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Impact of Financial Inclusion on Firms' Growth in African Nations

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Abstract

The paper examines financial inclusion's impact on firms' growth in African countries. The paper employs the two-step system generalized method of moment (GMM) to mitigate endogeneity concerns and covers 2010 to 2019 periods to exclude the impact of the covid-19 crisis on the estimated parameters of the models. The findings show that automatic teller machines, acting as a proxy for financial inclusion, positively influence the growth of firms in ten African nations. Similarly, bank branches, which also serve as a proxy for financial inclusion, positively influence firms' growth in ten African nations. The results are robust to alternative model specifications. The results suggest that investors may benefit from firms' business expansion as banks' financial inclusion strategy attracts additional deposits to lend to firms to fund profitable investments which stimulate their growth.

Keywords: Financial Inclusion, Firms' Growth, African Nations, Panel Data, System GMM

Introduction

Financial inclusion is the continuous process of improving financial intermediation services' quantity, quality, and efficiency. Financial inclusion (money accessibility) and the presence of accessible financial products play a critical role in fostering the growth of developing and emerging economies (Abubakar et al., 2020; Demirguc-Kunt et al., 2018). The phenomenon of financial inclusion impacting firms' growth is worth investigating. African firms still face the problem of rapid growth, which may be due to inadequate access to capital to stimulate business expansion and achieve the desired growth level. This raises the question of how financial inclusion (i.e., access to finance) affects firms' growth.

Financial inclusion makes accessing formal financial services easy and could raise banks' deposit base, enabling firms to access more debt capital and reduce their exposure to

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borrowing risk (Demirguc-Kunt et al., 2018). Financial inclusion is a government objective for progress in many African nations (Ozili, 2021). Effective implementation of financial inclusion may enhance access to financing, but poor implementation could perpetuate the issue of financing access.

Nonetheless, this study is important because despite the gradual decline in the number of people without access to an account from the original 2.5 billion in 2011 shows significant progress in financial inclusion. Regretfully, according to the most recent Findex statistics, the bulk of the 1.4 billion individuals who lack official bank accounts worldwide—and are therefore unable to access financial services—live in developing countries, particularly those in Africa. In addition, most individuals choose informal savings techniques, and less than 25% have accounts with depository financial organisations (The World Bank, 2022). African countries need financial inclusion since they are falling behind other countries in Asia and Latin America (Ayyagari & Beck, 2015).

The phenomenon of financial inclusion impacting firms' growth is worth investigating. African firms still face the problem of rapid growth which may be due to inadequate access to capital to stimulate business expansion to achieve the desired growth level. This raises the question of how financial inclusion (i.e., access to finance) affect firms' growth? Financial inclusion is important for African firms because it can expand banks' capital base. This ultimately made it easier for firms to obtain the necessary loans to boost firm growth. Moreover, the capacity to get enough funding for business expansion, new product, or market entry is often a prerequisite for firm growth. Financial inclusion plays a crucial role in this, providing businesses with the financial resources they need to expand. By increasing access to various financial goods, including credit, payment services, and insurance, financial inclusion promotes business development and opens opportunities for businesses to grow, penetrate new markets, and engage in more competitive pricing.

The study has practical significance to managers, investors, and policymakers. The managers of firms may benefit from raising additional capital because the financial inclusion strategies of banks attract more deposits to lend to firms. Investors could encourage firm managers to raise the needed debt to finance profitable investments from banks, using financial inclusion strategies to lure in more deposits. Policymakers should be encouraged to create enabling environments and enact policies that promote the development of the financial markets for inclusive growth.

Examining account ownership and usage as measures of financial inclusion revealed that the need to maintain a relatively large account balance, the distance to financial institutions, the lack of legal protections, and the absence of environmentally friendly practices excluded many people from the financial system (Allen et al., 2016). Initiatives, policies, and legislation often combine to achieve financial inclusion goals, targeting unbanked citizens. Financial inclusion is a government objective for progress in many African nations (Ozili, 2021). Effective implementation of financial inclusion may enhance access to financing, but poor implementation could perpetuate the issue of financing access.

