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Sectoral Stock Markets and Economic Growth Nexus: Empirical Evidence from Indonesia*

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Abstract

This study aims to analyze the causality relationship between sectoral stock markets (agricultural, financial, industrial, and mining sectors) and economic growth in the short and long term as well as to analyze whether it has similar types or not. The data used is quarterly timeseries data (first quarter 2009 to fourth 2019). To determine the causality relationship, this study conducts a variable and multivariate causality test. The results of the varying granger causality test show that there is only a one-way relationship, where the economic growth of the agriculture sector affects its shares. A one-way relationship also occurs in stocks of the industrial sector, which has an influence on economic growth. The multivariate causality test shows that the economic growth of the agricultural sector has a two-way causality relationship, and it also exists between the industrial sector and the financial sector stock markets. The two-way causality relationship between the stock market and sectoral economic growth is a convergence towards long-term equilibrium. The findings of this study suggest that the government through the Financial Services Authority and the Indonesia Stock Exchange have to maintain stability in the stock market as a supporter of the national economy.

Keywords: Sectoral Stock Markets, Economic Growth, Multivariate Causality

JEL Classification Code: F41, H54, P34, O16

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1. Introduction

The role of financial markets is a key development factor in generating strong economic growth because this sector contributes to economic efficiency by diverting financial funds from unproductive to productive uses (Durusu-Ciftci et al., 2017). It is consistent with Schumpeter (1934) who stated that one of the major benefits of innovation is its contribution to economic growth. Simply put, innovation can lead to higher productivity, meaning that the same input (investment funds) generates a greater output. The theory of development by Schumpeter (1934) assigns a paramount role to the entrepreneur and innovations introduced by him in the process of economic development. Additionally, Goldsmith (1969), McKinnon (1973), and Shaw (1973) also proved that financial development has a positive effect on economic growth. In general, the capital market has a positive impact on economic growth (Ali & Fey, 2016). Based on the above theory, the presence of financial markets plays an important role in economic growth as it can encourage the mobilization of savings in the economy

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and turn it into useful and productive capital. Thus, when the economy grows, it will generate a surplus and trigger growth in the financial sector. Therefore, the direction of causality between financial market development and economic growth remains ambiguous and open to empirical scrutiny (Pan & Mishra, 2018). An example of a financial market is the stock market in Indonesia and its development.

The average stock market capitalization of Indonesia's GDP in 2019 was 45.9%. This value decreased compared to the value of the previous year which was 47.3% in 2018. The average stock market capitalization of Indonesia's GDP from 2010 to 2019 was 46.8%. Where the highest figure was 51.9% in 2017 and the lowest was 42.3% in 2015 (Kompas, 2009).

During the economic crisis that occurred in 1997, the Indonesian government-regulated a policy of freeing foreign investment ownership at a maximum of 49% of total shares to 100% of total shares. This is stated in the Decree of the Minister of Finance Number 455/KMK.01/1997 concerning Purchase of Shares by Foreign Investors through the Capital Market (4 September 1997). This regulation revokes the provisions on restrictions on the purchase of shares by foreign investors through the capital market and stock exchanges as regulated in Decree of the Minister of Finance Number 1055 / KMK.013 / 1989. This policy greatly influences foreign investment in the Indonesian capital market and it can affect the capital markets of other countries.

The performance of the Indonesia Stock Exchange (IDX) Composite Stock Price Index (IHSG) throughout 2008 was recorded as an achievement year as well as a year of decline. CI once recorded the highest record on January 9, 2008, at the level of 2,830,263. This was driven by the increase in mining share prices following the increase in world oil prices. However, entering the fourth quarter of 2008 in early October, the JCI experienced a significant decline due to the global financial crisis and the case of default on shares of the Bakrie Group. At its peak, on October 8, 2008, JCI was corrected by 10.38 percent to reach the level of 1,451,669. JCI was at its lowest position at the level of 1,111,390 on October 28, 2008. This has prompted the IDX to suspend stock trading in all markets (Kompas, 2009).

In early 2009, stock transactions on the Indonesia Stock Exchange showed an increase, marked by the continued increase in the JCI. This shows that people are interested in investing in the capital market is getting bigger. Capital market developments during this period showed fair growth, as reflected in the relatively stable development of the Composite Stock Price Index (IHSG).

