

MACROECONOMIC DETERMINANTS OF PORTFOLIO FLOWS TO TÜRKİYE



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ABSTRACT

Macroeconomic Determinants of Portfolio Flows to Türkiye

This study aims to analyze the macroeconomic determinants of portfolio flows to Türkiye. The effects of global and country-specific financial conditions on portfolio investments are analyzed. In the empirical analysis, time series data sets and Autoregressive Distributed Lag (ARDL) model are employed. The findings showed that country risk premium, real effective exchange rate, inflation and industrial production have statistically significant effects on portfolio investments in Türkiye. The fact that macroeconomic stability and predictability stand out as inducing factors for portfolio investments is instructive for policy makers.

ÖZET

Türkiye'ye Yönelen Portföy Akımlarının Makroekonomik Belirleyicileri

Bu çalışma Türkiye'ye yönelen portföy akımlarının makroekonomik belirleyicilerini analiz etmeyi amaçlamaktadır. Küresel ve ülkeye özel finansal koşulların portföy yatırımları üzerindeki etkileri analiz edilmiştir. Ampirik analizde zaman serisi veri setleri ve Otoregresif Dağıtık Gecikme Modeli (ARDL) kullanılmıştır. Çalışmada elde edilen bulgular ülke risk priminin, reel efektif döviz kurunun, enflasyonun ve sanayi üretiminin Türkiye'ye yönelen portföy yatırımları üzerinde istatistiksel olarak anlamlı etkilere sahip olduğunu göstermektedir. Makroekonomik istikrarın ve öngörülebilirliğin yabancı portföy yatırımlarını teşvik edici unsurlar olarak öne çıkması politika yapıcılar için yol gösterici olmaktadır.

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I dedicate this thesis to my beloved nephew Kutay. I wish him a future full of health, success and happiness.

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CHAPTER 1

INTRODUCTION

Emerging countries seek to attract foreign resources to finance external deficits and economic activities due to their lack of savings. Those economies have higher growth potential compared to advanced economies due to young and growing population, novel industrialization and urbanization projects, and technological leapfrogging. However, it is essential to increase savings or provide external resources to support both the supply and the demand sides of economy in order to function properly (Peltonen et al., 2012). A precondition for a country and its assets to be considered in investment grade is growth prospects and macroeconomic stability in overall economy.

Portfolio investments are made in financial instruments. These instruments are equities and government and private sector debt securities. Portfolio flows have shorter maturities compared to foreign direct investments. This type of investment is also called hot money flows due to its characteristics. The volume of global portfolio flows is increasing due to globalization, the development of information technology and the increasing integration of financial markets. Portfolio flows, consisting of investments in equity and debt securities, now account for a significant share of cross-country capital flows. In 2024, %33 of the total gross foreign investments is composed of portfolio investments (CBRT). This trend is supported by factors such as increased participation of institutional investors, lower transaction costs and increased market access to emerging countries' financial markets.

Although portfolio flows create positive effects in the period of high inflows, they are highly volatile due to their great sensitivity to global and country-specific economic conditions so that it threatens financial stability due to the risk of sudden stops and outflows. In periods of high inflows, new funds create an upward effect on asset prices in financial markets, facilitate public and private sector borrowing, create appreciation in local currency and contributes to international reserves. In this respect, as long as it is manageable, portfolio flows in emerging economies are supportive for economies. However, high volume and unmanageable inflows create sudden surges in asset prices and create risks such as overvaluation of assets and currencies. An overvalued currency is a disadvantage for competitiveness of exporting sectors. On the other hand, a sudden deterioration in global risk appetite due to financial conditions or country-specific reasons may lead to rapid outflows. Rapid outflows lead to sudden and sharp declines in asset prices and put pressure on currencies. Countries may adopt macroprudential policies and capital control measures to support financial stability in cases of sudden and sharp portfolio flows. Despite the vulnerabilities, attracting portfolio flows is indispensable for emerging countries with external deficits to access foreign financial resources and thereby ensure economic growth and financial stability.

Portfolio flows are highly sensitive to global financial cycles and generally move in parallel. This dynamic highlights the significant influence of advanced economy central banks on global portfolio flows. After the Global Financial Crisis (GFC), global financial markets experienced severe crashes. With the launch of quantitative easing (QE) programs by advanced economy central banks, global liquidity increased, financial markets started to recover and global portfolio flows normalized. By 2013, the Federal Reserve Bank (FED) signaled to taper quantitative

easing and raised interest rates in 2015. As funds returned to advanced country assets, significant outflows from emerging economies were recorded in 2015. In 2019, financial markets again entered a turbulent period with the Covid-19 pandemic outbreak which affected the whole world profoundly. Financial consequences were relatively moderate compared to the GFC thanks to the monetary easing by central banks, which increased global liquidity and relieved financial markets. However, the impacts of the pandemic were severely felt in real economy.

Portfolio flows respond clearly to global and country-specific economic, financial and political conditions, and there are many studies in economics and finance literature that investigate the determinants of flows. Some studies in literature emphasize that global financial conditions are the main drivers of flows while others suggest that the country-specific conditions have a greater role.

Although there are many studies in the literature investigating the determinants of portfolio flows in Türkiye, there is a recent study gap. This thesis aims to fill this gap in the literature as it will focus on the recent time period. The study is organized as follows: 2. The Impacts of Portfolio Flows on National Economies, 3. Determinants of Portfolio Flows: Global and Country-Specific Conditions, 4. Türkiye's Macroeconomic Overview, 5. Literature Review, 5. Data, 6. Methodology, 7. Empirical Findings and 8. Conclusion and Policy Implications.

CHAPTER 2

THE IMPACTS OF PORTFOLIO FLOWS ON NATIONAL ECONOMIES

While investors chase returns, countries need to reduce their external deficits and promotes economic growth by directing the funds to finance the economic activities. A very significant advantage of portfolio flows is to meet the capital needs for economic development and welfare. Portfolio flows may be utilized to overcome the financing challenges, which is essential for infrastructural, industrial, and technological development.

Portfolio flows are of great importance for financial markets as well as real economies. Portfolio flows increase the volume and liquidity of financial markets. Markets with greater depth are more stable, less prone to sudden fluctuations and distortions. As portfolio flows increase the international reserves, they support the currency and contribute to reduce the volatility. Adequate international reserve level acts as a buffer against financial shocks especially in foreign exchange markets. Also flows provide sources for reducing current account deficits. Current account deficit puts pressure on the currency. If foreign capital does not flow as portfolio or direct investments, external borrowing would be inevitable. This causes pressure on government budget because of interest payments.

Governments often rely on portfolio flows in debt securities to finance fiscal deficits. If government deficits are financed through debt securities, a sizable portion of the buyers in domestic markets would be the domestic banks. The core activity of banks is not to finance government deficits but to meet the needs of economic agents. However, when the government directs banks to buy debt securities through various

regulations or when it is more profitable to invest in debt securities rather than carrying out their core activities, they would direct deposits and other liabilities to debt securities. Foreign portfolio flows to markets prevent domestic savings from financing the government deficits and increase the amount of funds available for other economic agents. This phenomenon, known as crowding out effect, refers to the limitation of financial resources to private sector investments and expenditures by government spending.

Finally, portfolio flows prioritize transparency and accountability. Countries implement regulatory reforms to attract flows which contributes to institutional development. Equity investors demand high standards in reporting, financial disclosure and transparency from companies. Those adapting to global standards enhance overall financial and management quality.

While portfolio flows provide significant benefits to national economies, they also create various financial risks and vulnerabilities. Risks mainly stem from the short-term nature of portfolio flows and their sensitivity to financial and political shocks. They react quickly to shifts in global risk sentiment. Sudden and high-volume outflows trigger mass collapses in equity and debt security markets.

High share of foreign investors in financial markets increase the adverse effects of financial shocks. This phenomenon is known as the contagion effect (Aloui et al., 2011). Emerging market investors seek safe assets in wake of financial and political turmoil which is simply due to investors' unwillingness to take emerging market risks. The severity of outflows depends on the extent of the presence of foreign investors in the financial markets. The more a country relies on foreign portfolio investments, the more vulnerable it is when capital flows out. In addition to

global conditions, country-specific economic and political crises may also lead to similar effects.

During periods of high flows, economies may lose competitiveness due to the appreciation of the local currencies. Especially exporting firms may lose their foreign market shares. In this case, it may be more profitable for them to halt domestic production and turn to cheaper imported goods or to abroad manufacturing. Thus, firms lose market share in foreign markets, domestic production declines and unemployment may rise. On the other side, currency depreciation is observed in periods of rapid outflows, which can trigger currency crises. Currency depreciation inflates foreign currency-denominated liabilities which increases debt service costs.