Most empirical studies conducted in the literature by past researchers have concentrated on the impact of revenue on firm growth and the financing of firms. However,

financial inclusion has received minimal attention. Recent years have seen limited research on the impact of financial inclusion on firm growth. However, most of this research has concentrated on the performance of firms, such as sales growth (Nizam et al., 2021; Chauvet & Jacolin, 2017). According to the results of these two studies, financial inclusion positively influences firms' sales expansion. Chauvet and Jacolin (2017), also conclude that less concentrated banks exacerbate the influence of financial inclusion on sales growth.

In contrast to previous research, this paper makes significant and incremental contributions to the literature. Firstly, this paper focuses on the impact of financial inclusion on firms' growth, utilising a large sample of listed manufacturing firms from 10 African nations to improve the conclusion's robustness. Secondly, this paper integrates the financial inclusion and tradeoff theories to elucidate the correlation between financial inclusion and firm growth, and empirical evidence supports this substantial relationship. As firms get more access to finance, they can fund profitable investment projects to increase firms' growth. They can also maximize the debt interest tax shield emphasized in the tradeoff theory to increase firms' performance, especially in African countries.

Our results indicate that the expansion of firms in African nations is significantly and positively correlated with financial inclusion. In particular, the growth of enterprises is significantly and positively correlated with the use of automatic teller machines as a proxy for financial inclusion. Similarly, enterprise growth is significantly and positively correlated with the proxy for financial inclusion that bank branches provide. Furthermore, the panel regression model simultaneously incorporates automatic teller machines and bank branches as financial inclusion proxies, yielding consistent results. The findings are resilient to outlier observations and alternative financial inclusion measurements.

Literature Review and Hypothesis Development

Firms' Growth and Financial Inclusion

Schumpeter (1911) claimed that financing drives economic growth. Consequently, through its products, the financial system enables individuals and businesses to access cash through borrowing and stimulates creativity, invention, investments, and productivity, resulting in both financial growth and enhanced performance. As a result, the financial system promotes capital development and accumulation by extending loans to businesses (Schumpeter, 1911). This stimulates competition among banks and develops control investments, resulting in financial growth and superior firm performance.

Besides, the banks perform an important intermediating function by channeling money or funds from the surplus to the deficit units in an economy (Schumpeter, 1934), and financial inclusion (i.e., access to financial services) helps improve the efficiency of banks' financial intermediating function (King and Levine, 1993). This supports Schumpeter's theory and confirms that banking activities as a key financial facilitator result in robust long-term growth and profitability.

Financial inclusion and growth are two aspects of a similar coin Mihaela et al. (2018). Financial inclusion relates to measures that help enterprises acquire access to loans and finance their capital stock, while wealth structure in finance is the kind of debt an enterprise requires to grow its economic activities. The firm's growth is a subjective evaluation of its

ability to utilize and grow based on the effective exploitation of its assets. The concept is occasionally employed over time as a broad measure of a firm's overall financial stability. Utilizing firm growth by analysts and traders evaluate specific companies within the same industry or two composite enterprises (Mihaela et al., 2018).

The economic notion of firm growth represents the value of a corporation. It refers to the importance that a firm deserves at a particular time. Theoretically, it is the sum required to create or acquire a business firm (Fowowe, 2017). The study empirically investigates the implications of access to finance on expanding businesses in African nations. To accomplish this, he employed subjective and objective indicators of access to finance and a new data set of enterprise-level information from the World Bank's Enterprise Surveys.

The intuitive measure of access to capital is derived from the rating of access to finance as an impediment to business operations or as an impediment of moderate severity. The objective assessment of access to finance is a parameter that measures whether enterprises are restricted in their ability to receive credit. Using data from 10,888 enterprises in 30 African nations, find that access to financing constraints considerably negatively influences firm growth as measured subjectively (Fowowe, 2017). In addition, the results of the objective measure indicate that enterprises that are not credit-constrained experience faster growth than credit-constrained firms.

