

## THE RETREAT FROM BIST: INSIGHTS INTO FOREIGN PORTFOLIO INVESTMENT MOVEMENTS

### BIST'ten Geri Çekilme: Yabancı Portföy Yatırım Hareketlerine Bakış

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#### Abstract

The need for rapid growth and development in developing countries increases the demand for capital. As a result, foreign portfolio investments are of great importance, especially in emerging markets, as they help meet capital needs. However, their ability to move quickly also introduces high volatility to financial markets. This study examines changes in the share of foreign portfolio investors in Borsa İstanbul from 2004 to 2023, aiming to provide long-term insights to market participants. Initially, changes in the foreign portfolio investor ratio over time are graphically analyzed alongside the BIST 100 index and the average interest rate of deposits with a maturity of up to 3 months. These changes are evaluated in the context of both global and local developments. The study then investigates the causal relationship between the foreign portfolio investor ratio and the BIST 100 index using a cointegration test and a causality test based on the VECM model. The findings show a one-way causality from the BIST 100 index to the foreign portfolio investor ratio, indicating that foreign investors' market movements are largely influenced by the performance of the BIST 100, and local market dynamics significantly affect foreign capital inflows.

#### Keywords:

Foreign Portfolio Investment, Borsa İstanbul, Causality Analysis.

#### JEL Codes:

G2, G10, G19

#### Öz

Hızlı büyüme ve kalkınma ihtiyacı, gelişmekte olan ülkelerde sermaye ihtiyacını arttırmaktadır. Bu nedenle yabancı portföy yatırımları özellikle gelişmekte olan piyasalar için sermaye ihtiyacını karşılamaya katkı sağlamaları nedeniyle büyük önem taşırken, aynı zamanda hızlı hareket edebilme yetenekleri nedeniyle finansal piyasalar açısından yüksek volatilité oluşturabilmektedir. Bu çalışmada 2004-2023 yılları arasında Borsa İstanbul'da yer alan yabancı portföy yatırımcılarının paylarındaki değişimler incelenerek piyasa aktörlerine uzun dönem için öngörü sunma amacını taşımaktadır. Öncelikle çalışmada, yabancı portföy yatırımcı oranının yıllar içindeki değişimleri BIST 100 endeksi ve vadesi 3 aya kadar olan mevduatların ortalama faizi ile birlikte grafik ile incelenmiştir. Yabancı portföy yatırımcı oranındaki değişimler küresel ve yerel gelişmeler eşliğinde değerlendirilmiştir. Daha sonra yabancı portföy yatırımcı oranı ile BIST 100 endeksi arasındaki nedensellik ilişkisi geniş bir zaman dilimini içerisine dahil edecek şekilde eşbütünleşme testi ve VECM modelini temel alan nedensellik testi ile analiz edilmiştir. Sonuçlar, BIST100 endeksinden yabancı portföy yatırımcı oranına doğru tek yönlü bir nedensellik ilişkisinin olduğunu göstermektedir. Bu bulgu, yabancı yatırımcıların piyasadaki hareketlerini büyük ölçüde BIST 100'ün performansına göre şekillendirdiklerini ve yerel piyasa dinamiklerinin yabancı sermaye girişleri üzerinde belirleyici olduğunu ortaya koymaktadır.

#### Anahtar

#### Kelimeler:

Yabancı Portföy Yatırımı, Borsa İstanbul, Nedensellik Analizi.

#### JEL Kodları:

G2, G10, G19

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Received Date (Makale Geliş Tarihi): 14.06.2024 Accepted Date (Makale Kabul Tarihi): 29.09.2024

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## 1. Introduction

The main problem of developing countries, including Türkiye, is the lack of capital. The need for rapid growth and development increases the need for capital in developing countries, whereas the lack of capital makes it necessary to provide external capital. This phenomenon, called foreign capital, is divided into two segments direct capital investments, which include long-term investments, and portfolio investments, which include short-term capital movements. In this study, foreign portfolio investments are discussed.

Portfolio investments are investments made in financial instruments such as stocks, bonds, and bills, to provide interest, value increase, or dividend income. Portfolio investments also include money market instruments and financial derivatives (Efe, 2008). Foreign portfolio investments contribute to economic growth by increasing capital accumulation. It also prevents the pressure on the exchange rates as it provides foreign exchange inflow to the country. In addition, foreign portfolio investments contribute to the formation of a deeper market by increasing the liquidity in the capital markets (Ustaoglu, 2021). Despite the positive aspects, foreign investor transactions are thought to cause emerging markets to become unstable and may slow down economic growth (Avci, 2015).

The most important factors for foreign investors are the security of the capital and profit potential. The portfolios have high liquidity, so they are sensitive to changes in certain criteria in the country. The duration of foreign capital through portfolio investments depends on many factors (Efe, 2008).

