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DEVELOPMENT FINANCING AND ECONOMIC GROWTH IN EMERGING ECONOMIES: A LONG-RUN CO-INTEGRATING PANELS ANALYSIS

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Abstract *The stance of the development financing in promoting economic growth remains critical, especially in West Africa. To contribute to the field, this paper explores the outcomes of development financing of selected countries including; Ghana, Senegal, Nigeria and the Gambia using data from 1994 to 2023. This study utilised fully modified ordinary least squares (FMOLS) regression model to evaluate the long run dynamic and endogeneity of financial variables and economic growth. This study revealed that GRANTS and FDI, positively impact growth at 5% level; while domestic credit to the private sector (DCPSET)though, has positive impact on the economic growth but insignificant at 5% level. The official development assistance (ODA) and Exchange rate (EXR) demonstrated long-run negative and significant effect on the economic growth of the selected countries. This study concludes that GRANTS and FDI remain important component of the development financing that contribute robustly to economic growth of the selected west African countries. The insignificant of the GRANTS suggests a limited access to credit or financial system inefficiencies which may limit its effect. Also, the negative effects of ODA and EXR are due to a greater share of concessional loans and dependency on importations. On this premise, this study recommends that policy makers prioritize the attraction and efficient management of grants to support infrastructure and other development goals; promote FDI attraction to improve ease of doing business; re-evaluate the structure and deployment of ODA which currently has a declining impact and support private sector credit for positive and significant effect.*

Keywords Development financing, Economic growth, Emerging economies, fully modified ordinary least squares

JEL: 016, 019, F21, F35, G21

1. INTRODUCTION

1.1 Background

Development financing are funding provided to support projects, initiatives and other developmental needs of countries. Studies, (Heshmati 2018; UNECA, 2021; AfDB, 2022) emphasised the indispensable role of finance in fostering economic growth and social progress including infrastructure development, poverty reduction, and the improvement of social services, such as education and healthcare in emerging economies like Nigeria, Ghana, The Gambia, and Senegal. To explore the role of development financing, studies (Ustarz& Fanta, 2021; Masila et al., 2025) have documented differences of impact of development financing among countries which included institutional framework and governance strategies. The UNDP (2021) found Ghana financial strategies accelerated the country's economic growth and improvement in their social welfare. The Nigeria economy has found to be sensitive to development finance as evidence from the promotion infrastructure including energy and transportation (World Bank, 2023; IMF, 2023). Despite, the narrow economic base and low private sector participation in its economy, The Gambia demonstrated effective utilization of its development as documented by the extent of its progress in rural connectivity (AfDB, 2021; IMF, 2023). In a demonstration of allocative efficiency, the development finance has had a significant impact on infrastructural growth in the Senegal (World Bank, 2023)

Countries worldwide are obsessed with policy objectives geared toward achieving and sustaining the growth and development of their economies. Achieving this becomes a herculean task for most governments, especially those from developing economies such as Sub-Saharan Africa (Rodrik, 2018; Collier, 2007). This becomes more debilitating when there are insufficient public funds to finance most of the country's needs. Government expenditure could be expanded as a result of growth in government spending which could occasioned by increase in size of the country's population, growing need for development and balanced growth (regional development) pursuit, increase in social security payment owing to rise in unemployment, price instability, high size of dependent population, size of the government functions and sectors of the economy, and growing need for infrastructural development and more. Therefore, in the realm of fiscal policy practices, besides other sources of revenue, taxation remains one of the major and dominant sources of government revenue to financing its expenditure. However, if the revenues of government are insufficient, it

may undertake to borrow to meet her spending needs. However, critiques (Omitogun, 2018; Mahmood, and Somaye, 2013) have underscored the crowding-effects of both increase in tax and debt on the nations' economy. Though, others, (Kandil,2017; Makin, 2018) have mixed opinions on crowding-out effect of taxation and debt on the economy. Therefore, to allay the fear of the crowding-out-effects of taxation and debt, recent economic development policies emphasized the optimization of development financing as potent financing options to promote economic growth of a country.

1.2 Objective

Despite substantial inflows of development financing into SSA, the impact of flows of finance on the countries' economies in this study remains complex. This is because some countries experienced rapid growth, others have seen limited benefits, often due to challenges such as political instability, poor governance, and inefficient use of resources. Studies of Bandura and Dzingirai (2019), and Cypher (2019) stressed the admixture of the roles of institutional and financial factors as a fundamental policy area to address in order to optimize the benefits of development financing. Therefore, the complexity in understanding the roles of development financing in the emerging economies motivated us into the investigation of the economic growth impact and the development financing mechanism among countries including Nigeria, Ghana, The Gambia and Senegal.

