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An Empirical Study on the Relationship between Financial Intermediaries and Economic Growth in Nigeria: A Cointegration and Causality Analysis

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Abstract: *The study empirically investigated the relationship between financial intermediaries and economic growth in Nigeria. Annual time series data covering 1970 to 2013 were used to analyze the long run and short run relationship between the development of financial intermediaries and economic growth along with the direction of causality between the indicators. The results of the unit root test show that the variables are integrated at I(1). Cointegration is being found between the series in the presence of a structural break in 1987, 1992 and 1996. Using bound testing technique for cointegration a stable long-run relationship was found between the indicators of financial intermediaries and the economic growth. Error correction coefficient was statistically significant. It was concluded that insurance premium and value of stock transaction have a positive impact on economic growth in both short runs and long-run. However, bank credit has a negative influence on economic growth. The causality test reveals a bi-directional relationship between bank credit and economic growth while a unidirectional causality moves from economic growth to insurance premium and value of stock transactions. Here remains an important policy implication for the concerned individuals of Nigeria, that is, they have to emphasize in financial development to ignite economic growth.*

Keywords: *Economic Growth, Financial Intermediaries, Andrews-Zivot, Bound Testing Approach, Granger Causality*

I. Introduction

In recent years, the link between financial intermediaries and economic growth has generated a great deal of interest among policymakers, academics, and economists in developing countries. Several studies have been carried out on the relationship between financial developments and economic growth in developed countries (see Levine 1997 for a detailed review). According to Aziakpono (2005) financial intermediation plays a significant role in increasing economic activities of an economy through the fallowing functions. Firstly, financial systems act as an effective conduit for channeling funds from surplus to deficit units by mobilizing resources and ensuring an efficient transformation of funds into the real productive sector of an economy. Secondly, financial intermediation leads to the transformation of the maturity of savers and investors' portfolios, thus, providing sufficient liquidity to the system as the need arises. The third important role is risks reduction from the system through diversification and techniques of risk sharing and pooling (Nissanke and Stein, 2003). Through these functions, a modern financial system may promote economic growth. However, despite the development of the new growth theory that provide theoretical backing on this nexus, the debate concerning the role played by the development of financial intermediaries in economic growth is far from settled. More empirical literature is needed especially in developing economy like Nigeria.

The financial intermediaries versus economic growth debate are ongoing, and policy makers and development economists in Nigeria continue to identify which one should come first. Is the bank-based financial development, insurance or the stock market- based financial development matters in promoting economic growth in Nigeria? Few studies in Nigeria attempt to identify which aspects of financial development is more growth promoting, and deserve more attention.

This study is divided into five sections. Section one is the introduction. Section two is the overview of the Nigerian financial sector. Section three reports the theoretical and empirical literature review. Section four presents a general specification of the model. Section five is the results of the analysis while the last section is the summary, policy implications, and recommendations

II. Overview Of The Nigerian Financial Sector

The Nigerian financial industry had been in existence since before the country got independence in 1960. There was the Banking Ordinance Act in 1952 which was the first law that allowed banks to operate in Nigeria. Many banks that had the require funds as capital base obtained a license to operate subject to supervision from the government. Only three foreign banks and two indigenous banks were working at that time with 20 branches each. Central Bank of Nigeria (CBN) was established in 1958 under the CBN Act. It started operation in the mid-1959 and was saddled with the responsibility of regulating banks, the distribution of currency and other traditional role performed by the apex banks. These functions are aimed at providing macroeconomic stability in the country. CBN also have the mandate to execute monetary policy decisions and act as the bankers' bank were it lend money to commercial banks (Corporate Guide International, 2010).

The country saw the establishment of a stock market in 1960. It was formally called the Lagos Stock Exchange and by December 1977 it metamorphosed to Nigerian Stock Exchange. It lists and trade in equity or shares of companies, government stocks, industrial loans and so on. The investing public can buy and sell quoted securities through the services of the stock market. Moreover, the market also deals with transactions clearing, settlement, and delivery services. An automated trading system services for remote trading and surveillance is part of it features. The Nigerian Stock Exchange has branches in Abuja, Benin, Ibadan, Kaduna, Kano, Lagos, Onitsha, Port Harcourt and Yola (Bloomberg, 2015).

The stock market contributed largely to the development of the financial sector in Nigeria. For instance, according to Nigerian Securities and Exchange Commission (2013), a total of 11.19 billion units of securities valued at N83.298 billion were traded in 130,548 deals in 2013. Market capitalization of equities stood at N10.195 trillion in January 2013 while All share index that measures the movement of prices of equities quoted on the Nigerian Stock Exchange was 31,853.19 points

The first domestic insurance company was established in 1958 called the African Insurance Company Limited. The Companies and Allied Matters Act of 1990 are authorized that Insurers must be established as limited liability companies (International Monetary Fund, 2013). The Commission was established by Decree, No.1of 1997. It has been empowered to supervise, inspect, provide remedies, enforcement of actions and composition of fines. The Insurance Act, No 1 of 2003 made provisions for the licensing and operation of insurers. Other provisions include reinsurance, intermediary services and so on. The source of fund for NAICON is from the Industry Levy and government grants, 50% Goes to operational purposes, 30% is for industry capacity upgrading while the remaining 20% are reserved for compensation and industry development.

As at September 2005, the industry recorded 104 insurance companies and four reinsurance companies in existence (Ojo, 2012). However, International Monetary Fund (2013) reported that in the Nigerian financial sector insurance industry is the underdeveloped segment with assets less than 2% of Gross Domestic Product (GDP). Assets of the life insurance are almost half of the property of the non-life sector, indicating a low level of savings and investment in insurance products. In terms of gross written premium, the insurance industry grew at an average rate of 23% from 2001 to 2010 but remains very small. The sector recorded a total premium income of ₦ 201 billion in 2010, representing 0.7% of the country's GDP. The gross written premium is estimated to be ₦232 billion in 2011.

The institutions saddle with the responsibilities of regulating the Nigerian financial sector are; the Federal Ministry of Finance (FMF), Central Bank of Nigeria (CBN) for the money market, the Securities and Exchange Commission (SEC) as the apex institution regulating the capital market, Nigeria Deposit Insurance Corporation (NDIC), insuring depositors funds with the money deposit banks, National Insurance Commission (NAICOM) and the National Pension Commission (PENCOM) (Maduka and Onwuka, 2013).

The Federal Ministry of Finance and Central Bank of Nigeria shares control over Bureau de Change. They are the monetary authorities in the country. The FMF also advises the Government on its fiscal activities and interacts with the CBN on financial matters. It handles licensing of Bureau de Change. The Federal Mortgage Bank of Nigeria (FMBN) regulates mortgage finance business in Nigeria. It provided banking and advisory services as well as research activities with regards to housing. FMBN have also been empowered to license and regulate Mortgage Institutions in Nigeria (Dimkpah, 1998).

The Nigerian financial sector had undergone structural transformations over the years. There are two periods that characterized the changes in financial activities in Nigeria. The first period was the pre-reform era (1970 to 1985) and the second is the post-reform period (1986 and above). Before the liberalization of the economy in 1986, Nigerian economy was characterized by issues of financial repression such as regulation of interest rates, credit, and bank deposit control. There was also directed investment by the government. However, the introduction of Structural Adjustment Programme by the Babangida administration in 1986 had made a large sweeping transformation in the financial sector. Reforms aimed at liberalizing the economy in terms of privatization and commercialization was initiated. Policies such as devaluation of currency, removal of subsidies, especially on petroleum product and the disbanding of commodity boards to encourage agriculture. The government had the objectives of accelerating the high level of savings and investment in the country. The

target is that increased savings would raise the level of funds that would be available for investment. Therefore, the economy would enhance its capacity to produce more goods and services (Dimkpah, 1998).

