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The Causality of Financial Inclusion and Economic Growth in Indonesia

Purwiyanta[1], **Ambar Pujiharjanto**[1], **Rini Dwi Astuti**[1], **Ploypailin Kijkasiwat**[2]
[1]Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran Yogyakarta, Indonesia
[2]Faculty of Business Administration and Accountancy, Khon Kaen University, Thailand

rinidwiastuti@upnyk.ac.id

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Financial depth; Financial acces; Financial stability; Economic growth

Abstract

Sustainable economic growth has become one of the economic goals of concern for policymakers around the world. Financial inclusion has received significant attention in planning strong policies to achieve growth goals. This study aims to analyze how fast the response to economic growth is due to shocks to financial depth, financial access, and financial stability in 34 provinces in Indonesia, 2014-2019. This study uses vector auto-regression (VAR) models and Granger causality to test the main research questions. The results of the study show that financial depth and stability can promote growth, not vice versa. The existence of shocks to the three financial inclusion variables responded differently to economic growth.

***Kata Kunci**: Kedalaman finansial; Akses keuangan; Stabilitas keuangan; Pertumbuhan ekonomi*

Abstrak

Pertumbuhan ekonomi yang berkelanjutan telah menjadi salah satu tujuan ekonomi yang menjadi perhatian para pembuat kebijakan di seluruh dunia. Inklusi keuangan telah mendapat perhatian yang signifikan dalam merencanakan kebijakan yang kuat untuk mencapai tujuan pertumbuhan. Penelitian ini bertujuan untuk menganalisis seberapa cepat respon pertumbuhan ekonomi akibat guncangan pada kedalaman keuangan, akses keuangan, dan stabilitas keuangan di 34 provinsi di Indonesia, 2014-2019. Penelitian ini menggunakan model vector auto-regression (VAR) dan kausalitas Granger untuk menguji pertanyaan utama penelitian. Hasil penelitian menunjukkan bahwa kedalaman dan stabilitas keuangan dapat mendorong pertumbuhan, bukan sebaliknya dan adanya guncangan pada ketiga variabel inklusi keuangan direspon berbeda oleh pertumbuhan ekonomi.

1. Introduction

Recently, increased consideration has been given to the impact of the inclusiveness of the financial sector (Kim et al., 2018; Okoye et al., 2017; Sahay et al., 2015; Sethi & Acharya, 2018; Singh & Huang, 2011). However, the performance of financial systems varies due to developments at a particular point in time (Gourène & Mendy, 2019), geographic variations and differences in dimensions (Sarma, 2015), so studies on the influence of the financial sector on growth do not always provide the same results in all situations. It has been argued that financial inclusion can enhance growth through the value added by the positive impact on people by improving conditions such as health, nutrition and education as well as reducing poverty (Yorulmaz, 2012).

Financial inclusion refers to providing access to financial services to disadvantaged people (Group, 2013). Financial inclusion is a strategy to increase public access to formal financial institutions (Hariharan & Marktanner, 2012). Financial inclusion covers a variety of financial services including savings, credit, insurance, money transfers and other payment services (Sarma & Pais, 2008). It is affected by the quality of financial products and service

delivery (Kijkasiwat & Chancharat, 2022). However, the indicators of financial inclusion are sometimes ignored, thereby weakening the role of financial inclusion in the economy (Sarma, 2015).

There are four characteristics of the financial system: depth, access, efficiency, and stability of financial institutions (Sotiropoulou et al., 2019). Many studies focus on financial access (Guney & Demirel, 2019; Sethi & Acharya, 2018; Sharma, 2016) and financial depth (Okoye et al., 2017). The novelty of the study is that it combines these two aspects and adds one more aspect, that of financial stability. In an economic crisis, financial stability is an important factor for efficient economic activity and economic growth (Sotiropoulou et al., 2019). Most studies use time series data, but the current study uses panel data. This study aims to: 1) analyze the causality of financial depth, financial access, and financial stability on economic growth in 34 provinces in Indonesia, and 2) analyze the speed of response to economic growth from the shock of the financial sector in 34 provinces in Indonesia.

