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Oil Resource Earnings and the Nigerian Economy: Does Financial Development Matter?

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Abstract
The study investigates the role of the financial sector in the mobilization of oil resources for the development of the Nigerian economy. While the period covers between 1981 and 2019, the research utilizes the principal component analysis (PCA) approach to construct a composite proxy for financial development from five variable indicators. Also, the study deploys the fully modified ordinary least squares (FMOLS) to estimate the impact of oil revenue and financial development on Nigeria's economic growth. The study found that oil revenue has a positive and significant effect on economic growth. In addition, the impact of financial development on economic growth is negative and significant. But, the interacted effect of oil revenue and financial development is positive and significant. Hence, the study concludes that, while the resource curse theory does not apply to Nigeria during the period, the part of oil proceeds that is channeled to financial development positively impacts the economy. Thus, the study recommends more robust development-related measures to improve financial development in the country and an improved articulation approach for the investment of the earnings from the Nigerian oil sector.
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1 Introduction

The financial sector plays an essential developmental role in mobilising the resources of developing countries to achieve development. The finance-growth literature posits that an effective financial sector will provide the intermediating part of savings mobilisation and investment, ultimately ensuring capital accumulation and enhancing the economy's productivity (Bakwena & Bodman, 2011). Also, in resource-abundant developing economies, the financial sector is expected to assist in mobilising the wealth generated from the country's natural resources for investment in the economy to contribute to the long term development goals of these countries. Therefore, capital accumulation is also vital to achieving positive economic progress even in a resource endowed economy. However, the experience in several resource-endowed developing economies over the years reveals that the available natural resources can become a disincentive for the development process (Moradbeigib & Law, 2017). As a follow-up, several authors have advanced various theories to explain the resource curse experience; how the available natural resources can impede the growth and development of these developing countries. For instance, some authors have argued that when there is a disconnect between the public sector allocation of resources and the development of the country's financial sector, it becomes difficult for a proper financial intermediation role to take place (Badeeb & Lean, 2017). Hence, it distorts the adequate utilisation of the wealth earned from exploiting the country's natural resources for appropriate investment and developmental purposes. The situation reinforces a poorer status for the financial sector and adversely affects the development of the economy. Hence, the financial markets in these developing economies perpetuate the lack of financial depth and will not play the proper catalytic role of facilitating the savings and investment of the wealth earned from the exploitation of natural resources (Beck, 2011).

The Nigerian situation falls into the unique category as the country exports unrefined crude oil and imports refined oil products from advanced nations. Nigeria earned a huge reputation for producing and exporting palm oil, cocoa, and groundnut before the '50s. With the production of oil in the early '50s and the taste of the revenue that accrued, the country soon adopted by methodically sidelining the other producing segments of the economy (Udoka & Nkamare, 2014). With the full focus on the exploration of oil resources, Nigeria turned to a mono-product economy. The returns from crude oil production have made the Nigerian government relegate other sources of revenue, including taxation (Alenoghena, 2020). Between 1981 and 2019, the earnings from crude oil export accounts for over 70% of the country's total government revenue (CBN, 2018). All efforts to develop the manufacturing sector have failed as the existing functional manufacturing concerns mainly depend on importing raw material inputs to function.

Furthermore, the Nigerian government has made a conscious effort to develop the internal financial markets to promote the growth of savings and encourage investment to enhance real sector productivity in the economy

(Bua et al., 2014). As a result, Nigeria has witnessed five distinct phases of financial reforms (Umejiaku, 2017). The key highlights of the fundamental reforms were to improve financial intermediation and encourage savings mobilisation, strengthen the system against financial and systemic crisis and promote competition and technological innovations in the banking system. With the banking consolidation reforms by the country's central bank (CBN), the banks were flush with the massive volume of liquidity at the end of 2009. However, some authors have argued that the banking system did not appropriately apply the available liquidity to enhance the development of the real sector of the economy (Adekunle et al., 2013; Uremadu, 2016). The authors maintained that the over-regulation of the country's financial system had brought financial disintermediation to the producing sectors of the economy. Furthermore, Adekunle et al. (2013) opined that the financial industry may not only have been in competition with the producing sectors of the economy for available resources but could have directly contributed to retarding their growth.