III. Theoretical And Empirical Literature Review

Schumpeter (1911) was among the pioneers on the nexus between financial intermediation and economic growth. He put forward an argument as to whether the financial sector of an economy can lead to economic growth, or it is the rapid industrialization that leads to the development of financial intermediaries. To Joan Robinson, it is when economic growth leads that financial development follows. However, Gerschenkron (1962), Patrick (1966), and Goldsmith (1969) emphasized that sound financial sector can play a significant role in increasing economic activities.

McKinnon (1973) and Edward Shaw (1973) were the first to explicate the notion of financial repression. According to this notion, a repressed financial sector discourages both saving and investment because the rates of return are lower than what could be available in a competitive market. In such a system, financial intermediaries fail to operate at it full capacity in promoting saving and investment thus, this impeding the development of the overall economic system. This finding was based on the theoretical grounds of the liquidity preference theory propagated by Keynes (1936) who believed that interest rates had to be lowered to avoid a fall in income. During the 1980s, many developing countries faced economic instability and high inflation rate. This led Neostructuralists such as Joseph Stiglitz (1989) to criticize the McKinnon-Shaw school and concluded that financial liberalization would only slow down the growth.

A different strand of the theory that positively links finance and growth emerged in the early 1990s as a branch of the literature of endogenous growth. Many studies depend on the model structure of the AK type (Romer, 1986), in the sense that there are constant returns to a sufficiently broad concept of capital. Bencivenga and Smith (1991) present a model in which savings are channeled to promote productive activities. Through this investors adjust their assets towards the illiquid growth enhancing. King and Levine (1993b) developed a Schumpeterian model of technological progress similar to Romer (1990). Financial intermediaries and securities markets enable particular entrepreneurs to undertake an innovative activity, which affects growth through productivity enhancement this is also similar to the view of Schumpeter (cited above). Bencivenga, Smith, and Starr (1995) indicate that financial institutions lower liquidity risk to which savers are exposed by enabling depositors to withdraw cash before a project's maturity (banks). This reduces the disincentive to investing in long-run projects.

Boyreau-Debray (2003) investigate the relationship between growth and financial intermediation subnational level within China. The author first uses evidence on the fragmentation of regional capital markets to justify the existence of local credit channels. Second, using a dataset of 26 provinces between 1990 and 1999, the study defines and introduces indicators of local banking development into the traditional growth regression framework using the GMM-system estimator. The findings indicate that the bank credit extended at the state level has a negative impact on provincial economic growth.

Ćurak et al. (2009) used fixed-effects panel model to explore the link between insurance industry development and economic growth in ten transition European Union member countries for the period 1992-2007. Also, they employed growth of GDP per capita as a measure of economic growth and three insurance variables (life insurance, non-life insurance, and total insurance). Furthermore, control variables were also used such as bank credit to the private sector, GDP per capita, stock market capitalization, Investment, Education, Openness, and Inflation. The findings of their study revealed that insurance industry development positively and significantly influences economic growth. The contribution includes life and non-life insurance, as well as, total insurance.

Ewah et al. (2009) investigated the relationship between the capital market efficiency and economic growth in Nigeria. An annual time series data was used covering 1961 to 2004 using variables such as market capitalization, total market transaction money supply, interest rate, and government development stock. The authors applied multiple regressions and ordinary least squares estimation techniques to analyze the data. The results of the total transactions in the stock market and interest rate assume positive sign. The study recommends that the private sector should be encouraged to invest in the capital market. This is through educating and enlightening the public about the role of the stock market in economic growth.

Chee and Nair (2010), utilized Panel data with a sample of 44 Asia and Oceania countries for the period 1996 to 2005. fixed effects generalised least squares and random effect estimator models were employed for the study. They investigated the impact of foreign direct investment (FDI) and Financial Sector Development on Economic Growth using GDP per capita , FDI to GDP ratio, financial sector development to GDP ratio and two dummy variables for least developed and developing countries as variables. They reported that development of the financial sector enhanced the contribution of Foreign Direct Investment on economic growth in the region.

Waheed and Younus (2010), investigated the effects of financial sector development and its efficiency on economic growth from developing and developed countries. They utilized a cross-country data averaged over the period 2001 to 2005 using the extreme bond approach (EBA) for sensitivity analysis. The variables used in the study are investment to GDP ratio, primary, secondary and tertiary gross enrolment ratio as a proxy for human capital, M2 to GDP Ratio, Private Credit to GDP ratio, trade openness, Inflation, FDI to GDP ratio, real GDP growth, real per capita Income growth and SPREAD defined as the measure of financial sector's efficiency. Their findings support the core idea that financial sector development and financial sector efficiency stimulates economic growth.

Ahmed and Wahid (2011) investigated the financial structure and economic growth link in African countries using FMOLS and Panel cointegration technique and time series data from 1986 to 2007. The variables used in the study are per capita real GDP, rate of investment, Private credit by deposit banks and other financial institutions as a ratio of GDP, stock market capitalization, total value of listed shares as a ratio of GDP, stock market total value traded and value of total domestic shares traded as a percentage of GDP. They construct indices of financial structure and financial activity using log of the ratio of the stock market total value traded to private credit ratio and log of the ratio of stock market capitalization to private credit ratio by utilizing principle component procedure. Their result suggests that market-oriented financial system is vital in explaining output growth via enhancing efficiency and productivity. Moreover, development of banking system is significant, and it is associated with the increase of capital accumulation.

Cheng et al., (2012) employed Pooled Mean Group (PMG) estimators to examine whether dynamic impacts of banks and stock markets on economic growth are related to the level of country development. Using annual data from 15 industrial and 15 emerging countries over the period from 1976 to 2005, they found that banking development and stock market development are not always a panacea for economic growth. Most importantly suggesting that fully functional tools to render stable growth for a country may depend on the level of the country's development. The variables used in the study are GDP, M3 for financial depth, and stock representing stock market development indicators.

Mahran (2012) used time series data for Saudi Arabia over the period from 1968 to 2010. The study employed an autoregressive distributed lag methods and the error correction model (ECM). He used broad money supply, M3 as liquid liabilities; currency plus demand and interest-bearing liabilities of banks as a percentage of GDP, credit to the private sector by commercial banks as a ratio to nominal GDP, investment to GDP ratio, government spending to GDP ratio, human development, trade openness to study Financial Intermediation and Economic Growth in Saudi Arabia. They conclude that financial intermediation has an adverse impact on the long-run real output growth in the country.

Ali (2013) investigated the long run and short run linkages between economic growth and financial development in Sudan from 1970 to 2011. He employed Autoregressive distributive lag (ARDL) techniques. He used three indicators to measure the financial developments which are the ratio of liquid liabilities of commercial Banks to nominal GDP, the credit provided to private sector by commercial Banks as a percentage of GDP and the broad money supply as a share of GDP. He also used control variables in the analysis such as trade openness, inflation, government expenditure and gross investment. His analysis indicated that liquid liabilities and credit to the private sector have a positive effect on economic growth. The study also found that inflation, government expenditure, trade openness and money supply have adverse impacts while gross investment has a positive impact on the economic growth in Sudan.

Kafingura (2013) examined the dynamic association between the economic growth and financial development in South Africa during the period from 1960 to 2012. He used Vector Autoregressive (VAR) approach. The variables used were Bank credit to private sector, real GDP, broad money supply, stock and bond market capitalization and real interest rate. He found that financial intermediaries had different effects on economic growth. The result also indicated bidirectional causality between economic growth and stock market and unidirectional causality from Bond market to economic growth. Thus, as for financial intermediaries, causality runs from economic growth to financial intermediaries.