Another risk factor is that large portfolio flows may lead to overvaluation and price bubbles in equity and debt security markets. Extreme price movements in financial assets may end up in collapse as price bubbles burst at the first sign of deterioration in risk appetite. Financial institutions that are leveraged in financial assets whose prices have risen excessively may face the risk of bankruptcy during corrections. This could lead to a wave of bankruptcies that may affect the entire economy.

Another difficult-to-manage situation that high portfolio flows can create is a deviation of domestic liquidity conditions. An influx of foreign currency funds can boost foreign exchange liquidity in foreign exchange markets, leading to overvaluation of domestic currency. Monetary authorities may intervene to draw excessive foreign currency liquidity and inject domestic currency. Thus, domestic currency liquidity increases and market interest rates go down. Increase in liquidity may complicate the monetary policy objectives during the periods of tightening. Tightening policies intend to cool down economy and maintain high interest rates.

However, excessive liquidity may adversely affect the functioning of the tightening measures and disrupt transmission channels.

Countries that rely heavily on portfolio flows adjust their domestic policies to prioritize foreign investors in line with their wishes and expectations. Those policies are not always in favor of the locals. While all segments of the society benefit from the development of financial markets and the establishment of financial stability and economic growth, investors utilize the most of the policy steps that prioritize markets. This is because they directly benefit the market reforms increasing their returns. The growth of wealth and its concentration in certain segments of society may trigger social unrests.

Economies should adopt a balanced and strategic approach to minimize the risks of portfolio flows while reaping the benefits. Policy component must include implementing sound macroeconomic policies, improving the quality of financial institutions and taking stabilizing regulatory measures. Establishing macroeconomic stability reduces the volatility of portfolio flows and draws institutional investment funds to a, which are more interested in longer-term investments rather than short-term profit-seeking approach. This, in turn, reduces the volatility of portfolio flows and limits the adverse effects of hot money flows aiming making quick profits.

Keeping inflation at consistently low levels is a fundamental requirement of macroeconomic stability and sustainable growth. High inflation distorts pricing behavior not only in real economy but also in financial markets. Fiscal discipline is also essential for economic stability. It is a set of fiscal rules aim to limit public expenditures and to keep the budget deficit below a certain level. High and inefficient public expenditures deteriorate budget balance. There are two ways of financing budget deficits. One is to impose additional obligations on taxpayers in

order to increase revenues, and the other one is borrowing. Financing budget deficits through borrowing creates interest payment pressure on the budget and leads to continuation of deficit in following fiscal periods.

Adequate level of international reserve accumulation serves as a buffer against the risk of financial turmoil caused by outflows. Reserves may be utilized to meet the high demand of foreign currency. This reduces contagion of financial risks to real economy. To this extent, portfolio flows can be used to accumulate reserves during periods of high capital inflows to be utilized when market conditions reverse.

In order to maximize the benefits of portfolio flows and alleviate the pressure felt when financial cycles reverse, the funds must be directed to productive areas when they are abundant. Long term investments in productive sectors such as technology, education and renewable energy will contribute to the country's capacity to generate revenues in foreign currency. Emerging economies must prioritize strategies that enhance long-term productive capacity and foster sustainable growth. Their priority must aim for stability and resilience instead of simply chasing after rapid and high growth.

CHAPTER 3

DETERMINANTS OF PORTFOLIO FLOWS: GLOBAL AND COUNTRY-SPECIFIC CONDITIONS

Interest rate differentials matter in portfolio investment decisions. Investors make rational choices by comparing yields of different markets. High interest rates mean greater yield, especially in debt security markets. As a macroeconomic indicator, interest rate gives key implications for economies. High interest rates encourage households to increase savings and attract foreign funds to economy. On the other hand, high rates increase funding cost which lead to increase interest rates of corporate and consumer credits. High funding cost give way to postponement of investments and risk of bankruptcy for companies having trouble in generating cash flows. Thus, high interest rates boost portfolio flows but real economy is likely to experience slow down.

High chronic inflation in Türkiye requires high interest rates. As Irving Fisher suggests, nominal interest rates must be adjusted for the inflation to compensate for real return. In case of exchange rate shocks, sudden and sharp interest rate hikes are experienced in order to slow down the depreciation and prevent inflationary pressures. Higher interest rates attract foreign investors to the domestic assets by taking advantage of interest rate differentials especially in expansionary cycles of advanced economy monetary policies. Another important issue in interest rate discussion is distinguishing the nominal and real interest rates. High nominal interest rates do not necessarily imply real returns. Real returns will turn negative in an economy in which inflation exceeds nominal interest rate.

Another mechanism which interest rate differentials affect portfolio flows is carry trade transactions. Investors borrow in a lower-yield currency while invest in assets of a higher-yield currency, earning a return equal to the interest rate differential. While this allows a country to attract significant portfolio flows during tightening cycle, it also creates vulnerabilities. An increase in cost of borrowing currency and a decrease in the yield of the investing currency narrow the yield spread and lead to capital outflows. While interest rate differentials attract foreign resources to emerging economies during periods of economic stability, their effect weakens due to high inflation, policy uncertainties and external shocks.

Exchange rate movements have been one of the most important factors determining portfolio flows in Türkiye, as in all emerging countries. A stable currency is one of the keys to attract foreign investors. While depreciations reduce returns of investments, appreciations increase in the opposite way. Türkiye's exchange rate dynamics have been characterized by fluctuations, especially in recent years.

Expectations play a pivotal role in exchange rate movements. When a depreciation is expected, investors convert their assets to reserve currency in order not to be affected by depreciation. This exacerbates the depreciation pressure on the exchange rate. Similarly, favorable expectations attract foreign resources to financial assets and give way to appreciation of local currency. In foreign exchange markets, as in all other financial markets, expectations determine the path to realization through the actions they bring along.

Inflation is another important determinant of portfolio flows as it directly affects real returns. Inflation erodes returns and leads to outflow movements. While high interest rates are favorable for flows, they are not preferred due to economic

stagnation. For this reason, it is vital to keep inflation at consistently low levels for overall economic stability. Inflation creates uncertainty, making long-term investment challenging. This dynamic is particularly important for countries like Türkiye, where inflation is a chronic problem. Inflation of the country corresponds to the highest rate after Argentina among G20 countries at the end of 2024. Global supply chain disruptions due to the Covid-19 pandemic, commodity prices and weak monetary policies played an important role in the rise in inflation in recent years. Optimal monetary and fiscal policy mix is a vital requirement for a stable and low inflation rate.

GDP growth provides a story that attracts portfolio flows as it signals an increase in a country's productive capacity, promising investment opportunities and profitability. However, the most important aspect of economic growth is the composition and whether it is sustainable.

A type of growth in which the economy overheats causes macroeconomic instabilities such as high inflation, budget deficit and income inequality. In this way, it would not be sustained in the following periods. Policymakers should promote investments in productive areas such as technology and green energy to ensure sustained growth in the future and avoid additional vulnerabilities in pursuit of high growth.

Political stability is of great importance in shaping investments as it directly affects risk perception and economic sentiment. Political instability raises a country's risk premium and spooks not only foreign but also domestic investors, leading them to seek safer assets. These assets are generally the advanced economy instruments and precious metals.

Portfolio flows increase during political stability and reforms periods in Türkiye. In particular, structural reforms taken by Turkish governments in early 2000s in the context of European Union membership negotiations boosted investor confidence. There have also been periods of political instability in recent history. Coup attempt in 2016, conflicts in the Middle East, and political turmoil with western countries significantly deteriorated investor sentiment and increased risk premium. Türkiye's geopolitical location is also a risk-enhancing factor, as it is close to regional instability areas. While the crossroads location of Europe, Asia and the Middle East offers strategic opportunities, the global power struggles are dragging the country into uncertainties.

Global liquidity conditions and monetary stances of advanced economy central banks are important external determinants of portfolio flows. In expansionary periods of financial cycles, favorable conditions for portfolio flows are emerged for emerging markets due to profit-seeking funds. Global conditions highlight the dependence of portfolio flows to external factors for emerging economies. Even if country-specific macroeconomic indicators present a favorable picture, foreign resources may not flow when global financial conditions are not in favor of emerging countries.

CHAPTER 4

TÜRKIYE'S MACROECONOMIC OVERVIEW

Türkiye is the seventieth largest economy in the world with USD 1.3 trillion GDP by the end of 2024 (World Bank). It is also categorized as an upper-middle income economy with GDP per capita of USD 15.666 by the end of 2023 (World Bank). Türkiye is a large and dynamic market providing a high potential for economic growth in various sectors with its 85 million population. Growth has historically been one of the strongest macroeconomic indicators of the Turkish economy. This characteristic positions the country as an attractive investment destination among the emerging markets. However, the advantages alone are not sufficient for sustainable growth and development. Macroeconomic stability and favorable investment climate are essential requirements for long-term sustainable growth. In fact, Türkiye's growth figures over the years reflect the outcomes of macroeconomic policies, global conditions and structural challenges.

