Financial Deepening, Private Domestic Savings and Per Capita Gdp Growth in Nigeria

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Abstract
A general way of evaluating the economic welfare or living standards of country is through its per capita GDP, This study investigates empirically the impact of financial deepening on per capita GDP growth, the interaction effect of financial deepening and private domestic savings on Nigeria's GDP per capita growth and how per capita GDP respond to shocks in financial deepening in Nigeria. Financial deepening is represented by, the ratio of private sector credit to gross domestic product (PSC/GDP). This study used quarterly data from 1986 to 2014 and was generated from both the CBN (2015) statistical bulletin and World Bank (2015) database. Concerning the Impact of Financial Deepening on GDP per capita and the Interaction effect of private domestic Savings and Financial deepening on GDP per capita, ARDL model was implore,. This thesis therefore, makes a modest contribution to the literature having identified that financial deepening can contribute to GDP per capita growth, if there is an improvement in domestic resources mobilization, and efficiency in capital allocation in the country. Simply put, these results appear to reveal that various financial development policies have not contributed enough to Nigeria's per capita growth. However, if government and financial institutions can encourage mobilization of domestic savings; develop credit and equity markets; minimise financial risk; and ensure efficiency of capital allocation, Nigerians can benefit from the deepening of the financial sector and domestic savings in the long-run development of the country.

1. INTRODUCTION

One common problem affecting the growth of developing economies is the issue of backward financial system and wrong financial policies (Nnanna, 2005). Nigeria in the 80s witnessed deep financial liberalization coupled with interest rate deregulation and expansion of the banking system and the likes, with the intention to deepen the financial sector. The Nigerian Financial sector and the banking subsector have witnessed different stages of restructuring. The first stage is described as the un-guided liaise-faire phase (1930-1959), during this period, numerous unsupervised and poorly capitalized indigenous banks failed in their early stages. The second stage was the control regime (1960-1985), during this period the Central Bank of Nigeria ensured that only capable and credible organisations were granted license to operate banking services based on the fixed capital based standard. The next stage post-SAP (Structural Adjustment Program), the over-stretching of free entry and political authority held the responsibility of issuing banking licenses based patronage. The fourth stage is the sector reform of the year 2004 which placed emphasis on recapitalization (or consolidation). The main aim of this reform was to deepen and enhance financial sector stability, competitiveness and the minimum capital base of banks was raised to N25 billion. This led to the merging of various banks. This was followed by the sector reforms of the year 2009 which was launched to sanitize the banking sector and streamline the banking industry along the lines of good Governance and international best practise. The aim of this reform was to establish financial stability, enable a healthy financial sector evolution and to ensure that the financial sector contribute to the real economy.

Figure 1.1 Financial Deepening Indicators in Nigeria
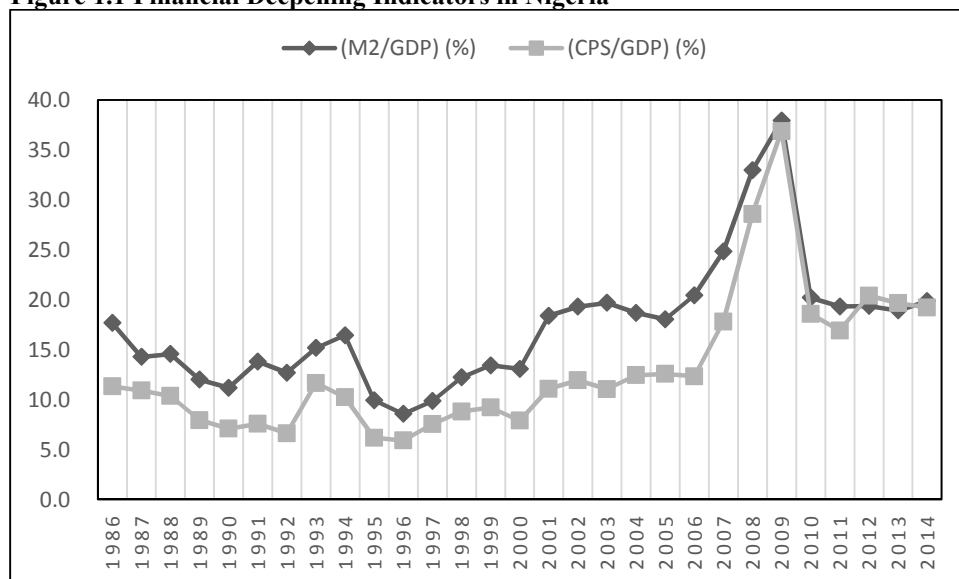
Source: Plotted by the researchers from the CBN statistical bulletin (2014).