These findings add credence to the notion that funding is crucial for firm growth and justify the numerous activities and steps being taken to make more finance available to African businesses. (Fowowe, 2017). Likewise, Varaiya et al. (1987), study analyses the forecasts generated by real-worth planning models. Results demonstrate that profitability and growth have the predicted effect on firms' performance. Therefore, financial inclusion increases firms' access to financing, which can be used to fund profitable investments that enhance the firm's growth.

Financial inclusion increases banks' deposit base, enabling firms to access debt borrowing to fund profitable investments that impact firms' growth. The adoption of digital technology (using the Internet-Based Readiness Index as a measure of digitalization) and the implementation of digital technology make access to funding easy and foster growth (Solomon & van Klyton, 2020). Therefore, financial inclusion should influence firms' growth.

Financial inclusion has become widely acknowledged as a key tool for decreasing income disparities and promoting faster economic growth (Neaime & Gaysset, 2018). Improving access to banking services has been demonstrated to enhance low-income and underprivileged populations by enhancing their capacity to maximize utility and withstand financial distress and their long-term financial stability (Neaime & Gaysset, 2018). To meet all demands, access to finance is crucial (Maity & Sahu, 2020). This is true for both preserving and enhancing social and economic status. Although there is no coherent financial inclusion theory, prior literature studies have laid the groundwork for understanding financial inclusion. Most previous approaches focused on the importance of finance to economic expansion (Rafiq & Adewale, 2019). Financial inclusion makes accessing formal financial services easy, lowers costs, and allows banks to raise their deposit base (Demirguc-Kunt et al., 2018). All else constant, banks' financial inclusion strategy makes access to formal financial services easy,

reduces costs, and can increase bank deposit base, ultimately making it easier for firms to obtain the necessary loans to boost firm growth. Although this is a logical conjecture, but there is no empirical evidence to support it. Therefore, this paper hypothesized that:
$H_{alternative}$: Financial inclusion should positively impact firms' growth.

Data and Research Method

Data

Our sample consists of 255 listed manufacturing firms from 10 African countries for the 2010-2019 period.[2] Manufacturing firms were selected because, according to the World Bank Report in 2022, manufacturing firms contributed significantly to the growth of African countries. The data were obtained from the DataStream database. Like Anarfo et al. (2020), we utilize two indicators of financial inclusion, namely, Automated Teller Machines (ATMs) per 100,000 adults and Bank Branches (BB) per 100,000 adults. The data starts from 2010 to remove the impact of the 2008 and 2009 financial crisis. The data ends in 2019 to remove the impact of the covid-19 pandemic, which began at the end of December 2019. Our focus is on African nations because they have problems of inadequate financial inclusion. Financial Inclusion is our main independent variable, and it is obtained from the World Development Indicators (World Bank database). Other macroeconomic data such as interest rate and GDP growth rate are obtained from the World Bank Database. The other company-specific data (e.g., firms' borrowings, firm size, book-equity to market-equity, and profitability) are extracted from the DataStream databases.

Justification of Main Dependent and Independent Variables

Firm growth describes the growth, advancement, and expansion of firms' size, scope, and reach over an extended period. It is a way to evaluate how much a business has expanded in several aspects, including sales. Businesses frequently have firm growth as an investment goal since it can result in higher profits, stronger productivity, and improved positioning in the market. Growth can be achieved by planning carefully, allocating resources wisely, managing well, and adjusting to changing circumstances in the market (Belitski et al., 2023). Researchers, professionals, and policymakers are still debating the variables that boost firms' growth likelihood and development into a more significant economic force (Belitski et al. (2023). The study examines the heterogeneity of the connection between profitability and growth amid a financial crisis. It also examines how innovation and the quantity of exports relate to growth and profitability and the results reveal profits benefit the growth of firms in the short term, but the impact of profits on growth depends on the measurement for growth (Fuertes-Callén & Cuellar-Fernández, 2019). In this study, firms' growth is measured as yearly changes in sales.

