



The Relationship between Stock Market-Based Financial Development and Economic Growth: The Case of Turkey*

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Abstract

This study aims to examine the effect of financial development on economic growth in the case of Türkiye. Financial development is considered the one of the basic elements of economic development. It provides an important reference to better understand the relationship between financial development and economic growth in Turkey and to predict the effects of economic policies. In the study, quarterly data for the period January 1999 - January 2023 are analysed for the Turkish economy with the help of ARDL (Autoregressive Distributed Lag-ARDL) cointegration methodology. According to the results, it has been seen that the stock market index, which is an indicator of financial development, consumption and net exports has a positive effect on growth. On the other hand, investment has no effect on growth rate and government expenditure has negative effect on growth rate.

Keywords: stock market, financial development, economic growth, bounds test, ARDL model

1. Introduction

Today, the relationship between financial development and economic growth has been a subject of great interest in the economic literature. Financial development aims to use resources effectively, encourage investments and support economic growth by strengthening a country's financial system. Economic growth means increasing a country's production capacity, increasing employment and increasing living standards.

Türkiye has taken important steps in financial development and economic growth in recent years. Turkey's level of financial development has increased, especially with factors such as reforms in the financial sector, expansion of the banking sector, deepening of capital markets and widespread use of financial technologies. In this context, examining the relationship between financial development and economic growth through the example of Turkey is

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important in terms of evaluating Turkey's economic performance and guiding future policy decisions. This study aims to examine in detail the relationship between financial development and economic growth through the example of Türkiye.

2. Financial Development

The financial system is an order or method in which different elements are in mutual relations and created to achieve a certain purpose. This system provides financing for economic activities, facilitates the conversion of savings into investments and manages payment transactions. It contributes to economic growth, capital flow and risk management through the collaboration of elements such as banks, financial institutions, capital markets, insurance companies and other financial instruments (Afşar, 2013:5). The financial sector primarily consists of collecting, evaluating and transferring information and resources to reduce costs. As a result, it will have positive results in growth due to the increase in efficiency and productivity of savers and investors. For the financial system to fulfill its mission successfully, the right conditions must be created. These conditions are correct economic policies, ensuring a stable macroeconomy, and legal regulation of the rights of lenders and shareholders. Here, the enforcement-bankruptcy system, commercial law, competition law, surveillance and audit system are included in these legal regulations. Once these environments are created and the system starts to work well, a stable growth will occur in the economy (E. Özince, 2008).

The main task of financial systems is to support economic development by dynamically distributing economic resources to the market under limited risk. This activity process may vary depending on the following prerequisites being met (Akgiray, 1998:2):

- An effective payments system: An effective payments system should be established so that the purchase and sale of goods and services can continue functionally. This system should include means of payment such as payment by check, credit cards, and consumer credit accounts.
- Appropriate intermediary institutions: To ensure that large-scale financial investments are evaluated in the right investment instruments, intermediary institutions that will ensure the effective distribution of savings funds geographically and temporally should be included in the financial system.
- Risk distribution: The financial system must include control mechanisms to ensure the appropriate distribution of risk between issuers of financial market instruments and investors evaluating fund sources.
- Information transmission mechanism: Information transmission mechanisms should be established to convey the prices of financial market instruments to individuals in a fluent and active manner. In this way, quick decisions can be made in the market and information asymmetry can be reduced.

These prerequisites are important for the financial system to function effectively and for the correct distribution of economic resources. The combination of these factors enables the financial system to fulfill its basic mission.

3. Financial Development & Economic Growth Nexus

The relationship between financial development and economic growth is discussed around four separate views shown below (Mutlu, 2016: 54):

