A Panel Data Analysis of the Relationship between Financial Development and Economic Growth in Asian Countries[1]

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ABSTRACT

The causal relationship between economic growth and financial development is of great importance in terms of the dynamics of economic growth and the financial background it provides. The aim of this study is to determine the existence and direction of the relationship between financial development and economic growth in selected Asian countries. The financial development index used in the analysis is an index reported by the IMF and is based on the depth, access and efficiency of financial institutions and financial markets. In addition, gross fixed capital formation and labor force are added to the model as control variables. In this panel data analysis of 24 Asian countries covering the period 2000-2021, Cross Section Augmented Dickey-Fuller (CADF) Unit Root Test and Westerlund ECM Panel Cointegration tests are applied. Dumitrescu and Hurlin (2012) Panel Granger causality test was used for causality analysis. The heterogeneous results of the study provide evidence of a causal relationship between GDP and financial development across countries. According to the findings of the study, instead of a general policy recommendation, it would be appropriate for countries to determine policies according to their own economic and financial characteristics, considering that both variables affect each other.

Keywords: *Gross Domestic Product, Financial Development, Panel Data Analysis, Asian Countries*

JEL Codes: F38, G00, O40

1. INTRODUCTION

It is recognized that achieving sustainable growth depends on many macro and micro dynamics with differential interaction. From the 17th century Mercantilist period to the present day, economic movements with different perspectives on growth and its factors have emerged, but no universal prescription for economic growth has been presented. Mercantilists, who emphasized the importance of precious metals, and Physiocrats, who argued that agriculture was the only productive sector and the laws of nature, sought ways to enrich their countries and achieve sustainable growth. Smith, Ricardo, Malthus and Mill, who stand out among the

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classical economists, used the division of labor, technological development and population growth rate to explain the growth of countries. They explained the capital accumulation required for growth on the basis of savings. British mathematician and philosopher Frank Ramsey's 1928 paper "The Mathematical Theory of Saving" was considered the foundation of modern growth theory. Throughout the 1960s, the Harrod (1936) and Domar (1946) model, which brought a dynamic approach to Keynesian theory, was considered the best model to explain growth. This model, collectively known as the Harrod-Domar model, is regarded as the beginning of modern growth theory in many sources. In growth theories, Solow's (1956) neo-classical growth model, which emphasizes the relationship between capital accumulation and saving, has taken an important place. The most important criticism of neo-classical growth models is the endogenous growth models advocated by Arrow (1962) and Lucas (1988). The first foundation of endogenous growth models was analyzed by Romer (1986) in his doctoral thesis on the dynamics of wealth creation. Romer considers technological development as an endogenous factor that is achieved by firms through profit maximization and R&D activities. Endogenous growth models emphasize the contribution of human capital, knowledge and technological development to economic growth. Neo-classical theory favors foreign savings and financial liberalization, which is based on the thesis that growth can be sustained with foreign resources if domestic savings are not sufficient, started to gain importance in the 1980s.

Liberalization practices first made themselves felt through financial markets. Thus, countries wishing to get a share of international resources have entered into a structural transformation process in order to free their financial markets from repression and control regimes and to provide diversity, efficiency, and depth in terms of institutions and financial products. While adopting financial liberalization policies as the financial source of growth, the hypothesis that underdeveloped and developing countries that cannot realize the necessary structural transformation in their markets will not be able to benefit from international capital flows is supported by financial crises, which explains the importance of financial development for countries in this process. While financial liberalization is a prerequisite for international capital flows to enter and exit national markets easily, financial development is an indicator that measures the extent to which this resource can be used in the real sector and even the purpose and duration of its stay in national markets. While financial liberalization is related to management policy, financial development is a long-term institutional and structural transformation process. In order to measure financial development, it is necessary to analyze the indicators in the market. According to Lynch (1996), these indicators are analyzed as quantitative measures and structural measures. In addition, the diversity of products offered in financial markets, market transaction costs, and financial prices are among the measures of financial development. Indeed, the ability of financial markets to fulfill their expected functions depends on these criteria. Levine (1997) defines the five basic functions of the financial system as protecting trade in goods and services from risk, ensuring the distribution and diversification of risk, utilizing idle resources, mobilizing savings, institutional control, and operational supervision. He argued that the effective functioning of these functions of financial markets affects economic growth through capital accumulation and technological innovation in the economy. In an era where globalization interconnects economies, sustainable development challenges intensify, and aspirations for prosperity are universal, understanding the mechanisms underpinning economic growth becomes imperative (Bakari,2024). Financial development is recognised as one of the areas most associated with economic growth and its relationship with economic growth is a very rich research topic in terms of academic literature. However, there is no consensus among researchers, academics and even policy makers on the

strength and direction of this relationship. In addition, the literature review shows that many internal and external dynamics such as different countries or groups of countries or the same countries in different periods, different socio-economic conditions of countries, different levels of economic or financial development, trade openness, differences in human resources including financial literacy, openness to innovation technology are also effective in supporting different results. Since it is quite difficult to include all variables for a country or a group of countries in models at once, each study contributes to the literature as a proof of the cumulative progress of science. The main objective of this study is to determine the existence and direction of the relationship between financial development and economic growth for selected ASIAN countries between 2000 and 2021, without any economic social classification. In the analysis of this relationship, the intermediary variable included in the model is gross fixed capital accumulation. The study, which contributes to the literature with this aspect, also offers a difference with the large number of selected Asian countries and the use of up-to-date data. In conclusion, our expected objectives throughout the article are to evaluate financial development, which is an important resource provider in economic growth, in terms gross fixed capital formation with current data, to enrich the literature and to present findings for decision makers. The main hypothesis of this study is that the level of financial development increases the gross fixed capital formation of countries, and that increased capital has a positive effect on financial development and a reciprocal relationship is developed with economic growth. In line with this purpose, our study is structured as follows. In the second part, from past to present financial liberalization and growth theories are briefly mentioned and a literature review focusing on the relationship between financial development and economic growth is presented. The third section presents the empirical methodology of the relationship between financial development, gross fixed capital investment and economic growth. Also, database and the selected model and empirical results. Finally, in the fourth section, the main findings and their economic, social and policy implications are summarised and recommendations for future research are provided.

2. THEORETICAL BACKGROUND AND LITERATURE REVIEW

Economic growth is the shift of the production possibilities curve to the right as a result of a country's ability to increase its full employment output through new technology, employment, and resource-enhancing institutions. The functioning of these institutions is mainly related to the level of development of the financial markets. Financial liberalization is an important step in the development of financial markets. The theories on financial liberalization give a great deal of attention to this relationship. McKinnon (1973) and Shaw (1973) argue that financial liberalization is the most important channel to realize growth by directing savings to investments. Thus, the theoretical foundations of the process of integrating national markets into international markets by removing barriers to capital inflows and outflows were laid. According to the view defended in the Mckinnon-Shaw hypothesis, the development of the financial system and its functioning of transmission functions both ensure the efficient allocation of resources and increase economic growth. Thus, countries with limited savings volume can provide financing, while investors have the opportunity to diversify their risks through portfolio diversification (Mollaahmetoğlu and Toprak, 2017). Economists who have developed a critical perspective on financial liberalization are generally the new structuralist school. One of the criticisms of the new structuralist approach is that the high interest rates that will occur with financial liberalization will not always create an increase in savings and will often have a stagflationary effect. Especially the crises that followed financial liberalization in

countries such as Latin America after 1980, Mexico in 1994, and Southeast Asia in 1997 led to criticism of McKinnon and Shaw's policies of growth through financial liberalization. Countries with capital shortages have tried to meet these problems with global capital in the short run, but the failure to transfer this capital to the real sector has brought along various problems in the long run (Has, 2007). Despite the increase in financial activity and financial deepening in developing countries, this did not benefit industry and trade (Akyüz, 1993). As a result of all these analyses, it has been an indicator of how the structure, development, and depth of financial markets play a key role in the liberalization process. The differences in the results of the studies on the subject vary depending on the methodology of the researcher as well as the choice of variables. These differences have been addressed in many studies in the economics literature. Among these studies, Bagehot (1873) and Hicks (1969) argued that the financial system affects the level of industrialization, while Schumpeter (1965) argued that the financial system supported by technology affects economic growth by increasing investments (Bağcı, 2017). Robinson (1952) argued that economic growth creates demand in the financial system, Patrick (1966) argued that this is not a one-way effect, but that there is an undeniable relationship between the financial sector and economic growth through a mutual interaction. Patrick, who analyzed the relationship between financial development and economic growth in depth, put forward the definition of demand-following and supply-led relationships, explaining the direction of causality between them. The economist who was able to empirically demonstrate the existence of this relationship was Goldsmith in 1969. Levine (1997), another scholar working on financial development and economic growth, defined the functions undertaken by financial markets and argued that financial markets that can fulfill these functions support economic growth. Four views are prominent in the literature. The first two are the supply-led view and the demand-following (or demand-led) view. The supply-led view argues that well-developed financial markets can channel investment efficiently and thus accelerate economic growth. According to economists who argue for the existence of a demand-following relationship, economic growth will enable financial development. Both views are confirmed in the literature with different variables and methods in many studies (Aslan and Küçükaksoy, 2006). The third one is the interaction view and the last view on this issue is the non-correlation view. There are also studies supporting the reverse view, which is not classified among these views. These views and the studies supporting these views are categorized below.