As mentioned above, one of the main problems of developing countries such as Türkiye is capital insufficiency, in which case foreign portfolio investments are important. In this study, the changes in the foreign portfolio investor ratio in the Turkish stock market between the years 2004-2023 have been examined. This study makes two important contributions to the literature. First, in the study, the changes in the foreign portfolio investor ratio over the years were examined graphically with the changes in the BIST 100 index and the average deposit interest with a maturity of up to 3 months. The course of these indicators was tried to be explained with important developments in international and national financial markets. As a second contribution, in addition to the studies in the literature, the causality relationship between the foreign portfolio investor rate and the BIST 100 index over a wide period of time, including many local and global financial developments, was tested with the Granger causality test. As can be seen from the studies in the literature (Atik, 2020; Atik and Yılmaz, 2021; Kartal et al. 2022), studies generally cover shorter periods. This study aims to take into account many important developments by covering a wide period.

## 2. Literature Review and Theoretical Background

In the literature there are studies investigating the relationship between foreign portfolio investment and stock market returns focused on developed markets (Bohn and Tesar, 1996; Egly et al., 2010; Todea and Pleşoianu, 2013). In 1996 Bohn and Tesar studied the effects of the expansion of U.S. investment in foreign stocks and its change over time on international portfolio choice. Their study is an important study in terms of understanding the investment tendencies of investors. They concluded that investors tend to enter the market where returns are expected to be high and retreat from markets when predicted returns are low.

Egly et al. (2010) examined net foreign portfolio investment inflows in conjunction with investor risk aversion and U.S. stock market factors. They found that positive shocks in the stock market have an insignificant short-term response to net corporate bond inflows and a significant short-term positive response to net corporate stock inflows. In addition, they found that net corporate stock inflows do not respond to risk aversion, while bond inflows have a significant medium-term response to increases in risk aversion. The results suggest that country-specific factors can affect foreign portfolio inflows.

Todea and Pleřoianu (2013) investigated the relationship between stock market efficiency and foreign portfolio investment in Central and Eastern European (CEE) stock exchanges. They found that foreign portfolio investment had a positive and significant impact on the information efficiency of eleven Central and Eastern European stock exchanges during the period 1999-2010.

There are a limited number of studies examining the effects of foreign portfolio investors' entry into the market for Türkiye. Avcı (2015) examined the relationship between foreign investor transactions and stock returns for the period between January 2003 and June 2014. In the study, it is found that there is a unidirectional relation between buy and sell transactions of foreign investors and stock market returns. The findings confirm the sensitivity of emerging market returns to foreign investor transactions.

In 2022 Kartal et al. investigated the effects of foreign investors' activities on the XU100 index using daily data from 01.02.2020 to 26.06.2020 by conducting the Engle-Granger cointegration test, Toda-Yamamoto causality test, and MARS analysis. The findings reveal that the net sales amount of foreign investors has an impact on the index during the COVID-19 pandemic times.

Atik (2020) investigated the effect of daily foreign portfolio investor rate on the Borsa İstanbul BIST100 index with Toda Yamamoto causality tests. For this study, the daily closing values of the BIST100 index and foreign investor share ratios between 01.01.2014 - 29.03.2019 were used.

Atik and Yılmaz (2021) aimed to examine the effect of the change in the monthly foreign share ratio on the BIST sector indices based on the selected sectors in Borsa İstanbul. Granger and Toda Yamamoto's causality analysis methods were used to determine the relationship between the sector indices and the change in the foreign share ratio. The study covers the periods of January 2009 - March 2019. It was determined that the change in the sector indices was not due to the change in the foreign share ratio but was due to the internal dynamics of Borsa İstanbul and the effects of other factors.

The question of how foreign capital flows differ between countries is one of the fundamental questions that attracts the attention of many researchers. Although many countries need foreign capital, some countries can provide more capital inflow. In general, when investors realize that the rate of return in any economy is relatively higher than the international rate of return, foreign capital movements towards that country begin to increase. However, the fact that the situation varies from country to country shows that risk is also a determinant in capital flow, as well as return.

According to an IMF study, transaction cost, asymmetric information, and market size are vital determinants of capital flows in the country. These main determinants are the driving factors of portfolio investment (Haider et al., 2016).

It is possible to collect the factors affecting the foreign portfolio investment of countries in two main groups. The first of these is a sufficient financial structure, the existence of legal regulations, the political and social environment, and the second is the macroeconomic indicators of the country.

For foreign portfolio investments, first of all, strong and well-organized financial markets are required. The financial system must have the capacity to assess and manage risks. In order for the financial system to function properly, authorized institutions must be able to identify, monitor, and manage risks effectively. The payment system must work reliably, especially through financial institutions and clearinghouses.

It must also have the ability to withstand economic shocks, such as a significant change in foreign exchange or interest rates, or a sudden capital outflow. In addition, adequate supervision is necessary for a healthy financial system. Supervisors should have a full understanding of the risks borne by financial institutions and how they can be managed (Evans, 2003).

The rule of law is very important for foreign portfolio investments. Portfolio investors need a reliable legal system that ensures compliance with agreements and regulations in the public or private sector. Adequate and clear legal regulations that protect all investors equally are important for the confidence of domestic and foreign investors. In addition, even if the legal regulations are sufficient, there are some problems in practice from time to time due to the insufficient independence of the legal organs. The application of the rule of law principle is critical in this sense.

