

THE IMPACT OF FINANCIAL DEVELOPMENT INDEX ON ECONOMIC GROWTH, STOCK MARKET PRICES AND TRADING VOLUME: TÜRKİYE EXAMPLE

Burcu SAVAŞ ÇELİK*

Abstract

The study aims to analyze the relationship between Türkiye's financial development index and BIST 100 prices, gross domestic product, and trading volume from 1988 to 2022. The financial development index by the IMF considers the financial markets and institutions of countries in terms of efficiency, depth and accessibility. Many studies investigate the relationship between financial development, economic growth, and the stock market. However, when the literature is examined, it is found that the financial development index prepared by the IMF is not used intensively, and the stock market trading volume variable is discussed in limited studies. For this reason, in this study, the effect of the financial development index reported by the IMF on other variables and the effect of transaction volume, which is considered a very important variable in the capital market, on financial development were tested. The study used the ARDL bounds test approach to investigate cointegration between variables. According to the results of the analysis, gross domestic product and trading volume have a positive and statistically significant effect on the financial development index. A negative but statistically insignificant relationship was found between the BIST 100 opening price and the financial development index. Within the scope of the results obtained, necessary measures and precautions should be taken in the capital market.

Keywords: Financial Development Index, Economic Growth, BIST 100, Trading Volume, ARDL Test.

FINANSAL GELİŞİM İNDEKSİNİN EKONOMİK BÜYÜME, HİSSE SENEDİ FİYATLARI VE İŞLEM HACMİNE ETKİSİ: TÜRKİYE ÖRNEĞİ

Öz

Çalışmanın amacı 1988-2022 dönemleri arasında Türkiye'nin finansal gelişim endeksinin BIST 100 fiyatları, gayri safi yurtiçi hasıla ve işlem hacmi

* Dr. Öğr. Üyesi, İstanbul Gelişim Üniversitesi, İktisadi, İdari ve Sosyal Bilimler Fakültesi, Uluslararası Ticaret ve İşletmecilik Bölümü, bsavas@gelisim.edu.tr, <https://orcid.org/0000-0002-3896-5858>

üzerindeki ilişkisini analiz etmektir. Finansal gelişmişlik indeksi IMF tarafından ülkelerin finansal piyasalarını ve kurumlarını etkinlik, derinlik ve erişilebilirlik açısından ele almaktadır. Literatürde finansal gelişme, ekonomik büyüme ve hisse senedi piyasası arasındaki ilişkiyi araştıran birçok çalışma bulunmaktadır. Ancak literatüre bakıldığında yoğun olarak IMF tarafından hazırlanan finansal gelişmişlik indeksi kullanılmadığı bunun yanı sıra işlem hacmi değişkeninin ise sınırlı çalışmada ele alındığı saptanmıştır. Bu nedenle bu çalışmada IMF tarafından raporlanan finansal gelişmişlik endeksinin diğer değişkenlere olan etkisi ve sermaye piyasasında oldukça önemli bir değişken olarak görülen işlem hacminin finansal gelişmeye olan etkisi incelenmiştir. Çalışmada değişkenler arasındaki eşbütünlükleri araştırmak için ARDL sınır testi yaklaşımı kullanılmıştır. Analiz sonucuna göre gayrisafi yurtiçi hasıla ile işlem hacminin finansal gelişme indeksi üzerinde pozitif ve istatistiksel olarak anlamlı etkisi bulunurken BIST 100 açılış fiyatı ile finansal gelişmişlik indeksi arasında negatif ve istatistiksel olarak anlamsız bir ilişkinin varlığını ortaya konulmuştur. Elde edilen sonuçlar kapsamında sermaye piyasasında gerekli önlem ve tedbirlerin alınması gerekmektedir.

Anahtar Kelimeler: Finansal Gelişmişlik İndeksi, Ekonomik Büyüme, BIST 100 Fiyat, İşlem Hacmi, ARDL Testi.

Introduction

Financial markets are places where intermediary institutions buy and sell funds within the framework of laws regulated by various supervisory and regulatory institutions for financial instruments. Financial markets have a wide range of transactions. Due to their wide scope of transactions, the degree of development of financial markets plays a crucial role in economic analysis.

Economists have been studying the relationship between financial development (F.D.), the stock market (S.M.), and economic growth (GDP), and it has recently attracted much attention. The relationship between GDP and F.D. was first put forward by Bagehot (1873) and later analyzed by Schumpeter (1911) and Gurley-Shaw (1955). As a result of these analyses, it was determined that financial development would accelerate economic growth. Therefore, countries have started to attach a great importance to financial development for faster economic growth (Göv and Yılancı, 2023; Kuş and Bölükoğlu, 2022; Makhdum et al., 2020). However, recent analyses have revealed that not all F.D. contributes to the GDP of each country (Karamelikli and Keskingöz, 2017; Gazel, 2016; Güneş, 2013).

