52909

Ikubor Ofili Jude/ Elixir Fin. Mgmt. 128 (2019) 52909-52923 Available online at www.elixirpublishers.com (Elixir International Journal)

Finance Management



Elixir Fin. Mgmt. 128 (2019) 52909-52923

Financial Development and Economic Growth Nexus: ARDL And VECM Analysis

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ARTICLE INFO

Article history: Received: 18 Feb 2019; Received in revised form: 17 March 2019; Accepted: 17 March 2019;

Keywords

Financial Development, Economic Growth, Capital Market and Banking Sector.

ABSTRACT

This study examines the short and long run causal relationship between financial sector development and economic growth in Nigeria using the Autoregressive Distributed Lag (ARDL) approach to cointegration analysis, Vector Error Correction Model (VECM), on yearly data over the period 1981 to 2017. Two factors from Cobb Douglas production function (labor and capital), and oil prices are used including an index of financial intermediary development constructed from six indicators of financial intermediary development component analysis. The results show that financial sector development index; both capital market and banking sector development are insignificant in influencing economic growth in Nigeria. In general, the results highlight the weakness of the Nigerian financial sector in stimulating economic growth through resource mobilisation and allocation and presents oil sector as the dominant factor driving economic activities in Nigeria. The study recommends the need to establish financial institutions that would strengthen and resolve the institutional and structural problems in the economy and create structures that would sustain other causal factors that mediates growth and financial intermediation where appropriate.

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1. Introduction

Financial sector development connotes improvements in the functioning of the financial sector. These include increased access to financial intermediation, greater diversification opportunities, improved information quality, and better incentives for prudent lending and monitoring (Ewetan and Ike, 2015). The essence of financial sector is to mop up funds and channel same in the form of credits, loans or invested capital to business sectors that most need these funds for investments. Indeed, financial sector is all the wholesale, retail formal and informal institution in an economy offering financial services to consumers, businesses and other financial sector such as banks, stock exchanges, insurers, credit unions, microfinance institutions and money lenders, (DFID;2004).

Economic growth literatures agrees that financial development and sustainable economic growth are highly related (see for instance, King and Levine 1993; Mckinnon 1973; Shaw,1973;). There is a positive relationship between financial sector development and economic growth that runs bi-directionally together with a mutually reinforcing effect. In other words, financial sector development promotes economic growth while economic growth itself stimulates further financial sector development, and the two mutually influence each other, leading to feed back hypothesis. Later studies like Levine and Zervos (1996) argue that financial system does not promote economic growth, rather responds to real sector development in an economy. Ewetan and Ike (2014) asserted that financial sector development is an important activity in the economy because it allows funds to be channeled from people who might otherwise not put them to productive use to people who will ultimately put the funds to productive uses.

important role in financing the real sector. Successive governments in Nigeria have carried out reforms and institutional innovations in the sector with the intention of ensuring financial stability so as to influence the growth of the economy and also enhance the institution to play a critical role of financial intermediation through savings mobilization. Proper and timely reforms policies in the financial sector would enhanced investment in the sector since finance is postulated as important determinant of investment which culminant in economic growth (Akpaeti, 2013). Financial sector has helped in facilitating the business transactions and economic development. A well-developed financial system performs several critical functions to enhance the efficiency of intermediation by reducing information, transaction and monitoring costs. If a financial system is well developed, it will enhance investment by identifying and funding good business opportunities, mobilizes savings, enables the trading, hedging and diversification of risk and facilitates the exchange of goods and services. All these result in a more efficient allocation of resources, rapid accumulation of physical and human capital, and faster technological progress, which in turn results in economic growth.

In line with the assumption that financial sector plays an

Another point of interest to scholars is the interaction between crude oil price, financial sector development and economic growth in oil producing states. Studies have shown that economic activities in oil-dependent economies are significantly determined by oil resources rather than savings of various economic units (mainly households), the degree with which economic activities is carried out through financial intermediaries will be low, weakening the link between financial intermediary development and economic growth (Nili and Rastad, 2007). Hence, crude oil price may play a significant role in explaining financial sector development in oil-dependent economies. Higher crude oil prices will therefore mean higher revenue and more economic activities passing through the financial intermediary sector. On the other hand, a lower crude oil price, will adversely impact on the activities of financial intermediaries. The well-documented low-level of financial sector development in oil-dependent economies has significantly been linked to activities in the oil sector in recent studies (see Nili and Rastad, 2007; Beck, 2011; Barajas et al., 2013).

A closer examination of the previous studies revealed that conscious efforts were not made to explore financial sectors indicators using the transformed series from principal component analysis. Research on financial sector development is expected to fill the knowledge gap with these indicators with the aim of establishing the linkage between financial sector development and economic growth in Nigeria. Furthermore, this study intend to extend the time frame from the previous work to 2017 in order to investigate in details the impact of financial sector development on economic growth in Nigeria as it relates to the present financial challenges affecting the economy.

More so, while most previous studies did not attempt to find a relationship between a component of the financial sector, capital market variable and economic growth, banking sector development and economic growth, this study would go further to uncover the relationship between the banking sector development and capital market as it affects economic growth in Nigeria. Assuming that a relationship exist between capital stock market, Banking development and economic growth, what is the direction of the relationship? Is it capital stock market that is causing economic growth or vice verse or both? There are divergent views as to the nature of the relationship between each of the components of the financial sector chosen for the study and the economic growth. While some found a positive relationship, some discovered a negative relationship and others did not find any relationship between the financial sector development and economic growth. These controversial finding are expected to fill the knowledge gap arising from not using the appropriate financial sector development indicators as a linkage to economic growth in Nigeria. The remainder of this study is structured as follows: Section 2 presents the data and methodology of the study. Section 3 presents and discusses the empirical results. Finally, section 4 offers some concluding remarks on the findings.

2. Literature review

The existence of a relationship between finance and growth seems incontestable as many researchers have worked on the issue and positively confirmed it. What is debatable is the direction of causality between finance and growth. The direction of causality has been described by Patrick (1966) as supply-leading and demand-following hypothesis. This postulation was buttressed by Mckinnon (1988). When causal relationship runs from financial development to growth, it is termed supply-leading because it is believed that the activities of the financial institution increase the supply of financial services which creates economic growth. Similarly, when the growth within the economy results in increase in the demand for financial services and this subsequently motivates financial development, then it is termed demand-following hypothesis. There are other scholars who believe that causality runs in both directions.

Several empirical studies have tested the relationship between financial development and economic growth (see Gurley and Shaw, 1955; King and Levine, 1993; Levine, 1997; Levine *et al.*, 2000; Odhiambo, 2005; Muchai, 2013). Some have observed that finance may influence growth; the supply-leading hypothesis (see Khan and Semlali, 2000; Levine *et al.*, 2000; Habibullah and Eng, 2011). Others have found that growth drives finance; the demand following hypothesis (see Ghirmay, 2004; Zang and Kim, 2007). In addition, there is a possibility of bidirectional causality (see Akinboade, 1998; Odhiambo, 2005), unimportant influence or simply independence between finance and economic growth (Stern, 1989; Tuck, 2003; Cevik and Rahmati, 2013.

