INTERNATIONAL JOURNAL OF ECONOMIC SOCIAL SCIENCE AND MANAGEMENT LAW
Peer Reviewed, Referred & Indexed Journal
E-ISSN: 3070-0558
VOL.7, NO.2 (2026)

FINANCIAL INCLUSION AND ECONOMIC GROWTH: EVIDENCE FROM EMERGING ECONOMIES

Vishal Kaushal[1], Muskan Chauhan[2]and Dr. Kulwant Singh Pathania[3]

[1] Senior Research Fellow, Department of Commerce, Himachal Pradesh University, Shimla, India

[2]Senior Research Fellow, Maharaja Agrasen University, Himachal Pradesh, India

[3]Professor, Dean Research and Director School of Management, Maharaja Agrasen University, India

Abstract

This study examines the impact of financial inclusion on economic growth using panel data from selected emerging economies (BRICS) over the period 2012–2024. Financial inclusion is proxied by bank branches and ATMs, and by domestic credit to the private sector, while economic growth is measured by the logarithm of GDP per capita. Using panel econometric techniques, including pooled OLS, Fixed Effects, and Random Effects models, the study identifies the most appropriate specification through the Hausman test. The results indicate that the Random Effects model is suitable. Empirical findings reveal that private credit significantly promotes economic growth, whereas bank branches and ATMs are statistically insignificant. Inflation and trade openness are found to negatively affect growth. Diagnostic tests confirm the presence of panel effects, suggesting the need for robust estimation. The study concludes that improving credit access and strengthening financial systems are essential for achieving sustainable economic growth.

Keywords: Financial Inclusion, Economic Growth, Panel Data, Random Effects, BRICS, Private Credit

1.Introduction

Financial inclusion is increasingly viewed as a cornerstone of inclusive and sustainable economic growth, especially in emerging market economies where significant portions of the population remain excluded from formal financial services (Beck et al., 2007; DemirgüçKunt et al., 2018). In BRICS countries, rapid financial deepening and digitalization have expanded access to banking infrastructure, including bank branches and ATMs, and have broadened the availability of credit to households and firms (Sahay et al., 2015; DemirgüçKunt&Klapper, 2013). The central argument is that a financially inclusive system mobilizes savings, allocates capital more efficiently, and supports entrepreneurship and investment, which in turn stimulates aggregate output and long run growth (King & Levine, 1993; Beck et al., 2007).

However, the empirical relationship between specific dimensions of financial inclusion—such as physical infrastructure (branches and ATMs) versus credit depth (domestic credit to the private sector)—and economic performance remains debated. Some studies find that bank branches and ATMs positively affect growth by improving access to transaction services and savings instruments (Hernández Pineda, 2022; Gehrung, 2020). Others argue that the mere expansion of physical outlets may not translate into meaningful growth effects unless accompanied by improvements in credit quality, institutional quality, and financial literacy (Beck et al., 2007; Honohan, 2008). In contrast, domestic credit to the

private sector is more consistently associated with higher growth, as it directly intermediates savings into productive investments (Levine et al., 2000; Cecchetti&Kharroubi, 2012). Against this evidence, the present paper investigates how financial inclusion, proxied by branches, ATMs, and private credit, influences economic growth in BRICS economies over 2015–2024, while also exploring the roles of inflation and trade openness.

Literature review

The theoretical literature on finance and growth stresses that well developed financial systems facilitate the efficient allocation of capital, reduce transaction and information costs, and enhance risk sharing, thereby fostering long run economic growth (King & Levine, 1993; Levine et al., 2000). Within this framework, financial inclusion is often treated as a dimension of financial development that extends the reach of formal financial services to excluded groups, enabling them to save, invest, and smooth consumption (Beck et al., 2007; DemirgüçKunt et al., 2018). Recent global studies confirm that higher levels of financial inclusion are associated with faster and more inclusive economic growth, particularly in low and middle income countries (Sahay et al., 2015; Beck et al., 2018; Azimi, 2022).

