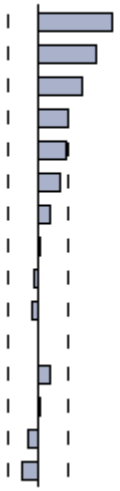
Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. LNCPI series doesn't show stationary.

Table 25: Correlogram of LNINTRATE

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.942	0.942	56.887	0.000
		2	0.894	0.055	108.98	0.000
		3	0.836	-0.108	155.33	0.000
		4	0.779	-0.035	196.28	0.000
		5	0.719	-0.053	231.78	0.000
		6	0.644	-0.174	260.79	0.000
		7	0.569	-0.073	283.80	0.000
		8	0.465	-0.302	299.45	0.000
		9	0.369	-0.056	309.49	0.000
		10	0.290	0.140	315.82	0.000
		11	0.203	-0.109	318.99	0.000
		12	0.144	0.205	320.62	0.000
		13	0.082	0.054	321.16	0.000
		14	0.051	0.237	321.37	0.000
		15	0.029	0.204	321.44	0.000

Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. LNINTRATE series doesn't show stationary.

Table 26: Correlogram of LNIPI

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.648	0.648	26.885	0.000
		2	0.513	0.161	44.023	0.000
		3	0.384	0.001	53.778	0.000
		4	0.269	-0.040	58.644	0.000
		5	0.240	0.078	62.593	0.000
		6	0.196	0.014	65.265	0.000
		7	0.100	-0.111	65.973	0.000
		8	0.016	-0.092	65.992	0.000
		9	-0.026	-0.001	66.042	0.000
		10	-0.043	0.018	66.184	0.000
		11	0.000	0.081	66.184	0.000
		12	0.110	0.189	67.126	0.000
		13	0.011	-0.198	67.136	0.000
		14	-0.092	-0.210	67.827	0.000
		15	-0.133	-0.024	69.300	0.000

Autocorrelation bar isn't in confidence interval, so there is a autocorrelation. LNIPI series doesn't show stationary.

According to autocorrelation tests BB series show stationary and other series don't show stationary.

4.4. UNIT ROOT TESTS

A unit root test is a statistical test for the proposition that in a autoregressive statistical model of a time series whose autoregressive parameter is one.

Dickey / Fuller, Augmented Dickey / Fuller (ADF), Phillips / Perron (PP) and KPSS tests are used to determine the stationarity of the series.

The hypothesis in unit root tests are:

H0: Variable has a unit root

H1: Not

In thesis, we use Augmented Dickey Fuller Tests and Philips Perron Tests to determine whether the variables have unit roots or not.

Results of ADF Tests are given in Table 27.

Table 27: Results of ADF Tests

	ADF Test Statistic (Level)		ADF Test Statistic (1st Difference)	
Series	**Intercept**	**Trend+ Intercept**	**Intercept**	**Trend + Intercept**
	P-Values		**P-Values**	
LNFPI	0,3022	0,6619	0,0000	0,0000
BB	0,0286	0,0951	0,0000	0,0000
CAB	0,4794	0,5657	0,0000	0,0000
LNISE	0,4661	0,5389	0,0499*	0,1752*
LNEXC	0,8214	0,2406	0,0000	0,0001
LNCPI	0,9256	0,0557	0,0000	0,0002
LNINTRATE	0,5418	0,9845	0,0000	0,0000
LNIPI	0,3636	0,5343	0,0000	0,0000

Results of ADF Tests show that;

- All variables have unit root in level because of p-values are higher than 0,05 level except BB Series. So these series dont show stationary.
- When we add trend effect, all variables have unit root because of their p-values are higher than 0,05. So these series don't show stationary.
- But when we take 1st difference, variables become stationary except LNISE series, because they don't have unit root. (p-values are lower than 0,05)
- After taking 2nd difference of LNISE series, results show that there is no unit root. So this series shows stationary. (p-values are lower than 0,05)

Results of Phillips Perron Tests are given in Table 28.

Table 28: Results of Phillips Perron Tests

	PP Test Statistic (Level)		PP Test Statistic (1st Difference)	
Series	**Intercept**	**Trend+ Intercept**	**Intercept**	**Trend + Intercept**
	P-Values		**P-Values**	
LNFPI	0,2658	0,6383	0,0000	0,0000
BB	0,0000	0,0000	----	-----
CAB	0,2411	0,2390	0,0000	0,0000
LNISE	0,5384	0,7743	0,0000	0,0000
LNEXC	0,8362	0,4571	0,0000	0,0002
LNCPI	0,9398	0,1918	0,0000	0,0001
LNINTRATE	0,5313	0,9890	0,0000	0,0000
LNIPI	0,0946	0,1053	0,0000	0,0000

Results of PP Tests show that;

- All variables have unit root in level because of p-values are higher than 0,05 level except BB Series. So these series dont show stationary.
- When we add trend effect, all variables have unit root because of their p-values are higher than 0,05 except BB series. So these series don't show stationary.
- But when we take 1st difference, variables become stationary, because they don't have unit root. (p-values are lower than 0,05)

ADF Tests and PP Tests show that variables don't show stationary in level except BB series. So we don't take 1st difference of BB series. We take differences of other series in application.

4.5. ESTIMATION OF THE MODEL

According to the most studies, the foreign portfolio investments (LNFPI) may increase with more favorable budget balance (BB), more favorable current account balance (CAB), higher ISE price index (LNISE), more valuable domestic currency (LNEXC), higher consumer price index (LNCPI), higher domestic interest rates (LNINTRATE), and higher industrial production index (LNIPI).

The aim of this study is to investigate whether those factors explain the foreign portfolio investments to Turkey (FPI) which is a component of the capital flow.

The relationship between those variables can be tested by using the Vector Autoregression method. All the regressions in this study are run via EViews 5.1 program.

Before starting the VAR analysis, it is necessary to determine the optimum lag length for the variables d(LNFPI), (BB), d(CAB), d(LNISE), d(LNEXC), d(LNCPI), d(LNINTRATE), d(LNIPI).

4.6. LAG ORDER SELECTION

Lag Lengths are used in Granger Causality Tests to determine the short run relationships of foreign portfolio investments with other factors.

From Table 29 to Table 35 show the results of the lag order selection. Schwarz Criterion is preferred to determine the optimum lag length for the foreign portfolio investments and the factors affecting to foreign portfolio investments to Turkey.

Table 29: Lag Order Selection (dLNFPI and BB)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-424.6279	NA	179947.6*	17.77616*	17.85413*	17.80563*
1	-421.8085	5.286351	189080.4	17.82536	18.05926	17.91375
2	-421.4220	0.692554	220065.1	17.97592	18.36575	18.12323
3	-415.5355	10.05602	203974.2	17.89731	18.44308	18.10356
4	-409.1005	10.45699*	185178.9	17.79585	18.49755	18.06103
5	-406.6416	3.790704	198965.4	17.86007	18.71770	18.18417
6	-400.8290	8.476725	186559.7	17.78454	18.79811	18.16757
7	-399.3130	2.084459	210143.0	17.88804	19.05754	18.33000
8	-395.2104	5.299234	213661.1	17.88377	19.20920	18.38465
9	-393.1195	2.526525	237760.3	17.96331	19.44468	18.52312
10	-386.7890	7.121863	223460.8	17.86621	19.50351	18.48494
11	-382.9319	4.017719	235002.5	17.87216	19.66540	18.54983
12	-376.6521	6.018171	225937.6	17.77717	19.72634	18.51376

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 1 according to Schwarz Criterion.

Table 30: Lag Order Selection (dLNFPI and dCAB)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-385.3987	NA	35096.94	16.14161	16.21958*	16.17108
1	-379.1776	11.66446	32004.76*	16.04907	16.28297	16.13746*
2	-378.4725	1.263339	36758.22	16.18635	16.57619	16.33367
3	-377.6112	1.471417	42006.00	16.31713	16.86290	16.52338
4	-376.3004	2.130092	47212.17	16.42918	17.13088	16.69436
5	-372.2782	6.200808	47528.14	16.42826	17.28589	16.75236
6	-365.6909	9.606563	43149.09	16.32045	17.33402	16.70348
7	-361.5830	5.648369	43628.10	16.31596	17.48546	16.75791
8	-354.2875	9.423342	38832.92	16.17864	17.50408	16.67953
9	-351.5231	3.340265	42017.25	16.23013	17.71150	16.78994
10	-345.0844	7.243598	39312.58	16.12851	17.76582	16.74725
11	-335.8484	9.620788*	33042.08	15.91035	17.70358	16.58802
12	-331.2918	4.366729	34132.38	15.88716*	17.83633	16.62375

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 1 according to Schwarz Criterion.