The supply-led view argues that the direction of causality is from financial development to economic growth. In this hypothesis, as in the neo-classical economics view, savings will be encouraged by liberalizing financial markets, and growth will be accelerated by directing them to areas with high marginal productivity (Alper and Öniş, 2001). The better financial institutions fulfill their credit supply function (the cheaper they can provide intermediation services), the greater the impact on the economic growth performance of a country (Kar and Seyhan, 2002). The basic assumption of the supply-frontier view is that the efficiency of financial markets will increase through competitive conditions that will emerge when the supply is high enough to meet the atomicity condition of a perfectly competitive market. The development of competitive conditions in financial markets is only possible by ensuring financial liberalization. Thus, costs will fall, investments will increase, and economic growth will be achieved. Supply-side hypotheses, as predicted by the neo-classical theory, state that liberalized financial markets encourage the transition from the traditional sector to the modern sector in the economy and cause a positive effect on economic growth by increasing new entrepreneurs in modern sectors (Onur 2005). This view, which was proposed by Bagehot (1873), was strengthened by Schumpeter (1912), became the subject of empirical studies

starting with Goldsmith (1969), continuing with Hicks (1969), Gupta (1984), and entering the growth model with McKinnon (1973) and Shaw (1973). Moreover, Fry (1978, 1988), Bencivenga and Smith (1991), King and Levine (1993), and Levine (1997) have made important contributions to this view. King and Levine (1993) showed in their study that financial institutions, which are an outcome of financial development, affect labour productivity and thus financial development can also lead to economic growth through the human capital channel. Yağlı and Topçu (2019), in their study covering the period 2005–2015 with G7 countries, found a supply-led relationship between financial development and economic growth in the long run and a reciprocal causality relationship in the short run. The results of Ergur and Özek (2020) panel data study covering the years 1988–2017 with countries including Brazil, Russia, India, China, South Africa, and Turkey supported the study of Yağlı and Topçu (2019) and found supply-led causality results in the short run and reciprocal causality results in the long run. The supply-led view has been supported by numerous studies to date and is a dominant hypothesis in the literature. There are many other studies in the literature that prove the contribution of the supply-led hypothesis to the economic growth of financial market development (Krinichansky and Sergi, 2019; Sharma, 2019; Ustarz and Fanta, 2021; Jammeh, 2022; Sohail and Li, 2023; Sghaier, 2023; Saidi, 2023; Bekele and Degu, 2023; Asante et.al., 2023; Oroud et al.,2023). It is noteworthy that recent studies supporting the supply-led view emphasize the relationship between the possible productivity increase expected to be generated by the financial system and the efficiency of institutions (Chinoda and Kapingura, 2024; Pradhan et al., 2023; Bayraktar et al., 2023; Xu Fengju and Wubishet, 2024).

The demand-following (or demand-led) view argues that the direction of causality is from economic growth to financial development. Domestic financial development is a result of economic growth. In other words, when per capita income increases, the demand for financial services increases, and this causes economic growth to affect financial development (Bayraktar et al., 2023). Since the demand for the financial system and the services it provides will increase in economies with the growth of the real sector, the financial system will also develop because of this increased demand (Kar and Kara, 2001). The financial sector has to develop in parallel with the real sector in order to fulfill the functions of meeting the deepening and diversifying resource demand of the developing real sector and providing liquidity. In other words, growth increases the demand for advanced financial instruments and financial institutions. Robinson (1952) argued that financial instruments develop as a result of economic growth. According to the demand-side approach, which is close to Keynesian and new structuralist views, the industrial sector develops with the growth of the real sector and the agricultural sector modernizes. The expansion of trade increases the demand for investment and consumption, which makes it necessary for the financial sector to transfer more resources to the real sector. This view, which was developed by Robinson (1952), has been grounded on Patrik's (1966) description of the relationship between economic growth and financial development, Gurley and Shaw's (1973) support for a strong link between the two variables, and despite all liberal currents, Jung (1986) has been defended with empirical results by Lucas (1988) and Stern (1989). Apart from these fundamental studies, some studies conducted between 2017 and 2023 whose results support the demand-side view are listed in the appendixs table**.** Among these studies, it is important to note that Zengin (2023) found that the financial development index and the financial institution development index have a bilateral relationship with growth.

Here, it is also necessary to mention a criticism of financial liberalization, which is closely related to financial development. The demand-led view is close to the new structuralist and new

Keynesian views that criticize financial liberalization. According to the New Keynesian approach, financial liberalization does not always accelerate growth and reduce inflation by increasing savings and investments. This is because there are significant financial distortions in developing countries (Cicioğlu, 2009). The new structuralist view, on the other hand, draws attention to the stagflationary effect of financial liberalization and argues that in such an environment, production may decline due to the increase in firm costs. The demand-led view's prediction that economic growth will start with an increase in production is, in a way, a criticism of the popularity of liberal policies, especially in developing countries.

According to the proponents of the *interaction view*, which is categorized as the third view, it is not possible to explain the relationship with rigid determinism. There is a bidirectional causality between economic growth and the financial sector that affects and is affected by each other. Development economist Arthur Lewis envisions a two-way relationship between financial development and economic growth, where financial markets develop as a result of economic growth and then finance plays a stimulating role in the growth of the real economy (Aslan and Korap, 2006). Financially developed countries achieve economic growth by utilizing resources efficiently and transforming them into productive investments, and, in a cyclical manner, this growth leads to financial development by diversifying, deepening, and increasing access to financial markets and institutions (Zengin, 2023). Since this view includes both supply-fronted and demand-followed views, it is argued that these views are not sufficient on their own, although the above ideas and studies on these views are confirmed in a sense.

In addition, Aydın (2019) applied Westerlund panel co-integration tests in his study covering the period 1992–2016 for the Fragile Five countries and found that there is a positive and significant relationship between economic growth and financial development in the long run. In their study, Gülay and Cowley (2020) applied time series to data covering the period 2006–2015 for Turkey and found that there is a positive and significant relationship between economic growth and financial development. In one of the most recent studies on this subject, Nguyen et al. (2022) found that financial development creates a positive impetus on economic growth for developing countries and reached results supporting the existence of a linear and bidirectional interaction between financial development and economic growth with data from 22 countries. Çeştepe and Tatar (2022) apply asymmetric panel causality tests for the Fragile Five data for 1980–2019 and reach different results for different countries. According to the results of causality analysis, both the supply-led and demand-followed views are supported in different periods for Indonesia, while the interaction view is valid for Turkey. Similarly, Kar, Nazlıoğlu and Ağır (2011) applied the Konya (2006) Panel Causality Test for Middle East and North African (MENA) countries and found that each country has its own specific results and there is no specific direction of causality between financial development and economic growth.

The fourth and final view on the relationship between financial development and economic growth is the *no relationship view*. Accordingly, Robert Lucas (1988), one of the pioneers of endogenous growth models, argues that financial development is not a fundamental determinant of economic growth and that there is no interaction between these two factors, yet economists pay too much attention to this issue. Philippe Aghion et al. in 2005 supported this view by concluding that financial development has no effect on growth in the long run. Guptha and Rao (2018) did not find a stable causality between economic growth and financial development in the BRICS countries between 1996 and 2016 in their study analyzed by Toda-Yamamoto method. Bölukoğlu (2021) conducted Panel Threshold Regression analyses of data from a

hundred countries in the 1995-2018 period and found that while there is a directly proportional relationship between finance and growth at low levels of financial development, this relationship becomes insignificant at high levels of financial development.

