



## THE IMPACT OF SELECTED MACROECONOMIC VARIABLES ON THE BIST BANKING INDEX: EXAMPLE OF TÜRKİYE IN 2002-2023\*

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### Abstract

The increasing number of financial instruments in the financial markets and the increase in product diversity in the real sector push the relevant markets to new searches in terms of both financing and competitiveness. In this context, in this study, the transformation of the recent global financial mobility and increasing financial competition in the macroeconomic variables in the Turkish economy and the possible effects of this transformation in selected macroeconomic variables on the banking sector, which is the most important pillar of the financial sector, were analyzed by determining the effects of the nominal effective exchange rate index (EERI), industrial production index (IPI) and consumer price index (CPI) on the banking stock exchange index between the periods 2002M01-2023M03 and the direction and degree of the relationship between the relevant variables were tried to be determined. In this context, since the Phillips-Perron unit root test results of the variables included in the analysis are stable at different stationary levels, the ARDL Boundary Test method was performed and the results obtained showed that; It was concluded that there is a positive and long-term relationship between the nominal EERI and the CPI and the banking stock exchange index, therefore the relevant variables are cointegrated, but the IPI and the banking stock exchange index are not long-term cointegrated.

**Keywords:** Finance, stock market, banking, ARDL, consumer price index.

**JEL Classifications:** G12, E31, G21.

## SEÇİLİ MAKROEKONOMİK DEĞİŞKENLERİN BİST BANKACILIK ENDEKSİNE ETKİSİ: 2002-2023 TÜRKİYE ÖRNEĞİ

### Öz

Finansal piyasalarda finansal çeşitliliğin artması ve üretici sektörde ürün çeşitliliğinin artması mevcut piyasaları hem finansman hemde mevcut rekabet koşullarına uyum konusunda yeni arayışlara yönlendirmektedir. Bu doğrultuda çalışmada son çeyrek yüzyılda yaşanan uluslararası finansal mobilite ve artış gösteren finansal rekabetin Türkiye ekonomisinde makroekonomik değişkenlerde yarattığı dönüşüm ve seçili makroekonomik değişkenlerdeki bu dönüşümün finansal sektörün en önemli ayağı olan bankacılık sektörü üzerinde ki olası etkileri, 2002M01-2023M03 dönemleri arası, nominal efektif döviz kuru endeksinin, sanayi üreyim endeksinin ve tüketici fiyat endeksinin bankacılık borsa endeksinde olası etkileri saptanarak analiz edilmiş ve mevcut değişkenler arasındaki ilişkinin derecesi ve yönü tespit edilmesi amaçlanmıştır. Bu doğrultuda analize konu olan değişkenlere Phillips-Perron birim kök testi uygulanmış ve test sonuçları ilgili değişkenlerin farklı durağanlık seviyelerinde durağan olduklarını göstermiştir. Bu nedenle değişkenlere ARDL Sınır Testi yöntemi uygulanmış ve yapılan analiz sonuçlarına göre; nominal efektif döviz kuru endeksi ve tüketici fiyat endeksi ile bankacılık borsa endeksi arasında pozitif yönlü ve uzun dönemli ilişkinin olduğunu dolayısıyla ilgili değişkenlerin eşbütünleşik olduğu ancak sanayi üretim endeksi ile bankacılık borsa endeksinin uzun dönemli eşbütünleşik olmadıklarını sonucuna ulaşılmıştır.

**Anahtar Kelimeler:** Tüketici fiyat endeksi, borsa, finans, ARDL, bankacılık.

**JEL Kodları:** E31, G12, G21.

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## Introduction

Recently, increasing international financial competition and inter-market mobility offer a number of opportunities to both domestic and foreign investors in the evaluation of capital. In this context, international financial markets are in a constant mutual interaction. International economic developments and increasing financial mobility offer a number of advantages to firms and savers along with increased financial diversity. Increasing financial competition and increasing financial interaction between countries have also made it easier for savers to access new derivative financial instruments. In this context, they analyzed the interaction between developed and developing country financial markets in Rose and Marquis (2006) studies and revealed that the same interaction between the financial markets of developing countries and the same interaction between the financial markets of developing countries and the financial markets of developed countries also affected the financial markets of developed countries.