Table 31: Lag Order Selection (dLNFPI and dLNISE)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	107.6602	NA	4.20e-05	-4.402510	-4.324543	-4.373046
1	125.9454	34.28467	2.32e-05	-4.997725	-4.763825*	-4.909334*
2	126.1891	0.436644	2.71e-05	-4.841213	-4.451379	-4.693894
3	130.9913	8.203683	2.63e-05	-4.874636	-4.328869	-4.668390
4	136.1534	8.388449	2.52e-05	-4.923058	-4.221357	-4.657884
5	138.2579	3.244450	2.74e-05	-4.844079	-3.986445	-4.519978
6	143.5650	7.739600	2.63e-05	-4.898543	-3.884976	-4.515515
7	150.7994	9.947177*	2.33e-05	-5.033306	-3.863806	-4.591350
8	155.8087	6.470447	2.28e-05*	-5.075364	-3.749930	-4.574480
9	160.1991	5.305054	2.31e-05	-5.091630	-3.610263	-4.531819
10	163.5015	3.715150	2.46e-05	-5.062561	-3.425261	-4.443823
11	168.3862	5.088272	2.48e-05	-5.099426*	-3.306191	-4.421760
12	171.3808	2.869787	2.74e-05	-5.057532	-3.108365	-4.320939

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 2 according to Schwarz Criterion.

Table 32: Lag Order Selection (dLNFPI and dLNEXC)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	136.8400	NA	1.24e-05	-5.618335	-5.540368	-5.588871
1	147.4532	19.89959	9.45e-06*	-5.893882*	-5.659981*	-5.805490*
2	150.7679	5.939004	9.74e-06	-5.865331	-5.475498	-5.718013
3	152.5810	3.097368	1.07e-05	-5.774210	-5.228443	-5.567964
4	154.7532	3.529737	1.16e-05	-5.698050	-4.996349	-5.432876
5	157.6148	4.411690	1.23e-05	-5.650618	-4.792984	-5.326517
6	163.0684	7.953087	1.17e-05	-5.711182	-4.697615	-5.328154
7	165.3327	3.113487	1.27e-05	-5.638864	-4.469363	-5.196908
8	167.0732	2.248091	1.43e-05	-5.544716	-4.219282	-5.043832
9	178.5143	13.82466*	1.08e-05	-5.854762	-4.373394	-5.294951
10	180.8228	2.597037	1.20e-05	-5.784282	-4.146981	-5.165543
11	182.0550	1.283627	1.40e-05	-5.668960	-3.875726	-4.991294
12	185.4695	3.272205	1.52e-05	-5.644563	-3.695395	-4.907970

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 2 according to Schwarz Criterion.

Table 33: Lag Order Selection (dLNFPI and dLNCPI)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	188.7040	NA*	1.43e-06*	-7.779333*	-7.701366*	-7.749869*
1	190.6186	3.589921	1.56e-06	-7.692442	-7.458542	-7.604051
2	191.8711	2.243981	1.76e-06	-7.577961	-7.188127	-7.430642
3	194.4044	4.327781	1.87e-06	-7.516850	-6.971083	-7.310604
4	198.6469	6.894031	1.86e-06	-7.526953	-6.825253	-7.261780
5	199.7067	1.633820	2.12e-06	-7.404444	-6.546810	-7.080343
6	204.3888	6.828165	2.08e-06	-7.432868	-6.419300	-7.049839
7	208.8751	6.168652	2.07e-06	-7.453130	-6.283629	-7.011174
8	211.7788	3.750616	2.22e-06	-7.407451	-6.082017	-6.906567
9	215.6088	4.627834	2.30e-06	-7.400365	-5.918997	-6.840554
10	219.8251	4.743364	2.36e-06	-7.409378	-5.772077	-6.790640
11	223.9849	4.333151	2.45e-06	-7.416037	-5.622803	-6.738372
12	225.2439	1.206563	2.90e-06	-7.301830	-5.352662	-6.565237

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 1 according to Schwarz Criterion.

Table 34: Lag Order Selection (dLNFPI and dLNINTRATE)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	90.76966	NA*	8.49e-05*	-3.698736*	-3.620769*	-3.669272*
1	92.83442	3.871435	9.20e-05	-3.618101	-3.384201	-3.529710
2	93.56937	1.316775	0.000106	-3.482057	-3.092223	-3.334738
3	95.55822	3.397615	0.000115	-3.398259	-2.852492	-3.192013
4	97.58344	3.290992	0.000126	-3.315977	-2.614276	-3.050803
5	99.21922	2.521822	0.000140	-3.217467	-2.359834	-2.893366
6	102.7880	5.204405	0.000144	-3.199498	-2.185931	-2.816470
7	104.5202	2.381814	0.000160	-3.105008	-1.935507	-2.663052
8	107.2525	3.529243	0.000173	-3.052187	-1.726753	-2.551304
9	114.7692	9.082636	0.000153	-3.198715	-1.717348	-2.638904
10	122.2201	8.382287	0.000138	-3.342504	-1.705203	-2.723765
11	123.7688	1.613233	0.000159	-3.240366	-1.447132	-2.562700
12	126.5499	2.665251	0.000177	-3.189580	-1.240412	-2.452987

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 1 according to Schwarz Criterion.

Table 35: Lag Order Selection (dLNFPI and dLNIPI)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	86.10766	NA	0.000103	-3.504486	-3.426519*	-3.475022
1	92.02768	11.10004	9.52e-05	-3.584487	-3.350587	-3.496096
2	93.17230	2.050769	0.000107	-3.465512	-3.075679	-3.318194
3	97.50713	7.405341	0.000106	-3.479464	-2.933697	-3.273218
4	103.1435	9.159113	9.96e-05	-3.547646	-2.845946	-3.282473
5	104.1860	1.607208	0.000114	-3.424418	-2.566784	-3.100317
6	110.6624	9.444696	0.000104	-3.527599	-2.514032	-3.144571
7	114.6493	5.482051	0.000105	-3.527055	-2.357555	-3.085099
8	123.1348	10.96040	8.91e-05	-3.713950	-2.388516	-3.213067
9	126.6695	4.271050	9.34e-05	-3.694561	-2.213194	-3.134750
10	129.2610	2.915484	0.000103	-3.635875	-1.998574	-3.017137
11	146.6417	18.10486*	6.14e-05*	-4.193403	-2.400169	-3.515737*
12	151.4932	4.649377	6.26e-05	-4.228883*	-2.279716	-3.492290

Notes: Numbers with "*" indicate the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Bayesian Criterion, HQ: Hannan-Quinn Information Criterion.

- The optimum lag order is chosen as 1 according to Schwarz Criterion.

Table 36: Optimum Lag Orders

VARIABLES	OPTIMUM LAG ORDER
dLNFPI and BB	1
dLNFPI and dCAB	1
dLNFPI and dLNISE	2
dLNFPI and dLNEXC	2
dLNFPI and dLNCPI	1
dLNFPI and dLNINTRATE	1
dLNFPI and dLNIPI	1

After finding the optimum lag order by choosing Schwarz Criterion, in Section 4.7 Granger Causality Tests are used to determine the relationship between foreign portfolio investments and all factors in short run.

4.7. GRANGER CAUSALITY TESTS

4.7.1. dLNFPI and BB

Table 37: Result of Granger Causality Test (dLNFPI and BB)

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
BB does not Granger Cause DLNFPI	59	1.10384	0.29794
DLNFPI does not Granger Cause BB		2.76588	0.10188

H_0: BB does not Granger Cause dLNFPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, BB does not Granger Cause dLNFPI.

H_0: dLNFPI does not Granger Cause BB

- We do not reject null hypothesis, because it's probability value is higher than 0,05 and 0,10 significance level. Thus, dLNFPI does not Granger Cause BB.

- But, we reject null hypothesis in 0,15 significance level, because it's probability value is lower. Thus, dLNFPI Granger Causes BB.

Results of the Granger Test for model are;

- At 0,05 and 0,10 significance level, there are no causal links between foreign portfolio investment and budget balance. They don't cause each other and they are not related in short run.
- At 0,15 significance level, there are one-way relationship. Change in foreign portfolio investment has effect on budget balance. But change in budget balance doesn't have effect on foreign portfolio investment in short run.

4.7.2. dLNFPI and dCAB

Table 38: Result of Granger Causality Test (dLNFPI and dCAB)

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
DCAB does not Granger Cause DLNFPI	59	1.75712	0.19037
DLNFPI does not Granger Cause DCAB		0.76155	0.38657

H_0: dCAB does not Granger Cause dLNFPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dCAB does not Granger Cause dLNFPI.

H_0: dLNFPI does not Granger Cause dCAB

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNFPI does not Granger Cause dCAB.

Results of the Granger Test for model are;

- ❖ At 0,05, 0,10 and 0,15 significance level, there are no causal links between foreign portfolio investment and current account balance. They don't cause each other and they are not related in short run.

4.7.3. dLNFPI and dLNISE

Table 39: Result of Granger Causality Test (dLNFPI and dLNISE)

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
DLNISE does not Granger Cause DLNFPI	58	0.46927	0.62804
DLNFPI does not Granger Cause DLNISE		8.68327	0.00055

H_0: dLNISE does not Granger Cause dLNFPI

- ❖ We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNISE does not Granger Cause dLNFPI.

