



Financial Inclusion and Economic Growth of Heavily Indebted Poor Countries

DEMEHIN James Adeniyi, PhD¹

*Department of Finance,
Adekunle Ajasin University, Akungba-Akoko,
Ondo State*

ORINA Tobi Adewumi, FCA²

*University Bursar,
Adekunle Ajasin University, Akungba-Akoko,
Ondo State*

Date of Submission: 15-08-2024

Date of Acceptance: 31-08-2024

Abstract

Financial inclusion is believed to condition-precendent for fast economic growth over the world, especially in the heavily indebted and poor countries (HIPC). However, the actual effect of financial inclusion on the economic growth of countries facing a dual problem of poverty and protracted indebtedness is a subject of debate. This study therefore assessed how financial inclusion affects the economic growth of the countries that fall into this category. The study period covered 2010 to 2022 examining the effect of enlarged financial inclusion variables, namely account ownership per thousand (ACC), number of bank branches (BRAN), bank branches network per thousand (BRPT), logarithm of total number of account owners (LOGLACT), logarithm of outstanding loans (LOGOUTL) and logarithm of number of borrowers (LOGBORR) on the logarithm of Real Gross Domestic Product (LOGRGDP) of the countries.

The study used the Panel Least Squares Generalized Method of Moments (PLS-GMM) fixed effect method and discovered that ATM and BRPT had positive and significant effect on RGDP (coeff. = 0.453421, $p = 0.0043$ and coeff. = 0.045609, $p = 0.00302$ respectively). The effect of LOGBORR was negative and significant (coeff. = -4.790408, $p = 0.0036$). The effect of remaining four variables were not significant during the period.

The study concludes that the financial inclusion significantly affects the economic growth of HIPC and therefore recommends that the HIPC should leverage on the potentials of financial inclusion for economic growth. They need to create conducive regulatory frameworks that promote financial inclusion, invest in financial infrastructure, provide

financial literacy and facilitate the use of digital technologies that can enhance financial inclusion.

Keywords: Financial Inclusion, Economic Growth, HIPC, PLS-GMM.

I. Introduction

Financial inclusion, often viewed as a powerful driver of economic growth, is a concept that has gained significant attention in recent years, particularly in the context of Highly Indebted Poor Countries (HIPC). These nations face unique challenges stemming from their high levels of external debt and limited access to financial services, which, in turn, can hinder their economic development. The relationship between financial inclusion and the economic growth of HIPC is a topic of critical importance, as it pertains to the well-being and future prospects of millions of people living in these countries. While the importance of financial inclusion for the economic growth of HIPC is evident, the problem lies in understanding the extent to which financial inclusion can impact these countries and the specific challenges they face in achieving it. HIPC face unique economic, structural, and social barriers that make the attainment of financial inclusion a complex undertaking.

One of the central issues is to comprehend the extent to which financial inclusion can penetrate highly indebted poor countries. With many regions lacking basic financial infrastructure, it is crucial to assess how far financial inclusion initiatives can extend and the challenges involved in reaching underserved populations. The precise impact of financial inclusion on the economic growth of HIPC is still a subject of research and debate. While there is a theoretical connection, the empirical



evidence demonstrating the magnitude of this impact in real-world scenarios is less clear. Additionally, HIPCs face a range of challenges in implementing financial inclusion policies effectively. These challenges are multifaceted and include regulatory and governance issues, infrastructure limitations, and political stability concerns. Understanding how these factors impede or facilitate financial inclusion is essential.

Furthermore, in some cases, cultural norms and social practices can be a barrier to participation in the formal financial system. Understanding how these cultural and social dynamics affect the uptake of financial inclusion is crucial. Also, HIPCs are a diverse group of countries with varying economic, social, and political circumstances. The problem of tailoring financial inclusion strategies to suit the unique contexts of individual HIPCs remains a critical issue. This paper examined the effects of financial inclusion variables on the economic growth of HIPCs. This research significantly contributes to the ongoing discourse on how to unlock the potential of financial inclusion in these countries and foster economic growth that can improve the lives of their populations.

Assessing financial inclusion is a complex and multifaceted task. It is particularly challenging to provide a quantifiable answer to questions about the extent of financial inclusion in a country or economy. Originally, financial inclusion was measured using a single proxy indicator, such as the percentage of adults globally who held accounts at a bank or a regulated institution like a credit union, microfinance institution, or mobile money service provider (Demirgüç-Kunt et al, 2022). This indicator was initially introduced as the proportion of adults with accounts at formal financial institutions (banks, credit unions, microfinance institutions) in the initial Global Findex survey (Takouda et al, 2022). Over time, it was revised to incorporate mobile money services, as seen in Demirgüç-Kunt et al, (2018; 2022). However, relying on a single indicator provides only a partial view of financial inclusion, which is a significant limitation of this approach. To address this limitation, several authors have suggested aggregating multiple indices into a composite index, as proposed by Becker et al (2017) and Greco et al, (2019). Using such a composite measure allows for a more comprehensive evaluation of entities' performance as such approach provides a summarized numerical measure that combines various criteria or attributes, each weighted to reflect its relative importance (Permanyer 2011). Composite indicators, also known as synthetic

indices or performance indices, have gained popularity due to their simplicity. They have been widely employed to study various concepts, including human development, sustainability, perceived corruption, innovation, competitiveness, entrepreneurship, and corporate social responsibility.