The increasing diversity and increasing interaction in financial markets is one of the main pillars of the system, which has led to the rapid development of banking in the recent period and to enter a rapid technological transformation in order to respond to the expectations of investors. The importance of banks, which are the main determinants of exchange rate, inflation and industrial production and the most important financing pillar, is increasing day by day. The increasing share of banking in the financial system was also reflected in banking profits, which led to a further increase in the share of the banking sector in the overall economic structure. Increasing banking profits have increased the interest of national and international investors in related banking stocks in the equity market. On the one hand, the increasing interest in banking stocks and on the other hand, the fact that banks are one of the main financing elements of macroeconomic variables and determining the direction and degree of the relationship between banks and the macroeconomic system will provide important clues in future investment projections and investment decisions.

It is an undeniable fact that this interaction between the financial markets of countries and the increasing capital movements are one of the main determinants of the macroeconomic transformations of national economies. In this context, it can be said that variables such as exchange rate, IPI and CPI, which are among the basic macroeconomic variables, are the leading indicators for both national and foreign savers in financial investment decisions because they are the main determinants of both production, consumption and consumption patterns.

In this context, it is an undeniable fact that the IPI is an important indicator that contains basic clues about the course of the country's economy for both national and international investors. There is an econometric relationship based on mutual causality between the national stock exchanges, which are one of the basic elements of the financial markets, and therefore the stocks of the companies listed on the stock exchange and the industrial production index. Karamustafa and Küçükkale (2002) concluded in their study that the increases in the IPI increased the profitability of the company and this situation reflected positively on the company shares.

Another macroeconomic indicator that guides investors in the financing of investments is the exchange rate and the exchange rate policies followed by national economies. There are two types of interaction between the stock market index (SMI), which is one of the main investment instruments of the recent period, and the exchange rate. On the one hand, when viewed from the foreign investor's side, the increase in the exchange rate and the depreciation of the national currency will cause the foreign investor to turn to this area by reducing the value of the shares in the stock market in foreign currency, while on the other hand, the increase in the exchange rate for the domestic investor may cause the direction of investments to turn from the stock market to the foreign currency.

Another variable that investors include in their decision-making processes in investment decisions for domestic and foreign investors is the general level of prices. Especially in inflationary periods, the increase in prices will have a positive reflection on stock prices in the short term and will cause the value of investments against inflation to be preserved. Fisher (1930) proved in the study that there is a statistically significant and positive relationship between the general level of prices and stock returns. However, when this situation is taken into account in other variables, it may cause us to encounter different results from country to country and sometimes in the same country over time. In the study, Fama (1981) concluded that increases in the general level of prices would increase the production costs of the firms and cause the firms to make a profit below the market expectations due to the cost inflation that may arise, and it was concluded that this situation would cause declines in stock prices with the decrease in profitability of the firms as a result of financial rationality.

In this context, in this study, the direction and degree of the relationship between banks, which are the most important pillars of both national and international financial markets, and macroeconomic variables were determined in order to provide savings with resources in investment decisions. The relationship between the general level of prices, the IPI and the exchange rate of banks, and therefore banking shares, will both enable us to make inferences about the relevant monetary policy and its possible effects and guide savers in their investment decisions.

### **1.Literature Review**

Karagöz et al. (2009) conducted research to examine the enduring relationship between specific macroeconomic indicators within the Turkish economy and the ISE index. They employed the Johansen cointegration method to analyze data spanning from January 1998 to December 2008, including the inflation rate, quarterly weighted deposit interest rate, M1 money supply, industrial production index, real effective exchange rate, and the ISE 100 index. The findings in their study revealed several key points: Firstly, the study determined that these variables were indeed cointegrated. Secondly, with the exception of the industrial production index, all the examined variables had a statistically significant impact on the SMI. Thirdly, the research established a positive relationship between consumer prices and stock prices, indicating that as consumer prices rose, stock prices tended to increase. Conversely, it found that interest rates had a negative correlation with stock prices, suggesting that as interest rates went up, stock prices tended to decrease. Lastly, the study demonstrated a positive influence of the real exchange rate on the SMI.