Another important issue is transparency. Transparency is, above all, the critical element that allows investors to know the risks they are undertaking when investing. Investors need information to determine which financial instruments to invest. Disclosure of information provides pricing efficiency and market confidence.

It is also an important issue for portfolio investors whether there is discrimination in the country or not. Discrimination will harm potential returns or increase risk levels. Discrimination on the basis of nationality or any other form of discrimination will deter portfolio investments.

Another important issue is the protection of property rights. The rights of the portfolio investor against the financial markets and the financial instruments they hold should be secured. Investors want to have the right to freely move their capital within and outside the country. Investors refrain from investing if they do not have assurance that they will be able to move their capital as and when they want (Evans, 2003). Therefore, the openness of the economy is also an important determinant of portfolio investments. Countries with capital controls and restrictive trade policies discourage foreign direct investment inflows than countries with liberal policies. Open economies attract more foreign capital than heavily hedged economies.

The second factor affecting foreign portfolio investments is related to macroeconomic variables. There are many macroeconomic variables that affect foreign portfolio investments in financial markets. The main of these factors are market size interest rates and exchange rates. The relationship between foreign portfolio investors and a country's market size is generally associated with lower country risk, economic growth, and developments in financial markets (Bekaert et al., 2006). Countries with deeper markets are more likely to attract foreign portfolio investments. When international inflation is taken into account, capital tends to go to countries with higher interest rates. According to the portfolio investment theory, the foreign portfolio investor will

invest in this way until the interest rate equalizes all over the world. Therefore, it can be said that foreign portfolio investment is affected by the domestic interest rate (Waqas et al., 2015). The relationship between the foreign exchange rates in the country and the foreign portfolio investor is generally examined through how exchange rate risk and exchange rate fluctuations affect investment decisions (Eichengreen and Hausmann, 1999). Exchange rate fluctuations can affect the investment flows to the country positively or negatively by affecting the expected returns and risk levels of foreign investors (Faeth, 2009).

While foreign portfolio investors gain advantage by exchanging their currencies at high exchange rates in the country, they can also contribute to the rise of the stock markets by investing their money in the stock market in the future. This is because, as the amount of foreign currency in the market increases, foreign currency becomes abundant in the markets, causing exchange rate to decrease. Consequently, when foreign portfolio investors exit the market, they both benefit from the increase in the stock market and have the opportunity to convert their money into foreign currency at a lower exchange rate (Őenol and Koç, 2018). On the other hand, sudden and unexpected changes in exchange rates increase risks. Therefore, sharp fluctuations in exchange rates or sudden increases in fixed exchange rates can pose an obstacle to foreign investment. This volatility in the exchange rate attracts speculative capital flows rather than productive and sustainable foreign investments (Gümüő et al., 2013).

The relationship between inflation and foreign portfolio investors is examined through how inflation affects the risk perception and expected returns of investors (Glosten et al., 1993). High inflation increases the risk perception of foreign investors by increasing economic uncertainty, and this may reduce the investment flows of foreign portfolio investors. Therefore, inflation poses one of the biggest threats to investors. Low and stable inflation fosters an attractive environment for portfolio investments.

High growth rates are another factor that causes foreign capital flows to countries. Economic growth positively affects the investment flows of foreign portfolio investors to the country by enhancing the country's macroeconomic stability and the attractiveness of the investment environment (Albuquerque, 2003). Foreign investors invest especially in developing countries to benefit from the growth potential of these countries. Particularly in countries where savings are insufficient, external cash inflow is essential for the desired growth to occur. However, it is important to note that failure to adequately control the capital coming in the form of portfolio investments within the country may pose risks for the country's economies (Őenol and Koç, 2018).

The relationship between the state of the country's balance of payments and foreign portfolio investors is examined through how the balance of payments affects investors' risk perception and economic stability (Calvo et al., 1993). Deterioration in the balance of payments may have negative effects on the exchange rate and inflation and may reduce the investment flows of foreign portfolio investors to the country by reducing the confidence of foreign investors in the country (Milesi-Ferretti and Tille, 2011). In this context, high balance of payments deficits increases country risk and therefore negatively affect potential investment flows.

The relationship between tax rates in the country and foreign portfolio investors is examined in terms of how tax rates affect investment costs and expected returns (Desai and Dharmapala, 2011). High tax rates can diminish the expected returns of foreign investors and increase investment costs, negatively affecting the investment flows of foreign portfolio investors to the country (Feldstein, 1995). A country's tax practices also have a significant impact on

attracting foreign investors. Investors base their investment decisions on the expected after-tax return of an investment. Tax is one of the policy tools used especially by developing countries to attract foreign investment (Gümüş et al., 2013).

Country risk is also an indicator that determines the direction of portfolio investments. Country risk is the risk that a debtor country will not be able to meet its financial obligation to a foreign lender or investor. As this risk increases, foreign investment will decrease. Measuring country risk is not straightforward.

The relationship between the credit rating of securities and their investors is associated with how credit ratings affect investors' risk perception and return expectations (Cantor and Packer, 1996). High credit ratings positively affect the investment flows of foreign portfolio investors to the country by offering investors the promise of low risk and reliable returns. Because the credit score is important in determining the probability of individuals and organizations to fulfill the obligations of the government or private sector organizations.

