Promoting Financial Inclusivity, a Route to Economic Growth: An Empirical Analysis from Sub-Saharan African Countries

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PROMOTING FINANCIAL INCLUSIVITY, A ROUTE TO ECONOMIC GROWTH: AN EMPIRICAL ANALYSIS FROM SUB-SAHARAN AFRICAN COUNTRIES

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ABSTRACT

This study examines the relationship between financial inclusion and per capita income growth for 42 sub-Saharan African countries from 2007 to 2020. Using the Generalized Method for Moments framework, this study discloses that a rise in the number of bank branches, automated teller machines, and savings stimulates per capita economic growth. Conversely, an elevated number of credit provisions to the private sector and high growth of population hinder per capita economic growth. The policy recommendation is for banking authorities to expand their services to underserved areas, raise interest rates on deposits, and decrease credit provision to the private sector.

Keywords: Financial inclusion; Sub-Saharan Africa; Economic growth.
JEL Classifications: G2; F43; G21.

I. INTRODUCTION

A vital component of the United Nations' sustainable development goal set to be accomplished by 2030 is financial inclusion (FCIN). In recent years, FCIN has gained significant attention among macroeconomic researchers and commentators. It is believed that enabling the mass population's access to financial institutions will not only foster per capita economic growth (ECGR) but also reduce inequality and poverty, ultimately enhancing the human capital of society (Nizam *et al.*, 2020). This approach rests on the understanding that enabling people's participation in financial systems empowers them to accumulate assets, invest, and engage in economic activities. The outcome is a surge in entrepreneurial endeavors, greater financial stability, and an elevation of living standards.

The comprehensive evaluation of FCIN is measured across three distinct yet interconnected dimensions: accessibility, usage, and service quality. Each of these dimensions holds a critical role in understanding the effectiveness and impact of FCIN initiatives. Accessibility indicators assess the proximity of individuals to financial products or services and the expected time required for customer service. This includes an investigation of the physical proximity of financial institutions and the ease with which individuals can access their services, along with gauging the efficiency of customer service response times. The dimension of usage covers the analysis further by considering the level of active engagement within the financial system. Metrics such as the percentage of adults with bank accounts, the frequency and number of deposits, and the number of adults receiving loans from commercial banks provide a clear picture of how individuals are integrating financial services into their lives. Simultaneously, the aspect of service quality measures the level of customer satisfaction with financial institutions' products and services. This aspect reflects how successfully financial institutions are serving the changing demands and expectations of their clients.

Economists argue that involving the entire adult population in financial activities will generate development opportunities for all segments of society by providing equal access to borrowing at market rates. Financial development and economic growth form a virtuous circle, where the growth of one reinforces the growth of the other. However, there is an ongoing debate among macroeconomists regarding the starting point of this virtuous circle. The supply-side approach suggests that financial inclusion creates a conducive environment for rapid and sustainable economic growth, while the demand-side approach argues that economic growth promotes the development of financial institutions. For instance, by increasing deposits in commercial banks (Olaniyi, 2015). Nonetheless, the question of whether financial inclusion can effectively reduce income inequality remains uncertain, with varying perspectives among economists. A World Bank report from 2008, cited by Makina and Walle (2019), highlights the unclear association between FCIN and inequality.

The rise of digitisation has made full FCIN a feasible goal, although it may take longer than the United Nations' target year. Financial inclusion indicators, especially those related to financial technologies, have garnered policymakers' attention, urging them to prioritise the accessibility of online financial services like fintech (Singh and Stakic, 2021). Digital technologies facilitate financial transactions by enabling people to access financial services anytime and anywhere without

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significant economic loss. The time costs associated with visiting physical financial institutions, such as wage loss, missed business appointments, and transportation expenses, can be eliminated with the introduction of digitised financial services. Digital finance also enhances worker productivity, as tasks like providing change to customers can be streamlined through digital adoption. However, digital finance is not without challenges, including cyber-attacks, financial fraud, the cost of internet access, the level of financial education, and low receptiveness to digital solutions (Chatterjee, 2020).