An increase in the IHSG on the capital market can stimulate investment, so that it has an impact on increasing domestic capital accumulation and enhancing the national economy. Capital obtained from the capital market, of course, can increase capital in the country (Ngare, 2014). Therefore, the increasing domestic capital can increase national output and encourage economic growth. Moreover, the role of financial development in economic growth emerged by utilizing the neoclassical growth theory and received considerable attention since the development of the theory of endogenous growth. Research conducted by Atje and Jovanovic (1993) using the Mankiw-Romer-Weil (MRW) growth model to the stock market and cross-border evidence suggested that stock market development can be a major indicator of economic growth. This finding is in line with Jovanovic (1993) and Cooray (2010) who expanded the Mankiw-Romer-Weil (MRW) growth model by decomposing capital into two components, the stock market, and the non-stock market capital. Both models assumed that the stock market is one of the determinants of a stable per capita growth rate. Furthermore, De Bondt and Thaler (1985) explained that stock market fluctuations and the increase in the JCI are also influenced by the sector of the stock market. They will affect the JCI on the Stock Exchange, either directly or indirectly.

The development of the stock market sector in Indonesia during the period January 2009 to December 2019 experienced fluctuations, where the industrial sector stock index experienced an increase in the index (the highest) at the end of 2009 of 27.46% and the lowest in 2010 of 14.28%. After 2010 there was growth below 5% with an average growth of 4.6% during the study period. The development of agricultural sector stocks also experienced the highest fluctuation during that period; in the second quarter of 2009, there was an increase of 43.62% compared to the previous quarter. In 2010, the average growth was 6.75%, and in 2011, it was 0.21%. During the research period, agricultural sector stocks grew by an average of 1.20%. The development of financial sector stocks increased during the period studied by 163.54% with an average index growth of 5.37%.

Sectoral stock market conditions on the IDX can be divided into two conditions, namely a bullish condition (high return and low volatility) and a bearish condition (low return and high volatility). The difference in these conditions is caused by differences in volatility (Defrizal et al., 2021). This condition is a consideration for investors in making decisions. Optimistic investors seem to postpone their investment until market conditions are corrected (Nguyen & Pham, 2018). The existence of a growing sectorial stock market proves that shares according to certain sectors are increasingly needed by the public (investors). This of course can meet the needs of funds for companies to support production activities and encourage economic growth. This view is in line with the expression of Lusiana (2012) who stated that investment for a country is a necessity. In the other words, investment is one of the driving forces of the economy and the state can encourage economic development in line with the demands of the development of its society. This expression shows that the increase in economic growth is also inseparable from the development of investment in the stock market.

The development of the stock market is positively associated with economic growth as reported in the researcher by Atje and Jovanovic (1993), Bencivenga et al. (1996), Levine and Zervos (1998), Andersen and Tarp (2003), Brasoveanu et al. (2008), Cooray (2010), and Ngare et al. (2014). The stock market and banks positively affect economic growth as stated by Beck and Levine (2004). In another recent study by Fufa and Kim (2017), it is stated that stock market liquidity has a strong positive impact on economic growth. Nordin and Nordin (2016) revealed that the stock market has a greater influence on Malaysian economic growth than the debt market. Seven and Yetkiner (2016) also found that the relationship between stock market development and economic growth is positive and significant in middle and high-income countries. Likewise, Coşkun et al. (2017) argued that capital market development and economic growth have a long-run cointegrating relationship. However, some studies stated the negative or insignificant impact of financial markets on economic growth, especially in developing countries; for example, Kar et al. (2011), Narayan and Narayan (2013), and Snigh (1997).

Narayan and Narayan (2013) found that there is no evidence that the financial sector or the banking sector contributed to economic growth. Evidence of heterogeneity in the relationship to financial growth has led to the grouping of countries based on income levels as founded by several researchers (Andini & Andini, 2014; Henderson et al., 2013; Odedokun, 1996, Rioja & Valev, 2014). In this case, Rioja and Valev (2014) found that the stock market does not contribute to the economic growth of low-income countries, while banks have a sizeable positive effect on capital accumulation. Some authors also emphasized that this relationship can vary based upon the level of financial development. Besides, evidence on non-linearity between finance and growth has been analyzed by Chen et al. (2013), and Shen and Lee (2006).