The first approach is soon as "finance-led growth". It postulates that development of the financial sector leads to economic growth. By promoting the financial sector, financial intermediaries are able to collect savings and grant loans to investors involved in establishing businesses that produce products or services and improve the conduct of existing ones. This view is in agreement with the findings of many studies (Goldsmith, 1969; King and Levine, 1993; Levine, 1997; Neusser and Kugler, 1998; Khan and Semlali, 2000; Levine et al., 2000; Almeida and Wolfenzon, 2005; Jean-Claude, 2006; Apergis et al., 2007) on pooled countries' time series. It states that financial sector development and economic growth go hand-in-hand. Countries with betterdeveloped financial systems tend to enjoy a sustained period of growth and studies confirm the causal link where the financial sector drives economic growth (see Schumpeter, 1934; Neusser and Kugler, 1998; Almeida and Wolfenzon, 2005). The same conclusion was reached by studies conducted in developing countries, either pooled together (Odedokun, 1996; Ndikumana, 2000; Christopoulos and Tsionas, 2004; Ndebbio, 2004; Habibullah and Eng, 2011), or considered individually, such as Kilimani's (2007) and Kargbo and Adamu's (2009) research in Uganda and Sierra respectively. Similarly, Leone. Seetanah's (2008)investigation of the dynamic relationship between financial sector development and economic growth in Mauritius for the period 1952 to 2004 concluded that financial sector development drives economic growth. The German Imperial Government's decision to develop a banking system called the "German banks of affairs" or "capitalisation banks" that extended bank credit to industry in the late eighteenth century is a successful case that supports this hypothesis (Bowen, 1950). Foreign borrowing to finance industrial activity was avoided by creating a domestic source of financing. This contributed to the rapid expansion of German industry.

Levine and Zervos (1998) examined whether the banking sector and capital markets, as the main sources of indirect and direct finance, respectively, contribute more to economic growth. The study found that both the banking sector and stock market liquidity have independent positive and significant effects on economic growth. Arestis, Demetriades et al. (2001), Shan *et al.* (2001) and Abu-Bader and Abu-Qarn (2008) explored the relationship between financial sector development and economic growth, using a bank-based model and concluded that financial sector development is a catalyst for economic growth. Expressed differently, banks perform scrutiny and monitoring tasks on behalf of investors. They mitigate the underlying risks, by capitalizing on information acquired, which reduces uncertainty and enables funds to flow to the most profitable projects. In such a situation, the spillover effects of efficient investment lead to economic growth (Levine, 2005). Employing a neoclassical framework to analyze the linkage between finance and growth from a European perspective, Papaioannou (2007) found evidence that financial development promotes economic growth in developing and emerging countries by lowering the cost of capital while for advanced economies it works through raising total factor productivity. Similarly Habibullah and Eng (2011) noted that a strong network of financial institutions that provide diversified financial services impacts positively on economic growth.

Secondly, the demand-following hypothesis, also known as growth-led finance, which states that when the economy grows, it creates additional demand for financial services in response to demand from investors and other economic agents (Shan et al., 2001). This relationship stems from the understanding that when an economy experiences real growth, private businesses are most likely to plan investments that increase their demand for financial services (Robinson, 1952; Gurley and Shaw, 1955; Ghirmay, 2004; Zang and Kim, 2007). Improved firm performance implies an increase in the need for financial capital for expansion, meaning that financial sector development responds positively to higher rates of economic growth. Private investors are interested in exploiting available opportunities, and borrow more from financial intermediaries to make investments. In addition, financial intermediaries respond to the needs of the economy by availing new financial instruments such as bonds and other commercial papers.

Odhiambo's (2008) research on the link between financial development and economic growth in Kenya found a causal relationship flowing from economic growth to financial sector development. Likewise, Quartey and Prah (2008) found evidence to support the demand-following hypothesis in a study in Ghana using the growth of broad money to GDP ratio as a measure of financial sector development. Along the same lines, Hassan, Sanchez and Yu (2011) assessed the relationship between financial sector development and economic growth for selected low-and middle-income countries over the period 1980 – 2007 and concluded that the causal relationship runs from growth to finance in the SSA, East Asia & Pacific regions, hence supporting the demand-following hypothesis.

Thirdly, is the bidirectional influence between financial sector development and economic growth refers to the mutual influence of these variables. This indicates that financial sector development influences economic growth and viceversa. Patrick (1966) argued that the directional causality between financial sector development and economic growth changes with the stage of development. In the early stage of development, the economy needs the financial sector to provide funds for innovation and investment. Later, when the economy reaches a level of self-sustainability, many investors identify opportunities and increase their borrowing, in order to further invest in new projects. Akinboade (1998)and Odhiambo (2005) established the existence of a bi-directional causality between financial development and economic growth in Botswana and Tanzania, respectively. Both studies found that financial sector development and economic growth are complementary. The same conclusion was reached by Luintel and Khan (1999) in a study of the finance-economic growth relationship in ten LDCs. Similarly, Calderón and Liu (2003) and Bangake and Eggoh (2011) found a mutual causal relationship between financial development and economic growth. This indicates that financial sector development and economic growth are in reciprocal influence. However, Bangake and Eggoh (2011) stressed that output growth had more influence on financial development than did financial development on economic growth. They added that this link appears to be more pronounced in low-income countries than in high-income countries.

Finally, the absence of any relationship between finance and economic growth presents an exception to the previous hypothesis. It indicates that financial sector development and growth in output in an economy do not influence each other. Furthermore, no unidirectional relationship is plausible between financial sector development and output growth on the one hand or between output growth and financial sector development on the other. Muchai (2013) and Cevik and Rahmati (2013) found no relationship between finance and economic growth in Kenya and Libya, respectively. Using VAR analysis for the period 1972 to 2008, Muchai's (2013) empirical study of the finance-growth channel in Kenya found that savings mobilized by financial institutions did not influence capital formation and hence did not lead to economic growth. Cevik and Rahmati's (2013) research on Libya for the period 1970 to 2010 found no long-run relationship between financial intermediation and nonhydrocarbon output growth. Similarly, in revisiting the longand short-run relationships between bank lending (as a proxy for the financial sector) and economic growth in Malaysia for the period 1960 to 1998, Tuck (2003) found no relationship between the volume of bank loans and real output growth. A plausible explanation is possibly funds diversion to nonproductive activities, due to microeconomic inefficiencies in the banking sector (Demetriades and Andrianova, 2004).

3. Research Methods

3.1 Sources of Data and Methods of Data Collection

To carry out this empirical analysis, the study employed secondary data. The relevant data for this study were sourced from World Bank financial development Indicators in the 2017 version World Bank financial structure, and British Petroleum annual report covering the period from 1981 to 2017. The data set was tailored to the need of the empirical framework and it contained information on the selected variables such real GDP per capital, capital market development index (FINDEX1), Banking sector development index (FINDEX2), gross fixed capital formation (GFCF), Labor (HABR), Oil price (OIlp). To avoid perfect collinearity, these variables were transformed in its natural logarithm and excel, E-View10 were applications (softwares) used for data estimation and analysis.