Büyükşalvarcı and Abdioğlu (2010) investigated the relationship between stock prices and selected macroeconomic factors in the Turkish economy in their studies. ISE 100 index, exchange rate, money supply in a broad sense, consumer price index, IPI and gold price data were analyzed monthly by Granger causality test for the period 2001:03-2010:06. In the study, it was stated that there is a long-term and one-way causality from the stock price to macroeconomic variables.

Özlen and Ergun (2012) investigated the effects of selected macroeconomic factors on selected stock returns in the Turkish economy. Data on the interbank interest rate, exchange rate, consumer price index, current account deficit and stock returns of 45 companies were analyzed by autoregressive distributed delay method for the period 2005:02-2012:05. The results expressed in the study; that interest rate and exchange rate are the most important variables in stock price movements and that companies' stock returns are very sensitive to interest rate and exchange rate changes.

In their study, Poyraz and Tepeli (2014) investigated the relationships between stock prices and money supply, inflation, gold prices, currency basket, Treasury bill interest rate and IPI in the Turkish economy. Selected variables were analyzed monthly for the period 1995:12-2011:11 by correlation analysis, Granger Causality tests and multiple regression model. The results expressed in the study; The most important of the variables affecting the prices of stocks are the exchange rate and the

Treasury bond interest rate, there is a positive relationship between the money supply, the IPI and the SMI, and the CPI has almost no effect on the SMI.

Arnes (2014) investigated whether it is possible to predict the return of the stock market with selected macroeconomic variables in the Turkish economy. Real effective exchange rate, nominal exchange rate, industrial production and interbank lending rate and SMI data were analyzed by Engle and Granger method for the period 1994-2013. In the study, there are the effects of macroeconomic variables that vary over time.

In their study, Kendirli and Çankaya (2016) investigated the relationship between exchange rate and inflation in the Turkish economy and the BIST banking index. Banking index data from the CBRT effective US Dollar sales rate, CPI and stock market indices were analyzed monthly by Granger Causality Test and Johansen cointegration test for the period 2009:01-2015:03. The results expressed in the study; According to the Johansen cointegration test analysis, no long-term relationship was detected between the variables, according to the Granger test analysis, only one relationship was detected at the 10% significance level. The relationship in question was one-way from the banking index to the exchange rate.

In their research, Kaya and Uğurlu (2016) examined the connection between specific macroeconomic indicators within the Turkish economy and the stock market. They utilized Multivariate co-integration analysis and error correction-enhanced Granger causality tests to analyze data on private sector final consumption expenditures, GDP, private sector fixed investment expenditures, and the BIST 100 composite index returns for the period spanning from the first quarter of 1998 to the fourth quarter of 2013. The findings of the study suggest that there is a two-way causal relationship between stock market returns and both GDP and private sector fixed investment expenditures. Additionally, the study indicates that stock market returns are correlated with the real sector.

Uzun and Güngör (2017) In their research, they explored the connection between the SMI and specific macroeconomic indicators. They conducted a monthly analysis using panel data methodology for the years 2004 to 2013, focusing on industrial production index, inflation, exchange rate, M2 money supply, interest rate, and key stock price indices across 50 different countries and their respective economies. The findings from the study revealed several key points: First, in developed economies, there exists a long-term relationship between the SMI and the chosen macroeconomic variables. Second, in developing economies, except for interest rates, the selected macroeconomic indicators display a long-term correlation with the SMI. Lastly, in underdeveloped country markets, selected macroeconomic indicators demonstrate a lasting association with stock prices.

In the study, Koyuncu (2018) investigated the relationship between the BIST 100 index and selected macroeconomic variables in the Turkish economy. BIST 100 index, interest rates, inflation, IPI and economic growth data were analyzed by FMOLS and DOLS tests for the period 1988-2016. The results expressed in the study; In general, there is a relationship between macroeconomic variables and the SMI, the rise in the IPI and inflation will raise the SMI, and economic growth and interest rates negatively affect the SMI.

Babuşcu, Hazar and Yümlü (2019) examined the interaction of bank stocks with macroeconomic variables in their studies with the analysis of co-coupling for the period between 2006Q1 and 2018Q10 and concluded that bank shares were negatively affected by inflation, industrial production index, deposit interest and S&P 500 index, and positively affected by money supply and CDS pirim.