The impact of financial inclusion on economic growth in the HIPCs remains subject to debate. Several authors have found evidences that suggest that it propels economic growth (Morduch, 1999; Beck, et al., 2007; Demirguc-Kunt, 2012). However, Banerjee et al. (2015) conducted a randomized controlled trial in India and found limited evidence of significant impacts on business profits or household consumption. They argued that while microfinance institutions which mainly facilitate financial inclusion may benefit individual borrowers, its macroeconomic effects on overall economic growth may be modest.

Furthermore, financial inclusion has implications for income distribution and inequality which is a major feature of HIPCs. Burgess and Pande (2005) examined the relationship between financial deepening, including measures of financial inclusion, and income inequality in India. Their results suggested that greater financial inclusion, particularly through the expansion of banking services to rural areas, could reduce income inequality by providing access to credit for marginalized populations. However, the relationship between financial inclusion and income inequality is complex and context dependent. Beck et al. (2014) argued that while greater financial inclusion can reduce income inequality by providing opportunities for wealth accumulation among low-income groups, it can also exacerbate inequality if access to financial services is concentrated among the wealthy or if financial markets are characterized by inefficiencies and discrimination.

Rutherford et al. (2015) observed that despite the potential benefits of financial inclusion, heavily indebted and poor countries face numerous challenges in expanding access to financial services. The authors identified factors such as inadequate infrastructure, regulatory barriers, limited financial literacy, and social and cultural issues that can significantly impair financial inclusion. They proposed targeted policy interventions, such as improving financial literacy, expanding branch networks, promoting digital financial services, and fostering inclusive regulatory frameworks in HIPCs to foster effective financial inclusion practices.

In the light of the foregoing, this study examined the effect of financial inclusion on



economic growth of selected HIPCs. This study differs from many others in that more financial inclusion specific variables (rather than the financial inclusion index) are included in the research model. The inclusion was meant to identify the specific effect of each of the variables on economic growth.

II. Literature Review

Conceptual Literature

Heavily Indebted and Poor Countries (HIPCs)

The notion of "heavily indebted poor countries" (HIPC) was formulated by the International Monetary Fund (IMF) and the World Bank in 1996 as part of an initiative aimed at addressing the significant gap in development financing within developing nations. According to the IMF, there are 39 countries classified as HIPCs, with 37 of them meeting the full qualifications, while two are in the process of qualifying (IMF, 2022). These countries belong to a category characterized by extreme poverty and substantial debt burdens. Due to their precarious financial situation, these nations require substantial external assistance to foster the growth of their domestic economies. The HIPC designation grants these countries certain privileges, including debt relief measures such as rescheduling or outright cancellation, to alleviate the burden of their unsustainable debt levels, which they are unable to effectively manage on their own (World Bank, 2022).

The IMF (2022) outlined certain prerequisites that must be met before a country can be classified as a HIPC. These conditions include eligibility for borrowing from the World Bank's International Development Association (IDA) and the IMF's Poverty Reduction and Growth Trust, both of which offer loans at zero interest rates and subsidized rates respectively. Additionally, these countries must grapple with an unsustainable debt burden that cannot be effectively managed through conventional debt relief mechanisms. They are also required to adhere to established criteria for sound monetary and fiscal policies as prescribed by the IMF. Furthermore, they must have developed a comprehensive "Poverty Reduction Strategy Paper (PRSP)" through a participatory process involving various stakeholders within the country. Majority of the countries classified as HIPCs are situated in the African continent (IMF, 2022).

HIPCs, as classified by international financial institutions, represent a group of countries with an alarming proportion of external debt relative to their Gross Domestic Product (GDP). The classification of HIPCs is a recognition of the severe

economic challenges faced by these nations. High levels of indebtedness constrain their ability to allocate resources towards essential social services, infrastructure development, and economic growth initiatives. Often, HIPCs find themselves in a distressing cycle, where the debt burden is exacerbated by a lack of access to financial services and opportunities for economic growth. The situation in HIPCs is further compounded by the limited availability of infrastructure for formal financial services. Many individuals in these countries live in remote, underserved regions where banks and financial institutions are scarce. The low-income levels prevalent in HIPCs render access to savings and investment products difficult, even if financial services are made available. Additionally, weak regulatory frameworks, coupled with political instability and governance challenges, hinder the development and effective implementation of financial inclusion policies (IMF, 2022; Winful et al, 2022).

Financial Inclusion and Economic Growth of HIPCs

Financial inclusion is a multifaceted concept that embodies the notion of providing affordable and accessible financial services to all segments of society, irrespective of their income levels or social status. This concept encapsulates a broad range of financial products and services, including savings, credit, insurance, and payment mechanisms, which are indispensable for fostering economic stability and growth. For many HIPCs, financial inclusion holds significant promise, as it serves as a potential mechanism to break the cycle of poverty, limited access to financial resources, and barriers to economic development.