Salami et al. (2013) used the ordinary least square (OLS) method of regression to investigate the impact of the financial development sector on economic growth in Nigeria. The variables used were the ratio of credit to the private sector to GDP, real interest rate, and the ratio of liquidity liabilities to GDP. Their result indicated that the only interest rate is found to be negatively related to the economic growth while other variables are positively related to economic growth

Nkoro and Nko (2013) analysed the relationship between the development of the financial sector and economic growth in Nigeria. They used annual time series data covering the period of 1980 to 2009 for five variables, namely: ratios of broad money supplies to gross domestic product (GDP), private sector credit's to GDP, bank deposit liability to GDP, market capitalisation to GDP, prime lending rate and real GDP. Their results from the vector error correction model (VECM) revealed that, in the long-run, there is long-run equilibrium relationship between the economic growth and financial sector development in Nigeria. They

concluded that there was a high-speed rate of adjustment in economic growth due to changes in the financial sector development.

Ohwofasa and Aiyedogbon (2013) examined the impact of financial deepening on the economic growth in Nigeria. They employed vector autoregressive model (VAR) and analyse the effectiveness of financial deepening indicators, namely: ratios of money supply to gross domestic product (GDP), private sector credit to GDP, gross national savings to GDP and other determinants which include gross capital formation, exchange rate and prime lending rate on the growth of Nigerian economy respectively. The results reveal that there is long-run equilibrium relationship between the financial deepening indicators and economic growth. Also, the results from the innovation accounting system show that the behaviour of economic growth, exchange rate and gross domestic savings in the previous year affect the current behaviour of the Nigerian economic growth positively. Likewise, the behaviour of the gross capital formation in the previous year has a significant negative effect on the current economic growth. As a result, despite various economic and institutional reforms carried out by monetary authorities, the extent to which financial deepening affect economic growth is found to be very low.

Peia and Roszbach (2013) re-examines the empirical relationship between financial development and economic growth in 26 countries. The variable used in the study are gross domestic product, bank credit value of stock transaction indicate that stock market development is positively related to GDP in 15 countries, while a positive, stable relationship between bank credit and GDP is present in 16 countries. However, the overall result is consistent with the cross-country literature and points towards a positive finance-growth nexus. The causal link between credit and GDP points to a clearer evidence of bidirectional and reverse causality in the case of bank-based economies. It is concluded that the leading role of financial intermediation in industrialized countries appears to vanish when we consider a period in which the financial sector has developed extensively.

Alkhuzam et al. (2014) applied Granger causality and cointegration techniques to investigate the direction of causality and the long-run relationship between economic growth and financial development in Qatar using annual data from 1990 to 2012. They used three alternative indicators to measure the financial development which are domestic credit provided by banking sector as ratio to GDP, Bank credit to private sector as ratio to GDP, and broad money supply (m2) to GDP ratio, while the real GDP measures the economic growth. Their analysis showed that a positive long-run relationship exists between all the three financial development indicators and real GDP. They also found that in the short-run a unidirectional causality running from the real GDP to domestic credit provided by the banking sector. However, no causal relationship between bank credit to the private sector to GDP and real GDP, and between other two financial indicators and real GDP have been found.

Arabi (2014) employed Johansen approach to cointegration and vector error correction Model to examine the dynamic relationship between economic growth and financial development in Sudan over the period 1970 to 2012. He used three indicators to measure the financial development, namely: Domestic credit to the private sector to GDP, deposit liability to GDP, and money supply GDP ratio. The result indicates that a long-run cointegration exists between financial development and economic growth.

Madichie et al. (2014) investigated the relationship and direction of causality between the financial development and economic growth in Nigeria. They applied error correction model and pairwise Granger causality test on four data series, namely: real gross domestic product, financial development, liquidity ratio and interest rate covering the period of 1986 to 2012. Their results from the Johansen cointegration test showed the existence of long-run equilibrium relationship between the financial development and economic growth in Nigeria. Meanwhile, a positive long-run relationship is found to exist between the liquidity ratio, fixed capital formation, and economic growth. On the other hand, interest rate and financial development are found to have a negative long-run relationship with the economic growth. Furthermore, the results from the pairwise Granger causality test confirmed the existence of unidirectional causality running from the gross capital formation to economic growth and from economic growth to the interest rate. Also, unidirectional causality was found to exist, running from the economic growth to the financial development. Moreover, liquidity ratio was also found to Granger-cause economic growth.

Ogege and Boloupremo (2014) examine the impact of deposit money bank credit on the economic growth in Nigeria. They use multivariate Johansen Juselius and vector error correction model to analyse five variables, namely: per capita gross domestic product, credit extension to production, general commerce, services and other sectors covering the period of 1973-2011. The results show that there is the existence of a long-run relationship between the deposit money bank credit and economic growth. Also, deposit money bank credit was found to have a significant positive impact on the Nigerian economy. On the other hand, services, credit to general commerce and other sectors were found to have an adverse effect on the growth of the Nigerian economy.

Pradhan et al. (2014) employed the panel vector autoregressive model to investigate the causal relationship between banking sector, stock market development and economic growth in 26 ASEAN regional

forum countries from 1961–2012. Based on the constructed development indices, the study found out that a long-run relationship exists between the two financial intermediaries and economic growth. Also, they found bidirectional causality between banking sector development and economic growth and a unidirectional causality from stock market development to economic growth.

Sahoo (2014) used ARDL and Granger causality approach to examining the role of financial intermediation in Indian economic development from 1982-2012. The study employed variables such as real GDP, the ratio of private sector credit-to-GDP, the rate of market capitalisation-to-GDP and the sum of credit to the private sector and market capitalisation as a proportion of GDP for it analysis. The outcome of the analysis revealed that both the bank-based and market-based financial deepening have a positive impact on Indian economic growth with banking sector exalting higher influence over the financial market sector. Furthermore, unidirectional causality was found running from private sector credit to real GDP, while no causality was observed between stock market capitalization and real GDP.

Akinlo and Apanisile (2014) employed pooled OLS, fixed effect model and generalized method of moment panel model to investigate the relationship between insurance and economic growth in sub-Saharan Africa from 1986-2011. The study used panel data based on the following variables: real GDP, Gross premium income, Physical capital, Human capital, Inflation, Interest rate, and Openness. Their finding shows that insurance has a positive and significant contribution to economic growth in sub-Saharan Africa. The results also show that human capital is positive and statistically significant for economic growth while trade openness and interest rate have an adverse and significant effect on economic growth.

Ayadi et al. (2015) explored the impact of financial development, Bank efficiency, on economic growth across the Mediterranean using Fixed-effect panel model from 1985–2009. Based on the variables used, the result proved that independent legal institutions, good governance, and sound financial reforms have a substantial positive impact on the financial development. Furthermore, inflation affects banking sector development especially when the capital account is open. Government debt affects domestic credit to private sector. Finally, capital inflows appear to have an income effect, increasing revenue and thereby national savings, and thus increasing the availability of credit.

IV. Methodology

4.1 Data

We used annual time series data for 44 years ranging from 1970 to 2013. The data was obtained from World Bank Development Indicators (2014) and the CBN Bulletin (2013). Insurance, the value of transactions, bank credit, and lending rate were used as explanatory variables. Per capita GDP is the regressed variable. The variables have been transformed into logarithms form as to have a reliable results that would impact adequately on policy decisions.