Referring to some previous literature, this study tries to analyzes the sectorial relationship between the stock market and economic growth in Indonesia, the specificity of the same sectorial variables between the stock market and economic growth through the Gross Domestic Product (GDP) variable. The sectorial variables include the agricultural, financial, industrial, and mining sectors. This is different from research conducted by Fufa and Kim (2017), who analyzed the relationship between the stock market, banks, and economic growth. It is also different from the research conducted by Nordin and Nordin (2016) who analyzed the influence of the stock market and debt market on the Malaysian economy.

Systematically, this study presents five parts point of view: Part 1 is research problem; Part 2 presents literature review; Part 3 illustrates research methods; Part 4 is research results and discussion, and; the last part is summarized of the findings in conclusions.

2. Literature Review

2.1. Relationship between Financial Services Sector, Real Sector, and Economic Growth

It is based upon reviewing some previous literature; this section will present in detail the relationship among variables involved in this study. According to economic growth theory, the main determinants of per capita economic growth are the initial rate of GDP, human capital, and the accumulation of physical capital. Per capita economic growth should be negatively related to the initial level of GDP because economies tend to converge to the established countries at a reduced rate of accumulated capital (convergence effect), and it is positively related to the level of human capital in a country because higher human capital implies a more innovative and potentially faster economic growth. Besides, many other economic, political, institutional, and geographic factors have been included in the empirical growth model (Durlauf et al., 2005) for extensive surveys.

Development of financial sector services on economic growth by considering government policies and the country's economic stability indicated by fiscal policy, measures of openness to international trade, and price stability (Levine et al., 2000). Arcand et al. (2012) examined financial development in a growth regression and found a non-linear relationship between financial development and economic growth.

2.2. The Relationship between the Stock Market and the Economy

A country's economy is not only influenced by domestic factors, but it is also influenced by external factors such as foreign investment. In general, investment is divided into two types, namely investment in the real estate and the financial sectors. In terms of investment in the financial sector, it can be done in the stock market. The economy has a very close relationship with the level of investment, where it theoretically is a component taken into account in the calculation of Gross Domestic Product (GDP) as an indicator for the economy.

Research conducted by King and Levine (1993), measuring the role of the financial sector in the economy, stated that the influence of the financial sector on the economy does not only involve banking but covers the role of the capital market as part of the financial system. This implies that a well-developed financial sector can drive the economy, capital accumulation, and increase productivity.

According to Levine et al. (2000), the financial sector can be grouped into two categories, namely the banking sector and the capital market. The development of the banking sector is measured using four variables. First, Liquid Liabilities of Financial (LLY), which is the amount of money plus demand for debt and the interest divided by GDP. This variable measures the intermediation of financial institutions which include the central bank, savings bank, and other financial institutions. The second variable, assets of commercial banks - central banks, measures the ratio of commercial bank assets divided by assets of commercial banks and central banks. The third, private sector credit is the amount of credit extended by financial institutions to the private sector. The fourth, bank credit is the proportion of savings channeled as a credit to the private sector as a share of GDP. Capital market variables are divided into two types. First, capital market liquidity is measured by the value of shares traded compared to economic size, called the traded value. Second, the average value of domestic shares listed on the stock exchange in domestic transactions as part of the economic size (GDP), is called capitalization.

Furthermore, Jalil et al. (2010) in their research revealed that financial development indeed fosters economic growth in China. China's economic growth, among other factors, is also driven by financial developments. Therefore, Chinese policymakers are advised to take the necessary actions to ensure financial development. China has had phenomenal success in its transition from a centrally planned economy to a more market-oriented economy.

Pan and Mishra (2018), proposed five different models proposed to link financial performance with economic growth. The first is the Keynesian model, which assumes that people have three motives for holding money: the transaction motive, the prudential motive, and the speculative motive. The second is the neoclassical model which states that capital market operations are assumed to be free of cost. Money has no direct effect on capital accumulation. The main assumption of the neoclassical model is that money and capital are substitutes. The model developed by McKinnon (1973) who criticized the assumption of the Keynesian model and the neoclassical model that the capital market functions competitively with a single interest rate that regulates the market. Shaw (1973) emphasized the important role of lending activities. The key difference between the two models lies in their assumptions about how finance is developed. Fourth, the IS-LM model linking interest rates and real output in the market for goods and services and the market for money and assets. The fifth model is the endogenous growth model. Financial development can lead to faster economic growth through technological growth because of innovation.