Studies on the F.D.–GDP relationship suggest four possible directions of causality

- i) F.D.→ GDP (unidirectional relationship)
- ii) GDP→ F.D. (unidirectional relationship)
- iii) F.D. ↔ GDP (bidirectional relationship)
- iv) No relationship.

The relationship between F.D.-GDP has not yet reached a clear conclusion. The most important reasons for this are the differences arising from the cultural and political structure of the countries and the variability of the data set and analysis types used in the studies (Çeştepe and Yıldırım, 2016, p. 13).

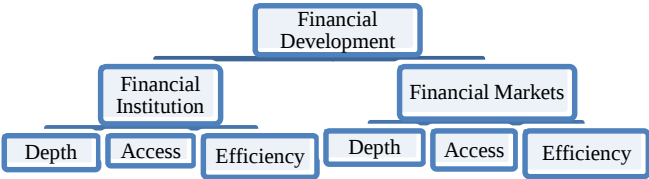
The relationship between F.D-S.M. was first developed by Boyd and Smith (1998) and Huybens and Smith (1999). In the following period, research was conducted with different data sets from different countries, and as a result of the analysis, Kumar and Dhankar (2017) found;

- i) F.D.→ SM (unidirectional relationship)
- ii) SM→ F.D. (unidirectional relationship)
- iii) F.D. ↔ S.M. (bidirectional relationship)
- iv) No relationship.

This study investigates the effect of the F.D. on GDP, P and V. In the literature, many studies investigate F.D.'s effects on GDP and S.M.. However, when the studies are examined, it is seen that a financial development measure that includes many variables, such as M2 and the ratio of stock market capitalization, is used. However, the F.D. index calculated by the IMF is expected to provide more comprehensive results since it deals with many complex dimensions (Eyüboğlu and Akan, 2020, pp. 975-976).

The F.D. reported by the IMF has two subcategories. These are financial institutions' development index and financial markets' development index. Both sub-indices are calculated by evaluating depth, access, and efficiency. In this way, the F.D. index, which has a very complex structure, provides more robust and reliable results. The F.D. calculated by the IMF is calculated annually, and the principal components analysis technique is used (Özarslan - Doğan, 2021, p. 70).

Figure 1. Key Components Of The F.D. Index



The main sub-indicators of financial institutions and financial markets representing F.D. are presented in Table 1.

Table 1. F.D. Indicators

Variables	Financial Institutions	Financial Markets
	Private-sector credit to GDP	Stock market capitalization to GDP
Depth	Pension fund assets to GDP	

	Mutual fund assets to GDP	Stocks traded to GDP
	Insurance premiums, life and non-life to GDP	International debt securities of government to GDP
		Total debt securities of financial corporations to GDP
		Total debt securities of nonfinancial corporations to GDP
Access	Access Bank branches per 100,000 adults	Percent of market capitalization outside of the top 10 largest companies
	ATMs per 100,000 adults	Total number of issuers of debt
	Efficiency Net interest margin	
Efficiency	Lending-deposits spread	Stock market turnover ratio
	Non-interest income to total income	
	Overhead costs to total assets	
	Return on assets	
	Return on equity	

Source: Svirydenka, K. (2016)

This study aims to investigate whether Türkiye's F.D. index is indeed related to GDP, P and V. In this way, the research contributes to the literature in many ways. First and foremost, most of the previous studies in Türkiye did not consider the F.D. calculated by the IMF and analyzed the level of F.D. only in the light of macroeconomic indicators. F.D. is one of the most important macroeconomic indicators of countries. Since it calculates the effects of positive and negative developments in countries on the financial market, it directly and indirectly affects many other macroeconomic factors. Economic growth, unemployment, CDS premium and credit ratings are among the most important of these. Determining financial stability is of great importance in terms of the considerations of investors who want to make direct and/or capital investments. Secondly, the relationship between the F.D., GDP, P and V, has not been analyzed. Financial stability is one of the important indicators affecting the capital market. Determining how investors' investment preferences are affected by F.D. reports has an important place in the preparation of economic development and growth reports of countries. For this reason, determining the effects of F.D. on GDP, capital market prices and transaction volume has an important place in terms of putting forward rational policies. Lastly, no recent study deals with the data set range used in the study. In this way, it is aimed to fill the gap in the literature.

Our study proceeds as follows. The second part examines the sample literature to determine the relations between F.D., GDP, P and V. The third part presents the dataset and model used in our empirical analysis. In the fourth part, we present the empirical findings. In the fifth and final part, we offer conclusions and recommendations by interpreting the empirical findings.

1. LITERATURE REVIEW

This section of the study lists studies on the relationship between financial development index, gross domestic product, stock market prices and trading volume.