3.2 Theoretical Framework

Our first objective is to identify finance-growth relationship in Nigeria. Therefore, the model will be derived using Cobb Douglas Production Function. This is because Cobb Douglas function captures the amount of output in an economy taking note of labour and capital inputs. This consistent with the study by (see Ang, 2009; Samargandi, Fidrmuc and Ghosh, 2013, Jalil, Feridun,& Ma 2010; Demirgüç-Kunt and Levine, 2008; Beck and Demirguc-Kunt, 2009; Coban and Topcu, 2013; iheanacho, 2016 among others)

$$Y = AK^{\alpha}L^{1-\alpha}$$
Where

Y = aggregate GDP, L = labor, K = capital and A = TFP

(1)

Also, Y measures economic growth (proxy with real GDP per capital), K denotes the amount of capital (measured by gross fixed capital formation), and L denotes the amount of labour (measured by labour rate), A is parameter that captures the effects of other factors of production which is also known as the efficiency parameter.Technically, A measures a Total Factor Productivity (TFP).

Augmenting the neoclassical Cobb Douglas Production function by incorporating Financial sector development, dividing by population and taking the natural log in consistent with Ang, 2009; Samargandi, Fidrmuc and Ghosh, 2013, Jalil, Feridun,& Ma 2010; Demirgüç-Kunt and Levine, 2008; Beck and Demirguc-Kunt, 2009; Coban and Topcu, 2013; iheanacho, 2016). We have

Dividing by POP and taking the natural logs $ln \begin{pmatrix} Y \\ Y \end{pmatrix} = ln A + cln \begin{pmatrix} K \\ Y \end{pmatrix} + c - 1ln \begin{pmatrix} L \\ Y \end{pmatrix}$

$$ln\left(\frac{Y}{POP}\right) = ln A + \alpha ln\left(\frac{K}{POP}\right) + \alpha - 1ln\left(\frac{L}{POP}\right)$$
(2)
$$ln\left(\frac{Y}{POP}\right) = real GDP per capital (LRGDPPC)$$

 $\ln\left(\frac{K}{POP}\right)$ = Gross fixed capital formation (LGFCF)

 $\left(\frac{L}{POP}\right)$ = labour rate (LHABR)

A denote TFP as a function of financial sector development variables A=f(FINDEX).

Econometrics specification of the model

$LGDPPC = \alpha_0 + \alpha_1 LFINDEX1 + \alpha_2 FINDEX2 + \alpha_3 LGFCF + \alpha_4 LHABR + \alpha_5 LOILP + \varepsilon_t$

Thus, the study adopts the methodology by Ndako (2010) and Iheanacho 2017), by combining stock market and banking sector indicators, that is, the ratio of commercial bank assets to the sum of commercial bank assets and central bank assets (*DMBA*), Credit to the Private Sector as a ratio of GDP (*CPS*), Stock Market Value Traded as a ratio of GDP (*MV*) and Stock Market Turnover Ratio (*MT*) into two indicators (*FINDEX1 &2*), by using principal components analysis (PCA).

The justifications for the need to construct these indices out of the aforementioned financial development indicators are as follows: First, previous studies Samargandi, Fidrmuc and Ghosh 2013) establish that when all the financial development indicator variables are included in each regression, inconsistent results are obtained, which might be because financial development variables are highly correlated among themselves. Thus, the index is used to overcome the problems of multicollinearity. Second, studies attempting to investigate the link between financial development and growth have no uniform argument as to which proxies are most appropriate for capturing this linkage: they choose a number of different measures and subsequently come up with different results (King and Levine, 1993; Savvides, 1995; Khan and Senhadji, 2003; Chuah and Thai, 2004). Thus, this new index of financial development is able to capture most of the information from the original data and is a better indicator than the individual variables.

The composite index of financial development (*FINDEX1*), for the first model, is calculated using the formula that is similar to the algorithm developed by Dermirguc-Kunt and Levine (1996). For Nigeria in year t,

$$FINDEX1 = \frac{1}{m} \sum_{j=1}^{m} \left(100 * \left(\frac{F_j}{F_j} \right) \right)$$
⁽⁴⁾

Where F is an indicator of financial development, \overline{F}_{j} is the sample mean of the F_{j} , indicator, and m is the number of indicators included in the computation of the index (m = 3 in this case).

Table 1 presents the result of the principal component analysis. It shows the index of financial development from the proxies of financial indicators: Credit to the Private Sector as a ratio of GDP (CPS), Stock Market Value Traded as a ratio of GDP (MV) and Stock Market Turnover Ratio (MT). The first eigenvalue indicates that 87.01 percent of the variation is captured by the first principal component while the second principal component explains 10.25 percent of the total variation. The third principal component account is only 2.74 percent of the total variation. From the table, it shows that the first principal component is the best measure of the index since it captures about 87.01% of the information from these proxies. It also shows the first vector with almost equal weight, indicating a similar pattern. For this reason, we use the first principal component, PC1 to pool the rest into one principal component.

 Table 1. Result of the Principal Component Analysis for FINDEX1.

(3)

Principal	Principal Components Analysis									
Date: 10/1	0/18 Tim	e: 01:15								
Sample: 19	981 2017									
Included o	observatio	ns: 37								
Computed	l using: O	rdinary cor	relations							
Extracting	g 3 of 3 pos	ssible comp	onents							
Eigenvalu	es: (Sum =	= 3, Averag	e = 1)							
Number	Value	Difference	Proportion	Cumulative	Cumulative					
				Value	Proportion					
1	2.610302	2.302875	0.8701	2.610302	0.8701					
2	0.307427	0.225156	0.1025	2.917729	0.9726					
3	0.082271		0.0274	3.000000	1.0000					
Eigenvecto	ors (loading	gs):								
Variable	PC 1	PC 2	PC 3							
STMCAP	0.567899	-0.674437	0.471832							
STVATRE	0.560976	0.736626	0.377742							
TURN	0.602326	-0.050167	-0.796672							
Ordinary c	orrelations	:								
	STMCAP	STVATRD	TURN							
STMCAP	STMCAP 1.000000									
STVATRE	0.693515	1.000000								
TURN	0.872358	0.845877	1.000000							

cesult of	the Princ	ipal Comp	onent Analy	SIS FOR FINDEX
l Compoi	nents Analy	ysis		
/10/18 T	ime: 07:21			
1981 201	7			
observat	tions: 37			
ed using:	Ordinary	correlations	5	
ng 3 of 3 j	possible co	mponents		
ues: (Sun	n = 3, Aver	rage = 1)		
Value	Difference	Proportion	Cumulative	Cumulative
			Value	Proportion
2.447365	1.894846	0.8158	2.447365	0.8158
0.552519	0.552402	0.1842	2.999883	1.0000
0.000117		0.0000	3.000000	1.0000
tors (load	ings):			
PC 1	PC 2	PC 3		
0.617974	-0.343817	0.707035		
0.485960	0.873981	0.000253		
0.618022	-0.343434	-0.707179		
correlatio	ons:			
BAGDP	CPSGDP	M2GDP		
1.000000				
0.568943	1.000000			
0.999883	0.569186	1.000000		
	Cesuit of Comport 10/18 T 1981 201' observat ed using: ng 3 of 3 ues: (Sun Value 2.447365 0.552519 0.000117 tors (load PC 1 0.617974 0.485960 0.618022 correlatio BAGDP 1.000000 0.568943 0.999883	Components Analy Components Analy 10/18 Time: 07:21 1981 2017 observations: 37 observations: 37 od using: Ordinary on g 3 of 3 possible colspan="2">Ordinary on g 3 of 3 possible colspan="2" Ordinary on g	Value Difference Propose 0.000117 0.0000 2.447365 1.894846 0.8158 0.552519 0.552402 0.1842 0.000117 0.0000 tors (loadings): PC 2 PC 3 PC 1 PC 2 PC 3 0.617974 -0.343817 0.707035 0.485960 0.873981 0.000253 0.618022 -0.343434 -0.707179 correlations: BAGDP CPSGDP M2GDP 1.000000 0.568943 1.000000 0.999883 0.569186 1.000000	Component Analysis Components Analysis (10/18 Time: 07:21 1981 2017 observations: 37 colspan="2">correlations ng 3 of 3 possible components ues: (Sum = 3, Average = 1) Value Cumulative Value 2.447365 1.894846 0.8158 2.447365 0.552519 0.552402 0.1842 2.999883 0.000117 0.0000 3.000000 tors (loadings): PC 1 PC 2 PC 3 0.617974 -0.343817 0.707035 0.618022 0.618022 -0.343443 -0.707179 correlations: BAGDP CPSGDP M2GDP 1.000000 0.568943 1.000000 0.999883 0.569186