Financial inclusion empowers individuals and businesses to participate in the formal financial system, facilitating savings, investment, and risk management. Access to credit enables small businesses to expand, hire more labor, and invest in equipment, leading to increased productivity and economic growth. Moreover, inclusion in the formal financial system can foster stability by mitigating reliance on informal, often risky financial practices. It is a means of protecting against unforeseen shocks and is instrumental in poverty alleviation, as it opens up opportunities for wealth accumulation.

Financial inclusion encourages people to save and invest their money in various financial instruments. This capital can then be channeled into productive activities such as starting businesses, building infrastructure, and supporting agriculture, all of which contribute to economic growth



(Oumarou & Celestin, 2021). Access to credit allows individuals and small businesses to expand their operations, purchase equipment, and hire more labor. This increased productivity can lead to higher income levels and contribute to economic growth. Inclusion in the formal financial system often provides individuals and businesses with access to insurance and risk management tools. This can help protect against unexpected shocks and improve overall economic stability (Takouda, et al., 2022).

Klapper et al, (2006) asserted that a broader access to financial services entails increased competition among financial intermediaries, which, in turn, can lower intermediation costs and improve credit accessibility for potential entrepreneurs. This enhanced access to financial services encourages more talented but financially disadvantaged entrepreneurs to initiate new businesses, ultimately leading to increased productivity as these new entrants use their newfound resources to create jobs through business expansion. In the short term, there may be minimal increases in income inequality if only a few entrepreneurs gain access to financial services, as they experience an immediate boost in income that their neighbors might not share. Klapper et al, (2006) however, observed that in the long term, income inequality is likely to gradually decrease as these entrepreneurs continue to create more jobs and offer improved wages.

2.2 Theoretical Framework

This study is built around the two aspects of finance-inequality hypotheses. The finance-inequality widening hypothesis, initially proposed by Clarke et al. (2006), suggests that when institutional constraints are present, financial development tends to primarily benefit the higher-income group, who are more creditworthy. According to this hypothesis, financial development tends to favour the wealthy. In contrast, the lower-income group, lacking access to credit and adequate collateral, may struggle to access financial services. Consequently, individuals with limited financial resources, often possessing only basic education, are relegated to unskilled labor markets, resulting in lower wages, ultimately leading to reduced welfare.

In contrast to the finance-inequality widening hypothesis, the finance-inequality narrowing hypothesis, introduced by Galor and Zeira (1993), and Banerjee and Newman (1993), offers a different perspective. This hypothesis posits that deficiencies in financial markets deter individuals with fewer resources from engaging with financial services, such as borrowing for investments in human and physical capital. It

suggests that individuals who inherit more wealth invest in education and take up skilled jobs, while those with fewer resources are left with no option but to borrow for educational purposes. As a result, they may remain unskilled, and this cycle can persist across generations. The finance-inequality narrowing hypothesis argues that financial development broadens access to credit, enabling the less privileged to borrow for human capital investments, improve their earning potential, and, in turn, enhance their welfare. This hypothesis concludes that there is a negative relationship between income inequality and financial development, as increased financial development leads to reduced inequality and improved welfare.

Greenwood and Jovanovic (1990) present a theoretical model that combines elements of both the finance-inequality widening and finance-inequality narrowing hypotheses. They propose that during the early stages of economic development, the higher-income group gains initial access to and benefit from financial services, resulting in a widening income gap between the rich and the poor. This model suggests an inverted U-shaped relationship between income inequality and financial sector development. As the financial sector expands, it offers broader financial access to the economy and to individuals with fewer resources, leading to a reduction in income inequality as the economy stabilizes. To connect financial inclusion with welfare, Radcliffe and Voorhies (2012) explain that owning a formal account in a financial institution provides households with the means to accumulate funds for income-generating activities, such as micro-enterprises, agricultural inputs, education, retirement planning, and risk management. A basic account serves as a store of value for precautionary savings and a secure place to store money, reducing impulsive spending. Electronic payments also have the potential to enhance individual welfare by offering cost and time savings, increased sales, reduced transaction costs, and improved connectivity between the government, employers, employees, and families for direct payments of social grants, wages, and remittances. When financial markets function effectively, individuals with entrepreneurial skills gain access to credit to finance their projects. This suggests that the impact of financial inclusion on aspects of welfare, such as income inequality, may be positive, as observed by some authors (Attanasio et al., 2015).

2.3 Empirical Literature

Financial inclusion is beneficial for economic growth for several primary reasons.



According to Winful et al, (2022), it facilitates efficient resource allocation, encourages savings mobilization, and aids in managing risks. The authors highlighted that in the Post-2015 Development Agenda, financial inclusion has been established as a crucial objective for United Nations member countries, with the aim of enhancing people's well-being, reducing poverty, and advancing economic development within these nations.