A report from the United Nations demonstrated that about 2 billion people worldwide lack access to structured financial institutions. For example, in Africa, only 23% of the adult population has bank accounts in financial institutions (Olaniyi, 2015). The limited participation of citizens in formal institutions negatively impacts the entire economy, discouraging technological companies from investing in new financial technologies and hindering the development of financial institutions. Consequently, disparities between continents, regions, and countries increase, leaving governments of underdeveloped nations with fewer domestic borrowing opportunities. As a result, these governments often rely on external sources of borrowing, such as the "International Monetary Fund" (IMF), the "World Bank", and the "United Nations" (UN), to meet their financial needs. Financial inclusion strives to provide equal opportunities to all citizens and increase transparency in various business activities, which is not only facilitates loans and financial transactions but also supports other business activities. Given this backdrop, the present study aims to answer a few research questions: (i) How does the extent of FCIN influence the per capita income growth in Sub-Saharan African countries? (ii) What is the impact of credit provision to the private sector on per capita ECGR in Sub-Saharan African countries? and (iii) How does this impact vary in comparison to other factors of financial inclusion?

The present study contributes to the existing literature in many folds. First, Numerous research endeavours have probed the correlation between financial inclusion and economic growth. However, it's noteworthy that, as far as our knowledge extends, there hasn't been a study on this subject conducted in sub-Saharan Africa. The most proximate study we could locate was carried out by Matekenya *et al*., (2021) who investigated the correlation between financial inclusion and human development. Significantly, their study failed to include essential variables such as ICT, government expenditure, openness, physical capital, and population increase, which are pertinent to both economic and human development. The present study mitigates the issues by adding all important instrumental variables along with the FCIN variables.

Next, many previous studies have relied on constant absolute GDP figures, as exemplified by Nizam *et al*. (2020), Chatterjee (2020), Liu *et al*. (2022a), Ghosh (2019), and Okoye *et al*. (2017). While this approach has its merits, it may fall short of providing a comprehensive understanding of a country's standard of living and overall economic well-being. Hence, our study deviates from this convention by adopting the growth of GDP deflated by purchasing power parity, which offers a more nuanced perspective on economic conditions.

Furthermore, many studies rely on utilizing an index for measuring financial inclusion, as exemplified in works by Nizam *et al*. (2020), Ghosh (2019), Thathsarani

et al. (2021), Huang *et al*. (2021), Kumar (2023) and Mohammed *et al*. (2023) While this method has its merits, it may not fully capture the nuanced impact of individual variables on the ultimate dependent variable, economic growth. In this context, our study aims to offer a more nuanced perspective that can be particularly valuable to policymakers in sub-Saharan Africa, where resources are often scarce and prioritization is paramount. We intend to achieve this by sequentially outlining the factors that should take precedence.

The rest of the paper is organised as follows. The findings of past literature are discussed in Section 2, and the methodology and data are discussed in Section 3. Section 4 deals with the empirical results, and their interpretation. Section 5, includes the interpretation and discussion of the results. Finally, section 6, concludes and offers some policy recommendations to the authorities of financial institutions and the governments of the region.

II. LITERATURE REVIEW

Numerous studies have observed the relationship between FCIN and various development indicators, including human development, economic growth, inclusive growth, per capita income, poverty reduction, and income inequality. The majority of research papers indicate a positive impact of FCIN on these development indicators. For instance, Andrianaivo and Kpodar (2011) probe the association between computerised information, FCIN, and ECGR in African countries from 1988 to 2007. They used ATMs and the number of branches as measures for FCIN and found that ICT, including mobile phones, partially promotes ECGR through FCIN. They also demonstrated that mobile phones enhance the impact of FCIN on ECGR in Africa. Similarly, Anand and Chhikara (2013) and Oruo (2013) analysed how FCIN and income growth are connected, the findings substantiated that FCIN leads to higher human development and ECGR.

