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The Relationship between Financialization and Economic Growth: Evidence from ARDL Model for the Turkish Economy

Summary: While financialization has been widely discussed in the literature, Turkish economy-related literature is understudied. To our knowledge, there is no analysis of the link between financialization and economic growth in the Turkish economy. The present study is a very early attempt to measure financialization at the macroeconomic level for the Turkish economy using the ARDL model for 2002Q1-2016Q2. For the definition of financialization, the present paper uses the share of finance, insurance, and real estate sectors as of GDP at the macroeconomic level for the Turkish economy. The findings show a long-run relationship between financialization and economic growth; however, financialization negatively impacts the long-term growth of the Turkish economy.

Keywords: Financialization, Turkish economy, ARDL model, Economic growth.

JEL: E44, O11, O16.

The relationship between finance and economic growth has a controversial place in the economics literature. The relationship between finance and growth is positive, as established by the influential works of Raymond W. Goldsmith (1969), Ronald I. McKinnon (1973) and Edward S. Shaw (1973), and is empirically researched by Ross Levine (1997), Levine and Sara Zervos (1998), Robert Lensink (2001) and Alexandre Akimov, Albert Wijeweera, and Brian Dollery (2009). However, the potential negative effects of the increasing role of financial markets in national economies are also discussed in this literature in the context of financialization hypothesis.

For emerging markets, with the lack of financial deepening, the role of the financial system in economic growth can be linked with poor economic performance. In the literature on emerging markets, few studies address the financialization-economic growth relationship both in the short and long run. It is of great importance to investigate financialization for these countries, which have weak financial deepening and do not have complex high-level financial instruments like developed economies. In line with emerging markets, in this paper, the share of financial, insurance, and real estate as of GDP (FIRE/Y) is used for the financialization of the Turkish economy, first used in the Turkish economy-related financialization literature. Emerging markets economies have generally not completed financial liberalization and their financial markets

are generally state bank-led and dependent on the banking sector (Fırat Demir 2009a, b, c). In this framework, it is posited that addressing financialization for the Turkish economy, a critical emerging markets economy, can make a valuable contribution to this financialization literature.

The organization of this paper is as follows. In the second part, financialization in the Turkish economy after the 2001 financial crisis is summarized with a particular emphasis on financial deepening and banking sector development. The empirical approach with a literature review is given in the third part of this paper. This paper's fourth and last part gives a general conclusion with limitations.

1. Literature Review and Hypothesis Development

Financialization has been widely scrutinized since the Second World War due to the pace of the financial sector. In the early 1970s, Reaganomics policies in the US and Thatcherism in the UK led to a set of deregulation policies upon financial markets (see Thomas I. Palley 2007, 2016 for the role of deregulation on the financial markets, financial crises and financialization).

While there has been an extensive body of literature on financialization, there is no consensus on its definition. Gerald A. Epstein (2005, p. 2) defines financialization as follows:

"Financialization" refers to the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operations of the economy and its governing institutions, both at the national and international levels.

Another definition of financialization comes from Greta Krippner (2005). Krippner (2005) defines financialization as an increase in the financial sector's share in the economy. This study employs the share of Finance, Insurance, and Real Estate sectors of GDP as an indicator of financialization. Also, it uses a macroeconomic indicator for the empirical analysis between financialization and economic growth.

Krippner (2005) indicates an unambiguity for measuring financialization at the macroeconomics level. In the financialization literature, occasionally used macro-level financialization measures are given as follows (Epstein 2005; Krippner 2005; Englebert Stockhammer 2008):

- the share of financial, insurance, and real estate as of GDP,
- the credit given by the banking sector to the real sector as of GDP,
- the share of employment of finance, insurance, and real estate sectors in total employment,
- the share of financial income as of GDP,
- the stock market turnover rate.

Within the literature, Gerald Duménil and Dominique Levy (2004a, b), Stockhammer (2004), James Crotty (2005), Epstein and Arjun Jayadev (2005) and Krippner (2005) examine the economic consequences of financialization at the macroeconomic level and emphasize that they are negative. In this literature, Özgür Orhangazi (2008a, b) examines the impact of financialization on investment at both macroeconomic and microeconomic levels.

Claes Belfrage and Markus Kallifatides (2018) examine financialization within the framework of Sweden's finance-dominated growth strategy, which they call the New Swedish model, using aggregated indicators. Nicole Cerpa Vielma et al. (2019) examined financialization at the micro level within the framework of the US megabanks. Guglielmo Forges Davanzati, Andrea Pacella, and Angelo Salento (2019) conclude that financialization has a distorting effect on income distribution in Italy. Priya S. Gupta (2019) discusses financialization through an urban lens and argues that cities determine the overall structure of financialization; Eckhard Hein (2019) examines the relationship between financialization and macroeconomic regime for mature economies before and after the 2008 financial crisis and reveals the extent to which the crisis altered financialization through shifts in macroeconomic regimes. Annina Kaltenbrunner (2018) examines financialization by examining exchange rate determination for an important emerging market economy, such as Brazil, within the integration framework into international financial markets. In particular, the study concludes that financialization leads to significant changes in exchange rate determination.

