



FINANCING ECONOMIC GROWTH AND DEVELOPMENT IN SUB-SAHARAN AFRICA (1981–2021)

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ABSTRACT: *The aim of this paper is to explore the relationship between financing growth and development using panel data, Auto regressive distributed lag model (ARDL) analysis in 31 selected high income sub-Saharan African countries for the period of 40 years from 1981 to 2021. The sampled countries were based on their average GDP growth rate over the years under study. The study used ex post-facto and analytical research design. The Gross Domestic Per Capita Growth (GDPPCG) served as the dependent variable while Domestic Credit to Private Sector by Banks (DCPSB), Bank Liquidity Reserve to Bank Assets Ratio (BLR) and Gross Domestic Savings (GDS) were used as the independent variables. The inflation rate served as the control variable. Using the bound test proposed by Pesaran, Shin, and Smith in 2001 (and long & short run causality approaches), the long-run association was estimated. The ARDL model's findings show that financial development has a favorable and considerable influence on economic growth in sub-Saharan African high-income nations. The study suggests implementing a financial inclusion approach to increase financial institution accessibility to households, particularly the unbanked in rural areas.*

KEYWORDS: Financial Development, Economic Growth, Co-integration.



INTRODUCTION

Good financial systems have not yet been built in economically underdeveloped nations, which may be connected to nations with low incomes; they are extremely important for economic progress in all nations. High-income nations are typically recognized and regarded as having effective financial policies and programs, both in terms of conception and implementation. According to Meier [1], economic progress is a process in which (a) the real per capita income of the nation rises steadily over time and (b) the proportion of the population living in poverty and the level of economic inequality in the society do not rise.

There is no universal agreement on the relationship between economic development and financial expansion, according to some evidence. On this subject, there are two recognized schools of thought. According to Levine [2] and McKinnon [3], the first school of thought claimed that financial development is necessary for economic expansion. Finance actually affects growth by having an impact on saving, investing, and technical advancements (Demirguc-Kunt, [4]).

The second school of thought, known as Neoclassical thinkers, maintained that finance is not the main driver of growth (Lucas, [5]). According to Lucas (1988), the literature has overemphasized the link between financial development and economic growth over time (Christopoulos & Tsionas, [6]). Scholars like De Groen [7] and Ductor and Grechyna [8] presented compelling arguments and data in the past in support of an inverse relationship between the development of the financial sector and economic growth. Although it has not been very long, a good number of studies conducted by various academics have supported the idea that the development of the financial sector has a favorable impact on growth (Durusu-Ciftci, Ispir, & Yetkiner, [9]; Muhammad, Islam, & Marshdeh, [10]; Pradhan, Arvin, Hall, & Nair, [11]).

Financial development encourages economic growth especially where it increases the rate of capital accumulation as stated by King and Levine [12], who went further to outline some ways through which development of the financial sector affects growth which, grouped into four categories: (i) financial system is capable of promoting productivity by entrepreneurs and projects selection of higher quality, (ii) through external finance mobilization for these entrepreneurs, (iii) through risk diversification of innovative activities, provision of superior vehicle, and (iv) disclosing the potential profits attached to uncertain business of innovation where necessary. According to Beck, T., Levine, R., & Loayza, N. [13], financial intermediaries exercise a significant positive impact on the total factor productivity growth, which flows through to overall gross domestic product growth. Consequently, financial intermediaries affect growth by altering the savings as argued by the endogenous growth model observed in the works of Bencivenga and Smith [14], Levine (1997), and Pagano [15]. However, Jayaratne and Strahan [16] were not in support of this simply because they found no convincing evidence to support the view that financial markets increase economic growth by increasing overall saving and investment.