The theories analyzing the relationship between financial development and economic growth in the literature are categorized under four headings. These are demand-side hypotheses, supply-side hypotheses, feedback, and neutrality models.

According to the demand-side hypothesis, economic growth favors financial development. This hypothesis show that, more financial institutions and instruments are needed due to an expansion in the real economy, and thus, financial growth is achieved through economic growth (Kar and Pentecost, 2000) The supply-first hypothesis, on the other hand, suggests that financial development is the cause of economic growth. According to this approach, growth in financial markets means increased financial institutions, financial instruments, technological innovations, and productivity (Çetenak et al., 2023). Thus, positive progress in these macroeconomic variables affects the economy's growth. Another approach, the feedback model, reveals that the relationship between financial development and economic growth is bidirectional (Calderón and Liu, 2003). On the other hand, the neutrality model argues that there is no relationship between F.D. and GDP.

They have been tabulated to see these causality analyses in the literature in more detail. Table 1 presents the studies analyzing the relationship between economic growth and financial development.

Table 2. Empirical Studies On The Relationship Between F.D.- GDP, P and V

Author/Authors	Period	Country/Countries	Method	Result
Göv and Yılanıcı (2023)	1990-2019	30 countries	LASSO, KLASSO	GDP→ F.D.
Kuş and Bölükoğlu (2022)	1980-2018	Türkiye	Granger	F.D.→ GDP
Eyüboğlu and Akan (2020)	1980-2016	Türkiye	RALS-EG, cointegration, Granger	GDP→ F.D.
Makhdom et al. (2020)	1990-2019	BRICS+Türkiye	CADF and Panel	F.D. →GDP
Kılıç (2019)	1968-2017	Türkiye	Johansen	GDP↔ F.D.
Güzel and Oluç (2021)	1970-2015	Türkiye	Johansen and Granger	GDP↔ F.D.
Atgür (2019)	2004-2007	Türkiye	Gregory-Hansen	GDP ≠ F.D. Long period (+)
Asteriou and Spanos (2019)	1990-2016	26 E.U. countries	Panel	F.D.→GDP pre-crisis period (+) F.D.→GDP post-crisis

				period (-)
Pata and Ağca (2018)	1982-2016	Türkiye	ARDL – Granger	F.D.→GDP ^{long and short period (+)}
Sağlam and Erataş Sönmez (2017)	2010-2018	European Transition Economies	Panel	F.D.→GDP
Karamelikli and Keskingöz (2017)	1998-2014	Türkiye	Granger	GDP≠F.D.
Kandil (2017)	1970-2013	China - India	VECM	GDP→F.D.
Helhel (2017)	200-2013	E7 countries	Panel	GDP→F.D. ^{long period}
Noor and Ramli (2017)	1960-2010	Malaysia	ARDL	GDP→F.D.
Çestepe and Yıldırım (2016)	1986-2015	Türkiye	Johansen and Toda-Yamamoto	GDP↔F.D. ^{long and short period}
Işık and Bilgin (2016)	2003-2015	Türkiye	Hatemi – J	GDP≠F.D. ^{pre-crisis period} F.D.→GDP ^{post crisis period}
Ak et al. (2016)	1989-2011	Türkiye	Toda- Yamamoto	GDP→F.D.
Gazel (2016)	1990-2014	Ten countries	Panel	GDP≠F.D. ^{long-period}
Bozoklu and Yılancı (2013)	1988-2011	14 countries	Dumitrescu-Hurlin panel	F.D.→GDP
Güneş (2013)	1988-2009	Türkiye	VAR	GDP≠F.D.
Karaca (2012)	1990-2011	Türkiye	Toda- Yamamoto	F.D.→GDP
Azam et al. (2011)	1970-2007	Malaysia	ARDL	GDP→F.D.
Altuntaş and Ayriçay (2010)	1987-2007	Türkiye	ARDL	F.D.→GDP
Öztürk (2011)	1975-2005	Türkiye	Johansen -Granger	GDP→F.D.
Kumar and Dhankar (2017)	2000-2014	South Asian	GARCH	F.D. → stock returns and volatility
Apostolakis et al. (2021)	2007-2020	7 advanced countries	VAR-GARCH	F.D. → oil stock returns

2. DATA AND METHOD

In this study, annual data on the financial development index, economic growth, stock market prices and trading volume variables are used. The numerical data for the F.D. variable were obtained from the report prepared by the IMF. GDP data are obtained from the World Bank. Monthly stock prices and volatility data are obtained from investing.com. The start and end

dates of all series used in the analysis differ. The time period is set as 1988-2022 to make the analysis easier to understand and provide accurate results.