In India, Sharma (2016) evaluated how financial participation influences ECGR. The study utilised VAR and "Granger causality" techniques and established a constructive connection between ECGR and FCIN. In the same year, Olaniyi (2015) investigated the impact of ECGR, internet access, and literacy rates on FCIN in Africa from 2005 to 2014. The study revealed a positive influence of economic growth, internet access, and literacy rates on FCIN in Africa. Kim (2016) expanded the topic by examining the role of FCIN in income inequality and ECGR in OECD countries from 2004 to 2011. The research results suggested that FCIN modifies the detrimental association between income inequality and ECGR. Similarly, Hanivan and Nasrudin (2019) made an index of FCIN for Indonesia country and Pasuhuk (2018) said that financial access through inclusion helps Indonesia to reduce poverty and increase the economic growth of the nation.

Other studies further contribute to our understanding of the relationship between FCIN and ECGR. In a study, Williams *et al*. (2017) explored the role of FCIN in ECGR and poverty reduction in a developing economy from 2006 to 2015, showing that ATMs, branches, and government expenditures reduce poverty and promote ECGR. Similarly, Okoye *et al*. (2017), however, found a negative contribution of the financial circuit on economic acceleration and poverty in Nigeria. Sethi and Acharya (2018) conducted a panel study across 31 countries

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from 2004 to 2010, revealing a positive and long-run relationship between FCIN and ECGR, as well as a bi-directional causality between the two.

The relationship between FCIN and ECGR has also been examined in specific regions. In a study, Gourène and Mendy (2019) investigated West African countries from 2006 to 2015 and found a long-term reversible connection between income extension and FCIN. Van *et al*. (2019) examined ASEAN countries from 2004 to 2015, confirming a positive relationship between FCIN and ECGR, particularly in countries with low income and a low degree of financial inclusion. Sikarwar *et al*. (2020) included household debt in their analysis of the link between FCIN and ECGR in India. Using time series data from 2011 to 2017, they identified three out of ninety-six FCIN indicators that had an impact on ECGR.

Additionally, studies have explored the impact of FCIN on various aspects of development beyond ECGR. For example, Matekenya *et al*. (2021) focused on sub-Saharan Africa from 2004 to 2017 and proved an optimistic repercussion of financial participation in human development. Similarly, Adedokun and Aga (2021) investigated whether economic growth could serve as a pathway to economic growth in sub-Saharan African economies. with the help of panel data spanning from 2004 to 2017. They established that FCIN has a strong favourable impact on regional ECGR. According to their research, measures should be put into place to increase access to high-quality and reasonably priced financial services and goods, promoting inclusive growth in the area. Emara and El Said (2021) expanded on the topic by studying the relationship between FCIN and ECGR in the MENA region from 1990 to 2018. Their findings confirmed a significant link between regional economic growth and financial inclusion.

In another study, Thathsarani *et al*. (2021) analysed the role of FCIN in "economic growth" and "human capital" in South Asia. They used panel data from eight South Asian countries spanning from 2004 to 2018. The study revealed that in the long run, FCIN had a strong effect on human capital development, whereas, in the short-run, it had a positive effect on economic growth. The authors recommended government intervention to facilitate access to financial institution services in the area. Ahmad et al. (2021) conducted a time series analysis to investigate the relationship between "human capital", "economic growth", and "digital financial inclusion" in China's provinces from 2011 to 2018. Their findings showed that provincial economic growth in China was considerably and favourably impacted by digital FCIN and human capital. The authors suggested that higher income growth can be achieved by investing in human capital development and improving digital finance.

Daud and Ahmad (2023) explored the interaction between FCIN, economic growth, and digital technology in 84 countries from 2011 to 2017. Their findings suggested that both FCIN and digital technology have a favourable and considerable impact on ECGR, with digital technology amplifying the effects of FCIN. Younas *et al*. (2022) used panel data from 2008 to 2017 to examine how FCIN, the shadow economy, and ECGR in developing economies relate to one another. Their analysis, employing OLS and GMM techniques, confirmed that FCIN has a strong positive effect on ECGR in developing countries. Kouladoum *et al*. (2022) focused on sub-Saharan African countries and studied the relationship between

digital technologies and financial participation. They concluded that financial participation increases with the advancement of digital technologies.

