THE RELATIONSHIP BETWEEN FOREIGN PORTFOLIO INVESTMENT AND MACROECONOMIC VARIABLES

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Abstract
     The study analyzes the relationship between foreign portfolio investments and macroeconomic factors for the period between 2006-2012 by using VAR, Var Granger Causality Tests, Impulse Responses and Variance Decomposition. According to Granger Causality Tests and Impulse Responses, foreign portfolio investment affects Istanbul Stock Exchange Price Index and exchange rates. Only industrial production index has affect on foreign portfolio investment.

Keywords: Foreign portfolio investment, macroeconomic variables, Turkey

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.
     Erol (2000) and Pazarlıoglu and Gulay (2007) suggest that there are many benefits of foreign capital such as; contribution to the host countries' capital accumulation and production capacity, new technology and knowledge, contribution to the improvement of the country's balance of payments, new sales and marketing techniques, new business opportunities, and high tax revenue. Foreign capital also has various effects on the host country's production, employment, income, balance of payments and economic development.
     Although capital flows are one of the most attractive subjects to the researchers, there still are nish areas to be analyzed. Thus, this study focuses on the the relationship between foreign portfolio investment to Istanbul

Stock Exchange and main macroeconomic variables. The study makes contributions to the literature by analyzing a developing country-Turkey-whose financial markets are opted by many foreign investors to other financial markets. Secondly, since the foreign investors hold more than half of the assets in Turkish debt and equity markets, and their transactions have considerable impact on financial markets, this study will pave the way for understanding the effect of foreign investors especially on macroeconomic variables. Thirdly, Turkey has been living with current account deficit problem for decades and government induces foreign portfolio investors in order to finance the deficit, the study will awake the government to capture the total effect of foreign investment, which might be used while giving decisions about foreign investors and balance of payment.

The paper has four parts. The first part briefly gives information about foreign portfolio investment to developing countries and to Turkey. The second part dicusses the literature on macroeconomic factors affected from foreign portfolio investments. The third part is about empirical analysis. The last part concludes.

Foreign Portfolio Investment To Developing Countries And Turkey
Developing Countries

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 and Eratas, 2009: 9).

Net potfolio flows to developing countries in 1985-2011 period are given in Figure 1. The figure shows that 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 average because of the instability of financial markets due to global financial crisis.

Figure 1. Net Portfolio Flows to Developing Countries
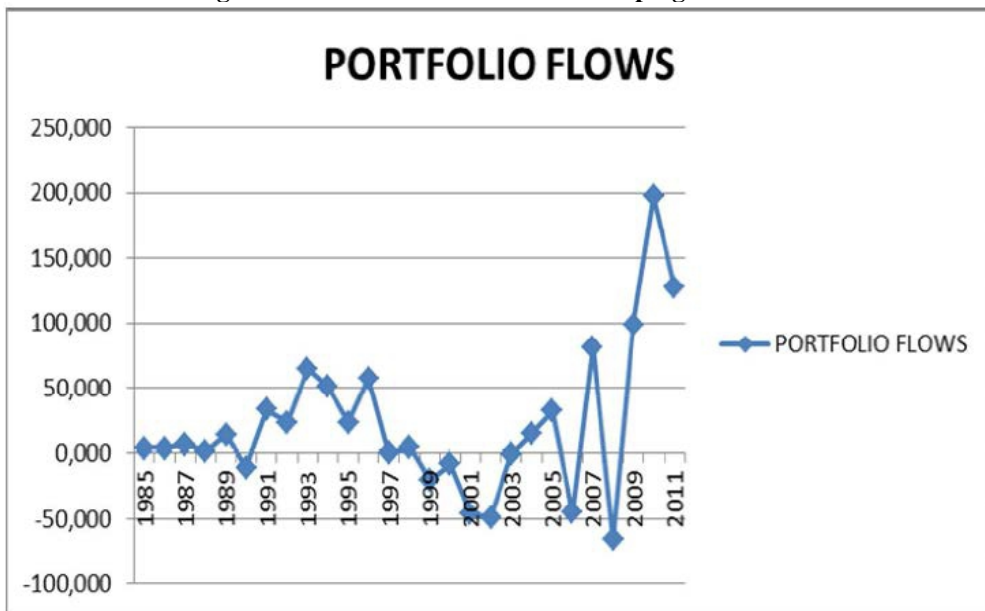
Source: IMF World Economic Outlook Database, September 2011.