The next section presents literatures relating to financial inclusion and economic growth. The third section is research methodology, following by empirical findings and discussion section. The last section is the conclusion of this study.

2. Literature Review

Much of the academic literature finds the strong relationship between financial inclusion and economic growth over a long period (Bigirimana & Hongyi, 2018). Financial inclusion is defined as access to formal financial services by individuals and companies to enable them to utilise a variety of quality payment, savings, credit and insurance services as well as electronic financial transactions (Kijkasiwat & Chancharat, 2022). Access to finance is an important issue because of its contribution to reducing income inequality and increasing economic growth (Demirgüç-Kunt & Klapper, 2012). The development of financial inclusion encourages the ease of household access to financial services such as bank deposits and credit. Financial inclusion influences the behaviour of firms and local spending, then effectiveness of monetary policy (Mehrotra & Yetman, 2015).

In their study, Sethi & Sethy (2018) examines the relationship between financial inclusion and economic growth in India. The results of the linear cointegration test confirm that there is a long-term relationship between financial inclusion and economic growth for India. The authors demonstrate that improvements in financial services from both the demand and supply sides have a positive impact on economic growth. These results suggest that India can achieve long-term economic growth by increasing the scope of financial inclusion. However, there is no evidence of nonlinear cointegration, which indicates that there is no asymmetric effect of financial inclusion on economic growth. Furthermore, the causality test shows that financial inclusion causes economic growth, but not vice versa. The results of this study support previous research conducted by Ogege & Boloupremo (2014), Babajide et.al (2015), and Nwafor & Yomi (2018), which found that financial inclusion has a positive effect on economic growth in Nigeria. A different result is discussed by Okoye et al. (2017), who demonstrate that credit to the private sector cannot promote economic

growth in Nigeria but financial inclusion has driven poverty reduction in Nigeria through the provision of rural credit.

In another study, Gourene & Mendy (2019) examined the causality of financial inclusion and economic growth using West African Economic and Monetary Union (WAEMU) panel data from 2006 to 2015. Their research showed that there is a bi-directional causality between financial inclusion and economic growth in the medium or long term, but not in the short term. Granger causality analysis reveals a unidirectional causality between the number of deposits/loan accounts and gross domestic product (Sharma, 2016).

A research inquiry conducted by Otekunrin, et al., (2021) explores the connection between economic growth, financial development, financial inclusion and financial innovation in Africa by employing the panel structural vector autoregression using annual data from 2004 to 2018. The results of the study show that the causality between financial inclusion, financial innovation and economic growth is significantly negative in the long run. Meanwhile, short-term causality shows that there is a relationship between economic growth and financial inclusion and financial innovation (Otekunrin et al., 2021). By contrast, research by Lenka & Sharma (2017) examines the effect of financial inclusion on economic growth in India during the period 1980 to 2014, and show that there is a positive impact of financial inclusion on economic growth in both the long and short term. The literature thus suggests a connection between financial inclusion and economic growth and thus provides a platform for the current research inquiry.

3. Methodology

The Indonesian economy is dynamic, including financial inclusion and economic growth. There are two views regarding the nexus of financial inclusion and economic growth. High economic growth is seen as a factor that can deepen financial inclusion. It is possible to have a two-way relationship between financial inclusion and economic growth. For variables that include time series, results could be influenced by the value of the previous period, which creates a lag effect in the data. For this reason, the econometric model used in this study considers the existence of lag and the causality relationship between variables. Based on these arguments, this study uses the VAR analysis and the Granger causality test. Time series data may be subject to non-stationary series motion. It is necessary to check the stationarity of the data series using augmented Dickey-Fuller (ADF). The optimal lag structure is obtained by the lowest Akaike information criteria (AIC). This study uses panel data consisting of 34 provinces in Indonesia and the 2014-2019 annual time series. The analysis tool uses VAR which explains that each variable in the model depends on the past movements of these variables and the past movements of all variables in the system (Gujarati, 2012). The VAR model in this study is as follows in Equation 1-4:

$$Growth = \sum_{i=1}^{n} \alpha_i KK_{ti} + \sum_{j=1}^{n} \alpha_j AK_{tj} + \sum_{k=1}^{n} \alpha_k SK_{tk} + e_{1t} \quad (1)$$