In line with this, Gerschenkron [17] is of the opinion that contribution of financial development on economic growth was solely dependent on the economic backwardness of an economy. He argued that a more active financial system is needed more by economically backward countries, whereas developed countries do not need an active financial system to have economic growth stimulated. Despite the relevance of a developed financial system for stimulating economic



growth, economically backward countries, or the low-income countries (LIC), remain financially underdeveloped and this could be found mostly in Africa. Detragiache, Gupta, and Tressel [18] argued that political instability and corruption are the major factors behind the poor financial system in LICs. Therefore, they further argued that efforts to strengthen the prudential regulation and supervision may not be expected to yield an immediate benefit especially in the short run, as LICs are characterized to be weak in policy implementation.

Statement of the Problem

The long-lasting inconclusive nature of debate on the relationship between financial growth and development by scholars, students and researchers, especially in low income countries, gave rise to this study. This study is centered on high income countries, using a long period of forty-years with thirty-one sampled countries in a population of fifty-four countries in sub-Saharan Africa.

Gap in Literature

Empirical works so far reviewed exhibited some issues to be of great importance and contributed to the literature by providing recent evidence on finance-growth nexus in LICs by either grouping LICs along with developed or middle-income countries, or analyzing a small sample of individual countries. This study pooled available data of 31 countries in sub-Saharan Africa out of the population of 54 countries which have the highest average growth rate in gross domestic product (GDPGR) for a long period of 40 years beginning from 1981 to 2021, to analyze the relationship between finance growth and economic development among the high income countries in sub-Saharan Africa.

Objectives of the Study

The objective of this study is:

- (1) to assess the impact of financial growth on economic development in high income countries in sub-Saharan Africa.

Research Question:

- (1) Does financial growth impact economic development in high income countries in sub-Saharan Africa?

Research Hypothesis:

The research hypothesis is written in null form:

- (1) Financial growth does not impact economic development in high income countries in sub-Saharan Africa.

Scope of the Study

The study concentrates on financing growth and development in sub-Saharan African countries which covers the period of 1981 to 2021, using 31 high income countries from the total of 54 countries in sub-Saharan Africa. In line with the World Development Report 1981 [19], the year 1981 was characterized by poor economic growth rate among which then turned to adjustment problems of different groups of developing African countries, hence the



consideration of the prospects for human development in the majority of countries in sub-Saharan Africa. The study ends in 2021 as a result of data availability.

REVIEW OF RELATED LITERATURE

The long lasting debate on finance-growth nexus was earlier started by Schumpeter [20] as he forwarded the view of the importance of financial sector development for economic growth. Schumpeter argued that financial sector development is essential for economic growth in every economy. It contributes immensely to economic growth through technological innovations. His argument is that financial development affects economic growth through the provision of sufficient funds available for the firms to have the best productive use. Patrick's argument is centered on the early stage of the country's economic development. The financial system leads economic growth, as he observed; however, as the country advances toward becoming a developed nation, the growth definitely creates demand or situations which appeal for the financial sector to be developed. This age-long theoretical debate on finance-growth nexus was supported by Levine (1997) establishing his argument on finance as the lubricant of the main engine of economic growth.

The literature shows also that some of the recent studies have diligently raised the subject of threshold or non-linearity on the finance-growth nexus as an issue to be treated. Their views argued that the level of financial development is in no doubt beneficial for economic growth up to a certain threshold. As soon as the development of the financial sector reaches that threshold, that seems to be a turning point because further development of finance leads to declining economic growth. Law and Singh [21], using panel data of both developed and developing countries (87 countries), concluded that more or continuous additional [provision of finance is not necessarily good for economic growth. In a similar manner, a study by Samargandi, Fidrmuc, and Ghosh [22], using threshold effect on panel data, analyzed the finance-growth nexus using 52 middle-income countries over the period of 30 years (from 1980–2008). Their study revealed an inverted U-shaped relationship between finance and growth, especially in the long run. In line with this, Arcand, Berkes, and Panizza [23] observed a disappearing effect of financial development on economic growth. According to Arcand, Berkes, & Panizza (2015), finance gradually developed a negative impact on output growth when credit to the private sector (CPS) reaches a threshold. Arcand et al. (2015) revealed that there is a threshold once credit to the private sector reaches a particular level from 80–100% of GDP.