Although it is not included in the basic classification, there are also those who argue that there is an inverse relationship between both variables in the literature. According to this view, which we can also call *the reverse view*, the existence of an overdeveloped financial system will prevent savings from being directed towards investments (Bozoklu and Yılancı, 2013). There are studies supporting this view. According to this approach, financial development negatively affects economic growth. The leading representatives of the view started with Wijnbergen (1983). Also Ouyang and Li (2018) show the negative impact of financial development on economic growth with data from thirty Chinese regions. Peprah et al. (2019) argue that financial development can have a dampening effect on economic growth only after a certain level. Asteriou and Spanos (2019) differ from other studies in that they argue that the relationship is generally supply-led but turns negative during crisis periods. In his IMF study, Poghosyan (2022) analyzed the Caucasus and Central Asian countries and argued that the relationship between economic growth and financial development is not linear but bell curve-shaped. Therefore, he concluded that developed countries may be negatively affected by financial development, but the supply-led view is valid for developing countries. In addition, the results of Wang et al. (2024), who analysed 12 Asian countries according to their development levels, showed that the relationship between financial development and economic growth is determined by the level of economic development at which the country is located. in the group of less developed countries, the relationship between financial development and economic growth was strongly negative. However, for the moderately and highly developed countries/regions in the sample, financial development had a positive effect on economic growth. In conclusion, the reviewed literature reveals the existence of a complex and multifaceted relationship between financial development and economic growth. In the literature where the supply-side hypothesis is predominantly proved, research on efficiency and productivity improvement through the providers and outputs of a sound and effective financial system continues.

3. ECONOMETRIC METHODOLOGY AND FINDINGS

In this study, the relationship between financial development and economic growth for 24 Asian countries for the period 2000–2021 is analyzed. The choice of period and country was based on the years for which complete, up-to-date data were available and the countries representing the various regions of Asia. A panel data analysis was conducted by taking the Financial Development Index created by the World Bank, countries' Gross Domestic Product (GDP), and Gross Fixed Capital Formation 2015 constant data. In the selection of countries, the completeness of the data in the relevant years was taken into consideration.

Information about the variables in the model is shown in Table 3.1

Variables	Description	Period, Type, Value	Source
GDP	Gross Domestic Product (GDP)	Annual, USD, constant, Logarithm	World Bank- World Development Indicators & IMF Financial Development Index
FIND	Financial Development Index	Annual, index	
GFCF	Gross Fixed Capital Formation	Annual, USD, constant, Logarithm	
LABOR	Labor force	Annual, total, Logarithm	
Countries	Armenia, Bahrain, Bangladesh, Brunei, Indonesia, Iran, Israel, Japan, Jordan, Kazakhstan, Korea, Kyrgyzstan, Lebanon, Malaysia, Pakistan, Philippines, Russia, Saudi Arabia, Singapore, Thailand, Turkey, United Arab Emirates, Uzbekistan, Vietnam		

Table 3.1. Variables Used in the Model

In this study analyzing the relationship between financial development and economic growth, annual data for the period 2000-2021 are used. The variables used in the model are first logarithmized. The logarithmic transformation of the model enables both the empirical estimation of the model and the elasticities of the explanatory variables to be obtained. The logarithmic form of the model can be written as defined in equation (1).

$$\text{Model 1: } GDP_{it} = \beta_0 + \beta_1 FIND_{it} + \beta_2 GFCF_{it} + \beta_3 LABOR_{it} + \mu_{it} \qquad (1)$$

In the study, firstly, the cross-sectional dependence of the variables and the model are tested separately. Pesaran (2004) proposed the cross-sectional dependence (CD) test, which can be used for a variety of panel data models, including unit root dynamic heterogeneous panels with structural breaks and small T and large N. The test verifies the null hypothesis that there is zero dependence among panel members. The ordinary least squares (OLS) residuals from each individual regression in the panel data model are averaged to determine the CD test (Dobnik, 2011:12).

$$CD_{LM3} = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{p}_{ij}\right) \qquad (2)$$

The hypotheses of the cross-sectional dependence test applied by Pesaran (2004) are given below:

H_0= There is no cross-section dependence.
H_1= There is cross-section dependence.

Variables	GDP	FIND	GFCF	LABOR	Model
CD Test Statistic	72.77853***	21.42649***	50.44490***	56.26237***	22.10889***

Table 3.2 Cross-Section Dependence Test Results of Variables
Note: Pesaran scaled LM test statistic is used for the model. *** indicates that H_0 is rejected at 1% significance level.

After investigating the presence of cross-sectional dependence in panel data analysis, determining whether the slope coefficients are homogeneous will improve the results of the analysis. Pesaran and Yamagata (2008) model will be used to test the slope homogeneity of the panel data. Our model can be written as follows:

$$Yi,t = \mu i + \beta' iXi,t + \varepsilon i,t \quad (3)$$

where i = 1, …, N represents the cross-sectional dimension and t = 1, …, T the time dimension. μi is a constant. β 1 i is k 1 ×1, and is a vector of unknown slope coefficient with k = k 1 + k being the total number of regressors. The null hypothesis is formulated as

H_0: βi = β for all i,

against the alternative:

H_1: βi = β for some i

In H_0, slope coefficients are homogenous, whereas the alternative hypothesis (H_1) is that the slope coefficients are heterogenous.

	Delta	p-value
	15.409	0.000
adj.	17.035	0.000

Table 3.3 Slope Homogeneity Test Results

According to the test results, since the p-values are zero, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, it is concluded that there is heterogeneity within the slope in the model. In general, second-generation unit root tests operating under cross-sectional dependence give the heterogeneity result and operate under the heterogeneity assumption (Turgut and Uçan, 2024: 352). The test result confirms this general assumption.

In this study, cross-sectionally augmented Dickey-Fuller (CADF) unit root test, which is one of the second-generation unit root tests applied by Pesaran (2006), is applied since cross-sectional dependence is accepted. This test statistic is valid for both N>T and T>N in terms of the number of cross-sections and time interval. The formula for the CADF test statistic is as follows:

$$y_{it} = (1 - \varphi_i)\mu_i + \varphi_i y_{i,t-1} + u_{it} \quad (4)$$
$$i = 1, \ldots, N \quad \text{and} \quad t = 1, \ldots, T$$

$$u_{it} = y_i f_t + \varepsilon_{it} \quad (5)$$

In this equation, f_t the unobservable common effect, ε_{it} shows the individual error. According to this test, the unit root hypotheses are as follows:

$$\Delta y_{it} = \alpha_i + \beta_i y_{i,t-1} + y_i f_t + \varepsilon_{it} \quad (6)$$

$H_0: \beta_i = 0$ For all i (non-stationary)
$H_1: \beta_i < 0, i = 1,2, \ldots \ldots N_1, \beta_i = 0, i = N_1 + 1, N_1 + 2, \ldots \ldots N$ (stationary).

The CIPS (Cross-Sectionally Augmented IPS), which is called the general unit root statistic, is obtained by averaging the unit root values of the countries representing each cross-section of the panel. The CIPS statistic is shown below.

$$CIPS = N^{-1} \sum_{i=1}^{N} CADF_i \qquad (7)$$

The cross-sectionally augmented Dickey-Fuller (CADF) unit root test results for the model are shown in Table 3.3

Variable	Delay	Level Intercept /Trend	CIPS statistic	Delay	1st Difference Intercept /Trend	CIPS statistic
GDP	2	0	-2.056	2	0	-2.653***
FIND	1	0	-2.064	1	0	-5.142***
GFCF	2	0	-1.731	2	0	-2.786***
LABOR	3	1	-2.041	3	1	-3.064***
(N:24, T:22) Intercept (0)	%1	-2.40	**(N:24, T:22) Trend (1)**		%1	-2.92
	%5	-2.21			%5	-2.73
	%10	-2.10			%10	-2.63

Table 3.4 Cross-sectionally Augmented Dickey-Fuller (CADF) Unit Root Test Results
Note: Statistical values are determined according to Akaike Information Criterion (AIC).

According to the results of the cross-sectionally augmented Dickey-Fuller (CADF) unit root test, the variables are stationary at level (I(0)) and stationary at first difference (I(1)).