Figure 1 presents the annual calendar adjusted growth rate since 2000. Türkiye recorded an average growth rate of 7.2% between 2002 and 2007, thanks to the stable economic environment and investor confidence that emerged from structural reforms after the double crises experienced in 2000 and 2001. The consistent growth performance was disrupted during the GFC, then it recovered quickly in 2010 and 2011, by 8.6% and 11% respectively. Positive but fluctuating growth rates were recorded in the following years. Until Covid-19 pandemic, average annual growth rate was 5.5%. In this period, the highest growth rate was recorded as 8.7% in 2013 and the lowest was 3.3% in 2016. Due to the Covid-19 pandemic,

growth was measured as 0.9% in 2019. 2020 was also a year of extraordinary conditions, as the measures taken against the pandemic around the world led to disruptions in global supply chains and trade. In 2021, as the effects of the pandemic eased and the economic recovery became more evident, deferred consumption and investment expenditures became obvious. The economy recorded a strong 11.8% growth rate in that year. Then it returned to historical averages in 2022 and 2023, 5.3% and 5.1%, respectively.

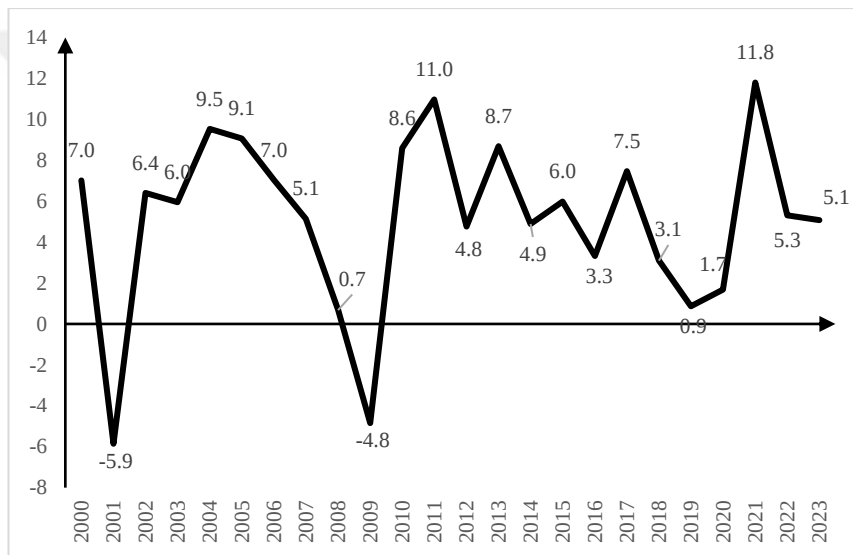


Figure 1. Annual GDP growth of Türkiye (% change in Turkish lira)

Source: TURKSTAT

Compared to other emerging economies, growth performance is one of Turkish economy's highlights. However, significant economic vulnerabilities have also persisted for years. One of them is budget deficit. Budget deficit represents the imbalance between government expenditures and revenues. It basically indicates the high level of government expenditures considering the revenues. Expansionary fiscal policies, tax benefits and incentives aim to stimulate economic activity, but they reduce government revenues and increase expenditures. Expansionary fiscal policies

lead to multiple benefits as they focus on infrastructure investments, housing programs, tax cuts, social subsidies and other direct expenditures. While those policies stimulate economic activity and support growth, they increase government debt. Figure 2 presents the central government budget deficit to GDP ratio since 2001. Türkiye managed to reduce the severe budget deficit after 2001 gradually. From -33% in 2001 to -4.5% by 2004 and continued its downward trend until 2008. It rose to -5.2% in 2009 and then followed a moderate course until 2019. In 2020, jumped to -3.5% due to the reduction in government revenues during the pandemic and reached to -5.2% in 2023. The devastating earthquake in 2022 had also significant impact on the increase.

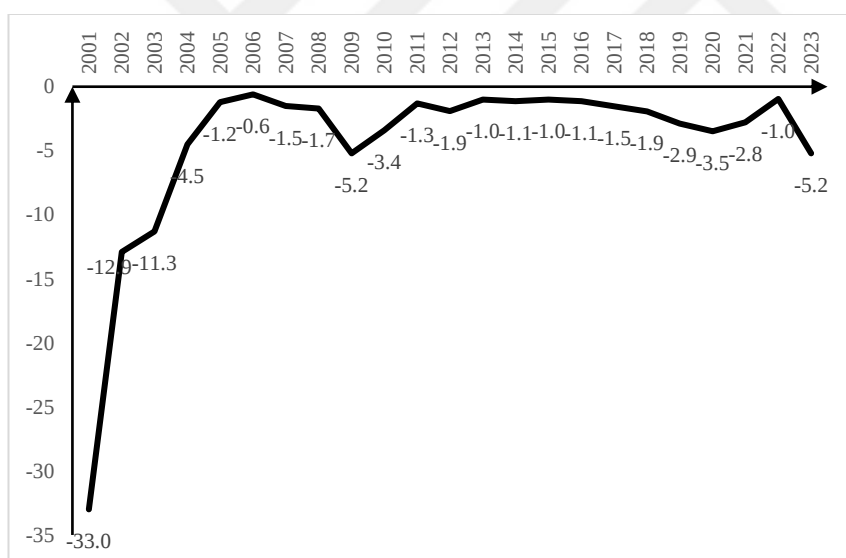


Figure 2. Central government budget deficit of Türkiye, (% of GDP)

Source: Ministry of Treasury and Finance of Türkiye

Another vulnerability of the economy is current account deficit which has been persisting for years. This indicates that the economy can't balance its exports and imports of goods and services. The economy records high deficit in strong economic activity and growth periods. The main driver is the large share of imported

intermediate goods being used in manufacturing, energy, commodities, and consumer goods. Cyclical increases in global commodity and energy prices deepen the deficit. In this respect, political developments, geopolitical tensions and global financial conditions that affect commodity prices put pressure on emerging economies through increasing cost. Table 1 presents Türkiye's annual current account balance since 2000. Current account deficit to GDP ratio is historically negative. In 2001, the negative growth reduced the demand for imported inputs, raw materials and consumer goods, resulting in a current account surplus, which is a rare case. As economic activity recovered throughout the years, the deficit also increased, reaching -4.1% in 2005. The balance was steadily negative and remained above -5% for the next 3 years. A quick recovery was observed due to the slowdown in economic activity after the GFC. However, it jumped and reached to -8.9% in 2011. The balance turned positive in 2019 and remained negative thereafter.

Table 1. Current Account Balance of Türkiye

Year	Current Account Balance (bn US dollars)	As Share of GDP (%)	Year	Current Account Balance (bn US dollars)	As Share of GDP (%)
2000	-9.2	-3.6	2012	-41.8	-4.7
2001	3.8	1.9	2013	-49.3	-5.2
2002	-0.6	-0.3	2014	-32.1	-3.4
2003	-7.5	-2.4	2015	-21.4	-2.5
2004	-14.2	-3.5	2016	-22.2	-2.5
2005	-20.9	-4.1	2017	-35.1	-4.1
2006	-31.2	-5.6	2018	-14.6	-1.9
2007	-36.9	-5.4	2019	15.0	2.0
2008	-39.4	-5.1	2020	-31.1	-4.3
2009	-11.4	-1.7	2021	-6.4	-0.8
2010	-44.6	-5.7	2022	-46.6	-5.1
2011	-74.4	-8.9	2023	-40.5	-3.7

Source: CBRT, TURKSTAT

Current account balance dynamics reveal a cyclical fluctuation. The deficit deepens in a similar manner with growth. The main explanation is the dependence on

imported raw materials and other intermediate goods in manufacturing. The more production the higher demand for imported goods. GDP growth and current account balance to GDP ratio are shown in Figure 3. The current account deficit improves in weak growth years such as 2001, 2009 and 2020. Similarly, it is observed that the current account deficit jumped to historically high levels in above-average economic growth years such as 2006, 2011 and 2017.

