

Assessing the impact of financial inclusion on economic growth: A comparative analysis between lower middle-income countries and upper middle-income countries

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Abstract

Despite tremendous financial development, it has been increasingly acknowledged that financial systems are far from inclusive. With greater dynamism in the financial sector now, a critical evaluation around financial inclusion surfaces. The principal intention of this paper is to assess the impact of Financial Inclusion on Economic Growth in the Middle-Income countries. The evaluation concentrates on a comparative analysis between the Lower-Middle Income Countries and Upper Middle-Income Countries. The system Generalised Methods of Moments (GMM) model was adopted for a sample of 15 Lower-Middle Income Countries (LMICs) and 15 Upper Middle-Income Countries (UMICs) over the time period 2008 to 2019. Financial Inclusion was assessed by 3 dimensions, namely account ownership, demographic outreach and outstanding loans. The results showed that in the UMICs, all dimensions of financial inclusion had a positive relationship with economic growth. On the other hand, while the first two dimensions establish a positive link with economic growth in the LMICs, outstanding loans had a negative and significant effect. As for Financial Stability, the bank Z-score left a positive and significant footprint on economic growth in the MICs, with the significance being more prominent in the UMICs. Non-performing loans as an indicator for financial instability had a strong and adverse impact on growth in the MICs. Also, the paper further extends the analysis to the effect of financial inclusion on financial stability owing to the existence of a potential trade-off. While, account ownership and demographic outreach improved financial stability, outstanding loans, nevertheless, exhibit a negative and significant impact on financial stability in the MICs.

1. Introduction

Distortion to real sectors, in terms of inherent and significant output loss, has often been mutually reinforced with elevated risks associated with financial instability during the crisis periods. Practical implications thus emerged to pursue financial stability goal alongside sound, competitive and effective financial institutions, conducive to enhancing growth. Indeed, well-functioning and stable financial systems deliver a critical impetus to economic development by propounding savings, credit, payment, and risk management services.

Despite tremendous development in the financial sector and considerable advances in all areas pertaining to financial profitability, competitiveness, and sustainability, it has been increasingly acknowledged that financial systems are far from inclusive. A rapid emergence of financial inclusion was eventually observed in the 2000s. Financial inclusion entails a greater share of individuals that have access to and use basic financial services (Barajas *et al.*, 2020). FI has been widely defined as the ease of access to the basic financial products and services in the formal financial system to all levels of society; in particular, the under-banked and unbanked population, in a fair and transparent manner (UNCTAD, 2014). However, Sarma (2008) argued that access to the financial services does not completely correspond to the comprehensive notion of FI. Sahay *et al.* (2015) thus captured FI as being both the access to,

availability of and the effective use of the financial services. Jahan et al. (2019) provided an extension to include the quality of the products and services in the financial system.

On the international discussion front, the importance of an inclusive financial system has increasingly gained recognition, with financial inclusion being set out as a facilitator of other goals in the 2030 Sustainable Development Goals and has positioned prominently as a target in eight of those goals. Over 50 territories have already adopted a Financial Inclusion Strategy for their economy (Espinosa-Vega *et al.*, 2020). An all-inclusive financial system is thus, fundamental to ease the efficiency of resource allocation and curtail the growth of informal sources of lending.

At the basic level, financial inclusion surfaced with account ownership that serves as an entry point to the formal financial system. Early literature exemplified that financial accessibility allows people to park their funds in the formal sector, creating a multiplier effect on economic growth. Yet, while account ownership remains nearly universal in high-income countries, almost half of the unbanked individuals across the globe, reside in the populous middle-income countries such as Bangladesh, India, Indonesia, Mexico, Nigeria, and Pakistan (World Bank, 2017). This pertaining issue establishes a particular interest to assess the significance of a stable and inclusive financial sector on economic growth. As a matter of fact, the issue has been addressed from manifold viewpoints, whether from an international or domestic context

Theoretically, financial inclusion, in facilitating the access of financial services to all individuals and in particular to the weaker segments of the population, is expected to lead to more expenses/developments and hence increase the level of economic growth. As such, a more inclusive financial system is critical in easing the efficiency of resource allocation and curtailing the growth of informal sources of lending. Financial accessibility should allow people to park their funds in the formal sector, creating a multiplier effect on economic growth. FI also reinforces the efficiency of the intermediation process through sound investment patterns, leading to increased stability and economic upturn (Cull *et al.*, 2012). As such FI is pinpointed to as a potential means which is connected to manifold financial parameters, including the financial well-being and stability of an economy. Although no direct theoretical linkage has been established, Khan (2011), Sahay *et al.* (2015) and Cihak *et al.* (2016) brought to light major constructive mechanisms through which FI contributes to FS.