Empirical work on BRICS and other emerging economies further underscores the importance of financial inclusion. DemirgüçKunt et al. (2018) show that greater access to bank accounts and credit is linked to higher household welfare and lower poverty, while Sahay et al. (2015) highlight that financial inclusion reforms in BRICS countries have spurred both credit deepening and output growth. More recent BRICS focused studies also document that financial inclusion improves financial stability and resilience, provided that regulatory frameworks and institutions are adequate (Pandey et al., 2023; Sebai&Talbi, 2024). These findings suggest that expanding financial inclusion can be a powerful lever for achieving sustainable and inclusive growth in emerging markets.

With respect to specific indicators, Hernández Pineda (2022) analyzes the impact of bank branches and ATMs on growth in several Latin American countries and finds that a higher number of branches and ATMs positively affects economic growth, implying that physical financial infrastructure matters for growth. Similarly, Schäfer et al. (2020) argue that financial development, proxied by bank branches, ATMs, and bank accounts, increases economic growth and reduces income inequality, especially in the short run. However, some studies caution that the mere expansion of branches and ATMs may not yield growth gains if access is not accompanied by meaningful usage of credit and insurance products (Honohan, 2008; Beck et al., 2007). In contrast, domestic credit to the private sector is more consistently found to promote growth, as it directly channels funds to productive firms and entrepreneurs (Levine et al., 2000; Cecchetti&Kharroubi, 2012). Nguyen et al. (2022) further confirm that financial inclusion, particularly through credit expansion, has a significantly positive impact on economic growth across global panels.

At the same time, the macroeconomic context—especially inflation and trade openness—moderates the finance growth

nexus. High inflation typically erodes the real value of financial contracts, distorts investment decisions, and undermines financial stability, thereby weakening the growth effects of financial inclusion (Bruno & Easterly, 1998; Barro, 1995). Trade openness, on the other hand, can either amplify or dampen growth depending on institutional quality and the structure of financial intermediation; some studies find that greater openness boosts growth via productivity gains, while others highlight the vulnerability of weak financial systems to external shocks (Frankel &Romer, 1999; Wacziarg& Welch, 2008). In BRICS specific panels, recent work also points to the importance of institutional quality and regulatory frameworks in determining how financial inclusion and trade openness translate into growth and stability (Pandey et al., 2025; Kumar et al., 2024).

Taken together, the literature suggests that financial inclusion can significantly promote economic growth, but the magnitude and sign of its effects depend on both the chosen indicators (branches, ATMs, and credit) and the broader macroeconomic environment (inflation, trade openness, and institutions). The present study contributes to this strand by examining the differential impact of bank branches, ATMs, and domestic credit to the private sector on growth in BRICS economies over 2015–2024, using panel data methods and controlling for inflation and trade openness, while also accounting for panel effects and cross-sectional dependence.

2.Research Gap

Despite the growing body of literature on financial inclusion and economic growth, several important gaps remain. First, most existing studies rely on single indicators such as bank branches or credit, which fail to capture the multidimensional nature of financial inclusion. Second, limited attention has been paid to the comparative roles of access (bank branches, ATMs) and financial depth (private credit) in influencing economic growth. Third, many studies use older datasets and do not incorporate recent developments in emerging economies, particularly since 2015. Moreover, previous research often overlooks panel-data heterogeneity and cross-sectional dependence, leading to biased and inconsistent estimates. The interconnected nature of economies, especially in emerging markets, requires robust econometric techniques that account for such dependencies. Finally, there is insufficient evidence on whether physical financial infrastructure or credit expansion plays a more significant role in driving economic growth.

3. Data and Methodology

3.1. Research Objectives

1. To examine the impact of financial inclusion on economic growth in emerging economies using panel data analysis.
2. To analyse the relative importance of financial inclusion indicators—bank branches, ATMs, and private credit—in influencing economic growth.

3.2.Data and methodology

This study employs a panel dataset comprising five emerging economies (BRICS) for the period 2012–2024, sourced from World Bank's World Development Indicators (WDI). The variables under studies are GDP,branches per 100,000 adults, ATMs per 100,000 adults, and domestic credit to the private

sector (% of GDPinflation and trade openness. In this study GDP is dependent variable which is indicator of Economic Growth, and Bank Branches , ATM, Domestic credit to private Sector are independent variable, which is indicator of financial inclusion .Additionally, inflation and trade openness are included as control variables to account for macroeconomic conditions.