Similarly, Christopoulos and Tsionas (2004) found in their study that a unidirectional long-run causality exists between financial development and economic growth and runs from finance to growth. However, problems of cross-sectional dependence were not considered. Similarly, Jedidia et al. [24] and Samargandi et al. (2014) used time-series techniques for their data analysis, while their results revealed a positive impact of financial development on economic growth.

Deb et al. [25] disaggregated their samples which they used in their study into developed and emerging economies on quarterly data bases over the period 1993–2014. Their findings revealed that in developed economies, finance drives growth correspondingly with the supply-leading hypothesis, while the demand-following hypothesis rather is obtainable in the case of



emerging economies. Dash et al. [26], using both insurance and bank development indicators in their study, provided convincing evidence of long-run causality as shown in their results between financial development and growth. In the short run, they found a bi-directional relationship (using granger causality) between insurance and growth, especially in banking and growth. They were of the opinion that a developed insurance industry helps in overcoming economic shocks while expansion in the economy can give rise to increase in income levels and, hence, an increase in demand for insurance.

Herwartz and Walle [27] used annual data for 73 economies in their study, spanning the period 1975–2011. Their findings revealed that the impact of finance on economic development is generally stronger in high-income countries than in low-income countries. Another earlier study by Pradhan, Arvin, Bahmani, Hall, and Norman [28] used four different proxies of financial development (bond market development, banking sector development, insurance sector development and stock market development) looking into the finance-growth relationships in the ASEAN region from 1991–2011. It was found that bond market development, banking sector development, stock market development, insurance market development, and per capita economic growth were co-integrated in the long-run. However, as it relates to causality, their findings were sensitive to the application of financial development proxies. There was evidence of unidirectional causality emanating from banking sector development to economic growth as well as bi-directional relationship (using granger causality approach) between stock market development and economic growth, and insurance sector development and economic growth.

Menyah et al. [29] in their study used a data-set of twenty-one African countries and did not find evidence of support for finance-led growth outcomes. Hassan et al. [30] in their study provided empirical results on the finance-growth relationship in low- and middle-income countries. Their findings revealed that a positive relationship exists between financial development and economic growth in developing countries. Their outcome shows a two-way causality relationship between finance and growth for most of the sampled regions and one-way causality from growth to finance for the two poorest regions, as indicated in their results.

A study carried out by Demetriades and Rousseau [31] on the non-monotonic relationship between financial development and economic growth revealed that financial depth is no longer a yardstick for long-run growth. They further argued that bank regulation and supervision influenced finance growth-nexus. It is therefore obvious and vital to note that a higher level of development of the financial sector may not always be considered beneficial for economic growth. However, one common issue with this paper on the relationship between financial development and economic growth is that they are conducted on highly non-heterogeneous panels (including high-income countries).



METHODOLOGY

Research Design

The study used *ex post-facto* and analytical design, whereby the variables to be estimated are secondary. The study made use of tables and graphs so as to bring out the rudiments of this study. The historical nature of the data is such that it cannot be manipulated since the events had already taken place and had been recorded. The study used e-view 10 software for data analysis. We ensured that the variables used for this study are verifiable, reliable and validated. We test for unit root just to ensure that variables have a constant mean over the years. Some were transformed just to ensure that results are acceptable at less than 5% level of significance. Since stationary level was achieved at 1(0) and 1(1), this called for bound co-integration test based on the long-term nature of our study. We however tested for short-run causality and parameter stability test. The hypothesis was tested using ARDL since it is a panel data of long-term nature and the model can take care of any correlation that may occur between the explanatory variables and the error term, while decision is taken at 5% level of significance.