H_0: dLNFPI does not Granger Cause dLNISE

- ❖ At all significance level we reject null hypothesis, because it's probability value is lower. Thus, dLNFPI Granger Causes dLNISE.

Results of the Granger Test for model are;

- ❖ At all significance level, there are one-way relationship. Change in foreign portfolio investment has effect on Istanbul Stock Exchange Index. But change in ISE doesn't have effect on foreign portfolio investment in short run.

4.7.4. dLNFPI and dLNEXC

Table 40: Result of Granger Causality Test (dLNFPI and dLNEXC)

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
DLNEXC does not Granger Cause DLNFPI	58	0.06678	0.93548
DLNFPI does not Granger Cause DLNEXC		3.98773	0.02436

H_0: dLNEXC does not Granger Cause dLNFPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNEXC does not Granger Cause dLNFPI.

H_0: dLNFPI does not Granger Cause dLNEXC

- At all significance level we reject null hypothesis, because it's probability value is lower. Thus, dLNFPI Granger Causes dLNEXC.

Results of the Granger Test for model are;

- At all significance level, there are one-way relationship. Change in foreign portfolio investment has effect on nominal exchange rates between TL and USD. But change in EXC doesn't have effect on foreign portfolio investment in short run.

4.7.5. dLNFPI and dLNCPI

Table 41: Result of Granger Causality Test (dLNFPI and dLNCPI)

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
DLNCPI does not Granger Cause DLNFPI	59	0.07184	0.78966
DLNFPI does not Granger Cause DLNCPI		0.32596	0.57033

H_0: dLNCPI does not Granger Cause dLNFPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNCPI does not Granger Cause dLNFPI.

H_0: dLNFPI does not Granger Cause dLNCPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNFPI does not Granger Cause dLNCPI.

Results of the Granger Test for model are;

- At 0,05, 0,10 and 0,15 significance level, there are no causal links between foreign portfolio investment and consumer price index. They don't cause each other and they are not related in short run

4.7.6. dLNFPI and dLNINTRATE

Table 42: Result of Granger Causality Test (dLNFPI and dLNINTRATE)

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
DLNINTRATE does not Granger Cause D...	59	1.64142	0.20541
DLNFPI does not Granger Cause DLNINTRATE		2.23918	0.14017

H_0: dLNINTRATE does not Granger Cause dLNFPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNINTRATE does not Granger Cause dLNFPI.

H_0: dLNFPI does not Granger Cause dLNINTRATE

- We do not reject null hypothesis, because it's probability value is higher than 0,05 and 0,10 significance level. Thus, dLNFPI does not Granger Cause dLNINTRATE.
- But, we reject null hypothesis in 0,15 significance level, because it's probability value is lower. Thus, dLNFPI Granger Causes dLNINTRATE.

Results of the Granger Test for model are;

- At 0,05 and 0,10 significance level, there are no causal links between foreign portfolio investment and interest rates. They don't cause each other and they are not related in short run.
- At 0,15 significance level, there are one-way relationship. Change in foreign portfolio investment has effect on interest rates. But change in the value of interest rates doesn't have effect on foreign portfolio investment in short run.

4.7.7. dLNFPI and dLNIPI

Table 43: Result of Granger Causality Test (dLNFPI and dLNIPI)

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
DLNIPI does not Granger Cause DLNFPI	59	2.27709	0.13692
DLNFPI does not Granger Cause DLNIPI		0.02478	0.87547

H_0: dLNIPI does not Granger Cause DLNFPI

- We do not reject null hypothesis, because it's probability value is higher than 0,05 and 0,10 significance level. Thus, dLNIPI does not Granger Cause dLNFPI.
- But, we reject null hypothesis in 0,15 significance level, because it's probability value is lower. Thus, dLNIPI Granger Causes dLNFPI.

H_0: dLNFPI does not Granger Cause dLNIPI

- We do not reject null hypothesis, because it's probability value is higher than all significance level (p=0.05,0,10,0,15). Thus, dLNFPI does not Granger Cause dLNIPI.

Results of the Granger Test for model are;

- At 0,05 and 0,10 significance level, there are no causal links between foreign portfolio investment and industrial production index. They don't cause each other and they are not related in short run.
- At 0,15 significance level, there are one-way relationship. Change in industrial production index has effect on foreign portfolio investment in short run. But change in foreign portfolio investment doesn't have effect on industrial production index.

To understand the relationships of foreign portfolio investments and all factors, causal links are given in Table 44.

Table 44: Causality Links of dLNFPI and Other Factors

	SIGNIFICANCE LEVEL		
CAUSAL LINKS	**0,05**	**0,1**	**0,15**
BB---> dLNFPI	×	×	×
dLNFPI---> BB	×	×	√
dCAB---> dLNFPI	×	×	×
dLNFPI---> dCAB	×	×	×
dLNISE--> dLNFPI	×	×	×
dLNFPI---> dLNISE	√	√	√
dLNEXC--> dLNFPI	×	×	×
dLNFPI---> dLNEXC	√	√	√
dLNCPI--> dLNFPI	×	×	×
dLNFPI---> dLNCPI	×	×	×
dLNINTRATE--> dLNFPI	×	×	×
dLNFPI---> dLNINTRATE	×	×	√
dLNIPI--> dLNFPI	×	×	√
dLNFPI---> dLNIPI	×	×	×

Var Granger Causality Tests are used to see all causality links of variables. The tables of statistics will appear immediately as on the following pages.

Table 45: Result of Var Granger Causality Tests of dLNFPI

Dependent variable: DLNFPI

Excluded	Chi-sq	df	Prob.
BB	1.599590	2	0.4494
DCAB	2.049629	2	0.3589
DLNISE	1.509945	2	0.4700
DLNEXC	2.374507	2	0.3051
DLNCPI	1.023896	2	0.5993
DLNINTRATE	2.765203	2	0.2509
DLNIPI	3.974086	2	0.1371
All	12.20333	14	0.5900

We can see from Table 45 that none of the results shows any causality that is significant at the 5% and 10% levels.

Table 46: Result of Var Granger Causality Tests of BB

Dependent variable: BB

Excluded	Chi-sq	df	Prob.
DLNFPI	0.421108	2	0.8101
DCAB	4.856032	2	0.0882
DLNISE	0.608235	2	0.7378
DLNEXC	2.123643	2	0.3458
DLNCPI	15.44829	2	0.0004
DLNINTRATE	4.418688	2	0.1098
DLNIPI	0.588360	2	0.7451
All	35.96556	14	0.0011

There is causality from dLNCPI to BB is almost significant at the 5% level. Also there is causality from dCAB to BB and dLNINTRATE to BB are almost significant at the 10% level.

Table 47: Result of Var Granger Causality Tests of dCAB

Dependent variable: DCAB

Excluded	Chi-sq	df	Prob.
DLNFPI	3.023206	2	0.2206
BB	0.373087	2	0.8298
DLNISE	4.016993	2	0.1342
DLNEXC	2.585819	2	0.2745
DLNCPI	15.07367	2	0.0005
DLNINTRATE	5.097786	2	0.0782
DLNIPI	2.194977	2	0.3337
All	35.41400	14	0.0013

There is causality from dLNCPI to dCAB is almost significant at the 5% level. Also there is causality from dLNINTRATE to dCAB is almost significant at the 10% level.

Table 48: Result of Var Granger Causality Tests of dLNISE

Dependent variable: DLNISE

Excluded	Chi-sq	df	Prob.
DLNFPI	18.99195	2	0.0001
BB	1.070203	2	0.5856
DCAB	1.673235	2	0.4332
DLNEXC	6.798454	2	0.0334
DLNCPI	2.298365	2	0.3169
DLNINTRATE	3.663608	2	0.1601
DLNIPI	3.544132	2	0.1700
All	38.97080	14	0.0004

There is causality from dLNFPI to dLNISE and dLNEXC to dLNISE are almost significant at the 5% level.

Table 49: Result of Var Granger Causality Tests of dLNEXC

Dependent variable: DLNEXC

Excluded	Chi-sq	df	Prob.
DLNFPI	7.246220	2	0.0267
BB	7.844943	2	0.0198
DCAB	2.511587	2	0.2848
DLNISE	2.784237	2	0.2485
DLNCPI	1.439518	2	0.4869
DLNINTRATE	3.592419	2	0.1659
DLNIPI	2.561225	2	0.2779
All	29.56135	14	0.0088

There is causality from dLNFPI to dLNEXC and BB to dLNEXC are almost significant at the 5% level.

Table 50: Result of Var Granger Causality Tests of dLNCPI

Dependent variable: DLNCPI

Excluded	Chi-sq	df	Prob.
DLNFPI	1.764834	2	0.4138
BB	0.653358	2	0.7213
DCAB	1.741694	2	0.4186
DLNISE	1.733529	2	0.4203
DLNEXC	0.643749	2	0.7248
DLNINTRATE	5.299668	2	0.0707
DLNIPI	0.808645	2	0.6674
All	12.85030	14	0.5383

None of the results shows any causality that is significant at the 5%. But there is causality from dLNINTRATE to dLNCPI are almost significant at the 10% level.