2.1. Model Specification

The form representing the empirical framework of the study examining the impact of the F.D. on GDP, P, and V in Türkiye is expressed in Equation 1.

$$FD_t = f(GDP_t, P_t, V_t) \quad (1)$$

The modified and transformed version of Equation 1 is expressed in Equation 2 below:

$$LNFD_t = \alpha_0 + \alpha_1 LNGDP_t + \alpha_2 LNP_t + \alpha_3 LNV_t + \varepsilon_t \quad (2)$$

In Equation 2, LNFD represents the financial development index's logarithm function, LNGDP represents economic growth's logarithm function, and LNP represents the logarithm function of stock market prices. Also, LNV represents the logarithm function of the trading volume.

2.2. Estimation Techniques (ARDL)

To obtain the short- and long-term effects of stock market prices and trading volume on the financial development index in Türkiye. Autoregressive Distributed Lag (ARDL) method was used by Peseran et al. (2001). According to Chandio et al. (2020), the ARDL method is superior to conventional cointegration techniques like Engle-Granger and Johansen-Juselius because it yields more meaningful results for smaller samples and does not need the variables' stationarity levels to match because the ARDL limits test was chosen in the study because of that the ARDL bounds test model, created to obtain the long-term coefficients of the study, is expressed in equation 3 below.

$$\begin{aligned} \Delta LNFD_t = & \varphi_0 + \sum_{i=1}^p \varphi_{1i} \Delta LNFD_{t-i} + \sum_{i=0}^p \varphi_{2i} \Delta LNGDP_{t-i} + \\ & \sum_{i=0}^p \varphi_{3i} \Delta LNP_{t-i} + \sum_{i=0}^p \varphi_{4i} \Delta LNV_{t-i} + \lambda_1 LNGDP_{t-1} + \lambda_2 LNFD_{t-1} + \\ & \lambda_3 LNP_{t-1} + \lambda_4 LNV_{t-1} + \varepsilon_t \end{aligned} \quad (3)$$

In the ARDL bounds test method, the Wald (F-stat) test is used for the long-run cointegration between variables. Pesaran et al. (2001) F-test statistics are considered at this point. There is no significant long-term relationship between the variables if the estimated value of the F-test obtained as a result of the analysis is less than the lower bound. But, if the F-test's value obtained as a result of the analysis is higher than the upper bound, it indicates a long-run relationship between all of these variables. The fact that the calculated F-test statistics are within the specified limits means explain that the result is unstable (Chandio et al., 2020, p. 6).

The ARDL error correction model (ECM) is expressed by equation 4 below to estimate the short-run relationship between the variables:

$$\Delta \text{LNFD}_t = \varphi_0 + \sum_{i=1}^{p-1} \varphi_{1i} \Delta \text{LNFD}_{t-i} + \sum_{i=1}^{p-1} \varphi_{2i} \Delta \text{LNGDP}_{t-i} + \sum_{i=1}^{p-1} \varphi_{3i} \Delta \text{LNPP}_{t-i} + \sum_{i=1}^{p-1} \varphi_{4i} \Delta \text{LNV}_{t-i} + \delta \text{ECT}_{t-1} + \varepsilon_t \quad (4)$$

In Equation 4, ECT_{t-1} denotes the error correction term and δ the error correction coefficient. In the study, the stability of the variables used in the ARDL bounds test was checked with a serial correlation test and a heteroskedasticity test. In contrast, the CUSUM and CUSUMSQ tests were used to investigate the stability of the ARDL model.

3. RESULTS AND DISCUSSION

Descriptive statistics for F.D., GDP, P, and V can be seen from the Table 3, P is found to be more volatile than GDP and F.D. In addition, it is determined that F.D. shows a left-skewed distribution in terms of skewness, while GDP, P, and V show a right-skewed distribution.

Table 3. Descriptive Statistics

	LogP	LogF.D.	LogGDP	LogV
Mean	-1.014246	26.69511	29.27499	4.113977
Median	-0.970151	26.95042	31.10572	5.520340
Maximum	-0.671652	27.58790	34.63500	7.534362
Minimum	-1.663176	25.23251	17.26181	-3.218876
Std. Dev.	0.320427	0.769254	4.838149	3.236449
Skewness	-0.748935	-0.326527	-1.168994	-0.969157
Kurtosis	2.266703	1.564743	3.151710	2.550719
Jarque-Bera	4.056122	3.626063	8.005086	5.773416
Probability	0.131590	0.163159	0.018269	0.055759

3.1. Unit Root Test Results

The first point to be considered in studies using time series data is to determine the stationarity of the series. Unit root analysis should be performed (Yamak and Erdem, 2017, p. 94). In this study, Augmented Dickey-Fuller (ADF) and Phillips-Perron (P.P.) unit root tests, frequently used in the literature, were used to test the stationarity of the variables, and the stationarity results are presented in Table 4. Since the series used in the study contain unit roots at different levels, i.e. $I(0)$ and $I(1)$ in the fixed and fixed trend models, there is no obstacle in constructing the ARDL model. According to the test results, F.D., GDP, P, and V variables are stationary at the first difference $I(0)$. The unit root test results (ADF and PP) show that ARDL method can evaluate short-term and long-term relationships between variables.