4.2 Model Specification

The functional relationship of the model is captured as:

GDP= f (BC, VTS INS LR,) ……………………………………………………………………………..…..(1)

For the sake of econometric analysis, the functional equation will be transformed into a linear function as:

$$ln gdp_t = \beta_0 + \beta_1 lnbc_t + \beta_3 invts_t + \beta_2 lnins_t + \beta_4 lnlr_t + \varepsilon_t \quad \text{…………}(2)$$

4.3 Variables Description

We use real GDP as a measure of economic growth where it is defined as the total money value of all goods and services produced within a country in any given period. Also, domestic credit to private as a percentage of GDP is used as a proxy for banking sector development. The assumption here is that the higher the GDP, the greater the banking sector development and hence the high the economic growth. Various researchers including Wolde-Rufael (2009), Akinboade (2000) and Hassan et al. (2011), have explained the variability, complexity and shortcomings of the various financial deepening proxies' measures. They have concluded that among all proxies, the growth of domestic credit of private sector indicates that there are both growths in financial development and domestic investment, which are useful for economic growth.

Lending rate is proxied for the interest rate. The rate of interest differs due to time, risk and the marginal productivity of capital (Chandra 2004). Therefore, lower interest rate motivates investment, productivity and hence brings about economic growth (Obamuyi 2009). In this study, we hypothesized that the interest rate has adverse effects on economic growth.

Total value of shares traded ratio measures the total value of shares traded on the stock market divided by GDP. The total value traded ratio or stock market liquidity ratio measures the organized trading of firm equity as a proportion of gross domestic product, and therefore, should positively reflect the liquidity of an

economy relatively to the size of the market (Herriott 2001). However, the total value traded ratio complements the market capitalization ratio.

Total insurance premium: The insurance market development is proxied by the total insurance premiums. However, the use of the premiums as a proxy for insurance market activity would only capture the role of life and non-life insurance companies as providers of indemnification and risk transfer not their role as institutional investors. The premium income of insurance companies directly depicts the interest of the economy in insurance coverage and may be a relatively accurate measure for payouts to clients and can resend influx of capital into the insurer's assets (Haiss and Sümegi, 2008).

4.4 Unit Root Test

Zivot-Andrews Unit Root Test

Various unit roots are used to test the stationary properties of time series data, namely: Augmented Dickey-Fuller (ADF) tests developed by Dickey Fuller (1979), Philips-Perron (PP) tests developed by Philips and Perron (1988), Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests developed by Kwiatkowski et al. (1992), Dickey-Fuller GLS (DF-GLS) tests developed by Elliott et al. (1996) and Ng-Perron developed by Ng-Perron (2001). All the tests have their share of inadequacy due to not having information about structural breakpoints that may occur in the series. This leads to spurious and biased results. As a result of that, Zivot-Andrews (1992) developed three models to test the stationarity properties of the variables with the existence of a structural breakpoint in the series. The models in form of the equations as follows:

(i) Equation (3) permits a one-time change in the function of the trend component, which is the slope.
(ii) Equation (4) has one-time change both in trend and intercept functions of the variables to be used for empirical purposes and
(iii) Equation (5) allows a one-time change in variables at the level form. Zivot-Andrews (1992) pursued three models to check the hypothesis of a one-time structural break in the series.

$$\Delta z_t = q + qz_{t-1} + v_t + w\Delta Q_t + \sum_{j=i}^{k} d_j \Delta z_{t-j} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

$$\Delta z_t = v + vz_{t-1} + w_t + v\Delta T + \sum_{j=i}^{k} d_j \Delta z_{t-j} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

$$\Delta z_t = w + wz_{t-1} + w_t + d\Delta Q_t + d\Delta T_t + \sum_{j=i}^{k} d_j \Delta z_{t-j} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

The dummy variables are indicated by ΔQ_t showing mean shift occurred at each point with time break while trend shift variables is shown by ΔT_t so,

$$\Delta Q_t = f(x) = \begin{cases} 1 \dots \dots if \;\; t > TB \\ 0 \dots \dots if \;\; t < TB \end{cases}$$

and $\Delta Q_t = \begin{cases} t - TB \dots \dots if \;\; t > TB \\ 0 \dots \dots \dots \dots \;\; if \;\; t < TB \end{cases}$

The null hypothesis of unit roots break date is $w=0$ which shows that the series is not stationary with a drift not having information about the structural breakpoint while $w< 0$ hypothesis means that the variables are found to be trend-stationary with one unknown time break. Zivot-Andrews unit root test means all points possible for a possible time break and does inference through regression for all possible breakpoints consecutively. Afterward, this unit root test chooses time break that decreases one-sided t-statistic to test $\breve{w}(= w - 1) = 1$. Zivot-Andrews intimates that in the presence of end points, asymptotic distribution of the statistics is deviated to infinity point. It is required to select a region where the end points of sample period are excluded. Further, Zivot-Andrews suggested the trimming regions.

4.5 F-Bound Test to Cointegration Equation

We apply Autoregressive Distributed Lag (ARDL) approach known as the bound test as presented by Pesaran & Shin (1999) and extended by Pesaran, Shin & Smith (2001). As against the conventional Johanssen cointegration method that uses a system of the equation to estimate long run connection. The application of

ARDL helps to obviate problems associated with determining short time series data (Enisan & Olufisayo, 2009). The approach can test for cointegration among the variables regardless of whether the underlying variables are I(0), I(1), or fractionally integrated. But the approach has a limitation when it comes to integration of order two I(2). Moreover, the long and short-run parameters of the model are estimated simultaneously. As a result, the inability to test hypotheses on estimated coefficients in the long-run associated with Engle-Granger method is avoided. Therefore, the ARDL model in this study is specified as follows.

$$\Delta LNGDP_t = \alpha_1 + \varphi T_{1987} + \sum_{i=1}^{n} \beta_1 \Delta LNGDP_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta LNBC_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta LNIS_{t-i} + \sum_{i=o}^{n} \beta_4 \Delta LNVTS_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta LNLR_{t-i} + \theta_1 LNGDP_{t-1} + \theta_2 LNBC_{t-1} + \theta_3 LNIS_{t-1} + \theta_4 LNVTS_{t-1} + \theta_5 LNLR_{t-1} + \varepsilon_{1t} \dots (6)$$

$$\Delta LNBC_t = \alpha_1 + \varphi T_{2006} + \sum_{i=0}^{n} \beta_2 \Delta LNBC_{t-i} + \sum_{i=1}^{n} \beta_1 \Delta LNGDP_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta LNIS_{t-i} + \sum_{i=o}^{n} \beta_4 \Delta LNVTS_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta LNLR_{t-i} + \theta_2 LNBC_{t-1} + \theta_1 LNGDP_{t-1} + \theta_3 LNIS_{t-1} + \theta_4 LNVTS_{t-1} + \theta_5 LNLR_{t-1} + \varepsilon_{2t} \dots . (7)$$

$$\Delta LNIS_t = \alpha_1 + \varphi T_{1992} + \sum_{i=0}^{n} \beta_3 \Delta LNIS_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta LNBC_{t-i} + \sum_{i=0}^{n} \beta_1 \Delta LNGDP_{t-i} + \sum_{i=o}^{n} \beta_4 \Delta LNVTS_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta LNLR_{t-i} + \theta_3 LNIS_{t-1} + \theta_2 LNBC_{t-1} + \theta_1 LNGDP_{t-1} + \theta_4 LNVTS_{t-1} + \theta_5 LNLR_{t-1} + \varepsilon_{3t} \dots (8)$$

$$\Delta LNVTS_t = \alpha_1 + \varphi T_{1986} + \sum_{i=o}^{n} \beta_4 \Delta LNVTS_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta LNIS_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta LNBC_{t-i} + \sum_{i=1}^{n} \beta_1 \Delta LNGDP_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta LNLR_{t-i} + \theta_4 LNVTS_{t-1} + \theta_3 LNIS_{t-1} + \theta_2 LNBC_{t-1} + \theta_1 LNGDP_{t-1} + \theta_5 LNLR_{t-1} + \varepsilon_{4t} \dots \dots \dots (9)$$

$$\Delta LNLR_t = \alpha_1 + \varphi T_{1994} + \sum_{i=0}^{n} \beta_5 \Delta LNLR_{t-i} + \sum_{i=o}^{n} \beta_4 \Delta LNVTS_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta LNIS_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta LNBC_{t-i} + \sum_{i=1}^{n} \beta_1 \Delta LNGDP_{t-i} + \theta_5 LNLR_{t-1} + \theta_4 LNVTS_{t-1} + \theta_3 LNIS_{t-1} + \theta_2 LNBC_{t-1} + \theta_1 LNGDP_{t-1} + \varepsilon_{5t} \dots \dots \dots . (10)$$