Net portfolio flows to developing countries are classified by their regions in Table 1. It is seen 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 1. 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.

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 fluctuations 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.

Table 2. 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.

Table 2 exhibits the foreign portfolio investments for the the period of 25 years. 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. 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).

Literature on Macroeconomic Factors

There are numerous macroecomic variables which effect to foreign portfolio investment to financial markets. 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 3.

Table 3. Factors and 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 2.

Figure 2. Determinants of International Capital Flows

Source: Adapted from Kim (1999: 60).
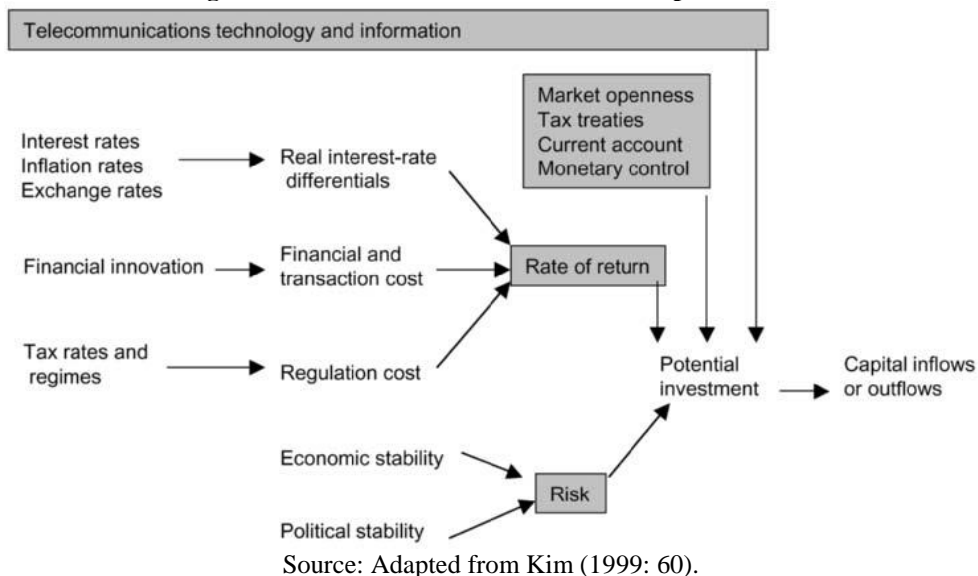
Market Size

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

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.

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).

Inflation Rates

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

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.

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

Tax Rates

The nature of a country's tax laws have an important affect on attracting 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. 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).

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).

Credit Rating of Securities

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. 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 to determine the likelihood that the government will pay its bond obligations.

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.

Transaction Cost

High transaction costs affect foreign investors' choice negatively. Investors will normally prefer countries where the transaction costs are relatively low.

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.

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. Disclosure of information provides pricing efficiency and market confidence.

Empirical Analysis
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. 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.

Model and Variables

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

LNFPI = *C1*+ *C2* **BB** + *C3 CAB* + *C4* **LNISE** + *C5* **LNEXC** + *C6* **LNCPI** *C7* **LNINTRATE** + *C8* **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

C1….8 : Coefficient of Variables

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. Augmented Dickey/Fuller (ADF) test is used to determine the stationarity of the series.

Table 4. Results of ADF Tests

Series	ADF Test Statistic (Level)		ADF Test Statistic (1st Difference)	
	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)

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).

Lag Order Selection

Lag lengths are used in Granger Causality Tests to determine the short run relationships of foreign portfolio investments with other factors. 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 5. 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, Granger Causality Tests are used to determine the relationship between foreign portfolio investments and all factors in short run.