In the study, Demir (2019) investigated the effect of selected macroeconomic variables on the BIST 100 index in the Turkish economy. Commercial loan interest rate, BIST 100 index, net inflows from portfolio investments, real effective exchange rate, net foreign direct investment inflows, Brent oil price and GDP data were analyzed quarterly by ARDL boundary test method for the period 2003Q1-2017Q4. The results expressed in the study; economic growth, the relative value of the domestic

currency, foreign direct investments and portfolio investments increase the SMI, but the price of crude oil and the interest rate adversely affect the SMI.

Hasan et al., (2019) investigated the relationship between the industrial index and macroeconomic variables in the stock market in the Turkish economy. BIST industrial index, exchange rate, interest rate, inflation and M2 money supply data were analyzed monthly by ordinary least squares regression for the period 2003:01-2013:12. The results expressed in the study; money supply, interest rate, exchange rate and inflation have a negative effect on the BIST industrial index and selected independent variables can explain the change in the BIST industrial index by 87.4%.

Tursoy (2019) investigated the relationship between stock and interest rate in the Turkish economy. Stock price index and deposit interest rates data were analyzed monthly by ARDL boundary test and VAR method for the period 2001:01-2017:04. The results expressed in the study; that there is a long-term and significant relationship between the variables analyzed, that the interest rate has a negative effect on stock prices, and that stock prices adversely affect interest rates.

In their study, Fattah and Kocabıyık (2020) explored how macroeconomic variables impacted the stock markets in both the United States and Turkey. They conducted their analysis on a range of economic indicators, including the BIST 100 index, money supply, industrial production index, consumer price index, interest rate, export-to-import coverage ratio, dollar exchange rate, gold price, and oil price data for the US economy. For the Turkish economy, they examined the S&P 500 index, interest rate, industrial production index, consumer price index, money supply in a narrow sense, and export-to-import coverage ratio. This analysis was conducted on a monthly basis, spanning from January 2010 to February 2019.

The findings from their research can be summarized as follows:

- i. In the case of Turkey, there was a bidirectional causality between the exchange rate and money supply and the SMI.
- ii. A one-way causality relationship was observed from the CPI to the SMI in Turkey.
- iii. Causality relationships between the SMI and gold prices, oil prices, and the IPI were not clearly determined for Turkey.
- iv. For the US economy, a one-way causality relationship was found from the money supply to the S&P 500 index.

In the study, Sivrikaya (2021) examined the impact of shocks affecting macroeconomic factors in the Turkish economy on financial and industrial stock returns traded in BIST. Industrial production index, real effective exchange rate, consumer price index, BIST industrial and financial indices and M1 and M2 money supply growth data were analyzed monthly with generalized effect-reactions and estimation error variance decoupling for the period 2008:11-2020:08. The results expressed in the study; that the exchange rate, inflation and money supply growth rate provide important information in the estimation of the fluctuation in the financial and industrial indices of the stock market. Finally that the effect of production in the industrial sector on share returns is negligible in the long and short term.

Heidari and Dadashzadeh (2022) investigated the effects of selected macroeconomic factors on ISE return in their study. ISE yield, crude oil price, exchange rate and inflation rate data were analyzed monthly with the Markov Regime Change Model for the period 2000-04-01 - 2017-12-01. The results expressed in the study; that stock yield delays have a positive effect on the equity market, that in a low-yield regime the positive effects of the crude oil price and the negative effects of the inflation rate are significant, and that in a high-yield regime only the exchange rate is meaningful.

## 2.Data Set and Methodology

In the study, where the effect of the nominal effective exchange rate index, IPI and CPI on the banking stock exchange index in the Turkish economy was examined, the data were investigated monthly for the period 2003M01:2022M12. The initiation of the analysis period in 2003 was influenced by the recovery of the country's economy in 2003 after the economic crises in the Turkish economy in 2000 and 2001. Although the natural logarithms of the analyzed variables were taken, the letter symbol (KUR) of the nominal EERI was determined as the letter symbol (KUR) of the industrial production index, as the letter symbol of the CPI (TUFE). Finally the letter symbol of the stock exchange banking index analyzed as the dependent variable (BANKA). From the analyzed data, IPI, nominal EERI and CPI data were provided through International Financial Statistics (IFS), the database of the International Monetary Fund. In addition, the banking stock exchange index data analyzed in the study was provided through the Investment database. The empirical analysis performed was performed in the Eviews 12 program.