Where Δ is a first-difference operator, and *n* is the optimal lag length. Determining the existence of the long - run relationship amongst the variables in the above equations and is done using bounds testing procedure, which is the first stage in ARDL cointegration method and is based on F-test statistic. The Joint significance test, which implies no cointegration is given by the null hypothesis $H_0: \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = 0.$

Therefore, rejecting the null hypothesis, i.e. $H_1: \theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq \theta_5 \neq 0$ implies that cointegration exist among the variables. Two bounds of critical values are computed by Pesaran et al. (2001) for decision rule. The lower bound assumes that all the variables are I(0) and upper bound assumes they are all I(1). If the computed F-statistic exceeds the upper critical value, there is cointegration. If the F-statistic falls within the two bounds of critical values, the test becomes inconclusive. Finally, if the F - statistic is below the lower critical value, it implies no cointegration.

4.6 Toda Yamamoto Causality

Toda and Yamamoto (1995) causality technique is applied in the level of Vector Autoregressive irrespective of whether the variables are cointegrated, integrated or not. Toda and Yamamoto disagreed that the F-statistic test used for traditional Granger causality may not be valid as the test does not have a yardstick allocation when the time-series data integrated or cointegrated. Toda-Yamamoto technique is fundamentally engaged the evaluation of an augmented VAR (k +dmax) model. k is the best lag criteria in the original VAR system, and dmax is the maximum order of integrations of the variables in the Vector Autoregressive system. Toda-Yamamoto causality test applies an adapted Wald test (MWALD) statistic to test zero restrictions on the parameters of the original VAR (k) model. The test has an asymptotic (chi-square) distribution with k degrees of freedom. The test involves two steps. The first step is to determine the best lag (k) and the maximum order of integration (Q) of the variables in the system. The lag criteria, k, is acquired in the process of the VAR in levels between the variables in the system by using diverse lag length criteria such as Akaike information criterion and Schwarz information criterion. For this reason, this study uses the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), Dickey-Fuller GLS (DF GLS) tests. This is done to discover the maximum order of integration assigned by the symbol (dmx). (dmx) Is equal to Q if all the variables in the time-series found to be I(Q) or one of the variables were found to be I(Q) and the other one is found I(Q-1). This study runs ADF, PP, DF, and Zivot Andrew tests by taking the lag length suggested by AIC (Akaike Information Criterion). The second steps use the modified Wald procedure to test the VAR (k) model for causality. The best lag length is equal to p= (k+dmax). In the case of a bivariate relationship, Toda and Yamamoto causality test can be represented as follows:

$$LNGDP_t = \propto_0 + \sum_{i=1}^{k} a_1 LNGDP_{t-i} + \sum_{i=k+1}^{k+dmx} a_2 LNGDP_{t-i} + \sum_{i=i}^{k} b_1 LNBC_{t-i} + \sum_{i=k+1}^{k+dmx} b_2 LNBC_{t-i} + \sum_{i=i}^{k} c_1 LNIS_{t-i} + \sum_{i=k+1}^{k+dmx} c_2 LNIS_{t-i} + \sum_{i=i}^{k} d_1 LNVTS_{t-i} + \sum_{i=k+1}^{k+dmx} d_2 LNVTS_{t-i} + \sum_{i=i}^{k} e_1 LNR_{t-i} + \sum_{i=k+1}^{k+dmx} e_2 LNR_{t-i} + \varepsilon_{1t} \dots\dots\dots (11)$$

$$LNBC_t = \propto_0 + \sum_{i=i}^{k} b_1 LNBC_{t-i} + \sum_{i=k+1}^{k+dmx} b_2 LNBC_{t-i} + \sum_{i=1}^{k} a_1 LNGDP_{t-i} + \sum_{i=k+1}^{k+dmx} a_2 LNGDP_{t-i} + \sum_{i=i}^{k} c_1 LNIS_{t-i} + \sum_{i=k+1}^{k+dmx} c_2 LNIS_{t-i} + \sum_{i=i}^{k} d_1 LNVTS_{t-i} + \sum_{i=k+1}^{k+dmx} d_2 LNVTS_{t-i} + \sum_{i=i}^{k} e_1 LNLR_{t-i} + \sum_{i=k+1}^{k+dmx} e_2 LNLR_{t-i} + \varepsilon_{2t} \dots\dots\dots (12)$$

$$LNIS_t = \propto_0 + \sum_{i=i}^{k} c_1 LNIS_{t-i} + \sum_{i=k+1}^{k+dmx} c_2 LNIS_{t-i} + \sum_{i=i}^{k} b_1 LNBC_{t-i} + \sum_{i=k+1}^{k+dmx} b_2 LNBC_{t-i} + \sum_{i=1}^{k} a_1 LNGDP_{t-i} + \sum_{i=k+1}^{k+dmx} a_2 LNGDP_{t-i} + \sum_{i=i}^{k} d_1 LNVTS_{t-i} + \sum_{i=k+1}^{k+dmx} d_2 LNVTS_{t-i} + \sum_{i=i}^{k} e_1 LNLR_{t-i} + \sum_{i=k+1}^{k+dmx} e_2 LNLR_{t-i} + \varepsilon_{3t} \dots\dots\dots (13)$$

$$LNVTS_t = \propto_0 + \sum_{i=i}^{k} d_1 LNVTS_{t-i} + \sum_{i=k+1}^{k+dmx} d_2 LNVTS_{t-i} + \sum_{i=i}^{k} c_1 LNIS_{t-i} + \sum_{i=k+1}^{k+dmx} c_2 LNIS_{t-i} + \sum_{i=i}^{k} b_1 LNBC_{t-i} + \sum_{i=k+1}^{k+dmx} b_2 LNBC_{t-i} + \sum_{i=1}^{k} a_1 LNGDP_{t-i} + \sum_{i=k+1}^{k+dmx} a_2 LNGDP_{t-i} + \sum_{i=i}^{k} e_1 LNLR_{t-i} + \sum_{i=k+1}^{k+dmx} e_2 LNLR_{t-i} + \varepsilon_{4t} \dots\dots\dots (14)$$

$$LNLR_t = \propto_0 + \sum_{i=i}^{k} e_1 LNLR_{t-i} + \sum_{i=k+1}^{k+dmx} e_2 LNLR_{t-i} + \sum_{i=i}^{k} d_1 LNVTS_{t-i} + \sum_{i=k+1}^{k+dmx} d_2 LNVTS_{t-i} + \sum_{i=i}^{k} c_1 LNIS_{t-i} + \sum_{i=k+1}^{k+dmx} c_2 LNIS_{t-i} + \sum_{i=i}^{k} b_1 LNBC_{t-i} + \sum_{i=k+1}^{k+dmx} b_2 LNBC_{t-i} + \sum_{i=1}^{k} a_1 LNGDP_{t-i} + \sum_{i=k+1}^{k+dmx} a_2 LNGDP_{t-i} + \varepsilon_{5t} \dots \dots (15)$$