Table 4. ADF and P.P. Unit Root Test Results

Variables	ADF		PP	
	Intercept	Trend and Intercept	Intercept	Trend and Intercept
F.D. I(0)	0.629(0)	0.678(0)	0.633(3)	0.678 (0)
F.D. I(1)	0.000*** (0)	0.000*** (0)	0.000*** (7)	0.000*** (13)
GDP I(0)	0.422 (0)	0.765 (0)	0.409 (1)	0.732 (2)
GDP I(1)	0.000*** (0)	0.001*** (0)	0.000*** (3)	0.001*** (3)
P I(0)	0.000***(1)	0.597 (1)	0.015** (6)	0.886 (2)
V I(0)	0.045** (1)	0.552	0.015***(8)	0.282(1)

Note: *** denotes a 1% significance level, ** denotes a 5% significance level, * denotes a 10% significance level. The optimal lag lengths determined according to the Akaike Information Criterion are shown in parentheses.

3.2. Cointegration Testing Results

When the cointegration analysis results for the ARDL model given in Table 5 are examined, it is seen that the F test value value (6.75) is greater than the 1% critical value between the critical lower and upper values. According to this result, it can be said that there is a long-run cointegration relationship between the independent variable and the dependent variable at a 1% significance level. ARDL model can be constructed to determine the short and long-run relationship between variables. After determining the appropriate lag length in the model created to estimate the relationship between the variables, ARDL long-run coefficients are expressed in Table 5.

Table 5. Results of Cointegration Bound Test

k	F istatistiği	%10	%5	%1
3	6.75	3.2	3.67	4.66

3.3. Long-Run and Short-Run Estimates

Short and long run ARDL models are shown in Table 6. While the F.D. index was used as the dependent variable, economic growth, stock market prices, and trading volume were used as independent variables in the study.

Table 6. AIC Long-Run and Short-Run Results (3,3,1,3)

Variables	Coefficient	Std. Errors	t-Statistic	Prob.
Long Term Estimation				
LOG(P)	-0.021403	0.015635	-1.368866	0.1879
LOG(V)	0.020186	0.008247	2.447642	0.0249
LOG(GDP)	0.110233	0.022052	4.998763	0.0001

Short term Dynamics				
D(FD(-1))	0.297008	0.132663	2.238827	0.0380
D(FD(-2))	0.239989	0.122259	1.962962	0.0653
DLOG(P)	0.002659	0.006396	0.415731	0.6825
DLOG(P(-1))	0.009829	0.005184	1.896095	0.0741
DLOG(P(-2))	-0.017070	0.005821	-2.932776	0.0089
DLOG(V)	0.008658	0.002564	3.376445	0.0034
DLOG(GDP)	-0.005049	0.021646	-0.233247	0.8182
DLOG(GDP(-1))	-0.078411	0.020344	-3.854226	0.0012
DLOG(GDP(-2))	-0.053635	0.132663	2.238827	0.0380
CointEq(-1)*	-0.846075	0.131640	-6.427173	0.0000

Table 6 shows a negative but statistically insignificant relationship between F.D. and P in the Türkiye. The result obtained is similar to the study conducted by Okoli (2012) in Nigeria. It states that financial deepening, a sub-component of the financial development index, is unrelated to GDP and P.

The other variable whose effect on the F.D. is examined in the study is the V. In the results obtained, a statistically significant and positive relationship was found between F.D. and V.

The last variable whose effect on the F.D. is examined in the study is the GDP. In the results obtained, a statistically significant and positive relationship was found between F.D. and GDP.

In addition, the value of R^2 was found to be 0.72 in the study. This value shows that the selected independent variables can explain approximately 99% of the F.D. in the study. Finally, if the F test is significant, our model is meaningful.

Table 7. Diagnostic and Evaluation Test Statistics for the ARDL (3,3,1,3) Model

Variables	Coefficient
R^2	0.728
Log-likelihood	92.496
F İstatistiği	0.723
AIC	-5.156
SIC	-4.698

3.4. Diagnostic Tests

Table 8 includes the Breusch-Godfrey and Breusch-Godfrey LM Tests. The results of the diagnostic and evaluation test statistics in Table 8, the Breusch-Godfrey LM test, which investigates the presence of autocorrelation, shows that there is no presence of autocorrelation in the model, and the ARCH

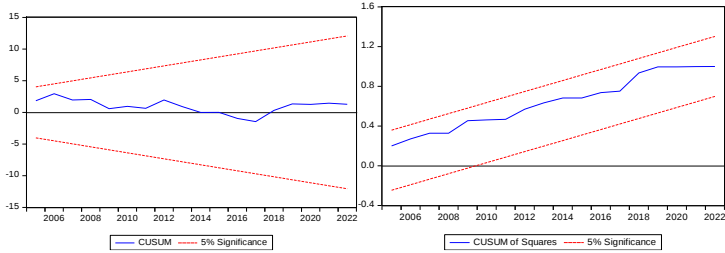
test, which investigates the presence of changing variance, shows that there is no changing variance problem in the model.