Financial Inclusion (FININC): The variable is the main independent variable, and it is proxied by Automated Teller Machine per 100,000 adults and Bank Branches per 100,000 adults. Automatic teller machines and bank branches per 100,000 adults are significant proxies for measuring financial inclusion. Khandare (2019) and Ayyagari & Beck (2015) used the proxy to illustrate the level of equitable expansion in the regions and nations under investigation. Having an account at a legitimate financial institution is a key component of financial inclusion in its early stages. This highlights the significance of a bank branch, where

the charge must be opened, and a debit card, which the account holder may use to conveniently withdraw money from ATMs has also been use as proxy of financial inclusion by the World Bank (Khandare, 2019; Ayyagari & Beck, 2015). These metrics show how far financial inclusion has come, which is why this study focused on using Automated Teller Machines and Bank Branches as proxies for financial inclusion.

Justification of Control Variables

Firms' Borrowing

Firms' borrowing refers to debt. According to Modigliani & Miller (1963) debt was positively correlated with firm performance. Debt increased corporate performance due to interest tax benefits but also heightened the prospect of financial distress (Modigliani & Miller, 1963). It was implied that having the right amount of debt would improve the firm's success. Debt and firms' performance are seen to be positively correlated, according to Modigliani & Miller in 1958. Matemilola et al. (2012) also discovered that debt affects firm performance. Conversely, debt and sales growth are negatively correlated (Aurangzeb and Anwar ul Haq, 2024).

Firm Size

The size of firms both influences and supports firm growth in a positive way. The firm size is a crucial factor in determining firm growth (Gomes & Schimid, 2010). They emphasised that only when a corporation can manage the impacts of its scale does the relationship between credit and firm growth remain valid (Gomes & Schimid, 2010). The firm size was cited by Fama et al. (2001), as another prevalent risk factor affecting firm growth. They demonstrated that firm growth was affected by size.

As a result, a corporation's profitability was correlated with its size, and large firms had greater earnings and lower bankruptcy risk (Fama et al., 2001). Similarly, Abor (2005) asserted that size has a favourable impact on firm growth. Additionally, according to Banz. (1981), firm growth is explained by size. Contrarily, it was asserted by Kanne et al. (2023) Amihud (2002), and Horowitz et al. (2000), that firm growth was unaffected by size. According to Amihud (2002) and Horowitz et al. (2000), investors discovered small businesses could outperform large corporations in their industry and are no longer underestimated. However, the current study expects firm size would favourably impact firm growth because large firms produce steady cash flow to finance profitable investments to improve firms' growth.

Furthermore, Chauvet and Jacolin (2017) find that size increases the growth of firms because of economic scale advantage that bigger firms enjoyed. In an earlier study, Pagano and Schivard (2003) also found that size is positively related to firm growth because larger size raises productivity growth as such firms can capitalize on the benefits of increasing return to scale and finance growth expansion. Firm size is expected to be positively related to firms' growth because of the benefits of increasing return to scale. Firm size is measured as the natural logarithm of total assets.

Book to Equity to Market Equity

A positive correlation between book-to-market equity and firm growth was revealed by Gomes & Schimid (2010). In a similar vein, Auret & Sinclaire, (2006) claimed that book-to-market equity was crucial to determining the firm's growth and showing promising indicators.

Like Chan (1991) related distress variables, Fama & French (1992) introduced book-to-market equity as a risk factor proxy. Fama & French (1992) concluded that book-to-market equities influenced firm growth. Additionally, it was demonstrated that book-to-market equity was positively correlated with firm growth by Stattman (1980) because book-to-market equity captured relative earning prospects. The current study expects a positive association between book-to-market equity and firms' growth. Book-to-market equity is book value of equity to market value of equity ratio (BTM).