Where LNGDP is the natural logarithms of Gross domestic product, LNBC is the natural logarithms of banking sector, LNIS is the natural logarithms of Insurance, LNVTS is the natural logarithms of Volume of trade of stock market, and LNLR is the natural logarithms of Lending rate. $\propto_0, a_1, a_2, b_1, b_2, c_1, c_2, d_1, d_2, e_1, e_2,$ are the model's parameters; k is the Lag length, dmx is the maximum order of integration, $\varepsilon_{1t}, \varepsilon_{2t}, \varepsilon_{3t}, \varepsilon_{4t}, and\ \varepsilon_{5t} \sim N(0, \sum \varepsilon_{1t}, \sum \varepsilon_{2t}, \sum \varepsilon_{3t}, \sum \varepsilon_{4t}, \sum \varepsilon_{5t})$ are the residual of the model. The null hypothesis (Ho) of non-Causality among the variables is expressed as: Ho: $a_1 and a_2 = 0\ \forall i = 1,2,3 \dots \dots \dots k,$ $b_1 and b_2 = 0\ \forall i = 1,2,3 \dots \dots \dots k,$ $c_1 and c_2 = 0\ \forall i = 1,2,3 \dots \dots \dots k,$ $d_1 and d_2 = 0\ \forall i = 1,2,3 \dots \dots \dots k,$ $e_1 and e_2 = 0\ \forall i = 1,2,3 \dots \dots \dots k$ are tested using modified wald test (MWALD).

V. Result

This section discusses the empirical outcomes of the impact of financial intermediaries on economic growth in Nigeria. The discussions are presented in steps, beginning with the descriptive statistics, the analysis of the empirical result of unit root tests using Augmented Dickey-Fuller and Phillips-perron and Andrew-Zivot (include structural breaks). The cointegration tests use ARDL multivariate bound testing approach that was developed by Pesaran et al. (1996). The estimates of the Short-run and Long-run coefficients are observed through the Autoregressive Distributive Lag (ARDL). The last step is the determination of causality between the financial intermediaries variables and economic growth through non-Granger causality popularly known as today Yamamoto Granger causality.

5.1 Descriptive Statistics

It is well-known fact that time series data are subjected to the high rate of skewness. This is due to the existence of many outliers along the trend line. From the table of descriptive statistics, Jarque-Bera test of normality is used to see whether the data is normally distributed. The null hypothesis in the normality test assumes that the series are normally distributed. Likewise, the mean based coefficients of skewness and kurtosis are applied to check the symmetric nature of the variables.

From the Table 1, it is clearly seen that the series are normally distributed. This is because the mean coefficients of the Jarque-Bera statistics show that the series are normally distributed. Contrariwise, the results from the standard deviation oppose that of the Jarque-Bera test of normality. This is because, the frequency distribution of the standard deviation clearly portrays that all the series are far from being normal

Table 1 Descriptive statistics

	LNGDP	LNBC	LNIS	LNVTS	LNLR
Mean	2.790551	1.071028	3.412454	8.106629	2.613003
Median	2.630965	1.103911	3.263136	6.552024	2.818844
Maximum	4.908538	1.583749	5.595167	14.67030	3.454738
Minimum	0.952381	0.586821	1.053078	2.809403	1.791759
Std. Dev.	1.253611	0.202060	1.363398	3.589900	0.481664
Skewness	0.179982	-0.126067	0.011097	0.480243	-0.352509
Kurtosis	1.645096	3.740974	1.650496	1.808513	1.707814
Jarque-Bera	3.603121	1.123125	3.339698	4.293990	3.972458
Probability	0.165041	0.570317	0.188276	0.116835	0.137212
Sum	122.7842	47.12524	150.1480	356.6917	114.9721
Sum Sq. Dev	67.57623	1.755620	79.93070	554.1576	9.976006

5.2 Unit Root Test

After descriptive statistic, the next step is to determine the method suitable for achieving the stated objectives, in doing so we have to first find out the order of integration of the variables under study. For this purpose, the analysis applied two most popular unit root tests, namely ADF and Phillip Perron. Table 2 below indicates that ADF and Phillip Perron unit root tests of the data series at the level are not stationary. However, all the data series become stationary at first difference. Thus, the variables under the study are integrated at I (1).

The major limitation of the traditional unit root tests is that they do not supply information about the structural break in the data series. This may provide biased result, through OLS regression. Zivot-Andrews test is applied to capture the break and avoid the spuriousness of results. The results as reported in Table 3 indicate that all the variables are integrated at I (1). The result is consistent with the ADF and Phillip Perron unit root tests. The Zivot Andrews unit root test stationary is based on single structural break period of 1992, 1987, 1996, 1992 and 1987 for lnGDP, lnBC, lnVTS, lnIS, and lnLR respectively. Thus, in the absent of I (2) the findings justify the use of ARDL approach to detecting the long-run relationship.

Table 2 ADF and Phillip Perron Unit Root Tests

Variables	ADF TEST		PP TEST		DLF TEST	
	Level	1st Diff	Level	1st Diff	Level	1st Diff
lnGDP	-1.963	-6.16***	-1.99	-6.16***	-1.64	-6.29***
lnBC	-2.18	-5.44***	-2.33	-9.23***	-1.71	-5.45***
lnIS	-2.61	-4.20***	-2.09	-4.16**	-2.66	-4.23***
lnVTS	-1.55	-6.72***	-1.51	-6.72***	-1.59	-6.46***
lnLR	-1.68	-6.27***	-1.25	-6.28***	-1.92	-6.38***

*, ** and *** Denotes rejection of the null hypothesis at 10% and 5% and 1% significance level.

Table 3: Zivot-Andrew Unit Root Test

Variables	Levels		First Difference	
	Z-statistics	TB(Year)	Z-statistics	TB(Year)
lnGDP	-3.2979	1992	-7.1846***	1987
lnBC	-3.9951	1987	-6.3646***	2006
lnVTS	-3.8119	1996	7.9278***	1992
lnIS	-4.8841	1992	-5.0278***	1986
lnLR	-4.955	1987	-7.9076***	1994

*, ** and *** Denotes rejection of the null hypothesis at 10% and 5% and 1% significance level.

5.3 Lag Selection Procedures

The literature reveals that computing ARDL F-statistic is very much sensitive to lag order selection (Bahmani-Oskooee & Brooks 1999; Economidou & Harvey 2006; Shahbaz & Rahman 2010). The choice of lag length was based on Akaike information criterion (AIC), Schwarz information criterion (SIC) and Hannan-Quin information criterion (HQ). The test indicates in Table 4 shows that one (1) lag is selected based on the SC because it performs better than other criteria (Narayan, 2004; Pesaran et al. 2001).