This study seeks to examine the complementary role of the financial sector in transmitting the wealth from oil earnings to develop the country's economy. Thus, the justification for this study stems from the fact that the existing studies on the subject matter have not explicitly examined the complementary role of the financial sector in transmitting the country's oil wealth to develop the nation's economy. The remaining part of the paper is structured as follows. Section two reviews the extant theoretical and empirical literature on the subject matter of the study. The third section second covers the presentation of the related methodology and theoretical framework of the study. While the fourth section focuses on the empirical results and analysis of the study, section five is concerned with the presentation of the study conclusions and recommendations.

2 Literature Review

The review of related literature on the subject matter of this study is discussed in three phases—first, the relationship between oil revenue and economic growth; second, the relationship between financial development and economic growth; third, the relationship between financial development, oil revenue and economic growth.

In the early studies on the relationship between finance and growth, Schumpeter argued that an effective financial system positively supports the country's economic growth and welfare (Adusei, 2012). The proposal of Schumpeter actively confirms the existence of the "supply-leading hypothesis", citing the unidirectional causality which flows from financial development to economic growth. The Schumpeterian proposal has found support in several other studies, including Gurley & Shaw (1955), McKinnon (1973), Bencivenga & Smith (1991), Abu-Bader & Abu-Qarn (2008), Ogwumike & Salisu (2010), Alenoghena (2014), Ugbaje & Ugbaje (2014), Mahawiya (2014), Ali et al. (2015) and Adayleh (2018). On the opposing side, Robinson (1952) contends that financial development is an outcome arising from the advancement and growth of the economy hence, as 'enterprise leads finance follows. Robinson's treatise, referred to as the 'growth leading finance hypothesis' or the 'demand following hypothesis' because it posits that growth stimulates and causes finance. The proposal of Robinson also found support in several empirical studies afterwards (Odhiambo, 2007; Saibu et al., 2009; Muhammad & Umer, 2010; Ndlovu, 2013; Adeyeye et al., 2015; Pradhan et al., 2016; AbuAl-Foul et al., 2016; Gabriel et al., 2016; Ono, 2017; Pinshi, 2020). The third set of studies argued in favour of the complementary or feedback hypothesis. The results of the feedback hypothesis indicate a mix of two-way causation (bidirectional) between financial development and economic growth (Acaravci et al., 2009; Oskooe, 2010; Hassan et al., 2011; Adusei, 2013; Ishioro, 2013; Onuonga, 2014; Kolapo et al., 2018).

Several studies have examined the natural resource curse theory in discussing the relationship between oil wealth and economic growth. The resource curse theory, often referred to as the poverty paradox, is an occurrence where countries with rich natural resources (such as oil or other mineral resources) experience less economic development over time with the continuous exploitation of the available natural resources. Several studies empirically support the application of the resource curse theory based on the negative relationship between natural resource earnings and economic growth (Sala-i-Martin & Subramanian, 2003; Smith, 2004; Frankel, 2010; Azarhoushang et al., 2014; Elhannani et al., 2016; Badeeb et al., 2017; Damette & Seghir, 2018; Tiba & Frikha, 2019). On the other hand, studies are contending that natural resources abundance positively affects the economic prosperity of nations (Quixina & Almeida, 2014; Olayungbo, 2015; Alkhateeb et al., 2017; Aminu & Raifu, 2019; Nguyen, 2019).

