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DOMESTIC CREDIT TO PRIVATE SECTOR BY BANKS AND ECONOMIC DEVELOPMENT IN SELECTED SUB-SAHARAN AFRICAN COUNTRIES (2002 – 2023)

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Abstract

This study examined the effect of domestic credit to private sector by banks on economic development in selected Sub-Saharan African countries (Nigeria, South Africa, Kenya, and Ghana) from 2002 to 2023. This study was motivated by the controversial issue in literature on the real effect of domestic credit to private sector by banks on economic development. Specifically, this study ascertained the effect of domestic credit to private sector by banks on real gross domestic product, standard of living, and human development index. An ex post facto research design was adopted using secondary data that were sourced from Central Bank of Nigeria and World Bank Reports. The models were estimated using the Panel Ordinary Least Square (POLS) regression technique. The findings of the study reveal that domestic credit to private sector by banks has significant effect on real gross domestic product in the four selected Sub-Saharan African countries; domestic credit to private sector by banks has no significant effect on standard of living in the four selected Sub-Saharan African countries; and domestic credit to private sector by banks has no significant effect on human development index in the four selected Sub-Saharan African countries. The study concluded and asserts that within the period reviewed, domestic credit to private sector by banks have no significant effects on economic development (real gross domestic product, standard of living, and human development index) in the four selected Sub-Saharan African countries. Since Sub-Saharan Africa has a large unbanked population, the study recommends that banks can improve economic growth by expanding access to financial services through mobile banking, agent banking, and innovative financial technology solutions. This enables more individuals and businesses to participate in the formal economy and access credit. Governments in Sub-Saharan Africa are advised to invest in education by providing loans for

school fees, vocational training, and higher education. Access to education equips individuals with skills and knowledge essential for economic participation and social mobility. Educational loans can empower youth and adults to improve their earning potential and contribute to sustainable development.

Keywords: Domestic credit to private sector; economic development; Sub-Saharan Africa.

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INTRODUCTION

Economic development in Sub-Saharan Africa remains a paramount concern for scholars, policymakers, and international development agencies. Sub-Saharan Africa (SSA) is a much diversified region made up of thirteen (13) small nations with a small population, little human capital, and a small land area, as well as low, lower-middle-, upper-middle-, and high-income countries, twenty two (22) of which are fragile or afflicted by violence (World Bank, 2023). With its abundance of natural resources, largest free trade area in the world and 1.2 billion people as its market, the continent has the ability to lead the way in development by fully utilizing its people and resources (World Bank, 2023). The interplay between financial systems and economic development has long been a subject of intense scrutiny in economic research. According to Amali, Alymkulova & Ejila (2023), the relationship between private-sector lending and economic growth

has become a prominent topic of debate in economic circles worldwide, and empirical research on the subject has yielded mixed outcomes.

Among the various components of financial systems, bank credit stands out as a pivotal element that can significantly influence economic development. Bank credit serves as a critical source of funding for businesses, enabling investment in capital, expansion of operations, and innovation. By providing the necessary financial resources, banks play a crucial role in supporting economic activities and fostering growth (Ayibatunimibofa, Lucky, & Yinlayefa, 2022). As the heartbeat of financial systems, bank credit pulsates through the economic veins, influencing and, in turn, being influenced by the broader economic landscape (Onwioduokit & O'Neill, 2023). Bank credit plays a fundamental role in economic development by providing the financial resources necessary for investment, business expansion, and infrastructure projects. It facilitates the functioning of businesses, stimulates entrepreneurial activities, and supports the development of various sectors of the economy.

Bank credit serves as a lifeline for businesses, providing the capital necessary for start-ups to launch and for established firms to grow (Ogbonna, Anaemena, Okechukwu, & Ibenyenwa, 2023). It enables companies to invest in new technologies, expand their workforce, and enter new markets. The availability of bank credit can, therefore, have profound effects on economic activity, influencing factors such as employment, productivity, and income levels. Despite the recognized importance of bank credit, the precise mechanisms through which it impacts economic development remain complex and multifaceted. However, the effect of bank credit on economic development is not uniform across different contexts and can be influenced by a range of factors, including the regulatory environment, the efficiency of financial institutions, and the overall

economic conditions (Amali, Alymkulova, & Ejila, 2023). In well-regulated and stable financial environments, bank credit can significantly enhance economic growth by ensuring that funds are available for productive uses. Conversely, in poorly regulated or unstable environments, the same credit can lead to financial crises and economic instability.

While bank credit is widely recognized as a crucial component of economic development, many developing countries continue to struggle with limited access to credit, high interest rate, and inefficient lending processes, hindering the ability of business and individual to invest, innovate, and grow, thereby constraining economic growth and development. The empirical studies of Igbinedion (2023), Ogbonna, Anaemena, Okechukwu, & Ibenyenwa, 2023), Amali, Alymkulova, and Ejila (2023), Ajudua (2023), and Muhammad and Ngele (2023) in the context of Nigeria revealed that bank credit has the potential to stimulating economic growth and development. On the other hand, Yerima & Idris (2023), Adewole, Suberu, Fapetu, & Olorunmade (2023), Innocent, Ademola, and Glory (2019), Shuni (2023), Amos (2020), and Mazeli, Adigwe, & Ananwude (2020) showed that bank credit has not significantly improve economic development and growth in Nigeria. In South Africa, Adewale (2014), Ratombo & Mongale (2024), and Chisasa & Makina (2015) have found the positive effect of bank credit on economic growth and development in South Africa, while this claim is empirical refuted by the work of Gwatidzo & Simbanegavi (2024) envisaged a negative relationship between bank credit and economic growth in South Africa. It is more complicated that Barnard (2016) reported that credit extension is found to have positive and significant impact on economic growth in both South African and in emerging markets. Also, in both South Africa and in emerging markets, government consumption has negative impact on economic growth. Against this backdrop, this study seeks to explore the effect of bank credit on

economic development in four selected Sub-Saharan African countries (Nigeria, South Africa, Kenya, and Ghana).