Ewa Karwowski (2019) examines de-financialization by considering the role of the state. In this framework, she finds that the role of the state plays crucial role in shaping the general structure of financialization and de-financialization. Karsten Kohler, Alexander Guschanski, and Stockhammer (2019) examined the effect of financialization on the wage share for advanced economies. Their empirical results show that the impact of financial liberalization and financial payments of non-financial corporations on the wage share is negative for these economies. Riccardo Pariboni and Pasquale Tridico (2019) find a negative relationship between financialization (which they call financial capitalism in their study) and labor share for OECD countries. Daniela Tori and Özlem Onaran (2017) examine the relationship between financialization and investments for UK non-financial firms. In this framework, they conclude that financialization crowds out investments.

Orhangazi (2019)¹ discusses the relationship between intangible assets and investment-profitability and links the absence of relationship between these investments and profitability with financialization through intangible assets.

As seen in the literature review above, it is observed that the literature has been expanding and different aspects of financialization have been addressed. However, most of the studies are linked with the developed countries, remaining incomplete and understudied (see Crotty and Kang-Kook Lee 2002; Demir 2009a, b; Thomas Kalinowski and Hyekyung Cho 2009; Joachim Becker et al. 2010; Leda Maria Paulani 2010; Eliane Araújo, Miguel Bruno, and Débora Pimentel 2012; Eugenia Correa, Gregorio Vidal, and Wesley Marshall 2013; K. Ali Akkemik and Sükrü Özgen 2014; Hwan-Joo Seo, Han Sung Kim, and Joonil Kim 2016).

Studies on emerging markets within this literature are particularly interesting. Araújo, Bruno, and Pimentel (2012) examined financialization within the framework of financial liberalization and trade liberalization for the Brazilian economy. In particular, they found that the structural changes in the Brazilian economy (based on

¹ See Leila E. Davis (2017) for the summary of the financialization literature.

trade and financial liberalization) created a distortion effect on macroeconomic variables, such as investment and consumption and that the financial sector developed within this framework. In other words, they found the real impact of financialization to be negative for the Brazilian economy.

Becker et al. (2010) show that while the characteristics and causes of financialization in Chile, Brazil, and Serbia are idiosyncratic, financialization distorts the overall macroeconomic (including microeconomic) equilibrium and leads to a crisis-prone economy.

Correa, Vidal, and Marshall (2013) argue that financialization in the Mexican economy has led to structural transformations and macroeconomic stability problems, resulting in an unstable accumulation regime.

Using micro-level firm data, Charilaos Mertzanis (2019) examined the relationship between financialization and financial constraints for 138 developing economies. Firstly, the study distinguishes between bank-based and market-based financing, examines financialization through financial depth and finds that financialization is an important proxy for external financing constraints for non-financial firms in these countries.

On the other hand, Crotty and Lee (2002) addressed financialization through financial liberalization for the South Korean economy. This study, which puts the International Monetary Fund (IMF) at the heart of the financial transformation in South Korea, underlines that financialization developed in the South Korean economy as a result of an IMF transformation together with low macroeconomic performance. Moreover, financialization literature focusing on the Turkish economy could be counted as newly developed and rare literature. Demir (2009a, b), İşıl Tellalbaşı (2011), Akkemik and Özgen (2014) and Halil Tunali and Onur Özdemir (2017) examine financialization for the Turkish economy. Tellalbaşı (2011) and Akkemik and Özgen (2014) examine financialization for the Turkish economy using micro-level data, and the data are primarily based on the firms that are publicly held in the Borsa İstanbul Stock Exchange (BIST).

Tellalbaşı (2011) investigated financialization in companies listed in Borsa İstanbul (BIST) included in the industrial sector index. The results obtained by Tellalbaşı confirm that financialization has the impact of crowding out investments.

Akkemik and Özgen (2014) tested the institutional and macroeconomic determinants of financialization through firm-level analysis at the micro-level. Akkemik and Özgen (2014) found that only firm-level size and macro-level economic growth determined financialization in their analysis of 41 publicly held companies between 1990 and 2002.

Demir (2009a) analyzed the financialization trend of companies in the Turkish manufacturing industry and listed them on the BIST compared to Mexican and Argentine manufacturing industry companies. Findings obtained by Demir (2009a) state that the financialization of Turkish manufacturing industry firms stems from macroeconomic uncertainty and the difference between the return on financial investments and real sector investments.

Demir (2009b) analyzed the financialization trend of companies in the Turkish manufacturing industry and listed on the BIST under different assumptions compared

to Mexican and Argentine manufacturing industry companies. According to Demir (2009b), the results obtained in the study, in which panel data analysis was performed by taking the share of financial assets in total assets, show that financialization has a different structure in developing countries. It has been concluded that companies in the Turkish manufacturing industry tend towards financial investments when macroeconomic uncertainty and instability decrease. At the same time, he concluded that the difference between financial and economic investments negatively correlates with financialization.