Many studies opine that the resource curse theory is perpetrated through the dominant public sector that downplays oil wealth investment in the financial system on the relationship between the three variables. As a result, the weakened financial system dampens the overall quality and volume of investment in the economy which in turn adversely affects the level of economic activities (Nili & Rastad, 2007; Ploeg & Poelhekke, 2009; Kurronen, 2015; Barajas et al., 2016; Ramez & Hooi, 2017). However, the studies of Samargandi et al. (2014) and Ogbonna et al. (2020) have mixed results in the outcome of their empirical studies. They found that while financial development positively affected the non-oil sectors, its impact on the growth of the oil sector and total GDP growth is either negative or insignificant. In other similar studies, Moradbeigib & Law (2017) and Badeeb & Lean 2017 observed that while oil resources dampen the economy, financial development is positive and mitigates the

negative effect of oil resources. Also, the study by Oderinde & Olusoji (2020) examined the impact of oil dependence on the various producing sectors of the Nigerian economy through the financial industry. They conclude that oil resource dependency promotes the finance-growth nexus in Nigeria with varied impacts on the leading producing sectors of the economy.

The literature gap for this study stems from the fact that there are no existing studies on the Nigerian economy that examine the financial intermediation role of banks in converting the wealth earned from the exploitation of crude oil to improve the country's economy. While several studies have investigated the relationship between financial development and economic growth (Alenoghena, 2014; Gabriel et al., 2016: Kolapo et al., 2018) in Nigeria, many other empirical studies have been conducted on the relationship between oil earnings and the economy (Olayungbo, 2015; Alkhateeb et al., 2017; Aminu & Raifu, 2019; Nguyen, 2019). However, the existing empirical literature on the relation nship between the three variables is scanty on the Nigerian economy. The study by Oderinde & Olusoji (2020) focuses on the effect of oil dependence and financial development on the producing sectors of the economy. However, it failed to look at the specific impact of oil dependence and financial development on the general economy. Also, the study by Ogbonna et al. (2020) concerns the effect of the financial sector on oil and non-oil revenue. It fails to address the extent to which the financial system has assisted the revenue earned from oil to promote the development of the Nigerian economy. This is the lacuna that is addressed in this study.

3 Theoretical framework and methodology

3.1 Theoretical framework

This section of the study discussed two theories adopted as the theoretical framework for the analysis; the resource curse theory and the Dutch disease theory.

3.1.1 Resource Curse Theory

One important and influential area in recent development dialogue is the resource curse. The resource-curse theory claims that countries abundant in natural resources will have adverse economic-development outcomes because of low economic growth and development, corruption, and resource-led conflicts. In addition, the natural-resource curse theory argues in favour of a converse relationship between high earnings from resource abundant countries and the trend of economic growth. Sachs and Warner (1995; 2001) were among the early authors to investigate the association between natural resources earnings and economic growth. Since then, a vast amount of literature has examined the reality of and possible routes through which the lavishness of natural resources can adversely affect economic growth.

3.1.2 Dutch Disease Theory

The Dutch disease theory is one of the solid theoretical explanations of the resource curse theory. The phenomenon refers to a reduction in a country's ability to export from non-resource sectors like manufacturing due to an appreciation in the exchange rate due to substantial earnings from exploiting natural resources like crude oil. Hence, the Dutch disease paradox refers to a situation where the non-resource sector weakens. The country experiences inflation due to the resource flux to the thriving natural-resource sector (Badeeb & Lean, 2017). The influx of investments into the resource industry leads to wage increases which in turn trigger an increase in the prices of non-tradable and the appreciation of real exchange rate. Thus, there is an increase in the real exchange rate due to the inflow of resource revenues and foreign direct investment (FDI) into the resource-producing sector at the expense of the non-resource sectors like manufacturing. The strong appreciation of the country's currency reduces the competitiveness in non-resource sectors and leads to deindustrialisation through the decline in output and employment.