Table 8. Diagnostic Checking of the ARDL Model

Test	F-statistic	Prob.
Breusch- Godfrey LM Test	0.723891	0.5533
Breusch- Godfrey Test	0.976465	0.5070

CUSUM and CUSUM of Squares tests measure the stability of the model's short and long-run coefficients. It is observed that the curves obtained as a result of the test statistics for the error terms of the model remain within the critical limits at the 5% significance level. The CUSUM and CUSUMSQ results confirm the model's parameter stability over time.

Figure 2. CUSUM and CUSUM of Squares Test Results



Conclusion

The financial development index, which addresses the financial development of financial markets and institutions in terms of efficiency, depth, and access in a multidimensional way, has become popular, especially in recent years. However, when we look at the studies, it is seen that the researchers still do not understand its importance. Therefore, the aim of this study re-emphasize the importance of the financial development index calculated for Türkiye between 1988 and 2022 and to determine its interaction with macroeconomic indicators using the ARDL bounds test approach.

Before analyzing the relationship between financial development and GDP, P and V variables stationarity were analyzed with ADF and P.P. unit root tests. After determining the stationarity of the series in 1st difference, cointegration analysis was started. After the F test' value was found to be significant, the short- and long-term significance of the relationship between the variables was analyzed. As a result, a statistically significant and positive relationship was found between F.D. dependent variable and GDP and V independent variables. In addition, a statistically insignificant and negative relationship was found between F.D. and P.

When the results of the analysis showing the relationship between F.D. and GDP are analyzed, it is revealed that there is a significant similarity with the studies investigating this relationship. It is determined that Türkiye has a demand-side hypothesis, that is, economic growth favors financial development. This finding is consistent with expectations for developing economies. The most important reason for this is that developing countries support financial institutions and markets in line with their economic growth; that is, the priorities of such countries are growth-oriented rather than development-oriented.

Considering the positive and significant relationship between financial development and trading volume, a 1% increase in trading volume in Türkiye leads to a 0.02% increase in financial development. Trading volume is significant for stock exchanges. An increase in trading volume means an increase in the number of investors trading in the stock exchange, which can be interpreted as an increase in the number of foreign investors that can support financial development. It is similar to the studies conducted by Kuş and Bölükoğlu (2022), Makhdom et al. (2020), Sağlam and Erataş Sönmez (2017), Bozoklu and Yılandı (2013) and Karaca (2012).

When we look at the relationship between prices and financial stability, the results are insignificant, suggesting that financial stability reports do not affect investors' demand for stocks. In other words, the investor utilizes the past prices of financial assets while making investment decisions and, therefore, cannot make excessive profits from the stock market (Savaş, 2021, p. 13). The result obtained is similar to the study conducted by Okoli (2012) in Nigeria. And also Kumar and Dhankar (2017) found similar results Asian countries.

In conclusion, it is possible to say that the results obtained are not surprising since Türkiye is a developing country. The fact that Türkiye has a weakly efficient market and prefers vertical growth instead of horizontal growth confirms our results.

In this framework, several policy recommendations that policymakers should consider can be presented:

- For countries to reach the level of developed countries, they should not only prefer economic growth. While realizing economic growth, importance should also be attached to economic development.

- Policymakers are encouraged to improve financial literacy, particularly among prospective stock market investors

- In the hypotheses dealing with the relationship between trading volume and price, Türkiye's transition from a weakly efficient market model to an enormously efficient one should be accelerated.

- It should be ensured that the positive and significant relationship between economic growth and financial development index is also a double-

sided relationship between financial growth and economic growth. For this purpose, confidence in financial markets should be restored.

One of the most critical limitations of the study is that the financial development index started to be calculated in 1986. Although it entered 2024, the most recent data still belongs to 2022. Another limitation is that although the BIST 100 started to be calculated in 1986 since the trading volume value was annually between 1986 and 1987, the data analysis was started as of 1986.

Peer Review: Independent double-blind

Author Contributions: Burcu SAVAŞ ÇELİK: %100

Funding and Acknowledgement: No support was received for the study.

Ethics Approval: This study does not contain any human or animal research that requires ethical approval.

Conflict of Interest: There is no conflict of interest with any institution or person related to the study.