The Latency Distributed Autoregressive (ARDL) boundary test, which is a method used to investigate whether a long-term relationship exists between selected variables, differs from the Engle Granger and Johansen methods that came before it in terms of investigating long-term relationships. In order for the ARDL boundary test to be applied, the data to be analyzed do not have to be stationary of the same order. In the application of the ARDL limit test, the fact that the data to be analyzed are stable at the first difference or level does not constitute an obstacle. However, in order to apply this test, the data to be analyzed should not be static in the second difference (Pesaran et al., 2001). As can be seen from the explanations made, the ARDL has allowed the boundary test to be widely used in the study of long-term relationships between selected variables.

In order to investigate the long-term relationship between the variables with the ARDL method, it is necessary to determine the optimal delay lengths. The Schwarz and Akaike information criteria are used to determine optimal delay lengths. In addition, the fact that the F statistical value obtained in the analysis exceeds the upper limit critical value indicates that the analyzed variables are related to each other in the long term (Toker, 2020:85).

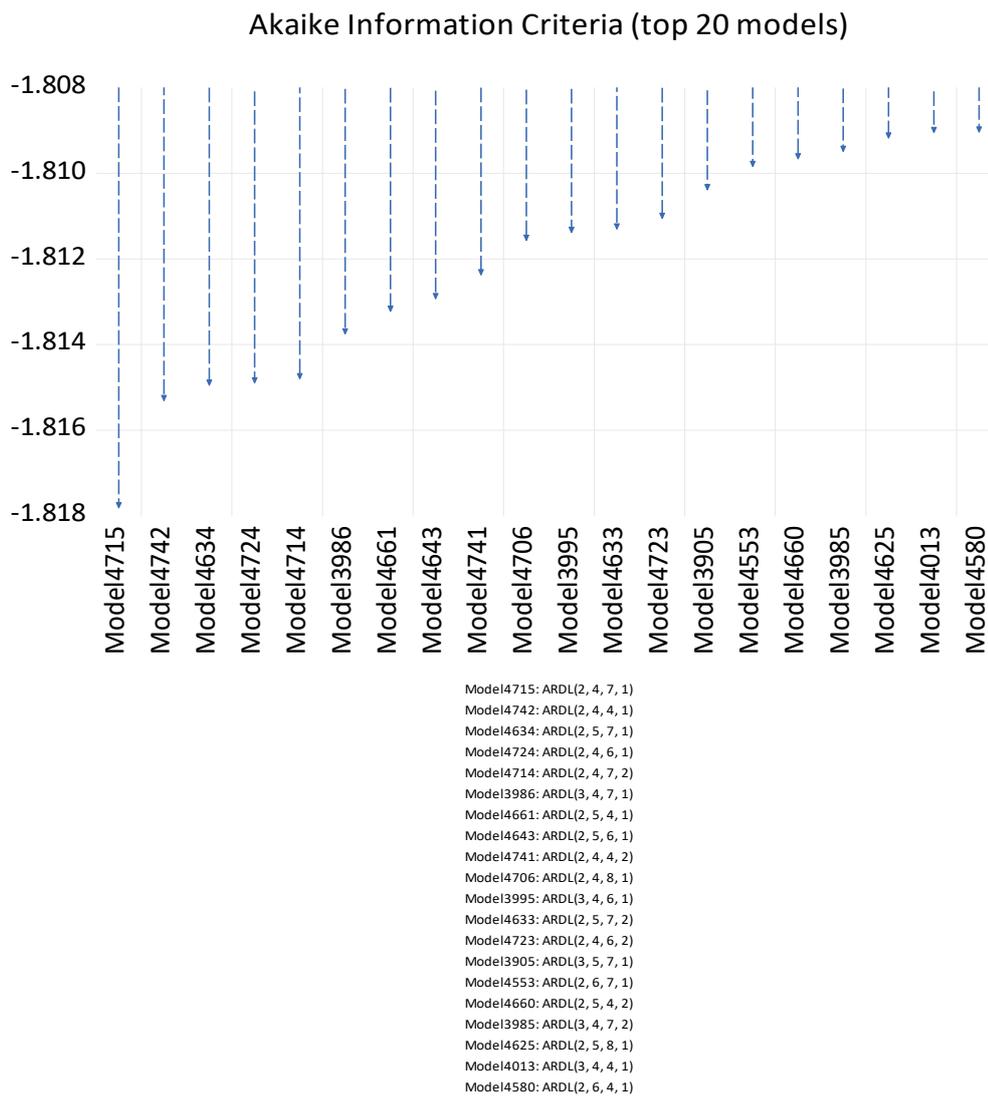
In order to determine the stationarity levels of the data to be analyzed in the study, Augmented Dickey-Fuller test (ADF) and Phillips-Perron (PP), unit root tests were applied. The zero hypothesis of the unit root tests applied for the variables in the analysis is that the variables examined are not stationary. The alternative hypothesis of these tests is that the analyzed variables are stationary. The results of Phillips-Perron and Augmented Dickey-Fuller unit root tests of the analyzed data are given in *Table 1*.

