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The causality between economic growth and stock market in developing and developed countries: Toda-Yamamoto approach

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Abstract. *There are different hypotheses in the literature used to explain the causality relationship between financial development and economic growth. In this study, the causality relationship between the value of stock markets, which is a dimension of financial development and economic growth has been examined. For this purpose, in order to reveal the possible differences between developed and developing countries, the stock market data and GDP values obtained from different countries are considered. As analysis method, Toda-Yamamoto Granger causality analysis was used for the period of 1998Q1-2017Q4. In conclusion, unilateral causalities from stock market indexes to economic growth are determined in United States, BRICS countries and Turkey. Therefore, the development of stock markets is leading to economic growth. This result is not different in terms of developed and developing countries. The supply-leading hypothesis, which is one of the two economic growth hypotheses with one-way causality, is valid. However the results for Germany indicate the two-way relations. This means that feedback hypothesis is valid for Germany.*

Keywords: stock markets, economic growth, Toda-Yamamoto causality analysis, developing countries, developed countries.

JEL Classification: G15, E22, C13.

1. Introduction

Economic growth is the increase in the volume of goods and services produced in an economy (Onwumeree et al., 2012). The growth concept in developed and developing countries means that the increase in income and production in a certain period. In this context, economic growth is also expressed as an increase in GDP per capita in a country (Özel, 2012, p. 64).

In the process of globalization, it is aimed to increase the interactions between countries and to increase the living standards of individuals. With globalization, the boundaries between the countries have been eliminated and economic, political, cultural and social loyalties are increasing (Eren and Çütcü, 2018).

Stock markets are an indispensable part of a financial system that encourages economic growth by attracting financing resources from sectors with large capital to relatively less capital (Mamun et al., 2018). And also more important for developing countries, where borrowing and especially the long-term banking sector borrowing opportunities are limited (Mauro, 2000).

The development of the stock market in an economy can provide for a better distribution of resources in at least two different ways. The first one reduces the cost of informing investors about investment projects proposed by companies (Boyd and Prescott, 1986; King and Levine, 1993). Second, stock markets play a decisive role in protecting the interests of investors by spreading and pooling risks (Greenwood and Jovanovic, 1990). This allows investors and firms to make appropriate investment decisions (Mamun et al., 2018). In addition, the liquidity created by the stock markets enables investors to buy or sell stocks without hampering their long-term investment plans, while providing long-term capital to companies (Pan and Mishra, 2018).

Equity markets increase the expertise of financial intermediaries, allocate resources to the most productive areas and increase the amount of production (Mamun et al., 2018). Through the stock markets, investors can provide capital allocation to the economy at low costs and gain profits. However, well-organized exchanges encourage the financing provided by the market, rather than the financing provided by the banking sector, thus creating a growth effect on the economy (Mamun et al., 2018). In addition, the stock markets that in particular operating in the emerging markets, support economic growth through foreign capital investments. Therefore, the role of capital markets in developing countries such as Turkey, where there is high economic growth rate is very important. An increase in the per capita income of individuals can force them to invest in long-term financial assets through the financial system mechanism (Geyikçi, 2017). The role of stock markets after the 1980s increased significantly in both developed and developing economies. This development has increased the interest of investors, economists and policy makers in the direction of the relationship between stock markets and GDP. Looking at the developed economies, it is seen that stock prices and GDP are moving together. Stock markets of countries with high GDP performance tend to increase.

Therefore it is important to describe the behavior of these two variables to determine the direction of causality between GDP and stock markets (Öztürk, 2016).

For such reasons, the relationship between stock markets and economic growth has been extensively studied in recent years. However, there is no consensus on the direction and magnitude of the relationship, so the issue remains up-to-date. Considering what has been told until now, the following questions and answers are the subject of concern: First; What is the direction if there is a relationship between the time series of the stock market indices and the GDP growth indicators? If there is a relationship, does such a relationship differ in developed and developing countries? In order to answer these questions, the relationship between stock market indices and GDP values of developed and developing countries will be examined. Toda-Yamamoto approach was used to reveal causality relations.