The relationship between transaction costs in the country's financial markets and foreign portfolio investors is related to how transaction costs affect investors' investment costs and potential returns (Bekaert and Harvey, 2000). While low transaction costs encourage investment flows of foreign portfolio investors to the country, high transaction costs negatively affect these flows (Tse and Zobotina, 2001).

Practices in other countries' economies are important factors affecting the investment decisions of foreign portfolio investors. Foreign investors aim to diversify their investments and reduce their risks due to differences between country economies and policies (Bekaert et al., 2006). At the same time, countries are implementing practices that will be attractive to foreign investors in order to attract foreign capital to their own countries. Such practices also determine the direction of foreign portfolio investments. Policies and economic practices in other countries allow foreign portfolio investors to make comparisons in terms of competitive advantages and potential risks when deciding to invest in a country (Dvorák, 2003). On the other hand, in countries with similar risks, investors prefer countries offering higher returns.

Another issue is the diversity of investment instruments in countries. The high variety of instruments in which foreign investors will invest plays a role in shifting portfolio investments towards those countries (Şenol and Koç, 2018).

### **3. Data**

To maintain a broad scope for the study, the daily closing values of the BIST100 index between 04.05.2004 and 27.01.2023 and the daily foreign investor rate for the same period were used. Thus, the period in which many crises and macroeconomic developments were experienced was included in the sample period. Foreign portfolio investor ratio was obtained with the Matrix database, and index data was obtained from <https://tr.investing.com>.

The summary statistics of the foreign investor ratio and BIST100 index are presented in Table 1. According to Table 1, it is seen that the average foreign investor ratio for the examined period was 60.995%. Therefore, more than 50% of BIST100 consists of foreign investors. The fact that the standard deviation in the foreign investor ratio is 9.194% is an indication that the change in the foreign share ratio is high in the examined period.

**Table 1. Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
FOREIGN	4601	60.989	9.194	28.99	72.46
BIST100	4601	86001.618	71640.574	15922.4	566110.0

The new type of coronavirus, also called SARS-CoV-2, was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. The declaration of a pandemic by the WHO had a significant impact on international trade, country economies and financial markets. To gain a clearer understanding of the impact of the COVID-19 period on foreign investor rates and the stock market, descriptive statistics were re-evaluated by dividing them into two distinct periods: before and after the onset of the COVID-19 pandemic. Table 2 shows the descriptive statistics before and after the pandemic.

**Table 2. Descriptive Statistics Before and After Pandemic**

	n	Mean	Sd	Min	Max
<b>Before</b>					
FOREIGN	3898	64.333	3.894	49.28	72.46
BIST100	3898	64684.524	25758.231	15922.4	123556.1
<b>After</b>					
FOREIGN	703	42.443	7.95	28.99	60.63
BIST100	703	204200.81	115903.07	84246.203	566110.01

When Table 2 is examined, it is seen that while the average rate of foreign investors was 64.33% in the pre-pandemic period, this rate decreased to 42.44% on average in the post-pandemic period. At the same time, the standard deviation of the foreign investor ratio also increased after the pandemic. A series of economic measures and policy changes taken after the pandemic may have changed these rates.

#### 4. Findings

This study aims to examine the changes in the foreign investor ratio in the Turkish stock market between 2004-2023. For this purpose, first of all, the changes in the foreign investor ratio over the years were examined graphically the BIST 100 index and deposit interest rate up to 3 months. Secondly, the causality relationship between the foreign investor ratio and the BIST 100 index was tested with the Granger causality test.

##### 4.1. Developments Affecting Financial Markets

The main motivation of this study is to explain the remarkable change in the foreign investor ratio between 04.05.2004- 27.01.2023. In this framework, the BIST 100 index, the average deposit interest rate up to 3 months and the foreign investor ratio are shown in Figure 1. Significant developments in international and national financial markets have been annotated on the figure for reference and context. It is observed that foreign portfolio investors have been net sellers in the Borsa İstanbul, especially since the first month of 2020. The continuous downward trend indicates that the exits of foreign investors in the stock market are permanent.

Considering that the results of many measures taken after the 2000 November and 2001 February crises in Türkiye could be taken until the end of 2003, the analysis was started from January 2004. Transition to the Strong Economy Program (CBRT, 2002), implemented after the 2000 November and 2001 February Crises, includes important decisions for macroeconomic indicators and financial markets.

With the measures taken after these crises, the foreign investor ratio in Borsa İstanbul started to increase in the last quarter of 2001 and at the beginning of 2002. In particular, the IMF-supported economic reforms and structural transformation programs implemented in 2001 contributed to the restoration of foreign investors' trust in Türkiye (Yeldan, 2002; Cizre and Yeldan, 2005).

Within the framework of these developments, the increasing trend in the foreign investor ratio (FPI) in Borsa İstanbul, especially since the beginning of 2004, is striking. Türkiye's process of starting full membership negotiations with the European Union (EU) in 2004 increased the interest of foreign investors in Türkiye. Another factor is the reflection of the effect of increasing global liquidity due to low interest rates and low risk perception in the mid-2000s. This situation has increased the interest of foreign investors in the financial markets of developing countries such as Borsa Istanbul.