LITERATURE REVIEW

Clarification of Concepts

The credit that banks provide to the economy is known as bank credit. According to Atseye, Edim, & Ezeaku (2015), the finance literature has given significant attention to the theoretical underpinning debate of bank credits and their relevance in economic development. The growth of the banking industry is a major factor in the effectiveness and efficiency of financial intermediation, particularly in developing nations in Sub-Saharan Africa. According to Ogunmuyiwa, Okuneye & Amaefule (2017), this is based on the claim that banks are crucial drivers of economic development and expansion because of their ability to extract savings from the economy's surplus units and allocate them to the economy's deficit units for use in manufacturing. Due to bank credit's status as an economy's lifeblood, it bridges the gap between the borrower and the lender (Mazeli, 2023). Economic development encompasses progress in providing livelihood on a sustainable basis, access to education and basic healthcare for the majority of the population (Belshaw & Livingstone as cited in Barro & Bassolet 2023). Economic development' is a process in which a nation is improving in the sector of the economic, political, and social wellbeing of its people. The term has been used frequently by economists, politicians, and others in the 20th and 21st centuries. The concept, however, has been in existence in the West for centuries. "Modernization, westernization and especially industrialization, are other terms often used while discussing economic development.

Theoretical Underpinning

The relationship between bank credit and economic development is pivotal in understanding how financial systems impact economic growth. Various theories have been developed to elucidate this relationship, focusing on the mechanisms through which bank credit influences economic development. However, the study is anchored on the theory of financial intermediation theory because the theory posits that financial institutions, such as banks, serve as intermediaries between savers and borrowers. They mobilize savings and allocate them to productive investments. Besley & Bringham (2009) noted that the presence of intermediaries improves economic well-being. They further explained that financial intermediaries were created to fulfill specific needs of both savers and borrowers and to reduce the inefficiencies that would otherwise exist if users of funds could get loans only by borrowing directly from savers.

Empirical Studies

Nigeria

Igbinedion (2023) investigates the impact of bank credit and remittances on private sector performance within the ARDL and Bound test framework in Nigeria utilizing annual data spanning 1981 to 2021. The result revealed that both bank credit and remittances inflow have positive and statistically significant impact on private sector performance. However, in the long-run, only bank credit matters while remittances impacted negatively on private sector performance. Ogbonna, Anaemena, Okechukwu & Ibenyenwa (2023) examined bank credit to the different segments of the industrial sector in the economic development of Nigeria. The specific objectives are to examine the impact of bank credit on agriculture, mining, quarrying, manufacturing, and government on economic development (HDI) in Nigeria. The study was anchored on the pecking order theory and Central Bank of Nigeria (CBN) statistical bulletin and World Bank Data Atlas

report of various years from the data source which were subjected to the Auto Regressive Distributed Lag (ARDL) technique to test the interaction between independent variables and the dependent components in human development index at 5% level of significance. While bank credit to the manufacturing segment of the industrial sector significantly impacted HDI, bank credit to the mining and quarrying segment of the industrial sector showed an insignificant impact on HDI. Conclusively, bank lending to the different segments of the industrial sector has a short and long-run relationship but could not exact the necessary significant impact on the economic development of Nigeria (Ogbonna, Anaemena, Okechukwu & Ibenyenwa (2023).

Amali, Alymkulova, & Ejila (2023) ascertained if there is a substantial shift in the direction of the subsisting argument with reverence to Nigeria. The Autoregressive Distributed Lag (ARDL) approach was applied due to the mixed order of integration results obtained from the Unit Roots Test, which accounted for some structural breaks. For this study, the long-run results carry more prominence than the short-run since there is inherent room for adjustments. The empirical results show that private sector credit has a positive and significant impact on economic growth in Nigeria in the short run. However, in the long run, credit to private sector has a positive and insignificant impact on economic growth in Nigeria. The results also revealed that digitalization does not moderate the effect of banks' credit to the private sector on economic growth in Nigeria for the period reviewed. Ajudua (2023) empirically evaluated the impact of deposit money banks' credit on the performance of Nigerian economic growth. Data covering 1986 to 2020 were collected from secondary sources and unit root test, co-integration test and the ECM method used in analyzing the data. Findings from the study revealed that total bank credit and money supply both had a positive significant relationship with economic growth. Private sector credit had a positive but not

significant relationship with economic growth while lending rate had a negative and significant relationship with economic growth.

The empirical impact of loans to the private sector on Nigeria's economic growth from 1981 to 2021 was evaluated by Muhammad & Ngele (2023). The impact of CPS on Gross Domestic Product Growth (GDPG) was examined using series data and the ordinary least squares technique. Credit to the private sector, lending rate, and deposit money bank's assets was used as independent variables. The series' data were taken from the World Bank Indicators 2021 and the Central Bank of Nigeria's Statistical Bulletin 2021. The analysis's findings indicate that all of the variables, including Gross Domestic Product (GDPG), CPS, INTR, and DMBA, were stationary at 1st difference. The analysis discovered that the variables are co-integrated, which means they have a long-run link, even though interest rate was statistically proven to have a negative impact on economic growth. Yerima & Idris (2023) examined the impact of bank credits on economic growth in Nigeria. The study utilized time series data covering the period of 1986 to 2022. The data were sourced from the annual statistical bulletin of the Central Bank of Nigeria. To analyse the data collected, Johansen co-integration technique and Vector Error Correction Model (VEM) are adopted to measure the long-run and short-run relationship among the study variables. Furthermore, Granger Causality is utilized to measure the direction of causality between banks credits and economic growth. From the analysis, results show that credits to the private sector, credits to the public sector and combined credits to both sectors exacted a positive and significant impact on economic growth. Shuni (2023) employed the Non-Linear Auto Regressive Distributed Lag model (NARDL) and Threshold estimators to investigate the independent effect of consumer credit on economic growth, this to ascertain whether consumer credit has a significant effect on economic growth focusing on Nigeria. The annual World Bank and Central Bank of Nigeria data

between 1981- 2021 were used for the analysis. The findings revealed a long-run co-integration between consumer credit and economic growth. There is also an evident of a short-run asymmetric relationship between Nigeria's economic growth and consumer credit. A threshold of 10.91% was disclosed between consumer credit and economic growth. Finally, economic growth increases in the early phases of rising consumer credit but depreciates at later stages when consumer credit grows above the threshold.