3.2 Model specification

The model used for the empirical analysis of the effects of oil dependence (ODI) and financial sector development (FD) on economic growth follows Fosu & Magnus (2006) and Oderinde & Olusoji (2020). We adopt the aggregate production function model as they did with some modifications. The model is specified thus:

$$Y_t = A_t K_t^{\beta} L_t^{\alpha} \quad \text{-(1)}$$

Where Y_t represents the economy's aggregate output at time t and A_t, K_t, L_t are the total factor productivity (TFP) for capital stock and labour stock, respectively. For per capita stock, we divide through by L and have:

$$\frac{Y_t}{L} = \frac{A_t}{L} * \frac{K_t^{\beta}}{L} * \frac{L_t^{\alpha}}{L} \quad (2)$$

Equation (2) then becomes

$$y_t = \varphi_t * k_t \quad \text{-(3)}$$

Where y_t refers to output per capita in year t, φ_t is the TFP per capita in year t, and k is the capital stock per capita in t. Fosu & Magnus (2006) contends that the effect of oil revenue (OILREV) and financial development (FD) on output in the economy will operate through TFP. Furthermore, it is logical to assume that TFP is a function of OILREV, FD and other exogenous factors (control variables, C). Therefore,

$\varphi_t = f(OILREV, FD, C) = OILREV_t^{\alpha} * FD_t^{\beta} * C_t$ - - - - (4)

Combining equations (3) and (4) gives

$y_t = k_t^{\varphi} * OILREV_t^{\alpha} * FD_t^{\beta} * C_t$ - - - - - - - (5)

Where φ, α, β are the constant elasticity coefficients of output with respect to k, OILREV and FD. Equation (4) can be subjected to logarithmic transformation to minimise fluctuations in the data. Taking the logarithm of equation (5)

$ly_t = \varphi lk_t + \alpha lOILREV_t + \beta lFD_t + \Phi lOILREV * FD_t + lnC_t$ - - - (6)

Recall that y refers to output per capita (PCGDP). k is defined as gross fixed capital formation (GFCF), and C means the control variables in the model. The control variables in this model are government expenditure (GEXPDT) and trade openness (TOPEN). Finally, observe that Φ refers to the coefficient of the interaction effects between oil revenue and financial development. Hence, equation (6) can be expanded further.

$lPCGDP_t = \varphi lGFCF_t + \alpha lOILREV_t + \beta lFD_t + \Phi lOILREV * FD_t + \gamma lGEXPDT_t + \omega lTOPEN_t + \varepsilon_t$ - - (7)

The coefficients to be estimated are $\varphi, \alpha, \beta, \Phi, \gamma, \omega$ and $\mathcal{E}$ refers to the stochastic random error term.

Apriori Expectations:

$\frac{\partial \text{PCGDP}}{\partial \text{GFCF}} > 0$; Positive, $\frac{\partial \text{PCGDP}}{\partial \text{OILREV}} > 0$; Positive, $\frac{\partial \text{PCGDP}}{\partial \text{FD}} > 0$; Positive, $\frac{\partial \text{PCGDP}}{\partial \text{OILREV*FD}} > 0$; Positive, $\frac{\partial \text{PCGDP}}{\partial \text{GEXPDT}} > 0$; Positive, $\frac{\partial \text{PCGDP}}{\partial \text{TOPEN}} > 0$; Positive

3.3 Analytical framework

Phillips (1993) proposed an estimator that may utilise a semi-parametric correction to eliminate the problems related to long-run association of stochastic regressors to the cointegrating equation. Their proposal of a Fully Modified OLS (FMOLS) estimator is characteristically an unbiased approach that provides optimal estimates using the cointegrating regression technique. Also, it has the attribute of being a fully efficient mixture with normalised asymptotics that allows for standard Wald tests utilising the standard Chi-square statistical inference. Hence, the general framework simplifies the basis for the study of the asymptotic behaviour of the FMOLS in models that combine regressors with varying order of integration, such as regressors that are stationary at level [I(0)], and regressors that are stationary at first difference [I(1)] in one study.