Akkemik and Özen (2014) state that financialization stems from macroeconomic uncertainty and macroeconomic conditions in developing countries. However, they state that institutional transformation and developments between investor-shareholders are primary determinants of financialization in developed countries and countries with financial market depth. Therefore, the present study examines the link between financialization and economic growth in Turkey's emerging market and offers a different insight into the relationship between finance and economic growth in Turkey's emerging market economy. The growing role of financial institutions in an economy is associated with the financialization argument in the current literature.

In this context, the Turkish economy has financial markets in which financial deepening is below the world level (see Demir 2009a; Ömer Tuğsal Doruk 2022); however, the FIRE sector has a fast-growing share in the national income after 2001 financial crisis. Thus, the 2001 financial crisis, which is counted as the worst financial crisis that the Turkish economy has experienced, is of essential importance for the financial markets in the Turkish economy. After the 2001 financial crisis, regulatory framework and regulatory agencies (especially the BRSA-Banking Regulatory and Supervisory Agency) were established to monitor the financial markets. Thus, the financial markets, especially the banking sector, were restructured under the Transition to Strong Economy Program. Therefore, financialization is examined in the post-2001 financial crisis due to the restructuring policies. While the financial development is low, and the capital market deepening is below the world average, even if the Turkish economy is among the first developing countries that initiate the financial liberalization (see Demir 2009a; Doruk 2022). Thus, the FIRE sector is linked with the Turkish economy's finance-growth nexus phenomena since the bank-based financial system is a leading catalyst for the finance-growth nexus.

The potential contribution of this paper is twofold. First, unlike the previous studies that examine the effect of financialization on the Turkish economy, the macroeconomic data are used, and the indicator of financialization is based on a macro level. Second, the relationship between finance and growth is widely analyzed in the current literature that focuses on the Turkish economy; however, in this paper, the share of finance, insurance and real estate sector as of GDP is used for measuring the financialization, which is a different indicator from previous studies. The financialization hypothesis is mainly linked to the negative effect of growing financial transactions and the share of finance on the GDP.

The theoretical underpinnings of this assumption are based on the Turkish economy's bank-based financial development framework. The financialization level

is directly linked with financial development and various financial instruments. Primary financialization instruments are considered savings, investment, and real estate earnings in the Turkish economy. All in all, it is seen that the financialization literature has quite different results in developing and developed countries. In the current literature, it is seen that financialization is linked with the Anglo-American economies (see Epstein 2005; Krippner 2005). Türkiye has no Anglo-American economy-based financialization approach as an emerging economy in which financial markets play an essential role in economic performance. However, the share of the FIRE sector as of GDP can be used to measure the financialization process of the Turkish economy. Since the Turkish economy initiated the financial liberalization process very early, in the early 1990s, the FIRE-based financialization measurement can be appropriate for the Turkish economy.

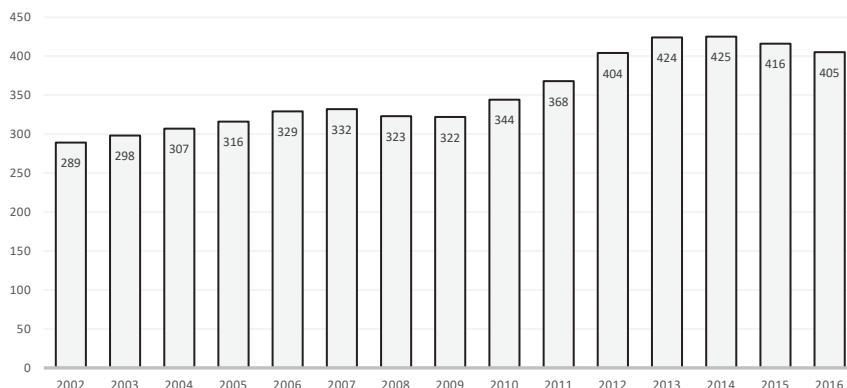
Krippner (2005) underlines that the share of FIRE in the GDP has been increasing since the early 1970s in the US economy due to changing patterns of accumulation and the financial sector. In the present study, Krippner's (2005) approach is used to measure the financialization progress of the Turkish economy. Krippner's paper concentrates on the US economy, while the present paper focuses on the developing/emerging economy. Therefore, the literature review above shows that the present paper contributes to the financialization literature using the emerging market-based analysis.

As frequently emphasized in the literature (e.g., Pariboni and Tridico 2019), financialization is an institutional process that emerges after a structural transformation. Before financial liberalization, the Turkish economy was a closed economy with an import substitution-oriented industrial policy until 1980, while it adopted an export-led growth policy after 1980 (A. Erinc Yeldan 2006). In this framework, Law No. 32 of 1989 brought about a financial transformation in Türkiye that liberalized capital mobility, while financial liberalization allowed the financial sector in the Turkish economy to develop in the state-led banking sector. The structural transformation experienced during this period brought about instabilities (Ziya Öniş 2010). This structural transformation, state-led banking sector and underdeveloped financial markets caused financial markets not to be at the desired level regarding access to finance and economic growth through financial liberalization (Doruk 2022). The period after the 2001 financial crisis is critical in this context.

For the Turkish economy, *Under the Transition to Strong Economy Program*, which was conducted right after the 2001 financial crisis, the banking sector was restructured, monitoring institutions were established, and many banks were merged. In that case, the banking and financial markets have had a more rigid structure than in the pre-2001 financial crisis period.