In another study, Liu *et al*. (2022a) studied how environmental quality and economic performance trade-off in the context of developing Asian economies. Using the panel ARDL model, the study found that long-term ECGR and CO_2 emissions were greatly boosted by bank credit and branch locations, while insurance premiums had little impact on economic expansion, they significantly reduced carbon emissions. The study recommended that governments develop strategies to optimise FCIN, ECGR, and environmental quality. Liu *et al*. (2022b) investigated the role of financial inclusion in economic and environmental performance in the OBRI (One Belt, One Road Initiative) countries from 2007 to 2019. Using ATMs and the number of branches as proxies for financial inclusion, they found that both ATMs and branches had a positive impact on ECGR but increased CO_2 emissions. Ozturk and Ullah (2022) conducted a study on the significance of OBRI economies, "digital financial inclusion" is essential for both economic expansion and environmental sustainability. The panel data from 2007 to 2019 for 42 OBRI countries supported the importance of "digital financial inclusion" for "economic growth" and "environmental sustainability" in the region. The study recommended the promotion of digital finance to spur ECGR and reduce CO_2 emissions.

Pandey *et al*. (2022) conducted a study on financial knowledge and innovation about sustainable growth in North India. They employed a questionnaire survey for the period 2019-2020 and found that usage, digitization, and fintech were significant drivers of financial inclusion. The study also demonstrated a positive impact of FCIN on sustainable growth in the northern region of India. Finally, Anthony-Orji *et al*. (2023) investigated how financial development, financial inclusion, and economic growth are related in Nigeria. Their study utilised time series data from 1981 to 2019 and concluded that both financial development and financial participation had a meaningful role in income prosperity in Nigeria.

A. Hypotheses Formulation
The main objective of this study is to evaluate whether the increased access to financial institutions' products and services measured in terms of branches, savings, and credits will promote per capita income growth in the sub-Saharan African region. Hence, the present study formulates the following hypotheses:

H0: *Financial inclusion does not promote per-person income growth in sub-Saharan Africa.*
H1: *Financial inclusion promotes per-personal income growth in sub-Saharan Africa.*

III. DATA AND METHODOLOGY
A. Data
The present study uses panel data from 42 Sub-Saharan African countries from 2007 to 2020. The data are sourced from world development indicators published by the World Bank. The selection of countries is strictly based on the availability of data.

Table 1.
Data Description

This table reports the description of the variables used in our study. These are the major variables that show the activities of financial inclusion of SSA countries.

GDP	"Gross domestic product per capita growth (PPP constant 2017 USD$)"
Branches	"Number of commercial bank branches per 100,000 adults"
ATMs	"Number of ATMs per 100,000 adults"
Credit	"Domestic credit to the private sector by banks (per 1000 adults)"
Saving	"Gross domestic saving as a percentage of GDP"
Gov_Spending	"General government final consumption expenditure (% of GDP)"
P_Capital	"Gross fixed capital formation as a percentage of GDP"
Openness	"The ratio of imports and exports to GDP"
Popgrowth	"Growth rate of population per year"
ICT	"Internet users per 1000 population"
Inflation	"Percentage change in consumer price index"

The variables used in this study are GDP per capita growth adjusted by the purchasing power parity, commercial bank branches, credits to the private sector, gross domestic savings, and gross fixed capital formation. A detailed description of the variables is given in Table 1.

B. Methodology

The study has used the dynamic Generalized Method of Moments (GMM) modelling framework suggested by Arellano and Bond (1991) for examining the role of FCIN on per capita GDP of SSA countries. The model is chosen due to its dynamic nature and the ability to handle the heterogeneity of data. The model also produces reliable estimates in the presence of a lagged dependent variable. The details of the model have been explained below.

$$GDP_{it} = \alpha GDP_{i,t-1} + \beta FCIN_{i,t-1} + \gamma X_{it-1} + \mu_i + \lambda_t + \epsilon_{it} \qquad (1)$$

where, GDP is considered as per capita growth of GDP. FCIN is the financial inclusion variables, i.e., Bank branches, ATMs, credits, savings, etc, where, X's are the vectors of control variables related to GDP i.e., Openness, physical capital, inflation, Population growth, Gov_spending, and ICT, μ is the unobserved country-specific effect and λ is the time-specific effect. α, β and γ are the parameters that need to be estimated, and ε is the error term, i=1,2,…….,42 (countries) and t=1,2,3,………14 (years) Following Arellano and Bond (1991), we use all the past values of the explanatory variables as instruments in the regression. So equation 1 can be written and estimated in the following form;

$$GDP_{it} - GDP_{it-1} = \alpha GDP_{i,t-1} + \beta FCIN_{i,t-1} + \gamma X_{it-1} + \mu_i + \lambda_t + \epsilon_{it} \qquad (2)$$

