

## Financial Inclusion and Economic Development: A Case Study of Indonesia

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**ABSTRACT**

Financial inclusion has emerged as a strategic policy priority in Indonesia, a developing country with more than 270 million people that continues to face persistent challenges of poverty and income inequality. Despite significant progress in expanding access to formal financial services, with the financial inclusion index reaching 85.1% in 2022, structural disparities across regions remain pronounced, and empirical evidence on the regional impact of financial inclusion on economic development remains limited. This research analyzes the relationship between financial inclusion and economic development in Indonesia using provincial panel data from 2016 to 2022. Financial inclusion is measured through the dimensions of access, availability, and usage of formal financial services, while economic development is represented by Gross Regional Domestic Product per capita. A fixed-effects panel data regression method is used to analyze 34 provinces with a total of 238 observations. The results show that financial inclusion has a significant positive effect on economic growth, with a coefficient of 0.425. Every 1% increase in the financial inclusion index increases GRDP per capita by 0.425%. The access dimension contributes the most compared with the availability and usage dimensions. The findings support the theory that expanding access to formal financial services drives savings mobilization, productive investment, and MSME empowerment, which ultimately accelerates inclusive economic growth in Indonesia

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### INTRODUCTION

As a developing country with a population exceeding 270 million, Indonesia faces various structural economic problems, including high poverty rates and income inequality. According to data from the Central Statistics Agency (Badan Pusat Statistik), Indonesia's Gini ratio stood at 0.381 in 2020, indicating a persistently high level of economic inequality. Meanwhile, the number of people living in poverty reached 26 million, although the trend has declined over the past decade. Financial inclusion is regarded as a strategy capable of addressing these issues (Danladi et al., 2023). Financial inclusion is defined by Presidential Regulation Number 82 of 2016 concerning the National Strategy for Financial Inclusion as a condition in which every member of society has access to formal financial products and services that are high-quality, timely, seamless, secure, and reasonably priced, in accordance with their needs and abilities (Cuéllar, 2025; Das, 2024; Kandpal et al., 2025; Verma et al., 2025).

The financial inclusion index in Indonesia has shown an upward trend. Information from the Financial Services Authority's (Otoritas Jasa Keuangan) National Survey of Financial Literacy and Inclusion shows that the financial inclusion index increased from 67.8% in 2016

to 76.19% in 2019 and further rose to 85.1% in 2022. The most recent achievement, recorded in 2025 based on an updated methodology, reached 80.51%. Theoretically, financial inclusion contributes to economic development through several transmission mechanisms (Ahmad et al., 2020; Kling et al., 2022). First, it improves the efficiency of capital allocation by connecting savers and investors more effectively. Second, it facilitates access to credit for micro, small, and medium-sized enterprises (MSMEs), which have long faced financing constraints (Charfeddine et al., 2024; Chibueze et al., 2025; Yoshino & Taghizadeh-Hesary, 2018). Third, it encourages a culture of saving and investment, ultimately increasing capital accumulation. Fourth, it streamlines economic transactions through an efficient payment system (Malempati, 2022).

Empirical research across various countries provides mixed evidence on how financial inclusion affects economic expansion. Sarma and Pais (2011) found a positive relationship between the financial inclusion index and the level of human development in several countries. Sanjaya (2014), in a study on Indonesia, demonstrated that financial inclusion through credit programs plays a role in poverty alleviation. Hannig and Jansen (2010) highlighted how financial inclusion may promote economic growth and strengthen financial system stability. However, studies on how financial inclusion affects Indonesia's economic growth remain limited, and the findings are inconsistent. Most previous studies have employed national aggregate data or focused on specific aspects, such as MSME credit. Studies that analyze the multidimensional impact of financial inclusion on economic development using provincial panel data remain scarce (Kling et al., 2022; Yang & Fu, 2019).

This study uses panel data from 34 provinces for the period 2016–2022 to examine the impact of financial inclusion on economic development in Indonesia. This research is expected to make an empirical contribution to the development economics literature while offering policy recommendations for the government in designing effective financial inclusion strategies. The multidimensional approach to measuring financial inclusion, combined with the use of provincial panel data, enables a more in-depth analysis of the heterogeneity of financial inclusion's impact across different regions of Indonesia.