Table 51: Result of Var Granger Causality Tests of dLNINTRATE

Dependent variable: DLNINTRATE

Excluded	Chi-sq	df	Prob.
DLNFPI	0.570979	2	0.7516
BB	13.41276	2	0.0012
DCAB	5.781844	2	0.0555
DLNISE	1.096575	2	0.5779
DLNEXC	2.592814	2	0.2735
DLNCPI	1.693229	2	0.4289
DLNIPI	0.031847	2	0.9842
All	23.13377	14	0.0581

There is causality from BB to dLNINTRATE and dCAB to dLNINTRATE is almost significant at the 5% level.

Table 52: Result of Var Granger Causality Tests of dLNIPI

Dependent variable: DLNIPI

Excluded	Chi-sq	df	Prob.
DLNFPI	0.769490	2	0.6806
BB	0.958018	2	0.6194
DCAB	8.470479	2	0.0145
DLNISE	2.183183	2	0.3357
DLNEXC	0.728801	2	0.6946
DLNCPI	1.147884	2	0.5633
DLNINTRATE	2.438869	2	0.2954
All	25.06781	14	0.0339

There is causality from dCAB to dLNIPI is almost significant at the 5% level.

Granger Causality Links at the 5% and 10% significance level are given in Table 53 and Table 54.

Table 53: Granger Causality Links at The 5% Significance Level

	dLNFPI	BB	dCAB	dLNISE	dLNEXC	dLNCPI	dLNINTRATE	dLNIPI
dLNFPI	------	×	×	√	√	×	×	×
BB	×	------	×	×	√	×	√	×
dCAB	×	×	------	×	×	×	√	√
dLNISE	×	×	×	------	×	×	×	×
dLNEXC	×	×	×	√	------	×	×	×
dLNCPI	×	√	√	×	×	------	×	×
dLNINTRATE	×	×	×	×	×	×	------	×
dLNIPI	×	×	×	×	×	×	×	------

Table 54: Granger Causality Links at The 10% Significance Level

	dLNFPI	BB	dCAB	dLNISE	dLNEXC	dLNCPI	dLNINTRATE	dLNIPI
dLNFPI	------	×	×	√	√	×	×	×
BB	×	------	×	×	√	×	√	×
dCAB	×	√	------	×	×	×	√	√
dLNISE	×	×	×	------	×	×	×	×
dLNEXC	×	×	×	√	------	×	×	×
dLNCPI	×	√	√	×	×	------	×	×
dLNINTRATE	×	√	√	×	×	√	------	×
dLNIPI	×	×	×	×	×	×	×	------

These results are consistent with Table 44 which shows the Causality Links of dLNFPI and Other Factors. Foreign portfolio investment affects Istanbul Stock Exchange Price Index and Exchange Rates. But FPI is not influenced by other factors.

4.8. IMPULSE RESPONSES

In signal processing, the impulse response, or impulse response function (IRF), of a dynamic system is its output when presented with a brief input signal, called an impulse. More generally, an impulse response refers to the reaction of any dynamic system in response to some external change. In both cases, the impulse response describes the reaction of the system as a function of time.

In economics, especially in contemporary macroeconomic modeling, impulse response functions describe how the economy reacts over time to exogenous impulses, which economists usually call 'shocks', and are often modeled in the context of a vector autoregression.

Impulses that are often treated as exogenous from a macroeconomic point of view include changes in

- Government spending,
- Tax rates,
- Fiscal policy parameters,
- The monetary base,
- Other monetarypolicy parameters,
- Productivity or other technological parameters and
- Preferences, such as the degree of impatience.

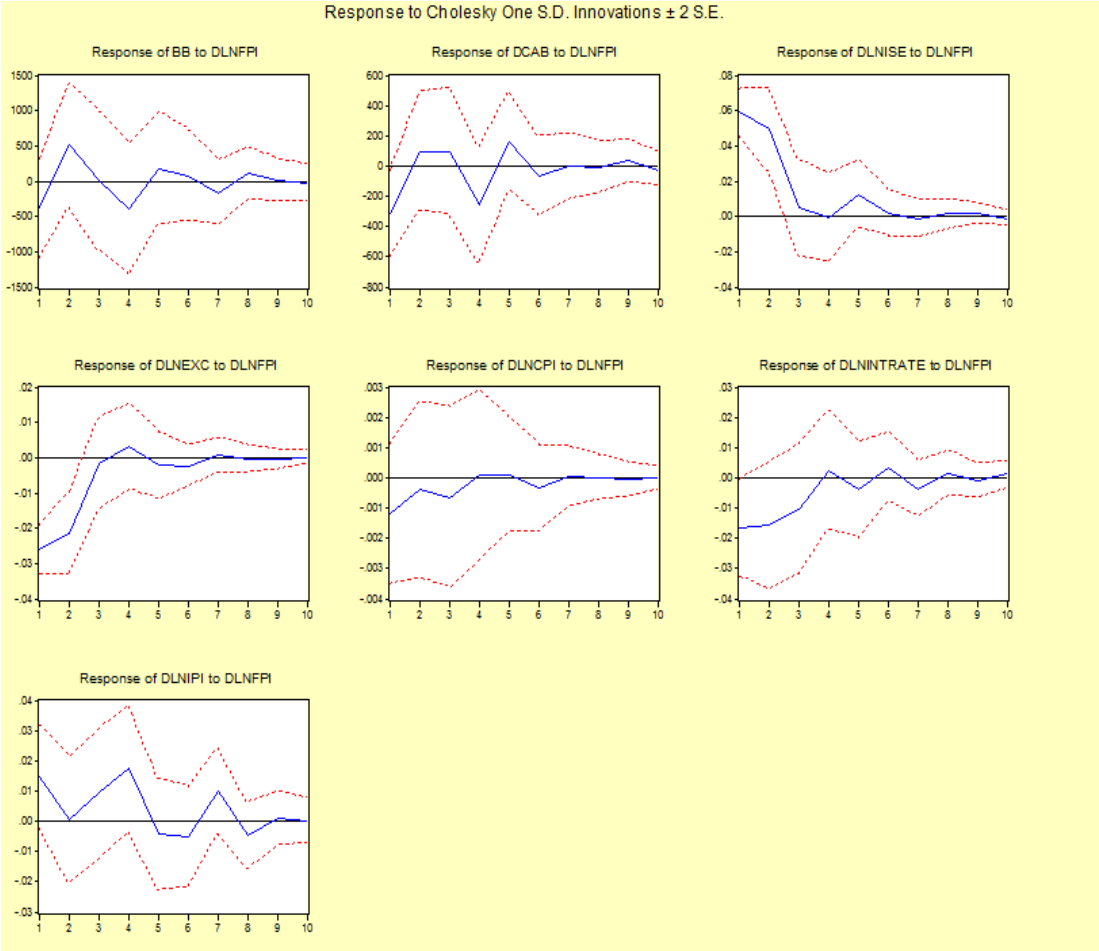
Impulse response functions describe the reaction of endogenous macroecenomic variables such as output, consumption, investment and employment at the time of shock and over subsequent points in time.

An impulse response function traces the response to a one-time shock in the innovation. The accumulated response is the accumulated sum of the impulse responses. It can be interpreted as the response to step impulse where the same shock occurs in every period from the first.

For stationary VARs, the impulse responses should die out to zero and the accumulated responses should asymptote to some (non-zero) constant.

Responses of all factors to one standard deviation innovation in foreign portfolio investment are given in Figure 22.