Besides, Ngare et al. (2014) investigated the role of stock market development on economic growth in Africa. They used annual data from a panel of 36 countries, of which 18 have stock markets, in Africa over the period 1980–2010. Panel data econometrics technique is used in data analysis. Their main findings were as follows: (i) countries with stock markets tend to grow faster compared to countries without stock markets, (ii) countries that are relatively developed and have stock markets tend to grow less fast compared to small countries with stock markets, (iii) Stock market development has a positive effect on economic growth, (iv) investment, human capital formation, and openness positively influence economic growth in the Africa region, (v) macroeconomic instability (inflation) and government consumption impact economic growth negatively, and (vi) countries that are politically stable and less corrupt tend to grow faster.

Thus, it can be concluded that the stock market can bridge and facilitate the community's investment needs; on the other hand, it also provides opportunities for entrepreneurs who need funds for expansion. This makes the stock market a vehicle for the democratization of the Indonesian economy as it is necessary to implement policies to motivate investment in the stock exchange.

3. Data and Methodology

3.1. Data Analysis Model

Pseudo regression is a condition where the results of statistical processing show a high value of R and it has a significant *t*-statistic; however, the results obtained have no scientific meaning. With the use of time-series data, the data stationary first is conducted with the unit root test for each variable.

3.2. Data Analysis Method

This study employs the analytical model as its data analysis with adjustment. The model starts from performing a stationary data test for each variable to be examined in regression through the ADF-test (Augmented Dicky Fuller) and PP-test (Phillips Perron).

The Granger causality test is then applied, giving that X_{2t} causes (Granger causes) X_{1t} if the past values of X_{2t} help to predict X_{1t} (Wooldridge, 2006). Thus, the granger causality test between two stationary variables can be explained by parsing the equation as follows:

$$lnPDBAGR_{t} = \alpha_{01} \sum_{(i=1)}^{p} \alpha_{1i} lnPDBAGR_{t-i} + \sum_{(i=1)}^{p} \alpha_{2i} lnSAGR_{t-i} + e_{1t}$$
(3.1)

 $\ln \text{PDBFIN}_{t} = \alpha_{01} \sum_{(i=1)}^{p} \alpha_{1i} \ln \text{PDBFIN}_{t-i}$

+
$$\sum_{i=1}^{p} \alpha_{2i} \text{InSFIN}_{t-i} + e_{1t}$$
 (3.2)

 $lnPDBIND_{t} = \alpha_{01} \sum_{i=1}^{p} \alpha_{1i} lnPDBIND_{t-i}$

$$+\sum_{(i=1)}^{p} \alpha_{2i} \text{InSIND}_{t-i} + e_{1t}$$
(3.3)

$$lnPDBMIG_{t} = \alpha_{01} \sum_{(i=1)}^{p} \alpha_{1i} lnPDBMIG_{t-i}$$

+
$$\sum_{(i=1)}^{p} \alpha_{2i} lnSMIG_{t-i} + e_{1i}$$
(3.4)

4. Results and Discussion

The results of the unit root test for each variable are shown in Table 1. It must first determine the lag length before testing the Granger Causality method. Lag length determination is analyzed by using the Lag Length Criteria method. The results of the lag length test can be seen in Table 2 below. According to the results of the lag length test, it identifies that the asterisk (*) is in lag 3. This indicates that the recommended optimal lag is lag 3.

The Granger Causality test is applied to identify the influence of the past on the present condition. Time series data is appropriate to indicate the causality (reciprocal) relationship between the variables studied, namely the sectorial of the stock market and economic growth. The results of the Granger causality test are presented in Table 3.

Regarding the results of the Bivariate Granger Causality Test, it shows there is no causality (reciprocal) relationship between agricultural sector stocks (LSAGR) and agricultural sector economic growth (LPDBAGR); however, there is only a one-way relationship. Moreover, the economic growth in the agricultural sector affects the shares of it, which is indicated by the probability value of 0.0454 which is smaller than 5%.