**Table 1: Phillips-Perron and Augmented Dickey-Fuller Unit Root Test Results**

Variables	Model	PP Test Statistic (P-value) LEVEL	PP Test Statistic (P-value) 1.DIFF	ADF Test Statistic (P-value) LEVEL	ADF Test Statistic (P-value) 1.DIFF
<b>BANKA</b>	<b>Intercept</b>	-2.202882 (0.2059)	<b>-16.60384</b> <b>(0.0000)</b>	-2.224240 (0.1983)	<b>-16.62810</b> <b>(0.0000)</b>
	<b>Trend &amp; Intercept</b>	-2.819672 (0.1917)	-16.58481 (0.0000)	-2.849175 (0.1813)	-16.60726 (0.0000)
	<b>None</b>	1.876549 (0.9856)	-16.35282 (0.0000)	1.798929 (0.9828)	-16.37405 (0.0000)
<b>KUR</b>	<b>Intercept</b>	4.730723 (1.0000)	-10.43968 (0.0000)	3.287577 (1.0000)	-10.98753 (0.0000)
	<b>Trend &amp; Intercept</b>	0.478780 (0.9992)	-10.97190 (0.0000)	0.017689 (0.9963)	-11.83660 (0.0000)
	<b>None</b>	<b>-3.129746</b> <b>(0.0018)</b>	-9.961496 (0.0000)	<b>-2.977597</b> <b>(0.0030)</b>	-10.22859 (0.0000)
<b>SUE</b>	<b>Intercept</b>	-2.028006 (0.2748)	<b>-69.21625</b> <b>(0.0001)</b>	-0.767478 (0.8258)	<b>-5.847752</b> <b>(0.0000)</b>
	<b>Trend &amp; Intercept</b>	-10.10302 (0.0000)	-71.13614 (0.0001)	-2.712112 (0.2328)	-5.840235 (0.0000)
	<b>None</b>	4.067547 (1.0000)	-26.78038 (0.0000)	2.990040 (0.9994)	-4.892717 (0.0000)
<b>TUFE</b>	<b>Intercept</b>	3.982036 (1.0000)	<b>-7.423249</b> <b>(0.0000)</b>	2.727505 (1.0000)	<b>-4.774004</b> <b>(0.0001)</b>
	<b>Trend &amp; Intercept</b>	3.884335 (1.0000)	-8.029330 (0.0000)	2.221648 (1.0000)	-5.417207 (0.0000)
	<b>None</b>	6.118496 (1.0000)	-5.518665 (0.0000)	3.509315 (0.9999)	-3.513234 (0.0005)

Of the variables analyzed in *Table 1.*, it is seen that the consumer price index, IPI and stock exchange banking index data are stable in the first differences, while the nominal EERI data are stable at the level. Since the analyzed variables are stationary to different degrees and not stationary in their second differences, it was decided to apply the ARDL boundary test method to investigate the long-term relationship between the variables. In this context, the results of the optimal delay selection required in the ARDL boundary test analysis are made according to the Akaike criterion and the values obtained are given in *Table 2.*