Adewole et al., (2023) investigated an argument and counter argument on the relationship between loans and advances by financial institutions and Nigerian economic growth. The paramount objective of this research centers on evaluating the effect of financial institutions credit on Nigerian economic growth. Data were obtained from CBN Statistical Bulletin. Auto Regressive Distributed Lag (ARDL) was used to present the result of the data collected. Findings of deposit money banks performance equation I revealed a strong correlation and significant relationship between independent and dependent variable. It was discovered from Micro-finance banks performance equation 2 that there was a strong correlation and significant relationship between independent and dependent variable. Finance houses performance equation 3 revealed a strong correlation and significant relationship between independent and dependent variable. Ayibatunimibofa, Lucky, & Yinlayefa (2022) examined how bank credit creation affects financial stability in Nigeria from 1981 to 2020. We obtained the data for the study from the Central Bank of Nigeria and World Bank statistical bulletins. The research looked specifically at how credit creation to the agricultural (LnCCAS), manufacturing (LnCCMS), transport and communication (LnCCTC), and mining and quarrying (LnCCMQ) sectors affects financial stability (FS) of banks in Nigeria. We used descriptive statistics, unit root, Johansen co-integration, VECM, and Granger Causality techniques at the 5% level to investigate this. The unit root demonstrates that all variables were stationary at

first differences, requiring the Johansen co-integration, which reveals the presence of long-run form. The VEC model reveals that LnCCAS and LnCCMS are positive and significant; LnCCMQ is negative and insignificant; while LnCCTC is positive but insignificant to FS in Nigeria. For the Granger causality, there is no directional relationship between each of LnCCMS, LnCCMQ, LnCCTC, and LnCCAS to FS. We conclude that credit creation by banks affects their financial stability in Nigeria.

Amos (2020) examined deposit money banks credit and economic growth in Nigeria from 1980-2018. The study used time series data obtained from World Bank Development Indicators and Auto Regressive Distributed Lag (ARDL) technique to examine the effect of domestic credit (DCPS) on GDP as a proxy for economic growth among other variables (INF, LIR). The result showed that 1 unit increase in domestic credit (dcps) has increased GDP by 6%. Inflation rate was found to shrink economic growth rate by 7%.The study concluded that deposit money banks credit was influential in driving economic growth in Nigeria for the 39 years period studied. Innocent, Ademola & Glory (2019) examined the influence of bank credits on the Nigerian economy using time series data covering the period from 1980 to 2017.Gross domestic product was used as proxy for the economy while credits to the private sector, public sector and prime lending rate were used as proxies of Banks credits. Unit root test was used to test stationary which reveals that all the variables were stationary at first difference. The regression analysis result shows that credit to the private sector have positive effect on Nigerian economy while credit to public sector and prime lending rate have negative effect on the Nigerian economy. The result of co-integration test presented reveals that there exist among the variables co-integration which means long-run analysis.

South Africa

Ratombo & Mongale (2024) used the Autoregressive Distributed Lag (ARDL) to investigate the effects of domestic credit and debt on the economic growth of South Africa. The study attempted to achieve its aim by using annual time series secondary data covering two decades from 2000 to 2020 and the data were collected from the World Bank. The unit root tests were performed to validate that stationarity was obtained as I (0) and I (1). The ARDL was used to reveal the co-integration bounds test outcome, and the short and long run results. A co-integrating long-run relationship among the variables was found. The results revealed that in the long-run domestic credit by the private sector to banks have a positive impact on gross domestic product (GDP) growth and a negative impact on GDP per capita. South Africa reveals a poor distribution of GDP growth and GDP per capita compared to a good distribution of domestic credit by the private sector to banks and external debt over the period 2000-2020.

Using data on South Africa's commercial banks in the period 2005–2018, Gwatidzo (2024) investigated the impact of bank regulation on bank performance. The study uses a fixed effects model to run the regression model as well as the data envelopment analysis approach to estimate efficiency scores. They found a number of interesting results. First, they found a negative relationship between capital stringency and bank performance, suggesting that increased capital requirements force banks to increase their reserves, adversely affecting their performance. Second, they found a positive relationship between activity restrictions and bank performance, indicating that this kind of regulation, which may well be good for the public, as argued by the public interest view of regulation, is also good for the regulated banks. Third, they found a negative and significant relationship between supervisory power and bank performance. Fourth, they found a positive and significant relationship between the market discipline index and bank performance.

Monareng (2022) examined effects of the efficiency of the financial sector on economic growth in South Africa through an augmented Solow-Swan growth model using annual data from 1975 to 2020. The financial sector development is characterized by the role of the banking sector in enhancing growth through the productive use of a country's stock of financial capital. In this study, autoregressive distributed lag (ARDL) and instrumental variable (IV) models are used to estimate the derived augmented financial sector induced growth regressions. The ARDL method observes a positive but insignificant effect of financial sector development on economic growth. However, using internal instruments, instrumental variable regression provides joint endogeneity between regressors. The IV estimation results showed that financial sector development has a significant positive effect on economic growth. Hence, increased efficiency in the banking sector can lead to enhanced growth. In addition, the results observed that the quality of institutions is crucial to the relationship between financial sector and economic growth.

Barnard (2016) investigated whether South Africa development finance institutions have significant impact on the country's socio-economic development and transformation. Development finance institutions credit extension is found to have positive and significant impact on economic growth in in both South African and in emerging markets. Also, in both South Africa and in emerging markets, government consumption has negative impact on economic growth. Additional analysis further showed that development finance institutions credit extension promotes increase in manufacturing to GDP in South Africa and in other emerging markets. Development finance institutions have significantly positive impact on HDI in South Africa but not in emerging markets. There is a positive (albeit not significant) impact of development finance institutions credit extension on poverty in South Africa, worse still, the relationship is significantly negative in other emerging countries.