Source:eviews10

Table 2 presents the result of the principal component analysis. It shows the index of financial development from the proxies of financial indicators: , the ratio of commercial bank assets to the sum of commercial bank assets and central bank assets (DMBA), Credit to the Private Sector as a ratio of GDP (CPS). The first eigenvalue indicates that 81.58 percent of the variation is captured by the first principal component while the second principal component explains 18.42 percent of the total variation. The third principal component account is only 0.00 percent of the total variation. From the table, it shows that the first principal component is the best measure of the index since it captures about 81.58% of the information from these proxies. It also shows the first vector with almost equal weight, indicating a similar pattern. For this reason, we use the first principal component, PC1 to pool the rest into one principal component.

3.3 Technique of Analysis

3.3.1 Stationarity test (Unit Root Test)

The first step is to investigate the order of integration of the variables used in the empirical study. The ADF (Augmented Dickey Fuller) test will be used and confirmed by PP (Philips Perron) in which the null hypothesis is H_{α} : $\beta = 0$ i.e β has a unit root, and the alternative hypothesis is H_{ρ} : $\beta < 0$. If the unit roots tests confirm that the variables are I(1), i.e integrated at first difference, the next step would be to test if they are co-integrated, i.e. if they are bound by long run relationship.

The main reason is to determine whether the data is stationary i.e. whether it has unit roots and also the order of integration. It ex expected that the variables be integrated at first difference, I(1). If the variables I(1), we proceed with the Johansen co-integration analysis. This can be achieved through Unit root test.

		· · · · · · · · · · · · · · · · · · ·		
VARIABLES	YEAR	EXPLANATION & APRIORI EXPECTIONS	SOURCE	TYPE OF DATA
Real Gross domestic	1981-2017	Real gross domestic product per capital (GDP) is an inflation-adjusted	World bank	GDP per capita
product		measure that reflects income per capital an economy in a given year,	Development	(constant 2005
(RGDPPC)		expressed in base-year prices, and is often referred to It is a proxy for	Indicators	US\$)
		economic growth.	(World Bank)	
Banking sector	1981-2017	FINDEX2 is Principal Component Index of Financial Development	Financial development	Linear
development index.		Indicators (banking sector indicators); LL is Liquid Liabilities of the	and structure data-set	combination of
we expect (+)		banking system as a ratio of GDP (M3 as a ratio of GDP); CPS is Credit to	(Nov. 2017 version)	series through
		the Private Sector as a ratio of GDP; DMBA is Deposit Money Bank		PCA (%)
		Assets to Deposit Money Bank Assets		
Capital market	1981-2017	FINDEX1 is Principal Component Index of Financial Development	Financial development	Linear
development. We		Indicators (capital market indicators); Stock Market Capitalization as a	and structure data-set	combination of
expect (+)		ratio of GDP; Stock Market Value Traded as a ratio of GDP; Stock Market	(Nov. 2017 version)	series through
_		Turnover as a ratio of GDP		PCA (%)
Oil price	1981-2017	Oil price is the price for which crude oil per barrel is bought or	British	Brent oil price
We expect (+)		purchased, it is the global oil price.	petroleum.	At \$.
Gross Fixed capital	1981-2017	It is the rate of domestic investment. CAPITA L is Gross Fixed Capital	World bank	As % of GDP
formation (GFCF).		Formation as a ratio of GDP	Development	
We expect (+)			Indicators	
Labour rate. We		LABOUR FORCE isLabour Force Participation Rate;	World bank	As % of GDP
expect (+)			Development	
			Indicators	
E		Stochastic error term variable. Used to capture unobserved variables in the		
		model		

Variables, Explanation and Apriori Expectations

3.3.2 Testing for lag Structure

In the assertion of Walter (1995) the section of an appropriate lag length is as significant as determining the variables to be included in any system of equations. Based on that, the study employs that Akaike Information Criterion (AIC) to choose the appropriate optimal lag length of the variables for this study.

3.3.3 ARDL co-integration

The study adopts an Auto-Regressive Distributed Lag (ARDL) bounds testing approach developed by Pesaran et al (2001) to model the long run determinants. This approach has some econometric advantages over the Engle-Granger (1987) and maximum likelihood-based approach proposed by Johansen and Juselius (1990), and Johansen (1991) cointegration techniques. First, the bounds test does not require pre-testing of the series to determine their order of integration since the test can be conducted regardless of whether they are purely I(1), purely I(0), or fractionally integrated. Second, endogeneity problems and inability to test hypotheses on the estimated coefficients in the long-run associated with the Engle-Granger (1987) method are avoided. According to Pesaran and Shin (1999), modeling the ARDL with the appropriate lags will correct for both serial correlation and endogeneity problems. Jalil et al (2008) argues that endogeneity is less of a problem if the estimated ARDL model is free of serial correlation. In this approach, all the variables are assumed to be endogenous and the long run and short run parameters of the model are estimated simultaneously (Khan et al, 2005). Third, as argued in Narayan (2004), the small sample properties of the bounds testing approach are far superior to that of multivariate cointegration (Halicioglu, 2007). The approach, therefore, modifies the Auto-Regressive Distributed Lag (ARDL) framework while overcoming the inadequacies associated with the presence of a mixture of I(0) and I(1) regressors in a Johansen-type framework. Fourth, the long and short-run parameters of the model in question are estimated simultaneously. Lastly, The ARDL has superior small sample properties compared to the Johansen and Juselius (1990) cointegration test (Pesaran and Shin, 1999). The procedure will, however crash in the presence of I(2) series.

Following Pesaran et al. (2001) as summarized in iheancho,2017, we apply the bounds test procedure by modelling the long-run equation as a general vector autoregressive (VAR) model of order p. The ARDL model is written as follow;

$$\Delta lrgpdc_{t} = \beta_{0} + \sum_{i=1}^{n} \beta_{1i} \Delta lrgdpc_{1t-1} + \sum_{i=0}^{n} \beta_{2i} \Delta lnfindex 1_{2_{t-1}} + \sum_{i=0}^{n} \beta_{3i} \Delta lfindex 2_{3_{t-1}} + \sum_{i=0}^{n} \beta_{4i} \Delta lgfcf_{4_{t-1}} + \sum_{i=0}^{n} \beta_{5i} \Delta lnHabr_{5_{t-1}} + \sum_{i=0}^{n} \beta_{6i} \Delta lnoip_{6_{t-1}} + \beta_{7} lrgdpc_{t-1} + \beta_{9} lfindex 2_{t-1} + \beta_{10} lgfcf_{t-1} + \beta_{11} lhrbr_{t-1} + \beta_{12} loilp_{t-1} + \varepsilon_{t}$$
(5)

Where Δ is the difference operator while ε_t is white noise or error term. All other variables have been previously defined above

3.3.4 Bounds Testing Procedure

The implementation of the ARDL approach involves two stages.