This paper is organised into five sections. In addition to section one which concerns with the introduction, section two deals with literature review; and the methodology of the study were discussed in section three. The results and analyses were done in section four, while conclusion and recommendations were presented in section five.

2. LITERATURE REVIEW

2.1 Theoretical Review

The Solow (1950) growth model and endogenous growth model by Romer (1986; 1990) and Lucas (1988) ushered in link between economic growth and development financing. According to Solow (1950), the factors that drives economic development of a country include labour, technology and capital. Capital to him, plays formidable role in enhancing output productivity of country through savings. Despite the limitation of the Solow growth model of emphasizing exogenous factors, its relevance was empirically demonstrated by (Adeniyi et al. 2015; Quartey, 2005; Njie ,2013; Sow, 2016). To address the limitation of Solow's model, Romer (1986, 1990); and Lucas (1988) opined in their studies that the drivers of "economic growth" are more internal(endogenous) than external (exogenous) as assumed by Solow model. Therefore, endogenous model emphasizes innovation, human capital, research and

development as primary factors within the system that promote growth. Though, Lucas and Romer have been able to explicitly revealed the importance of internal factors as growth determinants but failed to show the explicit direct link between economic growth and development finance as they rely on implicit assumption that knowledge, and research and development spillover can capably influence long-run economic performance (see Moloi, 2022).

2.2 Empirical Review

In demonstrating the roles of development financing to enhancing economic performance, Mai and Yoon (2020), and Moloi (2022) employed the panel regression approach and mixed econometrics methods (GMM, ARDL, and Thresholds) analysis respectively, and their studies documented that grant as one forms of development financing promote economic performance while loans negatively impact the economic growth (Mai &Yoon, 2019; Moloi,2022). In a related study by Kim and Lekhe (2019), used panel regression approach and discovered that official development assistance in form of grants exerted positive effect on the growth per capita and other macroeconomic indicators, while official development assistance in form of loans showed a negative impact. The study of Nguyen (2022) utilised generalized methods moments (GMM) to study the link between developing financing and growth of the economies of six associated southern east Asian nations and reported that there are spillover effects of development financing on the economic output through foreign direct investment. (See also Heshmati, 2018).

Adeniyi et al. (2015) maintained that the foreign capital on Nigeria's economic growth is based upon "the absorptive capacity of the economy". Though, to them, country's failure to translate large capital inflows into long term growth is often attributed to weak institutions and underinvestment in technology and human capital. Contrasting to other Africa country like Ghana, Quartey (2005), documented that Ghana has advanced from a blend of foreign aid and private sector development financing**,** resulting in more stable growth in the Ghana. Quartey's study argues that investments geared towards the infrastructure and education have boosted capital productivity. However, comparing to the Gambia, development financing has been primarily aid-dependent in the Gambia economy as revealed in the study by Njie (2013). Njie found that while aid temporarily increased public investment, and also argued for the significance of effectiveness of microfinance institutions as an alternative to get rid of poverty in the Gambia. Senegal has increasingly diversified its sources of development financing, combining public-private partnerships (PPPs) with external assistance (Schwerhoff & Sy, 2017) To them, the country's investment in energy and infrastructure has enhanced to close the capital gap, though, discovered that productivity remains stagnant.

Empirical evidences revealed that Nigeria has had adequate foreign investment and aids but these inflows have not expectedly translated into sustainable economic growth (Okonjo-Iweala & Osafo-Kwaako, 2007). Okonjo-Iweala and Osafo-Kwaako (2007) also remarked that the Nigeria's growth volatility can be explained by poor public investment management and insufficient investment in education and innovation. Poor pubic investment management development financing leading to poor broader economic growth may attributed to level of corruption, political instability, and poor infrastructure. In the quest to unravel the complexity of the growth determinants, study of Edith et al.; (2023) employed autoregressive distributed lag (ARDL) model and pairwise granger causality test to analyse annual data from 1985 to 2022. Their study revealed that "all share index, exchange rate and financial technology have positive and significant influence on economic outcome". Their study further documented non-significant impact of credit to private sector and gross savings on the economic outcome of Nigeria (Edith et al., 2023). Further Edith et al., (2023) discovered that remittances negatively impact the economic growth of Nigeria but non-significant; while exchange rate impact the economic growth positively which was contrary to a priori expectation of expected negative effect. Chinwe (2022) utilised ordinary least regression (OLS) to investigate the impact of the ratio of the amount money supply to gross domestic product and market capitlisation to gross domestic product and discovered a positive relation between the variables and economic outcome. On other flip, Chinwe (2022) also documented that, "share of the contributions of credit to private sector to gross domestic product and insurance premium to gross domestic product ratio negatively impact economic growth in Nigeria". Oyadeyi (2023) utilised granger causality method and discovered development financing has negative effect on the real sector of the Nigeria economy; See also (Kasilam, 2022).