2. Literature review

The relations between the stock market (as an indicator of financial development) and economic growth are tried to be explained in the context of the supply-leading (Schumpeter, 1911) and the demand-following hypotheses (Robinson, 1952; Kuznets, 1955) in literature. Schumpeter (1911) argued that financial development led to economic growth. Subsequently, Goldsmith (1969) and Shaw (1973) later were tested this hypothesis. In this context, supply-leading hypothesis is based on the view that the liberalized financial markets in accordance with the neoclassical economic approach have an accelerating effect on economic growth by promoting savings on the one hand and efficient allocation of savings on the other (Aslan and Küçükaksoy, 2006). In the demand-following situation, developments in the real sector reveal the demand, and financial institutions and instruments are the tools to meet the demand. The demand-following approach implies that finance is basically a passive element in the growth process (Patrick, 1966). There is another hypothesis except these two hypotheses which is called feedback hypothesis. The feedback hypothesis (Lewis, 1955; Patrick, 1966) is claimed that economic growth and stock markets can strengthen each other and that stock markets and economic growth involve mutual causality. According to another view known as the neutrality hypothesis, financial activity and economic growth are not causally related. According to this view, the observed correlation between them is false (Graff, 2002). Bhide (1993), Bencivenga and Smith (1991) and Stiglitz (1985) propose another opinion that financial activity is an obstacle to actual economic activity. They argue that financial development adversely affects economic growth, meaning that there is a negative causality from financial development to growth.

In the literature, it is observed that the stock market development causes economic growth, in general. Fama (1981) had found a strong relationship between stock prices and real economic indicators. Chen et al. (1986) showed empirically that the movements in macroeconomic variables had an effect on stock prices due to the effects of future

dividend and discount rates. Comincioli (1996) had stated that there is a relationship between previous stock prices and GDP. Comincioli (1996) had found that the past stock prices lead to economic growth behavior means that the stock market movements predict the economy. Goswami and Jung (1997) state that changes in consumption and investment opportunities are priced in capital markets and therefore changes in stock prices are related to economic variables. Levine and Zervos (1998) had found that the liquidity of stock markets is a strong determinant of the increase in GDP. Ray (2012) found that GDP growth had a positive effect on stock prices. The growth of GDP increases the flow of liquidity and also increases the stock demand.

Looking at some of the recent studies on this subject, Silva, Perera and Silva (2018) investigated the relationship between Sri Lanka's stock market performance and economic growth. According to the findings of their study on regression and correlation analyzes, there is a strong positive relationship between stock market performance and Sri Lanka's economic growth. Pradhan, Arvin, Hall and Bahmani (2014) found that banking sector development, stock market development, economic growth, and four key macroeconomic variables are cointegrated in the ARF countries. And also they found that banking sector development and stock market development, as well as other macroeconomic variables, matter in the determination of long-run economic growth. Ngare, Nyamongo and Misati (2014) investigated the role of stock market development on economic growth in Africa for the period 1980-2010. Panel data econometrics technique was used in their data analysis. They found that countries with stock markets tend to grow faster compared to countries without stock markets and countries which are relatively developed and have stock markets tend to grow less faster compared to small countries with stock markets. Furthermore stock market development has a positive effect on economic growth in Africa. Some other studies which are done in 2018, related the subject are summarized in Table 1 below.

Table 1. *A Summary of the Studies in 2018*

Author (s)	Periods/ Countries	Method	Findings
Hasan (2018)	1981-2017 yearly data /Bangladesh	ARDL Bound Test	The size of the stock market has a significant and long-term impact on real economic growth. A long-term causality from stock market development to real economic growth has been found. In the short term, there is no causality between real economic growth and stock market development.
Ogbeide and Akanji (2018)	1994-2014 quarterly data/BRICS Countries	Panel Data Analysis with Fixed Effect Model	It was observed that stock market development had a significant impact on economic growth. It was determined that there was a positive relationship between stock exchange indicators and BRICS 'economic growth indicators.
Ho (2018)	1975-2015 yearly data/South Africa	ARDL Bound Test	Banking sector development and economic growth increased the stock market development, on the other hand, inflation rate and real interest rate prevented the stock market development. Moreover, the foreign trade deficit has a negative impact on the stock market development.
Qamruzzaman and Wei (2018)	1980-2016/Bangladesh	ARDL Bound Test/Granger Causality Test	The findings confirm the existence of a long-term relationship between financial innovation and stock market growth and economic growth. In addition, the findings from the Granger causality test support the bidirectional causality between financial innovation, economic growth and stock market