Table 4 Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-59.25453	NA	1.58e-05	3.134367	3.343339	3.210463
1	156.1014	367.6809	1.48e-09	-6.151289	-4.897456*	-5.694713*
2	187.0021	45.22051*	1.18e-09*	-6.439128	-4.140433	-5.602070
3	212.5349	31.13760	1.33e-09	-6.465119*	-3.121564	-5.247581

* indicates lag order selected by the criterion

Where

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

5.4 Multivariate F-Bound Test Cointegration

The long run relationship between the indicators of financial intermediaries and economic growth is investigated by testing a joint significance of F-test. For the above stated null hypothesis of no cointegration. The calculated Pesaran et al. (2001) F-statistics for F_{GDP} (GDP/BC, IS, VTS, LR), F_{VTS} (VTS / GDP, IS, BC

LR) and F_{LR} (LR/ GDP, IS, BC VTS) are 3.24, 5.77 and 5.27 respectively. The F-statistics are higher than critical upper bound at 1 percent and 10 percent level of significance. These findings confirm the existence of a long-run relationship between the variables in the presence of structural breaks stemming in the series for the period 1970 to 2013 in Nigeria. For F_{BC}, the result shows that there is no cointegration as the F-statistic is less than the lower critical bounds at all levels of significance. For F_{IS} is inconclusive as the value lies between the lower and the critical upper boundary at 10 percent.

The Diagnostic tests for serial correlation, normality, and heteroscedasticity are conducted, and the results are presented in Table 5. The results also showed that there is no evidence of serial correlation and heteroscedasticity among variables. The model also passed the normality test.

Table 5 Multivariate Cointegration Bound Test Analysis

Variables	LNGDP	LNBC	LNIS	LNVTS	LNLR
Optimum-lags	(1,1,0,0,0,1)	(1,1,0,0,0,0)	(1,1,0,0,0,1)	(1,0,0,0,0,0)	(1,0,0,0,0,0)
F-statistics	3.24*	1.37	2.74	5.77***	5.27***
Critical values	1%		5%		10%
Upper bound	3.99		3.28		2.94
Lower bound	2.88		2.27		1.99
Diagnostic Test:					
Serial correlation	2.4 [0.133]	0.04[0.847]	1.07 [0.312]	4.93 [0.037]	1.17 [0.289]
Normality	1.7 [0.428]	28.4 [0.000]	1.16 [0.560]	0.49 [0.780]	0.54 [0.763]
Heteroscedasticity	0.49[0.489]	0.14 [0.709]	1.08 [0.305]	0.39 [0.535]	0.78 [0.383]

ARDL Long-run Cointegration

After confirming the presence of the long-run relationship between the variables, the next step is to estimate the signs and the magnitudes of the relationship. Table 6 indicates the estimated coefficients. The bank credit taken separately indicates an adverse impact on economic growth. It is indicated that a 1 percent change in bank credit results in – 0.51 percent change in economic growth. The inverse relation may be as a result of lack of public confidence in Nigerian banking sectors, especially before the bank consolidation. Also the recent banking crisis relates to poor regulation and supervision of the commercial bank. Moreover, most of the Nigerian bank credits are channeled into the declining industries and enterprises that could not promote economic growth due to low absorptive capacity and poor infrastructural facilities in the country. The result is in line with the finding of Boyreau-Debray (2003)

The long run positive impact of insurance development on economic growth is around 0.68 and statistically significant at a 1 percent level, meaning that a 1 percent increase in insurance premium will lead to 0.62 percent increase in economic growth. This result is in conformity with the empirical study of Akinlo and Apanisile (2014) who indicated a positive relationship between insurance development and economic growth in some sub-Saharan African. In the same vein, Oke (2012) has reported a positive correlation between economic growth and insurance sector development in the Nigerian economy.

The long run positive impact on the value of the stock transaction and the interest rate on the economic growth are each 0.11 percent. The former is statistically significant at 1 percent; the latter is statistically significant at 5 percent level of significantce. This indicates that a 1 percent increase in the value of the stock transaction and interest rate will lead to 0.11 percent increase in economic growth respectively. The result is in conformity with the empirical work of Ewah et al. (2009) who indicated a positive relationship between interest rate, the value of the stock transaction and economic growth in Nigeria. However, the results contradict the finding of Kalapo and Adaramola (2012) who indicated a negative relationship between interest rate, the value of the stock transaction and economic growth in Nigeria.

The dummy variable is explained by changes in a political trend represents political instability, macroeconomic instability, and poor infrastructural facilities. This is due to the failure of transition from military government to civilian government. The coefficient of the dummy variable showed a negative impact on the financial intermediation in Nigeria. Subsequent years after the June 12, 1993 election were followed by distress in the banking system which negatively affects the financial system and economic growth in Nigeria.

Table 6 ARDL Long-run Cointegration

Regressor	Coefficient	Standard error	T-Ratio[Prob]
LNBC	-0.51***	0.10356	-4.95[0.000]
LNIS	0.68***	0.06869	9.87 [0.000]
LNVTS	0.11***	0.01789	6.01 [0.000]
LNLR	0.11*	0.06188	1.80 [0.081]
TB(1992)	-0.04	0.08704	-0.43[0.669]
CONSTANT	0.03	0.14495	0.23[0.821]

***, ** and * show the significance at the 1%, 5% and 10% levels respectively.

5.5 Short run ARDL Cointegration

The ECM results are presented in Table 7. The results indicate that the value of stock transaction and insurance premium promote the economic growth positively and significantly at both one percent level of significance. This means that in the short-run, 1 percent increase in either insurance premium or value of the stock transaction will lead to increase in economic growth by 0.25 or 0.04 percent respectively. The result is in line with the new growth theory that posits a positive relationship between financial development indicators and economic growth. However, the result for bank credit indicates that a 1 percent change in bank credit will result in – 0.64 percent change in economic growth at 1 percent level of significance. The negative sign contradicts the theoretical expectation. However, The interest rate has a positive influence on economic growth. The coefficient of ECT_t indicates the speed of the adjustment back to the long-run equilibrium after a short-run shock. "Significant error correction term is further proven by the existence of stable, long-run relationship." (Bannerjee et al. 1998). The coefficient of ECT is -0.37 at 1 percent level of significance. This implies 37 percent adjustment back to the long-run equilibrium each year after a shock in the short run.

Table 7 short-run ARDL cointegration

Regressor	Coefficient	Standard error	T-Ratio[Prob]
ΔLNBC	-0.64***	0.055899	-11.45[0.000]
ΔLNIS	0.25***	0.051794	4.88[0.000]
ΔLNVTS	0.04***	0.010120	3.97 [0.000]
ΔLNLR	0.04*	0.024394	1.70[0.098]
ΔTB(1992)	0.20***	0.043017	4.75[0.000]
CONSTANT	0.01	0.053054	0.23[0.817]
ECM(-1)	-0.37***	0.064971	-5.74[0.000]
Diagnostic Test:			
Serial correlation	1.2758[0.267]		
Normality	4.2118[0.122]		
Heteroscedasticity	0.14358[0.707]		
R^2	0.85		
R^2- Adjusted	0.81		
DW-Statistics	1.5505		

***, ** and * show the significance at the 1%, 5% and 10% levels respectively.

5.6 Sensitivity Analysis

Diagnostic tests for serial correlation, normality and heteroscedasticity are conducted for the short-run, and the results are presented in Table 7. These tests show that the short-run model passes all diagnostic tests. The results also indicated that there is no problem of serial correlation and heteroscedasticity. The model also passed the normality test. Finally, we have examined the stability of the long-run parameters together with the short-run movements. For this test, we utilized the cumulative sum (CUSUM) and the cumulative sum squares (CUSUMSQ) tests as Proposed by Borensztein *et al.* (1998). The same procedure has been used by Pesaran and Pesaran (1997) and Mohsen *et al.* (2002) to test the stability of the long-run coefficients. The test is used on the residuals of the ECM model. The critical bounds for CUSUM and CUSUMSQ tests are illustrated in Figure-1 and Figure-2. It can be seen from the figures that the plot of the two tests stay within the critical bound of 5%. It implies that the statistics that confirm the existence of the long-run relationship. This indicates the stability of the ARDL model.