The cointegrating regression approach utilises the preliminary estimates of the symmetric long-run covariance matrice of the residuals. Suppose $\hat{u}_{1t}$ is the set of residuals obtained after estimating Equation 6, then $\hat{u}_{2t}$ can be produced incidentally and declared as $\hat{u}_{2t} = \Delta\hat{\epsilon}_{2t}$ in the course of the regression analysis.

$$X_t = \hat{\Gamma}_{21}' D_{1t} + \hat{\Gamma}_{22}' D_{2t} + \hat{\epsilon}_{2t}$$

r can then be generated straight from the different regression procedures. Therefore, we can obtain

$$\Delta X_t = \hat{\Gamma}_{21}' \Delta D_{1t} + \hat{\Gamma}_{22}' \Delta D_{2t} + \hat{u}_{2t} \quad (8)$$

Suppose we declare $\hat{\Omega}$ and $\hat{\Lambda}$ to be the long-run of the covariance matrices estimated applying the error term residuals $\hat{u}_t = (\hat{u}_{1t}, \hat{u}_{2t}')'$, then we express the adjusted data as:

$$y_t^+ = y_t - \hat{\omega}_{12} \hat{\Omega}_{22}^{-1} \hat{u}_2 \quad (9)$$

Also, the estimated bias of the error correction term may be confirmed:

$$\hat{\Lambda}_{12}^+ = \hat{\Lambda}_{12} - \hat{\omega}_{12} \hat{\Omega}_{22}^{-1} \hat{\Lambda}_{22} \quad (10)$$

Therefore, the FMOLS estimator can be given as:

$$\hat{\theta} = \begin{bmatrix} \hat{\beta} \\ \hat{\gamma}_1 \end{bmatrix} = \left(\sum_{t=2}^{T} Z_t Z_t' \right)^{-1} \left(\sum_{t=2}^{T} Z_t y_t^+ - T \begin{bmatrix} \hat{\Lambda}_{12}^{+\prime} \\ 0 \end{bmatrix} \right) \quad (10)$$

where $Z_t = (X_t', D_t')'$ constitutes the key to FMOLS approximation and would involve estimating the long-

run form of the matrix of the covariance estimators to be given as $\hat{\Omega}$ and $\hat{\Lambda}$. As a preamble to declaring the alternatives that are available for approximating $\hat{\Omega}$ and $\hat{\Lambda}$, it may be crucial to define the scalar estimator

$$\hat{\omega}_{1.2} = \hat{\omega}_{11} - \hat{\omega}_{12}\hat{\Omega}_{22}^{-1}\hat{\omega}_{21} \quad (11)$$

Equation (11) may be defined as the long-run variance of u_{1t} estimated conditional on u_{2t}. In addition, we apply here the correction to the degree-of-freedom for $\hat{\omega}_{1.2}$. Hence, it has been validated that null hypothesis for the Wald statistic $R\theta = r$ becomes

$$W = (R\hat{\theta} - r)'(R\,V(\hat{\theta})R')^{-1}(R\hat{\theta} - r) \quad (12)$$

Equation (12) retains an asymptotic χ_g^2 (Chi-Square distribution) such that g is declared as the constraints that may be enacted by R. The constraint that is imposed on the existing constant term or other variables are not testable using the theory that motivates equation (12).

3.4 Estimation Procedure

The estimation procedure for this study adopts a four-step process. The first step is the estimation of the financial development proxy using the principal component analysis (PCA). The second step is the unit root test, which involves the determination of the order of integration using the augmented Dickey-Fuller approach (ADF). The third step is the for long-run equilibrium cointegration test using the Engle Granger single-equation cointegration approach. The fourth step is the regression analysis using the fully modified OLS method.

3.5. Sources of data

The data for this study is extracted from the World Development Indicators (WDI) for some variables and runs from 1981 to 2019. The selected variables from WDI include: Per capita income, broad money, credit to private sector and trade openness. The WDI source was quite suitable as it offered a wide range of information on the variables. However, data on oil revenue, government expenditure, commercial bank assets, stock market capitalisation and gross savings were obrained from the Central Bank of Nigeria Annual Statistical report for 2020.