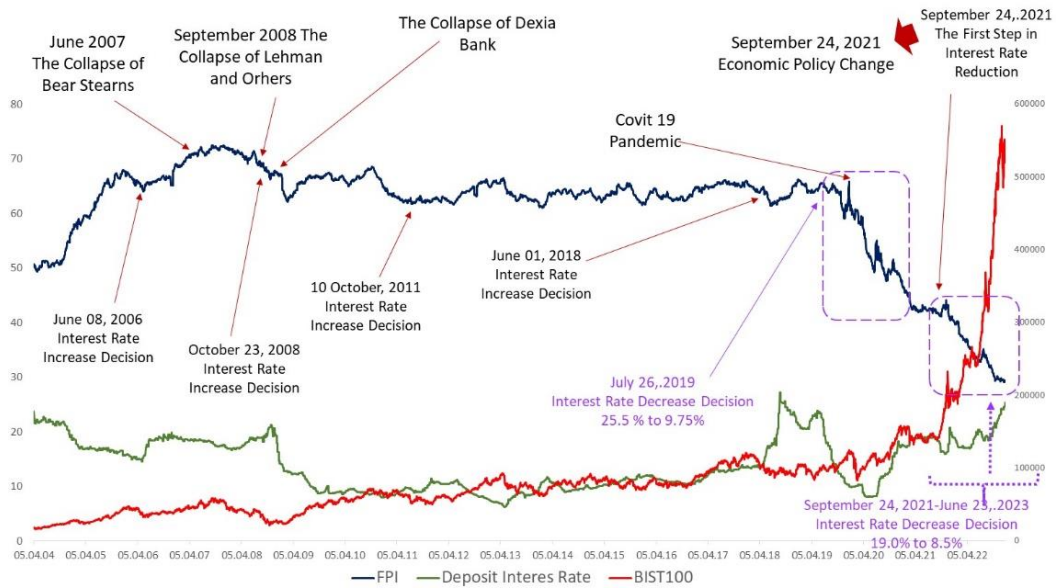


Figure 1. Tendency of the Foreign Portfolio Investors (05.04.2004-01.27.2023)

The important developments and their effects within the analysis period can be evaluated as follows. The fact that the Central Bank of the Republic of Türkiye (CBRT) increased the policy rate from 16.25% to 18% on April 28, 2006 does not seem to have a significant impact on the interest of foreign portfolio investors in Borsa İstanbul.

The beginning of the global financial crisis in USA is generally accepted as the subprime mortgage (housing loans provided to borrowers with low credit ratings) crisis, which started in 2007 and peaked in 2008 with the bankruptcy of Lehman Brothers (Mishkin, 2011). The collapse



of Bear Stearns' two hedge funds in June 2007 marks the beginning of the mortgage crisis that led to the global financial crisis (Gorton, 2008).

High interest rates and growth expectations in developing countries such as Türkiye may cause (may have caused) foreign investors to show interest in Borsa İstanbul. It is argued that the macroeconomic foundations, institutions and policies of countries are among the driving forces in capital flows in 2009-2010 (Fratzscher, 2012). Infact, a slight upward movement was observed in the foreign portfolio investors in Borsa İstanbul.

The bankruptcy of Lehman Brothers in October 2008 is considered one of the most important turning points of the global financial crisis (Gorton, 2009). This bankruptcy increased the risk perception of investors (Füss et al., 2016) and caused a major crisis of confidence in the global financial system, causing a liquidity crisis and freezing of credit markets (Gorton, 2009). This reduced the risk appetite of investors and led to the transfer of capital to low-risk assets. With the deepening of the crisis, investors started to withdraw their investments in high-risk countries such as Türkiye. In this period, it is observed that the ratio of foreign portfolio investors is in a decreasing trend. In addition, the global financial crisis had negative effects on Türkiye's macroeconomic indicators (Selçuk, 2010). This situation further reduced the confidence of foreign portfolio investors and triggered exits from the Stock Exchange.

With the globalization of the financial crisis in 2008, including the bankruptcy of Dexia Bank, financial markets and national economies were affected significantly around the world (Wiggins et al., 2014). This situation increased the risk perception of investors and also affected foreign investors in Borsa İstanbul.

One of the most remarkable developments after this date is that the 350 basis point increase in the policy rate in August 2008 did not seem to have much effect. Afterwards, it is observed that the foreign investor ratio remained in a certain band range (61.16%-66.16%) for a long time.

Although the CBRT increased the policy rate from 9.25% to 16.5% on June 1, 2018, it is observed that foreign portfolio investors did not react significantly to this change. The effect of the interest rate changes on foreign investor preference may vary depending on other economic and political factors (Aizenman and Binici, 2016).

In 2018, Türkiye experienced economic problems such as exchange rate volatility and the fight against inflation (Güngen, 2018). In this period, high interest rates and uncertainties regarding the Turkish economy can be considered as the reason why foreign portfolio investors did not show the expected interest in the stock market.