Empirical work (A summary of the empirical evidence has been provided in Appendix 2) on the financial inclusion-growth nexus is relatively recent and a majority of the existing work has established a positive link (See Sarma, 2008; Sarma and Pais, 2011; Kim *et al.*, 2018; Sethi and Acharya, 2018; Van *et al.*, 2019; Nizam *et al.*, 2020). It is noteworthy that few studies in the literature have so far focused on developing and middle-income countries sample or case studies (Vo *et al.*, 2021).

This paper goes beyond filling this research gap by providing a comparative evaluation between the lower middle-income countries and the upper middle-income countries. Owing to a potential trade-off that has emerged between financial inclusion and financial stability (Sahay *et al.*, 2015), this study further provides an extension by assessing the impact of financial inclusion on financial stability. This research is based on a sample of 30 middle-income countries from 2008 to 2019 and adopted a Generalised Methods of Moments (GMM) estimation to take into account the dynamic link in the financial inclusion-financial stability-growth nexus.

The rest of the paper is structured as follows: section 2 discusses the related empirical literature on the Financial Inclusion-Economic growth nexus, section 3 dwells into the methodology and provides an analysis of the findings while section 4 concludes.

2. Related Empirical Literature

Positive relationship between FI and EG

A way back, King and Levine (1993) initiated the analysis on the effect of financial development on EG in a cross-section of 80 economies over the time frame 1960 to 1989. Employing the partial correlation, extreme bounds and three-stage squares method, the scholars deduced a significant and positive influence on growth which was highly supportive to the theory of Schumpeter (1911). They concluded that efficient financial intermediaries foster productivity and growth through deploying resources towards promising investment projects.

The emergence of an inclusive financial sector in 2000s brought subsequent empirical evidence. Despite not using the terminology FI, Beck *et al.* (2007) was the first to explicitly examine the effect of both the breadth and outreach of financial systems on EG in 99 countries for the two-year period from 2003 to 2004 through a questionnaire. More basically, the academics captured the effect of the geographic and demographic access to banking services and the number of deposits and loans on growth. Increased access was perceived as being positively correlated with economic development and low financing obstacles were discovered in countries where ATMs and bank branches penetration and usage of loan services were high.

Sarma (2008) introduced a FI index, considering accessibility, availability, and usage of banking services, to probe the factors of FI in 54 countries. The findings inferred that, economies with higher GDP per capita, literacy rates and urbanization and low levels of income inequality are more financially inclusive, aligning with the 'demand-following' hypothesis established by Patrick (1966). Adopting this multi-dimensional FI index, Sarma and Pais (2011) evaluated its impact on economic development in 49 countries for the year 2004. The Ordinary Least Squares regression provided support to the positive and strong link with development in the economies. However, the findings revealed that banking sector liberalization impedes FI and development due to slow credit growth and credit access by foreign banks.

A comparative study of the low, middle, and high-income economies by Boldbaatar and Lee (2015), focused only on financial accessibility. Employing the GMM estimation, its relationship with EG was analyzed in 165 countries over 7 years, using multiple financial access indicators. The outcomes revealed that financial accessibility significantly fosters the economy. Likewise, Loukoianova and Yang (2018) adopted the GMM methodology to test for 188 nations in the Asia-Pacific region from 1990 to 2016. Despite a positive correlation between FI and per capita income growth was established, the degree differed substantially across the economies. The results disclosed that the benefits drawn from FI for growth reduce as FI expands, implying that low-income and developing economies derives more significant growth advantages than the advanced ones.

Kim *et al.* (2018) considered the exposure of FI to economic growth in 55 OIC economies from 1990 to 2013. The panel Vector Autoregressive (VAR) estimation supported the strong and positive relationship. Yet, the magnitude of the relationship differed across countries due to religion or financial literacy level. Controlling for trade openness and inflation, the findings decried positive and statistical significance to EG. Granger causality tests performed indicated the presence of mutual causality between FI and EG.

Huang *et al.* (2020) studied the influence of FI on economic development in 27 European Union (EU) economies. For more practical policy inferences, the sample was categorized into old-EU, present-EU, low and high-income members over 21 years from 1995 to 2015. Fully modified least squares methods employed, provided a less robust positive consequence of FI on economic development in high-income and old-EU countries in comparison to the low-income and recently joined EU economies where considerable and untapped areas for expansion and financial development is observed.

Suidarma (2019) evidenced the positive contribution of FI to EG by adopting the GMM estimation on a panel data of 10 ASEAN countries from 2008 to 2015. A similar approach by Adzimatunur and Manalu (2021) for their study in Indonesia revealed that this positive impact is reinforced by an increased financial literacy level. In the same vein, Thathsarani *et al.* (2021) sought to address the relationship in 8 countries in the South Asian region from 2004 to 2018. Employing the VECM method, FI was revealed to exhibit a positive and strong impact on growth in the short -run, while only outstanding deposits positively and significantly influenced growth in the long-run.