Nature and Source of Data: The study used secondary data sourced from online publications: World Bank development data.

Model Specification

The primary focus of this study is to provide a long time evidence for the relationship between the development of the financial sector and economic growth in high-income countries in sub-Saharan Africa. For this, this study proposed a short- and long-run causal relationship and co-integration model. On the basis of an extensive review of the literature, this study further used inflation as the control variable. Therefore, the model takes the following form:

$$GDPPCG_{it} = \beta_0i + \beta_1iDCPSB_{it} + \beta_2iBLR_{it} + \beta_3iINFLATION_{it} + \mu_{it}$$

The study adopted and modified the works of Kacho and Dahmardeh [32] on panel granger causality between economic growth and four different types of financial development in ASEAN (Association of Southeast Asia Nations)

Financial development is measured by private credit by deposit money banks and is obtainable from the financial development and structure database. The indicator has been used in literature by prominent authors including Kim and Lin (2010). The indicator used for economic growth was the logarithm of GDP per capita (constant 2010 US\$). The indicator was also utilized by Law et al. (2018), and Kacho and Dahmardeh (2017).

where subscripts i and t are the representatives of country and time period, respectively. LGDPPCG is the economic growth defined as gross domestic product per capita growth. Bank liquidity reserve to bank asset ratio (BLR) is the proxy for development of the financial sector, and it is measured as the ratio of GDP. DCPSB is the domestic credit to the private sector by banks, LNGDS is the log of gross domestic savings, while inflation is the consumer price index which serves as the control variable. Thus, this study allowed individual intercepts and slope coefficients across countries. β_{0i} is the country-specific fixed effect and $\beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}$ and β_{5i} are the country-specific long-run coefficients of bank liquid reserve to bank asset ratio, domestic credit to private sector by banks, gross domestic savings and consumer price index (inflation) respectively. The μ_{it} is the error term.



The Study Sample

This study includes a group of 31 high-income countries in sub-Saharan Africa based on their highest average GDP over the period under study. The average score of GDP was calculated on all the countries in Africa, while the first 31 with highest average GDP over the years under study were selected for study. These selected countries are Cameroun, Burkina Faso, Chad, Angola Benin, Botswana, Ethiopia, Equatorial Guinea, Egypt, Gambia, Guinea, Ghana, Lesotho, Mali, Mauritius, Nigeria, Namibia, Mozambique, Morocco, Papua, Senegal, Seychelles, Sudan, Togo, Tanzania, Tunisia, Uganda, Zambia, Cabo Verde and Libya.

Techniques of Data Analysis

The study applied the unit root tests on all the variables to determine the lag length using lag length criteria, serial correlation test, parameter stability test using graph and co-integration table using bounds test based on our stationary outcome especially where some of the variable attained stationary at different orders $I(0)$ and $I(1)$ as the case may be and test of hypothesis using (ARDL) model.

DATA ANALYSIS

The data analysis procedures involve the following four steps as outlined: checking the level of integration of the variables, testing for the long-run co-integrating relationship amongst the variables, estimating long-run co-integrating parameters, and finally testing for the short-run causality between financial development and economic growth.

Testing for Integration

Since this study seeks to analyze the long-run co-integrating relationship between financial development and economic growth, it is important to verify that all the variables are integrated at least of order one in level. It is because most of the co-integration techniques in panel data require variables to be integrated at least of order one, i.e., $I(1)$. Therefore, it is required to apply the unit root test on the variables before going for further analysis.