- **The View That Accepts Economic Growth as a Result:** It represents the theories on the relationship put forward by Goldsmith (1960), King and Levine (1993), McKinnon and Shaw (1973), Fry (1978, 1988), Bencivenga and Smith (1991) and Schumpeter (1911). The Schumpeterian approach argues that the benefits offered through financial agents are critical for change and growth. According to this approach, it is stated that financial intermediaries play a role in facilitating technological innovation, accumulating savings, evaluating investments and providing information about firms. (Capasso, 2004). The ability of financial intermediaries to direct resources to productive areas directly affects economic growth and has positive effects such as technical change and productivity increase. (Bloch and Tang, 2003). While Goldsmith (1969) stated the existence of a relationship between national income per capita and financial development, King and Levine (1993) showed in their studies that there was a positive relationship between the relationship. McKinnon and Shaw examined the effects of government interventions on financial development. In their study, they argued that restrictions in the banking system negatively affect the progress of the financial sector and reduce economic growth. They emphasized that the restrictions imposed on the banking system, such as the state's maximum interest rates, severe reserve requirements and direct credit programs, negatively affected growth. These studies also provide results consistent with the endogenous growth literature, which shows that services provided by financial intermediaries, such as liquidity supply and risk sharing, positively affect economic growth.

In addition, the endogenous growth literature, which models studies such as liquidity provision and risk sharing obtained with the support of financial intermediaries, has reached the same conclusion. Here, it has been found that the state has a negative impact on the growth rate when it takes over the financial system, and financial intermediaries have a positive impact on growth (Aslan and Küçükaksoy, 2006). In addition, the endogenous growth literature shows that services such as liquidity supply and risk sharing provided by financial intermediaries have a positive impact on growth. In this way, there are various views examining the relationship in studies, and these studies reveal different results from each other.

- **The View That Accepts Financial Development as a Result:** Representatives who support this point of view include Robinson (1952), Lucas (1988) and Stern (1989). This view argues that economic growth and increased demand for financial services trigger economic development. Economic development is a result of a growth rate. A growth rate further increases the demand for financial studies. This situation encourages economic development (Aslan and Küçükaksoy, 2006).
- **View Accepting the Existence of a Two-Way Relationship:** It argues that there is a reciprocal relationship between financial development and economic growth. Representatives supporting this view include Hugh Patrick (1966) and Demetriades and Hussein (1996). These studies provide evidence that growth affects financial development and financial development affects growth. That is, while growth promotes financial development, financial development also supports economic growth. This two-way relationship emphasizes the interdependence between economic growth and financial development (Atamtürk, 2005).
- **The View That Accepts No Relationship:** The studies of Robert Lucas and Shan and Morris support a view that there is no causal relationship between the relationship (Bozoklu and Yılancı, 2011). Shan and Morris (2002) conducted a study on 19 OECD

countries, China and South Korea for the period 1985-1998. However, the results of the study have been mixed. While it has been determined that financial development leads to economic growth in some countries, a corresponding interaction or economic growth has been found to confirm financial development in some countries. In general, it is concluded that financial development and economic growth occur in harmony and do not cause each other.

Based on these views, it has been observed that no common conclusion has been reached in theoretical studies regarding the study. This is also valid for studies focusing on Turkey. In the study, studies on relationship are included from the literature review.

4. Literature Review

Studies on the relationship between financial development and growth in Türkiye are shown in the table below.

Table 1: Literature Review for Türkiye

Source	Model	empirical result	Country
Pentecost with Snow (2000)	VEC model was used.	The causality relationship in the study varies depending on the financial indicators used. When a financial development indicator such as money supply is used, a causal relationship from financial development to economic growth is observed. That is, increases in money supply can affect economic growth. On the other hand, when other financial indicators such as bank deposits and bank loans are considered, a causal relationship emerges from economic growth to financial development.	Türkiye
Atamturk (2004)	Granger Causality	There is a causality from financial development to economic growth.	Türkiye
Honor (2005)	Granger Causality (Autoregressive Model)	After the financial liberalization of the Turkish economy, it has been concluded that financial liberalization is not the cause of financial development and openness to GNP , but GNP is caused by financial development and openness to financial liberalization.	Türkiye
Aslan and Küçükaksoy (2006)	Granger Causality Test model	In the study examined, the relationship between financial development and economic growth is that financial development affects economic growth.	Türkiye
lion and Korap (2006)	Johansen cointegration Granger causality	It has been observed that there is a long-term relationship with financial development variables and economic growth, and it has been concluded that this relationship changes with financial development indicators.	Türkiye
Your house (2007)	Unit Root Cointegration analysis was used.	According to the empirical results in the study, economic growth shows a causality relationship affecting financial development in the short term. However, long-term analyzes for Türkiye show a weak connection between economic growth and financial development. These results show that the Demand-Following Hypothesis is supported.	Türkiye