Negative relationship between FI and EG

Merely one exception to this positive relationship was identified. For the 2014-2018 span, Purwiyanta *et al.* (2020) focused their study of FI and EG in 34 Indonesian provinces. The analysis of panel data via the fixed effects model suggested that financial depth and FS have positive effect on EG. However, an unfavorable effect of financial access on growth was discovered. The explanation validates the existence of the paradox of thrift in the country. Indeed, given savings are withdrawals in the circular income flow, an increased ratio of public savings to GDP implies an absence of distribution of funds to the productive sector and hence, causing a decline in output.

Mixed relationship between FI and EG

At distinct time spans, Gourene and Mendy (2019) employed the heterogeneity panel causality model to analyze the causal linkage in 8 countries of the West African Economic and Monetary Union from 2006 to 2015. It was revealed that the usage of financial services influenced EG more significantly as compared with demographic penetration. A long-run bi-directional causality was observed between FI and EG although none was found in the short and medium-term. The results were more supportive to the growth-led hypothesis rather than the finance-led effect. Contrastingly, Nwogu (2021) adopted the VECM method in his study on 15 nations of the Economic Community of West African States over an extensive time span from 1970 to 2017. While a short run causal association was established between FI and GDP per capita, there was no long-run causality.

More recently, Chima *et al.* (2021) delivered support for the significance of an inclusive financial sector on growth in 48 sub-Saharan African countries over the span of 1995 to 2017. The outcomes from the system GMM method indicate that inclusive financial access improves EG and also, moderates the negative relationship between income inequality and EG. Yet, credit from banks and loan issuance costs exert a negative association with growth.

3. Data and Research Methodology

Model Specification

With reference to the main independent variables, the model specification of this paper pursues the work of Kim *et al.* (2018); Huang *et al.* (2020) and Ratnawati (2020). As control variables, the researchers adopted a similar set of variables, including trade openness, government expenditure, population, and inflation. Inspired by these scholars and relying on the availability of data, the relationship between FI, FS and EG will be outlined based on the following functional equation:

$$GDPC = f(FAC, FAV, FU, Z, NPL, CPI, TO) \quad (1)$$

Were,

GDPC: Gross Domestic Product per Capita

FAC: Financial Access indicator proxied by the Number of deposit accounts with commercial banks per 1,000 adults

FAV: Financial Availability indicator proxied by Automated Teller Machines per 100,000 adults

FU: Financial Usage indicator proxied by Outstanding loans from commercial banks as a percentage of GDP

Z: Bank Z-score

NPL: Non-Performing Loans to Total Gross Loans

CPI: Consumer price index (Base year: 2010)

TO: Trade Openness proxied by Sum of exports and imports as a percentage of GDP

Table 1: Summary of the Variables included in the model

Variables	Expected sign (+ or -)	Comments	Related refereces
Financial access (FAC)	Positive	An increase in FAC will drive EG up due to rising economic activities.	Boldbaatar and Lee (2015); Loukoianova and Yang (2018)
Financial availability (FAV)	Positive	An ease in FAV implies an improvement in the financial infrastructure which leads to efficient flow of funds and EG.	Thathsarani <i>et al.</i> (2021)
Financial Usage (FU)	Positive	A rise in FU through loans increase economic activity and economy's output through investments in high value-added activities.	Ratnawati (2020)
	Negative	A rise in FU through loans which are diverted towards health and emergency needs instead of productive units, comes at a cost to EG.	Chima <i>et al.</i> (2021)

Bank (Z)	Positive	A highly stable banking sector indicates a resilient financial system and higher output growth	Ijaz <i>et al.</i> (2019) ; Ntarmahet <i>et al.</i> (2019)
Non-performing loans to gross loans (NPL)	Negative	Greater NPL indicates a poor credit environment and a diversion of resources away from productive units, which adversely affect EG.	Manu <i>et al.</i> (2011); Ferreira (2018)
Inflation (CPI)	Negative	A rise in price levels creates uncertainty in the economy and depresses investment.	Guru and Yadav (2019)
Trade openness (TO)	Positive	An increase in TO spurs EG through increased productivity and competitiveness.	Huang <i>et al.</i> (2020)
	Negative	An increase in TO results in a negative impact on EG when there is poor financial development and low human capital	Kim <i>et al.</i> (2018)

Sample Selection

This research makes use of secondary data extracted from the database of World Bank and IMF. The data was collected on a yearly basis ranging from 2008 to 2019 for 30 MICs. The choice of this particular period was reached exclusively on the basis of availability of figures. The list of the MICs was adopted from the World Bank Classification of countries for the year 2019 for it to coincide with the end period of this research.