$$KK = \sum_{i=1}^{n} \beta_i Growth_{ti} + \sum_{j=1}^{n} \beta_j AK_{tj} + \sum_{k=1}^{n} \beta_k SK_{tk} + e_{2t} \quad (2)$$

$$AK = \sum_{i=1}^{n} \gamma_i KK_{ti} + \sum_{j=1}^{n} \gamma_j Growth_{tj} + \sum_{k=1}^{n} \gamma_k SK_{tk} + e_{3t} \quad (3)$$

$$SK = \sum_{i=1}^{n} \delta_i KK_{ti} + \sum_{j=1}^{n} \gamma_j AK_{tj} + \sum_{k=1}^{n} \gamma_k Growth_{tk} + e_{4t} \quad (4)$$

Where n, m refer to the number of lags, and α, β, γ, δ are the regression coefficients. Growth is economic growth, measured by constant price GRDP growth. KK is financial depth, measured by the ratio of credit to the private sector to GRDP. AK stands for financial access, measured by the ratio of total bank deposits to GRDP, and SK is financial stability, measured by the ratio of non-performing loans.

3.1. Granger Causality Test

The Granger Causality test is used to ascertain the direction of the relationship between variables. Granger's approach tries to answer whether {x} causes {y} or whether the current {y} value is explained by the past {y} value and then whether the addition of the {x} lag value is also significant. The variable {y} is said to be *Granger Caused* by the variable {x} if {x} helps predict {y} or the value of the lag coefficient {x} is statistically significant.

3.2. Impulse Response VAR

Because the coefficients in the VAR model are difficult to interpret individually, analysis is used to measure impulse response. This analysis of impulse response tracks the response of endogenous variables in the VAR system due to shocks or changes in the disturbance variable (e). Through this analysis, the impulse response can be used to trace shocks for the next several periods (Widarjono, 2018). The image impulse response will show the response of a variable due to the shock of another variable for several periods after the shock occurs. If the image impulse response shows a movement that is getting closer to the equilibrium point (convergence) or returns to the previous balance, it means that the response of a variable due to a shock will disappear over time with a non-permanent effect on the variable.

3.3. Variance Decomposition

Variance decomposition decomposes the variation of one endogenous variable into the shock components of the other endogenous variables in the VAR system. This variant decomposition explains the proportion of the movement of a series due to the shock of the variable itself compared to the shock of other variables. If the εzt shock is not able to explain the forecast error variance of the yt variable, it can be said that the yt variable is exogenous. In this condition, the yt variable will be independent of the εzt shock and the zt variable. Conversely, if the εzt shock can explain the forecast error variance of the yt variable, it means that the yt variable is an endogenous variable.

4. Empirical Results and Discussion

Economic growth in 34 provinces in Indonesia shows differences between regions. Provinces on the island of Sulawesi show the highest average growth, while provinces in Maluku and Papua have the lowest average economic growth compared to other regions. The high economic growth in Sulawesi is contributed to by the agriculture, forestry and fisheries sectors. Papua's economic growth has been very volatile, reaching its highest figure in 2016 at 9.14 percent, but in 2019 it experienced its lowest point of -15.72 percent (Figure 1). Papua is the only province in Indonesia that experienced negative economic growth in 2019. This is due to the decline in mining production owned by PT Freeport Indonesia. The decline in production occurred due to a shift in mining activities, from open pit mining to underground mining (Grasberg Block Cave).