Profitability

Profitability should impact firms' growth. Rodeiro-Pazos et al. (2022) results revealed positive impact of profitability on firm growth. Likewise, Ihenyen et al. (2023) found that profitability positively impacts firm growth in European countries. The authors argue that profitable firms have internal financial resources to expand business operations and achieve desired growth level. The importance of profitability was also emphasized by Myers & Majluf (1984) where they argue profitable firms rely on retained profit to finance investments for growth expansion. In other words, firms should turn to retained earnings first before debt and equity when they need financing (Myers & Majluf, 1984). Likewise, Chakrabarti & Chakrabarti (2019) and Khemiri & Noubbigh (2018) emphasize the importance of profitability to stimulate business growth. Based on past studies, profitability is proxied by earnings before interest and tax to total assets ratio (EBIT/TA).

Interest Rate

The interest rate represented the yearly amount's rate of loan payment or other investments outside of principal payment. Ahigh interest rates reduced the actual value of anticipated cash flows, finally reducing the attractiveness of firm investments, and growth. Interest rates and firms' growth are typically inversely related (Solnik, 1983). Solnik (1983) also claimed that the rate of interest had a detrimental effect on stock performance. The current analysis also predicted that the rate of interest should be negatively related to firms' growth because high interest rates raise capital expenses and reduce firms' growth. High interest rates in developing nations were predicted to hurt short-term funding needed to improve firm growth. Most developing economies had high interest rates due to the inadequate performance of institutions that failed to regulate contracts and creditors (Obudah & Tombofa, 2013), which can lower firm growth.

GDP Growth Rate

If a nation's economy is doing well, GDP growth will benefit the firm's growth. This is because businesses are incentivized to employ more debt once the economy is doing well because of the tax benefits of debt (Ramli et al., 2019); Frank & Goyal, 2009), Therefore, if a nation's purchasing power increases and its firms generate more revenue, it will experience positive economic growth. Investors will subsequently purchase their stock, helping to raise the firms' stock value and ultimately improving corporate growth (Frank & Goyal, 2009).

Model Specification

The paper specifies a dynamic panel model because previous year firm growth can affect the current year growth (Matemilola et al., 2019). The model can be expressed as follows:

$$FG_{ijt} = \lambda FG_{ijt-1} + \beta o + \beta_1 FININC_{jt} + \beta_2 FBR_{ijt} + \beta_3 LogTA_{ijt} + \beta_4 EBITTA_{ijt} + \beta_5 INTR_{jt} + \beta_6 GDPG_{jt} + \Phi i + \alpha_t + \mu_{it}$$

Where *FG* annual growth rate in sales; *FI* is a financial inclusion indicator (i.e., Automatic Teller Machine - ATM and Bank Branches - BB*); FBR* is total debt to total assets, *LTA* is log of total assets, *EBITTA* is a ratio of profit before interest and tax to total assets; *INTR* is interest rate; *GDPGR* is gross domestic product growth rate; Φi is the firm-specific effects; α_t is the year fixed effects; and subscript i, j, and t represent firm, country, and time, respectively.

We employ the two-step system generalised method-of-moment (GMM) estimator proposed by Arellano and Bond (1991) and Blundell and Bond (1998). GMM improves efficiency by addressing biases introduced by the inclusion of lag dependent variables, endogeneity problem and firm-specific effects.[3] Additionally, the two-step estimator is more efficient than the one-step estimator because it uses heteroscedasticity-consistent standard errors (Blundell and Bond, 1998). The validity of GMM estimation is evaluated using AR(2) and Hansen over-identification tests.

Results and Discussion

Descriptive Statistics

The descriptive statistics reveals the characteristic of the data. The gross domestic growth rate (GDPR) has the highest mean and the lowest standard deviation indicating that it is the least volatile variable.