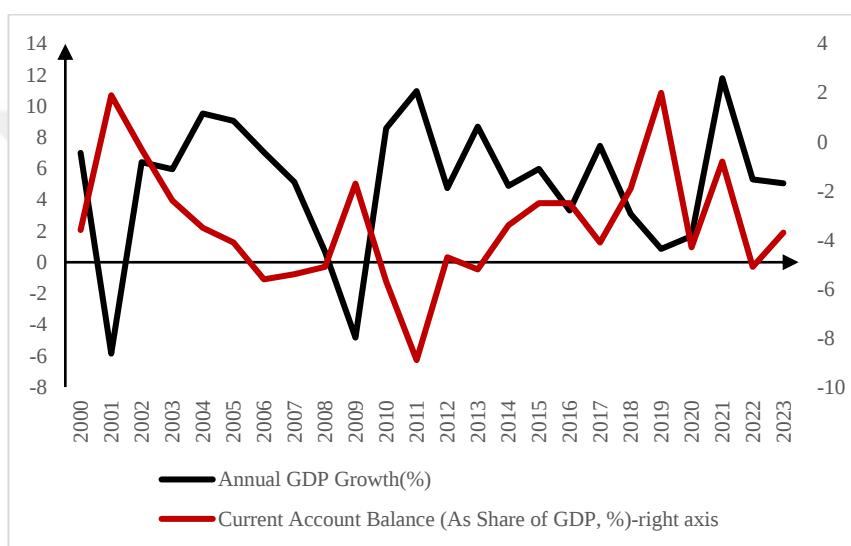


Figure 3. GDP growth and current account balance to GDP, (%)

Source: TURKSTAT

The most problematic component of the current account deficit is trade deficit which implies the trade of goods. Although the total export figures have been increasing steadily, the rise in import has been exceeding it. Figure 4 presents the ratio of exports to imports (coverage rate). It was recorded as 51% in 2000, then increased rapidly. In the following years, while both exports and imports increased steadily, the trade deficit maintained its upward trend and reached historically high levels in recent years. Total import amounted to USD 363 billion while total export to USD

254 billion, resulting in USD 109 billion trade deficit in 2022. Then maintained its course and recorded as USD 106 billion in 2023.

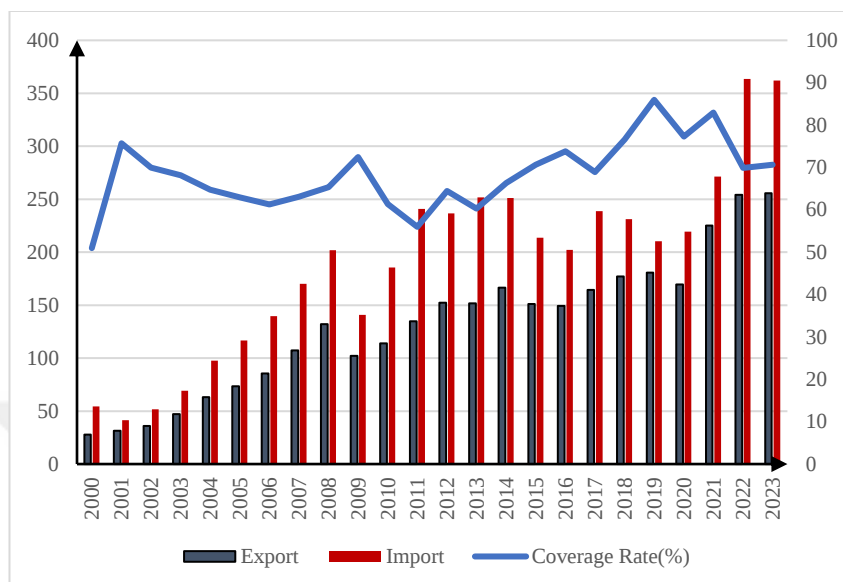


Figure 4. Annual export and import, (bn US dollars, %)

Source: TURKSTAT, Author's Calculation

The economy has been trying to deal with high inflation for many years. Table 2 presents annual consumer inflation since 2000. Inflation was at severe levels in the beginning of 2000s, recorded as 68.5% in 2001. Then sharp decline observed afterwards, fell down to single digits in 2004 with 9.3%. While it was steady at single-digit rates throughout the years, jumped to double-digits in 2017. It reached to 36% in 2021 and 64% in 2022 and 2023. The Covid-19 pandemic and the Russia-Ukraine war affected global supply chains significantly and created inflationary pressures. Also, weak monetary policy stimulated demand and fueled the inflation.

Table 2. Change in Annual Consumer Price Index, (%)

Year	Change in Index	Year	Change in Index
2000	39.0	2012	6.2
2001	68.5	2013	7.4
2002	29.7	2014	8.2
2003	18.4	2015	8.8
2004	9.3	2016	8.5
2005	7.7	2017	11.9
2006	9.7	2018	20.3
2007	8.4	2019	11.8
2008	10.1	2020	14.6
2009	6.5	2021	36.1
2010	6.4	2022	64.3
2011	10.5	2023	64.8

Source: TURKSTAT

Macroeconomic indicators such as GDP growth, external deficit, interest rates, inflation, and exchange rate movements play pivotal roles in attracting portfolio flows. These indicators show both the strengths and vulnerabilities of an economy. Türkiye implemented a series of structural reforms following the double crises in 2000 and 2001. This double crisis period was a turning point for the economy. Reforms made in the subsequent process aimed to strengthen the crisis generating dynamics. A stabilization program was implemented during this process. The program aimed to adopt floating exchange rate regime, limit the budget deficits by ensuring fiscal discipline, restructure the banking system in order to build confidence, and create a sustainable growth environment (Sungur, 2015). Moreover, the Central Bank of Republic of Türkiye (CBRT) was granted with instrumental independence and it was ensured that CBRT was no longer to finance the budget deficits. The reforms implemented within the program along with the European Union accession negotiations created a favorable investment climate.

Table 3 presents gross and net portfolio flows since 2000. Gross inflows totaled USD 42 billion in 5-year period between 2003 and the GFC. The average annual net inflow during the period was 6.5 billion dollars. The highest figure recorded in 2005 with USD 13.5 billion. The impacts of the crisis led to a retreat in portfolio flows in Türkiye as in all other emerging countries. Net outflows amounted to over USD 5 billion in that year alone. Subsequently, advanced economy central banks' QE programs helped to recover global liquidity so that portfolio flows rebounded in 2009. Türkiye recorded a strong post-GFC gross portfolio flows totaling USD 120 billion. 2012 was the most remarkable year in that period with USD 41 billion net inflows. Another important global development affecting emerging countries began with the 2013 Taper Tantrum. The FED's signals to slow down the QE and announcing its intention to raise the funding rates tightened market conditions and led to significant portfolio outflows from emerging markets (Sahay et al., 2014). Türkiye was also affected by the market turbulent and experienced net portfolio outflows for the first time since the GFC. In 2015, net portfolio outflows amounted to USD -13.9 billion. Flows normalized in the next two years. In 2017, there was a strong USD 24.4 billion inflows. Global risk perception was deteriorated again with breakout of the Covid-19 pandemic in 2019.

The CBRT started the policy rate cutting cycle in November 2021. As the rates continued to fall and inflation to rise throughout 2022, Turkish lira depreciated significantly. USD -13.7 billion net outflow was recorded in that year. In June 2023, the CBRT started tightening cycle. Stable course of the exchange rate moderate risk premium created favorable investment environment especially for carry trade. In 2023, gross flows amounted to USD 11.1 billion.

Table 3. Portfolio Flows to Türkiye, (bn US dollars)

Year	Gross Outflow	Gross Inflow	Net Flow	Year	Gross Outflow	Gross Inflow	Net Flow
2000	0.6	1.6	1.1	2012	-2.7	38.4	41.0
2001	0.8	-3.7	-4.5	2013	-1.2	21.4	22.6
2002	2.1	1.5	-0.6	2014	1.3	21.0	19.7
2003	1.4	3.9	2.5	2015	4.6	-9.2	-13.9
2004	1.4	9.4	8.0	2016	-0.3	8.1	8.4
2005	1.2	14.7	13.5	2017	-0.6	23.9	24.4
2006	4.0	11.4	7.4	2018	1.1	0.2	-0.9
2007	1.9	2.8	0.8	2019	6.3	3.6	-2.8
2008	1.2	-3.8	-5.0	2020	2.9	-6.7	-9.6
2009	2.7	2.9	0.2	2021	2.3	3.0	0.8
2010	3.5	19.6	16.1	2022	4.5	-9.2	-13.7
2011	-2.7	19.5	22.2	2023	3.1	11.2	8.1

Source: CBRT

Table 4 presents the details of portfolio flows. Portfolio flows consist of two types of financial assets; equity and debt security. Historical data shows that debt securities account for a significant portion of portfolio flows. Debt securities accounted for USD 9.8 billion of total USD 11.2 billion gross inflow in 2023.

Table 4. Details of Portfolio Flows, (bn US dollars)

Year	Gross Equity Inflows	Gross Debt Securities Inflows	Year	Gross Equity Inflows	Gross Debt Securities Inflows
2000	0.5	1.1	2012	6.3	32.1
2001	-0.1	-3.6	2013	0.8	20.6
2002	0.0	1.5	2014	2.6	18.4
2003	0.9	2.9	2015	-2.4	-6.8
2004	1.4	8.0	2016	0.8	7.3
2005	5.7	9.0	2017	3.0	20.9
2006	1.9	9.5	2018	-1.1	1.3
2007	5.1	-2.4	2019	0.4	3.2
2008	0.7	-4.5	2020	-4.3	-2.4
2009	2.8	0.1	2021	-1.4	4.4
2010	3.5	16.1	2022	-4.0	-5.1
2011	-1.0	20.5	2023	1.4	9.8

Source: CBRT

CHAPTER 5

LITERATURE REVIEW

The economics and finance literature are rich in studies investigating the determinants of portfolio flows. While some of the studies directly examine the determinants of portfolio flows, others examine the variables affecting the volatility of flows. Independent variables are generally classified into two groups; country-specific indicators (pull factors) and global financial conditions (push factors). Pull factors are generally selected as GDP growth, inflation, risk premium, currency value, and international reserves while push factors are usually global risk aversion, global liquidity conditions and advanced economies' monetary policy moves.