However, Ghana provides an illustrative case where development financing has supported reforms and investments in health and education. Aryeetey and Fenny (2017), submitted that development assistance in Ghana enhanced macroeconomic stability and supported education sector reforms, which in turn fueled improvements in labor productivity. Ghana's use of budgetary support and concessional loans for long-term social investments illustrates how financing can foster endogenous growth through knowledge-based development. The study of Adu et al. (2013) employed principal component analysis to assess financial development matters in the Ghana and discovered that contributions of the credit to private sector to gross domestic product and total domestic credit all are growth inducing. Using autoregressive distributed lag (ARDL) co-integration approach. Studies, (Ricky-Okine and Amankwaa 2020; Asongu,2018) revealed that there is long-run relationship between financial development and economic growth using the ratio of broad money to gross domestic product in the Ghana. Ricky-Okine and Amankwaa (2020) revealed that the

lagged differenced of economic growth and household consumption have positive and significant impact on economic growth in the short-run. In another study of Ibrahim and Alagidede (2019), examined the dynamic asymmetric effects of financial development on economic growth in Ghana using non-linear autoregressive distributed lagged model. Their study documented short run and long-run asymmetric relationship with mixed findings of positive and negative shock on the economic growth of Ghana (Ibrahim, &Alagidede, 2019).

Haag et al. (2024) analyzed how development financing facilitate domestic renewable energy transition in Senegal. Their study used two-step analyses and discovered that the micro, medium and small enterprises receive minimal development finance. The mainstream renewable energy development projects focused on large-scale energy plants with maximum attention and the micro small and medium enterprise (MSMEs) received only marginal share of the development funding Haag et al., 2024).

In literature on development financing and economic growth in emerging economies, particularly in sub-Saharan such as (Sehrawat and Giri,2016; Asongu, 2018; Kasilam,2022; Haag et al.2024; Oyadeyi, 2023), we discovered while some study focused on some selected forms of development financing others focused on specific countries creating a huge gap of understanding the interactions among countries from the same region. Therefore, to bridge this gap, we employed a fully modified ordinary least squares (FMOLS) to estimate the long-run co-integration between economic growth and development financing in West African. This a robust method which account for the endogeneity and serial correlation among variables of the selected countries. Further, a broad components of development financing which include GRANTS, ODA, DCPSET, FDI, moderated by EXrwere employed in this study as a robust contribution to the literature of development financing economic growth in West African. FMOLS suits endogenous growth theory because it corrects for feedback between finance and growth.

3. METHODOLOGY

3.1 Research Design

We resorted to time series panel analysis to explore the relationship between development financing and economic growth among selected countries including Nigeria, Ghana, The Gambia and Senegal. Panel data were collected from four countries used in this study. Prior estimation, we carried out various diagnostic tests including panel unit root to ensure the data are stationary. After the estimation, we evaluate the regional variations in the economic growth resulting from the development financing mechanisms of the selected countries.

3.2 Data and Sources of Data

Panel time series data on gross domestic product rate per capita (GDPCPPP), official development assistance (ODA), domestic credit to private sectors (DCPSET), the grants receipt excluding technical assistance (GRANTS), FDI and exchange rate (EXR) were used in this study as component of development financing. The data ranging from 1994 to 2023 related to variables of study were sourced from World Bank Development Indicators (Word Bank, 2023), and Index Mundi(2019).

3.3 Area of study

This study focused on four countries from the West Africa region. They include Nigeria, Ghana, Senegal and the Gambia. The West African nations are known to exhibit diverse economic structures, financing mechanisms, and growth trajectories, making them valuable case studies for this study. West African countries are known for their vast agricultural arable land, rich in mineral deposit and culture.

3.4 Empirical model

This study employed a panel fully modified ordinary least square (FMOLS) model because this study typically involves observations across multiple time periods and entities (such as countries or firms). Panel data provides opportunity to analyse data that have both cross sectional and time series dimension across economic agents. Thereby enables us to account for differences (heterogeneity) among entities over a period of time (Sanghro,2024).