In Figure 1, the number of publicly held firms is depicted in 2002-2016. As seen in Figure 1, the number of publicly held firms increased in that period. The number of publicly held firms was around 400 firms, which is below the world level (see Central Bank of the Republic of Turkey 2021; World Bank 2021²).

² **World Bank.** 2021. World Development Indicators. <https://databank.worldbank.org/source/world-development-indicators> (accessed December 12, 2021).



Source: Central Bank of the Republic of Turkey (2021)³.

Figure 1 The Number of Publicly Held Firms in the Period 2002-2016

Table 1 Assets of the Financial Markets in the Turkish Economy (as of December 2016, Billion TL)

Sector	Amount	As of total (%)
Banking sector	2731	81
Portfolio management institutions	122	4
Unemployment insurance fund	119	4
Insurance firms	96	3
Real estate investment trusts	60	2
Retirement investment funds	61	2
Private retirement funds	53	2
Leasing firms	49	1
Factoring firms	33	1
Financing institutions	33	1
Intermediate institutions**	20	1
Reassurance firms	3	0
Venture capital*	1	0
Capital market investment partnerships	0	0
Total	3.382	100

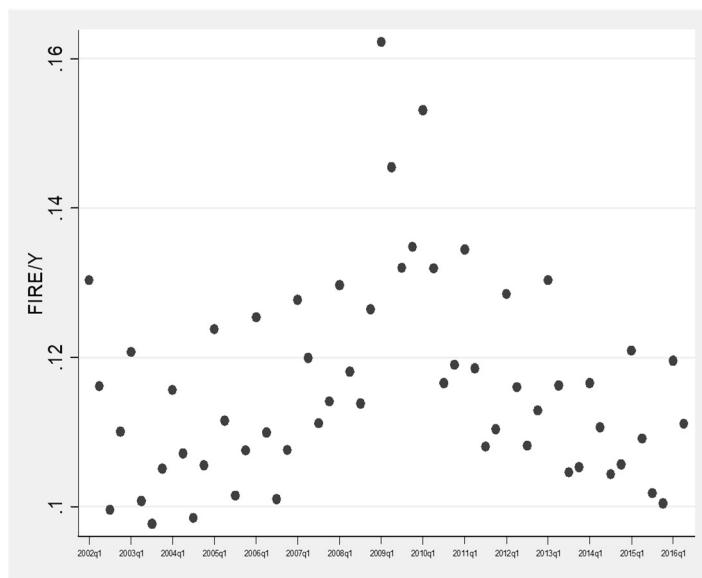
Notes: * There is no obligation for reporting the balance sheets or portfolio sheets of venture capital funds since 31st December 2013. ** As of September 2016.

Source: Bank Association of Turkey (BAT 2017, p. 19).

In Table 1, assets of the financial markets in the Turkish economy are depicted as of December 2016. The banking sector is the most significant share of the Turkish economy's financial markets is. As seen in Table 1, the most considerable portion of financial markets' assets belongs to the banking sector. This share is 2731 Billion \$, which is 81% of the total assets of financial markets in the Turkish economy.

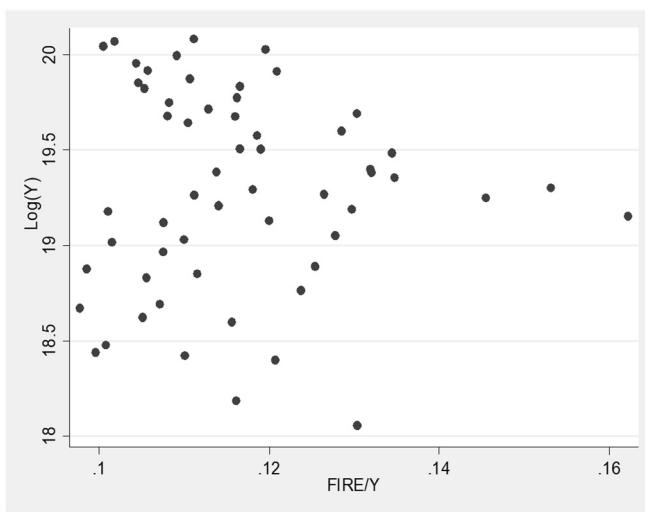
³ Central Bank of the Republic of Turkey. 2021. Electronic Data Delivery System. <https://evds2.tcmb.gov.tr/> (accessed March 04, 2021).

Figure 2 shows the development of the FIRE/Y in the period 2002Q1-2016Q2. The share of the FIRE in GDP had been increasing between 2002 and the pre-crisis period. FIRE/Y ratio is around 0.10 at 2016Q2.



Source: The author's estimation based on data from the Central Bank of the Republic of Turkey (2021).