The expansion of the financial sector is significantly influenced by the number of citizens who have access to financial services. The level of financial inclusion is closely tied to the development of the financial sector, as observed by Anarfo et al, (2019). Consequently, we can anticipate a positive impact of financial inclusion on economic development. Additionally, the establishment of a sound financial infrastructure, which effectively channels funds from savers to borrowers, is a key driver of robust economic growth, as noted by Sahay et al, (2015) and Sethi & Acharya (2018). Inclusive finance contributes to sustainable development and empowers marginalized segments of society, creating employment opportunities, reducing poverty, and promoting income equality through the efficient allocation of resources. Currently, there is a growing body of empirical research focused on the relationship between financial inclusion and economic development, as indicated by Dahiya and Kumar (2020).

For Oumarou and Celestin (2021), while financial inclusion is believed to have a positive impact on poverty reduction and economic development, comprehending the factors influencing it poses a significant challenge in Africa. Zins and Weill's 2016 study revealed that Africa exhibits a lower level of financial inclusion compared to other regions. The determinants of financial inclusion appear to be influenced by gender (with males being more included), income level (with the affluent being more included), and education level (with the educated being more included). Among these factors, income level and education have a more pronounced effect on promoting financial inclusion. Therefore, when formulating economic policies to enhance financial inclusion, it is advisable to target women and young people as specific population groups.

The World Bank (2008) report suggested that the immediate impact of improved access to finance on income inequality is not straightforward. Although direct financial access to the poor may not be the most effective means of reducing poverty and income inequality, calibrated general equilibrium models indicate that the most significant quantitative effect of financial access on income inequality arises through an indirect labor market channel. The direct effect is observed when individuals with low incomes and limited resources gain direct access to financial services, such as formal bank accounts, credit, micro-insurance, and payment systems. Tita and Aziakpono (2017) emphasized that formal account ownership serves as a gateway into the formal financial system. It enables individuals to effectively manage risk, accumulate working capital, establish a credit history through savings, and smooth consumption during economic downturns.

As noted by Sethi and Acharya (2018), if the savings accumulated through financial access are utilized for activities like micro-enterprise development or financing the education of underprivileged children, this can lead to a reduction in income inequality, benefiting both the current and future generations. Younger generations, in particular, stand to gain a better chance of securing decent employment or becoming entrepreneurs, thereby breaking the cycle of poverty. The indirect effect of financial access on income inequality is primarily channeled through the labor market. The impact on income inequality through the labor market depends on the extent of access gained, initial economic conditions, and labour productivity.

III. Methodology

Our research data were obtained from the World Bank Financial and Development Indicators for HIPCs and for the years studied. Due to paucity of requisite data, the study was limited to 2010 – 2022 and 24 heavily indebted and poor countries. The countries include Afghanistan, Cameroon, Central African Republic, Chad, Comoros Island, Congo DR, Congo Republic, Gambia, Ghana, Guinea, Guyana, Haiti, Hinduras, Liberia, Madagascar, Malawi, Mauritania, Mozambique, Nicaragua, Rwanda, Sao Tome & Principe, Tanzania, Uganda and Zambia.



Research Model

The relationship between the financial inclusion and economic variable variables is expressed in a functional equation as follows:

$$ECGRW = f(FINV; INFL) \dots\dots\dots(i)$$

$$ECGRW = RGDP \dots\dots\dots(ii)$$

Where:

$$FINV = (ACCT, ATM, BRAN, BRPT, BORR, LACT, OUTL, INFL) \dots\dots\dots(iii)$$

The model for this study is therefore stated in econometric form and logging specific variables as follows:

$$LOGRGDP_{it} = \alpha + \beta_1 ACCT_{it} + \beta_2 ATM_{it} + \beta_3 BRAN_{it} + \beta_4 BRPT_{it} + \beta_5 LOGBORR_{it} + \beta_6 LOGLACT_{it} + \beta_7 LOGOUTL_{it} + \beta_8 INFL_{it} + \epsilon_{it} \dots\dots\dots (iv)$$

Where:

- ECGRW = Economic growth
- FINV = Financial inclusion variables
- LOGRGDP = Logarithm of Real Gross Domestic Product
- ACCT = Account ownership per thousand of the population
- ATM = Number of ATM per thousand of the population
- BRAN = Number of bank branches
- BRPT = Bank branches per thousand of the population
- LOGBORR = Log of number of borrowers
- LOGLACT = Log of number of account owners
- LOGOUTL = Log of outstanding loans and advances
- INFL = Inflation rate
- α = Constant
- β_1, \dots, β_8 = Regression coefficients
- i = Individual HIPC
- t = Years
- ϵ = Stochastic error term

All the variables were subjected to two preliminary tests (descriptive statistics, correlations). Due to the violations of assumptions research data, especially non-normal distribution, we used the Panel Least Squares Generalized Method of Moments (PLS-GMM) to address the research objectives (Pugh, 2018).. The data for the study is panel/pooled in nature, of the form

$$y_{it} = \alpha_{it} + k_{it}' \beta_i + \epsilon_{it} \dots\dots\dots (v)$$

Where y_{it} is the dependent variable (LOGRGDP) and k_{it} is the k- vector of non-constant regressors (financial inclusion variables), ϵ_{it} is the error term while β_i are parameters for $i = 1, 2, \dots, n$ cross sectional units. To determine the more appropriate model for inferential purpose, the PLS-GMM primary result was subjected to Hausman test to ascertain which of the results of the fixed or random effects models should be preferred.