Hakem Değerlendirmesi: Dış Bağımsız

Yazar Katkısı: Burcu SAVAŞ ÇELİK: %100

Destek ve Teşekkür Beyanı: Çalışma için destek alınmamıştır.

Etik Onay: Bu çalışma etik onay gerektiren herhangi bir insan veya hayvan araştırması içermemektedir.

Çıkar Çatışması Beyanı: Çalışma ile ilgili herhangi bir kurum veya kişi ile çıkar çatışması bulunmamaktadır.

References

- Ak, M. Z., Altıntaş, N. & Şimşek, A. S. (2016). Türkiye’de finansal gelişme ve ekonomik büyüme ilişkisinin nedensellik analizi. *Doğuş Üniversitesi Dergisi*, 17(2), 151-160.
- Altıntaş, H. & Ayriçay, Y. (2010). Türkiye’de finansal gelişme ve ekonomik büyüme ilişkisinin sınır test yaklaşımıyla analizi: 1987-2007. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 10(2), 71-98.
- Asteriou, D. & Spanos, K. (2019). The relationship between financial development and economic growth during the recent crisis: Evidence from the EU. *Finance Research Letters*, 28, 238-245. <https://doi.org/10.1016/J.Frl.2018.05.011>
- Atgür, M. (2019). Finansal gelişme, ticari açıklık ve ekonomik büyüme ilişkisi: Türkiye örneği. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 33(2), 553-572.
- Azam, M. N., Al-Amin, A. Q., Noor, S.I.M., Yeasmin, M. & Kabir, M.A. (2011). Perception of the financial development and economic growth nexus for Malaysia. *International Jr. Finance and Accounting*, 1(1),

- Bagehot, W. (1873). *Lombard Street: A description of the money market*. Hesperides Press.
- Bozoklu, Ş. & Yıllancı, V. (2013). Finansal gelişme ve iktisadi büyüme arasındaki nedensellik ilişkisi: Gelişmekte olan ekonomiler için analiz. *Dokuz Eylül Üniversitesi İktisadi İdari Bilimler Fakültesi Dergisi*, 28(2), 161-187.
- Boyd, J. H. & Smith, B. D. (1998). Capital market imperfections in a monetary growth model. *Economic Theory*, 11, 241-273.
- Calderón, C. & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics*, 72(1), 321-334. [https://doi.org/10.1016/S0304-3878\(03\)00079-8](https://doi.org/10.1016/S0304-3878(03)00079-8)
- Chandio, A.A., Jiang, Y., Rauf, A.I, Ahmad, F., Amin, W. & Shehzad, K. (2020). Assessment of formal credit and climate change impact on agricultural production in Pakistan: A time series ARDL modeling approach. *Sustainability*, 12(13), 5241. <https://doi.org/10.3390/su12135241>
- Çeştepe, H. & Yıldırım, E. (2016). Türkiye’de finansal gelişme ve ekonomik büyüme ilişkisi/ *Uluslararası Yönetim İktisat ve İşletme Dergisi*, Icafr (16 Özel Sayısı), 12(12), 12-26.
- Çetenak, E. H., Haykır, Ö., & Çetenak, Ö. Ö. (2023). Does Financial Development Enhance Economic Growth? The Case of Turkic Countries. *Bilig*, (106), 55-76.
- Eyüboğlu, K. & Akan, K. (2020). Türkiye’de finansal gelişme ve ekonomik büyüme ilişkisi: Rals-Eg eşbütünleşme testi. *Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi*, 22(4), 974-988. <https://doi.org/10.32709/Akusosbil.627788>.
- Gazel, S. (2016). The relationship between financial development and economic growth: An analysis on troubled ten countries 1990-2014. *Business and Economics Research Journal*, 7(3), 39.
- Gurley J. G. & Shaw, E. S. (1955). Financial aspects of economic development. *American Economic Review*, 45(4), 515-538.
- Göv, A. & Yıllancı, V. (2023). Ekonomik büyüme, enerji tüketimi, dış ticaret dengesi ve finansal gelişme ilişkisine grafiksel nedensellik testi yaklaşımı. *İstanbul İktisat Dergisi*, 73(1), 203-230.
- Güneş, S. (2013). Finansal gelişmişlik ve büyüme arasındaki nedensellik testi: Türkiye örneği”, *Doğuş Üniversitesi Dergisi*, 14(1), 73-85.
- Güzel, İ. & Oluç, İ. (2021). Ekonomik büyüme-f finansal gelişme ilişkisinin ek değişkenlerle analizi: Türkiye örneği”. *Akademik Yaklaşımlar Dergisi*, 12(1), 57-73.