Table 2: List of Countries

LMICs	UMICs
Bhutan, El Salvador, Eswatini, Ghana, Honduras, India, Kenya, Lesotho, Nicaragua, Nigeria, Pakistan, Philippines, Ukraine, Vietnam, West Bank and Gaza	Argentina, Armenia, Brazil, Colombia, Costa Rica, Fiji, Georgia, Malaysia, Mauritius, Mexico, Montenegro, Paraguay, South Africa, Thailand, Turkey

Source: World Bank Group

Econometric methodology

The panel model below is thus, set as a result of an expansion of the functional model (1) into an econometric one and the application of a logarithmic transformation:

$$\ln GDPC_{it} = \alpha + \beta_1 \ln FAC_{it} + \beta_2 \ln FAV_{it} + \beta_3 \ln FU_{it} + \beta_4 \ln Z_{it} + \beta_5 \ln NPL_{it} + \beta_6 \ln CPI_{it} + \beta_7 \ln TO_{it} + \varepsilon_{it} \quad (2)$$

The inclusion of logs, denoted by \ln , on both sides transforms the variables into their natural logarithmic forms, allowing for the reduction of the effect of outliers and the normalization of data distribution. α represents the constant term. β , indicate the estimated coefficients. ε entails to the error terms. Subscripts i and t capture the number of countries and time dimension, respectively.

Dynamic Panel Data Regression

Even upon estimating the panel data, the issue of endogeneity of the explanatory variables arises, as the endogenous variables are possibly correlated with the error term. A loss of dynamic particulars eventually, emerges. The nature of a growth model often entails to a dynamic effect, whereby its past value is closely linked to its current one. In general, governments target a growth rate which is time-adjusted and hence, this elucidates that EG might be characterized as a time-persistent phenomenon and high inertia (Seetanah, 2009). To account for this dynamism, a lagged dependent variable is added as an explanatory variable to control for convergence. The confirmation of convergence induces that an economy with lower initial growth will grow rapidly given it is at a distance of its steady rate (Barro and Martin, 1992). The following model based on the work of Fauzel (2017) incorporates this dynamic effect and the adjustment process:

$$\ln GDPC_{it} - \ln GDPC_{it-1} = \lambda (\ln GDPC_{it} - \ln GDPC_{t-1}) \quad (3)$$

Equation (3) depicts the process of adjustment of to the corresponding target growth level, $\ln GDPC^*_{it}$. The adjustment speed, ranging between 0 and 1, is delineated by the coefficient λ . The target growth level can be estimated as follows:

$$\ln GDPC^*_{it} = \alpha_t + \beta x_{it} + \mu_{it} \quad (4)$$

where, x_{it} entails to the vector of explanatory variables (FAC, FAV, FU, Z, NPL, CPI, TO) and β portrays the corresponding coefficients. While α_t indicates period specific intercept term, μ_{it} indicates the time variant idiosyncratic error term.

The combination of equations (3) and (4) result in the following:

$$\ln GDPC_{it} = \alpha_t + (1 - \lambda) \ln GDPC_{it-1} + \lambda \beta x_{it} + c_i + \varepsilon_{it} \quad (5)$$

c_i denotes the unobserved effects of firm specific and time invariant, expressly, the unobserved fixed effects.

First differencing of equation (5) results in the elimination of component c_i .

$$\Delta \ln GDPC_{it} = \alpha_t + (1 - \lambda) \Delta \ln GDPC_{it-1} + \lambda \beta \Delta x_{it} + \Delta \varepsilon_{it} \quad (6)$$

Owing to a possible endogeneity of $\ln GDPC_{t-1}$ two error terms through μ_{it-1} , it needs to be addressed by an instrumental variable. In this regard, the Instrumental Variable (IV) approach initiated by Hsiao (2006) can be adopted. Under this approach, despite consistent estimates of the parameters are produced, these are not necessarily efficient. As such, a second technique, the Generalised Methods of Moments estimators (GMM) advanced by Arellano and Bond (1991) is considered in this paper. This estimator deters dynamic panel bias (Nickell, 1981) while dealing with crucial modelling issues such as fixed effects and endogeneity. With regards to growth models, the GMM estimator is highly suitable and generates consistent estimates even when heteroskedasticity is present.

Following the choice of the GMM estimator, the selection between the difference and system GMM arises. Blundell and Bond (1998) put forward those lagged levels are merely weak instruments in case of persistent series such as GDP growth. As such, the first differences GMM estimation will possibly be affected poorly and have biased finite sample properties. Against this backdrop, the system GMM modelled by Arellano and Bover (1995) and Blundell and Bond (1998) will be adopted. The system GMM modifies the difference GMM to include lagged levels and lagged differences. The scholars depicted that the system GMM estimator generates efficient and consistent estimations while also owning improved asymptotic and finite sample properties. The one-step system GMM estimator will be adopted given the two-step system GMM produces asymptotic standard errors that are downward biased (Blundell and Bond, 1998; Baltagi, 2008).

Accounting for all the above, equation (2) is expanded as follows:

$$\ln GDPC_{it} = \alpha + \beta_0 \ln GDPC_{it-1} + \beta_1 \ln FAC_{it} + \beta_2 \ln FAV_{it} + \beta_3 \ln FU_{it} + \beta_4 \ln Z_{it} + \beta_5 \ln NPL_{it} + \beta_6 \ln CPI_{it} + \beta_7 \ln TO_{it} + \varepsilon_{it} \quad (7)$$

Results And Analysis.