Figure 2 The Development of FIRE/Y in That Period 2002Q1 and 2016Q2

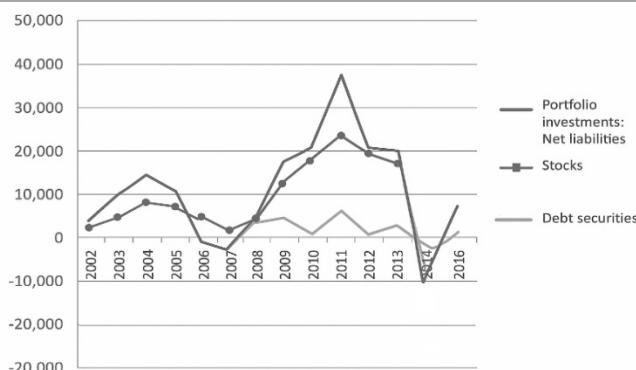


Source: The author's estimations are based on data from Central Bank of Republic of Turkey (2021).

Figure 3 The Relationship between FIRE/Y and GDP (in Logarithm), between 2002Q1 and 2016Q2, Real

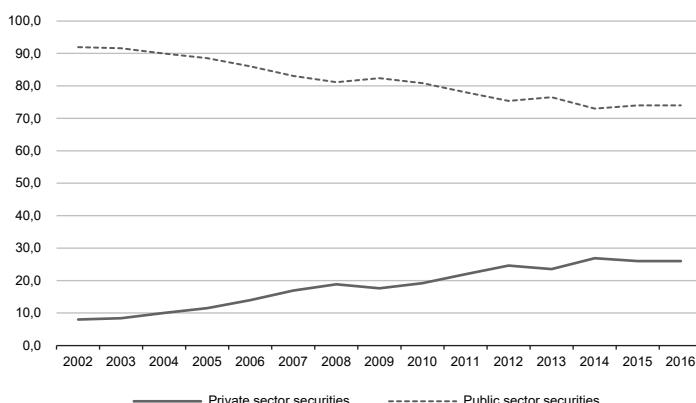
In Figure 3, the relationship between financialization and growth is depicted in 2002Q1-2016Q2. As seen in Figure 3, the relationship between financialization and growth was harmful in that period.

Portfolio investments increased in the period between 2002 and pre-crisis. The portfolio investments had been triggered by high-interest rates and a saving glut worldwide. As Orhangazi and Gökc̄er Özgür (2015) point out, the direction of portfolio inflows was from developed countries to developing countries due to the high-interest rate policy in the pre-2008 crisis era. However, the direction was reversed after the Quantity Easing Policies in the US. The effects of the QE policies on the portfolio inflows in the Turkish economy are seen in Figure 4. On the other hand, the most extensive portfolio inflows consisted of debt securities. The debt securities are mainly based on public bonds, as shown in Figure 4.



Source: Central Bank of the Republic of Turkey (2021).

Figure 4 Composition of Portfolio Investments in the Turkish Economy between 2002 and 2014, Million \$



Source: Central Bank of the Republic of Turkey (2021).

Figure 5 The Share of Public and Private Sector Securities in Total Securities, %

Figure 5 shows the share of public and private sector securities in total securities. As seen in Figure 5, public sector securities (especially public bonds) dominate the financial markets in the Turkish economy.

The Turkish economy's financialization is mainly based on the banking sector due to the lack of financial deepening and immature stock markets. The increase in the share of the finance, insurance and real estate sectors, which lead to financialization, in GDP causes a contraction in the production volume in the real sector in the long run and thus causes a negative development for economic growth. Researching financialization using FIRE may be a reasonable indicator for the Turkish economy, and thus FIRE/Y indicator is preferred in this paper. Thus, the following main hypothesis was expressed as follows.

H₁: The relationship between financialization and economic growth is negative in the long term.

2. Data and Methodology

In this paper, unlike the previous studies, the FIRE/Y indicator is used to measure financialization's effect on economic growth, following Krippner (2005) and Pariboni and Tridico (2019). FIRE/Y is estimated using CBRT EDDS (2018) data. Another variable is GDP in real terms (in 1998 prices). For robustness check, capital stock is estimated from investment data using the Perpetual Inventory Method (PIM), and the depreciation rate is taken as 7% as in Ensar Yılmaz (2015). All the variables are taken from the CBRT EDDS (2018) database. The start date is selected as 2002Q1, right after the 2001 financial crisis period is over, and the end date is chosen as 2016Q2 before the coup attempt in the Turkish economy.

2.1 CMR Unit Root Test with Structural Breaks

Jesus Clemente Lopez, Antonio Montañés, and Marcelo Reyes (1998) (CMR) with two structural breaks is utilized in the present study. CMR unit root test is based on the assumption that there are two endogenous structural breaks in the given period. There are two versions of the CMR test: Innovative Outlier (IO) and Additive Outlier (AO) versions. IO version of the CMR unit root test is preferred when the sudden shocks are considered. However, during the sample period of the present study, it is assumed that there is no sudden shock in the Turkish economy. The AO model is therefore used in the present study. AO model detrends the series, and then the final equation, which is given in Equation (1), is examined using the First Order Autoregressive AR(1) process:

$$y_t = \mu + d_1 DU_{1,t} + d_2 DU_{2,t} + \bar{y}_t, \quad (1)$$

where y is the outcome variable, DU denotes the dummy variable that takes 1 if $t > TB_i$ ($i = 1, 2$), otherwise 0. TB denotes the periods in which the mean of the variable is changed. 1 and 2 also denote the periods in which structural change is observed. Conventional unit root tests (ADF, PP, KPSS) take breakpoints as exogenous; thus, this assumption may lead to a false determination of the integration order of variables.