Table 1
Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
FG	2,500	19.214	3.289	8.033	36.028
BB	2,550	11.144	7.826	1	34
ATM	2,550	20.282	16.550	3	69
FBR	2,550	0.502	8.223	0.163	0.785
LogTA	2,550	23.501	5.635	6.758	34.297
EBITTA	2,550	5.000	3.240	-2.620	87.000
INTR	2,550	7.164	8.715	0.263	46.011
GDPR	2,550	24.967	1.166	22.416	27.076

Notes: *FG* is the annual growth rate in sales; *FININC (*i.e., ATM per 100,000 adults and BB per 100,000 adults) is a financial inclusion indicator; Log*TA* is total assets*; FBR* is total debt to total assets *EBITTA* is a ratio of profit before interest and tax to total assets; *INTR* is interest rate; *GDPR* is gross domestic product growth rate.

Correlation Results

Table 2 presents the correlation coefficient between firms' growth (FG) and the financial inclusion variables such as branches (BB) and Automatic Teller Machine (ATM), and the correlation coefficients between firms' growth and other independent variables. The correlation coefficient between firms' growth and bank branches (BB) has a positive value (0.234***) and statistically significant at 1% level. Similarly, the correlation coefficient between firms' growth and Automatic Teller Machine (ATM) has a positive value (0.136***) and statistically significant at 1% level. Thus, these variables suggest that as financial inclusion (i.e., firms' access to finance) increases, firms' growth also increases. Besides, the correlation coefficient between other independent variables is generally lower which indicate that there is no multicollinearity problem between the independent variables.

Table 2
Correlation Result

	FG	INTR	GDPR	BB	ATM	LogTA	EBITTA	FBR
FG	1.000							
INTR	0.088***	1.000						
GDPR	-0.032**	-0.356***	1.000					
BB	0.234***	-0.571***	0.083***	1.000				
ATM	0.136***	-0.223***	0.476***	0.365***	1.000			
LogTA	-0.294***	0.124***	-0.191***	0.124***	-0.123***	1.000		
EBITTA	-0.035***	-0.010**	0.024**	-0.005*	0.019**	0.001	1.000	
FBR	0.107***	-0.016**	0.069**	-0.030**	0.055**	-0.117***	0.001	1.000

Notes: FG is firms' growth is measured as yearly change in sales. ATM is the Automatic teller machines per 100,000 adults. BB is the bank branches per 100,000 adults. LogTA is the log of total assets, EBITTA is the ratio of earnings before interest and tax to total assets. FBR is the total debt to total asset ratio. GDPR is the yearly growth rate in Gross Domestic Product. INTR is the bank lending rate. Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Two-Step System GMM Results

In dealing with a large dataset, we must be cautious about the possible impacts of outliers as they can dramatically change the magnitude of estimated coefficients and even the direction of coefficient signs, leading to misleading results. To minimize the impacts of outliers on our estimation results, we winsorize all variables at the top and bottom 1%. The idea behind the winsorization technique is to make the sample mean, which is sensitive to extreme values, robust (Nguyen and Phan, 2020).

Table 3 reports the results for the Pooled Ordinary Least Squares (OLS) estimation, Random Effect estimation, Fixed Effect estimation, and the two-step System GMM estimation. The main estimation method is the two-step system GMM because previous year firms' growth may affect the current year firms' growth. The coefficient of the lag dependent variable (i.e., lagged Firms' $Growth_{it-1}$) is statistically significant at the 0.01 level (coefficient = 0.420***, t-statistics = 14.25) which confirms the relevant of the dynamic model to conduct this research. The autocorrelation of order one AR(1) is present as expected because the p-value (0.000) is statistically significant as it is less than 0.01. But autocorrelation of order two AR(2) is absent because the p-value (0.107) is statistically insignificant as it exceeds 0.01. Also, the Hansen Test of instruments validity shows that the p-value (0.229) is statistically insignificant as it exceeds 0.05. The results of the AR2 and the Hansen Test suggest that the model is correctly specified.