4 Empirical results and analysis

4.1 Principal component analysis of financial development

The principal component analysis in this study is conducted to estimate a composite index that incorporates the features of the five selected financial development measures adopted in this study. The measures are defined as shown:

i) Broad Money Supply (MSS)
ii) Credit to Private Sector (CPS)
iii) Commercial Bank Assets (CBAS)
iv) Stock Market Capitalisation (MCAP)
v) Gross Domestic Savings (GSAV)

The level of correlations among these variables is shown in Table 4.1. The highest estimated correlation is between money supply and credit to private sector (0.9678), while the lowest correlation is between market capitalization and gross savings (0.6077). Also, while the correlation between market capitalization and commercial bank assets is 0.81, the correlation between broad money supply and commercial banks assets is 0.88. With these high positive correlations, it may not be proper to use the variables together in multiple regression equations, leading to multicollinearity.

Table 1 Ordinary Correlation of Financial Development Variables

	CBAS	CPS	GSAV	MCAP	MSS
CBAS	1.0000				
CPS	0.8569	1.0000			
GSAV	0.8377	0.7506	1.0000		
MCAP	0.8143	0.7102	0.6077	1.0000	
MSS	0.8776	0.9678	0.7263	0.7225	1.0000

Source: Author's Estimation

The average correlation among all the variables is estimated at 0.83.2, as shown in the principal component

one orthonormal loading estimation in Figure 4.9. The high correlation among the variables justifies the computation of a composite proxy for the variables with the method of principal component analysis

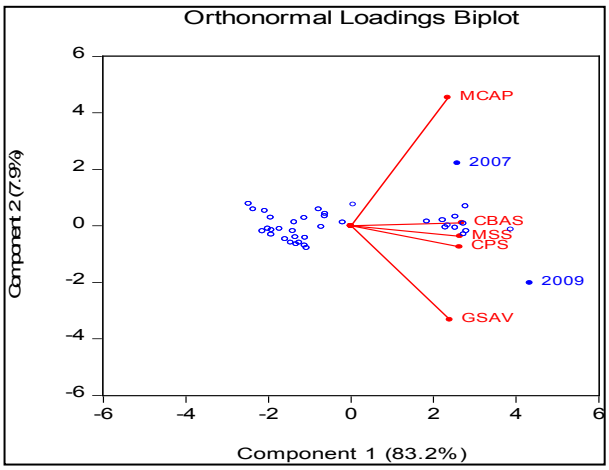

Figure 1 Orthonormal Loadings of Financial Development Variables

Table 2 gives the basis for the generation of the PCA variable data. The principal component one (PC1) equation is generated from the Eigenvectors (loading) shown in equation 13.

PC1 = 0.472CBAS + 0.463CPS + 0.421GSAV + 0.413MCAP + 0.464MSS - - (13)

Further observation reveals reveal that PC1 alone comprises 0.7689 proportions of the total PCA components. This is over 75% of the total proportion of all the PCs. Therefore, PC1 is conveniently adopted as the variable for the PCA of this study.

Table 2 Eigenvectors (loadings) of Financial Development Variables

Variable	PC 1	PC 2	PC 3	PC 4	PC 5
CBAS	0.4722	0.0178	0.1958	-0.8241	-0.2432
CPS	0.4628	-0.1320	-0.4957	0.3339	-0.6413
GSAV	0.4210	-0.5848	0.5945	0.3296	0.1363
MCAP	0.4127	0.7975	0.3074	0.3097	0.0574
MSS	0.4639	-0.0650	-0.5178	-0.0689	0.7125

Source: Author's Estimation

4.2 Unit Root Test

The unit root test result is shown in table 3. The ADF test statistics show that economic growth, oil revenue, financial development, government expenditure, gross fixed capital formation, and trade openness were all stationary at order one, that is, at I (1). All the variables are statistically significant at 1%, 5% and 10% critical values in first difference and shown in table 3.