TEST FOR STATIONARITY

Table 1.0

VARIABLES	Null -H	Statistic	Condition	ADF	DIFF	P-VAL
GDPPCG	Accept	-14.445	Trend/Intercept	Chi-S/Z test	1(0)	0.0000
BLR	Accept	-13.193	Trend	Chi-S/Z test	1(1)	0.0000
DCPSB	Accept	-17.247	Trend/Intercept	Chi-S/Z test	1(1)	0.0000
GDPPC	Accept	-11.769	Trend/Intercept	Chi-S/Z test	1(1)	0.0000
LNINFLATION	Accept	-8.0613	Trend	Chi-S/Z test	1(0)	0.0000
DMSCPS	Accept	-17.296	Trend/Intercept	Chi-S/Z test	1(1)	0.0000

Source: Researchers' Computation



From the Table 1 above, it is evidenced that some of the variables are stationary at difference order zero $1(0)$, while some at order one $1(1)$ which implied that the mean, variance and covariance of all our variables (explained and explanatory) are invariant at level $1(0)$ and order one $1(1)$ over the period under study. The results show that Augmented Dickey Fuller test result is more negative than the respective values of the variables at 5% level of significance, having all the corresponding p-values less than 5%. This result is suitable for co-integration test (using Bounds test) proposed by Pesaran, Shin and Smith in 2001.

Determination of Lag Length

Table 2.0

VAR Lag Order Selection Criteria

Endogenous variables: GDPPCG DCPSB BLR

LNINFLATION

Exogenous variables: C

Date: 08/26/21 Time: 02:21

Sample: 1 1230

Included observations: 215

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2677.454	NA	47272.19	24.95306	25.03145	24.98473
1	-1819.655	1667.722	20.42539	17.20609	17.67641*	17.39612*
2	-1787.411	61.18745	19.10162	17.13871	18.00097	17.48710
3	-1755.422	59.21711	17.91591*	17.07370*	18.32789	17.58045

Source: *Researchers' Computation*

From Table 2, the study observed that AIC with the corresponding value of 17.07370 at lag (3) claimed to be the lowest value among all the values marked. Since the criteria for selection is based on the lowest value, lag three (3) becomes the lag length for our study.

Serial Correlation LM Test

Decision Criteria: Accept H_0 if the probability values of F-statistic and of observed R-squared are greater than 5% level of significance; otherwise, reject the H_0 .

Table 3.0

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.201131	Prob. F(3,805)	0.3083
Obs*R-squared	3.645268	Prob. Chi-Square(3)	0.3024

From the Table 3.0, it is observed that P-values of F-statistic and Observed R^2 are 0.3083 and 0.3024 are not less than 5% respectively; therefore, we conclude that there is absence of serial



correlation on the estimated parameters using Breusch-Godfrey approach since the values are all greater than 5% level of significance.

Parameter Stability Test

$$GDPPCG_{it} = \beta_0i + \beta_1iBLR_{it} + \beta_2iDCPSB_{it} + \beta_3iINFLATION_{it} + \mu_{it}$$

GDPPCG BLR DCPSB INFLATION (ARDL Model)