- Helhel, Y. (2017). E7 ülkelerinde finansal gelişme ve ekonomik büyüme arasında nedensellik analizi. *Finans Politik ve Ekonomik Yorumlar*, (628), 9-18.
- Huybens, E. & Smith, B. D. (1999). Inflation, financial markets and long-run real activity. *Journal of Monetary Economics*, 43(2), 283-315. [https://doi.org/10.1016/S0304-3932\(98\)00060-9](https://doi.org/10.1016/S0304-3932(98)00060-9).
- Işık, H. B. & Bilgin, O. (2016). Finansal gelişme ve ekonomik büyüme ilişkisi Türkiye örneği. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi*, 5(7), 1757-1765. <https://doi.org/10.15869/itobiad.259113>
- Kandil, M., Shahbaz, M., Mahalik, M.K. & Nguyen, D.K. (2017). The drivers of economic growth in China and India: Globalization or financial development?, *International Journal Of Development Issues*, 16(1), 54-84.
- Kar, M., & Pentecost, E. J. (2000). *Financial development and economic growth in Turkey: further evidence on the causality issue*. Universitäts- und Landesbibliothek Sachsen-Anhalt.
- Karamelikli, H. & Kesgingöz, H. (2017). Finansal gelişme bileşenlerinin ekonomik büyüme üzerindeki etkisi: Türkiye örneği. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi*, 6(1), 683-701.
- Karaca, O. (2012), Finansal gelişme ve ekonomik büyüme: Türkiye için bir nedensellik analizi. *BDDK Bankacılık ve Finansal Piyasalar Dergisi*, 6(2), 85-111.
- Kılıç, M., Gürbüz, A. & Ayriçay, Y. (2019). Finansal gelişmenin ekonomik büyümeye etkisi: Türkiye örneği. *Kahramanmaraş Sütçü İmam Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 9(1), 53-68.
- Kumar, R. & Dhankar, R. S. (2017). Financial instability, integration and volatility of emerging South Asian stock markets. *South Asian Journal of Business Studies*, 6(2), 177-190.
- Kuş, N. & Bölükoğlu, A. (2022). Finansal gelişme ve ekonomik büyüme arasındaki ilişki: Türkiye örneği. *Fiscaoeconomia*, 6(2), 362-401. <https://doi.org/10.25295/fsecon.1062138>.
- Makhdom. M .A., Zohor. A. K. & Ebadi H. (2022). Finansal gelişmişlik düzeyinin ekonomik büyüme üzerine etkisi: Brics ülkeleri ile Türkiye incelemesi”, *Üçüncü Sektör Sosyal Ekonomi*, 57(4), 3418 - 3433. <https://doi.org/10.15659/3.Sektor-Sosyal-Ekonomi.22.12.1985>.
- Noor, S.I.M & Rambeli, N. (2017). Financial growth and economic development: Evidence from Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 7(10), 457-466. <https://doi.org/10.6007/IJARBS/v7-i10/3393>.
- Okoli, M. N. (2012). Evaluating the nexus between financial deepening and stock market in Nigeria. *European Scientific Journal*, 8(15), 18-29.

- Özarslan - Doğan, B. (2021). *Yenilenebilir Enerji Yatırımlarında Finansal Gelişmenin Önemi: E-7 Ülkeleri Üzerine Bir Analiz* (Doctorate Thesis) Anadolu Üniversitesi.
- Öztürk, N., Darıcı Kılıç, H. & Kesikoğlu, F. (2011). Ekonomik büyüme ve finansal gelişme ilişkisi: Gelişmekte olan piyasalar için bir panel nedensellik analizi”. *Marmara Üniversitesi İİbf Dergisi*, 30(1), 53-69.
- Pesaran, M. H., Shin, Y. & Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, 16(3), 289-326. <https://doi.org/10.1002/jae.616>.
- Pata, U. K. & Ağca, A. (2018). Finansal gelişme ve ekonomik büyüme arasındaki eşbütünleşme ve nedensellik ilişkisi: Türkiye örneği. *Osmaniye Korkut Ata Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 2(2), 115-128.
- Sağlam, Y. & Sönmez, F. E. (2017). Finansal gelişme ve ekonomik büyüme arasındaki ilişki: Avrupa geçiş ekonomileri örneği. *Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 12(1), 121-140. <https://doi.org/10.17153/Oguiibf.298769>.
- Savaş, B. (2021). *Borsa İstanbul kapsamındaki pay senetlerinin fiyat ve işlem hacimleri arasındaki nedensellik ilişkisi*. Muhasebe ve Finans Çalışmaları Üzerine Güncel Araştırmalar. IKSAD Publishing.
- Schumpeter, J. (1911). *The theory of economic development*, Harvard University Press.
- Svirydenka, K. (2016). Introducing a new broad-based index of financial development. *IMF Working Paper*. 16(5).
- Yamak, R. & Erdem, H.F. (2017). Uygulamalı zaman serisi analizi e-views uygulamalı, Celepler Matbaacılık.