Table 3 ADF Fisher Unit Root Test

Null Hypothesis: Unit root (individual unit root process) Series: LGDPN, LOILREV, PCFD, LGEXPDT, LGFCF, LTOPEN					
Method			Statistic	Prob.*	
ADF - Fisher Chi-square			201.173	0	
ADF - Choi Z-stat			-12.1666	0	
Series	t-stat	Prob.	Order of Integration	Max Lag	Obs
D(LGDPPC)	-3.375157	0.0184	I(1)	2	37
D(LOILREV)	-6.58546	0.0000	I(1)	2	37
D(PCFD)	-4.537985	0.0008	I(1)	2	37
D(LGEXPDT)	-6.233147	0.0000	I(1)	2	37
D(LGFCF)	-4.45538	0.0011	I(1)	2	37
D(LTOPEN)	-7.389263	0.0000	I(1)	2	37
Test critical values:	1% level		-3.621023		
	5% level		-2.943427		
	10% level		-2.610263		

Source: Author's Estimation

4.4. Single-Equation Cointegration Test

The normalized auto-correlation coefficient (termed the z-statistic) and the Engle-Granger t-statistic combine to reject the null hypothesis that there is no cointegration at the 5% level of significance (refer to Table 4).

Table 4 Engle-Granger Cointegration Test

Series: LGDPN LOILREV PCFD LGEXPDT LGFCF LTOPEN							
Null hypothesis: Series are not cointegrated							
Dependent	tau-statistic	Prob.*	z-statistic	Prob.*			
LGDPN	-1.3909	0.9966	-6.9375	0.9886			
LOILREV	-4.1422	0.2613	-24.1216	0.2464			
PCFD	-5.3275	0.0387	-852.8552	0.0000			
LGEXPDT	-3.8679	0.3666	-21.6934	0.3645			
LGFCF	-2.6087	0.8836	-15.1279	0.7453			
LTOPEN	-2.5205	0.9046	-11.4862	0.9045			
Intermediate Results:							
		LGDPN	LOILREV	PCFD	LGEXPDT	LGFCF	LTOPEN
Rho – 1		-0.1826	-0.6348	-1.1950	-0.5709	-0.3981	-0.3023
Rho S.E.		0.1313	0.1532	0.2243	0.1476	0.1526	0.1199
Residual variance		0.2113	0.0099	0.3589	0.0948	0.0147	0.0584
Long-run residual variance		0.2113	0.0099	14.0334	0.0948	0.0147	0.0584
Number of lags		0	0	2	0	0	0
Number of observations		38	38	36	38	38	38
Number of stochastic trends**		3	3	3	3	3	3
**Number of stochastic trends in asymptotic distribution							

Source: Author's Estimation

The related probability values were computed from the MacKinnon reaction to the surface replication results. From the sample size of the probabilities and critical values, there is evidence that only financial development rejects the null hypothesis of no cointegration. However, the concern here is about the long-run equilibrium cointegration of the interacting variables. The lower part of the table indicates that there are three cointegrating equations at the 5% level of significance estimated from the values of the tau-statistic and the probability values. Therefore, both tests confirm the long-run equilibrium cointegrating relationship among the variables: LGDPC, LOILREV, PCFD, LGEXPDT, GFCF and LTOPEN.

4.5.1 Assessing the Effects of Oil Revenue and Financial Development on Economic Growth

The FMOL investigation of the effects of oil revenue and financial development on economic growth is shown in Table 5. The results of the FMOLS test indicate that oil revenue, financial development, trade openness and the interacted coefficient of oil revenue and financial development are statistically significant in affecting economic growth at a 5% level of confidence. On the other hand, the effect of government expenditure and gross fixed capital formation was not statistically significant in affecting economic growth at a 5% level of confidence. In addition, while the effects of oil revenue, government expenditure, and trade openness positively impact economic growth, financial development and gross fixed capital formation are negative. In specific terms, a 10% change in oil revenue induces a 6% change in economic growth in the same direction. On the other hand, a 10% change in financial development stimulates a 4.1% change in economic growth in the reverse direction.