The official announcement of the COVID-19 pandemic in Türkiye in 2020 has a significant impact on foreign investors in Borsa İstanbul. The pandemic has caused significant uncertainty on financial markets and investor behavior on a global scale (Baker et al., 2020). In addition, Türkiye's economic conditions and policies during the COVID-19 pandemic are among the factors that changed foreign investors' interest in Borsa İstanbul (Kartal et al., 2022).

During the pandemic, the decline in profits and uncertainties that companies began to experience affected many investors (Tařkınoy, 2020). Reis (2021), in his study in which he analysed the fluctuations experienced in Borsa İstanbul during the pandemic, obtained results indicating that the risk appetite of foreign investors is sensitive to the change in the number of cases. It has been stated that this is an expected result for developing countries, because foreign investors are high in these markets, and portfolio investments are often withdrawn due to the

occurrence of global or regional risks. Similarly, there are other studies (Fu et al., 2021; Nwosa, 2021; Zaremba et al., 2021; Li et al., 2022; Magwedere and Marozva, 2022) in the literature on the exit of foreign investors from emerging markets during the pandemic period.

In this process, the CBRT started the process of gradually reducing the interest rates, which had an impact on these developments. Additionally, low profitability and the increase in global risk factors during this period may be effective in the exit of foreign investors. The exit of foreign investors from Borsa İstanbul during the Covid-19 pandemic can be interpreted as global economic uncertainties, risk perception and the tendency of investors to turn to safe haven assets.

The COVID-19 pandemic has led to great uncertainties and stagnation in the world economy (IMF, 2020). This situation has caused foreign investors to re-evaluate their investments, especially in developing countries, and turn to safer assets. During the pandemic, the risk perception of investors has increased and they have evaluated investments in developing countries as riskier (Didier et al., 2021). This situation explains the permanent exit tendency of foreign investors from Borsa İstanbul. Global economic uncertainties and the increase in risk perception caused foreign investors to turn to the assets of developed countries, which are considered as safe havens (Bekaert and Harvey, 2000).

Considering these elements, the uncertainties in the global economy and the shift in investor risk perception, particularly throughout the pandemic, have primarily driven the presence of foreign portfolio investors. It has been observed that foreign portfolio investors hastened their withdrawal from the market, following the CBRT's initiation of interest rate cuts on September 24, 2021, and the adoption of economic policies predicated on the belief that "low interest leads to low inflation" (Uctum and Uctum, 2011).

#### **4.2. Causality Analysis**

In this part of the study, the causality analysis method was applied to show the effect of the change in foreign investor ratio on the BIST 100 index. In causality analysis, it is necessary to check whether the variables in the model contain unit roots, that is, their stationarity. For this purpose, Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests were used to check whether the variables were stationary or not. What is meant by stationarity is that the mean and variance of the series do not change over time. The null and alternative hypotheses established in the first-generation unit root tests are:

$H_0$ : There is a unit root, the series is not stationary.

$H_1$ : There is no unit root, the series is stationary

The results of the ADF and PP tests performed to test the hypotheses are in Table 3 and Table 4, respectively. According to the ADF and PP unit root test results in Table 3 and Table 4, it was concluded that the BIST100 Index and the foreign portfolio investor ratio are not stationary at this level. The results show that these series are stationary on the first difference level. When the variables are non-stationary at the level spurious regression problem occurs.

**Table 3. ADF Unit Root Test Results**

		At Level		At First Difference	
		FOREIGN	BIST100	d(FOREIGN)	d(BIST100)
With Constant	t-Statistic	2.1510	4.5053	-57.9286	-9.2943
	Prob.	0.9999	1.0000	0.0001	0.0000
		n0	n0	***	***
With Constant & Trend	t-Statistic	-0.4622	5.5835	-58.2293	-9.6539
	Prob.	0.9852	1.0000	0.0000	0.0000
		n0	n0	***	***
Without Constant & Trend	t-Statistic	-0.9849	4.1859	-57.9089	-8.6144
	Prob.	0.2913	1.0000	0.0001	0.0000
		n0	n0	***	***

**Table 4. PP Unit Root Test Results**

		At Level		At First Difference	
		FOREIGN	BIST100	d(FOREIGN)	d(BIST100)
With Constant	t-Statistic	2.0787	7.4760	-58.0552	-66.7210
	Prob.	0.9999	1.0000	0.0001	0.0001
		n0	n0	***	***
With Constant & Trend	t-Statistic	-0.4892	6.7696	-58.2123	-67.0445
	Prob.	0.9841	1.0000	0.0000	0.0000
		n0	n0	***	***
Without Constant & Trend	t-Statistic	-0.9414	6.7381	-58.0491	-66.3860
	Prob.	0.3091	1.0000	0.0001	0.0001
		n0	n0	***	***

In this case, where level stationarity is not achieved but stationarity is achieved at the same difference level, it is necessary to investigate whether there is cointegration between the variables. Cointegration analysis is important because it shows us the long-term co-movement of variables.