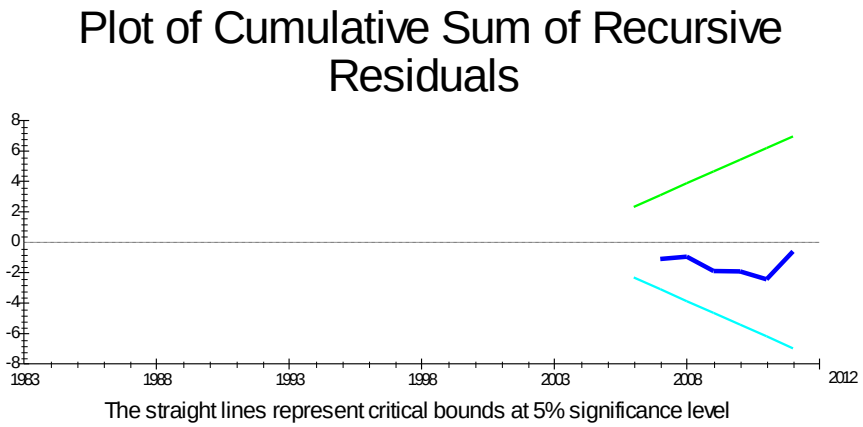

Figure 1

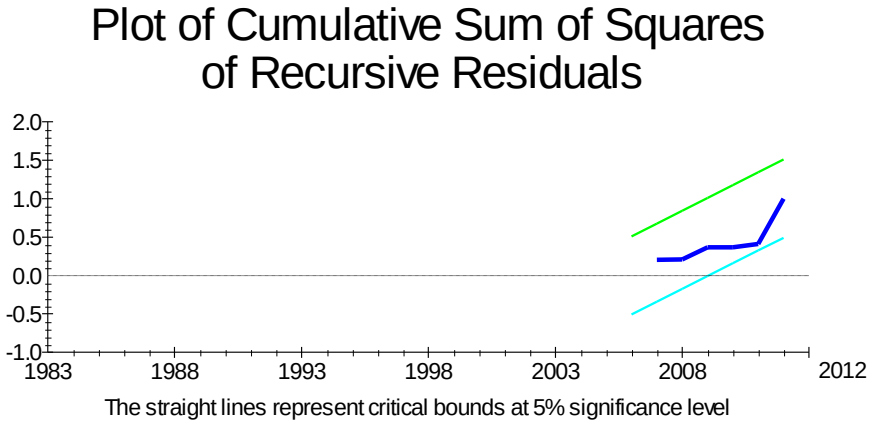

Figure 2

5.7 Non-Granger Causality (Toda Yamamoto Granger Causality)

The study employed the Toda-Yamamoto (1995) procedure to examine the causal nexus between the indicators of financial intermediaries and economic growth in Nigeria. The results are presented in Table 8. The findings indicate the existence of a bi-directional causality between real GDP and bank credit to the private sector at 1 and 5 percent level of significant respectively. This is in line with the empirical finding of Peia and Roszbach (2013) who indicated a two-way causality between the two indicators in Turkey. A unidirectional causality runs from bank credit to insurance and value of the stock transaction. Similarly, one-way causality moves from interest rate to bank credit and value of stock transactions. However, A bidirectional causality run between bank credit and economic growth. This is supporting the feedback hypothesis. A unidirectional causality was detected moving from economic growth to the insurance premium and value of the stock transaction at a significant level. This is in line with the view of demand following hypothesis. These finding supported the empirical finding of Catalan et al. (2000) who observed the same relationship in Thailand. Furthermore, bank credit, insurance, value of the stock transaction, and interest rate jointly cause economic growth while bank credit, insurance, value of the stock transaction, and GDP does not jointly cause lending rate. Since all financial intermediaries can jointly cause economic growth, the finding is in support with the theoretical view of Gurley and Shaw (1955) and Goldsmith (1969) who believe that financial intermediaries cause economic growth.

Table 8 Non-Granger Causality (Toda Yamamoto Granger Causality)

Variables	ΔLNGDP	ΔLNBC	ΔLNIS	ΔLNVTS	ΔLNLR	Joint
ΔLNGDP	-	11.18* [0.01]	2.41 [0.49]	0.35 [0.95]	1.55 [0.67]	21.71** [0.04]

ΔLNBC	16.18*** [0.001]	-	2.16 [0.54]	0.72 [0.87]	12.59*** [0.006]	24.72** [0.02]
ΔLNIS	13.68*** [0.003]	8.99** [0.03]	-	16.36*** [0.001]	4.85 [0.18]	37.70*** [0.002]
ΔLNVTS	8.74** [0.03]	9.03** [0.03]	8.20** [0.04]	-	9.11** [0.03]	20.54* [0.06]
ΔLNLR	1.80 [0.61]	3.50 [0.32]	2.19 [0.53]	3.06 [0.38]	-	10.80 [0.546]

***, ** and * show the significance at the 1%, 5% and 10% levels respectively. Figures in square parentheses and parentheses are the p-values and t-statistics respectively.

VI. Summary, Conclusion And Policy Recommendations

Since the advent of endogenous growth theory in 1980s and the influential work of King and Levine (1993), the debate on the possible role of financial intermediaries in promoting economic growth has assumed an important place in the burgeoning growth literature. There are a number of studies on the finance-growth nexus, both cross-country, and country-specific. However, there is a dearth of literature regarding Nigeria, especially in considering an insurance premium as a measure of financial development. In this context, this study is crucial as it would, hopefully, pave the way for further exploration of the role of financial intermediaries in the economic growth of Nigeria. The study evaluated the role of financial intermediaries in the sustainable economic growth of Nigeria. Augmented Dickey-Fuller and Phillips-Perron unit root tests, as well as Andrew-Zivot, are used to check the stationary of each variable in the model. All the variables are found I to be (1). The study employed ARDL bounds testing to examine the relationship between financial sector indicators (with particular attention to insurance, bank, and stock market development) and economic growth in both short-run and long-run. Toda Yamamoto Granger Causality was also applied to observe the nature of causality. Our findings suggest that there is a significant positive long-run and short-run relationship between stock market, insurance development, and economic growth. The results are consistent with theoretical and empirical predictions. However, a negative short-run and long-run relationship existed between bank development and economic growth. The feedback coefficient is negative and significant, suggesting about 0.37 percent disequilibrium in the previous period is corrected in the current year. We find a stable long-run relationship between economic growth and financial depth, as indicated by the CUSUM and CUSUMSQ stability tests. Bank credit, insurance, value of the stock transaction, and interest rate jointly cause economic growth while bank credit, insurance, value of the stock transaction, and GDP does not jointly cause lending. Our findings are consistent with the view that economic growth is an outcome of the financial development.

Based on the above findings, we can derive some important policy implication. If policy-makers aim to promote growth, then attention should be focused on both short-run and long-run policies. There is a need for the removal of impediments to the stock market and insurance development in the form of tax, legal and regulatory barriers. The financial system in Nigeria needs to be improved through financial deepening. As observed from our result, the banking sector development, as proxied by credit to the private, has a negative impact on growth. In order to reverse this trend, there is a need for banking institutions to revise the modalities for lending to the private sector. The Central Bank of Nigeria should ensure that the domestic credits provided by the banking sector are directed into their appropriate uses. Credit facilities should not be restricted to the large-scale manufacturing industries only, but it should also be extended to small and medium scale enterprises. This will go a long way in stimulating economic growth and development. Moreover, the Government should improve the necessary infrastructural facilities that will make an investment of these credits profitable.

In conclusion, this study has only examined the relationship between financial intermediaries and economic growth in Nigeria. Therefore, future researchers on this topic should consider the possibility of exploring causality between financial development index and economic growth.

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