**Table 2:** Optimal Delay Length According to Akaike Information Criterion



According to the results of the AIC in *Table 2.*, ARDL (2, 4, 7, 1) was selected as the optimal model among twenty models. In this context, the analyzes carried out in the study were carried out according to the ARDL (2, 4, 7, 1) model. *Table 3.* shows the boundary test results obtained as a result of the ARDL analysis. When the values in the table are examined, it is determined that the F-Statistic exceeds the I(0) upper limit critical value as 5.478432, the upper limit critical value at the significance level of 1%, 5% and 10%, and the I(1) upper limit critical value exceeds the upper limit critical value at the 5% and 10% significance level. The expression in which the coefficient estimates showing the degree and direction of the relationship between the variables analyzed in the study are reported in equation 1.

$$EC=BANK-(1.9647*KUR-1.8249*SUE+3.8751*TUFE) \quad (1)$$

**Table 3: ARDL Boundary Test Results**

F-Statistic	Critical Values	
Significance	I (0) Bound	I (1) Bound
5.478432		
10%	2.823	3.885
5%	3.363	4.515
1%	4.568	5.96

Following the results of the ARDL boundary test, long-term coefficients and short-term analyses are given in *Table 4.* and *Table 5.*, respectively. As can be seen in *Table 4.*, although the positive value of the nominal EERI coefficient as 1.964723 and the CPI coefficient as 3.875110, which are the independent variables of the analysis, affect the banking stock exchange index, which is the dependent variable, in the same direction, it was determined that the sensitivity of the banking stock exchange index was higher for the CPI compared to the nominal effective exchange rate. The fact that the prob values of the nominal EERI and the CPI are determined as 0.0010 and 0.0002, respectively, shows that there is a long-term relationship between these variables and the banking SMI, so the relevant variables are cointegrated. However, the fact that the probe value of the IPI data exceeded the level of 10% and was determined as 0.1278 shows that the IPI and the banking stock exchange index are not co-integrated.

**Table 4: Long-Term Coefficients ARDL (2, 4, 7, 1) Model**

Variables	Coefficient	t-statistic	Prob Value
KUR	1.964723	3.333417	0.0010
SUE	-1.824933	-1.528586	0.1278
TUFE	3.875110	3.781290	0.0002

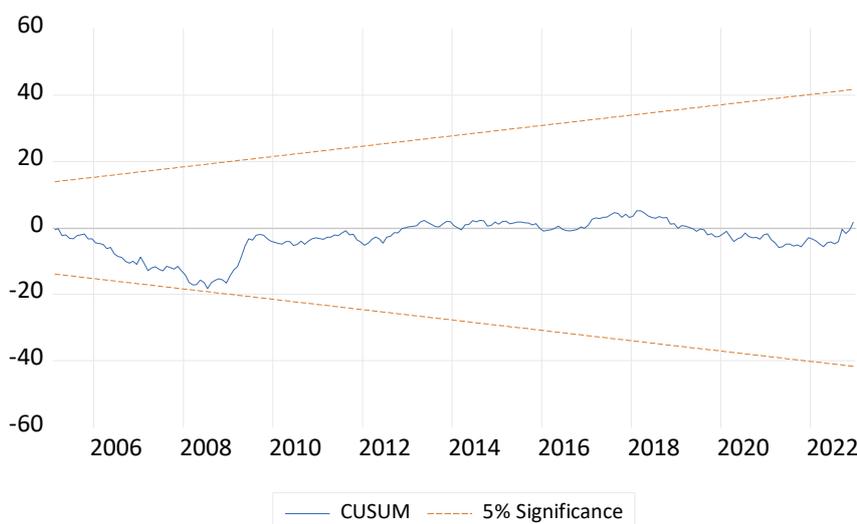
*Table 5.* shows the short-term and diagnostic test results of the ARDL analysis. When the values in the table were examined, the value of the cointegration coefficient for the ARDL (2, 4, 7, 1) model was negative and the probability value of the relevant coefficient was determined as "0". According to the table, the probe value of Breusch-Godfrey Serial Correlation LM Test was 0.4529, the probe value of Heteroskedasticity Test Breusch-Pagan-Godfrey Test was 0.2319 and the probe value of Ramsey Reset Test was 0.7441. In this context, the fact that the probe values of the listed tests are above 10% significance means that alternative hypotheses of statistical significance tests such as autocorrelation, heteroskedasticity and misdetermination of the model are valid.