Mackinnon

Critical

Value

(5%)

-3.5208

-3.5181

-3.5208

-3.5208

-3.5208

-3.5181

-3.5181

-3.5181

-3.5208

Note

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Table 1: Results of Unit Quadratic Test with PP-Test

t-Statistic

Phillips-

Perron

-12.5544

-8.1977

-6.4581

-6.8002

-5.1476

-5.1208

-5.5664

-9.5041

-5.8145

Variable

LPDB

LPDBAGR

LPDBFIN

LPDBIND

LPDBMIG

LSAGR

LSFIN

LSIND

LSMIG

On the other hand, industrial sector stocks (LSIND) have an influence on economic growth in the industrial sector (LPDBSIND). This is pointed by the probability value of 0.0183 which is smaller than 5% or significant. It means that there is only a one-way relationship. Besides, the result discovers that there is no causality (reciprocal) relationship between industrial sector shares and their economic growth. Meanwhile, shares in the financial sector and the mining sector do not have a reciprocal relationship; however, it has an impact on economic growth in the financial and mining sectors. This is figured by the probability value which is greater than 5% or not significant.

To explain the causality relationship, the analysis then utilizes the VECM model with a multivariate method using the Wald test (*F*-statistic). Multivariate causality analysis is able to explain several variables that have unidirectional, two-way causality or it even is able to run more than one variable that has a causality relationship simultaneously.

The results of the multivariate causality in Table 4 describes that there is a two-way causality relationship

Null Hypothesis	F-Statistic	Prob.
LSAGR does not Granger Cause LPDBAGR	1.0352	0.3894
LPDBAGR does not Granger Cause LSAGR	2.9710	0.0454
LSFIN does not Granger Cause LPDBFIN	0.4589	0.7128
LPDBFIN does not Granger Cause LSFIN	2.4622	0.0793
LSIND does not Granger Cause LPDBIND	3.8282	0.0183
LPDBIND does not Granger Cause LSIND	0.8473	0.4777
LSMIG does not Granger Cause LPDBMIG	0.3551	0.7857
LPDBMIG does not Granger Cause LSMIG	1.1283	0.3514

Table 3: Bivariate Granger Causality Test Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	374.9293	NA	1.43e ⁻¹⁹	-17.85021	-17.47406	-17.71324
1	722.7240	525.9335	3.49e ⁻²⁵	-30.86459	-27.10309	-29.49486
2	841.2809	127.2318	1.02e ⁻²⁵	-32.69663	-25.54978	-30.09414
3	1124.810	179.7989*	4.01e ^{-29*}	-42.57609*	-32.04389*	-38.74085*

Dependent					F-Stat					7–Stat
Variable	DLPDB	DLPDBAGR	DLPDBFIN	DLPDBIND	DLPDBMIG	DLSAGR	DLSFIN	DLSIND	DLSMIG	ECT _{t-1}
DLPDB	1	30.2446*** (0.0000)	0.0378 (0.9630)	1.5169 (0.2658)	0.9412 (0.4221)	1.7265 (0.2269)	0.5683 (0.5837)	0.6736 (0.5315)	1.8992 (0.1999)	-0.4027* (0.1020)
DLPDBAGR	45.8486*** (0.0000)	I	0.0124 (0.9877)	1.0582 (0.3829)	0.5263 (0.6063)	0.8863 (0.4422)	0.2417 (0.7897)	0.3511 (0.7122)	1.0609 (0.3821)	-0.5515 (0.1341)
DLPDBFIN	0.2019 (0.8204)	0.0794 (0.9242)	1	0.2093 (0.8146)	4.3908** (0.0428)	0.8117 (0.4713)	3.0264) * (0.0938)	3.7139* (0.0622)	1.0847 (0.3747)	-0.4863** (0.0510)
DLPDBIND	3.2756* (0.0805)	1.2725 (0.3218)	0.2947 (0.7510)	I	0.2247 (0.8027)	0.4639 (0.6417)	0.0306 (0.9699)	0.5033 (0.6190)	1.2072 (0.3391)	-0.5187 (0.2290)
DLPDBMIG	1.3476 (0.3032)	0.1082 (0.8985)	6.3227** (0.0168)	0.1982 (0.8233)	I	0.5772 (0.5791)	2.3005 (0.1507)	2.4804 (0.1334)	1.2116 (0.3379)	-0.3542* (0.1022)
DLSAGR	0.7944 (0.4784)	0.3180 (0.7346)	2.8209 (0.1068)	0.7807 (0.4841)	4.4298** (0.0419)	I	1.3662 (0.2988)	1.3662 (0.2988)	0.4881 (0.6277)	-0.6541 (0.1329)
DLSFIN	0.4824 (0.6309)	1.3215 (0.3095)	5.5600** (0.0238)	0.3412 (0.7189)	1.8265 (0.2108)	0.2669 (0.7710)	I	11.2600*** (0.0027)	2.6013 (0.1231)	-1.2509** (0.0369)
DLSIND	0.2261 (0.8016)	0.9799 (0.4087)	5.1265** (0.0293)	0.6679 (0.5342)	2.5324 (0.1289)	0.9767 (0.4098)	14.307*** (0.0012)	I	0.0297 (0.9707)	-0.9871** (0.0466)
DILSMIG	0.6590 (0.5384)	0.3677 (0.7013)	3.3884* (0.0752)	0.2635 (0.7735)	4.6706** (0.0369)	2.7308 (0.1132)	3.3158* (0.0786)	0.9885 (0.4057)	I	-0.7148* (0.0751)
Note: (.) is <i>P</i> -valı	le, Significant o	in a = 1% (***), 5%	6 (**) and 10% (*).						