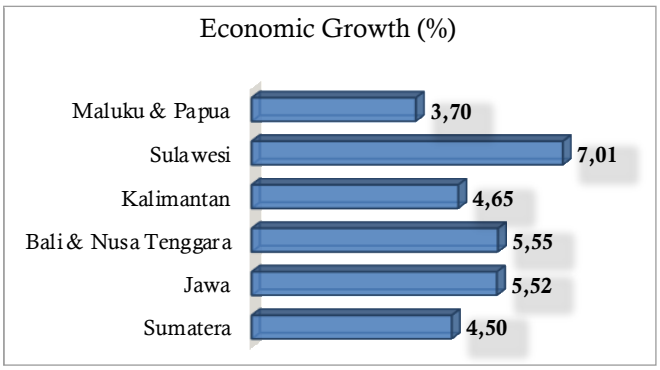

Figure 1. Economic Growth in Indonesia, 2014-2019
Source: Badan Pusat Statistik (2020) reprocessed

The development of financial inclusion varies between the provinces in Indonesia. Data on financial access shown by the ratio of deposits in banks to gross regional domestic product in DKI Jakarta Province reached nearly 120 percent, and the ratio of loans to the private sector to gross regional domestic product reached 76 percent. Table 1 shows the result of the unit root test.

Table 1. Result of the unit root test

Variable	ADF unit root test			
	Fisher Chi-square		Choi Z-stat	
	Statistic	Prob.	Statistic	Prob.
Growth	137.086	0.0000	-4.01103	0.0000
Financial depth (KK)	186.618	0.0000	-8.12856	0.0000
Financial access (AK)	210.071	0.0000	-9.01408	0.0000
Financial stability (SK)	90.1130	0.0377	-1.49250	0.0678

Notes:
prob < 0.05 reject the null hypothesis that the series has a unit root at the 5% level of significance;
prob < 0.1 reject the null hypothesis that the series has a unit root at the 10% level of significance.

A stationarity test was carried out to ensure that the data did not contain a unit root. The results of the stationarity test in Table 2 show that all the data was stationary at the 5% significance level, except for financial stability which was at the 10% significance level. This means that the data is stationary, where the data moves around the average throughout the all period.

The relationship between financial inclusion and economic growth was analyzed using the VAR model and Granger causality, where it is necessary to determine the optimum lag beforehand. The results of the determination of the optimum lag identified two lags based on the LR, FPE, and AIC criteria (Table 3).

Table 2. Granger Causality Test

Pairwise Granger Causality Tests **Sample: 2014 2019** **Lags: 2**			
Null Hypothesis:	**Obs**	***F*-Statistic**	**Prob.**
KK does not Granger Cause PE	134	2.92662	0.0571**
PE does not Granger Cause KK		0.09219	0.9120
AK does not Granger Cause PE	134	0.78262	0.4594
PE does not Granger Cause AK		1.78823	0.1714
SK does not Granger Cause PE	133	8.49374	0.0003*
PE does not Granger Cause SK		1.06841	0.3466

* 5% level significance ** 10% level significant

Table 3. The results of the determination of the optimum lag

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1208.049	NA	506023.5	24.48584	24.59070	24.52827
1	-916.6362	553.3906	1940.650	18.92194	19.44621*	19.13406
2	-880.2683	66.12335*	1288.168*	18.51047*	19.45415	18.89229*
3	-866.8756	23.26820	1363.399	18.56314	19.92624	19.11465

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

From the results of the Granger causality test (Table 2), the variables of depth and financial stability are shown to be factors that influence economic growth. The higher the credit which is channelled to the private sector, the more productive is the investment which is financed by banks. Conversely, the higher the economic growth, the higher the funds are that can be loaned to the private sector. In financing their investments, firms can raise funds through the capital market by issuing shares or bonds. However, the underdeveloped capital market in Indonesia has resulted in limited funds that can be accessed by companies through the capital market. Firms rely heavily on bank loans to expand their business. Banking credit disbursed to the private sector in the form of working capital credit and investment credit is able to increase company productivity. Corporate funding in Indonesia is still dominated by the banking sector. Banks must be able to carry out their intermediary role properly so that they can channel more credit to the private sector and encourage companies to grow further. The results of this study are in line with the research of Ogege & Boloupremo (2014), Babajide et al. (2015), Nwafor and Yomi (2018), but not in line with Okoye et al. (2017).

Financial stability is also a driving factor for economic growth. It indicates that investment financed from bank credit can run well and profitably. This can encourage increased output and economic growth. Financial stability is related to indicators of non-

performing loans (NPLs). NPL is one indicator of a bank's asset health. These indicators can be in the form of principal financial ratios that are able to provide information on assessments of capital conditions, profitability, credit risk, market risk, and liquidity. This non-performing loan will certainly have an impact on reducing the capital of a bank. If a non-performing loan is allowed, it will have an impact on lending for the next period.