First, the existence of the long-run nexus (cointegration) between the variables under investigation is tested by computing the F-statistics for analyzing the joint significance of the coefficients of the lagged levels of the variables.

Pesaran and shin, 1999 and Narayan, 2004 have provided two sets of appropriate critical values for different numbers of regressors (variables). This model contains an intercept or trend or both. One set assumes that all the variables in the ARDL model are I(0), and another assumes that all the variables are I(1). If the F-statistic lies above the upper-bound critical value for a given significance level, the conclusion is that there is a non-spurious long-run level relationship with the dependent variable. If the F-statistic lies below the lower bound critical value, the conclusion is that there is no longrun level relationship with the dependent variable. If it lies between the lower and the upper limits, the result is inconclusive. The approximate critical values for the F-test were obtained from Pesaran and Pesaran (1997). The general form of the null and alternative hypotheses for the F-statistic test is as follows (table 3): Secondly, if the cointegration between variables is identified, then one can undertake further analysis of long-run and short-run (error correction) relationship between the variables.

3.3.5 VECM based Granger Causality

The Granger representation theorem suggests that there will be Granger causality in at least one direction if there exists a cointegration relationship among the variables, providing that they are integrated order of one. The direction of causality is investigated by applying Vector Error Correction Model (VECM) granger causality approach only after confirming the presence of co-integrating relationship among the variables in the study. Granger (1969) argued that VECM is more appropriate to examine the causality between the series at I(1). VECM is restricted form of unrestricted VAR and restriction is levied on the presence of the long run relationship between the series. If two variables are nonstationary, but become stationary after first differencing and are cointegrated, the pth-order vector error correction model for the Granger causality test assumes the following equation: $\Delta ln X_{t} = \alpha_{10} + \sum_{i=1}^{p_{11}} \theta_{11i} \Delta ln X_{t-1} + \sum_{i=1}^{p_{12}} \partial_{12j} \Delta ln Y_{t-j} +$

$$\delta_{13}ECM_{t-1} + u_{1t}$$
(6)
$$\Delta lnY_t = \alpha_{20} + \sum_{i=1}^{p_{21}} \theta_{21i} \Delta ln X_{t-1} + \sum_{i=1}^{p_{22}} \partial_{22j} \Delta ln Y_{t-j} + \delta_{22}ECM_{t-1} + u_{2t}$$
(7)

 $\delta_{23}ECM_{t-1} + u_{2t}$ Where θ and ∂ are the regression coefficients, u_t is error term and p is lag order of x and y Table 4 indicates that the optimal lag order based on the this study uses Akaike Information Criterion (AIC) is 2. The presence of short-run and long-run causality can be tested. If the estimated coefficients of y in Eq. 2 is statistically significant, then that indicates that the past information of y has a statistically significant power to influence x suggesting that y Granger causes in the short-run. The long-run causality can be found by testing the significance of the estimated coefficient of $ECM_{t-1}(\delta_{23})$.

3.4 CUSUM Test

The CUSUM test (Brown, Durbin, and Evans, 1975) is based on the cumulative sum of the recursive residuals. This option plots the cumulative sum together with the 5% critical lines. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines.

		Table 3	
	null hypothesis of no co-integration	alternative hypothesis	Equation
	$H_0: \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = 0$	$H_1: \beta_7 \neq \beta_8 \neq \beta_{10} \neq \beta_{11} \neq \beta_{12} \neq \beta_{13} \neq 0$	
Sources: au	thor's design		

The significance of any departure from the zero line is assessed by reference to a pair of 5% significance lines, the distance between which increases with t. The 5% significance lines are found by connecting the points.

3.5 CUSUM of Squares Test

The CUSUM of squares test (Brown, Durbin, and Evans, 1975) is based on the test statistic. The CUSUM of squares test provides a plot of St against and the pair of 5 percent critical lines. As with the CUSUM test, movement outside the critical lines is suggestive of parameter or variance instability. **4. Empirical Analysis**

4.1 Stationary test (Unit root test)

Before we proceed for ARDL estimation, we test for the stationarity of the variables and to determine their order of integration. The test for unit root is to ensure that none of the series in integrated at I(2). Table 4 and 5 below present that results of ADF and PP Unit Root Test. The Augmented Dickey Fuller (ADF) and Philip Perron test was conducted at level and at first difference using both intercept with the null hypothesis that, the series has unit root (not stationary) against the alternative hypothesis that the series does not have unit root (are stationary) in order to differentiate between mere correlation and an underlying causal relationship. The integration of the variables at I(0) and I(1) makes ARDL the preferred approach in this empirical analysis.

For instance, the analysis of the unit root test results indicates that LGFCF is I(0) and the remaining variables are integrated order one (I(1)) and none of the variables are I(2) series.

The next step involves the selection of optimal lag length of the model. The optimal lag length was determined by different criterion suitable to the models (Table 4) using maximum lags in the model.

4.2.1 Selection of optimum lag length

It is essential to appropriately specify the lag length k for the ARDL and VECM model; if k is too small the model is misspecified and the missing variables create an omitted variable bias, while over-parameterizing involves a loss of degree and introduces the possibility of multicollinearity (Hosking, 2006). In general, ADRL and VECM estimates are known to be sensitive to the number of lags.

The optimal lag length test based on the three commonly used criteria, namely Akaike information criteria (AIC), Schwarz information criterion (SC) and Hannan-Quinn information (HQ) are presented in Table 6. From the three criteria, the optimum lag length is two (2). Therefore, lag 2 will be used in this study.

4.2.2 ARDL Approach to cointegration-(Bound testing)

After determining the order of integration and lag length, the next step is to employ bounds test to confirm the long-run relationship among the variables.