Since the unit root test results are stationary at the same degree and at the first difference, the Westerlund ECM Panel Cointegration test is required. The cointegration test shows whether there is a long-run relationship between the variables. Bootstrap values calculated by proving cross-sectional dependence are taken into account. In this study, the Westerlund ECM Panel Cointegration Test developed by Westerlund (2007), which is presented in two sections as group statistics and panel statistics and assumes that the series are stationary at first differences, is applied. The model is as follows:

$$\Delta y_{it} = \delta_i d_t + \lambda_i x_{it-1} + \sum_{j=1}^{P_i} \alpha_{ij} \Delta y_{it-j} + \sum_{j=0}^{P_i} \lambda_{ij} \Delta x_{it-j} + e_t \qquad (8)$$

$$y_{it-1} = \delta_i d_t + \lambda_i x_{it-1} + \sum_{j=1}^{P_i} \alpha_{ij} \Delta y_{it-j} + \sum_{j=0}^{P_i} \lambda_{ij} \Delta x_{it-j} + \varepsilon_t \qquad (9)$$

The hypotheses of cointegration statistics are as follows:

$H_0: \alpha_i = \alpha = 0$; there is no cointegration for the panel.
$H_1: \alpha_i = \alpha < 0$; cointegration exists for the panel.

In the next step, the error correction coefficient and its standard error are calculated for the entire panel:

$$\alpha_i = \left(\sum_{i=1}^{N} \sum_{t=2}^{T} \tilde{y}^2{}_{it-1} \right)^{-1} \sum_{i=1}^{N} \sum_{t=2}^{T} \frac{1}{\alpha_i(1)} \tilde{y}_{it-1} \Delta \tilde{y}_{it} \qquad (10)$$

$$SE(\alpha_i) = \left((\hat{S}^2{}_N) \sum_{i=1}^{N} \sum_{t=2}^{T} \tilde{y}^2{}_{it-1} \right)^{-1/2} \qquad (11)$$

In the third and final stage, the cointegration panel statistics are calculated. The calculation equation is as follows:

$$P_t = \frac{\alpha}{se(\alpha)} \sim N(0,1) \qquad P_a = T_\alpha \sim N(0,1) \qquad (12)$$

The cointegration tests developed by Westerlund (2007) assume that there is no dependence between the cross-sections that make up the panel when compared with standard normal distribution critical values. Westerlund (2007), however, noted that the bootstrap critical values proposed by Chang (2004) should be compared with cointegration statistics computed to account for cross-sectional dependency (Nazlıoğlu, 2010: 96).

	Stat.	Asym p-val	Bootstrap p-val
g_τ (Group Average)	2.933	0.998	0.957
g_α (Group Average)	4.499	1.000	0.033
p_τ (Panel)	1.461	0.928	0.000
p_α (Panel)	1.878	0.970	0.015

Table 3.5 Bootstrap Panel-ECM Cointegration Test
Note: Bootstrap probability values are obtained from a distribution with 1000 replications. Lag and prior levels are set to 1.

According to the results of the panel cointegration test, where bootstrap p-values are taken into account depending on the presence of cross-section dependence, the H_0 hypothesis indicating that there is no cointegration is rejected, and it is found that there is cointegration in the model. Accordingly, there is a long-run relationship between the variables.

The causality analysis developed by Dumitrescu and Hurlin (2012) considers the cross-sectional dependence of the panel. T is a test that can be applied both in the case of T>N and in the case of N>T when there are N cross-section sizes. However, the test first converges to the ordinary standard normal distribution. Furthermore, a semi-asymptotic distribution is specified for a fixed sample T. The heterogeneous model for each unit at time T is shown below (Dumitrescu and Hurlin, 2012):

$$y_{i,t} = \alpha_i + \sum_{k=1}^{K} \gamma_i^{(k)} y_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} x_{i,t-k} + \varepsilon_{i,t} \qquad (13)$$

The null hypothesis states that there is no Granger causality relationship, and the alternative hypothesis states that there is a causal relationship between these variables (Dumitrescu and Hurlin, 2012).

$H_0: \beta_1 = 0 \qquad \forall_i = 1 \dots N$
$H_1: \beta_1 = 0 \qquad \forall_i = 1 \dots N_1$

$\beta_1 \neq 0 \qquad \forall_i = N_1 + 1, N_1 + 2, \dots, N$

Countries	GDP does not cause FIND	GDP does not cause LABOR	GDP does not cause GFCF	FIND does not cause GDP	FIND does not cause GFCF	FIND does not cause LABOR	GFCF does not cause GDP	LABOR does not cause GDP	GFCF does not cause FIND	LABOR does not cause FIND	LABOR does not cause GFCF	GFCF does not cause LABOR
Armenia	2. 279	5.957**	1.304	0.010	3.084*	2.576	0,011	0,713	1,484	4,658**	1,511	9,119***
	(0.131)	(0.015)	(0.253)	(0.920)	(0.079)	(0.109)	(0,918)	(0,398)	(0,223)	(0,031)	(0,219)	(0,003)
Bahrain	0.004	0.062	0.132	0.013	1.665	0.169	6,389**	1,473	2,573	13,098***	0,262	1,223
	(0.950)	(0.803)	(0.716)	(0.908)	(0.197)	(0.681)	(0,011)	(0,225)	(0,109)	(0.000)	(0,608)	(0,269)
Bangladesh	6.578**	1.641	0.842	0.300	0.684	0.681	0,426	0,39	0,002	0,009	0,185	4,788**
	(0.010)	(0.200)	(0.359)	(0.584)	(0.408)	(0.409)	(0,514)	(0,532)	(0,960)	(0,925)	(0,668)	(0,029)
Brunei Darussalam	0.030	0.150	0.133	0.185	0.509	0.017	1,971	1,481	0,178	0,374	1,052	0,828
	(0.863)	(0.699)	(0.715)	(0.667)	(0.476)	(0.898)	(0,160)	(0,224)	(0,673)	(0,541)	(0,305)	(0,363)
Indonesia	0.048	2.065	0.013	0.632	2.443	0.435	3,870**	1,472	0,003	0,014	0,027	0,382
	(0.827)	(0.151)	(0.910)	(0.427)	(0.118)	(0.510)	(0,049)	(0,225)	(0,958)	(0,907)	(0,869)	(0,536)
Iran	0.486	3.531*	2.746*	0.429	0.446	1.863	0,830	2,95*	2,140	0,215	0,876	3,645*
	(0.486)	(0.060)	(0.097)	(0.512)	(0.504)	(0.172)	(0,362)	(0,086)	(0,143)	(0,643)	(0,349)	(0,056)
Israel	1.584	0.017	1.525	0.019	0.057	1.541	2,102	0,906	6,314**	0,090	0,184	0,010
	(0.208)	(0.895)	(0.217)	(0.891)	(0.812)	(0.214)	(0,147)	(0,341)	(0,012)	(0,764)	(0,668)	(0,921)
Japan	7.398***	0.768	0.007	4.509**	0.130	0.872	0,041	0,237	0,006	0,047	3,019*	0,782
	(0.007)	(0.381)	(0.933)	(0.034)	(0.719)	(0.350)	(0,840)	(0,626)	(0,940)	(0,828)	(0,082)	(0,377)
Jordan	0.269	2.037	4.472**	0.600	4.197**	0.145	1,185	4,336**	1,016	0,077	1,944	4,315**
	(0.604)	(0.154)	(0.034)	(0.438)	(0.04)	(0.703)	(0,276)	(0,037)	(0,313)	(0,781)	(0,163)	(0,038)
Kazakhstan	3.980**	0.472	7.840***	0.324	1.996	1.101	0,613	0,107	1,503	19,32***	0,956	2,820*
	(0.046)	(0.492)	(0.005)	(0.569)	(0.158)	(0.294)	(0,433)	(0,743)	(0,220)	(0000)	(0,328)	(0,093)
Korea	24.250***	0.328	2.039	4.311**	3.588*	0.590	3,548*	0,216	0,422	3,124*	0,744	0,014
	(0.000)	(0.567)	(0.153)	(0.038)	(0.058)	(0.442)	(0,060)	(0,642)	(0,516)	(0,077)	(0,388)	(0,907)
Kyrgyz Rep.	4.963**	0.115	2.971*	1.096	1.240	4.218**	1,939	0,074	20,024***	0,053	8,924***	0,355
	(0.026)	(0.735)	(0.085)	(0.295)	(0.266)	(0.040)	(0,164)	(0,786)	(0000)	(0,818)	(0,003)	(0,551)
Lebanon	0.230	0.643	11.522***	4.842**	3.670*	0.010	8,752***	0,027	0,189	0,154	0,599	0,036
	(0.632)	(0.423)	(0.001)	(0.028)	(0.055)	(0.920)	(0,003)	(0,869)	(0,664)	(0,694)	(0,439)	(0,850)
Malaysia	0.030	0.086	2.044	0.251	1.333	0.630	0,001	3,729*	7,23***	2,513	1,422	0,002
	(0.863)	(0.769)	(0.153)	(0.616)	(0.248)	(0.427)	(0,976)	(0,053)	(0,007)	(0,113)	(0,233)	(0,962)
Pakistan	1.964	1.359	0.202	3.253*	8.904***	0.389	0,976	1,328	5,34**	0,963	0,318	0,283
	(0.161)	(0.244)	(0.653)	(0.071)	(0.003)	(0.533)	(0,323)	(0,249)	(0,021)	(0,326)	(0,573)	(0,595)
Philippines	0.808	1.341	0.002	1.073	1.096	1.056	0,370	2,151	0,372	0,295	2,070	3,154*
	(0.369)	(0.247)	(0.966)	(0.300)	(0.295)	(0.304)	(0,543)	(0,142)	(0,542)	(0,587)	(0,150)	(0,076)
Russian Federation	0.072	2.456	4.665**	3.959**	7.018***	3.452*	2,398	0,382	0,057	0,003	1,987	2,504
	(0.789)	(0.117)	(0.031)	(0.047)	(0.008)	(0.063)	(0,121)	(0,537)	(0,812)	(0,954)	(0,159)	(0,114)
Saudi Arabia	0.597	3.969**	1.363	0.044*	0.883	6.991***	2,510	2,473	10,09***	0,374	0,229	12,487***
	(0.440)	(0.046)	(0.243)	(0.833)	(0.347)	(0.008)	(0,113)	(0,116)	(0,001)	(0,541)	(0,632)	(0.000)
Singapore	0.004	4.857**	0.544	1.526	0.115	0.038	9,529***	6,898***	3,649*	2,695	0,886	2,659
	(0.950)	(0.028)	(0.461)	(0.217)	(0.735)	(0.846)	(0,002)	(0,009)	(0,056)	(0,101)	(0,347)	(0,103)
Thailand	12.660***	0.001	0.197	3.074*	2.041	0.048	0,059	2,365	11,347***	5,095**	1,064	0,100
	(0.000)	(0.972)	(0.657)	(0.080)	(0.153)	(0.827)	(0,809)	(0,124)	(0,001)	(0,024)	(0,302)	(0,752)
Turkey	0.416	0.158	0.066	0.262	0.290	1.954	0,600	0,054	0,236	0,397	0.000	0,115
	(0.519)	(0.691)	(0.797)	(0.609)	(0.591)	(0.162)	(0,439)	(0,815)	(0,627)	(0,529)	(0,996)	(0,735)
United Arab Emirates	4.844**	0.599	0.475	0.236	3.338*	2.775*	0,032	0,308	2,272	3,135*	0,026	11,261***
	(0.028)	(0.439)	(0.491)	(0.627)	(0.068)	(0.096)	(0,859)	(0,579)	(0,132)	(0,077)	(0,872)	(0,001)
Uzbekistan	0.295	0.024	6.593**	0.379	4.500**	0.803	1,208	1,475	0,273	0,913	2,46	0,161
	(0.587	(0.878)	(0.010)	(0.538)	(0.034)	(0.370)	(0,272)	(0,225)	(0,601)	(0,339)	(0,117)	(0,688)
Vietnam	1.606	0.425	5.241**	0.329	2.691	0.402	0,667	2,386	1,881	0,127	0,025	0,041
	(0.205)	(0.514)	(0.022)	(0.566)	(0.101)	(0.526)	(0,414)	(0,122)	(0,170)	(0,722)	(0,876)	(0,840)