Consequently, before 1986, the system was under the "financial repression" with undesirable real interest rate, high tax burden on financial earnings and high liquidity, possible financial misallocations and reserve requirement ratios. After 1986, financial markets started to be active part of the economy. The easing of controls on the markets in the aftermath of the 1986 SAP was meant to mark a turn in the economy of Nigeria and since a part of financial system reform is the banking sector reform, the reforms are motivated by the need to deepen the financial sector and make it competitive and consistent in the global world (Nnanna 2005). The chart in fig 1.1 shows clearly two indicators for financial deepening in Nigeria and going by the financial reforms briefly discussed above, though the depth of the financial sector has been fluctuating the bank recapitalization reforms has been of great influence and has even proved to be of greater influence. Where both financial deepening indicators show a sharp upward trend from 2007 to 2009. However, despite the level of financial deepening, available data shows the savings culture in Nigeria is relatively poor when compared with the savings culture of other to developing economies. This could be seen on table 1.1 below

Table 1.1 Domestic Savings (%of GDP) of selected African Countries
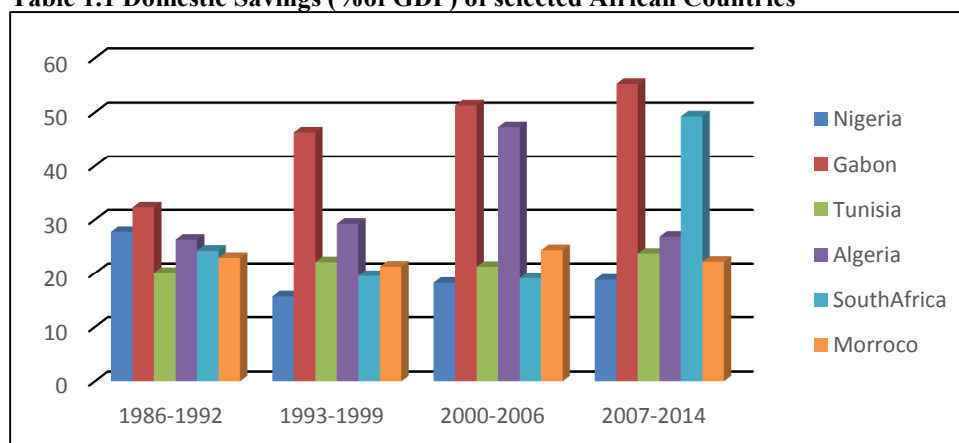
Source: Plotted by Researchers from World Bank Development Indicators (2014)

To achieve successful and sustained economic development, high levels of domestic investment that is financed by domestic savings from the public, business and household sectors is required (Collier & Gunning 1999). High level of financial depth should have the ability to effectively mobilize savings for investment purposes. Table 1.1, gives a clear picture of the domestic savings to GDP ratio of some African countries from 1986 to 2014 and it shows that Nigeria's average savings rate is relatively low compared to that of other countries except between 1990 to 1995 she toppled domestic savings of Tunisia, Tunisia, Algeria, South Africa and Morroco. Nonetheless, growth per capita comparatively low with her counterparts in the table