Sanjaya et al. (2014) used a panel data regression model to examine the relationship between poverty and financial inclusion in Indonesia from 2008 to 2012. The study found that financial inclusion through credit programs contributed to lower poverty rates. The dimension of banking service usage showed the greatest impact on poverty alleviation. Wardhono et al. (2016) analyzed the determinants of financial inclusion at the district/city level in Indonesia. The study found that education levels, infrastructure, and economic development had positive effects on the financial inclusion index. Geographic factors, such as population density and distance from economic centers, also had significant effects.

Umar (2017) calculated the Islamic financial inclusion index in Indonesia using Sarma's (2012) methodology and found that Indonesia's Islamic financial inclusion index remained relatively low, with high disparities across provinces. Provinces with large Muslim populations did not automatically have high Islamic financial inclusion index scores. Dienillah and Anggraeni (2016) examined the effect of financial inclusion on financial system stability in Asia, particularly in Indonesia. The study found that financial inclusion improved financial system stability by increasing banks' resilience to external shocks and diversifying their funding sources.

The majority of previous studies on financial inclusion in Indonesia have employed national aggregate data or focused on specific aspects, such as poverty or financial stability. There remains a lack of research examining the multidimensional effects of financial inclusion on regional economic growth. This study contributes by analyzing the heterogeneity of the effects of financial inclusion on economic development across various Indonesian regions using panel data from 34 provinces. The use of a multidimensional financial inclusion index makes it possible to identify which dimension has the greatest impact on regional economic development. In addition, the longer observation period, from 2016 to 2022, enables a dynamic examination of the impact of financial inclusion.

This research aims to analyze the effect of financial inclusion on economic development in Indonesia using provincial panel data from 2016 to 2022, focusing on three main objectives: examining the impact of the financial inclusion index on GRDP per capita, identifying the most influential dimension of financial inclusion—access, availability, or usage—and analyzing regional heterogeneity across Java-Bali, Sumatra, and Eastern Indonesia. Theoretically, this study contributes to the development economics literature by providing empirical evidence on the multidimensional impact of financial inclusion on regional economic growth in a large archipelagic developing country, where such evidence remains limited. Practically, the findings are expected to assist policymakers, including the government, OJK, and Bank Indonesia, in designing and evaluating targeted financial inclusion strategies; guide financial service providers in expanding access to underserved regions; and provide academics with a foundation for further research on the impact of financial inclusion on poverty reduction, income inequality, and the role of digital financial services.

## **METHOD**

This research employed a quantitative approach using panel data regression analysis to examine the relationship between financial inclusion and economic development in Indonesia. The study used secondary panel data covering 34 provinces in Indonesia from 2016 to 2022, resulting in 238 observations with a balanced panel structure. The data were obtained from the Financial Services Authority (Otoritas Jasa Keuangan), the Central Statistics Agency (Badan Pusat Statistik), Bank Indonesia, and the National Council for Financial Inclusion (Dewan Nasional Keuangan Inklusif). The observation period was selected based on consistent data availability and its relevance to the implementation of the National Strategy for Financial Inclusion.

The dependent variable was GRDP per capita, measured in millions of rupiah at constant 2010 prices, as a proxy for regional economic development. The main independent variable was the Financial Inclusion Index, calculated using Sarma's (2012) methodology, along with its three dimensions: access, availability, and usage. Access was measured by the number of savings accounts per 1,000 adults, availability by the number of bank branches per 10,000 adults, and usage by the ratio of credit volume to GRDP. The control variables included the regional inflation rate, the investment-to-GRDP ratio, the open unemployment rate, the human development index, and regional dummy variables.

The empirical model used is:

$$GRDP_{it} = \alpha + \beta_1 IIK_{it} + \beta_2 Inflation_{it} + \beta_3 Investment_{it} + \beta_4 Unemployment_{it} + \beta_5 HDI_{it} + \beta_6 Region_{it} + \varepsilon_{it}$$

“I” denotes province

“t” denotes year

Data analysis was conducted through several stages, including descriptive statistics, stationarity testing using the Im–Pesaran–Shin unit root test, panel model selection using the Chow and Hausman tests, classical assumption testing, and model estimation using fixed effects with robust standard errors. Multicollinearity was tested using the variance inflation factor (VIF), heteroskedasticity using the modified Wald test, and autocorrelation using the Wooldridge test.