The company's ability to repay loans depends on how the problem of asymmetric information is suppressed. There are two problems with asymmetric information: adverse selection and moral hazard (Mishkin, 2016). Adverse selection occurs before a transaction. The bank's ability to conduct credit analysis for prospective borrowers is the key to minimizing this problem. Credit will only be given to borrowers who deserve it, so the default risk will be low. Lending to unsuitable borrowers can trigger financial instability, such as what happened during the global crisis in 2008 which was caused by the subprime mortgage crisis. Lending, including mortgages, tended to be pro-cyclical when the economy was booming. The increase in credit disbursed was not balanced by the principle of prudence. Credit or debts were given to parties who were not eligible for a loan. The impact of these lending practices occurred when the economy began to overheat and the central bank responded by raising interest rates, which resulted in borrowers' inability to pay their debts, and resulted in financial stability disturbances. An unstable financial system will certainly affect economic growth through its influence on public expectations.

Another problem of asymmetric information is moral hazard, which is a problem that arises after a transaction. Problems arise after debt contracts. Borrowers can misuse the funds they receive by taking advantage of activities that may not be carried out. They undertake risky activities that can cause defaults. Banks must be able to carry out a monitoring process of borrower activity, and take the necessary actions if there are indications that the borrower begins to experience loan repayment difficulties. From a financial perspective, the borrower's ability to pay off either the principal or the loan interest will have no meaning without the willingness and good faith of the borrower. The more borrowers who are in arrears in instalments, the greater the NPL value at the bank. Other factors causing high NPLs are government policies such as an increase in the basic electricity rate, which can cause an increase in production costs, a policy to increase interest rates by a central bank as well as economic conditions such as inflation and depreciation which can reduce the firm's ability to repay loans.

Variable access to finance does not promote economic growth. Savings will increase due to an increase in income. This follows Keynes's theory, where saving is a function of income. Savings are a component of leakage in the national income stream, so if this variable not converted into investment by the banking system, it will not affect economic growth. Increasing bank liquidity does not necessarily increase bank lending. The tendency of banks to deposit excess funds at Bank Indonesia has resulted in an unsatisfactory intermediation process. Instead, the funds remain in Bank Indonesia and are not channelled to the real sector. Banks tend to place their excess funds in short-term and low-risk instruments, such as placements in SBIs and Bank Indonesia current accounts. This management of excess funds has occurred because the banks have been faced with short-term liquidity obligations. As

result, the increase in bank deposits has not been able to boost economic growth in Indonesia. These results differ from those cited in the research of Sharma (2016), and Sethi & Acharya (2018), but are in line with the results of Okoye et al. (2017).

The extent of the response of economic growth to a shock on financial inclusion variables can be seen from the results of the impulse response function (IRF). The IRF analysis of the VAR model shows that economic growth responds positively to the shocks that occur in the financial depth variable (KK). The proportion of credit in the private sector to the gross regional domestic product can boost economic growth in 34 provinces in Indonesia. This positive response is permanent and takes place quickly, starting in the first year of shock in the financial depth variable (Figure 2a). The response of economic growth to financial access variable (AK) shocks in the first to third years is negative. From the third years onwards, the response was positive but tends not to be permanent (Figure 2b). This means that bank deposits are not able to encourage economic growth. In other words, the paradox of thrift applied in 34 provinces in Indonesia during that period.

The response of economic growth to shocks that occur in the financial stability variable (SK) is positive in the first 3.5 years and then permanently negative (Figure 2c). Financial stability is represented by the amount of non-performing loans. A positive response at the beginning of the period may occur because the value of non-performing loans is still within reasonable limits that meets banking health requirements. Consequently, the shock on the stability variable in the early period still does not interfere with economic growth. However, if this shock continues, in the next period, this financial stability will cause a permanent decline in economic growth.