Figure 1.2 Per Capita GDP of selected African Countries in 2011

Per capita GDP of selected African countries in 2011
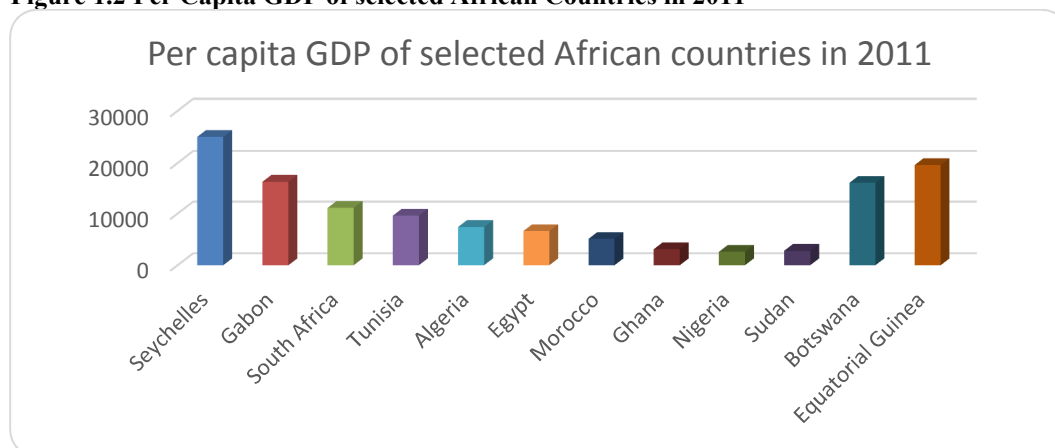
Source: Researchers' Computation from the WDI (2014)

Figure 1.2 above shows that Nigeria is still by far less than her some African countries in terms of improving the standard of living of her citizens. Certainly, financial deepening should robustly attract the reservoir of savings and allocate them to households, businesses and government for investments projects and other purposes with a view of returns which forms the basis for economic development, but Nigeria's economic base, has been overly degraded, low undermine private domestic savings and poor infrastructure base have combined with corruption to eat deep into the system. This raises many unanswered questions like the concern of how effective the financial sector have been in the mobilization of private domestic savings and how to channel these savings to growth enhancement and improvement of welfare. Thus it is not clear whether the level of financial deepening and quest for increase in the ability of individuals and households to access basic services in Nigeria will lead to welfare improvement thus having a direct impact on private domestic savings and standard of living of the people. It is in view of this, that the researchers' curiosity is driven to investigate the long run relationship between financial deepening, private domestic savings and per capita GDP growth in Nigeria by estimating the interaction effect of financial deepening and private domestic savings on Nigeria's GDP per capita growth

2. LITERATURE REVIEW

Uremadu (2007) examined the core determinants of financial savings in Nigeria and concluded that GDP growth per capita income (PCY), broad money supply (M2), and debt service ratio positively influence savings; inflation and interest rate in real terms negatively affect savings. The author therefore recommended that unemployment rate should be reduced to boost income per capita and increase economic growth via savings. He also posited that efforts should be made to even out inflation at reasonable levels in other to amend its negative impact on financial deepening in Nigeria.

Obafemi, Obusota & Amoke (2016) carried out a study to examine the relationship between financial deepening and investment in Nigeria by employing the Gregor-Hansen Endogenous structural break analytical framework and found that financial deepening significantly influence local investment and that there is unidirectional causality from financial deepening to investment within the economy.

Nzotta & Okereke (2009) investigated the relationship between, financial deepening and economic development in Nigeria using nine indicators financial deepening with 2SLS econometric framework and found that the financial market in Nigeria has no sustainable intermediation that can boost the growth of the economy, hence no effective allocation of credits and there low level of monetization in the economy.

Etuu (2012) investigated the core leading factors that reduce savings in Nigeria. Based on data collected, He discovered that savings output in Nigeria during the period was unsatisfactory but he also discovered that savings, which is achieved when saving habits is greatly considered by public private and government, is a necessary factor for economic development and growth.

The finding of Agu & Chukwu (2008) is quite different from other authors on Nigeria as their work employed the Multivariate econometric framework to test the causal link between economic growth and deepening in Nigeria using Toda and Yamamoto test approach. The results indicate the two variables of concern are related positively and it supports both supply-leading hypotheses and demand-following hypothesis. Similarly, Audu & Okumoko (2013) studied financial development and economic growth in Nigeria between 1970 and 2012. Using the FIML, the result revealed that all the variables used except ratio of money supply to GDP (M_2/GDP) and the ratio of credit issued to nonfinancial private firms to total credit internally has positive effect on the growth of the economy and the economy's financial growth also.