Figure 22: Responses of All Factors to dLNFPI Innovation

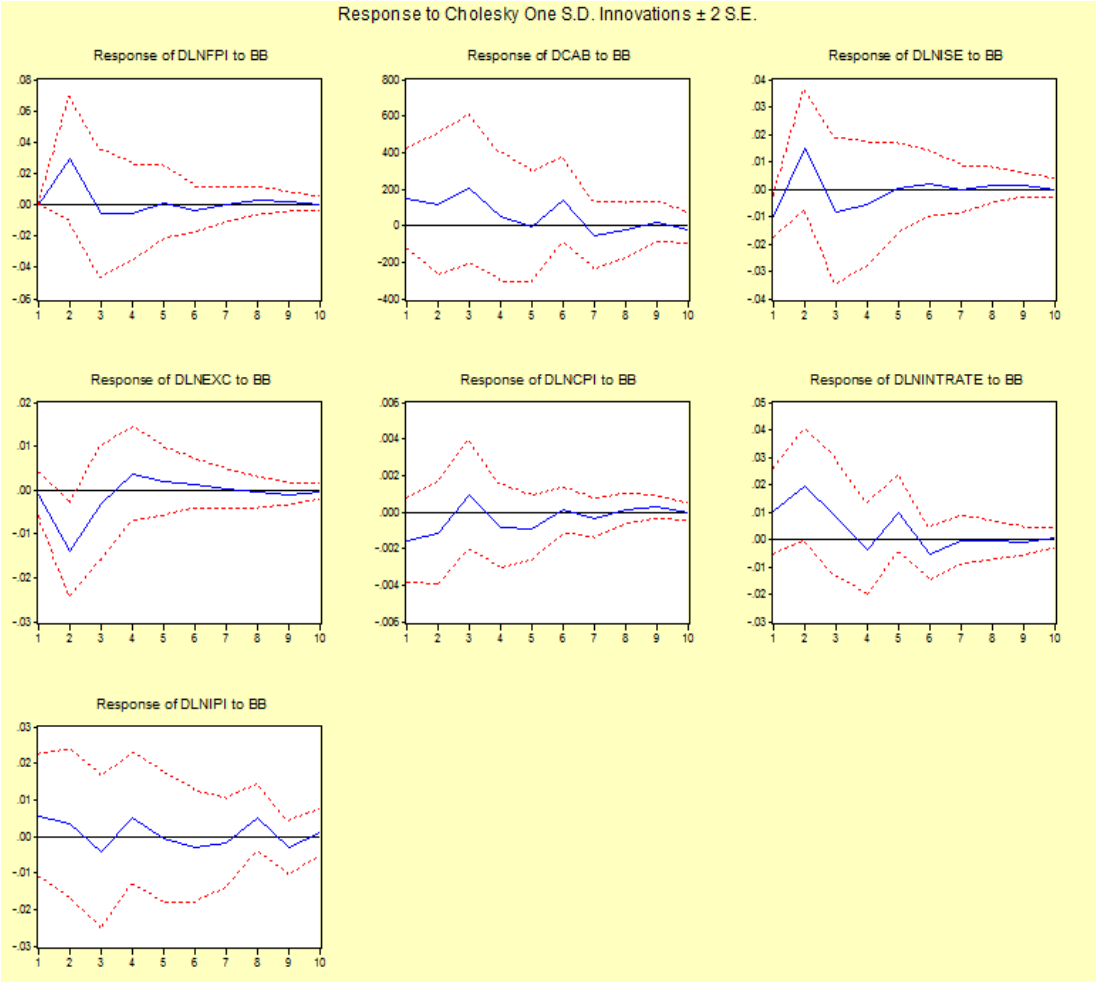


Response of Istanbul Stock Exchange Price to FPI and response of exchange rates to FPI are statistically significant until the 2,5. period. Foreign portfolio investment affects ISE positively and affects exchange rates negatively in these periods.

Foreign portfolio investment affects other factors positively in some periods and affects negaitively in some periods. But, these responses are not statistically significant.

Responses of all factors to one standard deviation innovation in budget balance are given in Figure 23.

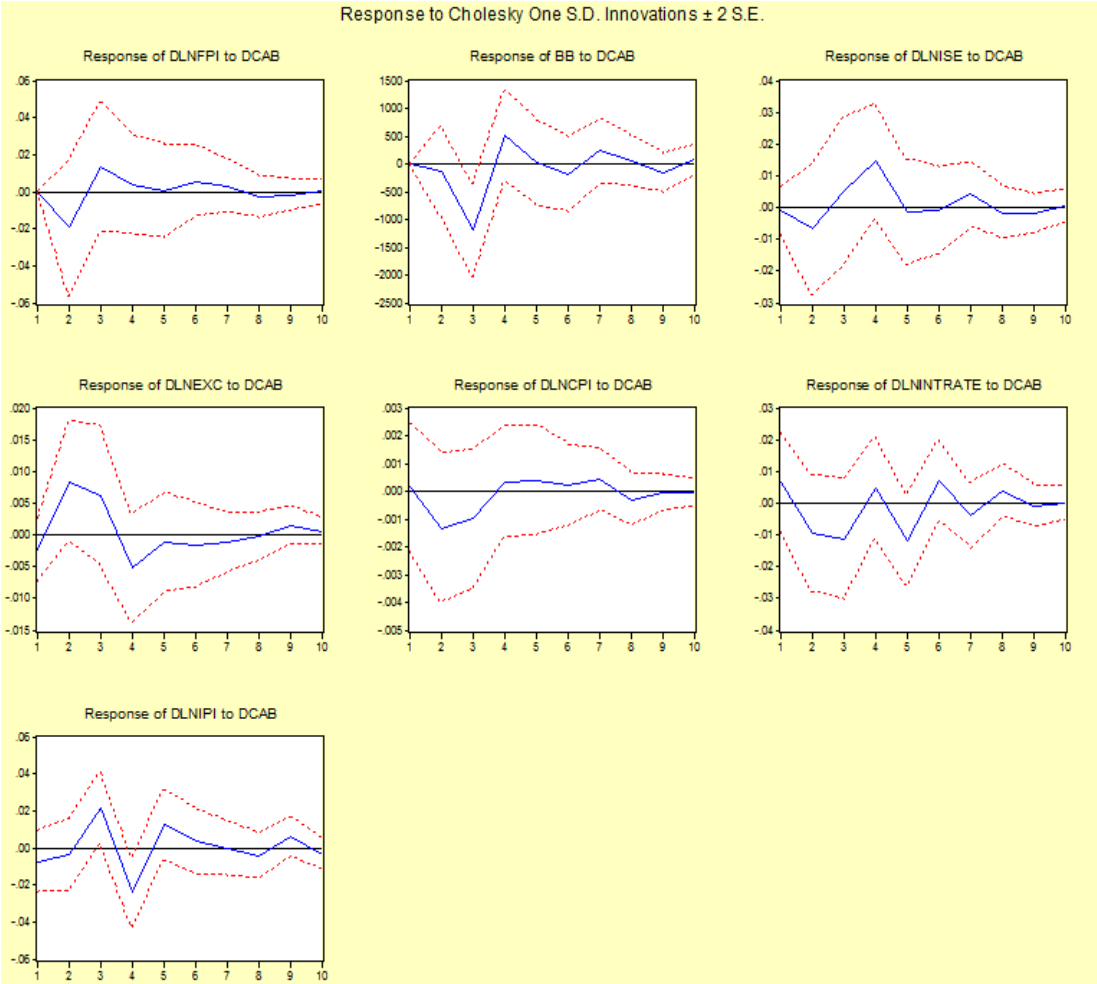
Figure 23: Responses of All Factors to BB Innovation



Budget balance affects all factors positively in some periods and affects negaitively in some periods. But, these responses to BB are not statistically significant.

Responses of all factors to one standard deviation innovation in current account balance are given in Figure 24.

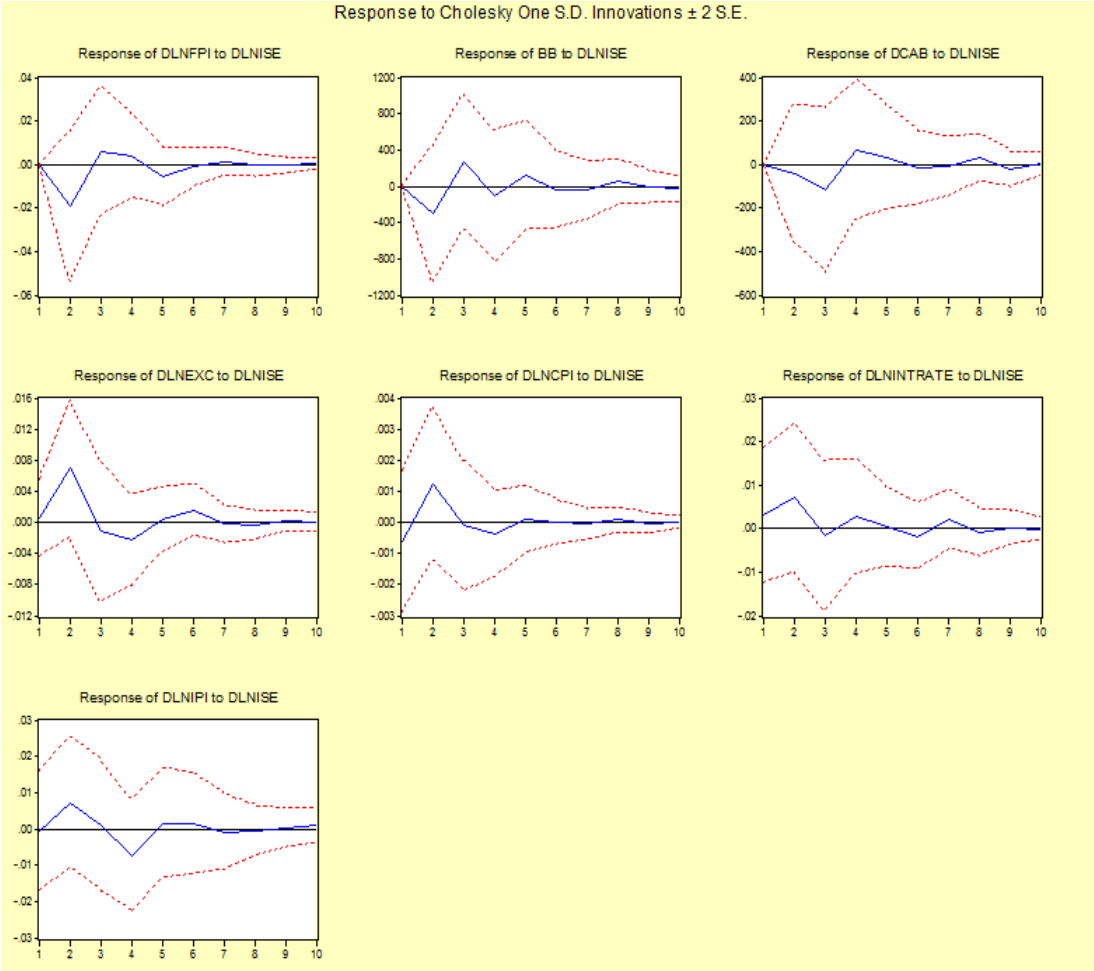
Figure 24: Responses of All Factors to dCAB Innovation



Current account balance affects all factors positively in some periods and affects negaitively in some periods. But, these responses to CAB are not statistically significant.