Tablo 3.6. Dumitrescu and Hurlin (2012) Panel Granger Causality Test Results by Country

Dumitrescu and Hurlin (2012) Panel Granger Causality Test Results (heterogeneous results) provide evidence of a causal relationship between GDP and FIND across countries. Some of these relationships are bilateral (Japan, the Republic of Korea and Thailand) while others are unilateral. Among the countries with unilateral relationships, the ones from GDP to FIND are

United Arab Emirates, Kazakhstan, Kyrgyz Republic and Bangladesh, while the unidirectional relationship from FIND to GDP is observed in Lebanon, Pakistan and Russian Federation. It is noteworthy that Japan and the Republic of Korea, which are among the most developed or high-income Asian countries, show bi-directional causality between GDP and FIND.

4. CONCLUSION

The aim of this study is to explain the causality relationship between financial development and economic growth for selected Asian countries. The analysis of the study is carried out using panel data techniques for the period 2000-2021. Dumitrescu and Hurlin (2012) test is used to determine the direction of the relationship between financial development and growth. First, the cross-section dependence test and the cross-section augmented Dickey-Fuller (CADF) unit root test, one of the second-generation unit root tests, were used. Since heterogeneous results were obtained from the homogeneity tests, the causality test was conducted accordingly. Panel Granger Causality test was selected for causality tests. All the results obtained are evaluated on a country basis. The results of the analysis reveal the existence of a complex and multidirectional relationship between financial development and economic growth in line with the general assessment of the literature. While early studies in the literature analysis supported a supply-side relationship, recent studies have shown that this relationship may be reciprocal, non-linear and that the growth effect on the country changes before and after a certain level of financial development. Without taking into account the different internal and external dynamics of countries and their different levels of socio-economic development, it would be misleading to prescribe a generalized relationship between financial development and economic growth with a rigid determinism. Our results recognize the dynamic interaction between financial development and economic growth in selected Asian countries over the period under review. Therefore, the results are evaluated on a country-by-country basis without any country grouping.

In line with the study objective, Dumitrescu and Hurlin (2012) Panel Granger Causality Test Results provide evidence of a causal relationship between GDP and financial development across countries. When the country-by-country results are analyzed, evidence of a bidirectional relationship is found for Japan, the Republic of Korea and Thailand. Among these countries, Japan and the Republic of Korea are among the prominent Asian countries with their export-oriented economies, competing in world markets by producing in the manufacturing and technology sectors, and rapid progress in the field of Fintech. A general assessment from a country-specific perspective is that the basis of the bidirectional causality between financial development and economic growth is that financial development provides efficiency and productivity in all factors of production, including human resources, and contributes positively to economic growth in areas such as leading technological development and development opportunities required by global markets and risk management. A well-developed financial sector that produces high technology can facilitate investment in the infrastructure, technology and human capital necessary for sustainable economic growth. Economic growth can also contribute to the development of financial markets and institutions. As economies grow, demand for financial services such as banking, insurance and investment products increases. This increased demand can stimulate innovation and growth in the financial sector. Higher levels of income and wealth generated by economic growth can lead to more savings and investment, providing a larger pool of funds for financial intermediaries to lend to. The common

characteristics of the countries where bidirectional causality is found, as well as the literature, show how the development of the financial system catalyzes economic growth.

The bidirectional causality between financial development and growth underlines that both of these areas can be powerful policy instruments. Policymakers aiming for sustainable economic growth should be aware of the importance of legal and systemic infrastructure arrangements to improve the financial system, technological investments, various incentive policies to expand access to the financial system and financial literacy education as part of financial inclusion measures. Ensuring that countries' economic systems and legal arrangements are such that they enhance the quality of institutions will enable the system to function as a confidence-building factor for financial institutions. This mutually reinforcing causality between financial development and economic growth will play an important role in the development of countries when supported by the right economic policies. By recognizing the interdependence of financial development and economic growth, governments and policymakers can develop deliberate strategies to promote sustainable and inclusive growth.