Author (s)	Periods/ Countries	Method	Findings
			development, both in the long term and in the short term.
Sikarwar and Appalaraju (2018)	2005-2017/India	Regression/Granger Causality Analyses	The study shows that there is a causal relationship between GDP and NIFTY50 index returns and there is a causality from SENSEX index to GDP.
Mingwei and Yingchao (2018)	2008-2017 quarterly data/China	Johansen Cointegration/ Granger Causality Test/Variance Decompositon	The results show that there is a long-term equilibrium relationship between GDP and stock exchange, and there is a causality between GDP and stock market value. The change in GDP causes the stock market value.
Pan and Mishra (2018)	1999/2005-2015/China	ARDL Bound Test/Toda-Yamamoto Causality Test	The results show that the stock market has a long-term negative relationship with the real sector, but the effect is low. And also there is no relationship between stock exchange and the real economy in the short term. Besides, the Toda-Yamamoto causality test showed that economic growth supports the development of the stock market.

3. Method

In this study, the United States and Germany are taken into account as a sample of the developed countries and BRICS (Brazil, Russia, India, China and South Africa) and Turkey are taken into account to represent the developing countries. The stock market data were obtained from the websites of the countries' stock market indexes, Bloomberg and Yahoo Finance databases. The GDP data as a measure of economic growth were obtained from OECD and World Bank databases. The natural logarithmic values of the variables were used in the analyses. The data cover the first quarter of 1998 and the fourth quarter of 2017. The variables and symbols used in the study are shown in Table 2.

Table 2. *Variables used in the analysis*

Variable	Symbol	Variable	Symbol
USA Stock Market Index	S&P 500	USA GDP	USA GDP
Germany Stock Market Index	DAX	Germany GDP	GER GDP
Brazil Stock Market Index	BOVESPA	Brazil GDP	BRA GDP
Russia Stock Market Index	MICEX	Russia GDP	RUS GDP
China Stock Market Index	SHANGAI	China GDP	CHN GDP
South Africa Stock Market Index	INVSAF40	South Africa GDP	SAF GDP
India Stock Market Index	BSE	India GDP	IND GDP
Turkey Stock Market Index	BIST100	Turkey GDP	TUR GDP

In order to investigate the causality between stock market and GDP and the direction of causality, the causality test proposed by Toda-Yamamoto (1995) was applied. This test is an appropriate approach to avoid some of the problems faced by the Granger causality test. For the Granger causality test to be performed, the series must be stationary or be integrated in the same order. However, it should be considered that there may also be causality between different series of integrated series. An advantage of this test is that it does not consider the cointegration information in the system. Testing can be done regardless of whether the series is co-integrated. In Toda-Yamamoto (1995) approach, the standard vector autoregressive model (VAR) is created by using the levels regardless of the order of the series. Then, the actual order of the VAR model is artificially changed to $k + dmax$ by adding the maximum integration order *dmax.* However, the coefficients of

the terms added to the model are not taken into consideration. In this causation procedure, the integration order (*dmax*) must not exceed the actual range (*k*) of the VAR model. According to the Toda-Yamamoto causality test procedure, the stock market and GDP model is presented as in equations as follows:

$$X_t = \alpha_o + \sum_{i=1}^{k+d\max} \alpha_2 X_{t-i} + \sum_{i=1}^{k+d\max} \alpha_3 Y_{t-i} + \eta_2$$

$$Y_t = \beta_o + \sum_{i=1}^{k+d\max} \beta_2 Y_{t-i} + \sum_{i=1}^{k+d\max} \beta_3 X_{t-i} + \eta_2$$

Toda Yamamoto causality test is performed with the help of modified WALD (MWALD) using above equations. In equations, X_t and Y_t represent the variables examined. In models, each variable is regressed on each other with a number of delays from 1 to $k + d\max$. η_1 and η_2 expresses error terms in equations. *k* shows the maximum number of delays and d the degree of integration of the variables.

3.1. Unit root test

In the study, first of all, it should be determined whether the variables are stationary or not. As mentioned before, it is not important whether the variables contain a unit root in the Toda-Yamamoto causality test. However, the unit root test is used to determine the maximum stationary degree *(dmax)*. For this purpose, the stationary state of the variables was investigated according to the Augmented Dickey-Fuller unit root test.

The ADF unit root results of the variables are given in Tables 3 and 4. The variables were firstly subjected to stationary tests at first level. The results of the unit root tests at level (Table 3) for variables show that the variables are not stationary, i.e. the series contain unit roots.