The GMM regressions results for the various samples are reported in the table below.

Table 3: GMM Estimates for the relationship between FI and EG

<i>lnGDPC as dependent variable</i>						
<i>Variables</i>	LMICs		UMICs		MICs	
	<i>Coefficient</i>	<i>p-value</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Coefficient</i>	<i>p-value</i>
lnGDPC (L1.)	0.6487	0.000***	0.4806	0.000***	0.4213	0.000***
lnFAC	0.4433	0.058*	0.1777	0.030**	0.2243	0.012**
lnFAV	0.0711	0.176	0.1185	0.025**	0.2459	0.097*
lnFU	-0.0851	0.037**	0.1710	0.130	-0.1648	0.088*
lnZ	0.0111	0.064*	0.2044	0.021**	0.6243	0.031**
lnNPL	-0.3257	0.013**	-0.2980	0.078*	-0.0490	0.086*
lnCPI	-0.0904	0.016**	-0.2455	0.043**	-0.1612	0.053*
lnTO	-0.1584	0.011**	0.0193	0.509	0.3120	0.126
constant	2.6798	0.003***	4.5809	0.000***	5.5052	0.000***
F-statistic	52.01	0.000	55.48	0.000	24.18	0.000
AR(2)	0.231		0.300		0.699	
Hansen test	Prob > chi2 = 0.367		Prob > chi2 = 0.319		Prob > chi2 = 0.183	
Difference-in-Hansen	Prob > chi2 = 0.312		Prob > chi2 = 0.233		Prob > chi2 = 0.194	

*, ** and *** denote the significance level at 10%, 5% and 1%, respectively

Source: Computed

Discussion of estimation results

The table delineates the linear relationship between the dependent and the independent variables by the coefficients. Strong evidence is provided to the finance-growth hypothesis, conforming the theoretical underpinnings of Goldsmith (1969) and McKinnon (1973). This has been empirically attributed to stable expansion of deposits base (Hannig and Jansen, 2010), lower information asymmetries (Jokipii and Monnin, 2013) and improved credit allocation process (Feghali *et al.*, 2021). Yet, considering the outcomes individually, an apparent mixed support is evinced in this study given not all p-values in the LMICs, UMICs and MICs are significant at the different levels.

In essence, the one-year lagged value of lnGDPC demonstrates its positive and significant relationship with current lnGDPC across all estimations. Interestingly, the coefficient varies across the estimations, where a value of 0.6487 is noted in the LMICs and a relatively lower value of 0.4806 is marked in the UMICs. This induces a slower adjustment pace in the LMICs with deviations from the target being amended by 35% ($\lambda=0.35$) after each year. Van *et al.* (2019) and Kim *et al.* (2018) also reported this convergence sign and a similar adjustment speed, across the same groups and in OIC countries, respectively. Therefore, a wider persistent nature in the pattern of EG is substantiated in the LMICs, whereby these countries grow relatively faster than their peers. The result further indicates the appropriateness of a dynamic model for estimation.

Financial accessibility (FAC)

In the MICs, the effect of FAC on EG is positive and statistically significant. This finding aligns to the supply-leading hypothesis of the finance-growth nexus, implying accessibility to financial services promote growth. An expansion in accounts penetration in the formal sector thus, improves savings that reflects the principal potential for funds for capital investment and ultimately, resulting into growth. This is in conformity with the study of Dahiya and Kumar (2020) and Ribaj and Mexhuani (2021). The latter made express reference to adequate monetary facilities in place that brings savings for favourable investments, an effective risk management and distribution of funds.

However, owing to the weaker effect in the LMICs, the outcome contrasts that reported by Loukoianova and Yang (2018) and Huang *et al.* (2020). These academics advanced that the benefits for account penetration for growth is higher in the low-income and LMICs due to the considerable scope for expansion of economic activities than the advanced countries. Arguably, their studies focused on Asia-Pacific and EU respectively, where the low-income and developing territories are also likely to engage in technology leapfrogging.

Indeed, this is less pertinent to LMICs globally as indicated by this study, where the mere access to and opening of bank accounts are inconsequential to growth. This was also concluded by Balele (2019) and Giron *et al.* (2021). The results of this study suggest that either account ownership does not necessarily translate into adequate deposits that would be provided as loans, or part of the deposits either remains ideal or are disbursed to unproductive areas that do not contribute directly to growth. Dupaset *al.* (2016) further averred that extending access had a limited effect on growth in developing states due to accounts that were not suited to the specific requirements of the marginalized segment and the high transaction fees involved with opening and using the account.

Financial availability (FAV)

The effect of outreach of financial services on growth enters insignificantly positive in LMICs, suggesting that the benefits of ATMs on growth are highly restricted. This can be attributed to the lack of development in the regions where despite ATMs being a less costly approach to enhance coverage, not enough services are provided except for cash withdrawals. The results coincide the studies of Iqbal and Sami (2017) and Ekechukwu and Mbah (2020) in the Indian and Nigerian economy, respectively. The researchers elucidated that the non-significance is explained by the high-cost financial resources and a poor level of financial infrastructure that exist in these LMICs.