Chisasa & Makina (2015) investigated the dynamic relationship between bank credit and agricultural output in South Africa using time series data from 1970 to 2011. Using the Johansen co-integration test, we observe bank credit and agricultural output to be co-integrated. In the long run we find credit and capital formation to have significant positive impact on agricultural output. Employing an ECM, we find that, in the short run, bank credit has a negative impact on agricultural output reflecting the uncertainties of institutional credit in South Africa. However, the ECM coefficient shows that agricultural GDP rapidly adjusts to short term disturbances indicating that there is no room for tardiness in the agricultural sector. The absence of institutional credit will be immediately replaced by availability of other credit facilities from non-institutional sources so that there is no room for possible non-application of intermediate inputs. Conventional Granger causality tests show unidirectional causality from bank credit to agricultural output growth; agricultural output to capital formation; agricultural output to labour; capital formation to credit; capital formation to labour, and a bi-directional causality between credit and labour. Noteworthy is that for the agricultural sector the direction of causality is from finance to growth, i.e., supply-leading, whereas at the macroeconomic level the direction of causality is from economic growth to finance, i.e., demand-leading. Adewale (2014) estimated the effects of changes in regulation as regards the rate of credit consumption and ultimately, economic growth in South Africa. Using quarterly dataset from various sources between 2007 and 2012 in regression analyses, it was found that an increase in credit consumption has precipitated an increase in economic growth. The study also uncovers that the regulatory interventions by the South African government play significant roles in reducing reckless (secured) lending, during the period under consideration at the expense of an increase in unsecured lending.

Ghana

By the use of the Autoregressive Distributed Lag (ARDL) approach, Sena, Asante & Brafu-Insaidoo (2021) investigated whether financial development influences the effectiveness of monetary policy and assessed their joint effect on economic growth in Ghana for the period 1980 to 2016. The results revealed that financial development strengthens the effectiveness of monetary policy on economic growth in Ghana. Buabeng, Adabor, & Nana-Amankwaah (2021) investigated the impact of lending rate on economic growth in Ghana. To do this, the study employed the autoregressive distributed lags model (ARDL) and the Toda and Yamamoto (1995) causal approach as estimation strategy. The estimates from the ARDL model suggested that ceteris paribus one percent increase in lending rate generates approximately 0.15 decreases in economic growth of Ghana in the long. In the short run, one percent increase in lending rate also generates approximately 0.112 percent decrease in economic growth. Contrary to the widespread belief that lending rate induce economic growth, they found that gross domestic product rather spurs lending rate, using Toda and Yamamoto (1995) causal approach.

Obeng-Amponsah, Sun, & Havidz (2019) used panel data spanning the period from 1961 to 2016. The results from the use of Johansen cointegration and vector auto-regression show that, though there is no long-run association among the variables, there exist significant short-run relationship between domestic credit to the private sector, broad money and gross capital formation. Further diagnostic tests showed that gross capital formation Grangercauses both domestic credit to the private sector and broad money, and domestic credit to the private sector Granger-causes broad money. Using the Autoregressive Distributed Lag (ARDL) framework, Baokoa, Acheampongb and Ibrahim (2017) examined the relevant factors influencing allocation of bank credit to the private sector in the Ghanaian economy for the period 1970 to 2011. The results show that broad

money supply, bank assets, real lending rate, and bank deposits are significant determinants of bank credit in both the short and long-run. Inflation also exerts significant positive impact only in the short-run.

Ofori-Abebrese, Pickson, & Diabah (2017) applied ARDL approach and Granger causality test to investigating the relationship and the causal direction between financial development and economic growth in Ghana during the period 1970-2013. The study revealed that the amount of credit from domestic sources to the private sector maintained a positively significant nexus with the growth of the economy whereas the domestic deposit was not the case. Also, the results established that there is a dependence of the Ghanaian economy to the changes in domestic credit to private sector whilst there exists a unidirectional causality running from the variations in economic growth to the domestic deposit in Ghana. Adu, Marbuah, & Mensah (2013) investigated the long-run growth effects of financial development in Ghana. They found that the growth effect of financial development is sensitive to the choice of proxy. Both the credit to the private sector as ratios to GDP and total domestic credit are conducive for growth, while broad money stock to GDP ratio is not growth-inducing. The indexes created from principal component analysis confirmed the sensitivity of the effect to the choice of proxy. The findings here suggest that whether financial development is good or bad for growth depends on the indicator used to proxy for financial development. Sackey & Nkrumah (2012) examined the effects of Financial Sector Development on Economic Growth in Ghana using the Johansen Co-integration analysis. The paper examines empirically the causal link between financial sector development and economic growth in Ghana. The Johansen Co-integration techniques within a bivariate vector auto-regressive framework were used for the regression. Using a quarterly time series set of data on Ghana over a

ten year period (2000 – 2009), the result of the study shows that, there is a statistically significant positive relationship between the Financial Sector Development and Economic Growth in Ghana.

Kenya

Njoroge (2024) delineated the impact of development banking on Kenya's economic growth. The study used a quantitative research design. Secondary data was utilized in this study. The data was collected from the financial statements of development banks in Kenya. The target population was 6 development banks in Kenya. The study then progressed to more complex regression analysis, where financial performance ratios and percentages for predictor factors formed the basis of the analysis. The study focused on 6 development financial institutions operating in Kenya. The findings (β=0.1153, p=0.0056), revealed that development banking had a positive and significant effect on economic growth. This infers that an improvement in development banking by one unit would lead to an improvement in economic growth by 0.115 units. The investigation substantiates a tangible and statistically significant correlation between the maturation of the development banking sector and the economic growth spectrum in Kenya.

Kiriga, Chacha, & Omanyo (2020) examined the impact of the interest rate cap on credit uptake by different sectors and also the impact of private sector credit on economic growth. The ARDL approach to co-integration was used to assess these impacts. The results showed that capping of interest rates led to an average decline of total credit by about 4.3 per cent per month from its pre-capping level. In terms of sectorial credit uptake, the ARDL estimates revealed that, on average, the agriculture sector experienced the largest decline of about 5.4 per cent relative to other sectors. The study found that there is a positive and significant long-run and short-run relationship between access to private sector credit and real GDP growth in Kenya. The elasticity of real GDP growth

with respect to private sector credit is about 0.25 and is statistically significant and economically important. This relationship suggests that the short fall in private sector credit (of approximately 4.3%) following the introduction of interest rate caps is associated conservatively with a shortfall in real GDP growth of about 1.1 per cent relative to the baseline (pre-capping period). This is a massive drag on growth and jobs, holding back the country from making progress in promoting inclusive growth.