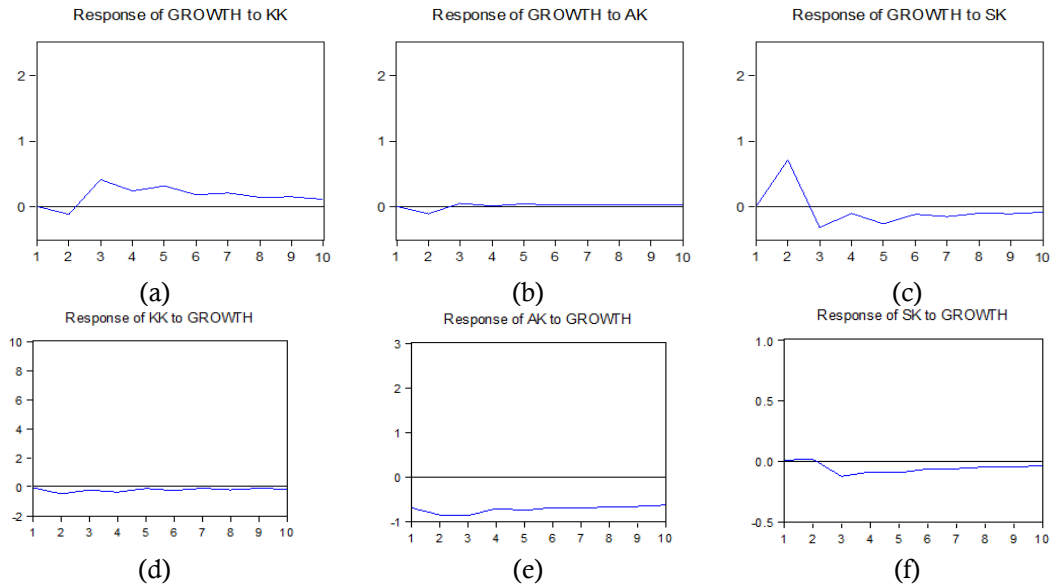

Figure 2. Impulse Response VAR

Variance decomposition shows the proportion of the movement of economic growth due to the shock of the economic growth itself compared to the shock of financial inclusion variables (Table 4). Current economic growth is strongly influenced by the economic growth itself in the entire period. Shock in financial inclusion (financial depth, financial access, and

financial stability) only determines the movement of economic growth by less than 20 percent. Financial stability is the biggest determinant of economic growth and access to finance is the smallest component influencing economic growth with a rate of less than 1 percent throughout the period. This shows that financial stability is an important factor that needs to be maintained in order to boost economic growth in 34 provinces in Indonesia.