Aug	mented Dick	ey-Fuller to	est			Phillips-Perron test					
lag	t-statistic	Critical v	Critical values		Remark	lag	t-statistic	Critical va	lues		remark
		1%	5%	10%				1%	5%	10%	
0	0.0492	-3.62678	-2.945842	-2.61153	I(1)	0	-0.245472	-3.626784	-2.94584	-2.61153	I(1)
0	-1.330614	-3.62678	-2.945842	-2.61153	I(1)	0	-1.217712	-3.626784	-2.94584	-2.61153	I(1)
0	-1.28513	-3.64634	-2.954021	-2.61582	I(1)	0	-0.77412	-3.626784	-2.94584	-2.61153	I(1)
0	-2.805408	-3.62678	-2.945842	-2.61153	1(0)	0	-2.809442	-3.626784	-2.94584	-2.61153	1(0)
0	-1.779424	-3.62678	-2.945842	-2.61153	I(1)	0	-1.772195	-3.626784	-2.94584	-2.61153	I(1)
0	-1.782479	-3.62678	-2.945842	-2.61153	I(1)	0	-1.784846	-3.626784	-2.94584	-2.61153	I(1)
0	-0.660857	-3.67932	-2.967767	-2.62299	I(1)	0	-1.754975	-3.626784	-2.94584	-2.61153	I(1)
	Aug lag 0 0 0 0 0 0 0 0 0 0 0 0	Augmented Dick lag t-statistic 0 0.0492 0 -1.330614 0 -1.28513 0 -2.805408 0 -1.779424 0 -1.782479 0 -0.660857	Augmented Dickey-Fuller to lag t-statistic Critical value 0 0.0492 -3.62678 0 -1.330614 -3.62678 0 -1.28513 -3.64634 0 -2.805408 -3.62678 0 -1.779424 -3.62678 0 -1.782479 -3.62678 0 -1.782479 -3.62678 0 -0.660857 -3.67932	Augmented Dickey-Fuller test lag t-statistic Critical v= 1% 5% 0 0.0492 -3.62678 -2.945842 0 -1.330614 -3.62678 -2.945842 0 -1.28513 -3.64634 -2.954021 0 -2.805408 -3.62678 -2.945842 0 -1.779424 -3.62678 -2.945842 0 -1.782479 -3.62678 -2.945842 0 -0.660857 -3.67932 -2.967767	Augmented Dickey-Fuller test lag t-statistic Critical v-ues 1% 5% 10% 0 0.0492 -3.62678 -2.945842 -2.61153 0 -1.330614 -3.62678 -2.945842 -2.61153 0 -1.28513 -3.64634 -2.945842 -2.61153 0 -1.28513 -3.62678 -2.945842 -2.61153 0 -1.28513 -3.62678 -2.945842 -2.61153 0 -1.79424 -3.62678 -2.945842 -2.61153 0 -1.782479 -3.62678 -2.945842 -2.61153 0 -1.782479 -3.62678 -2.945842 -2.61153 0 -0.660857 -3.67932 -2.945842 -2.61153	Augmented Dickey-Fuller test Remark lag t-statistic Critical values Remark 0 1% 5% 10% 0 0.0492 -3.62678 -2.945842 -2.61153 I(1) 0 -1.330614 -3.62678 -2.945842 -2.61153 I(1) 0 -1.28513 -3.64634 -2.954021 -2.61582 I(1) 0 -2.805408 -3.62678 -2.945842 -2.61153 I(0) 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 -0.660857 -3.67932 -2.945842 -2.61153 I(1)	Augmented Dickey-Fuller test Phil lag t-statistic Critical values Remark lag 0 1% 5% 10% 0 0 0 0.0492 -3.62678 -2.945842 -2.61153 I(1) 0 0 -1.330614 -3.62678 -2.945842 -2.61153 I(1) 0 0 -1.28513 -3.64634 -2.954021 -2.61582 I(1) 0 0 -1.28513 -3.62678 -2.945842 -2.61153 I(0) 0 0 -1.28513 -3.62678 -2.945842 -2.61153 I(1) 0 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 0 -0.660857 -3.67932 -2.967767 -2.62299 I(1) 0	Augmented Dickey-Fuller test Phillips-Perron t lag t-statistic Critical v= Remark lag t-statistic 0 0.0492 -3.62678 -2.945842 -2.61153 I(1) 0 -0.245472 0 -1.330614 -3.62678 -2.945842 -2.61153 I(1) 0 -0.245472 0 -1.28513 -3.64634 -2.945842 -2.61153 I(1) 0 -0.77412 0 -2.805408 -3.62678 -2.945842 -2.61153 I(0) 0 -2.809442 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.772195 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.772195 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.772195 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 -1.784846 0 -0.660857	Augmented Dickey-Fuller test Phillips-Perron test lag t-statistic Critical values Remark lag t-statistic Critical values 0 0.0492 -3.62678 -2.945842 -2.61153 I(1) 0 -0.245472 -3.626784 0 -1.330614 -3.62678 -2.945842 -2.61153 I(1) 0 -1.217712 -3.626784 0 -1.28513 -3.64634 -2.954021 -2.61582 I(1) 0 -0.77412 -3.626784 0 -2.805408 -3.62678 -2.945842 -2.61153 I(0) 0 -2.809442 -3.626784 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.772195 -3.626784 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.772195 -3.626784 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 -1.784846 -3.626784 0	Augmented Dickey-Fuller test Phillips-Perron test lag t-statistic Critical values Remark lag t-statistic Critical values 0 1% 5% 10% 1% 5% 10% 5% 0 0.0492 -3.62678 -2.945842 -2.61153 I(1) 0 -0.245472 -3.626784 -2.94584 0 -1.330614 -3.62678 -2.945842 -2.61153 I(1) 0 -1.217712 -3.626784 -2.94584 0 -1.28513 -3.64634 -2.954021 -2.61153 I(1) 0 -0.77412 -3.626784 -2.94584 0 -2.805408 -3.62678 -2.945842 -2.61153 I(0) 0 -2.809442 -3.626784 -2.94584 0 -1.779424 -3.62678 -2.945842 -2.61153 I(1) 0 -1.772195 -3.626784 -2.94584 0 -1.782479 -3.62678 -2.945842 -2.61153 I(1) 0 -1.784846	Augmented Dickey-Fuller test Remark Iag t-statistic Critical values Remark Iag t-statistic Critical values Remark Iag t-statistic Critical values Io% 10% Io% <

Table 4. ADF and PP test result at level form.

Sources: Author's computation using eviews 10 L= implies that the variables have been transformed in natural logs.

Table 5. ADI	and PP	test result	at 1st	difference.
--------------	--------	-------------	--------	-------------

1St diff	Aug	Augmented Dickey-Fuller test					Phil	llips-Perron test				
variables	lag	t-statistic	Critical	values		Remark	lag	t-statistic	Critical	values		remark
			1%	5%	10%				1%	5%	10%	
lrgdppc	0	-4.416778	-3.6329	-2.948404	-2.6128	I(1)	0	-4.404806	-3.6329	-2.9484	-2.6128	I(1)
lfindex1	0	-8.484231	-3.6329	-2.948404	-2.6128	I(1)	0	-8.484231	-3.6329	-2.9484	-2.6128	I(1)
lfindex2	1	-2.896369	-2.6347	-1.951	-1.6109	I(1)	0	-3.029757	-3.6329	-2.9484	-2.6128	I(1)
lgfcf	0	-3.413816	-3.6463	-2.954021	-2.6158	I(0)	0	-5.076281	-3.6329	-2.9484	-2.6128	I(0)
labr	0	-5.91825	-3.6329	-2.948404	-2.6128	I(1)	0	-5.918778	-3.6329	-2.9484	-2.6128	I(1)
loilp	0	-5.590731	-3.6329	-2.948404	-2.6128	I(1)	0	-5.588583	-3.6329	-2.9484	-2.6128	I(1)
ltrade	0	-5.619222	-4.3098	-3.574244	-3.2217	I(01)	0	-7.470102	-3.6329	-2.9484	-2.6128	I(1)

Sources: Author's computation using eviews 10 L= implies that the variables have been transformed in natural logs.