Responses of all factors to one standard deviation innovation in Istanbul Stock Exchange Price Index are given in Figure 25.

Figure 25: Responses of All Factors to dLNISE Innovation



Istanbul Stock Exchange Price Index affects all factors positively in some periods and affects negaitively in some periods. But, these responses to ISE are not statistically significant.

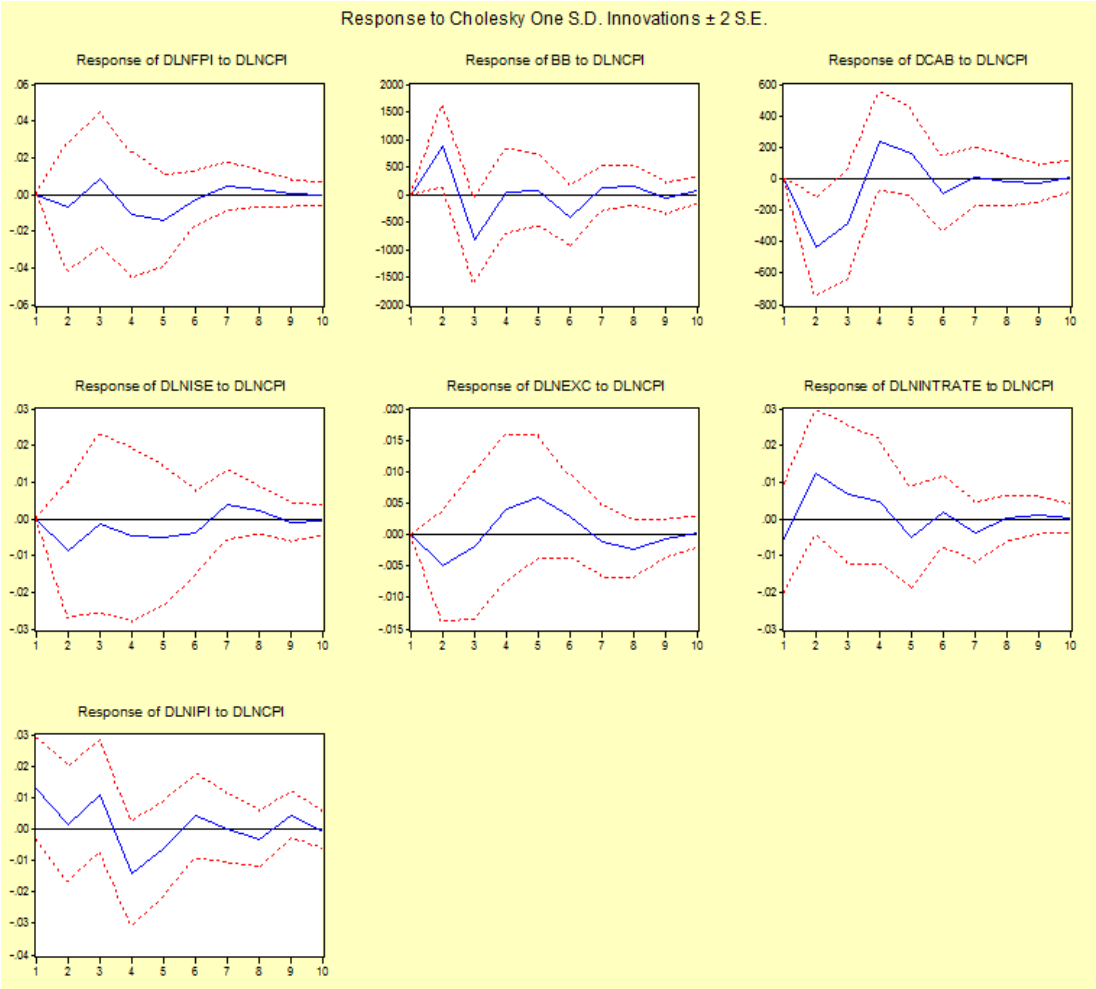
Responses of all factors to one standard deviation innovation in exchange rate are given in Figure 26.

Figure 26: Responses of All Factors to dLNEXC Innovation

Exchange rate affects all factors positively in some periods and affects negaitively in some periods. But, these responses to EXC are not statistically significant.

Responses of all factors to one standard deviation innovation in consumer price index are given in Figure 27.

Figure 27: Responses of All Factors to dLNCPI Innovation

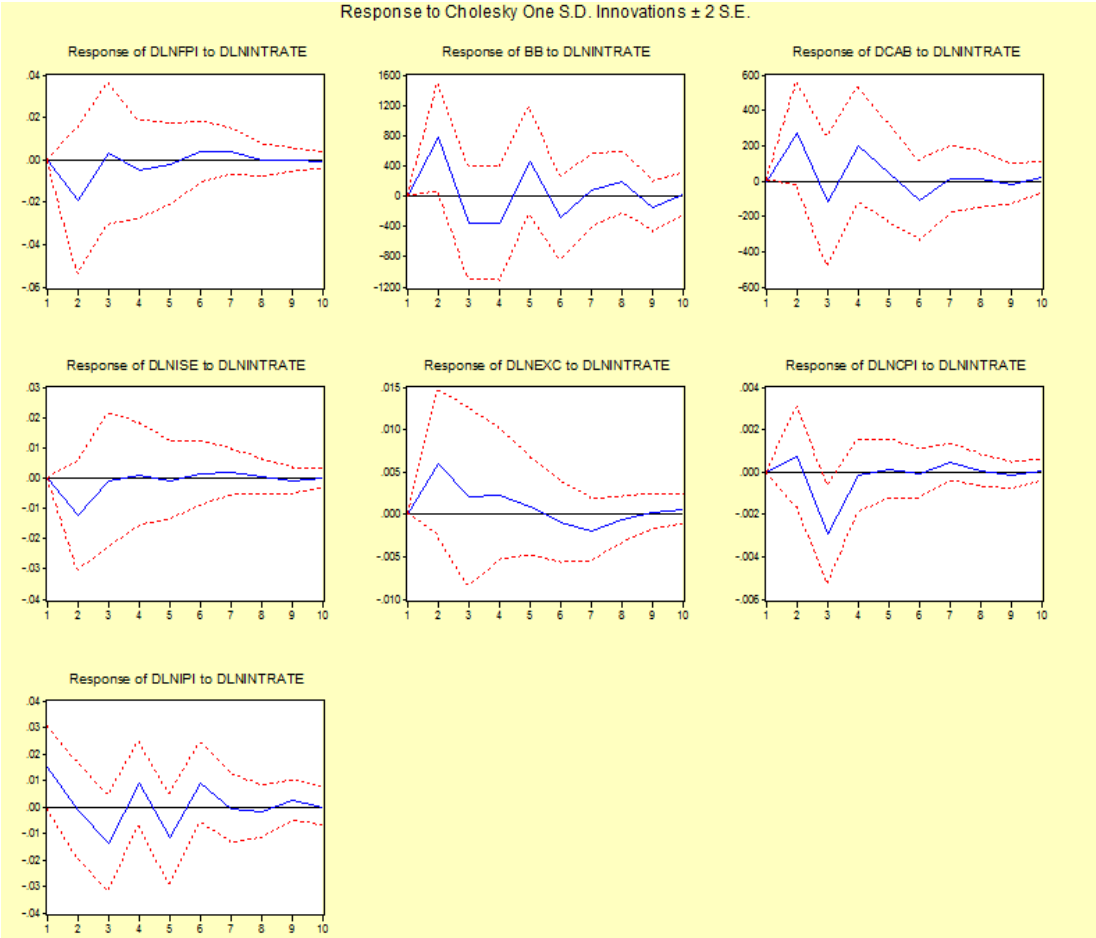


Response of budget balance to CPI is statistically significant until 2.period and response of current account balance to CPI is statistically significant until the 3. period. Consumer price index affects budget balance positively and affects current account balance negatively in these periods.