Thus, the CMR Unit Root test with structural break is used to determine the variables' integration level.

2.2 ARDL Model

The ARDL model is used to conduct the co-integration analysis between the variables. When the series are stationary at different levels, i.e., I(0) and I(1), except I(2), the ARDL model helps test the co-integration relationship between the variables. Therefore, the ARDL model allows the measurement of both short-term and long-term dynamic relationships of series that are stationary at different levels over time (except when the dependent variable is I(0) and all variables are I(2)). At the same time, endogeneity is considered a minor problem in the model because the residual is uncorrelated (Ahmad Zubaidi Baharumshah, Siti Hamizah Mohd, and A. Mansur M. Masih 2009).

The ARDL model is widely used in macroeconomic analysis based on time series and is still a valid econometric model (the work of Kleanthis Natsiopoulos and Nickolaos G. Tzeremes 2022 is an example).

The ARDL model is based on the Cobb-Douglas production function⁴, which is defined as follows:

$$Y = f(K, L, FIRE/Y), \text{ and then} \\ \text{Log}Y = \text{Log}K + \text{Log}L + \text{Log}FIRE/Y \quad (2)$$

Then the ARDL model is expressed in Equation (6) as follows:

$$\Delta \text{Log}Y_t = a_{0Y} + \sum_{i=1}^p b_{iY} \Delta \text{Log}Y_{t-i} + \sum_{i=1}^p c_{iY} \frac{\Delta \text{FIRE}}{Y_{t-i}} + \sigma_{1Y} Y_{t-1} + \frac{\sigma_{2Y} \text{FIRE}}{Y_{t-i}} \\ + \sum_{i=1}^p d_{iY} \Delta \text{Log}K_{t-i} + \sigma_{3Y} \text{Log}K_{t-1} + \sigma_{4Y} \text{Log}L_t + \varepsilon_{1t} \quad (3)$$

where Δ denotes the difference of the series, p denotes the lag length, and Y and FIRE/Y denote the real GDP and FIRE/Y, respectively. α and ε_{1t} denote the constant term and the random error term with zero mean and has no autocorrelation. ARDL model tests the null hypothesis as follows, $H_0: \sigma_{1Y} = \sigma_{2Y} = \sigma_{3Y} = \sigma_{4Y} = 0$, which shows there is no autocorrelation between series in the long term. The alternative hypothesis is $H_1: \sigma_{1Y} \neq 0, \sigma_{2Y} \neq 0, \sigma_{3Y} \neq 0, \sigma_{4Y} \neq 0$, and denotes the coefficients of the variables are different from zero, and there is a long-run relationship between variables in the long run (M. Hashem Pesaran, Yongcheol Shin, and Richard J. Smith 2001). Note that LogL is taken as exogenous since the population has grown exogenously.

The descriptive statistics of all the variables are given in Table 2. The average financialization as of GDP is around 11%, and its standard deviation is very low and around 1%.

⁴ The reason for using the Cobb-Douglas production function in this study is to avoid problems arising from omitted variable bias and to model production factors more conveniently.

Table 2 Descriptive Statistics

	Mean	Min.	Max.	Std.dev.
Log(Y)	16.94	16.40	17.37	0.27
FIRE/Y	0.11	0.09	0.16	0.01
Log(K)	18.09	17.65	18.54	0.27

Notes: $n = 58$ for all variables.

Source: Author's calculations.

The correlation analysis between the variables is given in Table 3. The correlation analysis shows a negative correlation between real GDP and FIRE/Y in the Turkish economy.

Table 3 Correlation Analysis

	Log(Y)	Log(K)
FIRE/Y	-0.23	0.09
Log(K)	0.92	-

Source: Author's calculations.

3. Findings

As discussed in the previous part of this paper, the CMR unit root test takes an endogenous structural break into the unit root test. To avoid the potential spurious regression problem, as Clive W. J. Granger and Paul Newbold (1974) point out, the unit root test is conducted to test the stationary level of the variables. The results of the CMR unit root test are depicted in Table 4.

Table 4 CMR Unit Root Test Results

Variable	Breakpoint 1	Breakpoint 2	T-test statistics	Critical value at 5% statistical significance	Model
FIRE/Y	2008Q3	2010Q3	-2.67	-5.49	AO
Log(Y)	2005Q3	2011Q4	-3.29	-5.49	AO
Log(K)	2007Q2	2013Q2	-3.28	-5.49	AO

Notes: Trimming is taken as %10.

Source: Author's calculations.

Thus, there is a need to test the co-integration relationship between variables. In Table 4, FIRE/Y, Log(K), and logY are found as I(1). While the series are stationary at different levels, the ARDL model is preferred for testing the co-integration relationship between the variables. In Table 5, ARDL model estimations are given.