Table 4.0

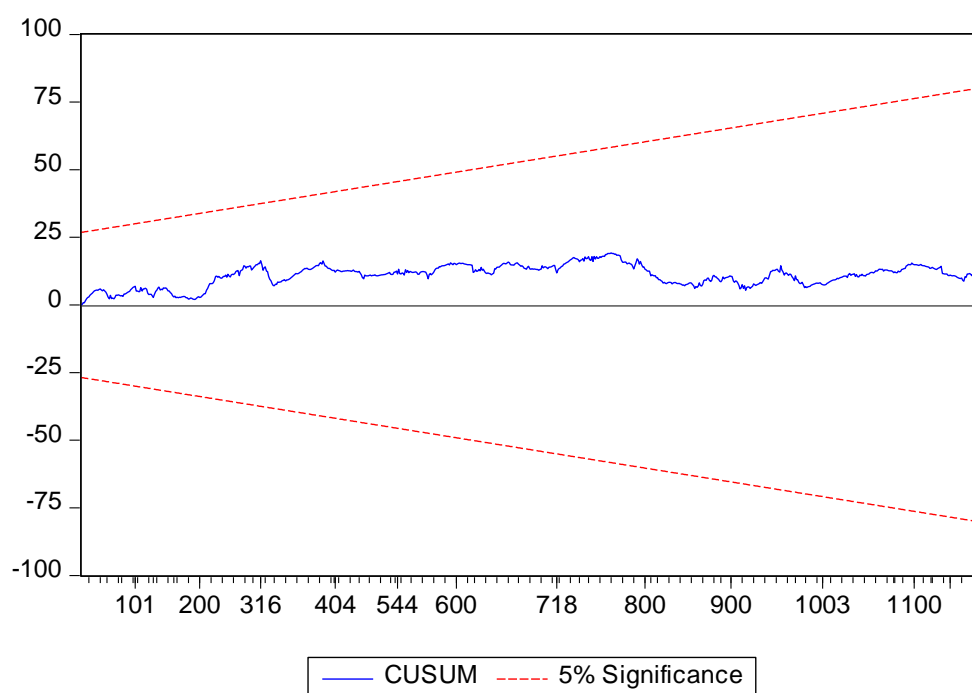


Table 4.0 shows the graphical movement of the explanatory variable (GDPPCG) which is in between the 5% significant red lines. This implies that the parameter estimated is stable over the years under study (1981–2021) without deviation because it lies within the 5% margin. We conclude that there are no structural breaks over the period.

3. Testing for Co-integration and Estimating the Long-run Relationship

Once the order of integration is determined within the variables, the next step is to perform the co-integration test amongst financial development, economic growth, and control variables. Taking into consideration the panel data and the time period of the study, this study used panel co-integration by Pesaran, Shin and Smith in 2001 using Bounds test.



Statement of Hypotheses

H_0 : No cointegration

H_1 : H_0 is not true.

Decision Criteria

Reject the null hypothesis if the F-Statistical value is greater than the value $i(1)$ bound at 5% critical value; otherwise, do not reject the null hypothesis. This implies that there is a long-run relationship.

BOUNDS TEST

Table 5.0

ARDL Bounds Test

Date: 08/27/21 Time: 00:15

Sample: 4 1229

Included observations: 818

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	219.0115	4

Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: *Researchers' Computation*

In Table 3, the study showed the results of Bound test which indicates that the $i(1)$ bound (4.01) at 5% level of significance is less than the F-statistics value (219.0115). This implies that there is evidence of co-integration in the series. There is a long-run relationship and any short time deviation can be adjusted for in the long-run at a given rate of adjustment which will be determined by a test for (ECM) error correction model.

**Table 6.0**

ARDL Error Correction Regression
 Dependent Variable: D(GDPPCG)
 Selected Model: ARDL(1, 1, 3, 0, 0)
 Case 2: Restricted Constant and No Trend
 Date: 09/30/22 Time: 16:55
 Sample: 1 1271
 Included observations: 818

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DCPSB)	-0.117953	0.043659	-2.701715	0.0070
D(LNGDS)	1.307346	0.336936	3.880099	0.0001
D(LNGDS(-1))	1.117594	0.353617	3.160469	0.0016
D(LNGDS(-2))	1.086755	0.333806	3.255646	0.0012
CointEq(-1)*	-1.154008	0.034694	-33.26216	0.0000

SHORT-RUN CAUSALITY**Table 7.0****The Short-run Causal Effect Table (Wald Test)****Statement of Hypothesis**

$$H_0 : C(4) = C(5) = C(6) = 0$$

$$H_1 : C(4) = C(5) = C(6) \neq 0$$

Wald Test:

Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	15.64023	(2, 808)	0.0000
Chi-square	31.28046	2	0.0000

Null Hypothesis: $C(1)=0, C(3)=2*C(4)$

Null Hypothesis Summary:



Normalized Restriction (= 0) Value	Std. Err.
C(1)	-0.154008 0.034822
C(3) - 2*C(4)	-0.362045 0.132030

Restrictions are linear in coefficients.