Onwumere (2012) in a similar study investigated effect financial deepening has on the growth of Nigeria's economy, employing the supply-Leading hypothesis with such variables like market capitalization, money stock diversification, broad money supply, economic volatility, and gross domestic product growth rates as proxy for economic growth and found that while broad supply and liquidity motivate the growth of the economy others variables employed in the study do not.

Okere & Ndugbu (2015) analysed the impact of macroeconomic variables on domestic savings mobilization in Nigeria for the period 1993 to 2012 employing the OLS econometric framework and found that there is a positive linkage between domestic savings and selected macroeconomic variables in the long run. But precisely, financial deepening seemed to have a greater impact on savings mobilization in Nigeria.

Shittu (2012) in his study investigated the influence financial intermediation has on Nigeria's economic growth by employed the error correction mechanism, the author found that intermediation significantly and positively influence the growth of the Nigerian economy. A similar study such as, Azege (2004) also discovered the same result and went further to establish that for Nigeria to achieve a fundamental overall economic growth, they have to encourage development of financial intermediary institutions

Werigbelegha & Igbodika (2015) examined the causal relationship between financial deepening and economic performance in Nigeria with the use of Granger causality analysis and found that there is a causal linkage between economic performance and financial deepening in Nigeria. They also established that about 63% of the fluctuations in performance of Nigerian economy occur due to changes in financial deepening variables.

Simon-Oke & Jolaosho (2013) investigated the impact of real interest rate on savings mobilization in Nigeria. They employed the Vector- Auto Regression (VAR) and the result showed that real interest rate influences savings mobilization negatively in Nigeria. They suggested to the government, that there is need for the existing gap between the lending and savings rates Nigeria to be bridged and to stimulate savings for investment and growth by increasing per capita income level of the people.

Olabanji, Donald & Ese (2015) examined the relationship between financial sector development and domestic savings in Nigeria using time series data for the period 1980 to 2012. The bound testing method also known as the autoregressive distributed lag (ARDL) model was used for the analysis and they found that financial deepening positively influence savings in Nigeria. The study recommended that consolidation of past financial sector reforms should be revived so as to improve mobilization of domestic savings in Nigeria

3. METHODOLOGY

Economic theory emphasizes on the need to boost economic growth through increasing the rate of savings and physical capital formation. There are some conventional theories of growth that posit that an increase in saving ratios generates capital accumulation, which in turn leads to higher growth in the short-run during the transition between steady states (Domar, 1946 in Shittu, 2012) . In a similar vein, endogenous growth models developed by Romer (1986) and Lucas (1988), also stress the importance of mobilizing savings and capital for economic growth. According to the endogenous theorists, what determines permanent increase in growth is nothing but high savings and accumulation of capital.

On the theoretical link between financial development and savings, McKinnon (1973) and Shaw (1973) provided two influential papers which demonstrate how mobilization of savings and well-developed financial sector can lead to economic growth. According to McKinnon (1973), due to the rudimentary and fragmented nature of the capital markets in most developing countries investment depend on savings in these countries. And because of this underdeveloped financial systems, financial markets will not be able to mobilize enough savings to support investment. As a result, the requirement that investors first accumulate the money balances needed to finance or acquire physical capital for investment projects calls for creating an enabling environment that will improve savings in developing countries. On the other hand, Shaw (1973) highlights the importance of debt-intermediation in order to accumulate capital for economic growth in developing countries. He argues that bank deposit and lending rates cannot properly reflect capital surplus or deficiency, as such, attention should be focused on enhancing the lending potential of financial intermediaries through high deposit rates so as to encourage the inflow of deposits into banks. Hence, from the foregoing arguments, a well-developed financial sector is expected to improve savings through improved efficiency in intermediation, which may also lead to economic growth.