Consumer price index affects other factors positively in some periods and affects negaitively in some periods. But, these responses are not statistically significant.

Responses of all factors to one standard deviation innovation in interest rate are given in Figure 28.

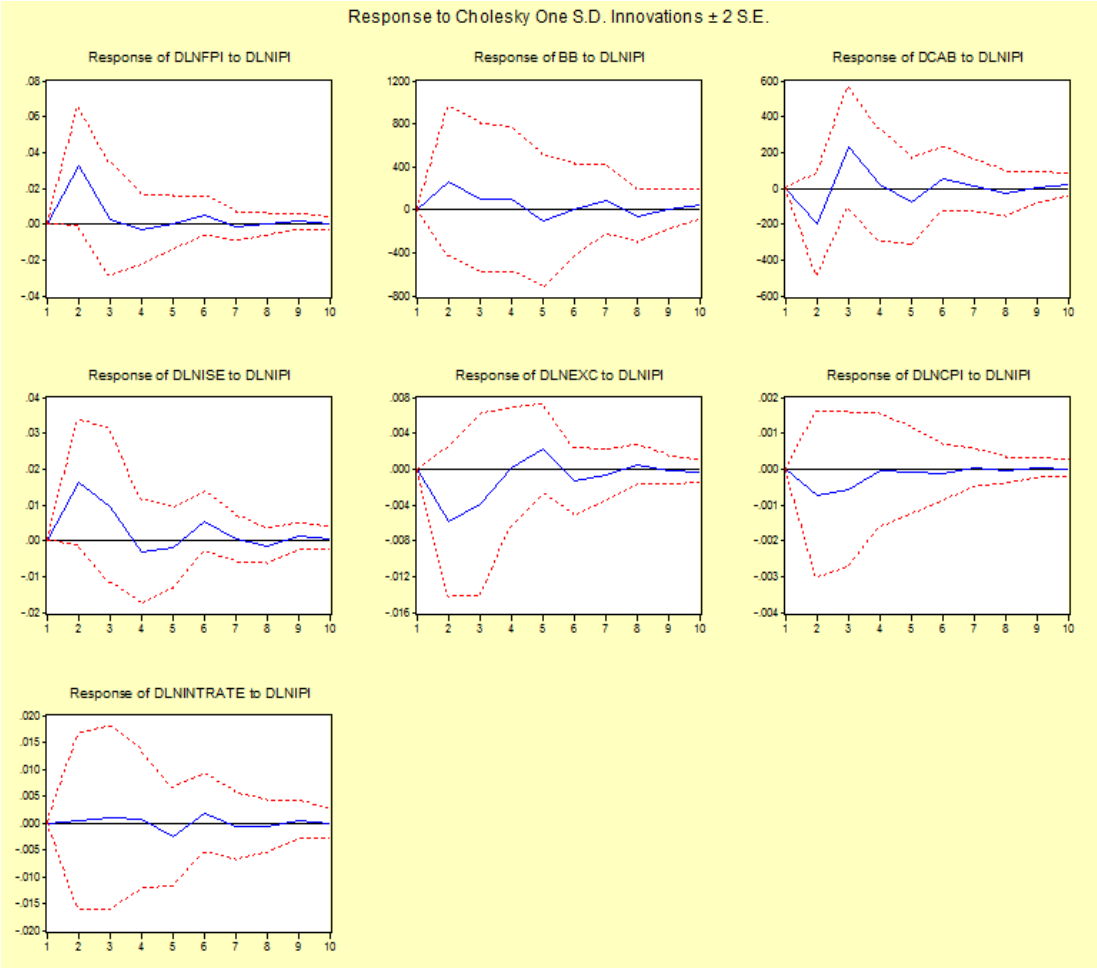
Figure 28: Responses of All Factors to dLNINTRATE Innovation



Interest rate affects all factors positively in some periods and affects negaitively in some periods. But, these responses to INTRATE are not statistically significant.

Responses of all factors to one standard deviation innovation in international production index are given in Figure 29.

Figure 29: Responses of All Factors to dLNIPI Innovation



Industrial production index affects all factors positively in some periods and affects negaitively in some periods. But, these responses to IPI are not statistically significant.

Impulse Responses of all factors are given in Table 55. Impulses are shown in vertical column and responses are shown in horizontal column.

Table 55: Impulse Responses

	dLNFPI	BB	dCAB	dLNISE	dLNEXC	dLNCPI	dLNINTRATE	dLNIPI
dLNFPI	------	×	×	√	√	×	×	×
BB	×	------	×	×	×	×	×	×
dCAB	×	×	------	×	×	×	×	×
dLNISE	×	×	×	------	×	×	×	×
dLNEXC	×	×	×	×	------	√	√	×
dLNCPI	×	√	√	×	×	------	×	×
dLNINTRATE	×	×	×	×	×	×	------	×
dLNIPI	×	×	×	×	×	×	×	------

When we look at Table 55, results of impulse responses are consistent with Granger Causality Test's results. Foreign portfolio investment affects Istanbul Stock Exchange Price Index and exchange rates. But FPI is not influenced by other factors.

4.9. VARIANCE DECOMPOSITION

While impulse response functions trace the effects of a shock to one endogenous variable on to the other variables in the VAR, variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR.

In econometrics and other applications of multivariate time series analysis, a variance decomposition or forecast error variance decomposition is used to aid in the interpretation of a vector autoregression (VAR) model once it has been fitted.

The variance decomposition indicates the amount of information each variable contributes to the other variables in the autoregression. It determines how much of the forecast error variance of each of the variables can be explained by exogenous shocks to the other variables.

Variance Decompitions of all series would appear as in Table 56 to Table 63.

Table 56: Variance Decomposition of DLNFPI

Variance Decomposition of DLNFPI:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	0.125828	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.141295	83.85768	4.202656	1.849227	1.814693	1.034421	0.244159	1.800500	5.196663
3	0.143155	82.46435	4.263098	2.699103	1.940375	1.158717	0.584148	1.797862	5.092344
4	0.143914	81.59672	4.351116	2.741351	1.995101	1.154881	1.188275	1.887118	5.085436
5	0.145386	80.77004	4.269730	2.688695	2.105082	1.140881	2.165740	1.875564	4.984272

For the foreign portfolio investment series, interestingly, while the percentage errors that is attributable to own shocks is 100% in the first period. But this proportion is decreasing from 100% to 80% in the 5th period. Budget balance and international production index explain 5% of the variation in foreign portfolio investment in the last period. Other series explain around 1-2% of the variation.

Table 57: Variance Decomposition of BB

Variance Decomposition of BB:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	2670.985	1.987102	98.01290	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	2992.098	4.478249	78.41269	0.210880	1.020426	0.002558	8.462754	6.617515	0.794929
3	3492.368	3.287215	64.44975	11.62927	1.357929	0.833532	11.89908	5.874242	0.668978
4	3591.614	4.307349	61.14264	12.99497	1.363151	1.627355	11.26435	6.599435	0.700754
5	3670.586	4.358489	60.09882	12.44382	1.405827	2.199900	10.81760	7.922121	0.753423

For the budget balance series, in the first period, variation in BB results from its own shocks, that is 98%. But this proportion is decreasing from 98% to 60% in the 5th period. Current account balance explains 12,5% and consumer price index explains 8% of the variation in budget balance in the last period. Other series explain around 1-4% of the variation.

Table 58: Variance Decomposition of DCAB

Variance Decomposition of DCAB:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	1093.486	8.211306	1.780039	90.00866	0.000000	0.000000	0.000000	0.000000	0.000000
2	1368.243	5.749959	1.885522	74.59822	0.095014	1.672643	10.00099	3.866483	2.131161
3	1472.669	5.393906	3.475033	65.02225	0.691596	4.887249	12.30466	3.937099	4.288208
4	1530.706	7.800635	3.309649	60.23095	0.842595	4.708560	13.74151	5.384808	3.981292
5	1558.434	8.631207	3.194960	58.12087	0.856953	5.461360	14.35903	5.277148	4.098474

For the current account balance series, in the first period, variation in CAB results from its own shocks, that is 90%. But this proportion is decreasing from 90% to 58% in the 5th period. Consumer price index explains 14,5% and foreing portfolio investments explains 8,5% of the variation in current account balance in the last period. Other series explain around 1-5% of the variation.