Sarno et al. (2016) investigated portfolio flows using monthly bond and equity flows data of 55 countries between 1988 and 2013, then employed Bayesian dynamic factor model. The study concluded that push factors explain 83% of debt security flows and 86% equity flows. The findings suggest that country-specific factors explain less than 20% of portfolio flows. The results also emphasized that the dominance of global factors limits the effectiveness of countries' macroeconomic policies in managing portfolio flows. Eller et al. (2020) covered the flows to 43 countries between 1994 and 2015. The research investigated the importance of global factors in explaining international capital flow dynamics. The study included foreign direct investments (FDI), portfolio flows and other financial investments using the Bayesian dynamic factor model. The findings indicate that global financial conditions, particularly interest rates, are the primary factors explaining the volatility of international capital flows. Broner et al. (2013) analyzed the volatility of FDI,

portfolio and other financial investments using dynamic stochastic general equilibrium model. The findings show that both gross and net flows experience stop and retreat during global crisis periods. Although gross flows show significant declines, net flows are not as volatile due to domestic investors' withdrawal of their funds from abroad due to exposure of same global financial conditions. The study suggests that sound international reserves help to stabilize the volatility of gross flows in middle-income countries. Broto et al. (2011) investigated the drivers of capital flow volatility in emerging countries. The study reveals that the push factors are the main determinants of the volatility of FDI and portfolio flows in emerging economies and these factors have become more obvious after 2000. It concludes that US interest rates and S&P500 index performance have a significant volatility impact on all types of capital flows. The article emphasizes that emerging economies have difficulties in dealing with the volatility of capital flows due to dominant global factors and that reserve adequacy is essential to minimize the adverse effects. Forbes and Warnock (2012) concluded in their study that low risk appetite is the main explanatory factor for unusual capital movements. It is emphasized that during periods of unfavorable global financial conditions, volatility spreads across through markets, financial institutions, and cross-country trade. Ahmed and Zlate (2014) conducted a panel data analysis in their study. Their findings suggest that push factors' explanatory power in explaining volatility of capital flows have increased after the GFC. Koepke (2019) found that the global economic and financial conditions are the most explanatory determinant of portfolio flows. In particular, a strong negative correlation between global risk perception and portfolio flows to emerging economies and a positive correlation with low interest rates in advanced economies were detected. Avdjiev et al. (2020) analyzed international bond issues

and credit utilizations between 2000 and 2015. They found that the influence of the U.S. monetary policy on capital flows increased following the GFC. A 100 basis points increase in the Federal Funds Rate during the pre-crisis period resulted in a 3% decline in cross-border credit flows. However, this decline increased to 8% following the GFC. Eichengreen et al. (2018) analyzed the volatility of flows in emerging countries using regression analysis in the research. They found that countries with high integration with global financial markets are more exposed to volatility in global shocks. Fratzscher (2012) employed a factor model to examine the volatility of capital flows in countries after the GFC. The findings suggest that the push factors are the dominant effects on portfolio flows during shocks. Especially, the increases in the VIX have negative effects on portfolio flows while country-specific conditions increase their importance during recovery periods. Koepke (2018) used a baseline regression model to examine the impact of shifts in expectations regarding FED policies on portfolio flows. Unexpected monetary policy moves, such as 2013 Taper Tantrum, influenced both debt security and equity flows in emerging markets. The findings show that a 1% upward revision of expectations regarding the federal funds rate caused a USD 15 billion outflow of funds from emerging markets. Alberola et al. (2016) used a panel regression to examine the impact of countries' international reserve accumulation on the flows' stabilization during financial shocks. The findings suggest that sound international reserve accumulation mitigate the volatility. The finding also suggests that sound international reserves attract higher flows during favorable financial conditions. Cerutti et al. (2019) employed Latent factor model and found out that global financial cycles significantly affect flows while inclusion in global indices such as MSCI increases vulnerability to external shocks due to higher level of integration

with the global financial markets. Banerjee et al. (2016) employed dynamic stochastic general equilibrium model. Their research emphasized that the tightening in FED's monetary stance have a negative impact on portfolio flows in emerging markets. Portes & Rey (2005) analyzed flows using a gravity model to find out the effects of market size, information asymmetry and transaction costs on flows instead of the variables commonly used in the literature. The findings emphasize that although geographical distance is not a physical barrier to flows, it has a negative impact on equity flows due to information asymmetry. It is concluded that improving financial infrastructure and increasing transparency can significantly increase portfolio flows. Fernandez-Arias (1996) investigates the reasons behind the significant increase in capital inflows in middle-income countries after 1986. The findings reveal the low interest rate environment in advanced economies facilitated the ability of middle-income countries to attract foreign capital and that push factors dominate pull factors in this regard.

While most of the studies in the literature find the push factors as the pivotal determinants and driver of capital flows, there are also studies that show that the pull factors are of primary importance. Cerutti et al. (2017) employed a dynamic factor model to analyze the effects of global financial cycles on capital flows between 1990 and 2015. Their findings show that global financial cycles explain less than 25% of the variations in capital flows. Additionally, the research shows the significant role of pull factors in shaping capital flow dynamics. Their results indicate that emerging countries are particularly more vulnerable to cyclical shocks compared to advanced countries. Förster et al. (2014) used the dynamic hierarchical factor model to investigate the complex factors behind the portfolio flows and found evidence that pull factors have the strongest impact on the volatility of flows with 80% explanatory

power. Vo et al. (2017) employed a multivariate regression model to show that exchange rate stability plays a significant role in attracting portfolio flows. In addition, they found that a higher GDP indicates higher market potential, which in turn encourages increased investments and attracts more portfolio flows.

In addition to macroeconomic variables as determinants of capital flows, several studies show the importance of other factors. Institutional quality and good governance are also pivotal factors for foreign investors when making investment decisions. Institutional quality can be measured by sound functioning of institutions, judicial processes, and with the management of corruption. Investors may hesitate to invest in the assets of countries with poor institutional quality, even if they offer high yield potential compared to their peers. Papaioannou (2009) investigated how institutional quality and political factors affect banking flows by using panel data. The study found that improved legal protections and lower political risk lead to significant increases in capital inflows. Mukherjee (2015) developed an international business cycle model to investigate the power of judicial institutions, institutional quality, and governance in shaping capital flows. The findings emphasize that countries with lower institutional quality index and weaker investor protection attract investments from a significantly narrower pool of investors. Nxumalo and Makoni (2021) examined the relationship between institutional quality and FDI and portfolio flows in emerging countries using an autoregressive distributed lag model. The findings suggest that there is a positive relationship between institutional quality and capital inflows in the long run and that higher institutional quality attracts more capital flows. Challe et al. (2019) suggest that high flows in favorable global financial cycles reduce the appetite of governments to invest in institutional quality.

The correlation between capital flows and institutional deterioration is most likely for countries with moderate institutional quality. Slesman et al. (2015) used a threshold regression model to investigate under which conditions the capital flows supported economic growth. It is emphasized that countries characterized by low institutional quality fail to benefit from capital flows in terms of economic growth. The study also found that the contribution of FDI to growth is higher compared to the contribution of portfolio flows. Alderighi et al. (2019) used a regression model to examine the effects of institutional factors on portfolio flows in emerging countries. Their findings show that improving corporate governance has a positive long-term effect on equity flows. The study finds that institutional factors are most important during normal market conditions.

In the concluding section of the literature review, the studies specifically addressing Türkiye are discussed. Sezgin Alp et al. (2024) investigated the dynamics of foreign investors' behavior in Borsa Istanbul between 2004 and 2023 using causality tests and cointegration analysis. The findings show that the performance of the BIST100 index is the main factor in the decision-making process for foreign investors. Kucukkaya (2011) analyzed the effects of push and pull factors in portfolio flows in Türkiye between 1989 and 2008 by using vector autoregression model. The findings suggest that high domestic interest rates and low equity prices have a significant effect in attracting flows. In addition, the depreciation of the Turkish lira plays a crucial role in enhancing portfolio flows. According to the study, local interest rates and the BIST100 index were the main drivers of portfolio flows before 2002, but exchange rate movements gained importance after Türkiye switched to a floating exchange rate regime in 2001.