The countries that prove the existence of the supply-side hypothesis in the results of the study are Lebanon, Pakistan and the Russian Federation. The country-specific findings that support the existence of the supply-side hypothesis are Lebanon's being an important banking center, Pakistan's demand for financial services directly related to its young and growing population, and Russia's economy based on energy exports. The countries that support the existence of the demand-side relationship are the United Arab Emirates, Kazakhstan, the Kyrgyz Republic and Bangladesh. Overall, the relationship between financial development and economic growth in Asian countries is complex and dynamic, characterized by interactions and feedback effects. Challenges in some Asian countries, such as disruptions in economic and financial systems, political uncertainties or geopolitical tensions, prevented the accurate capture of information on some Asian countries during the study process and therefore some countries could not be included in the study. In conclusion, the link between economics and finance is becoming increasingly important for global economies. When determining development policies for sustainable and inclusive economic growth, it should be carefully considered that both variables affect each other.

The structure of Asian countries differs significantly from each other in economic and social terms. These countries can be divided into developing, underdeveloped and developed economies, as well as transition economies, closed economies, high-tech, fast-growing and industrialized economies. Future studies may focus on these differences in Asian countries. In addition, the investor profile in financial markets in Asian countries between developed and less developed countries can be analyzed in terms of risk perception, financial literacy, trust in institutions and expectations of economic stability.

APPENDIX

Studies Supporting the Supply Frontier Hypothesis			
Study	**Period**	**Country**	**Method**
Jung (2017)	1961-2013	South Korea	VECM and Ganger Causality
Ofori-Abebrese, et al (2017)	1970-2013	GANA	ARDL and Granger Causality
Agheli and Hadian (2017)	1980-2013	Middle East Countries	SUR Method
Ağca and Pata (2018)	1982-2016	Turkey	ARDL and Granger Causality
Bist and Read (2018)	1995-2014	16 African Countries	Pedroni, Panel DOLS and Panel FMOLS
Erkişi (2018)	1996-2016	BRICS-T	Panel Data
Guru and Yadav (2018)	1993-2014	BRICS	Panel Data GMM
Ruiz (2018)	1991-2014	116 Countries	Panel Data
Younsi and Bechtini (2018)	1995-2015	BRICS	Panel Data
Paun et al. (2019)	2006-2015	40 Countries	Panel Data
Erataş Sönmez and Sağlam (2019)	1980-2016	Turkey and 8 Selected Countries	Panel Data
Fuinhas et al. (2019)	1990-2015	10 EU Member States	Panel Data
Tadesse and Abafia (2019)	1975-2016	Federal Democratic Republic of Ethiopia	VECM and Ganger Causality
Krinichansky ve Sergi (2019)	2008-2015	75 Russian Regions	Panel Data
Cizo et al. (2020)	1995-2017	EU Countries	Time Series, Pearson
Eyüboğlu and Akan (2020)	1980-2016	Turkey	RALS-EG Cointegration Tests
Ustarz ve Fanta (2021)	1990-2018	Sub-Saharan African	Panel Data GMM
Tuncay and Oruç (2021)	2010-2018	Turkey and 9 Selected Countries	FGLS
Alasgarlı and Sekmen (2021)	1998-2018	20 Asian Countries	Panel VAR Model
Jammeh (2022)	1967-2020	Gambia	Panel VAR Model
Oroud et al. (2023)	1980-2020	Jordan	ADRL ve ECM
Pradhan et al. (2023)	20E05-2022	79 Lower İncome Countries	VECM and Granger Causality
Sohail ve Li (2023)	1970-2019	Pakistan	NARDL Approach
Sghaier (2023)	1991-2015	Tunisia, Morocco, Algeria, and Egypt	Panel Data and GM
Saidi (2023)	1990-2019	Emerging Nations	FMOLS and DOLS, VECM
Asante et al. (2023)	2000-2019	29 Sub-Saharan Africa (SSA) Countries	Panel Veri - GMM

Bekele and Degu (2023)	2010-2017	25 Sub-Saharan Africa (SSA) Countries	Panel Veri - GMM
Chinoda ve Kapingura (2024)	2014-2020	Sub Saharan Africa	Panel Veri - GMM
Xu Fengju and Wubishet (2024)	1995-2021	18 East African Countries	Panel Veri - GMM
Studies Supporting the Demand-Side Hypothesis			
Study	Period	Country	Method
Tunalı and Onuk (2017)	2003-2015	Turkey	ARDL and Granger Causality
Altıner and Bozkurt (2018)	1980-2016	N11 Countries	Panel Data
Helhel (2018)	2002-2016	Fragile Five	Time Series
Zengin (2023)	1980-2020	Turkey	Time Series
Bayraktar et al. (2023)	Different Periods	Emerging Markets and Middle-income Economies	Dumitrescu-Hurlin
Studies Supporting the Mutual Interaction View			
Study	**Period**	**Country**	**Method**
Pradhan et al. (2018)	1961-2014	49 EU Countries	Panel Data
Alom (2018)	1985-2014	South Asian countries	VAR – VDCs- FMOLS
Yağlı and Topçu (2019)	2005-2015	G7 Countries	VECM
Ağazade and Karakaya (2019)	2001-2016	34 OECD Countries	Panel Data
Ergür and Özek (2020)	1988-2017	Brazil, Russia, India, China, South Africa and Turkey	Panel Data
Song et al. (2021)	2002-2016	142 Countries	FMOLS-VECM
Nguyen et al. (2022)	1980-2020	22 Developing Countries	DCCE
Studies Supporting the Unrelatedness View			
Study	**Period**	**Country**	**Method**
Munyanyi (2017)	1965-2015	Zimbabwe	Granger Causality
Guptha and Rao (2018)	1996-2016	BRICS	Toda-Yamamoto
Bölükoğlu (2021)	1995-2018	100 Countries	Panel Threshold Regression
Studies Supporting the Negative Relationship View			
Study	**Period**	**Country**	**Method**
Quyang and Li (2018)	1996-2015	30 China Region	GMM Panel VAR
Peprah et al. (2019)	1984-2015	GANA	ARDL and Granger Causality

Asteriou and Spanos (2019)	1990-2016	26 European Union Countries	Panel Data
Wang, Y. et al (2024)	1995-2020	12 Asian Countries	DCCE

Table 1. Literature Summary

REFERENCES

Ağazade, S. and A. Karakaya (2019). Financial Development Ans Economic Growth: A Panel Causality Analysis for OECD Countries. *Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty,*6 (2), 471-484.

Ağca, A. and U.K. Pata (2018). Cointegration and Causality Relationship Between Financial Development and Economic Growth: The Case of Turkey. *Osmaniye Korkut Ata University Journal of Faculty of Economics and Administrative Sciences,* 2(2),115-128.

Agheli, L. and G. Hadian (2017). Financial Development, Commercial Development, And Economic Growth in The Selected Emerging and The Middle Eastern Countries. *International Journal of Economics and Financial Issues,*7 (3),362 -370.

Akyüz, Y. (1993). Financial Liberalization: The Key Issues. *United Nations Conference on Trade and Development Discussion Papers*, No:56, United Nations Conference on Trade and Development, Geneva.

Alasgarlı, F. and T. Sekmen (2021). The Relationship Between Financial Development, Economic Growth and Inflation in Asian Countries. *Journal of Politics, Economics and Management Research,* 9(2) 19-48.

Alom, K. (2018). Financial Development and Economic Growth Dynamics in South Asian Region. *The Journal of Developing Areas,* 52(4), 47–66.

Alper, C.E. and Z. Önis (2001). Financial Globalization, Democracy Deficit and Persistent Crises in Emerging Markets: The Turkish Experience After the Liberalization of Capital Movements. *Doğu Batı Journal*, 17 (4), 203-225.

Altıner, A. and F. Bozkurt (2018). Financial Development and Economic Growth in N11 Countries: A Panel Data Analysis. *International Journal of Economics, Business and Politics,* 2 (2), 197-212.

Arrow, K. (1962). Economic Welfare and the Allocation of Resources for Invention A chapter in The Rate and Direction of Inventive Activity. *Economic and Social Factors*, 609-626 from National Bureau of Economic Research, Inc.

Asante, G. N., P.O. Takyi and G. Mensah (2023). The Impact of Financial Development on Economic Growth in Sub-Saharan Africa. Does Institutional Quality Matter? *Development Studies Research,* 10(1), 2156904.

Aslan, O. and H.L. Korap (2006). The Relationship Between Financial Development and Economic Growth in Turkey. *Muğla University Journal of Social Sciences*, 3(17), 1-20.

Aslan, O. and İ. Küçükaksoy (2006). The Relationship Between Financial Development and Economic Growth: An Econometric Application on The Turkish Economy. *İstanbul University Journal of Econometrics and Statistics,* 4,12-28.