According to Roodman (2009), one limitation of dynamic GMM is the potential bias in parameter estimates and invalidation of specification tests when there is an

excessive number of instruments, particularly when the time dimension increases. To address this issue, Roodman proposes two solutions aimed at reducing the number of instruments, both of which have been implemented in our analysis. So, to validate the over-identifying constraints and consistency of Dynamic GMM estimators, we included the Sargan (1958) test statistic and the Arellano and Bond (1991) second-order autocorrelation test statistic with all of our estimates.

IV. EMPIRICAL RESULTS

A. Data Summary

First, the study checks the summary of the data. The results will give an overview of the data for a comprehensive understanding of each variable at their independent level without interference or interaction with other variables. This will show how each variable is increasing or decreasing over time, the average rate of change in the variable, the minimum and maximum, and the standard deviation values of each variable.

Table 2.
Summary Table

This table reports some commonly used descriptive statistics "mean, standard deviation, minimum, and maximum" scores of each variable.

Variables	Mean	Std. Dev.	Min	Max
GDP	1.002	4.50	-36.78	19.94
Branches	6.63	9.09	0	55.10
ATMs	12.89	17.85	0	90.00
Credit	20.94	17.80	2.2	104.8
Saving	14.87	15.73	-38.8	77.3
Gov_Spending	15.47	7.27	2	43.5
P_Capital	24.07	11.05	3.3	88
Openness	71.99	36.51	0.8	225
Inflation	7.97	27.75	-8.97	557.2
Popgrowth	2.46	0.956	-2.63	5.08
ICT	15.84	16.35	0.37	75.47

According to the data presented in Table 2, the mean per capita gross domestic product growth by purchasing power parity (GDP) in the region is 1.00 USD. The minimum and maximum values of GDP are -36.78 USD and 19.94 USD, respectively, with a standard deviation of 4.50. The average number of commercial bank branches in the region per 100,000 adults is 6.63. The minimum and maximum numbers of bank branches per 100,000 adults are 0 and 55.1, respectively, with a standard deviation of 9. In terms of credits to the private sector by banks, the average number is 20.94 per 1000 adults, representing 2.2 percent. The minimum and maximum numbers of credits given to the private sector by banks are 2 and 104.80, respectively, with a standard deviation of 17.80. The average saving as a percentage of income in this region is 14.87 percent. The minimum and maximum percentages of saving are -38.80 and 77.30, respectively, with a standard deviation

of 15.73. The average gross fixed capital formation as a percentage of GDP in sub-Saharan Africa is 24.07 percent. The minimum and maximum percentages of gross fixed capital formation are 3.3 and 88 percent, respectively, with a standard deviation of 11.05. Government spending, measured as the final government consumption expenditure as a percentage of GDP, averages 15.39 percent in the region. The minimum and maximum percentages of government spending are 2 and 43.5, respectively, with a standard deviation of 7.32. As openness is the ratio of imports and exports to GDP. The mean and standard deviation of openness is 72 and 36.5 respectively. Similarly, the mean of population growth and ICT is 2.46 and 15.84 respectively.

B. Stationarity Test

First, we have examined the stationarity of the panel data to avoid unreliable and spurious results that arise as a result of the non-stationary data. The non-stationarity of the data will invalidate the standard assumptions of asymptotic. To overcome these problems associated with non-stationarity, the study tests the panel data using Levin-Lin-Chu unit-root test. The study results of the "unit root test" are given in Table 3.

Table 3.
Levin-Lin-Chu Unit Root Test

This table shows the unit root test results of the variables. All the variables are considered as level stationery.