Table 59: Variance Decomposition of DLNISE

Variance Decomposition of DLNISE:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	0.066412	78.93916	2.258928	0.019206	18.78271	0.000000	0.000000	0.000000	0.000000
2	0.091118	71.08871	3.785826	0.543360	18.11742	0.568787	0.894205	1.842065	3.159624
3	0.092488	69.25460	4.455780	0.850631	18.05921	0.570669	0.889709	1.796066	4.123334
4	0.093981	67.07525	4.662021	3.197779	17.51963	0.566165	1.118540	1.753418	4.107204
5	0.095195	67.14929	4.545080	3.139974	17.14842	0.881774	1.363209	1.717890	4.054355

For the ISE series, in all periods, variation in ISE results from foreign portfolio investments and its own shocks. Other series explain around 1-4% of the variation.

Table 60: Variance Decomposition of DLNEXC

Variance Decomposition of DLNEXC:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	0.032078	65.34024	0.100852	0.506023	0.035376	34.01751	0.000000	0.000000	0.000000
2	0.043630	59.85803	10.18381	3.982787	2.549781	18.38884	1.345711	1.892309	1.798730
3	0.044463	57.77776	10.25530	5.708891	2.522507	17.71399	1.466018	2.026081	2.529450
4	0.045427	55.85482	10.51002	6.766412	2.679017	17.35728	2.210570	2.196390	2.425489
5	0.045999	54.71849	10.41618	6.663474	2.621291	16.98280	3.815628	2.177372	2.604769

For the exchange rates series, in all periods, variation in exchange rates results from foreign portfolio investments and its own shocks. Also, budget balance

explain 10% of the variation in exchange rate series. Other series explain around 2-6% of the variation.

Table 61: Variance Decomposition of DLNCPI

Variance Decomposition of DLNCPI:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	0.008908	1.753448	3.000850	0.024939	0.487617	8.445555	86.28759	0.000000	0.000000
2	0.009823	1.602897	3.914516	1.867408	2.035334	7.296485	82.19811	0.542018	0.543228
3	0.010548	1.763278	4.207644	2.495465	1.777044	8.668285	72.07201	8.241308	0.774966
4	0.010648	1.736798	4.716535	2.556475	1.857857	8.976178	71.27555	8.116703	0.763909
5	0.010731	1.719753	5.354499	2.656931	1.835493	8.839193	70.83078	8.006982	0.756373

For the consumer price index series, in all periods, variation in CPI results from its own shocks. Also, exchange rates explain 8,8% of the variation in exchange rate series. Other series explain around 1-3% of the variation.

Table 62: Variance Decomposition of DLNINTRATE

Variance Decomposition of DLNINTRATE:									
Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	0.062647	7.085586	2.670000	1.047276	0.249164	6.685810	0.707733	81.55443	0.000000
2	0.072295	10.13487	9.397532	2.453853	1.191134	8.337365	3.426911	65.05651	0.001826
3	0.075863	11.04042	9.607397	4.417685	1.123058	7.572268	3.861701	62.35907	0.018406
4	0.076668	10.91375	9.627516	4.702429	1.234270	8.031581	4.142746	61.32395	0.023768
5	0.078571	10.65203	10.61821	6.729606	1.176724	7.654034	4.391513	58.65335	0.124526

For the interest rate series, in the first period, variation in INTRATE results from its own shocks, that is 81%. But this proportion is decreasing from 81% to 58% in the 5th period. Foreign portfolio investment, budget balance explain 10,5% and exchange rate explains 7,5% of the variation in interest rate in the last period. Other series explain around 0,1-7% of the variation.

Table 63: Variance Decomposition of DLNIPI

Variance Decomposition of DLNIPI:

Period	S.E.	DLNFPI	BB	DCAB	DLNISE	DLNEXC	DLNCPI	DLNINTR...	DLNIPI
1	0.065381	5.131403	0.747177	1.295415	0.005227	2.543141	3.795905	5.259685	81.22205
2	0.070056	4.476976	0.869685	1.404979	1.068226	2.279132	3.358700	4.610094	81.93221
3	0.076549	5.235153	1.055155	9.045219	0.906895	2.931874	4.760936	6.996094	69.06867
4	0.084586	8.545174	1.199088	15.51145	1.507459	3.120883	6.755556	6.787078	56.57331
5	0.087626	8.201183	1.121756	16.43390	1.436816	4.602232	6.759711	8.149467	53.29494

For the industrial production index series, in the first period, variation in IPI results from its own shocks, that is 81%. But this proportion is decreasing from 81% to 53% in the 5th period. Current account balance explains 16,5% of the variation in industrial production index in the last period. Also, foreing portfolio investment and interest rate explain 8% of the variation in IPI. Other series explain around 1-6,7% of the variation.

4.10. TEST RESULTS

According to Granger Causality Tests and Impulse Responses foreign portfolio investment affects Istanbul Stock Exchange Price Index and exchange rates. But FPI is not influenced by other factors.

Variance decomposition says that variation in Istanbul Stock Exchange Price Index and variation in Exchange Rates result from Foreign Portfolio Investments. Other variations of variables result from their own shocks.

Results of all tests are consistent with eachother and say that foreign portfolio investment affects ISE positively and affects exchange rates negatively. But FPI is not affected by all factors.

CONCLUSION

This thesis analyzes the relationship between foreign portfolio investment to Istanbul Stock Exchange and main macroeconomic variables. Also an application on ISE (Istanbul Stock Exchange) is done to find the relatinship between FPI to ISE and main macroeconomic variables.

There are more macroecomic variables which effect to FPI to Istanbul Stock Exchange. Based on the other studies in literature, factors are determined as follows:

- Market Size
- Interest Rates
- Exchange Rates
- Inflation Rates
- Economic Growth
- Government Finance (Balance of Payments)
- Tax Rates on Interest or Dividends
- Country Risk
- Credit Rating
- Openness
- Transaction Cost
- Rate of Return on Stock Market
- Disclosure of Information

This study uses monthly data for the period 2006:12 – 2011:12. 61 observations are used in application to determine the relationship between all variables. All datas are obtained from Database of Central Bank of the Republic of Turkey except FPI variable. It is obtained from Central Registry Agency Electronic Platform.

Dependent variable of the model is LNFPI which represents the natural logarithm of Foreign Portfolio Investments to Turkey.

Independent variables of the model are BB (Budget Balance), CAB (Current Account Balance), LNISE (Natural Logarithm of Istanbul Stock Exchange National 100 Price Index), LNEXC (Natural Logarithm of Nominal Exchange Rate Between TL and USD), LNCPI (Natural Logarithm of Consumer Price Index), LNINTRATE

(Natural Logarithm of Average Monthly Interest Rate Between Banks), LNIPI (Natural Logarithm of Industrial Production Index).

The relationship between those variables can be tested by using the Vector Autoregression method. All the regressions in this study are run via EViews 5.1 program.

Autocorrelation, ADF and PP Tests, Var Granger Causality Tests, Impulse Responses and Variance Decomposition are used for the purpose of examining the impacts of these variables on the level of portfolio investments to Turkey.

ADF Tests and PP Tests show that variables don't show stationary in level except BB series. So we don't take 1st difference of BB series. We take differences of other series in application.

According to Granger Causality Tests and Impulse Responses, foreign portfolio investment affects Istanbul Stock Exchange Price Index and exchange rates. But FPI is not influenced by all factors.

Variance decomposition says that variation in Istanbul Stock Exchange Price Index and variation in Exchange Rates result from Foreign Portfolio Investments. Other variations of variables result from their own shocks.

Results of all tests are consistent with eachother and say that foreign portfolio investment affects ISE positively and affects exchange rates negatively. But FPI is not affected by all factors.

According to the most studies, the foreign portfolio investments (LNFPI) may increase with more favorable budget balance (BB), more favorable current account balance (CAB), higher ISE price index (LNISE), more valuable domestic currency (LNEXC), higher consumer price index (LNCPI), higher domestic interest rates (LNINTRATE), and higher industrial production index (LNIPI).

On the contrary of the findings of studies in literature, all factors don't effect Foregn Portfolio Investments. But Foreign Portfolio Investments effect Istanbul Stock Exchange Price Index and Nominal Exchange Rate Between TL and USD.

But, correlation matrix can give some informations about relationships between all factors and foreign portfolio investments. There are positive relationships between Budget Balance, Istanbul Stock Exchange Price Index, Consumer Price Index, International Price Index and Foreign Portfolio Investments. However, there

are negative relationships between Current Account Balance, Exchange Rates, Interest Rates and Foreign Portfolio Investments. There is a strong positive relationship between Istanbul Stock Exchange Price Index and Foreign Portfolio Investments which is 0.94. But Granger Causality Tests say that there is a one way relationship from Foreign Portfolio Investments to Istanbul Stock Exchange Price Index. Also, there is a strong negative relationship between Interest Rate and Foreign Portfolio Investment which is -0.63. But Granger Causality Tests say that there is no relationship between Foreign Portfolio Investments and Interest Rates.

This study can be used to understand the relationship between Foreign Portfolio Investment to Istanbul Stock Exchange and Macroeconomic Variables. People can benefit from this thesis to realize which macroeconomic variables effect foreign portfolio investments to Turkey. Also they can learn changes in macroeconomic variables after attracting portfolio investments which is obtained from outside of Turkey.

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