The study shows that the main determinants of portfolio investments in Türkiye are the pull factors. Çepni et al. (2021) analyzed the effects of global economic uncertainty and US trade policies on the Turkish equity and debt security markets using vector autoregression model. The study finds that portfolio flows in Türkiye are highly sensitive to global economic uncertainty.



CHAPTER 6

DATA

The objective of this study is to determine whether global financial conditions or country-specific macroeconomic indicators are the key determinants of portfolio flows in Turkey.

The variables in the model are commonly used in the literature. The datasets of the variables are in monthly frequency ranging between January 2013 to October 2024.

The variables reflecting global financial conditions are FED asset size, VIX and US real interest rate. While FED asset size and VIX are obtained directly as ready to use, US real interest rate is calculated as the difference of monthly effective federal funds rate (EFFR) and US monthly consumer inflation. On the other side, 12-month inflation expectations, real interest rate, real effective exchange rate, CDS, annual inflation, monthly inflation and industrial production index are country-specific macroeconomic variables. 12-month inflation expectations reflect market participants' expectations and real effective exchange rate is based on consumer inflation. Similarly, real interest rate is calculated as the difference of the CBRT policy rate and the monthly consumer inflation of Türkiye. Portfolio flows, the dependent variable of the model, is gross flows and consist of equity and debt security flows. Information about the variables used in the study is presented in Table 5 and time series graphs of the variables are presented in Figure 5.

Table 5. Variables

Variables	Observation	Mean	Standard Deviation	Min	Max	Source of Data
Portfolio Flows	142	0.70	2.48	-5.98	9.06	CBRT
VIX	142	17.93	6.86	9.59	57.38	Bloomberg
FED Asset Size	142	5666.21	1908.80	2966.02	8949.53	FED
12M Inflation Expectations	142	15.49	11.34	6.12	45.75	CBRT
Real Interest Rate	142	-9.20	18.81	-75.39	8.28	CBRT, TURKSTAT
Real Effective Exchange Rate	142	79.64	19.67	47.61	113.63	CBRT
CDS	142	335.49	154.84	117.80	846.53	Bloomberg
Annual Inflation	142	24.01	23.13	6.13	85.51	TURKSTAT
Monthly Inflation	142	1.79	2.17	-1.44	13.58	TURKSTAT
Industrial Production Index	142	86.12	14.21	58.56	110.67	TURKSTAT

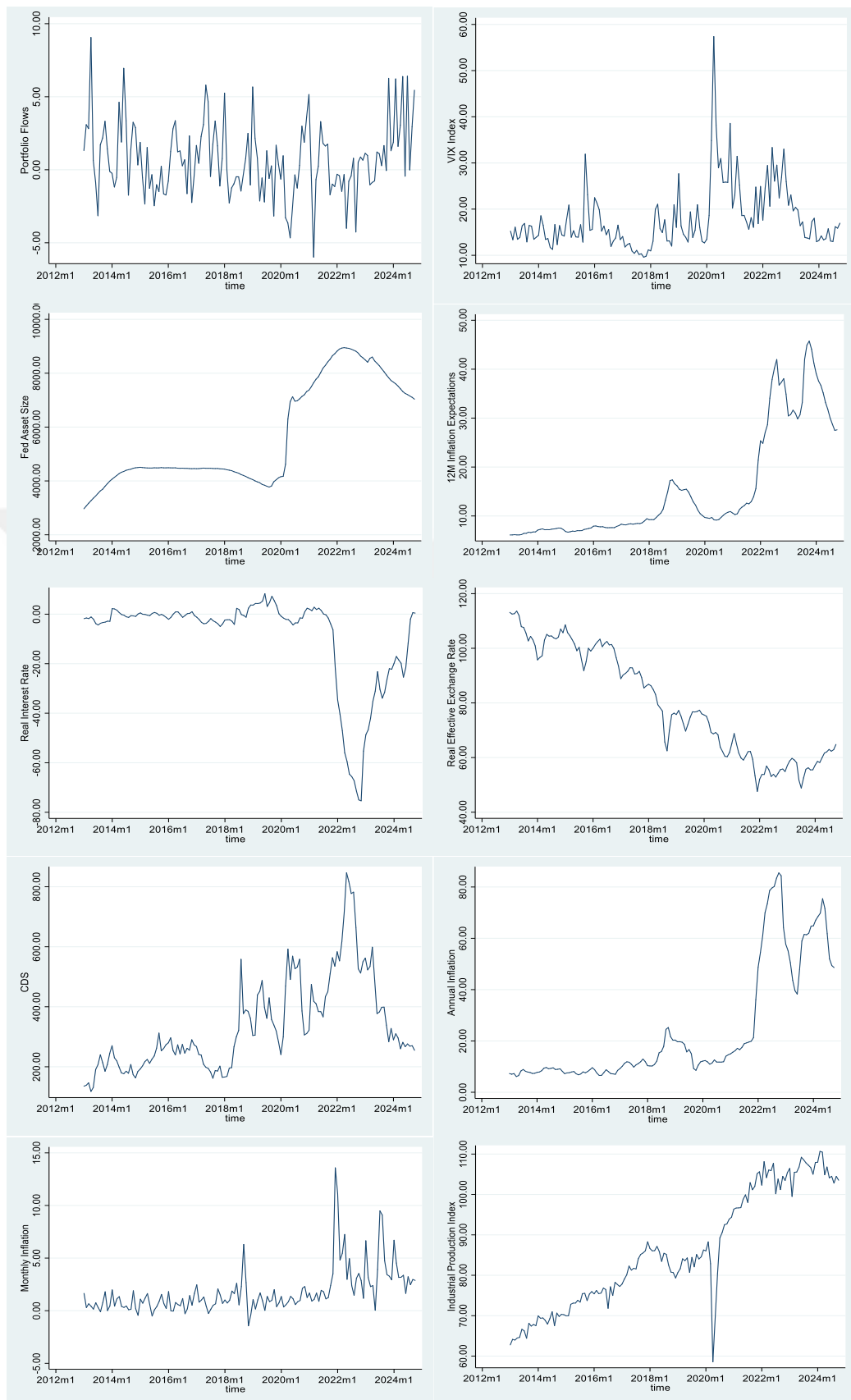


Figure 5. Time series of the variables

CHAPTER 7

METHODOLOGY

The Autoregressive Distributed Lag (ARDL) model, introduced in 1999 and expanded by Pesaran et. al. (2001). The model has been in use to analyze both short and long-run relationships between time series variables. A significant distinction of the ARDL model is its flexibility in accommodating variables of different integration orders. This capability to include variables of different orders -I(0) and I(1)- significantly broadens the applicability of the ARDL model, making it a compelling choice for empirical research involving economic and financial data. The ARDL model is selected for this study for the following advantages:

i. Different Integration Orders of the Series:

One of the principal advantages of the ARDL model is its ability to use series integrated at different orders without the risk of spurious regression results.

ii. Short and Long-Run Dynamics:

By incorporating lagged levels and differences of the variables, the ARDL model effectively captures both short and long-term relationships. This capacity is quite functional for our research.

A standard ARDL model is specified as:

$$Y_t = a_0 + \sum_{i=1}^p \beta_i Y_{t-i} + \sum_{j=0}^q \gamma_j X_{t-j} + \epsilon_t$$

In the equation:

- Y_t = Dependent variable at time t

- X_{t-j} = Independent variable at lag j
- a_0 = Intercept term
- β_i, γ_j = Coefficients of lagged dependent and independent variables
- ϵ_t = Error term assumed to be white noise
- p, q = Optimal lag lengths determined by selection criteria (AIC)

This specification enables a comprehensive analysis of both immediate and lagged effects of independent variables on the dependent variable.

7.1 Bounds testing for cointegration

The bounds test, developed by Pesaran et al. (2001), is used to analyze the long-run relationships among the variables.

i. Error Correction Model:

$$\Delta Y_t = a + \sum_{i=1}^{p-1} \beta_i \Delta Y_{t-i} + \sum_{j=0}^{q-1} \gamma_j \Delta X_{t-j} + \phi_1 Y_{t-1} + \phi_2 X_{t-1} + \epsilon_t$$

ii. F-Test:

1. Null Hypothesis H_0 : No long-run relationship ($\phi_1 = \phi_2 = 0$).
2. Alternative Hypothesis H_1 : Long-run relationship ($\phi_1 \neq 0, \phi_2 \neq 0$)

iii. Bounds Test:

1. If the F-statistic exceeds the upper bound, H_0 is rejected.
2. If it falls below the lower bound, H_0 is accepted.
3. If it stays within bounds, results are inconclusive.