The panel fully modified ordinary least square regression model is stated as :

$$Y_{it} = \alpha_i + \beta X_{it} + \mu_{it} \quad (1)$$

Where,

$Y_{i,t}$ = is the dependent variable of country 'i' and time 't' , i= 1,…,N; t= 1,…,T

αi = the intercept of specific-country i which account for unobservable country-specific characteristics or differences.

β = the parameter of the explanatory variable 'X_i' of specific country i

μ_{it}= the error term of the specific country i

In panel analysis, estimating the fixed effect and random effect is essential so as to determine the country-specific characteristics (Fixed effect) and determine if appropriate treating country-specific effect as random. (Sanghro,2024). However, in this study, these tests were accounted for by the fully modified ordinary least square (FMOLS).

This entails specification of the fixed and rando effect regression model. The fixed effect model is the same to the pooled regression representing the panel regression. Therefore, we now specify the random effect regression model as thus:

$Y_{it} = \alpha+\beta X_{it} + \mu_{it}+\varepsilon_{it}$ (2)

Where;

α_i: represents unit-specific intercept which captures heterogeneity across countries.

ε_{it} represents country-specific random effect.

Other items remain as defined in equation (1).

The variables we used in this study include domestic credit to private sectors (DCPSET) of the economy, the grants receipt excluding technical assistance (GRANTS) by the countries, official development assistance (ODA), and foreign direct investment (FDI) on the economic growth (GDPCPPP) of the emerging countries from West Africa sourced from WBDI (2023). The study incorporated exchange rate (Exr) as a control indicator.

Functionally, this study hypothesized that economic growth (GDPCPPP) is linearly and normally dependent on domestic credit to private sectors (DCPSET), (GRANTS), (ODA), (FDI), and exchange rate (Exr). This can be represented:

$GDPCPPP_{it} = f(DCPSET_{it}, GRANTS_{it}, ODA_{it}, FDI_{it}, Exr_{it},$ (3)

Equation 3 shows the functional relationship between the dependent variable and the independent variables, implying that economic growth is determined by the set of explanatory variables on the right-hand side of the equation. Much was not mentioned about the degree and directions or sign of their relationships.

Mathematically, equation (1) is re-specified as:

$GDPCPPP_{it} = \beta 0 + \beta 1 DCPSET_{it} + \beta 2 GRANTS_{it} + \beta 3 ODA_{it} + \beta 4 FDI_{it} +$

$\beta 5 Exr_{it}$, ----------(4)

Equation 4 is a deterministic equation as it specially outlined the listed independent variables on the right side of the equations as the only variables that causes variation in the dependent variable (economic growth).

Further, for econometrics estimation purpose, equation 4 is re-specified by including the error term as: $GDPCPPP_{it} = \beta 0 + \beta 1 DCPSET_{it} + \beta 2 GRANTS_{it} + \beta 3 ODA_{it} + \beta 4 FDI_{it} + \beta 5 Exr_{it} + \varepsilon_{it}$ ------- (5)

Equation 5 is a normal representation of stochastic multiple regression model without representation of the panel effects (the fixed and random). In view of this, equation 5 is further respecified to produce a standard econometric specification for a panel data model equation 6 as thus:

$GDPCPPP_{it} = \beta 0 + \beta 1 DCPSET_{it} + \beta 2 GRANTS_{it} + \beta 3 ODA_{it} + \beta 4 FDI_{it}$

$+ \beta 5 Exr_{it}, + \gamma_i + \delta_t + \boldsymbol{\varepsilon}_{it}$ -- – (6)

Where;

$GDPCPPP_{it}$ is the gross domestic product per capita purchasing power parity used to measure the economic growth of country i at time t.

$DCPSET_{it}$ refers domestic credit to private sectors in country i at time t

$Grants_{it}$ accounts for the grants received by country i at time t

ODA_{it} represents the official development assistance to country i at time t

FDI_{it} captures the foreign direct investment inflows into country i at time t

Exr_{it} accounts for the exchange rate of country i at time t

γ_i is the gamma which represents entity-specific intercept, capturing country heterogeneity

$\boldsymbol{\delta}_t$ denotes time-specificcontrolling for common shocks across years

$\boldsymbol{\varepsilon}it$ is the error term which captures the unobservable factors that have effects on the dependent variable but are not included in the model.