Table 4: Result of Multivariate Causality Test

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between economic growth in the agricultural sector (DLPDBAGR) and economic growth (DLPDB) as a whole. This reinforces the results of the previous ARDL model where economic growth in the agricultural sector has a positive and significant effect on economic growth in the short and long term. As it is known as an agricultural country, Indonesia should rely on the agricultural sector as an economic source and a key factor to support its development. The role of the agricultural sector in economic growth is very necessary because most of its population depend on this sector for their livelihoods. This is also the primary sector of many others because many of the products are derived from the agricultural sector. Growth in the Gross Domestic Product (GDP) of the agricultural sector during the 2013-2018 period, and the accumulated additional value that could be generated reached IDR 1,375 trillion, and the GDP value of the agricultural sector in 2018 increased by 47% compared to 2013. The Central Statistics Agency (BPS) stated that in the second quarter of 2020, GDP in the agricultural sector is the highest contributor to national economic growth, growing at 16.24 percent (q to q).

Furthermore, a causality relationship also occurs between the industrial sector (DLSIND) and financial stocks (DLSFIN), which confirms that the performance of industrial sector stocks affects the development of financial stocks. This indicates that the role of the financial sector as a source of financing and the industrial sector using such financing.

In terms of one-way causality, it occurs between the economic growth of the sectors of mining, financial, and industrial and economic growth of the financial sector. This indicates that the role of the government towards economic growth is creating policies in the mining sector such as, creating added value, not exporting semi-finished goods. The policies that favor domestic industrial companies will, of course, result in innovation, and the financial sector would be able to support capital for industrial development significantly. Simultaneously, in a multivariate manner, economic growth has an effect on the industrial sector, and financial-economic growth affects economic growth in the mining sector. Meanwhile, the economic growth in the mining sector has an effect on agricultural sector stocks. Finally, economic growth in the financial sector affects stocks in this sector, and stocks in the industrial sector. Meanwhile, shares in the financial sector and the mining sector do not have a reciprocal relationship; however, it has an impact on economic growth in the financial and mining sectors.

5. Conclusion

In the short term, economic growth in the agricultural, financial, industrial, and mining sectors has a balanced relationship with economic growth. Meanwhile, shares in the agricultural, financial, industrial, and mining sectors in the short term also have a balanced relationship with economic growth, except for the mining sector stocks.

In the long term, economic growth in the agricultural, financial, industrial, and mining sectors has a balanced relationship with economic growth. Meanwhile, shares in the agricultural, financial, industrial, and mining sectors in the long term also have a balanced relationship with economic growth, while the mining sector does not have a long-term equilibrium relationship.

The results of the bivariate Granger causality test show that there is only a one-way relationship, where the economic growth of the agricultural sector affects its stocks. There is also a one-way relationship where the economic growth of the industrial sector influences its stocks.

The multivariate causality test results show that economic growth has a two-way causality relationship with economic growth in the agricultural sector. A two-way causal relationship also occurs between stocks of industrial and financial sectors respectively. This indicates that the role of the financial market, whose issuers are engaged in banking, insurance, securities companies, and other financial services, has a strong relationship with the industrial sector.