7.2 Short and long-run dynamics estimation

After confirming the cointegration between variables, the following models are estimated:

i. Long-Run Model:

$$Y_t = a_0 + \sum_{j=0}^q \gamma X_{t-j} + \epsilon_t$$

ii. Short-Run Error Correction Model (ECM):

$$\Delta Y_t = a + \sum_{i=1}^{p-1} \beta_1 \Delta Y_{t-i} + \sum_{j=0}^{q-1} \gamma \Delta X_{t-j} + \lambda ECT_{t-1} + \epsilon_t$$

ECT_{t-1} is the error correction term which represents the speed at which deviations from the long-run equilibrium are corrected in subsequent periods.

The optimal lag length is determined using the Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), and Hannan-Quinn Criterion (HQC). The AIC, in particular, is preferred due to its tendency to select longer lag lengths, capturing more information about the data's temporal dynamics. AIC information criteria is used to determine the optimal lag lengths of variables in the model.

7.3 Diagnostic tests for model adequacy

To ensure the robustness of the model estimations, the following diagnostic tests are performed:

- Autocorrelation: Breusch-Godfrey LM Test.
- Heteroskedasticity: Breusch-Pagan Test.

- Normality: Skewness-Kurtois Test.
- Functional Form: Ramsey-RESET test.
- Stability: CUSUM and CUSUMS-Q Tests.

Passing these diagnostic tests indicates that the model is well-specified, and the results are reliable for inference. The ARDL model, with its ability to distinguish between short-run and long-run effects and handle mixed orders of integration, is well-suited for the empirical analysis in this study. Its robustness in small samples and straightforward implementation further validate its selection as the primary methodological tool.

CHAPTER 8

EMPIRICAL FINDINGS

In the first stage of our time series analysis, the stationarity of the series to be used in the model will be tested. One significant possibility offered by the ARDL model is the ability to use series that are stationary at level ($I(0)$) and first difference ($I(1)$) in the same model. Augment-Dickey Fuller (ADF) and Philips-Perron (PP) unit root tests are used to determine whether the series are stationary and to determine their stationarity levels. In the test, the H_0 hypothesis is “the series is non-stationary (no unit root)” and the H_1 hypothesis is “the series is stationary (there is a unit root)”. For the series to be stationary, the absolute value of the T-statistic must be greater than the absolute values of the various critical values and the p-value must be less than 5%.

ADF and PP test results are presented in Table 6. According to results, H_0 hypotheses (the series is non-stationary) are rejected and H_1 hypotheses (the series is stationary) are accepted for series of flows, vix, and cab so that they turned out to be stationary at level. The other series failed to fulfill the condition that the absolute value of the t-statistic is greater than the absolute value of the critical values and the p-value is less than 5% so that H_0 hypotheses (the series is non-stationary) are accepted and H_1 hypotheses (the series is non-stationary) are rejected so that they turned out to be non-stationary at level.

Table 6. Unit Root Tests (Level)

Variables	ADF Test		PP Test		Critical Value		
	Test Statistic	P-Value	Test Statistic	P-Value	1%	5%	10%
flows	-8.282	0.0000	-8.421	0.0000	-3.496	-2.887	-2.577
vix	-5.257	0.0000	-5.172	0.0000	-3.496	-2.887	-2.577
fedassetsize	-1.238	0.6569	-1.264	0.6456	-3.496	-2.887	-2.577
infexp	-0.644	0.8607	-1.077	0.7242	-3.496	-2.887	-2.577
rir	-1.115	0.7091	-1.683	0.4398	-3.496	-2.887	-2.577
reer	-1.537	0.5149	-1.538	0.5145	-3.496	-2.887	-2.577
cds	-2.328	0.1632	-2.324	0.1645	-3.496	-2.887	-2.577
ainf	-0.745	0.8348	-1.286	0.6356	-3.496	-2.887	-2.577
minf	-5.359	0.0000	-5.226	0.0000	-3.496	-2.887	-2.577
ipi	-1.611	0.4776	-1.357	0.6028	-3.496	-2.887	-2.577

A second ADF and PP tests were applied for the first variables of the non-stationary series at level and the results are presented in Table 7. The absolute value of the T-statistic of all series tested is greater than the absolute value of the critical values and the p-value is less than 5%. Thus, H_0 hypotheses (the series is non-stationary) are rejected and H_1 hypotheses (the series is stationary) are accepted so that the series of fedassetsize, infexp, rir, reer, cds, ainf, and ipi turned out to be stationary at first difference. The fact that the variables satisfy the stationarity condition at different levels ($I(0)$ and $I(1)$) necessitated the use of the ARDL model in time series analysis.

Table 7. Unit Root Tests (First Difference)

Variables	ADF Test		PP Test		Critical Value		
	Test Statistic	P-Value	Test Statistic	P-Value	1%	5%	10%
fedassetsize	-6.014	0.0000	-5.820	0.0000	-3.497	-2.887	-2.577
infexp	-6.569	0.0000	-6.482	0.0000	-3.497	-2.887	-2.577
rir	-7.002	0.0000	-6.958	0.0000	-3.497	-2.887	-2.577
reer	-8.736	0.0000	-8.537	0.0000	-3.497	-2.887	-2.577
cds	-11.781	0.0000	-11.800	0.0000	-3.497	-2.887	-2.577
ainf	-6.194	0.0000	-6.108	0.0000	-3.497	-2.887	-2.577
ipi	-13.679	0.0000	-14.449	0.0000	-3.497	-2.887	-2.577

The Akaike Information Criterion (AIC) was preferred to detect the optimum lag length to be used for each variable in the model. AIC is a generally used information criterion for model selection in literature, developed by Hirotugu Akaike. A lower value of the AIC indicates more efficiency which provides an appropriate fit to the data without unnecessary complexity. In this analysis, the AIC is employed to determine the selection of lag lengths for the model so that the chosen model captures the core dynamics of the series while avoiding unduly specification. This methodological approach contributes to enhance the reliability the results of the empirical analysis. The optimal lag length suggested by AIC for each variable is presented in Table 8.

Table 8. Lag Length Selection

Variables	Optimal Lag Length
flows	1
vix	2
fedassetsize	3
infexp	2
rir	2
reer	3
cds	1
ainf	4
minf	3
ipi	4

ARDL bounds test is used to test whether there is a long-run relationship (cointegration) between variables in time series. It was developed by Pasaran, Shin and Smith in 2001. In this test, an ARDL model is estimated and an F-Statistic is generated on the joint significance of the lagged level variables. The F-Statistic is compared to two critical values (bounds). The lower bound assumes that all variables are $I(0)$ and the upper bound assumes all the variables are $I(1)$. If the F-Statistic exceeds the upper bound it is accepted that there is a long-run relationship between the variables. If the F-Statistic goes below the lower bound its is accepted that there is not a long-run relationship (cointegration). If the F-Statistic is between the bounds results is uncertain. If cointegration is detected in the bounds test, Error Correction Model (ECM) is estimated to analyze the short-run adjustments and long-run equilibrium. In this research, ARDL bounds test is conducted to analyze the long-term impact of macroeconomic determinants on portfolio flows.

ARDL bounds test results are presented in Table 9. The test results show that the F-statistic exceeds all critical values. This indicates that the variables have a long-run relationship and the relationship is significant at the 1% level.

Table 9. ARDL Bounds Test Results

F-Statistic: 11.617***							
Critical Value: 10%		Critical Value: 5%		Critical Value: 2.5%		Critical Value: 1%	
I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
1.88	2.99	2.14	3.30	2.37	3.60	2.65	3.97
***The model is statistically significant at %1 significance level.							

After obtaining the results of the bounds test, the error correction model, which is used when a long-run cointegration is detected between the variables and helps to separate the short-run and long-run effects, is conducted. The results obtained in the ARDL error correction test make it possible to analyze not only the short-run dynamics of the model but also the long-run relations. In this context, thanks to the error correction model, the permanent and temporary effects of the variables can be separated. A negative and statistically significant ECT confirms the existence of a long-run equilibrium and explains how the variables respond to short-run shocks. Test results are presented in table 10. The EC term gives the result of -0.84. This means that 84% of the imbalances in one period are corrected in the next period.

According to the results obtained from the test, cds and ainf are significant on flows in the long run at 1% and 10% significance level respectively while reer and ipi are significant on flows at 1% and 10% significance level respectively in the short run. Accordingly, a 1-unit increase in Turkey's risk premium in the long run decreases flows by 0.13-unit and a 1-unit increase in annual inflation increases flows

by 0.09-unit. Similarly, in the short run, a 1-unit increase in the real effective exchange rate (appreciation) increases flows by 0.24-unit and a 1-unit increase in the industrial production index increases flows by 0.22-unit.

Table 10. ARDL Test Results

Long-Term						
flows	Coefficiency	Standard Error	t	P> t	[95% Conf. Interval]	
cds	-.0126478	.003601	-3.51	0.001	-.0197895	-.0055061
ainf	.0870843	.048835	1.78	0.077	-.0097684	.1839371
Short-Term						
flows	Coefficiency	Standard Error	t	P> t	[95% Conf. Interval]	
reer (D1)	.2359287	.0895585	2.63	0.010	.0583106	.4135467
ipi (D1)	.2158736	.1177817	1.83	0.070	-.0177186	.4494658
CointEq (-1)	-.8365984	.0901085	-9.28	0.000	-1.01488	-.6583165

Various tests were applied to test the validity and reliability of the ARDL model.