Table 3. *ADF Test Results (at Level)*

SERIES	Test Statistics								
(1)INDEXES	No Intercept			Intercept			Intercept & Trend		
S&P 500	0.829			-0.794			-1.814		
CV*	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.597	-1.946	-1.614	-3.521	-2.901	-2.587	-4.087	-3.472	-3.163
DAX	-0.589			-1.027			-2.289		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
BOVESPA	1.135			-1.585			-2.011		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
MICEX	1.488			-2.944			-3.018		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
SHANGAI	0,399			-2.256			-2..968		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
INVSAF40	2.075			-1.198			-2.582		

SERIES	Test Statistics								
(1)INDEXES	No Intercept			Intercept			Intercept & Trend		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
BSE		1,488			-1,114			-2,419	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
BIST100		1.408			-1.839			-2.581	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
(2)GDP	No Intercept			Intercept			Intercept & Trend		
USA GDP		4.048			-1.815			-2.021	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
GER GDP		3.926			-0.146			-2.466	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
BRA GDP		1.337			0.604			-2.096	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.551	-2.913	-2.592	-4.104	-3.479	-3.167
RUS GDP		0.765			-0.201			-2.700	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.553	-2.915	-2.592	-4.108	-3.481	-3.169
SAF GDP		3.335			2.981			-1.902	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.552	-2.914	-2.592	-4.106	-3.480	-3.168
TUR GDP		-8.522			-8.755			-8.802	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.552	-2.914	-2.592	-4.106	-3.480	-3.168
IND GDP		5,944			0,541			-1,918	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.552	-2.914	-2.592	-4.106	-3.480	-3.168
CHN GDP		-7.231			-7.212			-7.161	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.551	-2.913	-2.592	-4.104	-3.479	-3.167

*CV: Critical Value.

The non-stationary series are made stabilized by taking differences. In this respect, the first differences of the series were subjected to re-unit root test. It is understood from the results of the ADF unit root test that the series are stationary at first difference at 5% significance level (Table 4). This shows that the series is integrated at the I(1) level. All of the variables contain unit root I(1). Therefore, the maximum degree of integration for VAR *(k + dmax)* model is determined as *dmax* = 1.

Table 4. *ADF Test Results (at First Differences)*

SERIES	Test Statistic								
(1)INDICES	No Intercept			Intercept			Intercept & Trend		
S&P 500		-7.928			-7.960			-7.986	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.597	-1,945	-1,614	-3,521	-2,901	-2,590	-4,087	-3,471	-3,163
DAX		-9.185			-9.168			-1.712	
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1,950	-1,610	-3,546	-2,911	-2,590	-4,097	-3,476	-3,166
	-2.611	-1.950	-1.610	-3.563	-2.920	-2.595	-4.124	-3.488	-3.173

SERIES	Test Statistic								
(1)INDICES	No Intercept			Intercept			Intercept & Trend		
BOVESPA	-7.650			-7.777			-7.772		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
MICEX	-7.938			-8.324			-8.548		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
SHANGAI	-7.231			-7.212			-7.161		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
INVSAF40	-7.146			-7.657			-7.633		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
BSE	-6,782			-7,034			-6,979		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
BIST100	-8.522			-8.755			-8.802		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
(2)GDP	No Intercept			Intercept			Intercept & Trend		
USA GDP	-2.650			-5.062			-5.321		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.599	-1.945	-1.613	-3.527	-2.903	-2.589	-4.094	-3.477	-3.166
GER GDP	-4.729			-6.460			-6.423		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.611	-1.950	-1.610	-3.548	-2.912	-2.591	-4.099	-3.477	-3.166
BRA GDP	-2.244			-5.941			-5.541		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.551	-2.913	-2.592	-4.104	-3.479	-3.167
RUS GDP	-6.232			-7.595			-7.974		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.553	-2.915	-2.592	-4.108	-3.481	-3.169
SAF GDP	-3.335			-5.981			-7.902		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.552	-2.914	-2.592	-4.106	-3.480	-3.168
IND GDP	-0,784			-6,577			-6,590		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.610	-1.950	-1.610	-3.546	-2.911	-2.590	-4.097	-3.476	-3.166
TUR GDP	-7.332			-8.595			-8.974		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.552	-2.914	-2.592	-4.106	-3.480	-3.168
CHN GDP	-12.642			-14.228			-14.127		
CV	%1	%5	%10	%1	%5	%10	%1	%5	%10
	-2.612	-1.950	-1.610	-3.551	-2.913	-2.592	-4.104	-3.479	-3.167

3.2. Toda-Yamamoto (TY) Granger Causality Analysis

The lag lengths were determined by considering the FPE and ACI criteria. The LR criterion was taken into account when different criteria indicated in different lag lengths. Table 5 shows the results of the TY causality analysis.