IV. Results and Discussion

Descriptive Statistics

The descriptive statistics reveal the statistical properties of all the research variables. Table 4.1

Table 4.1: Descriptive Statistics

	GDPGR	ACCT	ATM	BRAN	BRPT	LOGBORR	LOGLACT	LOGOUTL	INFL
Mean	3.47358	286.768	6.952560	4.97636	32.0712	5.10789	5.14704	5.41322	5.97330
Median	3.87097	183.757	4.960586	3.00328	23.7119	5.34435	5.09641	5.32803	4.96159
Max	14.3624	1189.89	26.46181	31.2678	210.651	6.77063	6.77063	7.24303	27.2833
Min	-36.3919	1.22512	0.405479	0.31303	0.70157	3.25983	3.37621	3.17969	-4.29487
Std. Dev	4.39275	280.208	6.551456	5.36118	30.2789	0.70849	0.64441	1.02489	5.01219
Skewness'	-3.26082	1.54363	1.391601	2.53673	2.09699	-0.84892	-0.15018	-0.04587	1.43030
Kurtosis	29.1261	4.39582	4.006648	9.99456	8.94959	3.07876	2.72571	2.10076	5.49901
J-Bera	7734.49	122.448	93.43528	796.416	565.197	30.8150	1.76481	8.71506	153.900



Prob	0.00000	0.00000	0.000000	0.00000	0.00000	0.00000	0.41378	0.01281	0.00000
Sum	889.236	73412.6	1779.855	1273.98	8210.22	1307.62	1317.64	1385.78	1529.16
Sum Sq. Dev.	4920.56	2002181	10945.00	7329.28	233787.	128.000	105.894	267.854	6406.13
Observations	256	256	256	256	256	256	256	256	256

Source: Author's Computation (2024).

The mean values of LOGRGDP, ACCT, ATM, BRAN, BRPT, LOGBORR, LOGLACT, LOGOUTL and INFL are respectively 3.47358, 286.768, 6.952560, 4.97636, 32.0712, 5.10789, 5.14704, 5.41322 and 5.97330. While LOGRGDP, LOGBORR, LOGLACT and LOGOUTL are skewed negatively to the left of the mean (-3.26082, -0.84892, -0.15018 and -0.04587 respectively), ACCT, ATM, BRAN, BRPT and INFL are skewed positively to the right of the mean (1.54363, 1.391601, 2.53673, 2.09699 and 1.453030 respectively).

LOGRGDP, ACCT, ATM, BRAN, BRPT and INFL are leptokurtic with kurtoses greater than 3 (29.1261, 4.39582, 4.006648, 9.99456, 8.94959 and 5.49901 respectively). On their part, LOGBORR and LOGLACT are mesokurtic with their kurtoses approximately 3 (3.07876 and 2.72571 respectively) and only INFL is

platykurtic with its kurtosis less than 3 (2.10076). Except LOGLACT which has a probability of J-B statistics (0.41378 > 0.05 level of significance (LOS)), all the other variables are not normally distributed because their *p* values are all less than 0.05 LOS. The non-normality in the distribution of the variables presupposes that the assumption of normal distribution of Time Series as a pre-condition for its analysis has been violated. This is why this researcher chose to use the PLS GMM technique to estimate the research model. Other statistical properties are as shown in Table 4.1.

Correlations

The Pearson's correlation coefficients which indicate the degree of co-movement between the dependent and explanatory variables and among the latter are displayed in table 4.2.

Table 4.2: Correlations Matrix

	GDPGR	ACCT	ATM	BRAN	BRPT	LOGBORR	LOGLACT	LOGOUTLO	INFL
GDPGR	1								
ACCT	0.01560	1							
ATM	-0.0960	0.795382	1						
BRAN	0.01779	0.766544	0.8440481	1					
BRPT	-0.0280	0.523442	0.585192	0.6964190	1				
LOGBORR	0.14450	0.275968	0.1811987	0.0737858	0.33482	1			
LOGLACT	0.01803	0.013600	0.1362045	0.0044612	0.33591	0.748135	1		
LOGOUTL	0.13872	-0.268323	-0.3816267	-0.399054	-0.0822	0.461799	0.5685	1	
INFL	0.03396	0.035406	-0.0630030	-0.010039	0.02946	0.156579	0.0325	0.0491	1

Source: Author's Computation (2024).

ACCT, BRAN, LOGLACT and INFL have positive but extremely low correlations with LOGRGDP (0.01560 or 1.56%; 0.01779 or 1.78%; 0.018029 or 1.80% 0.033955 or 3.40% respectively). ATM and BRPT have negative but very low correlations with LOGRGDP (-0.09602 or -9.60% and -0.02802 or -2.80% respectively). On their part, LOGBORR and LOGOUTL have positive although low correlations with LOGRGDP

(0.144505 or 14.45% and 0.138724 or 13.72% respectively).