Source	Model	empirical result	Country
Acaravcı etc. (2007)	Cointegration Analysis	There is causality from financial development to economic growth.	Türkiye
Deceive etc. (2007)	Cointegration Analysis Error Correction Model	It has been concluded that between financial development and economic growth, economic growth positively affects financial development.	Türkiye
Altunç (2008)	Cointegration Analysis Error Correction Testing	The change in causality between financial development and economic growth depends on the indicators of financial development.	Türkiye
Güngör and Yılmaz (2008)	Granger causality.	There is a long-term relationship between developments in the securities market and banking sector and economic growth. The results obtained from Granger causality analysis show an interrelationship between economic growth and stock market development. Additionally, a unidirectional causality was determined from economic growth to the banking sector. The information here shows that the "Demand-Following" hypothesis is supported.	Türkiye
Nazlıoğlu et al. (2009)	Limit Test	It has been concluded that the relationship between financial development and private investments is a two-way causality.	Türkiye
Altıntaş and Ayriçay (2010)	Border as a model The test has been determined.	It was concluded that there is a long-term cointegration relationship between Financial Development, Real Growth, Real Interest Rate and Openness. These findings show that these variables are related to each other in the long term.	Türkiye
Öztürk et al. (2010)	Panel Granger causality test was applied.	The deepening and development of financial assets supports economic growth by ensuring a more comprehensive and effective use of resources in the economy. This shows that the strengthening of the financial sector has an effect on increasing economic growth. The results obtained in the research also confirm this view.	10 developing countries including Turkey
sprung up and Barber (2010)	Johansen- Juselius cointegration THERE IS	There is a unidirectional causality relationship in the financial development phenomenon towards the economic growth phenomenon, and a bidirectional causality relationship in the trade openness and economic growth relationship.	Türkiye
Keskin and Karşıyakalı (2010)	Engle –Granger Management and Causality Testing	It has been concluded that economic growth has a positive impact on financial development and economic growth.	Türkiye
Özcan and Bee (2011)	VAR Test	The relationship outcome is one-way in Turkey. The result of the study is in the direction of financial development from economic growth.	Türkiye
Slim (2011)	Cointegration Test Granger Causality	As a result of the study, there is a short-term positive relationship on the relationship, but there is no long-term relationship.	Türkiye
Soytaş and Küçükçaya (2011)	VAR Test with Granger Causality	The relationship was examined by creating an index with six different financial development variables, but there is no causality relationship.	Türkiye

Source	Model	empirical result	Country
Yüce et al. (2013)	Cointegration tests	According to the results of the study, the demand-following hypothesis is valid in some countries. On the other hand, in some countries the supply-following hypothesis is valid.	It was made for 44 countries
Coral and Peker (2013)	Limit Test	According to the results of the study, it has been observed that increases in interest rates increase economic development. In addition, when the effects of financial development and openness factors on economic development are examined, it is seen that these factors are more effective in the long term, while the effect is smaller in the short term.	Türkiye
Sun (2013)	limit test	According to the results of the study, there is no relationship between economic growth and money supply. However, it has been observed that financial development increased employment in the financial sector in the same period.	Türkiye
Gökdeniz etc. (2013)	Regression analysis	It has been concluded that financial markets contribute to economic growth.	Türkiye
Bozoklu and Yılançı (2013)	Panel Granger causality test	It was concluded that financial development has a significant impact on economic growth. Therefore, countries that want to increase their economic growth rate need to strengthen their financial development.	Türkiye, Peru, Chile, Thailand, Brazil, Indonesia, China, South Korea, Philippines, Hungary, India, Mexico, Egypt, Malaysia
Aydın et al. (2014)	Toda-Yamamoto Test was used.	The findings obtained as a result of the analysis indicate that there is a causal relationship from economic development to economic growth. In other words, increasing the level of economic development encourages economic growth.	Türkiye
Özaktan Davarcıoğlu (2016)	Linear Regression Model Testing	As a result of the study, it was concluded that financial development supports economic growth and the demand-following hypothesis remains valid. That is, increased financial development stimulates economic growth.	Türkiye
Çeştepe and Yıldırım (2016)	VEC and Granger causality test. Toda-Yamamoto analysis	According to the applied test results, a short- and long-term bi-directional causality relationship was found between economic growth and financial development.	Türkiye
İnançlı et al. (2016)	Pesaran and Yamagata (2008) Delta Test	As a result of the study, it was concluded that the relationship between financial development and economic growth was positive for D-8 countries.	D-8 Countries (Türkiye, Nigeria, Pakistan,