Mulu (2014) determined the effect of commercial bank loans on Kenya's economic growth. The data on economic growth were obtained from the Kenya National Bureau while the data on loans were collected from the audited financial statements of the 43 commercial banks in Kenya. The data used covered the period 2008 to 2012 and covered all the 43 commercial banks. Economic growth was regressed against rates of change in amounts lent by commercial banks lagged one year. The findings show that, first; the distribution of economic growth rate was not normally distributed, but skewed towards the right. Secondly, the distribution of the rate of change in the amounts of loans issued to borrowers was normally distributed. Thirdly, the correlation between economic growth rate and the rate of change in the amounts of loans issued was -0.097 as measured by the Pearson's Correlation Coefficient. This indicates that a positive change in amounts of loans issued was matched with a slight drop in economic growth. In the regression analysis, the constant term was 5.98074 which were statistically insignificantly different from zero as indicated by a p-value of 0.3066. The coefficient of the rate of change in the amounts of loans was -0.0372122 and statistically insignificant as indicated by a p-value of 0.7971. The whole regression was statistically insignificant as shown by F (1, 1) = 0.108844 ($p>0.05$).

Mwalungo (2011) established the effect of credit on economic growth in Kenya. Both qualitative and quantitative methods were used to achieve the objective of the study. A regression model was used to carry out the empirical analysis. The study used secondary data that was collected from the supervision department of the Central bank of Kenya for a period of 15 years. The findings and analysis reveal that private credit advanced has an effect on economic growth in Kenya. The study used a simple regression model, descriptive statistics and correlation analysis to establish the effect of credit on economic growth in Kenya. The model equated economic growth as a function of credit. The results obtained from the regression model show that there is a positive correlation between credit and economic growth in Kenya.

Methodology

This research adopted an ex-post facto longitudinal/panel research design in the choice of its time-frame; hence it examined features of selected countries in Sub-Saharan African at more than one fiscal period. The population of the study is drawn from four countries randomly selected from the pool of forty eight (48) countries in Sub Saharan Africa as follows: Nigeria, South Africa, Kenya, and Ghana. The data that were used in the study were secondary which were sourced from the World Bank from 2002 to 2023. All the data were on annual basis as contained in the source mentioned. The dependent variables are Real Gross Domestic Product (RGDP), Standard of Living (STDL), and Human Development Index (HDI), while the independent variables are Domestic Credit to Private Sector (DCPS), Lending Rate (LENR), and Inflation Rate (INFR). A linear and multivariate modified regression model of Ajudua (2023) was adapted and modified. The original model is stated as:

$$RGDP = f(TBC, MS, PSC, LR) \qquad 3.1$$

Where:

RGDP = Real Gross Domestic Product

TBC = Total Bank Credit

MS = Money Supply

PSC = Private Sector Credit

LR = Lending Rate

The following equation is so created when equation 3.1 is translated functionally:

$$RGDP = f(DCPS, LENR) \quad 3.2$$

$$STDL = f(DCPS, LENR, INFR) \quad 3.3$$

$$HDI = f(DCPS, LENR, INFR) \quad 3.4$$

Econometrically transforming 3.2 – 3.4 thus become:

$$LogRGDP_t = \beta_0 + \beta_1 LogDCPS_t + \beta_2 LogLENR_t + \varepsilon_t \quad 3.5$$

$$LogSTDL_t = \beta_0 + \beta_1 LogDCPS_t + \beta_2 LogLENR_t + \beta_3 LogINFR_t + \varepsilon_t \quad 3.6$$

$$LogHDI_t = \beta_0 + \beta_1 LogDCPS_t + \beta_2 LogLENR_t + \beta_3 LogINFR_t + \varepsilon_t \quad 3.7$$

Where:

$RGDPRGDP$ = Real Gross Domestic Product

$STDLSTDL$ = Standard of Living

$HDIHDI$ = Human Development Index

$DCPSDCPS$ = Domestic Credit to Private Sector by Banks

$LENRLENR$ = Lending Rate

$INFRINFR$ = Inflation Rate

e = Stochastic or disturbance term.

t = Time dimension of the variables

β_0 = Constant or intercept

β_{1-3} = Coefficients to be estimated or the coefficients of slope parameters

Results

Descriptive Properties of the Data

The variables' descriptive statistics are shown in Table 1. It shows the total number of observations, mean, median, maximum, minimum, standard deviation and sum of mean deviation. The mean values of the variables: RGDP, STDL, HDI, DCPD, LENR, and INFR are 2.64E+11, 3210.984, 0.578485, 52.83046, 14.01190, and 9.031986 respectively, while the median of the study variable are 3.00E+1, 2439.590, 0.550000, 27.84906, 13.83906, and 7.838523. The maximum values of the series are 5.51E+11 for RGDP, 6253.120 for STDL, 0.450000 for HDI, 142.4220 for DCPS, 24.77083 for LENR, and 26.23982 for INFR, whereas the minimum values are 3.82E+10, 1165.170, 0.450000, 8.084343, 7.041667 and -0.69203respectively for RGDP, STDL, HDI, DCPD, LENR, and INFR. The standard deviations of the variables are 1.61E+11, 1958.234, 0.085129, 47.49859, 3.511593 and 5.124136 for RGDP, STDL, HDI, DCPD, LENR, and INFR respectively. The measure of asymmetry of the distribution of the series around its mean that is, skewness of only RGDP is negative, while STDL, HDI, DCPD, LENR, and INFR are positive. The Kurtosis that measures the peakedness of the distribution of the variables is positive. The p-values of the Jarque-Bera for all the variables are significant at 5% level meaning that all the variables are normally distributed and free from any outlier that may affect the regression output.