Effect of Financial Inclusion Variables on Economic Growth in HIPC's.

We provide estimates for the preliminary PLS GMM model on the effect of financial inclusion on economic growth of HIPC's. The preliminary estimates are as shown in Table 4.3.



Table 4.3: Preliminary PLS-GMM Results

Method: Panel Generalized Method of Moments				
Dependent Variable = LOGRGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACCT	-0.000625	0.001955	-0.319542	0.7496
ATM	0.271391	0.096648	2.808020	0.0054*
BRAN	0.451859	0.118843	3.802165	0.0002*
BRPT	-0.027830	0.013863	-2.007537	0.0458
LOGBORR	2.117603	0.676411	3.130644	0.0020*
LOGLACT	-1.320898	0.827833	-1.595610	0.1119
LOGOUTL	0.565380	0.390464	1.447970	0.1489
INFL	-0.028579	0.054052	-0.528737	0.5975
C	-2.724100	2.459276	-1.107684	0.2691
R-squared	0.116451	J-statistic		1.71E-22
Durbin-Watson s	1.252813			

Source: Author's Computation (2024)

*Significant at 0.05 LOS

Without cognizance of the existence of differences in the characteristics of the HIPC's, the results of preliminary PLS-GMM show that ATM usage per thousand has a negative and significant effect on LOGRGDP (coefficient = -0.271391 and $p = 0.0054 < 0.05$ LOS) and BRAN and LOGBORR have positive and significant effect on LOGRGDP (coefficients 0.451859 and 2.117603 with $p = 0.0002$ and 0.0020 respectively). The remaining financial inclusion variables ACCT, BRPT, LOGLACT, LOGOUTL as well as inflation have no significant effect on LOGRGDP.

However, one major shortcoming of panel least squares is the assumption that it fails to recognize the possibility of heterogeneity and individuality in each of the studied countries characteristics.

Fixed and Random Effects Models' Estimations

To determine the more appropriate model for inferential purpose, the fixed and random effects models are estimated. The summarized estimates are summarized in Table 4.4.

Table 4.4. Summarized Fixed and Random Effect Models' Estimates.

Variable	Fixed Effect Model		Random Effect Model	
	Coefficient	Prob.	Coefficient	Prob.
ACCT	-0.006168	0.0936	-0.000410	0.8318
ATM	0.453421	0.0043*	0.311994	0.0012
BRAN	0.403151	0.0616	0.468304	0.0001
BRPT	0.045609	0.0302*	-0.025616	0.0534
LOGBORR	-4.790408	0.0036*	1.938269	0.0047
LOGLACT	-2.054192	0.2181	-1.215223	0.1419
LOGOUTL	0.686208	0.7121	0.496572	0.2210
INFL	-0.145793	0.0389*	-0.044699	0.3943
C	37.12388	0.0004	-1.819216	0.4779
R-squared	0.340682		R-squared	0.099182
Adjusted R-Squared	0.249438		Adjusted R-Squared	0.070006
Durbin-Watson stat	1.663276		Durbin-Watson stat	1.284031
J-statistic	7.88E-18		J-statistic	2.17E-24

Source: Author's Computation (2024).

The preferred results between that of the fixed and random effects models is determined by the result of the Hausman test displayed in table 4.5.



Table 4.5 Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	52.592181	8	0.0000

Source: Author's Computation (2024).

The null hypothesis guiding Hausman test is that the random effect model should be preferred in arriving at conclusion. However, since the probability of Chi-Square statistic (0.0000) is less than the 0.05 LOS, the Hausman test result supports the choice of fixed over the random effect model. Hence the effect of financial inclusion on economic growth is explained based on the fixed effect model (FEM) estimates.

Results of the FEM displayed in Table 4.4 reveal that ACCT, BRAN, LOGLACT and LOGOUTL have no significant effect on LOGRGDP, hence our conclusion cannot be based on them. However, ATM use per thousand has a positive and significant effect on RGDP such that an additional unit of ATM led to about 0.453421 rise in RGDP ($p = 0.0043 < 0.05$ level of significance (LOS)). BRPT also has a significant positive effect on RGDP such that a unit increase in the latter led to about 0.045609 rise in RGDP ($p = 0.00302$). The number of borrowers (LOGBORR) has a significant negative effect on RGDP. A percentage rise in the number led to about 4.790408% fall in RGDP ($p = 0.0036$) while inflation also depleted the RGDP as a unit rise in inflation rate reduced the RGDP by about 0.145793 ($p = 0.0389$). The coefficient of determination (R^2) of 0.340682 implies that about 34% of the variations in dependent variable (RGDP) is explained by the explanatory (financial inclusion variables).