Furthermore, some recent studies have supported the arguments presented by both McKinnon (1973) and Shaw (1973). According to these studies, a deeper financial system should be able to provide alternative savings instruments that more adequately match individual preferences, risk-averse and income profile. Agu and Chukwu (2009), are of the opinion that a well-developed and functional financial system performs crucial roles in enhancing the efficiency of financial intermediation and the major role of modern financial system is mobilization of savings from the surplus sector of the economy and promotion of investment by granting massive credits to the deficit sectors of the economy. This view is in consonance with Ikhide (1993), who observes that during the course of development, savers switch some of their savings from unproductive real

assets to financial assets and hence expand the supply of credit in the economy.

Finally, given that developing countries need to promote financial deepening, lower the rate of inflation and improve the nominal rate of return on money in order to expand the supply of credit in the economy, McKinnon (1973) employs the simple Harrod-Domar economic growth model to illustrate the virtuous cycle of financial reforms, growth and savings. He believes that the growth rate of income will have an effect on savings rate, so the rate of savings is an increasing function of the growth rate of income:

$$s = s(y, \rho) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.1$$

Where s is the rate of savings, y is the growth rate of income and ρ is the financial deepening variables other than economic growth rate which have an influence on the rate of savings. Thus:

$$y = \sigma. \, s(y, \rho) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.2$$

Where equation (3.2) indicates the interactions among economic growth, savings and financial deepening and σ is the output-capital ratio derived from Harrod-Domar models.

Since the objective of this study is to determine the relationship among per capita GDP growth, private domestic savings and financial deepening, the McKinnon (1973) and Shaw (1973) financial development framework is therefore the main underlying theory behind this study.

3.1 Model Specification

Based on the aforementioned theoretical postulates and following empirical literature on finance and economic growth (Agu & Chukwu, 2009; Odhiambo, 2008), the following model is specified to determine the relationship among financial deepening, private domestic savings and economic growth in Nigeria. The functional form is as follows:

$$RGDP_t = f(FD_t, PDS_t, RIR_t, INV_t) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.3$$

Where $RGDP_t$ = real GDP per capita growth,

FD_t = Financial deepening (measured as domestic credit to private sector scaled by GDP) PDS_t = Private domestic savings

RIR_t = Real interest rate on deposit

INV_t = Investment

t = Time trend. Taking the logarithm of both sides of equation (3.3) gives

$$InRGDP_t = \beta_0 + \beta_1 InFD_t + \beta_2 InPDS_t + \beta_3 RIR_t + \beta_4 InINV_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots 3.4$$

The β's are the coefficients to be estimated and their a-prior expected signs are that all coefficients are positively related to RGDP growth rate except for β₃, ε_t is the random term at time t, while ln is the logarithm expression. This study logs the variables in order to arrive at a growth rate with constant percentage each year. This study employs real per capita GDP, as it measures the growth rate of aggregate economic activity by Nigerians in the selected period of the study. In addition, if the financial sector is performing well and effective, this will allow household to save and as a result improve their wellbeing. This study uses the ratio of credits to private sector to GDP as a measure of financial deepening. This is because, it has been observed as the most effective and reliable indicator of financial depth and it gives an inkling on the dynamics of lending-investment activity. Private domestic savings (PDS) is used because conventional growth models such as Solow (1956) explains that it contributes to capital accumulation, which results to economic growth. Interest rate on deposits (IR) was used because it influences financial deepening and savings (Hemachandra1999). Finally, this study includes gross fixed capita formation to GDP ratio (INV), because it is commonly used to capture the effect of savings and investment in the economy and it is an important complementary variable in finance and growth relationship (Hamdi, Hakimi, & Sbia, 2013).

This study now turn to the impact of the interaction between financial deepening and private domestic savings on GDP per capita. This will help the researcher to examine whether the relationship between financial deepening and GDP per capita presented in model1 has changed. This objective is supported by the argument presented by McKinnon (1973), that there is an interaction among economic growth, savings and financial deepening and that this interaction improves economic growth. The following econometric equation is estimated:

$$InGDPPC_t = \beta_0 + \beta_1 (InFD * InPDS)_t + \beta_2 RIR_t + \beta_3 InINV_t + \varepsilon_t \dots\dots\dots\dots\dots\dots 3.8$$

Where the variable and parameters are as defined above. However, to conserve space, this study will not present the ARDL specification of this model.