Variables	Statistic	p-value
GDP	-9.267	0.000
Branches	-9.501	0.000
ATMs	-7.986	0.000
Credit	-4.6997	0.000
Saving	-17.006	0.000
P_Capital	-18.630	0.000
Gov_Spending	-15.778	0.000
Openness	-16.994	0.000
Inflation	-27.685	0.000
Popgrowth	-14.038	0.000
ICT(d1)	-19.599	0.000

From Table 3 it can be seen that all the variables except ICT are stationary at their level that is at level zero, whereas ICT is stationary at first difference. So our variables can be easily used for the next stage of the estimation process.

C. Multicollinearity Test

Multicollinearity is a concept in statistic that means several independent variables are highly correlated to one another which can give misleading and spurious results from a statistical analysis. In statistics, two variables are considered to be perfectly correlated if their correlation value is (+/- 1.0). This can lead to unreliable statistical inference. This means that predictor variables in a multiple regression model can

be linearly predicted from the others with a substantial degree of inaccuracy. In this case, the dependent variable will be affected by the two variables that are highly correlated instead of the individual variables when other variables are controlled during the regression process.

Table 4 shows the result of multicollinearity test. From the table, we see that the correlation between any two variables is less than 1. This means our variables are not highly correlated. After checking the stationarity and the multicollinearity of the data, the model is free from any of those undesirable features, we move on to do the regression of the data to see the interplay of the variables.

To examine the role of FCIN on the per capita growth performance of SSA countries, we use the GMM model in our estimation process. From the findings of Table 5, we see that bank branches, ATMs, savings, and trade openness are positively and significantly related to per-person income growth in Sub-Saharan Africa. Credit and population growth have negatively and significantly affected per-person growth of income growth while physical capital and government spending have no significant impact on per-person income growth in the region during the study period. The findings obtained that a 10 percent increase in bank branches, ATMs, savings, and openness have positively adjusted GDP per person by 0.75, 0.14, and 0.11 percent, respectively. Whereas a 10 percent increase in credit and population growth have affected GDP growth per person by 0.39 percent and 2.14 respectively. So banks should expand the branches and ATMs and keep an eye on the creditworthiness of private sector borrowers and accordingly, they can expand the credit limit. Through this, they can handle the credit limit which will help to increase the growth performances. The result further shows that the previous GDP per person has a strong and meaningful explanation of the present GDP per person with a coefficient of 0.12. The post-estimation result is also supportive with no autocorrelation and validity of Sargan statistics.

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Table 4.
Correlation Table

This table shows the multicollinearity of variables among themselves. This table helps us to know the positive and negative correlation among variables.

	GDP	Branches	ATMS	Credit	Saving	Gov_Spending	P_Capital	Openness	Inflation	Popgrowth	ICT
GDP	1.00										
Branches	0.047	1.00									
ATMs	-0.044	0.762	1.00								
Credit	0.007	0.532	0.378	1.00							
Saving	-0.032	0.056	0.045	-0.052	1.00						
Gov_Spending	-0.110	0.325	0.445	0.304	-0.245	1.00					
P_Capital	0.005	0.448	0.277	0.091	0.440	0.225	1.00				
Openness	0.061	0.610	0.472	0.261	0.109	0.530	0.484	1.00			
Inflation	-0.156	-0.026	-0.034	-0.092	0.030	-0.035	-0.058	-0.072	1.00		
Popgrowth	-0.044	-0.492	-0.607	-0.594	0.381	-0.382	0.025	-0.355	-0.008	1.00	
ICT	-0.163	0.631	0.743	0.550	0.050	0.320	0.216	0.320	0.032	-0.048	1.00

Table 5.
Role of FCIN on GDP

The table shows the role of financial inclusion variables on per capita GDP of SSA countries. The calculation of *** and ** denote significance at 1% and 5%, respectively. The values in the parentheses are the standard errors. ^{p} stands the probability values.