The J-Statistic of $7.88E-18$ or 7.88×10^{-18} is essentially zero, indicating that there is virtually no evidence of serial correlation in the errors, hence, the assumption that there is no serial correlation in the panel data model of the HIPCs is valid

V. Discussion of Findings

The findings of this study reveal important insights into the relationship between financial factors and economic growth, particularly within the context of heavily indebted and poor countries.

First, there is a positive and significant effect of automated teller machines (atm) on economic growth of heavily indebted and poor countries. Such positive and significant effect on economic growth in these countries suggests several potential reasons. ATMs can play a crucial role in expanding access to financial services in regions with limited banking infrastructure. By providing convenient and accessible banking services, ATMs can help integrate marginalized populations into the

formal financial system, promoting savings, investment, and entrepreneurship. Also, in many heavily indebted and poor countries, remittances from migrant workers constitute a significant source of income. ATMs can facilitate the efficient transfer and withdrawal of remittance funds, thereby supporting household consumption and investment, and ultimately contributing to economic growth. This is in addition to the effect of ATM availability on financial transactions efficiency. This efficiency reduces the cost of financial transactions, saves time and enhances productivity by stimulating economic activity, and foster sustainable growth in resource-constrained environments like the HIPCs.

Second, bank branches per thousand have positive and significant effect on economic growth of the HIPCs. This is expected. Such effect in HIPCs highlights the importance of physical banking infrastructure in promoting economic development. Bank branches serve as primary access points for credit in many developing countries. By increasing the density of bank branches, particularly in underserved areas, access to credit can be expanded, enabling small businesses and entrepreneurs to invest in productive activities, create employment opportunities, and drive economic growth. Aside this, increasing bank branches per thousand implies that financial intermediation is facilitated, allowing surplus funds to be allocated to borrowers with viable investment opportunities, thereby enhancing capital formation and economic growth.

Third, the number of borrowers significantly impaired economic growth of the HIPCs. This can be attributed to the potential challenges associated with excessive borrowing. HIPCs often face challenges in managing their debt levels, with high debt burdens consuming a significant portion of government revenues. Excessive borrowing can worsen debt sustainability concerns, diverting resources away from essential public investments in infrastructure, education, and healthcare, and impeding long-term economic growth. Also, large numbers of borrowers may compete for limited financial resources, crowding out private investment and stifling entrepreneurship and innovation. This crowding-out effect can hinder the development of a vibrant private sector, which is essential for driving economic diversification, employment generation, and poverty reduction in heavily indebted and poor countries.



Finally, as expected the effect of inflation on economic growth of the HIPC's was negative and significant. The reasons for this are obvious. Inflation erodes the purchasing power of consumers and businesses, particularly those with limited income or savings. High inflation rates can undermine consumer confidence, reduce household consumption, and dampen investment, thereby constraining economic growth and exacerbating poverty and inequality. Importantly too, Inflation introduces uncertainty into the economy, making it difficult for businesses and policymakers to plan and allocate resources effectively. This uncertainty can deter long-term investment, distort price signals, and hinder productivity growth, impeding sustainable economic development in heavily indebted and poor countries.

VI. Conclusion and Recommendations

This study assessed the effect of financial inclusion (FI) on the economic growth of selected HIPC's. Specifically, the study investigated how seven FI variables (the account ownership per thousand, number of ATM users per thousand, number of branches, branches per thousand, number of borrowers, number of account owners, outstanding loans and advances) and inflation which serves as a control variable on the real gross domestic product of the HIPC's. Employing a panel generalized method of moments (PLS-GMM) technique, the study found that three FI variables – automated teller machine (ATM) usage, bank branches per thousand people, the number of borrowers of loans and advances as well as inflation significantly affected the RGDP of the countries during the study period.

Specifically, the study found that both ATM usage and the density of bank branches have a positive and significant effect on economic growth in the HIPC's while number of borrowers and inflation significantly impaired the RGDP.

Based on these findings, we recommend that the HIPC's leverage on the potentials of financial inclusion for economic growth. There is need for them to create conducive regulatory frameworks that promote financial inclusion, invest in financial infrastructure, such as expanding the reach of

banking and payment systems to underserved areas, provide financial literacy programmes and increasing awareness about the benefits of financial inclusion can encourage people to participate in the formal financial system. The HIPC's should also facilitate the use of digital technologies that can enhance financial inclusion in remote and underserved populations.