Table 5 The Effect of Oil Revenue and Financial Development on Economic Growth.

Dependent Variable: LGDPN				
Method: Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.3858	0.2494	5.5572	0.0000
LOILREV	0.5997	0.2096	2.8607	0.0073
PCFD	-0.4098	0.1344	-3.0490	0.0048
LGEXPDT	0.0865	0.3343	0.2589	0.7974
LGFCF	-0.3305	0.2002	-1.6511	0.1112
LTOPEN	0.6302	0.1517	4.1532	0.0003
LOILREV*PCFD	0.3391	0.1310	2.5894	0.0147
R-squared	0.9275	Mean dependent var		29.4510
Adjusted R-squared	0.9134	S.D. dependent var		2.3333
S.E. of regression	0.6865	Sum squared resid		14.6077
Long-run variance	0.4803			

Source: Authors' Estimation

Substituted Coefficients:

==========

LGDPN = 1.3858 + 0.5997*LOILREV – 0.4098*PCFD + 0.0865*LGEXPDT – 0.3305*LGFCF +0.6302*LTOPEN + 0.3391*LOILREV*PCFD - - - (14)

4.5.2 Examining the Interacted Effect of Oil Revenue and Financial Development on Economic Growth.

Furthermore, the interacted effects of oil revenue and financial development have positively affected economic growth. It means that the part of oil revenue channelled through financial development has positively impacted economic growth during the period of analysis. More specifically, a 10% change in the interacted coefficient of oil revenue and financial development elicited a 3.4% change in economic growth in a similar direction. While the R-Squared is 0.93, the adjusted R-Squared is 0.91, indicating that 91% of the total variation in the dependent variable is explained by variations in the regressors of the model.

5 Conclusions and recommendations

This study examines the inter-relationships between oil revenue, financial development and economic growth in Nigeria from 1981 to 2019. The study analyses the effects of oil revenue and financial development on the economic prosperity of the Nigerian nation. Also, the study investigates the interacted impact of oil revenue and financial development on economic growth. The time scope covered in the study period witnesses a period of good oil earning and very significant phases of financial reforms in the country. The conclusions drawn in the study are based on the magnitude and signs of the coefficients that arise from the fully modified least squares regression test. First, the study observes that oil revenue positively affects economic growth during the study period. Therefore, the resource curse theory does not apply to Nigeria during this study. The existing empirical studies that are in support of the positive effect of oil revenue on economic growth include Olayungbo (2015), Alkhateeb et al. (2017), Aminu & Raifu (2019) and Nguyen (2019). Second, financial development has a negative and significant effect on economic growth. It means that financial development has had a depressing effect on economic growth. The adverse effect of financial development on economic growth declines with time in line with the empirical studies of Samargandi et al. (2014) and Ogbonna et al. (2020).

Finally, the interacted effect of oil revenue and financial development positively impacts the country's economic progress. It implies that the part of oil proceeds that is channelled to financial development has a positive impact on the economic prosperity of the Nigerian nation. The empirical studies of Moradbeigib & Law (2017) and Badeeb & Lean (2017) support the positive effect of the interaction of oil revenue and financial development on the economy.

The indication that Nigeria has a mono-product economy with heavy dependence on crude oil resources suggests implementing macroeconomic policies that will systematically reduce such heavy reliance. The government must diversify the economy to create other sources of income to mitigate the volatility of earnings from the oil market. Indeed, the government must improve the productivity of the real sector by channelling more oil-based resources to the firms and households through the financial industry. Along this line, the government should focus on improving the financial depth and access of the banking system to make them more efficient in performing the developmental function. The more specific effort by the government authority should be for the financial system to deliver improved savings mobilisation, credit extension, business management services and information technology services to enhance more productive investments across the various economic sectors of the economy.

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