3.3 Econometric Methodology

To understand the distribution and relationships among variables the study used descriptive statistics and correlation analysis.Further panel data techniques used to examine the impact of financial inclusion on economic growth. Firstly, pooled Ordinary Least Squares (OLS) model followed by Fixed Effects (FE) and Random Effects (RE) models are applied. The Hausman test is used to determine the appropriate model specification. To validate the suitability of the panel model, the Breusch–Pagan Lagrange Multiplier test confirms the presence of significant panel effects. Given the presence of autocorrelation and cross-sectional dependence, robust estimation techniques are recommended to ensure consistent and efficient results.

4. Data Analysis and Interpretation

The descriptive statistics in Table 1 provide important insights into the distribution and variability of the variables used in the study. The average number of bank branches is 16.4, and a relatively high standard deviation of 8.5 suggests significant disparities in banking access across regions. Similarly, ATMs exhibit a high mean value of 85.4 and very large standard deviation of 50 highlight considerable inequality in access to cash infrastructure. Private credit, with a mean of 76.2% of GDP and a lower median of 60.2, indicates a right-skewed distribution, implying that a few countries have exceptionally high levels of credit availability, further supported by its high standard deviation of 39 and wide range (43.9 to 179). In contrast, inflation appears relatively stable, with a mean of 5.02% and and a moderate standard deviation of 2.7. Trade openness shows a mean of 43.1 and a median of 45.7, indicating moderate integration with global markets, with some variability across countries, as reflected in a standard deviation of 10. Finally, log GDP has a mean of 28.3 and a median of 28.2, suggesting a fairly symmetric distribution with low dispersion (standard deviation of 1.2), indicating that differences in economic size among the sampled countries are relatively moderate.

Variable	Mean	Median	S.D.	Min	Max
BankBranches	16.4	14.2	8.5	7.73	39
ATMs	85.4	81.5	50	10.9	185
PrivateCredit	76.2	60.2	39	43.9	179
Inflation	5.02	4.57	2.7	0.98	16
Trade	43.1	45.7	10	24.3	60
GDP	28.3	28.2	1.2	26.5	30

Table 1: Descriptive Statistics Summary

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	26.6776	0.511	52.2	0.0000 ***
Bank_Branches	0.1193	0.0173	6.884	0.0000 ***

ATMs	-0.0161	0.0025	-6.501	0.0000***
Private_Credit	0.0314	0.0025	12.41	0.0000***
Inflation	-0.0187	0.0297	-0.632	0.5307
Trade	-0.0297	0.0069	-4.326	0.0000***

Table 2: Pooled OLS results *(*, **, and *** denote statistical significance at the 1%, 5%, and 10% levels, respectively.")*

In Table 2, the pooled OLS results demonstrate that financial inclusion has a significant impact on economic growth. The result in the table 2 indicates that bank branches and access to private credit have positive and statistically significant impact on GDP, indicating that enhanced access to financial services and increased credit availability foster economic growth. Conversely, the expansion of ATMs has a negative and significant effect on GDP suggesting that merely increasing the number of ATMs may not necessarily stimulate productive economic activity. Additionally, trade openness has a negative influence on economicgrowth, while inflation is found statistically insignificant impact.

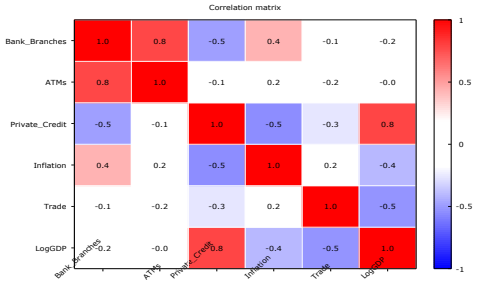

Figure 1: Correlation Matrix

Figure 1 demonstrates correlation among the variables in the study. Bank branches and ATMs exhibit a strong positive correlation (0.8). Bank branches also show a moderate positive relationship with trade (0.4). However, bank branches are negatively correlated with private credit (-0.5).ATMs show weak relationships with most other variables, with only a slight positive correlation with trade (0.2) and negligible or negative correlations with inflation and private credit. Private credit demonstrates a strong positive correlation with log GDP (0.8), suggesting that higher credit availability is closely associated with economic growth. At the same time, it has a negative relationship with inflation (-0.3) and trade (-0.5.Trade openness shows a moderate positive correlation with bank branches (0.4) and weak relationships with other variables, while inflation generally exhibits negative correlations with most financial inclusion indicators, particularly with private credit (-0.3) and log GDP (-0.5), suggesting that higher inflation may hinder financial development and economic growth. Finally, log GDP is negatively correlated with inflation (-0.5) and moderately negatively related to trade (-0.4), but strongly positively associated with private credit (0.8), reinforcing the importance of financial depth in promoting economic growth.