The error term is assumed to be normally distributed with zero mean, constant variance and independently distributed. $\boldsymbol{\varepsilon}_{it} \sim N(0,\boldsymbol{\delta}2,I)$

βi is the parameter i or coefficient i that provides the estimates in the model.

where $i = 1, 2, \ldots n$

A priori expectation of the model

Theoretically, $\beta 1, \beta 2, \beta 3, \& \beta 4, > 0$ *while* $\beta 5 < 0$.

This implies that the estimates of the coefficient of the variables; *DCPSETit, Grantsi*t, *ODAit,,and FDIit*are expected to have positive impact on the economic growth while the estimate of coefficient($\beta 5$) of the variable, *Exrit*is expected to have negative impact on the economic growth.

3.5 Estimation Technique

In this study, a long-run co-integrating panels analysis was conducted to examine the impact of development financing variables (DCPS, Grants, ODA, FDI, and Exchange Rate) on GDP per capita (PPP). The use of panel cointegration techniques ensures that the estimated relationships are valid in the presence of non-stationary data and endogeneity, thereby justifying the application of FMOLS.

3.6. Diagnostic Tests on Parameter

Prior to estimating the long-run relationship using Fully Modified OLS (FMOLS), we conducted a series of diagnostic tests to validate the appropriateness of the estimator. Specifically, we applied panel unit root and cointegration tests to confirm that the variables were integrated of order one and cointegrated.

Although FMOLS is designed to correct for both endogeneity and serial correlation, therefore, we do not perform the Hausman test and serial correlation test. The panel unit root test was done useng Levin, Lin & Chu t* to ensure the data are stationary before estimation so as to avoid spurious results. Also carried out was Panel Co-integration test using Pedroni (2004) and Kao to check for long-run relationship among the variables.

4. RESULTS AND DISCUSSION

4.1 Presentation of Results

Table 1 Summary Statistics

		GDPCPPP				
DCPSET			GRANTS	EXR	FDI	ODA
Mean	3715.243	12.44113	18.04740	203.7978	7.04E+08	42.16235
Median	3343.529	11.65000	19.59279	49.10712	2.25E+08	41.72796
Maximum	6796.474	32.40000	23.15600	1478.965	4.79E+09	121.4548
Minimum	0.000000	0.000000	-2.302585	0.095568	0.100000	0.100000
Std. Dev.	1381.445	7.069297	5.549614	263.2439	1.04E+09	29.10209
Skewness	0.124113	0.902812	-3.159810	1.476335	1.897774	0.327980
Kurtosis	3.390555	3.846104	11.89079	5.804719	5.667749	2.536815
Jarque-Bera	1.106440	20.54353	614.7492	85.68764	111.2025	3.331587
Probability	0.575095	0.000035	0.000000	0.000000	0.000000	0.189041
Sum	460690.1	1542.700	2237.878	25270.93	8.73E+10	5228.132
Observations	124	124	124	124	124	124

Source: Author's computation, 2025, using EViews version 10

Table 1 showed the summary (descriptive)statistics results. The mean (3715.243) and the median (3343.529) of the GDPCPPP estimated indicated the average gross domestic product per capita purchasing power parity among countries and the middle country's GDPCPPP. Since the mean is higher than the median, it suggests that few countries have very high growth in GDPCPPP more than the others which raises the overall averages. This further shows that the distribution is right-skewed and presence of outliers, indicating inequality in growth among the countries of investigation. The same behaviour(right-skewed) distribution was exhibited by direct credit to private sector (DCPSET)which its estimated mean(12.44113) is greater that median (11.65000) highlighting financial inequalities among the countries employed in the study. However, mean GRANTS (18.04740), that is the average across the selected four countries and median, the middle value when the four countries' grants are ordered is (19.59279). Since the mean (18.04740) <median (19.59279), indicates that the distribution is negatively skewed, suggesting that most countries are clustered around higher grants value close to the median value while one or more receive lower thereby pulling down the mean. The exchange rate (EXR),foreign direct investment (FDI), and official development assistance (ODA) variables distributions were found to positively skewed given the means (203.7978, 7.0400, 42.16235) of the selected four countries greater than their respective medians (49.10712, 2.2500, 41.73796) estimates. This results of the exchange rate and foreign direct investment showed inequality across countries, while the relative closeness of the mean of the ODA suggests more equitable distribution of aid with countries receiving similar aid.