Asteriou, D. and K. Spanos (2018). The Relationship Between Financial Development and Economic Growth During the Recent Crisis: Evidence from the EU. *Finance Research Letters,* 28, 238-245.

Aydın, Y. (2019). Analyzing the Relationship Between Financial Development and Economic Growth for Fragile Five Countries. *Journal of Economics, Politics and Finance Research,* 4(1),37-49.

Bağcı, A. (2017). *Savings, Financial Development and Growth Relationship: The Case of Turkish Economy* (Doctoral Dissertation). Gazi University, Institute of Social Sciences, Ankara, Turkey.

Bagehot, W. (1873). Lombard Street a Description of the Money Market. *E.P. Dutton and Company*, (Reprint 1920), New York.

Bakari, S. (2024). Unlocking Prosperity: Fresh Insights into Economic Growth Through Financial Development, Domestic Investment, And Corruption Trends in LAC Countries. *Munich Personal RePEc Archive, MPRA Paper No. 120411*. Online at https://mpra. ub. uni-muenchen. de/120411.

Bayraktar Y., A. Özyılmaz , M. Toprak , M.F. Olgun, E. Işık. (2023). The Role of Institutional Quality in The Relationship Between Financial Development and Economic Growth: Emerging Markets and Middle-Income Economies. *Borsa ˙ Istanbul Review*,23(6), 1303-1321.

Bekele, T. D. and A.A. Degu. (2023). The Effect of Financial Sector Development on Economic Growth of Selected Sub-Saharan Africa Countries. *International Journal of Finance and Economics*, 28(3), 2834-2842.

Bencivenga, V.R. and B. D. Smith (1991). Financial Intermediation and Endogenous Growth. *Review of Economic Studies*, 58(2), 195-209

Bist, J. P. and R. Read (2018). Financial Development and Economic Growth: Evidence from A Panel Of 16 African and Non-African Low-Income Countries. *Cogent Economics and Finance,* 6(1), 1449780.

Bölükoğlu, A. (2021). The Non-Linear Relationship between Financial Development and Economic Growth: New Findings with The IMF Financial Development Index. *Journal of Economics, Politics and Finance Research,* 6(2), 385-402.

Bozoklu, S. and V. Yılancı (2013). The Causality Relationship Between Financial Development and Economic Growth: An Analysis for Emerging Economies. *Journal of Dokuz Eylül University Faculty of Economics and Administrative Sciences,* 28(2), 161-187.

Çeştepe, H. and H. Tatar (2022). The Relationship Between Financial Development and Economic Growth: Asymmetric Panel Causality Analysis for Fragile Five Countries. *Mehmet Akif Ersoy University Journal of Economics and Business Administration,* 9(1), 542-560.

Chang, Y. (2004). Bootstrap Unit Root Tests İn Panels with Cross-Sectional Dependency. *Journal of Econometrics,* 120 (2), 263-293.

Chinoda, T. and F.M. Kapingura (2024). Digital Financial Inclusion and Economic Growth in Sub-Saharan Africa: The Role of Institutions and Governance. *African Journal of Economic and Management Studies,* 15(1), 15-30.

Cicioğlu, S. (2009). *Financial Depth and Dominance Analysis in The Turkish Economy in The Process of Financial Liberalization* (Doctoral Dissertation). Marmara University, Institute of Social Sciences, Istanbul, Turkey.

Cizo, E., O. Lavrinenko and S. Ignatjeva (2020). Analysis of The Relationship Between Financial Development and Economic Growth in The EU Countries. *Insights into Regional Development,* 2(3), 645-660.

Dobnik, F. (2011). Energy Consumption and Economic Growth Revisited: Structural Breaks and Cross-Section Dependence. *RUHR Economic Papers*, 44801.

Domar, E. (1946). Capital Expansion, Rate of Growth, and Employment. *Econometrica*, 14(2), 137–47.

Dumitrescu, E.I. and C. Hurlin (2012). Testing for Granger Non-Causality in Heterogeneous Panels. *Economic Modelling,* 29(4), 1450-1460.

Erataş-Sönmez, F. and Y. Saglam (2019). Economic Growth for Developing Countries: Panel Causality Analysis. *Socioeconomics,* 27(42), 87 106.

Ergür, H.O. and Y. Özek (2020). The Effect of Financial Development on Economic Growth In BRICS-T Countries. *Kahramanmaras Sütçü İmam University Journal of Social Sciences,* 17 (1), 343-357.

Erkişi, K. (2018). Financial Development and Economic Growth in BRICS Countries and Turkey: A Panel Data Analysis. *Istanbul Gelişim University Journal of Social Sciences,* 5 (2), 1-17.

Eyüboğlu, K. and K. Akan (2020). The Relationship Between Financial Development and Economic Growth in Turkey: Rals-Eg Cointegration Test. *Afyon Kocatepe University Journal of Social Sciences,* 22(4), 974-988.

Fuinhas, J.A., D.M. Filipe and M. Belucio (2019). The Nexus Between Financial Development and Economic Growth: Evidence from European Countries. *The Journal of Economics Studies and Research*,1-20.

Fry, M. (1978). Money and Capital or Financial Deepening in Economic Development? *Journal of Money, Credit and Banking* 10(2), 464 - 475.

Fry, M. (1988). *Money, Interest and Banking in Economic Development*. John Hopkins University Press, London.

Gülay, E. and J. Cowley (2020). Revisiting the Impact of Financial Development on Economic Growth: The Case of Turkey. *Global Business and Economics Review,* 22(4), 323-350.

Guptha, K. and R. Rao (2018). The Casual Relationship Between Financial Development and Economic Growth: An Experience with BRICS Economies. *Journal of Social and Economic Development,* 20, 308-326.

Gupta, K. L. (1984). *Finance and Economic Growth in Developing Countries*. Dover, N.H, Croom Helm, London

Guru, B. K. and I.S. Yadav (2018). Financial Development and Economic Growth: Panel Evidence From BRICS. *Journal of Economics, Finance and Administrative Science,* 24(47), 113-126.

Goldsmith, R. (1969). *Financial Structure and Development*, New Haven: Yale University Press.

Has, H. (2007). *Control of Speculative Capital Movements and Policy Recommendations for Turkey.* Capital Markets Board Auditing Department Qualification Study, Istanbul.

Harrod, R. (1936). *The Trade Cycle: An Essay*. Oxford University Press.

Helhel, Y. (2018). Financial Development and Economic Growth Relationship: An Analysis with Credit Based Financial Index. *Business and Economics Research Journal,* 9(4), 761-771.

Hicks, J. (1969) A Theory of Economic History. *Oxford Clarendon Press.*

Jammeh, I. Y. (2022). The Relationship Between Domestic Credit, Financial Development and Economic Growth in The Gambia. *International Journal of Social Sciences Perspectives*, 10(2), 43-60.

Jung, W., S. (1986). Financial Development and Economic Growth International Evidence. *Economic Development and Cultural Change*, 34, 336-346.

Jung, S. (2017). Financial Development and Economic Growth: Evidence from South Korea Between 1961 and 2013. *International Journal of Management Economics and Social Sciences,* 6(2), 89-106. http://hdl.handle.net/10419/168439 (25.02.2024).

Kar, M., and M.A. Kara (2001). Financial Integration and Capital Fluidity: The Case of Turkey. *Journal of Economics Business and Finance,* 16(180), 62-71.

Kar, M., and T. Seyhan (2002). A Critical Survey of The Empirical Studies on Financial Liberalization in Turkey. *Gaziantep University Journal of Social Sciences,* 5(1), 29-45.

Kar, M., Ş. Nazlıoğlu and H. Ağır (2011). Financial Development and Economic Growth Nexus in The MENA Countries: Bootstrap Panel Granger Causality Analysis. *Economic Modelling,* 28, 685-693.

King, R. G., and R. Levine (1993). Finance and Growth: Schumpeter Might Be Right. *The Quarterly Journal of Economics*, 108(3), 717-737.

Konya, L. (2006). Exports and Growth: Granger Causality Analysis on OECD Countries with A Panel Data Approach. *Economic Modelling*. 23. 978–992.

Krinichansky, K.V. and B.S. Sergi, (2019). Financial Development and Economic Growth in Russia. *In Modeling Economic Growth in Contemporary Russia* (1-28).

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35, 690-702.