As our variables are stationary at first difference then their integrating order is 1. The cointegration tests are sensitive to the lag length. For the optimal lag length determination VAR Lag Order Selection Criteria results are checked for lag 1 to 10. The results for the models are shown in Table 5. The optimal lag length is determined as 9 according to the Akaike Information Criterion (AIC). The AIC criteria are checked because it is flexible. After determining the optimal lag length, the assumptions that there is no autocorrelation at the 9-lag model and that the inverse roots of the model were located within the unit circle were controlled.

**Table 5. VAR Lag Order Selection Criteria**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-72425.71	NA	1.73e+11	31.55204	31.55484	31.55303
1	-40861.85	63086.46	184925.8	17.80346	17.81187	17.80642
2	-40800.24	123.0855	180342.5	17.77837	17.79238	17.78330
3	-40778.42	43.58462	178947.5	17.77060	17.79022	17.77751
4	-40705.71	145.1287	173670.8	17.74067	17.76589	17.74955
5	-40671.79	67.67635	171421.8	17.72764	17.75846*	17.73849
6	-40658.12	27.27241	170700.9	17.72342	17.75985	17.73624
7	-40653.62	8.967906	170663.8	17.72320	17.76523	17.73800
8	-40641.06	25.02035	170028.8	17.71948	17.76711	17.73624
9	-40632.16	17.72576*	169666.3*	17.71734*	17.77058	17.73608*
10	-40630.04	4.216711	169805.4	17.71816	17.77700	17.73887

**Note:** \* indicates lag order selected by the criterion. LR: sequential modified LR test statistic. (each test at 5% level) FPE: Final prediction error. AIC: Akaike information criterion. SC: Schwarz information criterion. HQ: Hannan-Quinn information criterion.

After determining the optimal lag length and order of cointegration, the Johansen and Jeselius cointegration test can be applied. Table 6 shows the results of the cointegration test for the model. If two or more time series are non-stationary but a linear combination of them is stationary, these series are said to be cointegrated. Cointegration describes a long-run relationship in a non-stationary time series. It is seen that there are long-run relations between the foreign portfolio investor ratio and the BIST 100 index with two cointegration equations.

**Table 6. Johansen and Jeselius Cointegration Test Results**

<b>Unrestricted Cointegration Rank Test (Trace)</b>				
<b>Hypothesized No. of CE(s)</b>	<b>Eigenvalue</b>	<b>Trace Statistic</b>	<b>0.05 Critical Value</b>	<b>Prob.**</b>
None *	0.022671	111.0955	15.49471	0.0001
At most 1 *	0.001266	5.814674	3.841466	0.0159
<b>Unrestricted Cointegration Rank Test (Maximum Eigenvalue)</b>				
<b>Hypothesized No. of CE(s)</b>	<b>Eigenvalue</b>	<b>Max-Eigen Statistic</b>	<b>0.05 Critical Value</b>	<b>Prob.**</b>
None *	0.022671	105.2808	14.26460	0.0001
At most 1 *	0.001266	5.814674	3.841466	0.0159

**Note:** Trace test indicates 2 cointegrating eqn(s) at the 0.05 level. \* denotes rejection of the hypothesis at the 0.05 level. \*\*MacKinnon-Haug-Michelis (1999) p-values. Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level. \* denotes rejection of the hypothesis at the 0.05 level. \*\*MacKinnon-Haug-Michelis (1999) p-values.

If there is a cointegration relationship between variables, causality should be analyzed through the vector error correction model (VECM). Since there is a cointegration relationship between the BIST 100 index and foreign portfolio ratio in the Johansen and Jeselius cointegration test, causality analysis was conducted through the VECM model. The findings obtained from the causality analysis are presented in Table 7.

**Table 7. VEC Granger Causality/Block Exogeneity Wald Tests**

<b>Dependent variable: BIST100</b>			
<b>Excluded</b>	<b>Chi-sq</b>	<b>df</b>	<b>Prob.</b>
FOREIGN	10.24781	9	0.3308
All	10.24781	9	0.3308
<b>Dependent variable: FOREIGN</b>			
<b>Excluded</b>	<b>Chi-sq</b>	<b>df</b>	<b>Prob.</b>
BIST100	108.1350	9	0.0000
All	108.1350	9	0.0000

In the model where the dependent variable is the BIST 100 index, it is seen that the probability value is 0.3308, which is greater than 0.05. This shows us that there is no causality relation between the foreign portfolio investor ratio and the BIST100 index. In the model where the foreign investment rate variable is the dependent variable, it is seen that the probability value is 0.000 which is greater than 0.05. This result signifies that there is a unidirectional causal relation from BIST100 to the foreign investor ratio.

## 5. Discussion

While numerous studies have investigated the relationship between foreign portfolio investment and stock market returns, it is seen that these studies mostly focus on developed markets (Bohn and Tesar, 1996; Egly et al., 2010; Todea and Pleřoianu, 2013). As mentioned in the introduction, foreign capital inflow is of great importance, especially for developing markets. However, there is a limited body of research on Borsa İstanbul in the literature. Atik (2020) found that there is a causality relation between foreign portfolio investors and the BIST 100 index. In this context, it has been determined that the changes in BIST 100 affect the foreign portfolio investor ratio, and the changes in the foreign investor ratio also affect BIST100. Avcı (2015) found a unidirectional causality relation from foreign investor transactions to stock market returns.