Source	Model	empirical result	Country
			Iran, Malaysia, Egypt, Indonesia, Bangladesh)
Light and Knowledge (2016)	Hacker and Hatemi-J (2012) causality test was applied.	According to the test results applied, a causal relationship could not be determined for economic growth and financial deepening indicators before the crisis. However, after the crisis, a causal relationship was found between the variables.	Türkiye
İlter Burtan (2018)	Cointegration test was applied in the study .	A positive relationship has been determined between financial development and economic development.	Türkiye, Shanghai Five countries (Kazakhstan , Kyrgyzstan, China , Tajikistan and Russia)
Pata and Agca (2018)	Bounds testing approach Granger HackerHatemi -J bootstrap causality test	The findings of the study show that the supplied hypothesis is supported for Türkiye and that financial development is effective on economic growth.	Türkiye
Iron (2019)	Regression analysis methodology is used in the empirical analysis with the help of SPSS program.	As a result of the analysis, it is concluded that financial development causes economic growth.	Türkiye

5. Data & Methodology

In the study, the relationships between financial development and growth in Turkey are investigated. In this context, the period 1999:01-2023:1 is studied with quarterly data. The logarithm of the data is used. The data is obtained from the databases of the Central Bank of the Republic of Turkey and the Turkish Statistical Institute. The estimation equation used in the research is shown in Eq.1.

$$\Delta\text{GROWTH}_t = a_0 + a_1\text{BIST}_t + a_2\text{PE} + a_3\text{CON} + a_4\text{NEXP} + a_5\text{INV} + \varepsilon_t \quad (1)$$

In Equation 1, GROWTH (GDP growth rate), BIST (Borsa Istanbul 100 Index Growth Rate) NEXP (Net Export), CON (Consumption Rate), PE (Public Expenditure) and INV (Investment rates) are included.

Time series analyzes is used to examine the relationship between variables. First of all, the stationarity levels of the variables are investigated with ADF (Augmented Dickey Fuller) and PP (Philip Perron) unit root tests. After stationarity tests, the cointegration relationship between the variables was handled with the ARDL (Autoregressive Distributed Lag) methodology. Additionally, Granger causality analysis was performed to analyze the causality relationship. These methods are powerful tools used to understand the relationship between variables and identify interactions.

6. Results

In this study, Augmented Dickey Fuller (ADF) and Philip Perron (PP) unit root analysis are used to determine the stationarity levels of the variables. These tests are widely used to analyze time series properties of variables and determine their stationarity properties. Based on the results of these tests, the stationarity levels of the variables are determined. The results are seen in Table 2.

Table 2: ADF and PP Unit Root Test Results

ADF Unit Root Test							
Models	t-stat./Prob.	GROWTH	NEXP	PE	CON	INV	BIST
Intercept Model	t-stat.	-1.372	-2.982	-2.318	-1.534	-1.515	-1.087
	Prob.	0.592	0.040	0.168	0.512	0.521	0.718
Intercept & Trend Model	t-stat.	-1.007	-4.346	-3.212	-3.006	-3.462	-2.916
	Prob.	0.937	0.004	0.088	0.135	0.049	0.161
PP Unit Root Test							
Models	t-stat./Prob.	GROWTH	NEXP	PE	CON	INV	BIST
Intercept Model	t-stat.	-1.528	-3.911	-6.465	-4.270	-3.155	-1.063
	Prob.	0.514	0.002	0.000	0.000	0.025	0.727
Intercept & Trend Model	t-stat.	-1.007	-4.265	-7.251	-7.602	-5.802	-2.956
	Prob.	0.937	0.005	0.000	0.000	0.000	0.150

According to the ADF and PP test results, it is decided that the GROWTH and BIST variables are not stationary. NEXP, PE, INV, CON variables are stationary. Series that are not stationary at level become stationary at their first difference. Different stationarity levels of the series show that ARDL (Autoregressive-Distributed Lag) analysis may be preferred for cointegration test. The ARDL analysis can be used in models where variables are level stationary or first order stationarity (Peasaran Shin and Smith, 2001). The cointegration test results can be seen in Table 3.