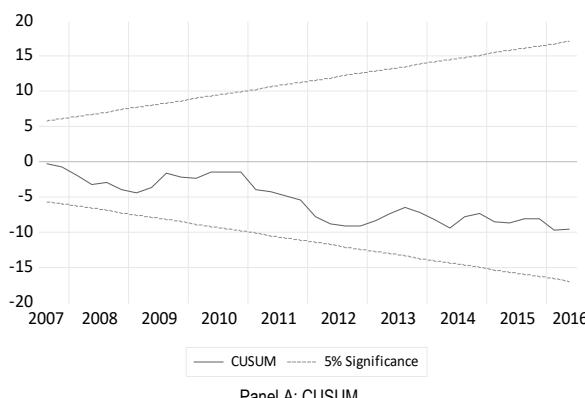
In Figure 6, the Cumulative Sum (CUSUM, henceforth) (Panel A) and Cumulative Sum of Squares (CUSUMSQ, henceforth) (Panel B) graphics are given. Figure 6 shows that there is no instability problem in the estimated model.

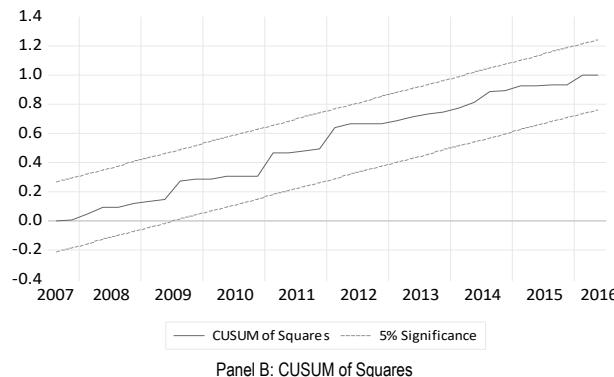
Table 5 The Results of the ARDL Model

	Coefficient	p-value
$\Delta(\text{Log}Y)_{t-1}$	-0.39	0.01
$\Delta(\text{Log}Y)_{t-2}$	0.57	0.00
$\Delta(\text{Log}Y)_{t-3}$	0.24	0.08
$\Delta(\text{Log}Y)_{t-4}$	0.68	0.00
$\Delta \text{Log}(\text{FIRE/Y})_t$	-0.55	0.00
$\Delta \text{Log}(\text{FIRE/Y})_{t-1}$	-0.02	0.84
$\Delta \text{Log}(\text{FIRE/Y})_{t-2}$	-0.16	0.06
$\Delta \text{Log}(\text{FIRE/Y})_{t-3}$	0.12	0.14
$\Delta \text{Log}(K)_t$	1.32	1.12
$\Delta \text{Log}(K)_{t-1}$	0.25	0.79
$\Delta \text{Log}(K)_{t-2}$	0.68	0.42
$\Delta \text{Log}(K)_{t-3}$	1.20	0.10
$\text{Log}(L)$	0.15	0.09
δ_{t-1}	-1.12	0.00
R^2	0.97	
Durbin-Watson Test Stats.	1.91	
Jarque-Berra Nor.	1.06	0.55
F statistics		0.00

Notes: All the estimations are conducted using heteroscedasticity and autocorrelation robust standard errors. Constant and trend are not reported.

Source: Author's calculations.





Source: Author's calculations.

Figure 6 CUSUM and CUSUMSQ Graphs of the Estimated Model

Table 6 F-bounds Test Results

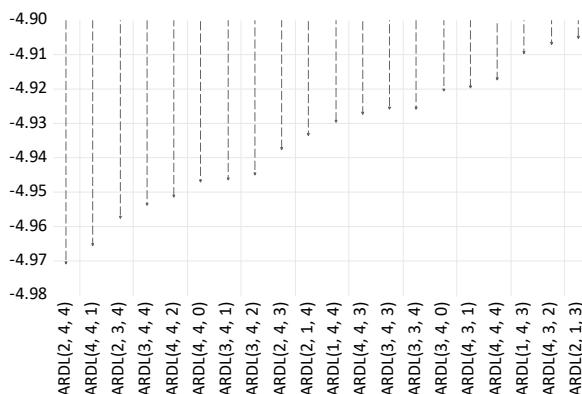
F test statistics: 9.90, k=2	5% CV	
	N=55	N=50
	5.19	5.24

Notes: The values for the asymptotic sample when $n = 1000$ for $I(1)$ are 5.85.

Source: Author's calculations.

Table 6 depicts the F-Bounds test results. The F-Bounds test results show a long-run relationship between financialization and economic growth in the Turkish economy. This relationship is negative and statistically significant at a 5% statistical significance level, according to the long-run coefficient between these variables in Table 7. In other words, financialization is an obstacle to economic growth. Figure 7 shows the model selection criterion for the estimated ARDL model.

Akaike Information Criteria (top 20 models)



Source: Author's calculations.

Figure 7 Model Selection Criterion

Table 7 Long Term Coefficients

Variable	Coefficient and p-value
Log(K)	0.17, 0.25
Log(FIRE/Y)	-0.15, 0.00

Notes: The constant term and trend are not reported.

Source: Author's calculations.

4. Robustness Check

For the robustness control of the ARDL model, labor is added as an endogenous variable. The obtained long-run coefficients are given in Table 8.