The standard deviation shows variability across the country's variables. It was revealed from table1 that the GDPCPPP standard deviation (1381.445) indicates high value. This suggests large differences in gross domestic per capita (PPP) among countries the four countries. The exchange rate (Exr) variable (263.2439) also shows high variability of exchange rates among countries. The official development assistance (ODAR)(29. 10209) indicating moderate differences of aid distribution among countries. However, the variables; DCPSET (7.069297), LNGRANTS (5.549614) and FID (1.0400) exhibited minimal standard deviations, suggesting low dispersions the countries. This indicates more consistencies of deposit credits to the private sectors across the four countries of investigation. Similarly, the estimate documents evenly distribution of grants and FDI to the economy of the four countries.

The GRANTS has skewness (-3.159810), indicating a strong negative skewness that is the data of the variable has a long tail on the left (left skewed). Suggesting that, most countries have higher grant while one or more receive lower grants thereby pulling the distribution to the left. The GDPCPPP (0.124113) shows almost symmetric distribution as the value approaches to zero indicating relatively balanced GDP per capita (PPP) across the four countries with

no outliers. DCPSET (0.902812) shows moderate positive skewness suggesting most countries have lower private sector credit deposits while few have much higher deposits. ODAR (0.327980) demonstrated mild positive skewness, indicating some levels of evenness in the Aid distributions among countries. FDI has high positive skewness (1.897774), indicating most countries modest FDI with one or two receiving large inflows. Meanwhile, the GDPCPPP has the lowest Jarque-Bera value, this means that it is closet to normality. The variable, ODAR has the minimum kurtosis (2.536815), indicating slightly platykurtic, meaning ODAR has spread-out distribution with fewer extreme values. While GRANTS has the maximum Kurtosis (11.89079), indicates highly leptokurtic distribution; suggesting extreme peak with data clustered tightly around the mean with outliers in both tail of the distribution. In between, we have GDPCPPP (3.339055) and DCPSET (3.846104) indicating close mesokurtic and mildly leptokurtic respectively. By mesokurtic, it implies the distribution is normal while mildly leptokurtic indicates that the variable distribution has higher concentration of values around the mean with heavier tails.

Table 2. Stationary test using Levin, Lin & Chu t*

Variables	At level		5% level significance	At first Difference		
	Test-stat	P-value	Decision	Test-stat	P-value	Decision
GDPCPPP	5.26106	1.0000	Not stationary	-2.33353	0.0098	Stationary, I*(1)*
DCPSET	0.32430	0.6271	„	-6.02675	0.0000	I*(1)*
GRANTS	23.3803	1.0000	„	-8.05182	0.0000	I*(1)*
EXR	4.81060	1.0000	„	-4.71246	0.0000	I*(1)*
FDI	1.59139	0.9442	„	-3.97540	0.0000	I*(1)*
ODA	-2.52371	0.0058	Stationary, I(*0*)	-12.4293	0.0000	I*(1)*

Source: Author's computation, 2025, using Eviews version 10

Table 2, presents the results of the panel unit root. The results indicated that all variables with the exemption ODA were not stationary at level as their p-values greater than 0.05 (5% significance level) threshold. This implies,that the series have unit root problem therefore, there was no sufficient evidence to reject the null hypothesis (H0: unit root exists). To circumvent the problem of unit root, we differenced the data by integrating them to order 1 (I(*I*). At the level of first difference, all the series become stationary as confirmed by the p-

value < 0.05.thereby, providing us sufficient to reject the null hypothesis and that the series are stationary.

Therefore, since the stationary results revealed that only ODA variable is stationary at level and other variables; GDPCPPP, DCPSET, GRANTS, EXR, FDI, were non-stationary at level but become stationary after taking the first difference; indicate mixed order of integration which suggests that a co-integration test (such as Engle-Granger or Johansen test) might be necessary but only needed if we choose to analyzing long-run relationships see(Johansen, 1988, 1991). Therefore, to ascertain whether there exists co-integration (long-run relationship) among the variables of the study we conducted a panel co-integration using Pedroni which accounted for heterogeneity characteristics among countries used in this study. The Pedroni and Kao estimates of panel co-integration are presented in the tables3

Table 3. Panel Co-integration Test Results (Pedroni & Kao Tests) (Within Dimension)

	(Pendroni)	P-value	(Kao)	P-value
Panel v-Statistic	-1.843071	P=0.9673	-1.997496	0.9771
Panel rho-Statistic	0.068352	0.5272	0.094517	0.5377
Panel PP-Statistic	-4.307439	0.0000	-5.111273	0.0000
Panel ADF-Statistic	-1.799770	0.0359	-2.551127	0.0054

Source: Author's computation, 2025 using EViews 10.