Our study differs from previous studies in terms of causality. It is found that there is unidirectional causality from BIST100 to the foreign investor ratio. The period we examined covers a wide study period and includes the post-Covid period in which many precautions were taken. As mentioned before the previous studies cover a narrower period (Atik, 2020; Atik and Yılmaz, 2021; Kartal et al., 2022).

As seen in Figure 1, a series of measures and events affecting the market and legal regulations taken during this period directly affect the stock market. The foreign investor ratio seems to be affected by these events which also change the stock market. One important reason why the outflow of foreign investors does not affect the stock market can be attributed to the decrease in alternative investment options. This reduction is coupled with negative real interest rates as a consequence of various measures taken in the post-COVID period. Although a decrease in foreign investors was observed, the interest of domestic investors in the stock market eliminated the impact of the outflows on the stock market.

## 6. Conclusion

As a natural consequence of globalization, the accelerated flow of liberalized capital movements between markets within countries is an ongoing trend. There are various factors that attract or lead foreign portfolio investors to the country's stock exchanges. Monitoring these factors, crucial for economic decision-makers of countries, in conjunction with current events is important for future strategies.

In this study, the movements of the BIST100 index and foreign portfolio investor ratio data for the period 2004-2023 were examined. From the long-term perspective, after 2006, which was the period when the effects of the November 2000-February 2001 crises were significantly eliminated, there was no significant change in the entry/exit of foreign portfolio investors to the BIST between the end of 2006 and 2019. However, it has been observed that since 2020, starting with the pandemic, foreign portfolio investors started to exit the stock exchange and this trend continued to intensify in the following dates. In this study, the relationship between the BIST 100 index and the movements of foreign portfolio investors has been analyzed with cointegration analysis and Granger causality analysis. The findings suggest that the BIST 100 index and foreign investor ratio are cointegrated which indicates that there are long-run relations between foreign investor ratio and the BIST 100 index. In causality analysis, it is found that there is a unidirectional causal relation from BIST100 to the foreign portfolio investor ratio. This means that the BIST

100 index is not affected by the withdrawal of foreign investors; in this case, it can be considered that foreign portfolio investors tend to withdraw from the stock market with different economic developments. In this regard, the findings indicate that changes in the BIST 100 index have a unidirectional effect on the foreign investor ratio. This suggests that foreign investors' market behavior is largely shaped by the performance of the BIST 100, and that domestic market dynamics play a decisive role in influencing foreign capital inflows.

The literature indicates various factors affecting the exit of foreign portfolio investors from the market. As a matter of fact, there was a decrease in foreign investments due to the decrease in risk appetite in economies that were economically weakened during the pandemic period and delayed in taking precautions.

The tendency of foreign portfolio investors to exit during the period when the BIST 100 index rises outside the general trend has contradictory findings with some studies in the literature (Hau and Rey, 2006). Several factors contribute to this phenomenon, including the implementation of different economic policies aimed at reducing inflation and the CBRT's decision to reduce interest rates as part of its perspective that lowering interest rates would lead to reduced inflation, a view not fully embraced by foreign portfolio investors. Foreign portfolio investors, apprehensive that the newly implemented economic model would not effectively reduce inflation, accelerated their exit from the market, taking into account the expected inflation risk premium, as found in the literature (Bekaert and Wang, 2010). Within the framework of studies emphasizing that not only the economic decisions of the country but also its legal practices have an impact on foreign portfolio investors (Leuz et al., 2009; Chari and Gupta, 2008), it will rank 116th among 140 countries in the World Rule of Law Index in 2022 (worldjusticeproject.org) ranks last among 14 countries in the Eastern Europe and Asia category. The growing need for foreign exchange lies at the root of the recently increasing fragility in the country's economy. As a matter of fact, the gradual depletion of the CBRT's net reserves with levels even falling into the negative, and restrictions on capital control may cause foreign creditors to lose confidence in the country's market, as supported in the literature (Reinhart and Reinhart, 2009; Alfaro et al., 2014; Benigno and Fornaro, 2014; Ghosh et al., 2014; Aizenman and Binici, 2016). Within this context, future research could investigate the factors contributing to the rise in the BIST 100 index despite the withdrawal of foreign portfolio investors from the stock market.

The most important factors that cause foreign portfolio investors to withdraw from Borsa İstanbul are global economic uncertainties caused by the pandemic, fluctuations in Türkiye's macroeconomic indicators, and political and geopolitical risks. It is thought that when the negative effects of these factors are reduced, the interest of foreign investors in Borsa İstanbul may increase again.

#### **Declaration of Research and Publication Ethics**

This study which does not require ethics committee approval and/or legal/specific permission complies with the research and publication ethics.

#### **Researcher's Contribution Rate Statement**

The authors declare that they have contributed equally to the article.

#### **Declaration of Researcher's Conflict of Interest**

There is no potential conflicts of interest in this study.

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