4. RESULT PRESENTATION

4.1 Unit Root Analysis of the Time Series

Time series data are characterized with dissimilar patterns overtime. Shocks to a stationary time series are

momentary due to constant mean and variance over time. On the other hand, non-stationary time series has time dependent mean and variance, giving rise to permanent fluctuation after shock. Therefore, in order to ensure robustness of the results, this study applies the null non-stationary tests and the null stationary tests to establish the order of integration of the series. The unit root test for stationarity is applied at 1%, 5% and 10% critical values and the results are presented in Table 4.3.

Table 4.1: Unit Root Test Results Summary

Variables	ADF (P-value)	PP (P-value)	KPSS
lnRGDP	0.018424 (0.9576)	0.514184(0.9866)	1.067214
ΔlnRGDP	-4.408753***(0.0005)	-5.300094***(0.0000)	0.425244**
lnFD	-3.071416**(0.0317)	-2.533827(0.1102)	0.355346
ΔlnFD	-3.501181***(0.0097)	-4.926919***(0.0001)	0.100681***
lnPDS	-2.698487*(0.0775)	-2.697447*(0.0775)	0.146983
ΔlnPDS	-6.299506***(0.0000)	-6.640228***(0.0000)	0.094790***
lnINV	-1.100508(0.7136)	-1.933674(0.3159)	0.265783
ΔlnINV	-3.268181***(0.0189)	-5.240723***(0.0000)	0.223180***
RIR	-4.204437***(0.0010)	-3.308764***(0.0167)	0.167800
ΔRIR	-3.979482***(0.0022)	-10.26207***(0.0000)	0.094774***

*** (significance at 1%), ** (significance at 5%). The optimal lag length for ADF is determined by Akalke's information criterion (AIC), while the bandwidth for the PP and KPSS tests were determined using the Bartlett-kernel procedure. Δ Denotes first difference of the time series variables.
Source: Eviews estimates.

From Table 4.3, the corresponding t-statistics indicate that some of the variables are non-stationary. However, the variables are all stationary after first differences, as the unit root coefficients are shown to be significant at the 1 per cent significant level. This means that the three unit roots tests consistently confirm that real GDP per capita (RGDP) and Investment (INV) are non-stationary at level and stationary after first difference justifying the use of ARDL.

Table 4.2: the ARDL bound test for the model

Test Statistic	Value	k
F-statistic	4.584755	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

From the result on table 4.3 above, it can be viewed that the bound test F-statistics of 4.584755 is greater than the upper bound critical value 3.79 at 5% level of significance. This indicates that there is a long run relationship among the variables. And this results qualified us to move on with the estimation of the ARDL model one.

Table 4.3: Estimated Short-run Coefficients Based on ARDL (3, 0, 0, 1)

Short-run: dependent variable (ΔlnRGDP)			
Regressor	Coefficient	Standard Error	t-Statistics (p-Value)
ΔlnFD*lnPDS	0.001878**	0.000930	2.019608 (0.0460)
ΔlnINV	0.010107	0.009792	1.032205 (0.3044)
ΔRIR	0.001306**	0.000705	1.851499 (0.0669)
ΔTrend	0.000191**	0.000098	1.958272 (0.0529)
ΔECT$_{t-1}$	-0.042940**	0.023436	-1.832220 (0.0698)
Panel B: Diagnostics Test Statistics			
Test	F-statistics	p-value	
Serial correlation	0.816923	0.4447	
Functional form	0.774320	0.3809	
Heteroscedasticity	0.686396	0.5056	

Notes: ** refers to significant at 5% level
Source: Eviews estimates.

In the short run, the interaction term of domestic savings and financial deepening is positive and it significantly influences per capita growth. Interest rate in real terms also has positively influences per capita growth. However, domestic investment insignificant but has a positive influence. Specifically, a 1 per cent increase in the interaction of financial deepening and private domestic savings, on average results to 0.0018% increase in per capita growth. While a unit increase in interest rate increases per capital growth by 0.1306% holding other factors constant. This results highlight that the more the financial system interact with domestic savers and interest rate is liberalized, the better they work to spur growth in the country. Concerning the coefficient of domestic investment that is insignificant, it seems that financial development and domestic savings work better to smooth per capita consumption than investment in the short-run.