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	28.0201	0.2916	96.09	0.0000***
Bank_Branches	0.0023	0.0045	0.516	0.6087
ATMs	0.0013	0.0015	0.846	0.4028
Private_Credit	0.007	0.0019	3.738	0.0006***
Inflation	-0.0134	0.0059	-2.283	0.0278**
Trade	-0.0084	0.004	-2.11	0.0412**

Table 3: Fixed Effects Regression Results*(*, **, and *** denote statistical significance at the 1%, 5%, and 10% levels, respectively.")*

In table 3 results of The Fixed Effects model shown indicate that, private credit has a positive and statistically significant impact on economic growth, highlighting the importance of financial depth in promoting growth. In contrast, bank branches and ATMs have statistically insignificant, impact on GDP suggesting that physical access to banking services does not significantly influence growth once unobserved heterogeneity is accounted for. Among control variables, inflation and trade openness exhibit negative and significant effects, implying that macroeconomic instability and external exposure may hinder economic growth.

Variable	Coefficient	Std. Error	z-Statistic	p-value
Constant	28.0265	0.5755	48.7	0.0000***
Bank_Branches	0.0024	0.0045	0.532	0.5946
ATMs	0.0011	0.0015	0.707	0.4798
Private_Credit	0.0073	0.0018	4	0.0000***
Inflation	-0.0132	0.0058	-2.286	0.0223**
Trade	-0.0087	0.0039	-2.218	0.0265**

Table 4: Random Effects (GLS) Regression Results*(*, **, and *** denote statistical significance at the 1%, 5%, and 10% levels, respectively.")*

The Random Effects results presented in table 4 indicate that private credit has a positive and highly significant impact on economic growth, confirming the importance of financial depth. In contrast, bank branches and ATMs has statistically insignificant, impact on GDP suggesting that physical banking access does not significantly affect growth. Both inflation and trade openness exhibit negative and significant effects, indicating that macroeconomic instability and external exposure may hinder economic performance.

Statistic/Test	Value
Between Variance	1.014
Within Variance	0.0041

Theta	0.9799
Joint Significance (Chi^2)	83.666***
Breusch–Pagan Test (RE vs OLS)	23.27***
Hausman Test (FE vs RE)	3.948
Prob (Hausman)	0.413

Table 5: Diagnostic Test Results*(*, **, and *** denote statistical significance at the 1%, 5%, and 10% levels, respectively.")*

In table 5 present the Diagnostic tests results confirm the presence of panel effects (Breusch–Pagan test) and support the use of the Random Effects model (Hausman test). However, given the presence of autocorrelation, robust estimation techniques are recommended for reliable inference.

5. Findings

The empirical results reveal that financial inclusion has a mixed impact on economic growth. Among the financial inclusion indicators, private credit to the private sector positive and significant impact on economic growth across all model specificationshighlights the importance of financial depth and access to credit in promoting investment and economic activity.In contrast, bank branches and ATMs statistically insignificant on GDP in the Random Effects model, suggesting that physical access to financial services alone does not necessarily translate into higher economic growth once country-specific factors are controlled.

Further results indicate that inflationand Trade shows a negative and significant effect, on economic Growth.The diagnostic tests further strengthen the reliability of the results. The Breusch–Pagan test confirms the presence of panel effects, while the Hausman test supports the use of the Random Effects model.

6. Conclusion

This study examines the relationship between financial inclusion and economic growth using panel data for selected emerging economies. The findings suggest that while financial inclusion plays an important role in economic development, its impact varies across different dimensions.Specifically, credit availability is the most crucial component of financial inclusion, significantly enhancing economic growth. In contrast, traditional indicators such as bank branches and ATMs show little effect, underscoring the need to move beyond physical infrastructure toward more effective financial intermediation. The results also emphasize the importance of maintaining macroeconomic stability, as higher inflation negatively affects growth. Additionally, the negative relationship between trade openness and growth suggests the need for stronger structural policies to fully benefit from global integration. Overall, the study concludes that policymakers should focus on expanding credit access, promoting efficient financial systems, and strengthening macroeconomic stability to achieve sustainable, inclusive economic growth.