Table 3 shows Pedroni's panel cointegration tests.To] validate the appropriateness of FMOLS estimation, Pedroni's panel cointegration tests were conducted. The results revealed mixed evidence: while the panel v-statistic and rho-statistic (-1.843071 and -1.9997496) with high p-value (0.9673 and 0.9771) of Pedroni and Kao test respectively did not reject the null hypothesis of no cointegration, both the panel PP-statistic and panel ADF-statistic (4.307439 and -5.111273) with low p-values (0.0000 and 0.0000) of both Pedroni and Kao (1999) test respectively were highly significant, indicating the presence of cointegration. These findings confirm a long-run equilibrium relationship among the variables, thereby justifying the application of FMOLS. For robustness, the Kao test was also considered, providing complementary within-dimension evidence of cointegration.

The ADF statistics (-1.799770) and (-2.551127) of Pedroni and Kao with P-value

(0.0359 and 0.0054) respectively which are less than 0.05(5% significance level) suggested existence of co-integration. To further confirm the within dimension co-integration, the co-integration between dimension was carried out as showed in table 3.1.

Table.3.1 Between-Dimension Alternative test for Co-integration

	Statistics	Prob. Value
Group rho-statistics	0.517129	0.6975
Group PP-Statistics	-5.283702	0.0000
Group ADF-statistics	-1.506424	0.0660

Source: Author's computation,2025 using EViews 10.

The test revealed that the group rho -statistics (0.517129 with p-value (0.6975) suggested no co-integration while the Group PP-statistics (5.283702) with low p-value (0.0000) suggested that there is co-integration among variables in the study. However, weak evidence against the null hypothesis of no co-integration was observed from the Group ADF-statistics (-1.506424) with p-value (0.06) which is little above 0.05(5% significance level but within 10% significance level).

In all the tests, the Pedroni PP and ADF statistics consistently demonstrated evidence of strong co-integration among the variables. However, the rho and v-statistics showed that there is weak or no co-integration. The Kao (1999) results further corroborate a number of cointegrations. Therefore, since several statistics including Pedroni PP and ADF confirmed the co-integration; this suggested apparent models for study which include Error Correction Model (ECM), Autoregressive distributed lag model (ARDL), Fully Modified Ordinary Least square (FMOLS) model, and Difference regression techniques as the suitable techniques for this study. In view of this, this study adopts a fully modified ordinary least square (FMOLS) as one of the dynamic econometrics techniquesto explore both the long run integration analysis of the explanatory variables on the dependent variable.

Table 4 Fully Modified Least Square (FMOLS) Pool Estimates

Variables	Coefficient	Standard error	t-stat	p-value
DCPSET	16.59962	10.96755	1.513521	0.1331
GRANTS	110.2022	11.27116	9.777359	0.0000
ODA	-5.596982	2.537703	-2.205530	0.0296
EXR	-0.796036	0.354812	-2.243542	0.0269
FDI	3.34E-07	6.66E-08	5.016600	0.0000

R^2= 0.814

R^2adjusted=0.798576

Source: Author's computations, 2025 using EViews 10

Table 4 depicts the fully modified least square panel estimates.

4.2. Analysis and Discussion the Panel Fully Modified Ordinary Least square (FMOLS) Regression

Table 4 depicts the fully modified least square panel estimates. From the results, the variable; direct credit to private sector of the economy (DCPSET) coefficient (16.59962) with p-value (0.1331) shows that it has direct positive relationship with the dependent variable, gross domestic product per capita purchasing power parity (GDPCPPP). This means that a 1% change in the DCPSET while holding other variables constant leads to approximately 16.60 unit change or increase in the growth of the economy in the long-run. The high p-value suggests that DCPSECT is not significant at 5% level. This is consistent with shallow financial markets in West Africa especially Gambia, Senegal and Ghana. This non-significant positive impact of the DCPSET on the economy may point out that the private sectors do not receive sufficient credit to grow and actualize their objective of promoting economic growth. This may warrant policy direction such as deepening the financial markets to boost or promote economy growth in West Africa in the long run. The GRANTS variable coefficient (110.2022) was found to be highly significant given its low (p-value = 0.0000), and with positive effect, indicating $1billion grants will increase economic growth of the selected countries by $110.20 22billion in the long-run. Contrary to a priori expectation of this study, the coefficient of the ODA variable is (-5.596982)with p-value (0.0296). This implies that ODAhas negative impact on the dependent variable (GDPCPPP) and statistically significant at the 5% level. This indicates that a 1% change in ODA leads to decline in the GDPCPPP by $5.59billionin the long-run. Like the ODA variable, the exchange rate (EXR) impact negatively on GDPCPPP. The coefficient of the Exr(-0.796036) with significant p-value (0.0269) suggesting that a 1% change exchange rate leads to reduction in GDPCPPP by -0.796036 (79%); suggesting adverse long-run effect on the economy. However, foreign direct investment (FDI) confirmed a positive and significant impact on the economic growth of theselected countries. This was demonstrated by the coefficient of FDI (3.34E-07), with p-value (0.0000). This suggest that a 1% change in FDI brings about 3.34E-07 in the economic growth of the selected countries. The magnitude of this coefficient though positive but very small. However,even though the coefficient is numerically small, its impact is meaningful when scaled to real-world FDI inflows (billions of dollars). This supports the arguments that foreign capital inflows enhance domestic development financing capacity, complementing other sources like grants, ODA, and domestic credits.