Table 8 Robustness Check Results: When Labor Is Added as an Endogenous Variable to the ARDL Model**Panel A:** Long Term Coefficients

Variable	Coefficient and p-value
Log(K)	0.06, 0.55
Log(FIRE/Y)	-0.15, 0.00
Log(L)	0.54, 0.00

Panel B: The F-test Results

F test statistics:	5% CV	
	N=54	N=50
14.17, k=3	4.31	4.36

Notes: The constant term and trend are not reported. The model is selected according to the diagnostic test results.

Source: Author's calculations.

Additional robustness checks are also applied. The lag length selection method is switched from the Akaike Information Criterion to the Schwarz Information Criterion. The findings from this robustness check are the same as in the primary model. For the sake of brevity, those robustness checks are not reported but can be requested from the author.

According to the findings from the ARDL model, the general inferences regarding the hypotheses are defined as follows. There is no long-term co-integration relationship between financialization and economic growth. If financialization is short-term, its impact on GDP in the current period is negative and statistically significant. However, it is seen that its contribution to GDP is positive and significant in the short run. In the long run, F-bounds test results show that financialization has a negative and statistically significant impact on Turkish economy's economic growth in both short and long-run. This finding suggests that the increase in the share of the financial sector in the national income in Turkey has a negative effect on economic growth in the long run.

5. Conclusion

In this study, the effect of financialization on economic growth was investigated in the Turkish economy after the 2001 financial crisis. In other words, the effect of the

financial, real estate, and insurance sector's share of GDP on economic growth is examined for the Turkish economy in the post-2001 financial crisis period.

After the 2001 financial crisis, the financial sector's share in national income was used to indicate financialization in the Turkish economy. The banking sector strengthened through strict regulations and significant capital inflows. To our knowledge, this indicator is used for the first time in Turkey-oriented financialization literature in this study.

Using the ARDL method, the short-and long-run effect of financialization on economic growth in the Turkish economy is examined using the Cobb-Douglas production function-based approach. The ARDL model results show that the impact of financialization on economic growth is negative, and it deteriorates the long-run economic performance of the Turkish economy. The findings are also robust to different modelling alternatives.

This study can make an essential contribution to the current literature on Turkey-oriented financialization. The first of these contributions is to investigate the impact of financialization on economic growth in the Turkish economy with a different macroeconomic variable. While the financial system of the Turkish economy is based on the bank-based system, the growth of the FIRE sector in the economy may crowd out the long-run economic growth. The economic growth rate is based on value-added calculations, and the FIRE sector may not be linked with the value-added increment in the Turkish economy. One possible policy suggestion is that the government may regulate the FIRE sectors to increase the economic growth performance of the Turkish economy.

The primary limitation of the present study arises from the data set. A short-term period was considered in this study because the variables in the data set are mainly available for 2002 and later. Further studies may examine the impact of financialization on economic growth through case studies to allow for a more detailed understanding of financialization within a developing country context.

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Appendix

Alternative ARDL Model

In the appendix of the paper, an ARDL model with Kaldorian dynamics is constructed⁵. This ARDL model is an alternative to the Cobb-Douglas production function and can be expressed as follows:

$$\text{Log}Y = \beta_0 + \beta_1 \text{Log}(FIRE) + \varepsilon_t \quad (\text{A1})$$

The results in Table A1 confirm the results of the main model used in this study. According to CMR unit root test results, the Log(FIRE) variable is I(1)⁶. According to the Bounds test results in Table A2, a relationship exists between financialization and GDP.

Table A1 The Results of the ARDL Model

	Coefficient	p-value
Log(Y) _{t-1}	-0.52	0.00
$\Delta(\text{Log}Y)_{t-1}$	-0.42	0.00
$\Delta(\text{Log}Y)_{t-2}$	-0.52	0.00
$\Delta(\text{Log}Y)_{t-3}$	-0.70	0.00
Log(FIRE) _{t-1}	-0.90	0.00
$\Delta \text{Log}(FIRE)_t$	-0.64	0.00
$\Delta \text{Log}(FIRE)_{t-1}$	-0.04	0.78
$\Delta \text{Log}(FIRE)_{t-2}$	-0.08	0.51
$\Delta \text{Log}(FIRE)_{t-3}$	-0.31	0.00
R ²	0.96	
Durbin-Watson Test Stats.	1.23	
F statistics, p-val.		0.00

Notes: All the estimations are conducted using heteroscedasticity and autocorrelation robust standard errors. Constant and trend are not reported.

Source: Author's calculations.

Table A2 F-Bounds Test Results

	5% CV	
F-test statistics:	N = 55	N = 50
10.53, k = 1	6.66	6.68

Notes: The values for the asymptotic sample when n = 1000 for I(1) are 6.29.

Source: Author's calculations.

Table A3 shows that FIRE, which refers to financialization, has a negative impact on GDP (at logarithmic level).

Table A3 Long Term Coefficients

Variable	Coefficient and p-value
Log(FIRE)	-1.70, 0.00

Notes: The trend is not reported.

Source: Author's calculations.

⁵ Thank you for this suggestion of the anonymous reviewer.

⁶ Results are available upon request from the author.

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