Table 3: ARDL Test Results

Independent Variables Number (k)	F Stat.	Critical Values (at 5% significant level)	
5	4.733	Lower Bond I(0)	Upper Bond I(1)
		2.39	3.38

According to the results, it is concluded that the F test value is above the critical value and in this context, a cointegration relationship exists. After determining the cointegration relationship, the ARDL model was used to determine long and short-term relationships. The model results for ARDL analysis are shown in Table 4.

Table 4: ARDL (1, 0, 0, 0, 1, 1) Model Results

Variables	Coeff.	t-stat.	Prob.
GROWTH (-1)	0.812	18.402	0.000
BIST	0.001	2.107	0.038
PE	-0.137	-4.809	0.000
NEXP	-0.020	-1.456	0.148
CON	0.001	0.089	0.928
CON(-1)	-0.035	-2.457	0.016
INV	0.001	0.115	0.908
INV(-1)	-0.061	-4.151	0.000
C	0.047	2.951	0.004

Diagnostic Tests	
R²	0.915
Adjusted R²	0.907
F stat.	117.553 (0.000)
Breusch-Godfrey LM Test	1.311 (0.272)
Jarque-Bera Normality Test	1.192 (0.550)
Ramsey Reset Test	0.210(0.647)

Diagnostic test results of the ARDL (1, 0, 0, 0, 1, 1) model are shown in Table 4. According to the results here, no autocorrelation or heteroscedasticity problems are exist. The error term is normally distributed and no errors are made in the setup of the model. FMOLS model, which has many advantages, can be used when obtaining the coefficients of cointegrated equations. The long-term coefficients obtained as a result of the FMOLS model are presented in Table 5.

Table 5: FMOLS Test Results

Variables	Coeff.	t- stat.	Prob.
PE	-0.459	-3.661	0.000
BIST	0.011	2.917	0.005
NEXP	0.158	1.666	0.099
CON	0.199	2.068	0.042
INV	-0.100	-1.063	0.291
C	-0.087	-1.032	0.305
R ²	0.073	Regression S.E.	0.008
Adjusted R ²	0.022	Total squared error	0.006

According to the results of FMOLS model, it is concluded that Consumption, Net exports and stock market index positively affected growth. On the other hand, it is concluded that investment expenditures do not have a significant effect and public expenditures also have a negative effect. It has been concluded that financial development, which is the focus of the study, has a positive and significant effect on growth in the long term for Turkey and for the analysis period.

7. Conclusion

The relationship between financial development and economic growth has been a subject of great interest in the economic literature. Financial development aims to use resources effectively, encourage investments and support economic growth by strengthening a country's financial system. Economic growth means increasing a country's production capacity, increasing employment and living standards. Türkiye has taken important steps in financial development and economic growth in recent years. Türkiye's level of financial development has increased, especially with factors such as reforms in the financial sector, expansion of the banking sector, deepening of capital markets and widespread use of financial technologies. In this context, examining the relationship between financial development and economic growth through the example of Turkey is important in terms of evaluating Turkey's economic performance and guiding future policy decisions. This study aims to examine the relationship between financial development and economic growth for the case of Türkiye.

In the analysis, quarterly data for the period 1999:01-2023:1 is used for the relationship between stock market-based financial development and economic growth. Evidence is found that there is a cointegration relationship between the series. FMOLS method is preferred to

obtain long-term coefficients because of the advantages of the model. According to the results, it is concluded that Consumption, Net exports and stock market index positively affected growth. On the other hand, it is concluded that investment expenditures do not have a significant effect and public expenditures also have a negative effect. It has been concluded that financial development, which is the focus of the study, has a positive and significant effect on growth in the long term for Turkey and for the analysis period.

To strengthen economic stability and development of Türkiye, financial markets need to be deepened and consolidated. In this context, policy makers and practitioners should constantly update the financial system and effectively solve the difficulties encountered in the real sector's access to financial resources. Based on empirical findings, it is recommended to create a guidance structure that will direct the flow of funds to the real economy. In this way, Turkey can achieve a strong position on the world economic stage by moving towards the goal of stable and sustainable development.

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