References

- Ali, M. A., & Fei, Y. S. (2016). Impact of Malaysia's capital market and determinants on economic growth. *The Journal of Asian Finance, Economics, and Business,* 3(2), 5–11. https://doi. org/10.13106/JAFEB.2016.VOL3.NO2.5
- Andersen, T. B., & Tarp, F. (2003). Financial liberalization, financial and economic growth in LDCs. *Journal of International Development*, 15, 189–209. https://doi.org/10.1002/jid.971
- Andini, M., & Andini, C. (2014). Finance, growth, and quantile parameter heterogeneity. *Journal of Macroeconomics*, 40, 308–322. https://doi.org/10.1016/j.jmacro.2014.01.008
- Arcand, J. L., Berkes, E., & Panizza, U. (2012). Too much finance? (Working paper no. 161). International Monetary Fund. https:// www.imf.org/external/pubs/ft/wp/2012/wp12161.pdf
- Atje, R., & Jovanovic, B. (1993). Stock markets and development. *European Economic Review*, 37, 632–640. https://doi. org/10.1016/0014-2921(93)90053-D
- Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking and Finance*, 28, 423–442. https://doi.org/10.1016/S0378-4266(02)00408-9
- Bencivenga, V. R., Smith, B. D., & Starr, R. M. (1996). Equity markets, transaction costs, and capital accumulation: an illustration. *World Bank Economic Review*, 10, 241–265. https://doi.org/10.1093/wber/10.2.241
- Brasoveanu, L. O., Dragota, V., Catarama, D., & Semenescu, A. (2008). Correlations between capital market development and

economic growth: The case of Romania. *Journal of Applied Quantitative Methods*, 3(1), 64–75. http://www.jaqm.ro/issues/volume-3,issue-1/pdfs/obreja-brasoveanu_dragota_catarama_semenescu.pdf

- Chen, K. C., Wu, L., & Wen, J. (2013). The relationship between finance and growth in China. *Global Finance Journal*, 24, 1–12. https://doi.org/10.1016/j.gfj.2013.03.006
- Cooray, A. (2010). Do stock markets lead to economic growth?. Journal of Policy Modeling, 32(4), 448–460. https://doi. org/10.1016/j.jpolmod.2010.05.001
- Coşkun, Y., Seven, Ü., Ertuğrul, H. M., & Ulussever, T. (2017). Capital market and economic growth nexus: Evidence from Turkey. *Central Bank Review*, 17(1). https://doi.org/10.1016/j. cbrev.2017.02.003
- De Bondt, W., & Thaler, R. (1985). Do security analysts overreact? *The American Economic Review*, *80*, 52–57. https://www.jstor. org/stable/2006542
- Defrizal, D., Romli, K., Purnomo, A., & Subing, H. A. (2021). A sectoral stock investment strategy model in Indonesia stock exchange. *The Journal of Asian Finance, Economics, and Business*, 8(1), 15–22. https://doi.org/10.13106/JAFEB.2021. VOL8.NO1.015
- Durlauf, S. N., Johnson, P. A., & Temple, J. R. W. (2005). Growth econometrics. In Aghion P. & Durlauf S. (Eds.), *Handbook* of economic growth (pp. 555–677). Amsterdam, Netherlands: Elsevier.
- Durusu-Ciftci, D., Ispir, M. S., & Yetkiner, H. (2017). Financial development and economic growth: Some theory and more evidence. *Journal of Policy Modeling*, 39, 290–306. https://doi. org/10.1016/j.jpolmod.2016.08.001
- Fufa, T., & Kim, J. (2017). Stock markets, banks, and economic growth: Evidence from more homogeneous panels. *Research in International Business and Finance*, 44, 504–517. https://doi. org/10.1016/j.ribaf.2017.07.120
- Goldsmith, R. W. (1969). *Financial structure and development*. New Haven, CT: Yale University Press.
- Henderson, D. J., Papageorgiou, C., & Parmeter, C. F. (2013). Who benefits from financial development? New methods, new evidence. *European Economic Review*, 63, 47–67.
- Jalil, A., Feridun, M., & Ma, Y. (2010). Finance-growth nexus in China revisited: New evidence from principal components and ARDL bounds tests. *International Review of Economics and Finance*, 19(2), 189–195. http://doi.org/10.1016/j.iref.2009.10.005
- Jovanovic, B. (1993). Investment options and the business cycle. Journal of Economic Theory, 144, 2247–2265. https://doi. org/10.1016/j.jet.2008.05.003
- Kar, M., Nazlioglu, S., & Agir, H. (2011). Financial development and economic growth nexus in the MENA countries: Bootstrap panel Granger causality analysis. *Economic Modeling*, 28, 685–693. https://doi.org/10.1016/j.econmod.2010.05.015