Table 1: Descriptive Properties of Data

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	P-value	Obs
RGDP	2.64E+11	3.00E+11	5.51E+11	3.82E+10	1.61E+11	-0.034342	1.763398	8.218231	0.00034	66
STDL	3210.984	2439.590	6253.120	1165.170	1958.234	0.604788	1.584278	9.535186	0.00850	66
HDI	0.578485	0.550000	0.740000	0.450000	0.085129	0.500753	1.989258	6.567687	0.04180	66
DCPS	52.83046	27.84906	142.4220	8.084343	47.49859	0.717780	1.729308	10.10759	0.00639	66
LENR	14.01190	13.83906	24.77083	7.041667	3.511593	0.248470	2.989404	7.679417	0.00198	66
INFR	9.031986	7.838523	26.23982	-0.69203	5.124136	1.089281	4.487583	19.13736	0.00007	66

Source: Output data from E-views 12.0

Panel Unit Root Test

Levin, Lin and Chu (LLC) Test

The LLC test was performed at first difference at individual intercept and individual intercept and trend. This is based on the fact that the preliminary investigation shows that the data were not all stationary at level and this was not reported in the work. The null hypothesis of the LLC test is that the variable is stationary. The null hypothesis of stationarity is accepted only when the p-value is less than 0.05. Tables 2 and 3 LLC unit root results at individual intercept and individual intercept and trend of first difference demonstrate that all of the variables' p-values for the LLC test statistic are significant at the 5% level of significance. The null hypothesis that the variables have no unit root at first difference is accepted. Thus, at the 5% level of significance, all the variables are stationary at first difference and integrated of order one, or 1. (1). The panel unit root test in Tables 2 and 3 emphasize that all the variable are stationary at first difference. The outcome of the panel unit root test using LLC demonstrates that every variable is stationary at first difference and free of the stationarity defect associated with the majority of time series data, allowing for the testing of the long-term co-integration relationship between the variables.

Table2: LLC Test Result at First Difference: Individual Intercept

Variables	LLC Test Statistic	Pooled Coefficient	Pooled t-Stat.	Remark
RGDP	-3.63777 (0.00)*	-0.84586	-6.014	Stationary
STDL	-3.46911 (0.00)*	-0.77812	-5.758	Stationary
HDI	-3.35447 (0.00)*	-0.36404	-3.497	Stationary
DCPD	-3.68117 (0.00)*	-0.96875	-6.946	Stationary
LENR	-3.98451 (0.00)*	-1.12603	-6.981	Stationary
INFR	-5.18728 (0.00)*	-1.35086	-8.897	Stationary

Source: Output Data using E-view 12.0.

Table 3: LLC Test Result at First Difference: Individual Intercept and Trend

Variables	LLC Test Statistic	Pooled Coefficient	Pooled t-Stat.	Remark
RGDP	-4.51672 (0.00)*	-1.29704	-8.340	Stationary
STDL	-3.89401 (0.00)*	-1.22638	-7.979	Stationary
HDI	-3.35447 (0.00)*	-0.36404	-3.497	Stationary
DCPD	-2.74661 (0.00)*	-1.13465	-7.693	Stationary
LENR	-3.07939 (0.00)*	-1.13723	-7.064	Stationary
INFR	-4.93326 (0.00)*	-1.38952	-9.351	Stationary

Source: Output Data using E-view 12.0.

Kao Residual Co-integration Test

The structural criteria for estimation the Kao panel Co-integration test is based on Engle-Granger. Kao (1999) noted that the null hypothesis of no co-integration for panel data exists in two tests. The first is a Dickey-Fuller types test while the other is an Argumented Dickey-Fuller type test. Table 4 depicts the Kao's co-integration test result. The p-values of the t-statistics are significant at 5% level of significance for model two only, which is the rejection of the null hypothesis of no co-integration for standard of living and domestic credit to private sector by banks in the four selected Sub-Saharan African countries. Put differently, standard of living is related in long run only with domestic credit to private sector by banks in the four selected Sub-Saharan African countries. Real gross domestic product and human development index are not co-integrated with domestic credit to private sector by banks in the four selected Sub-Saharan African countries as

the p-values of 0.1440 and 0.2117 are insignificant at 5% level of significance. In summary, it is concluded that there is no long run relationship between economic development and domestic credit to private sector by banks in the four selected Sub-Saharan African countries over the period studied since only one dependent variable (standard of living) out of a total three economic development variables (real gross domestic product, standard of living, and human development index) are co-integrated with domestic credit to private sector by banks in the long run as shown in Table 4.

Table 4: Kao Residual Co-integration Test

Models Estimated	Argumented Dickey-Fuller	
	t-Statistic	Prob.
RGDP → DCPS + LENR	-1.062544	0.1440
STDL → DCPS + LENR + INFR	-1.716505	0.0430
HDI → DCPS + LENR + INFR	-0.800507	0.2117

Source: Source: Output Data using E-view 12.0.

Notes: The ADF is the residual-based ADF statistic. The null hypothesis is no co-integration. (*) and (**) indicate that the estimated parameters are significant at the 1% and 5% level respectively.

Panel OLS Analysis of Domestic Credit to Private Sector by Banks and Economic Development

Real Gross Domestic Product and Domestic Credit to Private Sector by Banks

The Hausman test in Table 5 suggests the random effect estimation is preferred to fixed effect due to the insignificant p-value (0.062800) of the Chi-square. The result reveals that domestic credit to private sector by banks in the four selected Sub-Saharan African countries have positive but insignificant relationship with real gross domestic product, while lending rate has negative insignificant relationship with real gross domestic product. The coefficient of the constant 2.86E+11 indicates that if domestic credit to private sector by banks in the four selected Sub-

Saharan African countries is held constant, real gross domestic product would be up by a factor of 2.86E+11 and this is statically significant at 5% level of significance. A unit increase in domestic credit to private sector by banks would result in a corresponding increase in real gross domestic product by 2.51E+08. On the other hand, real gross domestic product would depreciate by factors of -2.50E+09 following a percentage rise in lending rate. The adjusted R-square value of -0.017123 shows that the explanatory variables jointly accounted for -0.17%% variations in real gross domestic product within the period studied. The F-statistic which determines the overall significance joint effect of the independent variables shows that domestic credit to private sector by banks in the four selected Sub-Saharan African countries and lending rate did not significantly explain the variations in real gross domestic product as the p-value (0.637858) is insignificant at 5% level. The Durbin Watson statistic (1.706523) which is the traditional test of autocorrelation in a model is within the acceptable range in that the variables in the model are not serially correlated.