This study had several limitations, including limited provincial-level financial inclusion data, which required the use of certain proxies; potential endogeneity bias due to the two-way relationship between financial inclusion and economic development; and the exclusion of qualitative factors, such as regulatory quality and institutional conditions. To address potential endogeneity, robustness checks were performed using lagged variables and the system generalized method of moments (system GMM) as an alternative estimation method.

## RESULT AND DISCUSSION

Table 1 presents descriptive statistics for all variables used in this study. The average GRDP per capita over the observation period was 45.8 million rupiah, with a standard deviation of 28.4 million rupiah, indicating a considerable economic disparity across provinces. The province with the highest GRDP per capita was DKI Jakarta (169.2 million rupiah), while the lowest was East Nusa Tenggara (18.3 million rupiah).

**Table 1. Descriptive Statistics of Research Variables**

Variables	Mean	Std. Dev	Min	Max
GRDP per capita (million IDR)	45.8	28.4	18.3	169.2
Financial Inclusion Index	0.68	0.12	0.42	0.94
Access Dimension	0.72	0.15	0.38	1.00
Availability Dimension	0.61	0.18	0.28	0.97
Usage Dimension	0.71	0.14	0.45	0.96
Inflation (%)	3.8	2.1	0.2	12.4
Investment/GRDP (%)	32.4	8.7	18.2	65.3
Unemployment Rate (%)	4.9	2.3	1.2	11.8
HDI	70.5	4.8	57.2	82.6

Source: Processed secondary data from the Central Statistics Agency (BPS), Financial Services Authority (OJK), and Bank Indonesia, 2016–2022 (n=238 firm-year observations)

The average financial inclusion index reached 0.68, with considerable variation across provinces. The accessibility dimension had the highest mean value (0.72), followed by the usage dimension (0.71) and the availability dimension (0.61). This indicates that the availability of financial infrastructure remains the primary constraint in the development of financial inclusion in Indonesia.

### Results of Prerequisite Tests

The Im–Pesaran–Shin unit root test results indicated that all variables were stationary at the 5% level, rendering differentiation unnecessary. The Chow test, with an F-statistic of 12.45 (p-value < 0.01), rejected the null hypothesis, indicating that the fixed effects model is more appropriate than the pooled OLS model. Furthermore, the Hausman test, with a chi-square

statistic of 23.78 (p-value < 0.01), showed that the fixed effects model is more consistent than the random effects model. The multicollinearity test yielded VIF values below 5 for all independent variables, indicating no serious multicollinearity issues. The modified Wald test detected heteroskedasticity (chi-square = 186.43, p-value < 0.01); therefore, estimation was conducted using robust standard errors. The Wooldridge test indicated no autocorrelation problem (F-statistic = 1.23, p-value = 0.27).

### Results of the Main Model Estimation

Table 2 presents the estimation results of the fixed effects model for the relationship between financial inclusion and economic development. Model 1 uses the aggregate financial inclusion index, while Model 2 disentangles the impact of each dimension separately.

**Table 2. Fixed Effects Model Estimation Results**

Variable	Model 1	Model 2
Financial Inclusion Index	0.425*** (0.089)	-
Access Dimension	-	0.268*** (0.076)
Availability Dimension	-	0.187** (0.082)
Usage Dimension	-	0.156** (0.071)
Inflation	-0.034* (0.018)	-0.038** (0.017)
Investment/GRDP	0.192*** (0.045)	0.201*** (0.043)
Unemployment Rate	-0.089** (0.039)	-0.095** (0.038)
Human Development Index (HDI)	0.315*** (0.098)	0.328*** (0.095)
Constant	-18.456*** (5.231)	-19.127*** (5.089)
R-squared within	0.643	0.661
F-statistic	45.67***	41.23***
Observations	238	238

\*Notes: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are in parentheses.\*

Source: Processed secondary data (2026)

The estimation results of Model 1 show that the financial inclusion index has a positive and significant effect on GRDP per capita, with a coefficient of 0.425. This implies that a one-point increase in the financial inclusion index increases GRDP per capita by 0.425 million rupiah, or approximately 0.93% of the average GRDP per capita. Model 2 provides deeper insight into the contribution of each dimension of financial inclusion. The accessibility dimension has the largest impact, with a coefficient of 0.268, followed by the availability dimension (0.187) and the usage dimension (0.156). All dimensions are statistically significant, confirming the importance of a multidimensional approach in the development of financial inclusion.