References

- [1]. Attanasio, O., Augsburg, B., De-Haas, R., Fitzsimons, E., & Harmgart, H. (2015). The impacts of microfinance: Evidence from joint-liability lending in Mongolia. *American Economic Journal of Applied Economics*, 7(1), 90–122.
- [2]. Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015). The miracle of microfinance? Evidence from a randomized evaluation, *American Economic Journal of Applied Economics*, 7(1), 22-53.
- [3]. Banerjee, A. V., & Newman, A. F. (1993). Occupational choice and the process of development. *Journal of Political Economy*, 101(2), 274–298.
- [4]. Becker, W., Saisana, M., Paruolo, P., & Vandecasteele, I. (2017). Weights and importance in composite indicators: Closing the gap. *Ecological Indicators*, 80, 12–22.
- [5]. Beck, T., Demirgüç-Kunt, A., & Honohan, P. (2014). *Finance for all?: Policies and pitfalls in expanding access*. World Bank Publications.
- [6]. Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, 12(1), 27–49.
- [7]. Burgess, R., & Pande, R. (2005). Do rural banks matter? Evidence from the Indian social banking experiment. *American Economic Review*, 95(3), 780-795.
- [8]. Clarke, G. R., Xu, L. C., & Zou, H. F. (2006). Finance and income inequality: What do the data tell us? *Southern Economic Journal*, 1(1), 578–596. <https://doi.org/10.2307/20111834>
- [9]. Dahiya, S., & Kumar, M. (2020). Linkage between financial inclusion and economic growth: An empirical study of the emerging Indian economy. *Vision*, 24(2), 184–193.
- [10]. Demirgüç-Kunt, A., Klapper, L., & Singer, D. (2013). *Financial inclusion and legal discrimination against women: Evidence from developing countries*. The World Bank.
- [11]. Demirgüç-Kunt, Asli, Leora Klapper, Dorothe Singer, and Saniya Ansar. (2022).
- [12]. Demirgüç-Kunt, A. Klapper, L., Singer, D. & Ansar, S. (2022). *The global finindex database 2021: financial inclusion, digital payments, and resilience in the age of COVID-19*. Washington, DC: World Bank Publications.
- [13]. Demirgüç-Kunt, A., Klapper, L., & Singer, D. (2013). *Financial inclusion and legal discrimination against women: Evidence*



- from developing countries. The World Bank, www.wb.org.
- [14]. Ernest C. Winful, K. Opoku-Asante, Mathew. O. Mensah, & Josiah, N. A. Quaye, (2022). Financial inclusion and economic development in Africa, *European Journal of Business and Management Research*, 7(2), 131-138: <http://dx.doi.org/10.24018/ejbmr.2022.7.2.1325>.
- [15]. Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The Review of Economic Studies*, 60 (1), 35–52. <https://doi.org/10.2307/2297811>
- [16]. Greco, S., Ishizaka, A. Tasiou, M. & Torrisi.G. (2019). On the methodological framework of composite indices: A review of the issues of weighting, aggregation, and robustness. *Social Indicators Research* 141: 61–94.
- [17]. Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy*, 98(5,Part 1), 1076–1107. <https://doi.org/10.1086/261720>.
- [18]. Honohan, P. (2008). Cross-country variation in household access to financial services. *Journal of Banking & Finance*, 32(11), 2493-2500.
- [19]. IMF (2022). Factsheet: Debt relief under the heavily indebted poor countries (HIPC) Initiative, (online) Accessed October 29, 2022, www.imf.org.
- [20]. Morduch, J. (1999). The microfinance schism. *World Development*, 27(2), 301-317.
- [21]. Oumarou, I. C., & Celestin, M. (2021). Determinants of financial inclusion in West African Economic and Monetary Union (WAEMU) countries. *Theoretical Economics Letters*, 11, 489-506. <https://doi.org/10.4236/tel.2021.113033>.
- [22]. Permanyer, I.(2011). Assessing the robustness of composite indices rankings. *Review of Income and Wealth* 57: 306–26.
- [23]. Pugh, G. (2018). The GMM estimation of dynamic panel models: An intuitive explanation of the principles, *Staffordshire University Business School, Staffordshire*
- [24]. Radcliffe, D., & Voorhies, R. (2012). A digital pathway to financial inclusion. http://responsiblefinanceforum.org/wp-content/uploads/Pathway_Financial_Inclusion.pdf.
- [25]. Sahay, R., Čihák, M., N'Diaye, P. M., Barajas, A., Mitra, S., Kyobe, A. et al., (2015). Financial inclusion: can it meet multiple macroeconomic goals? *International Monetary Fund*. Retrieved from: <https://www.elibrary.imf.org>
- [26]. Sethi, D., & Acharya, D. (2018). Financial inclusion and economic growth linkage: Some cross-country evidence. *Journal of Financial Economic Policy*. 10 (3), 369-385, <https://doi.org/10.1108/JFEP-11-2016-0073>
- [27]. Takouda, P. M. Dia, M. & Ouattara. A. (2022). Financial inclusion in West African economic and monetary union's economies: Performance analysis using Data Envelopment Analysis. *Journal of Risk and Financial Management* 15: 605. <https://doi.org/10.3390/jrfm15120605>.
- [28]. Tita, A. F. & Aziakpono, M. J. (2017). The effect of financial inclusion on welfare in sub-Saharan Africa: Evidence from disaggregated data, *Economic Research Southern Africa (ERSA) Working Paper 679*, National Treasury of South Africa.
- [29]. World Bank. (2015). *Global Findex Database – 2014, Measuring Financial Inclusion around the World*, World Bank Group, www.wb.org.
- [30]. Zins, A., & Weill, L. (2016). The determinants of financial inclusion in Africa. *Review of Development Finance*, 6, 46-57. <https://doi.org/10.1016/j.rdf.2016.05.001>.