Table 4. Variance Decomposition

Variance Decomposition of GROWTH:					
Period	**S.E.**	**GROWTH**	**KK**	**AK**	**SK**
1	2.193721	100.0000	0.000000	0.000000	0.000000
2	2.429218	90.89996	0.246213	0.207402	8.646427
3	2.490093	86.91978	2.978472	0.235583	9.866163
4	2.505748	86.00431	3.839948	0.233906	9.921835
5	2.539722	83.71876	5.261739	0.251270	10.76823
6	2.548906	83.11733	5.717833	0.254884	10.90995
7	2.562114	82.28189	6.299068	0.261017	11.15803
8	2.568197	81.89862	6.567188	0.265951	11.26824
9	2.575103	81.46697	6.864345	0.270356	11.39833
10	2.579052	81.22060	7.023662	0.275144	11.48059
Variance Decomposition of KK:					
Period	**S.E.**	**GROWTH**	**KK**	**AK**	**SK**
1	8.469780	0.004467	99.99553	0.000000	0.000000
2	8.692564	0.330303	98.68081	0.749745	0.239143
3	10.62756	0.265146	98.39332	0.507483	0.834054
4	10.86959	0.370346	97.58911	0.992441	1.048098
5	11.76891	0.326754	97.10835	0.900405	1.664491
6	11.97503	0.363267	96.54750	1.212437	1.876799
7	12.44996	0.342939	96.06603	1.224817	2.366218
8	12.61070	0.360463	95.61743	1.448348	2.573755
9	12.87727	0.352342	95.20740	1.516564	2.923692
10	12.99495	0.363062	94.84479	1.690610	3.101541
Variance Decomposition of AK:					
Period	**S.E.**	**GROWTH**	**KK**	**AK**	**SK**
1	2.891786	5.764313	8.829104	85.40658	0.000000
2	3.483461	9.981620	11.25494	73.99783	4.765614
3	4.068213	11.88668	9.987509	74.63155	3.494252
4	4.452286	12.43993	10.38917	73.61380	3.557103
5	4.786261	13.23164	9.706773	73.97313	3.088455
6	5.062969	13.65800	9.638548	73.90191	2.801542
7	5.305250	14.21704	9.224377	73.98685	2.571739
8	5.516831	14.60756	9.056877	73.95472	2.380840
9	5.704297	15.01311	8.776454	73.94640	2.264033
10	5.871063	15.33468	8.608310	73.89078	2.166227
Variance Decomposition of SK:					
Period	**S.E.**	**GROWTH**	**KK**	**AK**	**SK**
1	0.961331	0.009079	20.42812	0.978561	78.58424
2	1.014717	0.048943	18.75266	0.964806	80.23359
3	1.126078	1.230272	17.91616	0.897311	79.95626
4	1.151365	1.715039	17.16187	0.877284	80.24581
5	1.186599	2.216021	16.69940	0.837316	80.24726
6	1.200635	2.421451	16.31383	0.821507	80.44322
7	1.214661	2.610441	16.04049	0.802665	80.54641
8	1.221813	2.725120	15.85591	0.793358	80.62561
9	1.227799	2.829777	15.70805	0.788703	80.67347
10	1.231358	2.900947	15.63185	0.787609	80.67959
Cholesky Ordering: GROWTH KK AK SK					

5. Conclusion

This study analyzes the relationship between financial inclusion and economic growth in Indonesia by considering the differences in characteristics in 34 provinces during the 2014-2019 period. This study uses VAR analysis and Granger Causality based on panel data. Similar research that has been undertaken previously is only based on time series data in one particular area. The financial inclusion aspect which was analysed is also more complete than its consideration in the existing research because the current study examined three aspects of financial inclusion: financial depth, financial access, and financial stability. The results of the Granger causality test show that the variables of depth and financial stability are factors that influence economic growth, but not the other way around. Variable access to finance has no effect on economic growth, and vice versa. In accordance with Keynes's theory, saving is a leakage component in the national income stream, so that if this variable is not converted into investment by the banking system, it will not affect economic growth.

The policy implication of this research is that it is important for banks to be able to simplify the process of submitting and approving loans without reducing the prudential principle, then more funds can be used to finance investment. Credit analysis needs to be carried out in accordance with the terms and conditions in order to reduce credit risk. The role of banking intermediation should continuously improve and bank deposits need to be channelled into the productive sector. Excess banking liquidity should be channelled to banks that still have low liquidity and more funds used for investment. Accordingly, funds should not be allowed to settle in the central bank and be used instead to finance the real sector. Non-performing loans must be kept at a low level and not allowed to interfere with the health of the banking system. In order to maintain financial stability, it is very important for the central bank to implement financial stability policies. A central bank that only focuses on controlling prices may implement policies that are counterproductive to the economy. When inflation occurs, the central bank needs to implement contractionary policies. However, if the response is simply to raise interest rates, this action can have a negative impact on financial stability. For this reason, a policy mix is required, such as a combination of a reserve requirements policy, provisions related to loan to value ratio, and other macro prudential policies together with monetary policy. Instead, the central bank will be able to control prices and maintain financial stability to promote sustainable economic growth.

In general, it is concluded that financial inclusion is still an essential factor in determining the level of economic growth in 34 provinces in Indonesia. Policies to encourage financial inclusion are still a priority in developing countries such as Indonesia. The limitations of this study are the short research period and that financial inclusion only focuses on financial indicators in the banking system. Further research can add other financial inclusion variables, such as digital financial services, use of electronic money, financial products in the money market and capital market.

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Authors' Declaration

Authors' contributions and responsibilities

The authors made substantial contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

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Availability of data and materials

All data are available from the authors.

Competing interests

The authors declare no competing interest.

Additional information

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