### Analysis of Control Variables

The investment-to-GRDP ratio shows a significant positive impact, with coefficients ranging from 0.192 to 0.201, confirming the role of investment in driving regional economic growth. The Human Development Index also has a significant positive effect (0.315–0.328), indicating the importance of human capital quality for economic development. Conversely, inflation has a negative effect on GRDP per capita, with coefficients ranging from -0.034 to -0.038. The unemployment rate also exhibits a significant negative impact (-0.089 to -0.095), consistent with economic theory indicating a trade-off between unemployment and output.

### Analysis of Regional Heterogeneity

To analyze the heterogeneity of the impact of financial inclusion across different regions, this study divides the provinces into three groups: Java-Bali, Sumatera, and Eastern Indonesia. Table 3 presents the estimation results for each regional group.

**Table 3. Estimation Results by Regional Group**

Variable	Jawa-Bali	Sumatera	Indonesia Timur
Financial Inclusion Index	0.382*** (0.112)	0.456*** (0.134)	0.473*** (0.156)
Control Variables	Ya	Ya	Ya
R-squared	0.721	0.589	0.532
Observations	63	70	105

Source: Processed secondary data (2026)

The results show that the impact of financial inclusion on economic development is largest in Eastern Indonesia (0.473), followed by Sumatera (0.456) and Java-Bali (0.382). These findings indicate that the marginal impact of financial inclusion is higher in regions with a lower baseline of financial inclusion, consistent with the theory of diminishing marginal returns.

### Robustness Checks

This study used multiple alternative estimations to assess the results' robustness. First, a financial inclusion coefficient of 0.398 (significant at the 1% level) was obtained using the random effects model; this result was not significantly different from the fixed effects result. Second, a coefficient of 0.401 (significant at the 1% level) was obtained by addressing possible endogeneity with lagged factors. Third, a coefficient of 0.412 (significant at the 5% level) was obtained when endogeneity bias was addressed using the system GMM estimator.

### Discussion of Findings

The study's conclusions support the theory that financial inclusion benefits Indonesia's economic growth. This outcome is in line with earlier research that discovered the benefits of financial inclusion, such as Sanjaya et al. (2014) and Wardhono et al. (2016), albeit with different foci and methodologies. The dominance of the accessibility dimension in driving economic development indicates that there remain segments of society that have not yet been reached by formal financial services. Improving access through the expansion of financial service networks, reducing transaction costs, and improving regulations can yield high multiplier effects on regional economies.

The larger impact observed in Eastern Indonesia suggests the potential of financial inclusion as an instrument for reducing development disparities across regions. However, the implementation of financial inclusion strategies in this region needs to consider specific characteristics such as the archipelagic geography, low population density, and limited infrastructure. From the perspective of transmission mechanisms, financial inclusion promotes economic development through several channels. First, it mobilizes household savings to be allocated toward productive investments. Second, it provides credit access to MSMEs that have remained underbanked. Third, it improves the efficiency of the payment system, reducing transaction costs in the economy. Fourth, it encourages economic formalization, which ultimately enhances the tax base and the quality of economic data.

## CONCLUSION

. This study analyzed the relationship between financial inclusion and economic growth in Indonesia using panel data from 34 provinces from 2016 to 2022. The findings provide compelling empirical evidence that financial inclusion significantly promotes regional economic development, as measured by GRDP per capita. The main results show that GRDP per capita increases by 0.425% for every 1% increase in the financial inclusion index. The access dimension contributes the most to economic development compared with the availability and usage dimensions, suggesting that access constraints still need to be addressed. The regional heterogeneity analysis shows that the impact of financial inclusion is greater in Eastern Indonesia than in Java-Bali and Sumatra.

The policy implications of this study indicate that the implementation of the National Strategy for Financial Inclusion needs to be accelerated, with a focus on improving access to financial services, particularly in Eastern Indonesia. Potential strategies include expanding the network of financial service agents, developing financial products tailored to the characteristics of local communities, leveraging financial technology to reach remote areas, and strengthening coordination among stakeholders in the financial ecosystem. Future research could explore the impact of financial inclusion on other development indicators, such as poverty reduction, income inequality, and job creation. Furthermore, microeconomic analysis using household-level data could provide deeper insight into the transmission mechanisms through which financial inclusion affects household welfare. The development of financial inclusion measurement methodologies that incorporate digital and Islamic finance aspects also represents a relevant research agenda in the Indonesian context.

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