•	Table 6. VAR Lag Order Selection Criteria.								
	VAR Lag Order Selection Criteria								
	Lag	LogL	LR	FPE	AIC	SC	HQ		
	0	17.23602	NA	1.31e-09	-0.58492	-0.27385	-0.47753		
	1	202.4910	285.8220	5.78e-13	-8.37092	-5.882358*	-7.511865*		
	2	262.4019	68.46962*	4.43e-13*	-8.994396*	-4.32835	-7.38368		

Source: Extraction from estimation output using E-views10 * indicates lag order selected by the criterion; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

ble 7. ARDL bounds cointegration test results.

Specifications (Max lag = 2)	ARDL	F-statistic	Result					
1. F _{GDPPC} (Gdppc Findex1,Findex2,Gfcf, Habr, Oilp)	(1, 0, 0, 0, 0, 0)	3.850813*	Cointegration					
Critical Value Bounds	1%	5%	10%					
I0 Bounds	3.657	2.734	2.306					
I1 Bounds	5.256	3.920	3.353					
ARDL Models selected on Schwarz information criterion (SIC), $k = 5$								
* indicates significance at 10% level; Restricted intercept and no trend								
Source of critical value bounds: Naray	an (2005) Appendi	ix: Case II						

Sources: Extraction from estimation output using E-views10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFINDEX1	-0.032629	0.068997	-0.472901	0.6398
LFINDEX2	0.565558**	0.216502	2.612258	0.0141
LGFCF	0.055839	0.116952	0.477452	0.6366
LHABR	-0.849507***	0.293768	-2.89176	0.0072
LOILP	0.186956*	0.100044	1.868735	0.0718
С	8.235681	0.885878	9.296632	0

Table 8	Long-run	Coefficients	using AR	DL Annroac	h (Denenden	t variahle• I	(GDPPC)
Lable 0.	Long-run	Coefficients	using AK	DL Appi vac	II (Dependen	t variabie. I	

Sources: Extraction from estimation output using E-views10

Note: (1) The lag order of the model is based on Schwarz Bayesian Criterion (SBC).

(2) ** and *** indicate significant at 5 and 1 percent level of significance, respectively. Values in [#] are probability values.

The bounds test result confirms the long-run relationship because the calculated F-statistics are 3.850813 which are greater than the critical value of the upper level of bounds at the 10% level of significance (Pesaran (2001) and Narayan (2005)).This evidence gives strong indication of the existence of a long-run relationship among the variables included in the model.

4.2.3. Estimated Long-run Coefficients using ARDL Approach

Once we established that a long-run co-integrating relationship exists, the next step is to estimate the long-run coefficient. The estimated long-run coefficients are reported in table 8.

1. FINDEX1: The estimated result shows that coefficient of Findex1 is negative, but not significant. This implies that Findex1 has not been effective in influencing economic growth in Nigeria.

2. FINDEX2: However the study found that the Findex2 is positively related to real GDP at significant at the 5% level. The value of coefficient implies that 1% increase in Findex1 leads to increase in the real GDPPC by 56.55% on an average. The result implies that the banking sector development (findex2) affects the economic growth directly through its various channel of intermediation, and because investors/ stakeholders use it as a key indicator of economic activity and future financial development.

3. Control variables: Gross fixed capital formation (GFCF): shows that positive, but not significant. This implies that GFCF has not been effective in influencing economic growth in Nigeria in the long run with period of study. Labour and Oil price are statistically significant at 10% and 5%, respectively and labour inversely related to real GDPPC.

4.2.4 Estimated Short Run Coefficients using ARDL Approach (Dependent variable: LRGDPPC)

1. Findex1: The short-run coefficient of aggregate FIndex1 is positive and not statistically significant at indicating that

capital market in short run could not have a significant impact on the economic activities in the country.

2. Findex2: Also, banking sector development remain statistically insignificant in the short.

This shows that the Nigeria economy is yet to exploit the potentials financial development and indeed financial deepening is yet to be achieved. This result is in line with Samargandi et el. (2014) empirical findings of on the financegrowth for Saudi Arabian economy.

3. Control variables: GFCF gross capital formation and brent oil prices showed evidence of negative and positive statistical insignificant. While labor rate is negative and statistically significant in the model. In sum the results indicate weak influence of financial development variables on economic growth.

4. Error Correction Term (ECT): The short run adjustment process is examined from the ECM coefficient (ECT). The coefficient lies between 0 and -1, the equilibrium is converging to the long run equilibrium path, is responsive to any external shocks. However, if the value is positive, the equilibrium will be divergent from the reported values of ECM test. The coefficient of the lagged error-correction term (-0.3626) is significant at the 1% level of significance. The coefficient implies that a deviation from the equilibrium level of economic growth in the current period will be corrected by 36% percent in the next period to resort the equilibrium. Also, the coefficients suggest that over 36 per cent of the short-run disequilibrium is corrected in the long-run equilibrium in the economic growth model. Nonetheless, since the speed of adjustment for economic growth is slow, the divergence from equilibrium takes long to correct and some of the impact of shocks could be permanent. This highlights the weakness of the Nigerian financial intermediary sector in savings mobilisation and resource allocation.

	Tuble 37 Short Run Obernetents using TREPH reprivation										
Variable	Coefficient	Std. Error	t-Statistic	Prob.							
D(LFINDEX1)	0.000706	0.020424	0.034544	0.9727							
D(LFINDEX2)	0.107345	0.129473	0.829091	0.4152							
D(LGFCF)	-0.024374	0.042302	-0.576195	0.5698							
D(LHABR)	-0.39802***	0.128331	-3.101516	0.0049							
D(LOILP)	0.035364	0.034447	1.026625	0.3148							
ECT(-1)*	-0.36263***	0.083205	-4.358262	0.0002							
DIAGNOSTIC TEST											
R-squared	0.51001										
Adjusted R-squared	0.42834										
Durbin-Watson stat	1.91151										
Serial Correlation (LM) test	3.00344			0.2227							
Heteroskedasticity Test	8.53681			0.2014							
Ramsey RESET Test	1.54189			0.2246							

Table 9. Short Run Coefficients using ARDL Approach.

Sources: Extraction from estimation output using E-views10

Note: (1) The lag order of the model is based on Schwarz Bayesian Criterion (SBC).

(2) ** and *** indicate significant at 5 and 1 percent level of significance, respectively. Values in [#] are probability values.

Type of causality											
	short run		Chi-Statistics				Long run				
Variables	Δlrgdpc	Δlfindex1	Δlfindex2	Δlgfcf	Alhabr	Δloilp	ect & t-stat				
∆lnrgdpc		4.728876	2.342022	4.451017	0.807852	8.155974	-0.169742				
p-values		(0.1928)	(0.5045)	(0.2167)	(0.8476)	(0.0429)	[-2.35695]				
Δ lfindex1	0.199531		1.170719	10.71599	7.296820	11.30800	0.477081				
p-values	(0.9777)		(0.7600)	(0.0134)	(0.0630)	(0.0102)	[1.16868]				
Δ lfindex2	4.888803	4.272290		6.005571	5.644248	5.246428	-0.085334				
p-values	(0.1801)	(0.2335)		(0.1113)	(0.1303)	(0.1546)	[-1.11604]				
Δlgfcf	2.361909	4.309890	2.672330		1.737173	4.020509	0.058559				
p-values	(0.5008)	(0.2299)	(0.4450)		(0.6287)	(0.2593)	[0.26705]				
∆lhabr	18.54275	7.908072	34.39185	11.85376		21.79188	0.048351				
p-values	(0.0003)	(0.0480)	(0.0000)	(0.0079)		0.0001	[0.83818]				
Δloilp	3.236878	3.668702	1.807021	5.279847	3.204454		-0.785787				
p-values	(0.3565)	(0.2995)	(0.6134)	(0.1524)	(0.3612)		[-2.36277]				

Table 10.	Granger	Causality	Results	based	on	VECM.
Lanc Lo.	Urangu	Causanty	Itcourto	Dascu	UII.	