To check for the model fit of the study, the value of R-squared (0.814340) indicates that the explanatory variables (DCPSET, GRANTS, EXR, FDI, &ODA) in the model of this study explains about 81.43% of the variation in the dependent variable leaving about 18.57% unexplained which can be attributed to the error terms.This suggests that the model demonstrated a good fit. To further confirm goodness of fit, the Adjusted R-Squared (0.798576) was estimated, indicating about 79.85% of changes in the growth of the economies were accounted for by the explanatory variables in the study.

4.2.3 Discussion of Findings

Although prior studies suggest a positive impact of credit to private sector investment on economic growth. while this is confirmed in this study but we found that the effects of DCPSET in these countries remain negligible. This inadequate impact may stem from factors such as restricted access to credit, insufficient investment capital, and low levels of financial inclusion. These results are consistent with Gozgor (2018) and Menzie et al. (2005), who found that reduced political risks such as lower corruption, poverty, unemployment, and balance of payment volatility combined with financial openness and a robust banking system, can enhance domestic credit to private sector investment. The findings therefore highlight the need for targeted policy interventions to strengthen credit availability and foster private sector-driven growth in West Africa.

To test this hypothesis, regression estimates from the Panel fully modified least squares (FMOLS) in Table 5 were employed. The coefficient estimates for DCPSET = 16.59962 with a p-value of 0.1331 (> 0.05) indicates that the DCPSET do not immensely contribute to the economic growth of the selected countries.

Decision: Since the p-value (0.1331) of the estimated coefficient for DCPSET exceeds the 0.05 significance level, the study lacks sufficient evidence to accept the alternative hypothesis. Consequently, the null hypothesis is retained.

The study also demonstrated adequate evidence to reject the null hypothesis in favour of the alternative hypothesis and conclude as matter of policy directions that grants do effectively and significantly promote economic growth among selected countries from West Africa. This finding is in line with the findings of Mai and Yoon, 2019; Kim and Lekhe, 2019) that documented positive and significant effects of grants on economic growth but loans exert negative impact on economic outcome of the selected countries.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study examines the impact of development financing on the economic growth of four selected African countries including Nigeria, Ghana, The Gambia and Senegal. Arising from the fully modified ordinary least square (FMOLS)results, the, study concludes that development financing including domestic to private sector investments, grants, FDI, and official development assistance impacted differently on the economy of the selected countries. However, relying on the architectural context of the panel results, grants, foreign direct investment, and official development assistance was found to promote economic growth while domestic credit has not realized the economic growth expectation of selected countries from the West African.

5.2 Recommendations

The study recommends that countries should harness the potential effect of foreign direct investment, reposition their institutional approach to grants and official development assistance to consolidate on their contributions to their economic growth.

Policy makers in the case of Nigeria should prioritize the attraction and efficient management of grants to support infrastructure and other development goals; promote FDI attraction to improve ease of doing business; re-evaluate the structure and deployment of ODA which currently has a declining impact and support private sector credit for positive and significant effect.

However, inefficient performance of credit to private sector investments should be a thing of concerns to the region especially Gambia, Ghana, and Senegal given the economic importance of private sector. These countries should prioritize development financing spending by focusing on STEM education promotion with positive multiplier effects on their economy. Given the pervasiveness and its importance to economic growth drive, it is suggested that further study should focus on the problem militating against the low performance of credit to private sector to economic outcome in the region by incorporating more countries beyond the four countries this study used, which of course a limitation to this study.

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