Remarkably, in the UMICs, the coefficient is rather significant. The outcomes are congruent with the manifold findings of Beck *et al.* (2006); Boldbaatar and Lee (2015) and Gehrung (2020). The latter insinuated that the demographic outreach of availability of banking services allows cash and credit movements, ensures consumption levels during lean events, and lowers financing obstacles. Thatsarani *et al.* (2021) further advanced that banks in the UMICs move highly towards efficiency and quality of services. Indeed, they focus on migrating transaction activities to self-service channel. In turn, an efficient flow of funds is described that eventually, nurtures EG. This also conforms the theoretical view of McKinnon (1973).

Financial usage (FU)

In the UMICs, the results support the findings of numerous research, notably, Demircuc-Kuntet *al.*, 2017 and Siddiket *al.* (2019), that has identified rising loan amount extended by banks as an increase in economic activity and ultimately, growing economy's output. Aligning with the work of Ratnawati (2020) and Chen and Yuan (2021), the positive coefficient of 0.1710 on EG is expected, particularly when loans are diverted towards investments in high value-added activities such as education that contributes to human capital, and entrepreneurship, that promotes technological progress, rather than emergency and health needs. This implies an advanced credit environment, resulting in efficient deployment of resources towards the most productive units. Yet, a better credit environment to support the lending practices, also comes with strict collaterals exigencies and restrictions on credit accessibility to underserved segments. Giron *et al.* (2021) reported that lack of documentation limits credit inclusion and potential investments in the less developed territories. This is further supportive to the insignificant effect that might be attributed to smaller amounts of loans disbursed to productive underserved groups that retards greater investments, conducive for growth.

As opposed, in the LMICs, the results establish a negative and significant relationship. Although a boom in credit growth implies greater FI, this is translated into an unfavourable impact on EG, particularly when there is an expansion of low-income borrowers with poor ability to repay or whose activities are only limited to low-scale investments. This also reflects the poorly regulated credit conditions in the LMICs, that renders an inefficient allocation of funds. This goes well with the study of Angeles (2015) and Sikarwar *et al.* (2020) and who ascribed the negative relationship to extensive household debt, whereby credit is principally used for consumption-smoothing. Chimaet *al.* (2021) also reported that loan issuance expenses are higher than profit from loans itself in several SSA economies that are part of the LMICs, which further hinder banks' motivation to disburse loans to the underserved segment, which eventually halt economic progress.

Other independent variables

The other independent variables had the overall expected impacts on economic growth, although to varying extent for different sub samples, except for trade openness which was reported to have either insignificant or negative relationship with growth in selected sub samples.

4. Conclusion

Summary of findings

Despite tremendous financial development, it has been increasingly acknowledged that financial systems are far from inclusive. With greater dynamism in the financial sector now, a critical evaluation around financial inclusion surfaces. This paper extends empirical support by assessing and comparing the impact of financial inclusion and financial stability on economic growth in the LMICs and UMICs. Using a sample of 30 countries, equally distributed between the LMICs and UMICs for the period 2008 to 2019, the study exemplified whether the numerous dimensions for financial inclusion and financial stability have a significant relationship with economic growth or not. The system GMM estimation was adopted as the principal methodology in the study.

Policy Implications

Extending financial inclusion through access to deposit accounts comes off as pertinent to improve both growth and financial stability in the MICs in order for these countries to escape the 'middle-income trap'. First, governments' commitment, and involvement towards setting financial inclusion as a policy priority is indispensable. Flexible regulations towards simplified accounts can be adopted to ease the process for the financially excluded people, without undermining the KYC and money laundering policies. Besides, for long-term growing financial inclusion, an adequate consumer protection framework needs to be instituted to capture the trust of the unbanked and underserved segments. Reference can be made to India, where in 2014, the introduction of biometric identification cards was of huge success to foster account ownership given it brought transparency and consumer protection across the formal sector. As for banks in the MICs, an initiation to create a 'lock-in' effect by taking the first-mover advantage of attracting untapped clientele base is important to reduce the likelihood of default.

In the LMICs, a feeble effect of financial availability explains a greater need to foster banking penetration through technology-based approaches such as ATMs in order for the LMICs to climb the income scale. It is recommended to improve investments in market studies and stimulate regulatory efforts around innovation in the banking sector such that the banks can design products that would suit the characteristics, needs and preferences of the unbanked and low-income populations. This would also offer the financial sector with a diverse portfolio of channels for bringing the products and services closer to the marginalised group. This approach is particularly more critical in LMICs, where majority of the greatest unbanked segment resides (Barajas *et al.*, 2020¹). In the UMICs, governmental incentives to enhance the range of services of ATMs and improve the delivery through voice-activated interfaces or haptic touch screens must be initiated.