Table 5. *Toda-Yamamoto Granger Causality Analysis Results*

Series	Causality Direction	Series	df	Chi-Square	Prob.*
INVSAF40	→	SAF GDP	1	13,04871	0,0030
XCHN	→	CHN GDP	6	25,59027	0,0003
BOVESPA	→	BRA GDP	6	12,81005	0,0462
MICEX	→	RUS GDP	5	38,15776	0,0000
BSE	→	IND GDP	3	18,92599	0,0003
BIST 100	→	TUR GDP	6	17,11758	0,0089
S&P 500	→	USA GDP	4	11,57257	0,0208
DAX	→ ←	GER GDP	2	9,005561 6,622934	0,0111 0,0365

* Significance level of 0,05.

As a result of the analyses, unilateral causality relations were determined from the stock markets to GDP in all BRICS countries, USA and Turkey. According to the Toda-Yamamoto causality test, the H_0 hypothesis that indicates there is no causality from the stock market indexes to the economic growth is rejected at 5% significance level. This means that there is a relationship between stock markets and economic growth. The direction of the relationship is from stock markets to economic growth. Therefore, the development of stock markets is leading to economic growth. This result does not differ in terms of developed and developing countries. In summary, it is seen that the supply-leading hypothesis, which is one of two economic growth hypotheses which contains one-way causality, is valid in general. However the relationship between Germany Stock Index (DAX) and Germany GDP is two-sided. This result means that feedback hypothesis is valid for Germany.

4. Conclusion

In this study the major economies in the continent of America and Europe, BRICS countries and Turkey were considered. In the study, the causal relationship between GDP and stock indexes was investigated using the Toda-Yamamoto causality test for the period 1998Q1-2017Q4 using the two-variable VAR model. According to the causality test results, causal relations were determined from the stock markets to economic growth in all developing and developed countries. The results of this study are similar to the results of recent studies such as Hasan (2018), Ogbeide and Akanji (2018), Qamruzzaman

and Wei (2018), Sikarwar and Appalaraju (2018) and differs from the studies such as Ho (2018), Mingwei and Yingchao (2018), Pan and Mishra (2018).

Unlike other studies, in this study, the relationship between stock market indices and GDP values of developed and developing countries are examined comparatively. In addition, only causality was emphasized in this study and analyzes were performed in a simple way and the results were asked to be interpreted healthier. The findings of this study contribute to a better understanding of the relationship between economic growth and financial markets. Financial markets play an important role in the creation of funds necessary for the financing of economic development and for directing these funds to efficient investments. As a result of developments such as increasing the role of private sector in the economies, facilitating access to financial information and freedom of trade and capital movements, the importance of financial markets has increased.

In the economic development process, the industrial sector plays a decisive role. The role of stock markets in the relationship between fund supply and demand is to perform a regulatory and stabilizing function. Therefore, the stock markets are expected to have a guiding characteristic in the real sector (Yayla et al., 2017). The results of the study also show that the signals reflected by the stock market improve the forecast for economic activity. Moreover, the fact that the stock markets reflect the expectations for the future shows that the expectations of investors regarding the future of the economy are generally correct.

Empirical findings show that stock market development contributes to economic growth with a one-way causality from stock market development to economic growth. This finding is consistent with the hypothesis of supply-leading hypothesis. According to the results of the study, economic growth is supported by a globalized economy and increasing total investment factors in countries with well-functioning stock markets. Therefore, regulations and policies related to the stock markets in emerging countries such as Turkey becomes more important. In this context, it is the responsibility of the organizations that regulate, supervise and mediate transactions such as the Public Disclosure Platform, Capital Markets Board, Borsa İstanbul, Central Registry Agency, Settlement and Custody Bank, in order to ensure that domestic and foreign investors have sufficient confidence in the stock markets and gain profits by bringing their capitals.

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