Dependent Variable- GDP	Coefficient
Constant	5.140*** (1.712)
GDP.L1	0.120*** (0.022)
Branches	0.755*** (0.141)
ATMs	0.146*** (0.040)
Credit	-0.393*** (0.032)
Saving	0.107*** (0.017)
P_Capital	0.012 (0.024)
Gov_Spending	-0.081 (0.075)
Openness	0.055*** (0.008)
Popgrowth	-2.147*** (0.362)
ICT	-0.121**(0.019)
AR(1)	0.018^p
AR(2)	0.396^p
Sargan test	1.00^p

D. Robustness Check

As we know from earlier studies of Andrianaivo and Kpodar (2011), and Pasuhuk (2018) that FCIN significantly affects economic growth and poverty alleviation. In order to support the findings of the GMM model, the study, therefore, attempts to examine other Two Stage Least Squares (2SLS) model approaches to justify our findings. We have examined the model, and the estimated results are given in Table 6.

Table 6.
Role of FCIN on GDP from 2SLS Model

The table shows the role of financial inclusion variables on per capita GDP growth of SSA countries with the help of the 2SLS model. The calculation of ***, **and * denote significance at 1% 5% and 10%, respectively. The values in the parentheses are the standard errors.

Dependent Variable –GDP	Coefficient
Constant	8.763** (3.565)
Branches	0.536** (0.031)
ATMs	0.413** (0.255)
Credit	0.013 (0.020)
Saving	-0.044 (0.037)
P_Capital	-0.035 (0.470)
Gov_Spending	-0.041**(0.250)
Popgrowth	-0.126*** (0.032)
ICT	-0.314(0.425)
Wald Chi2	23.67*** (0.002)

From the above table 6, it can be observed that our results are also supportive of GMM results. It shows expansion of bank branches and ATMs has a significant positive effect on increasing the per capita GDP growth of SSA countries. Similarly, population growth has also a negative effect on per capita GDP.

E. Discussion

From the analysis, it is observed that, the connection between proxies of financial inclusion and GDP per person growth in sub-Saharan Africa. The result shows that financial inclusion promotes per capita economic growth in sub-Saharan Africa. The positive coefficient of branches ATMs are consistent with the findings of Andrianaivo and Kpodar (2011), Oruo (2013), Williams *et al*. (2017), Raza *et al*. (2019) and Liu *et al*. (2022a). The negative and significant coefficient of credits to the private sector and population growth supports the findings of Sofi, and Zamir (2019) are contradicts the results of Cabeza-Garcíaa *et al*. (2019). Saving has a significant and positive coefficient of one which is in line with traditional economic belief. The significantly positive coefficient of government spending supports the exploration of Williams *et al*., (2017). The significantly negative coefficient of ICT is contradictory to economics theories. However, the adaption of ICT proxies by internet users can be peculiar in the sub-Saharan Africa region due to (a) the diversion of scarce resources from more productive economic activities to buying slow expensive internet which can hurt GDP growth and (b) the region's low literacy rate may result in individuals spending a significant amount of time engaging in unproductive internet browsing rather than engaging in productive activities.

V. CONCLUSION AND RECOMMENDATIONS

Financial inclusion is building an economic environment where every adult citizen has equal access to quality products and services from financial institutions. A high rate of financial inclusion will generate more money for commercial banks to fund private and government projects. Full financial inclusion is part of the sustainable development goal set to be achieved in 2030. Sub-Saharan Africa has been the region with the lowest rate of financial inclusion in the world which drags rapid economic growth and poses difficulties in stabilizing the economy. The interaction between financial inclusion and economic growth is expected and found to be positive in this study, as the availability of money for lending by commercial banks will spark economic activities in an economy that will result in rapid and sustainable participative economic growth. This study looks into the relationship between financial inclusion and inclusive growth in Sub-Saharan Africa taking a sample of 42 countries for the duration of 14 years. This study uses the GMM model to estimate the data. The results show that financial inclusion promotes per capita economic growth in the region.

The bank authorities of the region should establish more bank branches, ATMs to increase access to financial institutions thereby increasing per capita economic growth in the region. Saving should also be encouraged by not only realising access to financial institutions but also conducting sensitisation programs on the

importance of saving and raising the interest rate on deposits to a higher rate than inflation. The government also should ban the payment of employees, contractors, and beneficiaries of welfare benefits over the counter to burst financial inclusion.

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