Furthermore, the validity of the estimated model is confirmed by employing relevant diagnostics tests such as Breusch-Godfrey serial correlation LM test, test for equal variance and test for model specification. The results of the tests suggest that the model passes the assumptions of linear regression model. The LM test rejects the null hypothesis that there is serial correlation in the model. This means that the ARDL is found to be robust against residual autocorrelation. The ARCH test confirms that there is constant variance in the model, while the RESET test confirms that the model is well specified.

Moreover, the long-run elasticities of the variables in model II are presented on Table 4.8 below.

Table 4.4: Estimated long-run Coefficients Based on ARDL (3, 0, 0, 1)

Long-run: dependent variable (lnRGDP)			
Regressor	Coefficient	Standard Error	t-Statistics (p-Value)
lnFD*lnPDS	0.043735**	0.021722	2.013437 (0.0467)
lnINV	0.235388*	0.136483	1.724661(0.0876)
RIR	-0.004708	0.005047	-0.932813(0.3531)
Constant	4.223944	3.611995	1.169421(0.2449)
Trend	0.004454*	0.002562	1.738649 (0.0851)

$R^2 = 0.997349$, Adjusted $R^2 = 0.997145$
S.E. of regression = 0.014584
Durbin-Watson stat = 1.944624
F-statistic = 4891.375
Prob(F-statistic) = 0.000000

Notes: ** and * refer to significant at 5% and 10% level, respectively.
Source: Eviews estimates.

From Table 4.8, the interaction between financial deepening and private domestic savings, and investment exert a positive impact on per capita GDP. However, real interest rate exerts a low negative impact on per capita GDP. Particularly, between the positive impact variables, the value of the interaction between financial deepening and private domestic savings of 0.04, implies that a 1% increase in in the interaction between financial deepening and private domestic savings leads to 0.04 per cent increase in per capita GDP, all things being equal. The result shows that in the long-run financial deepening not only impact GDP per capita directly but impacts it indirectly through private domestic savings elasticity. Furthermore, this result is consistent with McKinnon (1973) argument that the interaction of financial development and domestic savings contributes to economic growth. The investment variable shows impact of 0.23 on GDP per capita, which implies that an increase in investment through private savings and credit to private sector could lead to increase in GDP per capita of 0.23% in the long-run, all things being equal. Concerning the negative value of interest rate of -0.004, the result suggests that a 1 unit increase in real interest rate could decrease GDP per capita by 0.4 percent in the long-run, all things being equal.

5. CONCLUSION

The financial sector plays an important role in improving the efficiency of capital allocation, encouraging domestic savings, and hence boosting of economic growth of any country. Skilled and talented private sector in Nigeria can help the country to achieve its dream of becoming an industrialized nation before the year 2020. Identifying the roles of financial deepening (credit to private sector) and private domestic savings can help policy makers to formulate policies that will provide a spring board for Nigeria's economic growth per capita. For this reason, this study examines the roles of financial deepening (credit to private sector) and private domestic savings for Nigerian economic growth per capita, using quarterly data for the period 1986–2014. Most empirical studies in literature measure the level of financial deepening, by using broad money supply (M2 relative to GDP). However, this study employs credit to private sector as a ratio of GDP. This is because, it captures how much resources the financial sector can mobilise resources and can adequately summarise all potential sources of financial depth in the private sector, which is where most financial institutions do their businesses. By employing ARDL bounds test approach, this study estimates the impact of financial deepening and private domestic savings on per capita GDP growth of Nigeria.

From the estimation, the conclusions to be drawn are: first, financial deepening (credit to private sector) is negatively related to GDP per capita growth in the short-run. Second, the interaction of financial deepening with private domestic savings has a positive and significant impact on GDP per capita growth in the long-run development of the country. In addition, the interaction of financial is deepening with private domestic savings improved domestic investment, as a result per capita growth. Simply put, these results appear to reveal that various financial development policies have not contributed enough to Nigeria's per capita growth. However, if government and financial institutions can encourage mobilization of domestic savings; develop credit and equity markets; minimise financial risk; she can reap the benefits of the financial market deepening and savings in the long-run development of the country.

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