Table 5 indicates that there is a short-run causality and stands as evidence of short-run causality test where the probability of F-statistics (0.0000) and Chi-square (0.0000) are not greater than 5% level of significance. This indicates that $C(2) = C(3) = C(4)$ is not equal to zero and does cause GDPGR in the short run. Therefore, the null hypothesis is not accepted and we then state that $C(2)=C(3)=C(4) \neq 0$. This implies that the Bank Liquidity Reserve to Bank Assets ratio (BLR), Gross Domestic Savings (GDS) and Domestic Credit to Private Sector by Banks affect the gross domestic product growth rate.

Test of Hypothesis

Statement of Hypothesis in a Null Form

Financial growth does not impact economic development of high income countries in sub-Saharan Africa.

Decision Criteria: Accept H_0 if the coefficient of the explanatory variable is negatively signed and the probability value is greater than 5% level of significance; otherwise, reject the null hypothesis.

AUTO-REGRESSIVE DISTRIBUTED LAG MODEL (ARDL)

Table 8.0

VARIABLES	P-VALUE OF F-STAT	COEFFICIENTS	DURBIN-WATSON	P-VALUES OF T
GDPPCG	0.0000		2.038539	
DCPSB(-1)		0.122046		0.0062
LNGDS(-3)		-1.086755		0.0014
INFLATION		-0.001123		0.3444
BLR		-0.016404		0.2748

Source : *Researchers' Computation*

GDPPCG = Gross domestic product per capita growth, DCPSB = Domestic credit to private sector, LNGDS = Log of Gross domestic savings, BLR = Bank liquidity reserve.

Table 8.0 displayed the numerical values as used in the ARDL model. The coefficient of DCPSB(-1) is 0.122046 which is positively signed with a corresponding probability value of



0.0062. The coefficient value of LNGDS (-3) is -1.086755 with a corresponding probability value of 0.0014. The coefficient value of the inflationary rate used as a control variable is -0.001123 with a corresponding probability value of 0.3444. The coefficient value of BLR is -0.016404 with a corresponding p-value of 0.2748. The probability value of f-statistic is 0.0000, less than 5% level of significance. This result indicates that the overall regression is statistically significant. The Durbin-Watson statistic is 2.03 as evidenced in Table 8.0 which implied the absence of autocorrelation.

Decision: Since the coefficient of domestic credit to private sector by banks (0.122046) is positively signed and the probability value (0.0062) is less than 5% level of significance, therefore, we accept the alternate hypothesis and conclude that financial growth has a positive and significant impact on economic development in high income countries in sub-Saharan Africa.

DISCUSSION OF FINDINGS

Considering the integration and co-integration phenomenon, an inspiring paper by Christopoulos and Tsionas (2004) investigated the long-run relationship between financial depth and economic growth, taking the data from 10 developing countries. They analyzed data using panel unit root and panel co-integration techniques. They also took threshold effects into the account. They concluded that there is a long-run relationship between financial development and economic growth in 10 developing countries. The result of our study which spans from 1981 to 2021 is in agreement with that carried out by Chistoppoulos and Tsionas as at 2004 especially on the co-integration aspect of the study, since there is evidence of long-run relationship using Bound test on long- and short-run causal effect. The ARDL result is in line with Herwartz and Walle (2014) in their work, indicating a positive and significant impact of financial growth on economic development on high income countries in sub-Saharan Africa.

CONCLUSION

Financial intermediaries exercise a large positive impact on the total factor productivity growth, which feeds through to overall GDP growth as witnessed by Beck, T., Levine, R., and Loayza, N. (2000). Consequently, financial intermediaries affect growth by altering the savings. Financial growth stimulates economic development especially where it increases the rate of capital accumulation. Therefore, developing countries need to embark on savings which will eventually stimulate investments of long-term nature through the financial intermediaries as vehicles for economic growth and development since there is evidence of co-integrating effect among them.



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