Results
Granger Causality Tests
        Causality test results are shown on the following table (Table 6). According to the results:
        * 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 is 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.
        * 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.
        * 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.
        * 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.
        * 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.
        * 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.
        * 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.

Table 6. Causality Links of FPI and Other Factors

CAUSAL LINKS	SIGNIFICANCE LEVEL		
	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 also used to see all causality links of variables. The results show that Foreign portfolio investment affects Istanbul Stock Exchange Price Index and Exchange Rates. FPI is only affected from industrial production index (Table 7.).

Table 7. Granger Causality Links

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

Significance level: 10%

Impulse Responses

Responses of all factors to one standard deviation innovation in foreign portfolio investment are given in Figure 3. 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.

Figure 3. Responses of Factors to FPI
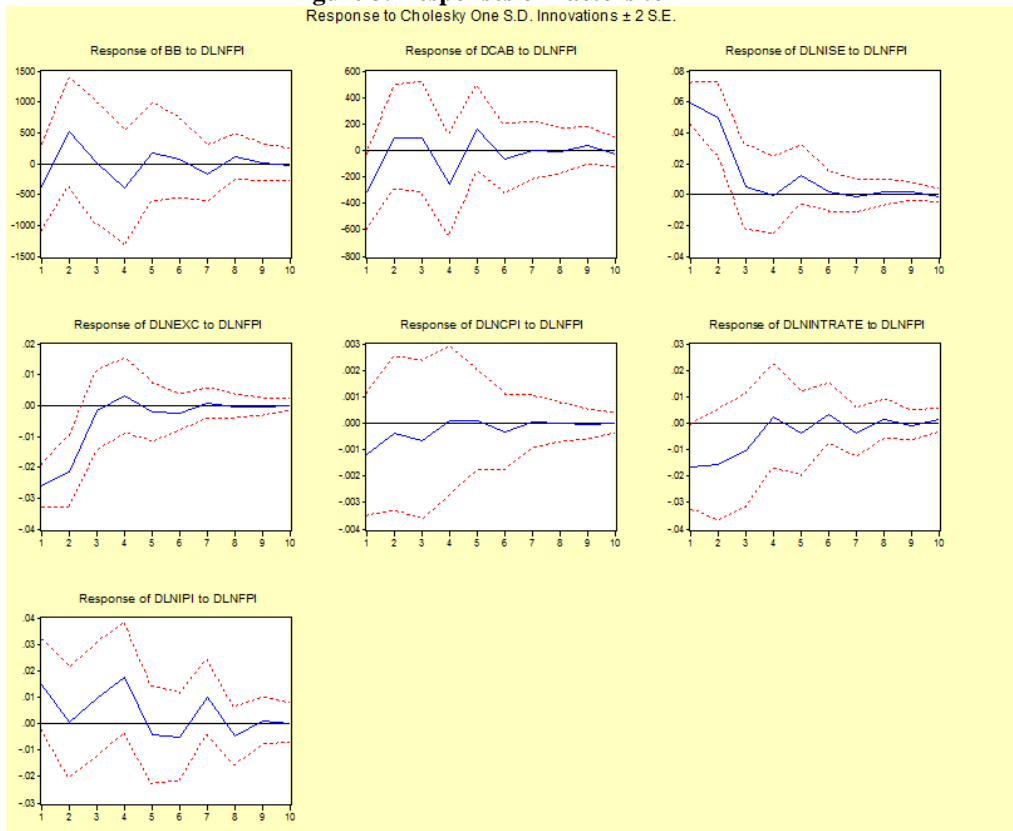
Variance Decomposition

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 8.

Table 8. Variance Decomposition of FPI

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.

Conclusion

This study analyzes the relationship between foreign portfolio investment to Istanbul Stock Exchange and main macroeconomic variables by using monthly data for the period 2006:12 – 2011:12. Vector Autoregression method, 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.

According to Granger Causality Tests and Impulse Responses, foreign portfolio investment affects Istanbul Stock Exchange Price Index and exchange rates. Only industrial production index has affect on foreign portfolio investment. 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.

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