The two financial inclusion proxies are bank branches (BB) and Automatic Teller Machine (ATM). In the main estimation method, which is the two-step system GMM, the coefficient of BB is statistically significant at and positively related to firms' growth at the 1% significance level (coefficient of BB = 0.030***, t-statistics = 2.71). As a robustness check, in the Pooled OLS model, the coefficient of BB is statistically significant and positively related to firms' growth at the 1% significance level. Likewise, as a robustness check, in the Random Effect method, the coefficient of BB is statistically significant and positively related to firms' growth at the 1% significance level. Moreover, in the Fixed Effect method, the coefficient of BB is statistically significant and positively related to firms' growth at the 1% significance level.

In the main estimation model, which is the two-step system GMM, the coefficient of ATM is statistically significant and positively related to firms' growth at the 1% significance level (coefficient of ATM = 0.038***, t-statistics = 4.38). As a robustness check, in the Pooled OLS model, the coefficient of ATM is statistically significant and positively related to firms' growth at the 10% significance level. Likewise, as a robustness check, in the Random Effect model, the coefficient of ATM is statistically significant and positively related to firms' growth at the 10% significance level. But, in the Fixed Effect model, the coefficient of ATM is statistically insignificant indicating no relationship with firms' growth.

The findings suggest that financial inclusion makes access to finance easy for firms to fund profitable investment which in turn increases firms' growth. The findings also suggest that improvement in access to financial services allows banks to attract more deposits which can be channeled to firms to meet their financing needs and growth target. These findings support Nizam et al. (2021) findings for ASEAN 5 countries and reasoning that financial inclusion has a greater effect on economic growth because of the advantage obtained from the allocation of financial access to support firms' growth. Likewise, financial inclusion

positively impacts on firms' growth in developing and emerging countries (Chauvet and Jacolin, 2017). Financial inclusion makes universal access to a broader range of formal financial services possible at reduced costs to support the growth of firms. In conclusion, the finding on the positive impact of financial inclusion on firms' growth are robust. It is not influenced by the selection of financial inclusion proxies and outliers' observations. Moreover, the results are not driven by biases due to the inclusion of lag dependent variable, endogeneity problem, and firm-specific effects. These findings support Nizam et al. (2021) findings for ASEAN 5 countries that financial inclusion impacts positively on firms' growth and reasoning that financial inclusion has a greater effect on economic growth because of the advantage obtained from the allocation of financial access to support firms' growth.

Turning to the firm-level control variables, firms' borrowing is positively related to firms' growth. The results agree with Chauvet and Jacolin (2017) who reported that debt loan has positive impact on firms' growth in developing and emerging countries. Rodeiro-Pazos et al. (2022) also reported that debt positively impact firms' growth of eight European countries. The reason is that firms can use more debt capital for business expansion to raise their growth level. Furthermore, firms' size is negatively related to firms' growth. The reason is that as firms become bigger the need to further expand reduces which slow down their growth rate. The results are inconsistent with Chauvet and Jacolin (2017) who found that size increases the growth of firms because of economic of scales advantage that bigger firms enjoyed. In earlier study, Pagano and Schivard (2003) also found that size is positively related to firms' growth because larger size raises productivity growth as such firms can capitalize on the benefits of increasing return to scale. Conversely, profitability has insignificant impact on firms' growth. The results are inconsistent with Rodeiro-Pazos et al. (2022) and Ihenyen et al. (2023) who found that profits are positively related to firms' growth in European countries because profitable firms have internal financial resources to expand business operations and achieve desired growth level.

Turning to macro-level control variables, interest rate impact on firms' growth is mixed indicating an ambiguous relationship. The findings contradict the reasoning that interest rate represent costs to the firm which should lower the firms' growth rate level. The study finds more evidence that GDP growth is positively related to firms' growth. The reason is that in good economic periods, businesses flourish and generate more sales which translate to increased growth for firms. Beck et al. (2005) also reported positive impact of GDP growth on firms' growth. The reason is that firms grow faster in an economy with greater growth opportunities (Beck et al., 2005).