These tests are used to assess the extent to which the model fulfils its assumptions and how reliable the results are. For this purpose, autocorrelation, heteroskedasticity, normality, model stability and cointegration tests were applied. The tests' results are presented in Table 11.

Table 11. Diagnostic Tests

Tests	P-Value
Breusch-Godfrey LM Test for Autocorrelation	0.5893
Breusch-Pagan Test for Heteroskedasticity	0.9268
Skewness-Kurtosis Test for Normality	0.0709
Ramsey-Reset Test	0.3775
F-Statistic	11.617

The autocorrelation test checks whether the error terms are internally dependent. For this purpose, Breusch-Goldfrey Autocorrelation Test is conducted. If the p-value obtained as a result of the test is greater than 5%, there is no autocorrelation and the model is valid. However, if the p-value is less than 5%, there is an autocorrelation problem in the test. According to the result of the test we applied, the p-value is greater than 5% and it is concluded that there is no autocorrelation problem in the model.

Breusch-Pagan Heteroskedasticity test is applied to test whether the variance of the error terms of the model is constant. If the constant variance assumption is valid, the p-value should be greater than 5%. In the test, the p-value was greater than 5%.

Skewness/Kurtosis Test for Normality was applied to determine whether the error terms are normally distributed. If the p-value is greater than 5%, it is concluded that the error terms are normally distributed. According to the test result the p-value is greater than 5%.

The Ramsey-Reset Test was applied to check whether the model was correctly specified and important variables were ignored. If the p-value is greater than 5%, the model is considered to be correctly identified. According to the test result, the p-value is greater than 5%.

Cumulative Sum of Residuals (CUSUM) Test is applied to check whether there are structural breaks in regression models and whether the coefficients are constant over time. The CUSUM test creates a graph using the cumulative sum of the error terms and determines whether the model is stable over time. The CUSUM test checks whether the mean of the coefficients is constant, while the CUSUM-Square test checks whether the distribution of the coefficients is constant. For this reason,

the CUSUM-Square test is more sensitive. According to the results, the estimated parameters remained between the critical limits at 5% significance level and are stable.

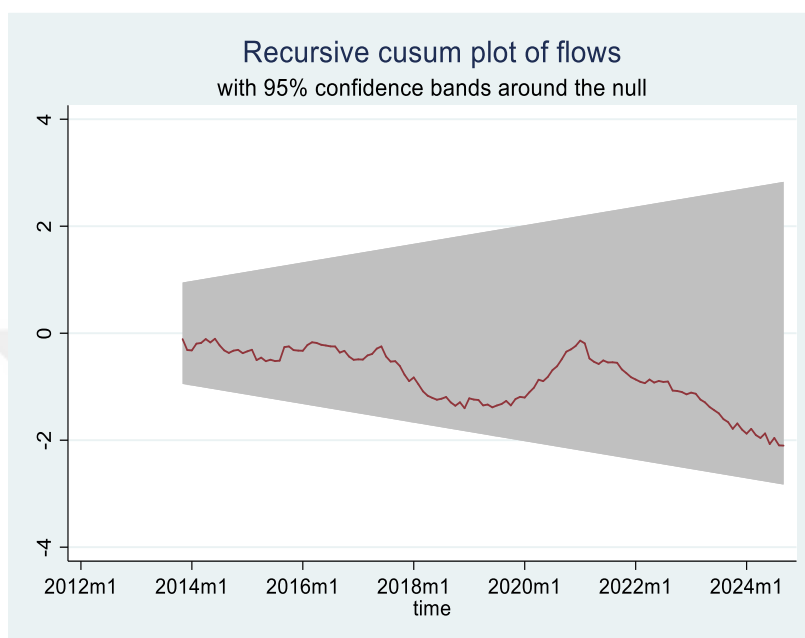


Figure 6. CUSUM test graphic

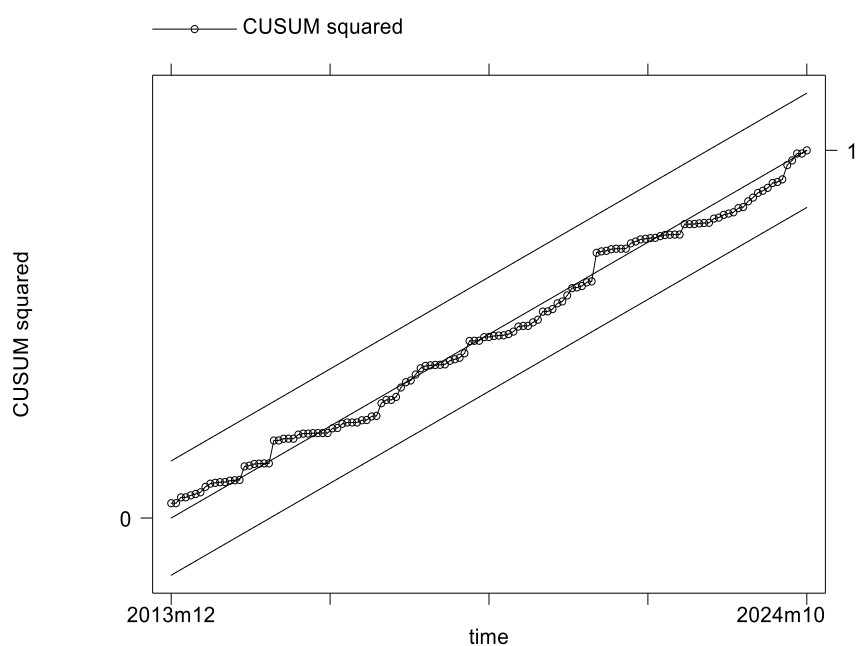


Figure 7. CUSUM-Q test graphic

CHAPTER 9

CONCLUSION AND POLICY IMPLICATIONS

The aim of this study is to reveal which macroeconomic variables best explain the portfolio flows to Türkiye. It is clear that the results of this thesis will be instructive for emerging countries and Türkiye and will provide guidance to policy makers.

As presented in the Literature Review chapter, most of the studies suggest that global financial conditions are the main determinant of portfolio flows. These studies argue that when global financial conditions are favorable global funds tend to flow to emerging market assets for higher returns. On the other side, a limited number of studies found that country-specific conditions are the main drivers. These studies found that foreign resources flow to emerging market assets for comparatively higher returns when country-specific macroeconomic indicators are favorable.

In this study, we found that main explanatory determinants of portfolio flows to Türkiye are real effective exchange rate and industrial production index in the short-term, while the CDS and monthly inflation in the long-term. The results of the empirical analysis suggest that flows to Türkiye in the sample period are related to country-specific macroeconomic conditions rather than global financial conditions.

In the short-term, the most prominent variables were the real effective exchange rate and the industrial production index. The nominal effective exchange rate shows the weighted value of a country's currency against currencies of multiple countries, which generally have weight in bilateral trade. The real effective exchange rate is calculated by adjusting the nominal effective exchange rate for relative price

effects (CBRT). As mentioned earlier, return on a portfolio investment decreases in line with the depreciation of currency. Real appreciation does not necessarily imply an exchange rate-driven return, but it does imply a relative appreciation in real terms. This strengthens investors' decisions to invest in a country's assets. Indeed, the results of the empirical analyses confirm. Accordingly, real effective exchange rate is positively correlated with the portfolio flows at %1 significance level. Industrial production index reflects the firms' real output engaged in production in industrial sectors. The index is a key indicator for economic activity and industrial growth. A positive industrial production index indicates a strong economic activity and supports firm income and profitability. Consequently, this increases stock prices and draws foreign investors to capital markets. Our results are consistent with this thesis. Thus, industrial production index is positively correlated with portfolio flows at %10 significance level.

According to our ARDL test results, CDS and annual inflation are significant on portfolio flows in the long-term. CDS is a financial instrument which refers to risk premium. It allows creditors to insure receivables in case of default of borrowers. Higher CDS premium indicates economic and political unrest. In our analysis, CDS is turned out to be negatively cointegrated with portfolio flows at the 1% significance level. Another independent variable which is significant in explaining portfolio flows in the long-term is annual inflation. Annual inflation refers to annual increase in general level of prices. Accordingly, annual inflation is positively cointegrated with portfolio flows at the 10% significance level.

The prominence of country-specific factors in explaining portfolio flows in our study suggests that even if global conditions are not favorable, countries can draw foreign portfolio flows. However, policymakers must provide stable economic

and political environment. Macroeconomic and political stability ensures stable investment climate which contributes economic growth and welfare.



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