Author Contributions: Vishal Kaushal– Conceptualisation, Methodology and

Formal analysis, Muskan Chauhan–Writing original draft and review and editing, Dr. Kulwant Singh Pathania–Supervision. All authors have read and agreed to the published version of the manuscript.

Corresponding Author: Vishal Kaushal

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Data Availability Statement: The bibliometric dataset and search strategy used in this study are available from the corresponding author upon reasonable request. Data were retrieved from the Scopus database (Elsevier).

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Azimi, M. N. (2022). New insights into the impact of financial inclusion on economic growth: A global perspective. *PLoS ONE*, *17*(11), e0277730. https://doi.org/10.1371/journal.pone.0277730
2. Barro, R. (1995). Inflation and economic growth. *National Bureau of Economic Research*. https://doi.org/10.3386/w5326
3. Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, *12*(1), 27–49. https://doi.org/10.1007/s10887-007-9010-6
4. Beck, T., Pamuk, H., Ramrattan, R., & Uras, B. R. (2018). Payment instruments, finance and development. *Journal of Development Economics*, *133*, 162–186. https://doi.org/10.1016/j.jdeveco.2018.01.005
5. Bruno, M., & Easterly, W. (1998). Inflation crises and long-run growth. *Journal of Monetary Economics*, *41*(1), 3–26. https://doi.org/10.1016/s0304-3932(97)00063-9
6. Cecchetti, S. G., &Kharroubi, E. (2012). Reassessing the impact of finance on growth. *RePEc: Research Papers in Economics*. https://EconPapers.repec.org/RePEc:bis:biswps:381
7. Claessens, S. (2006). Access to financial services: A review of the issues and public policy objectives. *The World Bank Research Observer, 21*(2), 207–240.
8. DemirgüçKunt, A., & Klapper, L. (2013). Measuring financial inclusion: The Global Findex Database. World Bank Policy Research Working Paper No. 6559.
9. Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution*. World Bank Publications.
10. Frankel, J. A., & Romer, D. (1999). Does trade cause growth? *American Economic Review*, *89*(3), 379–399. https://doi.org/10.1257/aer.89.3.379
11. Gehrung, M. (2020). The ATM around the corner-how financial development, access, and integration influence economic growth and inequality. *Access, and Integration Influence Economic*

Growth and Inequality (November 23, 2020).

12. Hernández Pineda, A. L. (2022). Does the number of bank branches and ATMs boost economic growth? *RevistaEconómica, 70(1),* 113–142.
13. Honohan, P. (2008). Cross-country variation in household access to financial services. *Journal of Banking & Finance*, *32*(11), 2493–2500. https://doi.org/10.1016/j.jbankfin.2008.05.004
14. King, R. G., & Levine, R. (1993). Finance and Growth: Schumpeter might be right. *The Quarterly Journal of Economics*, *108*(3), 717–737. https://doi.org/10.2307/2118406
15. Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of monetary Economics*, *46*(1), 31-77.
16. Pandey, A., Kiran, R., & Sharma, R. K. (2023). Investigating the Determinants of Financial Inclusion in BRICS Economies: panel data analysis using Fixed-Effect and Cross-Section Random Effect. *Sustainability*, *15*(2), 1603. https://doi.org/10.3390/su15021603
17. Sahay, R., et al. (2015). Financial inclusion: Can it meet the goals of access and stability? IMF Staff Discussion Note SDN/15/07.
18. Sebai, M., & Talbi, O. (2024). Threshold effects of financial inclusion on financial stability: Evidence from BRICS nations. *Journal of Infrastructure Policy and Development*, *8*(11), 8363. https://doi.org/10.24294/jipd.v8i11.8363
19. Wacziarg, R., & Welch, K. H. (2008). Trade Liberalization and Growth: new evidence. *The World Bank Economic Review*, *22*(2), 187–231. https://doi.org/10.1093/wber/lhn007