In the LMICs, greater outstanding loans come off as a cost to both stability and growth. A need for greater focus of policy measures to address frictions to financial inclusion, notably to the credit infrastructure arises. It is recommended to ensure a promising regulatory environment for banks, particularly through; the creation of lending mechanisms that are tailored to the borrowers' unique purposes which can curtail the moral hazard risks in banks' quotidian activities; the reduction of default risk as a result of credit information bureaus being established or improved; a risk-based approach to due diligence; and greater legal actions to reduce the size of the informal financial sector. With reference to the UMICs, where a trade-off emerged between financial inclusion and financial stability, policies around making credit affordable must therefore be initiated. More specifically, liquidity supports can be provided to banks that target the underbanked or unbanked groups or credit facilities can be offered to entrepreneurs.

¹Barajas, A., Beck, T., Belhaj, M. and Naceur, S., 2020. *Financial Inclusion: What Have We Learned So Far? What Do We Have to Learn?* IMF Working Papers.

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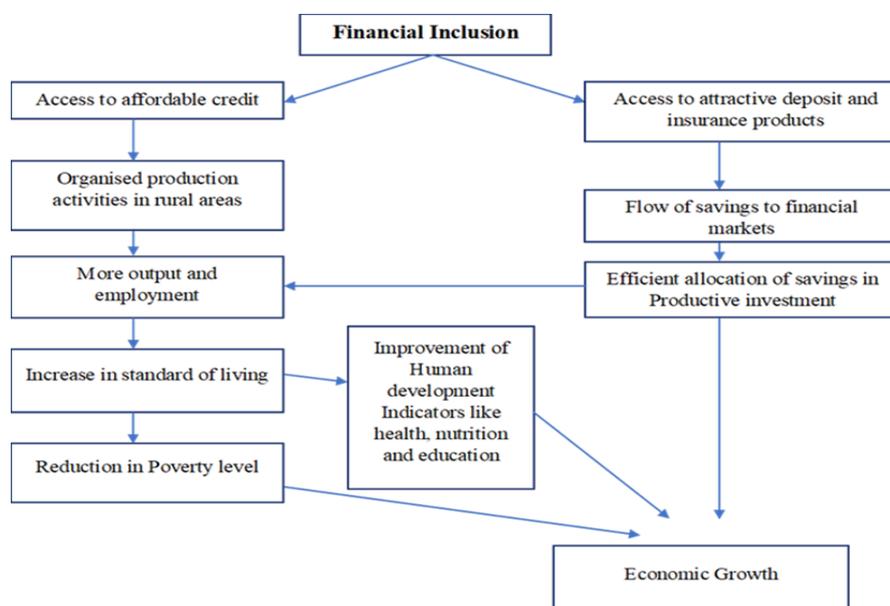
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APPENDICES

Appendix 1: Financial Inclusion- Economic Growth link: Transmission channels.



Appendix 2: Summary of empirical evidence

Author	Sample	Time-Period	Method	Findings
Financial Inclusion and Economic Growth				
King and Levine (1993)	80 countries	1960-1989	Partial Correlation, extreme bounds and three-stages squares	Positive
Beck <i>et al.</i> (2007)	99 countries	2003-2004	Questionnaire	Positive
Sarma and Pais (2011)	49 countries	2004	Ordinary Least Squares	Positive
Boldbaatar and Lee (2015)	165 countries	2004-2011	GMM estimation	Positive
Loukoianova and Yang (2018)	188 countries in Asia-Pacific region	1990-2016	GMM estimation	Positive
Kim <i>et al.</i> (2018)	55 OIC countries	1990-2013	Panel VAR and Granger Causality	Positive
Suidarma (2019)	10 ASEAN countries	2008-2015	GMM estimation	Positive
Huang <i>et al.</i> (2020)	27 European Union countries	1995-2015	Fully modified least squares	Positive
Thathsarani <i>et al.</i> (2021)	8 South Asian countries	2004-2018	VECM	Positive
Purwiyanta <i>et al.</i> (2020)	34 Indonesian provinces	2014-2018	Fixed effects model	Negative
Gourene and Mendy (2019)	8 West African Economic and Monetary Union	2006-2015	Heterogeneity panel causality model	Mixed
Nwogu (2021)	15 countries of the Economic Community of West African States	1970-2017	VECM	Mixed
Chima <i>et al.</i> (2021)	48 sub-Saharan African countries	1995- 2017	GMM estimation	Mixed