Table 5: Panel OLS of Real Gross Domestic Product and Domestic Credit to Private Sector

Variables	Pooled OLS		Fixed Effect		Random Effect (* Preferred)	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	2.86E+11	0.0437	-1.61E+11	0.5180	2.86E+11	0.0705
DCPS	2.51E+08	0.6754	1.64E+09	0.0762	2.51E+08	0.7082
LENR	-2.50E+09	0.7580	2.42E+10	0.1054	-2.50E+09	0.7830
R-squared	0.014173		0.177119		0.014173	
Adjusted R-squared	-0.017123		-0.273507		-0.017123	
S.E. of regression	1.62E+11		1.82E+11		1.62E+11	
Sum squared resid	1.66E+24		1.39E+24		1.66E+24	
Log likelihood	-1795.793		-1789.831			
F-statistic	0.452863		0.393050		0.452863	
Prob(F-statistic)	0.637858		0.990515		0.637858	
Durbin-Watson stat	0.176523		0.198473		1.706523	
Hausman Specification Test						
	Chi-Sq. Statistic		5.536310			
	P-value		0.062800			

Source: Computer output data using E-views 12.0

Note: Periods included: 22, Cross-sections included: 4, Total Number of Observations: 88

Standard of Living and Domestic Credit to Private Sector by Banks

From the Hausman test in Table 6, the random effect is favored as the p-value of the Chi-square is insignificant at 5% level. The result discloses that domestic credit to private sector by banks and inflation rate in the four selected Sub-Saharan African countries have positive significant relationship except lending rate with lending rate that shows a negative relationship with standard of living. According to the constant coefficient of 813.6858, keeping domestic credit to private sector by banks, lending rate, and inflation, standard of living would be down by $813.6858. Increasing domestic credit to private sector by banks and inflation rate in the four selected Sub-Saharan African countries by a unit respectively lead to 40.62175 and 49.07588 appreciations in standard of living. On the other hand, a percent increase in lending rate leads to -13.70410 depreciation in standard of living. The F-statistic value of 3142.7007 with a p-value of 00.000000 show that domestic credit to private sector by banks, lending rate, and inflation jointly and significant explained the changes in standard of living. Going by the adjusted R-squared of 0.867375, it is crystal clear that the explanatory variables reasonably accounted for joint contribution of 86.74% changes in standard of living. It is also observed from the Durbin Watson statistic that the variables in the model are free from autocorrelation problem and inference deduced is reliable in statistical terms as revealed in Table 4.6 of a Durbin Watson value of 1.78.

Table 6: Panel OLS of Standard of Living and Domestic Credit to Private Sector

Variables	Pooled OLS		Fixed Effect		Random Effect (* Preferred)	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	813.6858	0.2215	-1248.970	0.2654	813.6858	0.2662
DCPS	40.62175	0.0000	47.49730	0.0000	40.62175	0.0000
LENR	-13.70410	0.7008	99.10232	0.1241	-13.70410	0.7270

INFR	49.07588	0.0235	62.22754	0.0271	49.07588	0.0389
R-squared	0.873496		0.898661		0.873496	
Adjusted R-squared	0.867375		0.839341		0.867375	
S.E. of regression	713.1452		784.9050		713.1452	
Sum squared resid	31531714		25259113		3153171	
Log likelihood	-525.1860		-517.8664			
F-statistic	142.7007		15.14932		142.7007	
Prob(F-statistic)	0.000000		0.000000		0.000000	
Durbin-Watson stat	1.580952		1.561834		1.780952	
Hausman Specification Test						
	Chi-Sq. Statistic		6.871901			
	P-value		0.076100			

Source: Computer output data using E-views 12.0

Note: Periods included: 22, Cross-sections included: 4, Total Number of Observations: 88

Human Development Index and Domestic Credit to Private Sector by Banks

The Hausman test in Table 7 suggests the acceptability of the random effect estimation as a result of insignificant p-value of the Chi-square. The result disclosed that domestic credit to private sector by banks has positive and significant relationship with net human development index, while lending rate (significant) and inflation rate (insignificant) reveal negative relationship with human development index. The coefficient of the constant 0.610735 means that if domestic credit to private sector by banks, lending rate, and inflation are held constant, human development index would appreciate by 61.07%. A unit increase in domestic credit to private sector by banks would result in a corresponding increase in human development index by 0.1%. The adjusted R-square value of 0.946253 shows that the explanatory variables jointly accounted for 94.62% variations in human development index within the period studied. The F-statistic which determine the overall significance joint effect of the independent variables shows that domestic credit to private sector by banks controlled by lending rate and inflation rate significantly explained the variations in human development index as the p-value of F-statistic is significant at 5% level. It could be deduced from the Durbin Watson statistic of 1.78 that the model is free from autocorrelation.

Table 7: Panel OLS of Human Development Index and Domestic Credit to Private Sector

Variables	Pooled OLS		Fixed Effect		Random Effect (* Preferred)	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.649757	0.0000	0.586046	0.0000	0.610735	0.0000
DCPS	0.001129	0.0000	0.001339	0.0000	0.001259	0.0000
LENR	-0.009030	0.0000	-0.005456	0.0007	-0.006881	0.0000
INFR	-0.000488	0.5567	-0.000204	0.7516	-0.000262	0.6727
R-squared	0.897861		0.970282		0.948734	
Adjusted R-squared	0.892919		0.952886		0.946253	
S.E. of regression	0.027857		0.018478		0.018653	
Sum squared resid	0.048112		0.013999		0.021573	
Log likelihood	144.7378		185.4787			
F-statistic	181.6721		55.77600		382.4579	
Prob(F-statistic)	0.000000		0.000000		0.000000	
Durbin-Watson stat	1.799644		1.718016		1.789253	
Hausman Specification Test						
	Chi-Sq. Statistic		4.183329			
	P-value		0.242300			

Source: Computer output data using E-views 12.0

Note: Periods included: 22, Cross-sections included: 4, Total Number of Observations: 88

Granger Causality Effect Result

To examine the effect of domestic credit to private sector by banks on economic development visa viz: real gross domestic product, standard of living, and human development index, this study applied the granger causality test. The essence of choosing the granger causality over ordinary least square regression is based on the fact that it takes into consideration the dynamic nature of variables. Furthermore, for a variable to have effect on another it must cause it move or granger because it and it is only the granger causality test that offers such tool of effect assessment. The lag length selected was automatically selected by the software (E-views 12.0) on the premises that the data applied were gotten from the World Bank which were all on yearly/annual bases. The result in Table 4.8 reveals that domestic credit to private sector by banks and lending rate have significant effect on real gross domestic product in the four selected Sub-Saharan African

countries. This is on the argument that causality flows from domestic credit to private sector by banks and lending rate to real gross domestic product at 5% level of significance.