Table 3

Regressors	**Pooled OLS Model**	**Random Effect Model**	**Fixed Effect Model**	**2step System GMM Model**
Firms' Growth $(FG)_{it-1)}$	-	-	-	0.420***
				(14.25)
Interest Rate (INTR)	-0.006*	0.020*	0.025**	-0.028**
	(-1.97)	(1.92)	(2.14)	(-2.32)
GDP Growth Rate	0.111**	0.014**	-0.073	0.273***
(GDPR)	(2.29)	(2.10)	(-0.29)	(3.30)
Bank Branches (BB)	0.070***	0.053***	0.047***	0.030***
	(4.39)	(3.83)	(3.02)	(2.71)
Automatic Teller	0.046***	0.010*	-0.008	0.038***
Machine (ATM)	(3.51)	(1.92)	(-0.42)	(4.38)
Profitability (EBITTA)	-0.001*	0.001	0.001	0.001
	(-1.52)	(0.91)	(1.10)	(0.37)
Log of Total Assets	-0.155***	-0.107***	-0.018	-0.149*
(Log TA)	(-11.71)	(-3.63)	(-0.30)	(-6.85)
Firms' Borrowing (FBR)	0.001***	0.001*	0.001*	0.002***
	(3.12)	(1.98)	(1.79)	(3.42)
CONSTANT	21.614***	22.802***	20.795***	9.333***
	(9.91)	(6.11)	(3.14)	(4.16)
Breusch-pagan LM	4201.16			
	(0.000)			
Hausman test		28.57 (0.002)		
Multicollinearity	3.74			
(VIF)				
Heteroskedasticity (p-value)		0.000		
Serial Correlation (p-value)		0.000		
Adjusted R-squares	0.0831	-	-	-
F-test Value (p-value)	17.40	3.09 (0.002)	2.34 (0.009)	841.41 (0.000)
	(0.000)			
AR (1)	NA	NA	NA	0.002
AR (2)	NA	NA	NA	0.107
Hansen Test	NA	NA	NA	0.229
No. of Firms	255	255	255	255
Number of instruments	NA	NA	NA	154

FG.is the annual growth rate in sales; *FININC (*i.e., ATM and BB) is a financial inclusion indicator; Log*TA* is log of total assets; *EBITTA* is a ratio of profit before interest and tax to total assets; *INF* is inflation rate; *INTR* is interest rate; *GDPR* is gross domestic product growth rate. Numbers in parenthesis are t-statistics. Asterisks indicate statistical significance at the 1% (***) and 5% (**).

Conclusion

To the best of our knowledge, the issue has not been addressed in the literature; therefore, unlike previous research on the variables influencing the size of businesses, this study explores whether financial inclusion has an influence on the growth choices made by firms in developing nations. The results of the system GMM estimation reveal a positive impact of financial inclusion on firms' growth, which supports the insights drawn from the financial inclusion and trade-off theories.

The research has theoretical and policy implication. First and foremost, the theoretical implication has positive impact of financial inclusion on firms' growth and support the insights on the financial inclusion theory and the Modigliani and Miller's theory that claimed firms that can easily access debt borrowings can benefits from debt interest tax-shield to grow their firms. On the first practical policy implication of the study, the positive impact of financial inclusion on firms' growth implies that firm managers can benefit from the banks' financial inclusion strategies in terms of easy access to debt borrowings to fund profitable projects that increase firms' growth. The second practical implication of the study is that the policymakers should ensure the quality of the financial markets through encouraging banks to promote more financial inclusion strategies to attract more deposits to lend to firms and firms can use the debt loan to fund good investments that raise their growth level. The third practical implication of the study is that investors may consider investing their financial resources in firms capitalizing on the financial inclusion policy to attract additional funds required to finance business growth and increase the value of their invested capital.

Our financial inclusion measures access to finance due to data availability for the selected countries. Other proxies of financial inclusion would be useful for future research. Additionally, future studies might look at how financial inclusion affects other outcome factors related to corporate finance, such as cash holding and green real investments. Furthermore, the interplay impacts of financial inclusion and cash flow risk on loan maturity structure might be the subject of future study. There is a chance that the degree of financial inclusion will determine how cash flow risk affects debt maturity.

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