Appendix 3: FI trends in LMICs and UMICs

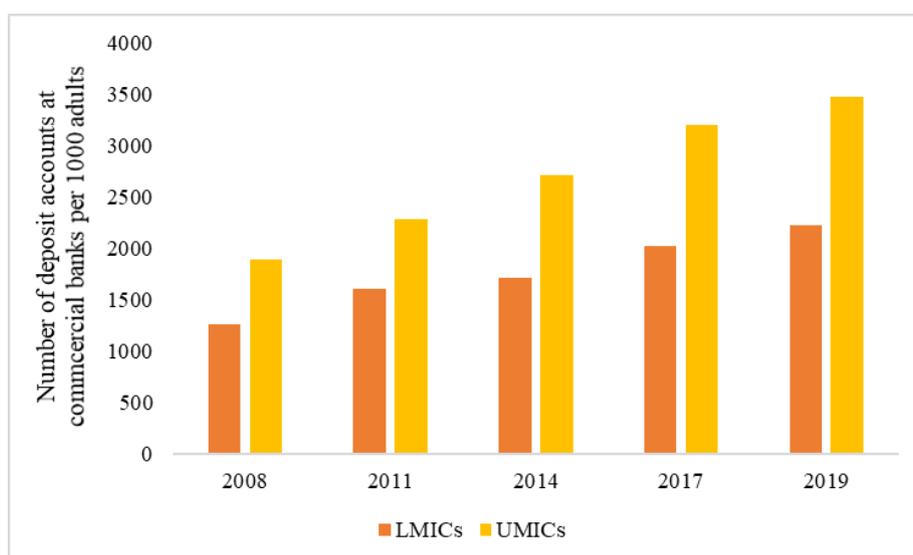


Figure A1: Account penetration

Source:IMF

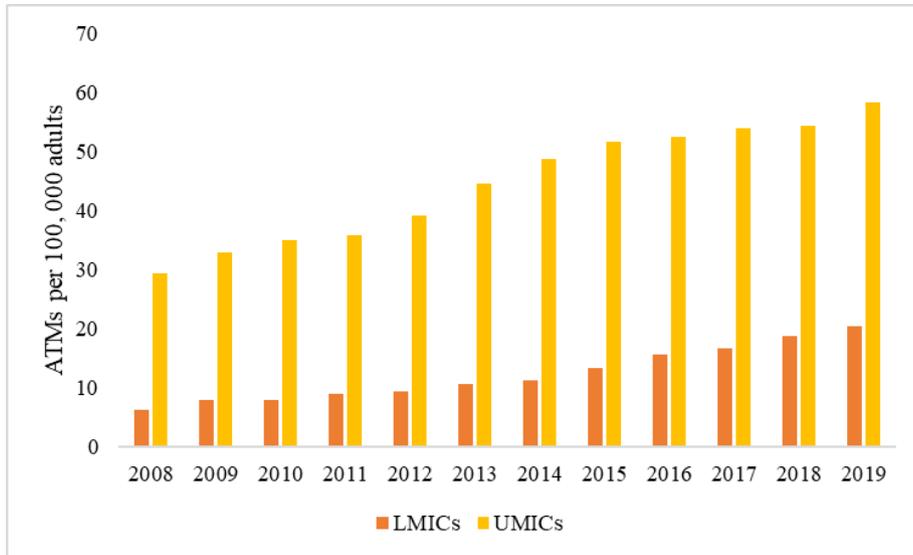


Figure A2: Financial Availability (ATMs)
 Source: World Databank Indicators

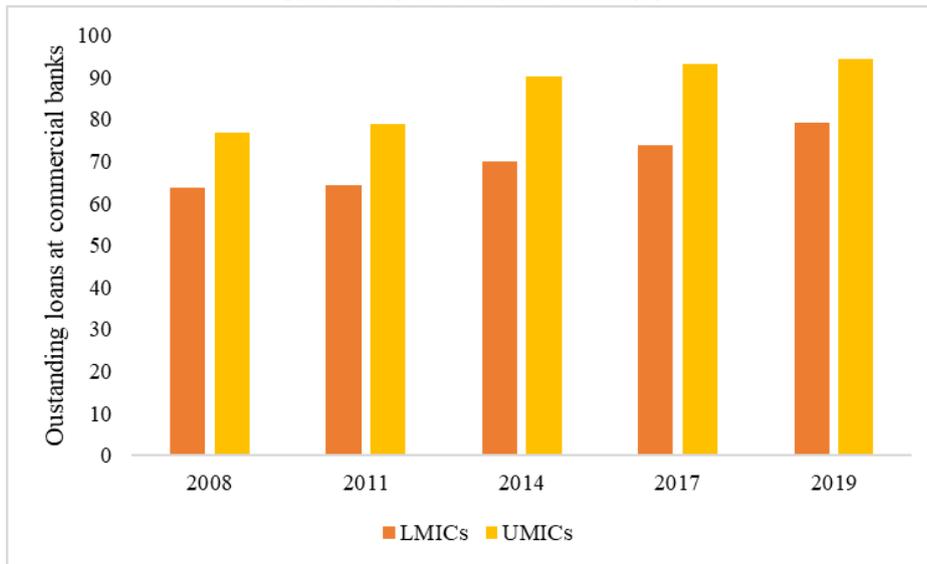


Figure A3: Credit Inclusion
 Source: IMF Database