**Table 5: Short Term and Diagnostic Test Results**

Variable	Coefficient	t-Statistic	Prob Value
C	-1.302031	-4.694696	0.0000
D(BANKA(-1))	-0.158256	-2.570354	0.0108
D(KUR)	1.006705	5.080104	0.0000
D(KUR(-1))	1.071355	4.703910	0.0000
D(KUR(-2))	-0.274072	-1.322114	0.1875
D(KUR(-3))	0.421950	2.240815	0.0261
D(SUE)	0.067863	0.932433	0.3522
D(SUE(-1))	0.302978	3.333447	0.0010
D(SUE(-2))	0.273224	2.950003	0.0035
D(SUE(-3))	0.393354	4.366186	0.0000
D(SUE(-4))	0.165732	1.801822	0.0730
D(SUE(-5))	0.188354	2.156544	0.0322
D(SUE(-6))	0.122876	1.651584	0.1001
D(TUFE)	2.942294	5.165400	0.0000
CointEq(-1)*	-0.093421	-4.713756	0.0000
EC = BANKA - (1.9647*KUR -1.8249*SUE + 3.8751*TUFE)			
<b>Diagnostic Tests</b>			
<b>Tests</b>	<b>Test Value (Prob.)</b>		
Breusch-Godfrey Serial Correlation LM Testi	0.795030 (0.4529)		
Heteroskedastisite Testi Breusch-Pagan-Godfrey	1.244710 (0.2319)		
Ramsey Reset Testi	0.106828 (0.7441)		

The Cusum test in *Figure 1*. supports the stability of the previously reported ARDL (2, 4, 7, 1) model at a significance level of 5%.

**Figure 1: Cusum Test**



### 3. Conclusion

The increasing financial depth in the financial markets and the increase in product diversity in the real sector have led the relevant markets to new searches in terms of both financing and competitiveness. In particular, financial developments and increasing financial mobility offer a number of advantages to companies and savers with increasing financial diversity. Financial

competition and increased financial interaction have also made it easier for savers to access new derivative financial instruments.

In this context, the permanent effects of recent global financial mobility and increasing financial competition on macroeconomic variables are an undeniable fact. This transformation in macroeconomic variables shows its first effects on the Turkish banking sector, which is the most fundamental actor of the financial markets. In this context, the possible impact of macroeconomic variables on the banking system in the Turkish economy after the relevant transformation was analyzed with the possible effects of the nominal effective exchange rate index, IPI and CPI on the banking stock exchange index between the periods 2002M01-2023M03 and the direction and degree of the relationship between the relevant variables was tried to be determined.

In this context, unit root tests were applied to the relevant variables and it was decided to apply the ARDL boundary test method to investigate the long-term relationship between the variables since the analyzed variables were stationary to different degrees and not stationary in the second difference. It was concluded that the positive value of the nominal EERI coefficient as 1.964723 and the CPI coefficient as 3.875110, which are the independent variables of the study, affected the dependent variable banking stock exchange index in the same direction and at the same time, the sensitivity of the banking stock exchange index was higher for the CPI than the nominal effective exchange rate. The fact that the probe values of the nominal EERI and the CPI are 0.0010 and 0.0002, respectively, shows that there is a long-term relationship between these variables and the banking SMI, so the relevant variables are cointegrated. In addition, the fact that the probe value of the IPI data exceeded the level of 10% and was determined as 0.1278 showed that banking stock exchange index and IPI were not co-integrated. The analysis and findings support the studies on Fisher (1930), Babuşcu, Hazar and Yümlü (2019), Karagöz et al., (2009), Kaya and Uğurlu (2016), Kendirli and Çankaya (2016), Koyuncu (2018), Demir (2019), Hasan et al., (2019), Heidari and Dadashzadeh (2022).

In order to provide the relevant analysis and findings as a source for savers in their investment decisions, the positive and long-term co-integrated relationship of the banking index with the general level of prices and the exchange rate was determined, the direction and degree of the relationship between banks, which are the most important pillars of both national and international financial markets, and macroeconomic variables were determined. In this context, the relevant study will both provide guidance on the relevant monetary policy and its possible effects and will be a source of investment decisions of savers.

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