- King, R. G., & Levine, R. (1993a). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*, 108(3), 717–738. https://doi.org/10.2307/2118406
- King, R. G., & Levine, R. (1993b). Finance, entrepreneurship, and growth: Theory and evidence. *Journal of Monetary Economics*, 32(3), 513. https://doi.org/10.1016/0304-3932(93)90028-E
- Kompas. (2009). In 2008 IHSG achieved and slumped. https:// tekno.kompas.com/read/2008/12/30/22124067/tahun.2008. ihsg.berprestasi.dan.terpuruk
- Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: causality and causes. *Journal of Monetary Economics*, 46, 31–77. https://doi.org/10.1016/S0304-3932 (00)00017-9
- Levine, R., & Zervos, S. (1998). Stock markets, banks, and growth. *American Economic Review*, 88(3), 537–558. https://www.jstor.org/stable/116848
- Lusiana. (2012). Investment business in Indonesia. Jakarta: PT Rajagrafindo Persada.
- McKinnon, R. I. (1973). *Money and capital in economic development*. Washington, DC: The Brookings Institution.
- Narayan, P. K., & Narayan, S. (2013). The short-run relationship between the financial system and economic growth: New evidence from regional panels. *International Review of Financial Analysis*, 29, 70–78. https://doi.org/10.1016/j. irfa.2013.03.012
- Ngare, E., Morekwa, E., & Misati, R. N. (2014). Stock market development and economic growth in Africa. *Journal of Economics and Business*, 74, 24–39. https://doi.org/10.1016/j. jeconbus.2014.03.002
- Nguyen, D. D., & Pham, M. C. (2018). Search-based sentiment and stock market reactions: An empirical evidence in Vietnam. *The Journal of Asian Finance, Economics, and Business*, 5(4), 45–56. https://doi.org/10.13106/JAFEB.2018.VOL5.NO4.45
- Nordin, S., & Nordin, N. (2016). The impact of capital market on economic growth: A Malaysian outlook. *International Journal* of Economics and Financial Issues, 6(7S), 259–265. https:// www.econjournals.com/index.php/ijefi/article/view/3617
- Odedokun, M. O. (1996). Alternative econometric approaches for analyzing the role of the financial sector in economic growth: Time-series evidence from LDCs. *Journal of Development Economics*, 50, 119–146. https://doi.org/10.1016/0304-3878(96)00006-5
- Pan, L., & Mishra, V. (2018). Stock market development and economic growth: Empirical evidence from China. *Economic Modelling*, 68, 661–673. https://doi.org/10.1016/j. econmod.2017.07.005
- Rioja, F., & Valev, N. (2014). Stock markets, banks, and the sources of economic growth in low and high-income countries. *Journal* of Economics and Finance, 38(2), 302–320. https://doi. org/10.1007%2Fs12197-011-9218-3

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- Seven, U., & Yetkiner, H. (2016). Financial intermediation and economic growth: does income matter? *Economic System*, 40, 39–58. http://doi.org/10.1016/j.ecosys. 2015.09.004
- Schumpeter, J. A. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle.* Cambridge, MA: Harvard University Press.
- Shaw, E. S. (1973). Financial deepening in economic development. New York: Oxford University Press.
- Shen, C., & Lee, C. (2006). Same financial development yet different economic growth: Why? *Journal of Money, Credit and Banking*, 38, 1907–1944. http://doi.org/10.1353/mcb.2006.0095
- Snigh, A. (1997). Financial liberalization: Stock markets and economic development. *Economic Journal*, 107, 771–782. https://doi.org/10.1111/j.1468-0297.1997.tb00042
- Wooldridge, J. M. (2006). Introductory econometric: A modern approach (4th ed.). Mason, OH: South-Western Cengage Learning.