Lucas, R.E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics,* 22(1988), 3-42.

Lynch, D. (1996). Measuring Financial Sector Development: A Study of Selected Asia-Pacific Countries. The Developing Economies, 3(1996), 1-33.

McKinnon, R.I. (1973). *Money and capital in economic development.* 1st ed. Washington: The Brookings Institution.

Mollaahmetoğlu, E. and M.S. Toprak, (2017). The Impact of Global Capital Flows on Firms' Performance: Evidence from Turkey. *IGU Journal of Social Sciences, 4*(2), 1-16.

Munyanyi, M. E. (2017). The Dynamic Relationship Between Financial Development and Economic and Economic Growth: New Evidence From Zimbabwe. *Munich Personal RePEc Archive Paper* No. 80401,1-19. https://mpra.ub.uni-muenchen.de/80401

Nazlıoğlu, Ş. (2010). The Effect of Macroeconomic Policies on Agricultural Sector: A Comparison for Developed and Developing Countries. Unpublished PhD Thesis, Erciyes University, Institute of Social Sciences.

Nguyen, H.M., Q.T. Thuong Le, C. Minh Ho, T.C. Nguyen, and D. Hong Vo (2022). Does Financial Development Matter for Economic Growth in The Emerging Markets? *Borsa Istanbul Review,* 22(4),688-698.

Ofori-Abebresel, G., R.B. Pickson and B.J. Diabah (2017). Financial Development and Economic Growth: Additional Evidence from Ghana. *Modern Economy,* 8(2), 282-297.

Onur, S. (2005). The Relationship Between Financial Liberalization and GNP Growth. *ZKU Journal of Social Sciences*, 1(1), 127-152.

Oroud, Y., H.A. Almahadin, M. Alkhazaleh and B. Shneikat (2023). Evidence from An Emerging Market Economy on The Dynamic Connection Between Financial Development and Economic Growth. *Research in Globalization, 6,* 100124.

Paun, C. V., R.C. Musetescu, V.M. Topan and C.D. Danuletiu (2019). The Impact of Financial Sector Development and Sophistication on Sustainable Economic Growth. Sustainability, 11, 1713.

Patrick, H.T. (1966). Financial Development and Economic Growth in Underdeveloped Countries. *Economic Development and Cultural Change,* 14(2), 174-189.

Peprah, J.A., I.K. Ofori and A.N. Asomani (2019). Financial Development, Remittances and Economic Growth: A Threshold Analysis. *Cogent Economics and Finance,* 7(1), 1-20.

Pesaran M. H. (2004). General Diagnostic Tests for Cross Section Dependence in Panels. *Cambridge Working Papers in Economics* No. 0435. Faculty of Economics. Cambridge, MA.

Pesaran M. H. (2006). Estimation and Inference in Large Heterogeneous Panels with A Multifactor Error Structure. *Econometrics* 74: 967-1012.

Pesaran, M.H. and T. Yamagata (2008). Testing Slope Homogeneity in Large Panels. *Journal of Econometrics,* 142(1), 50-93.

Poghosyan, T. (2022). Financial Development and Growth in The Caucasus and Central Asia. *IMF Working Paper* 22(134).

Pradhan, R.P., M.B. Arvin and S. Bahmani (2018). Are Innovation and Financial Development Causative Factors in Economic Growth? Evidence from A Panel Granger Causality Test. *Technological Forecasting and Social Change,* 132(1), 130-142.

Pradhan, R.P., M.S. Nair, M.B. Arvin, and J.H. Hall(2023). Institutional Quality, Financial Development And Sustainable Economic Growth Among Lower İncome Countries. *In Natural Resources Forum,* 47 (3), 435-483.

Quyang, Y. and P. Li (2018). On the Nexus of Financial Development, Economic Growth, And Energy Consumption in China: New Perspective from A GMM Panel VAR Approach. *Energy Economics,* 71 (1), 238-252.

Robinson, J. (1952). *The Generalization of the General Theory*. The Rate of interest and other essays (67–142). MacMillan Publishing Company, London.

Romer, P. M. (1986). Increasing Returns and Long Run Growth. *Journal of Political Economy*, 94, 1002–37.

Ruiz, J.L. (2018). Financial Development, Institutional Investors, And Economic Growth. *International Review of Economics and Finance*, 54, 218-224.

Saidi, K. (2023). Does Financial Development and Renewable Energy Matter for Economic Development? A Study of Emerging Economies. *Journal of the Knowledge Economy*, 1-17.

Schumpeter, J. A. (1965). Economic Theory and Entrepreneurial History. in: *Aitken HG*, ed. Explorations in enterprise. Harvard University Press, Cambridge, MA

Schumpeter, J. A. (1912). *The Theory of Economic Development*. Cambridge: Harvard University Press.

Sghaier, M.I. (2023). Trade Openness, Financial Development and Economic Growth in North African Countries. *International Journal of Finance and Economics*, 28(2), 1729-1740.

Sharma, S.K. (2019). Financial Development and Economic Growth in Selected Asian Economies: A Dynamic Panel ARDL Test. *Contemporary Economics*, 14(2), 201-218.

Shaw, E.S. (1973). *Financial Deepening in Economic Development* (1st ed.). New York: Oxford University Pres.

Sohail, H.M. and Z. Li (2023). Nexus Among Foreign Direct Investment, Domestic Investment, Financial Development and Economic Growth: A NARDL Approach in Pakistan. International Journal of Economics and Business Research (IJEBR), (25)2.

Song, C.Q., C.P. Chang and Q. Gong (2021). Economic Growth, Corruption, And Financial Development: *Global Evidence. Economic Modelling*, 94, 822-830.

Solow, R.M. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*,70(1), 65-94.

Stern, N. (1989). The Economics of Development: A Survey. *Economic Journal*, 99, 597–685.

Tadesse, T. and J. Abafia (2019). The Causality Between Financial Development and Economic Growth in Ethiopia: Supply Leading Vs Demand Following Hypothesis. *Journal of Economics and Financial Analysis, 3*(1), 87-115.

Tunalı, H. and P. Onuk (2017). The Causality Relationship Between Financial Development and Economic Growth: The Case of Turkey. *Journal of Economic Policy Research,* 4(1), 1-15.

Tuncay, O. and D. Oruç (2021). The Relationship Between Financial Development and Economic Growth in Developing Economies. *Journal of Human and Social Sciences Research,*10 (3), 2111-2128. http://www.itobiad.com/tr/pub/issue/64619/890302 (20.02.2024).

Turgut, E. and O. Uçan (2024). Validity of Purchasing Power Parity: Example of E7 Countries (1992-2022). *Academic Review of Economics and Administrative Sciences,* 17(2), 343–356.

Ustarz, Y. and A.B. Fanta (2021). Financial Development and Economic Growth in Sub-Saharan Africa: A Sectoral Perspective. *Cogent Economics and Finance,* 9(1), 1934976.

Wang, Y., N.S. Mazlan, W.A.S.W. Ngah, M. Faheem, Y. Liang (2024). Financial Development and Economic Growth in Asian Countries: Evidence from The DCCE Approach. *Eurasia Business and Economics Society*, 14(2), 397-420.

Westerlund, J. (2007). Testing for Error Correction İn Panel Data. Oxford Bulletin of Economics and Statistics, 69(6), 709-748.

Wijnbergen, S.V. (1983). Interest Rate Management in Ldc's. Journal of Monetary Economics 12(3), 433-452.

Xu, F. and A. Wubishet (2024). Analysis of The Impacts of Financial Development on Economic Growth in East Africa: How Do the Institutional Qualities Matter? *Economic Analysis and Policy.* 82(C), 1177-1189.

Yağlı, İ. and E. Topçu (2019). The Causality Relationship Between Financial Development and Economic Growth: The Case of G7 Countries. *Afyon Kocatepe University Journal of Social Sciences,* 21(3), 888-898.

Younsi, M. and M. Bechtini (2018). Economic Growth, Financial Development and Income Inequality in BRICS Countries: Evidence from Panel Granger Causality Tests. *MPRA Paper* No. 85182, 1-16. https://mpra.ub.uni-muenchen.de/85182 (25.02.2024).

Zengin, B. (2023). The Effect of Financial Development on Economic Growth: An Analysis of The Turkish Economy Using Toda-Yamamoto Approach. *Journal of Business Research,* 15(3), 2331-2346.