Table 4.8: Real Gross Domestic Product and Domestic Credit to Private Sector by Banks

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
DCPS does not Granger Cause RGDP	84	6.15861	0.0151	Causality
RGDP does not Granger Cause DCPS		0.21760	0.6421	No Causality
LENR does not Granger Cause RGDP	63	6.93207	0.0108	Causality
RGDP does not Granger Cause LENR		7.5E-05	0.9931	No Causality

Source: Computer output data using E-views 12.0

From the output in Table 9, at 5% level of significance, causality do not run from domestic credit to private sector by banks controlled by lending rate and inflation rate to standard of living. This is an indication domestic credit to private sector by banks in the selected Sub-Saharan African countries has no significant effect on standard of living. On the other hand, there is an evidence of causal relationship between standard of living, lending rate, and inflation rate hence, lending rate and inflation rate is significantly affected by standard of living.

Table 9: Standard of Living and Domestic Credit to Private Sector by Banks

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
DCPS does not Granger Cause STDL	84	2.06551	0.1545	No Causality
STDL does not Granger Cause DCPS		0.26453	0.6084	No Causality
LENR does not Granger Cause STDL	63	0.01818	0.8932	No Causality
STDL does not Granger Cause LENR		6.32795	0.0146	Causality
INFR does not Granger Cause STDL	84	1.06975	0.3041	No Causality
STDL does not Granger Cause INFR		4.74004	0.0324	Causality

Source: Computer output data using E-views 12.0

It is evidence in Table 10 that there is no unidirectional causal relationship between domestic credit to private sector by banks controlled by and inflation rate to human development index. Causality flows from domestic credit to private sector by banks controlled by and inflation rate to human development index at 5% significance level. This implies that domestic credit to private sector by banks controlled by lending rate and inflation rate has no significant effect on human development index. Human development index has significant effect on inflation rate as causality runs human development index to inflation rate at a significant level of 5%

Table 10: Human Development Index and Domestic Credit to Private Sector by Banks

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
DCPS does not Granger Cause HDI	84	3.31686	0.0723	No Causality
HDI does not Granger Cause DCPS		2.62266	0.1019	No Causality
LENR does not Granger Cause HDI	63	0.63154	0.4299	No Causality
HDI does not Granger Cause LENR		13.1284	0.0006	Causality
INFR does not Granger Cause HDI	84	0.12185	0.7279	No Causality
HDI does not Granger Cause INFR		2.13542	0.1478	No Causality

Source: Computer output data using E-views 12.0

Discussion

The Kao co-integration test reveals the presence of a long run relationship between standard of living and domestic credit to private sector by banks in the four selected Sub-Saharan African countries. Real gross domestic product and human development index are not co-integrated with domestic credit to private sector by banks in the four selected Sub-Saharan African countries. This supports the finding of Kiriga, Chacha, and Omanyo (2020) who found that there is a positive and significant long-run relationship between access to private sector credit and real GDP growth in

Kenya. On the contrary, it disagrees with the result of Mazeli, Adigwe, and Ananwude (2020) that there is no long-run relationship between private sector credit and real GDP growth in Nigeria.

With regard to the effect estimation tested using the granger causality approach; it was found that domestic credit to private sector by banks has significant effect on real gross domestic product in the four selected Sub-Saharan African countries. This supports the empirical studies of Igbinedion (2023), Ogbonna, Anaemena, Okechukwu, &Ibenyenwa, 2023), Amali, Alymkulova, and Ejila (2023), Ajudua (2023), and Muhammad and Ngele (2023) in Nigeria that bank credit has the potential to stimulating economic growth and development. On the other hand, it refutes the results of Yerima & Idris (2023), Adewole, Suberu, Fapetu, & Olorunmade (2023); Innocent, Ademola, & Glory (2023); Shuni (2023); Amos (2020), and Mazeli, Adigwe, & Ananwude (2020) that bank credit has not significantly improve economic development and growth in Nigeria. In South Africa, it affirm the findings of Adewale (2014); Ratombo & Mongale (2024), and Chisasa & Makina (2015) on the positive effect of bank credit on economic growth and development in South Africa, while it disagrees with the work of Gwatidzo (2024) who envisaged a negative relationship between bank credit and economic growth in South Africa. Similarly in Ghana, it agrees with the research of Njoroge (2024) and Mwalungo (2011), and Mwalungo (2019) that development banking had a positive and significant effect on economic growth. Conversely, it refutes Mulu (2014) who concluded that economic growth in Kenya is not driven by changes in bank credit. The findings also rejected the research of Ofori-Abebrese, Pickson, & Diabah (2017) and Sackey & Nkrumah (2012) who established that there is a dependence of the Ghanaian economy to the changes in domestic credit to private sector whilst there exists a unidirectional causality running from the variations in economic growth to the domestic deposit in Ghana.

CONCLUSION

Bank credit plays a fundamental role in economic development by providing the financial resources necessary for investment, business expansion, and infrastructure projects. The study concluded and asserts that within the period reviewed, domestic credit to private sector by banks have no significant effects on economic development (real gross domestic product, standard of living, and human development index) in the four selected Sub-Saharan African countries.

In view of the findings of this study and firstly, banks can improve economic growth by expanding access to financial services through mobile banking, agent banking, and innovative financial technology solutions owing to the fact that Sub-Saharan Africa has a large unbanked population. This enables more individuals and businesses to participate in the formal economy and access credit. Secondly, governments in Sub-Saharan Africa are advised to invest in education by providing loans for school fees, vocational training, and higher education. Access to education equips individuals with skills and knowledge essential for economic participation and social mobility. Educational loans can empower youth and adults to improve their earning potential and contribute to sustainable development. Finally, governments in Sub-Saharan Africa are advised to support healthcare development by financing hospitals, clinics, and medical equipment purchases. Banks can collaborate with healthcare providers to improve access to quality healthcare services, especially in underserved rural areas. Enhanced healthcare infrastructure reduces mortality rates, improves health outcomes, and boosts life expectancy, key components of the human development index

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