Sources: Computation from eviews 10

Note: *** and ** denotes significant at 1% and 5% significance level, respectively. The figure in the parenthesis [...] denote as t-statistic and the figure in the squared brackets (...) represent as p-value. if t-statistic >2 (it indicates level of significance)

5. Diagnostic Test: The coefficient of determination (Rsquare), which measures the goodness of fit of the model. indicates that 51% of the variations observed in the dependent variable were explained by the independent variables. This was moderated by the Adjusted R-squared to 42.83%, indicating that there are other variables other than our explanatory variables that might also impact on the dependent variable. There is no evidence of serial correlation, heteroscedasticity and functional form misspecification in each of the ARDL models specified. Figures 1-2 indicate the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares (CUSUMSO) stability test results as proposed by Brown, Durbin, & Evans, (1975) were also tested The CUSUM and CUSUMSQ are within the critical boundaries for the 5 per cent significance level (within the two straight lines). Thus, the CUSUM and CUSUMSQ tests indicate that the coefficients of the ARDL model in each of the specifications are stable.



Figure 1 & 2. Plot of CUSUM and CUSUMQ for Specification.

Sources: eviews10

4.2.5 Results of Granger Causality Test

Although our variables are correlated that does not necessarily implied causation in any aspect of the word. Granger (1969) in a paper introduced the approach which tries to answer the question of whether variable x causes y in order to measure the amount of the present values of y that can be explained by past values of y and then to see whether adding lagged values of x can improve the explanation. Table 10 reports the results for Granger causality test where there is consistency in the[causality pattern in the long-run but not in the short-run. Regarding causality test is however, presented in the table below:

In inferring causality in this section, more emphasis is given to the core variables like FINDEX1, FINDEX2 and RGDPPC.

Long run causal relationship: Table 10 reports the results for Granger causality test where there is a long run causality running from independent variables (Findex 1, Findex2 and the control variables) to the dependent variable (RGDPPC) at 5% level of significance. As the error correction terms at banks and stock market equations have the correct sign and statistically significant, but insignificant at the control variables. Therefore, the null hypotheses of no causality have been rejected indicating that banking development and stock market development do not Granger cause economic growth in the long-run. These findings reject the demand-leading hypothesis in favour of the supply-following view that finance drives economic growth

Short run causal relationship: Regarding causality pattern in the short-run, our model indicates the existence of no causal relationship between economic growth rate and stock market (Findex1) and no direction of causality between economic growth and banking sector development (Findex2). Therefore, the null hypotheses of no causality have been rejected indicating that banking development and stock market development do not Granger cause economic growth in the short run and vice sersa. These findings reject the demand-leading hypothesis or supply-leading hypothesis and favour of the neutrality view that finance has relationship with economic growth.

On the other hand, there is no directional relationship between banking sector development and stock market development. This uncommon result seems to be surprising in terms of the financial structure literature and the on-going debate of bank-based versus market-based. In other words, this finding do not supports the financial services view that banks and stock market are more likely to be complementary rather than substitutes. In sum, support are in consistent the evidence that financial sector activities in Nigeria is not well developed. (Iheanacho,2016).

5.0 Findings and Conclusion

The main objective of this study was to examine the relationship between financial sector development and economic growth in Nigeria. Being an empirical study, an econometric model was derived using Cobb Douglas production function in consistent. The study also examined the direction of causality and long-run relation between development and economic growth. financial The examination was done using ARDL approach to cointegration (in EViews) to ascertain the long run relationships among the variables and subsequently vector error correction model (VECM) and granger causality test were estimated based on the cointegration test outcome to find out the short run and long run relationships. However, the objectives of the study were fulfilled with the following findings;

FINDEX1, The estimated result shows that coefficient of Findex1 is negative, but not significant. This implies that Findex1 has not been effective in influencing economic growth in Nigeria.

The findings are consistent with Cevik and Rahmati (2013), Quixina and Almeida (2014) and Samargandi et al. (2014) observed for Libya, Angola and Saudi Arabia, respectively. The results confirm the weakness of financial intermediary sector in saving mobilisation and resource allocation in oil-dependent economies as documented by Nili and Rastad (2007), Beck (2011) and Barajas et al. (2013). FINDEX2, however the study found that the Findex2 is positively related to real GDP at significant at the 5% level. The value of coefficient implies that 1% increase in Findex1 leads to increase in the real GDPPC by 56.55% on an average. The result implies that the banking sector development (findex2) affects the economic growth directly through its various channel of intermediation, and because investors/ stakeholders use it as a key indicator of economic activity and future financial development. The causal effect of crude oil price on economic growth and financial sector development is found to be positive and significant in the long-run, suggesting that crude oil price is a key driver of long-term development of the Nigerian financial sector and as such among the underlying factors that determine the amount of economic activities passing through the Nigerian financial sector. Labour inversely related to real GDPPC.

The short-run coefficient of aggregate Findex1 is positive and not statistically significant indicating that capital market in the short run could not have a significant impact on the economic activities in the country. Also, Findex2, banking sector development remain statistically insignificant in the short. This shows that the Nigeria economy is yet to exploit the potentials financial development and indeed financial deepening is yet to be achieved. This result is in line with Samargandi et el. (2014) empirical findings of on the financegrowth for Saudi Arabian economy.

There is no evidence of short run causality was between recorded between economic growth rate, stock market (Findex1) and banking sector development (Findex2). This is because financial development has a weaker effect in oilexporting countries like Nigeria than in oil importing countries. Also, it is due to the high dependence on oil in the former but also because of the general inefficiency of financial institutions in oil dependent countries.(see Nili and Rastad, 2007). These findings also, reject the demand-leading hypothesis or supply-leading hypothesis and favour of the neutrality view that finance has relationship with economic growth. On the other hand, there is no directional relationship between banking sector development and stock market development. This uncommon result seems to be surprising in terms of the financial structure literature and the on-going debate of bank-based versus market-based. In other words, this finding do not supports the financial services view that banks and stock market are more likely to be complementary rather than substitutes. In sum, support are in consistent the evidence that financial sector activities in Nigeria is not well developed. (Iheanacho, 2016).

The results suggest that both stock market and banking sector development are not significant drivers of economic growth in Nigeria.

The results are similar to what Naceur and Ghazouani (2007) documented for the Middle East and North Africa (MENA) region but deviates from what Barajas et al., (2013). The results highlight the special case of developing oil-exporting countries: economic activities are significantly driven by the oil sector.

The results of this study show that there is every need to enhance resource mobilisation and allocation efficiency in the financial sector in Nigeria. Such objective would require putting in place appropriate policy and institutional frameworks including regulatory, supervisory and legal frameworks.

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