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# FINANCE-LED GROWTH AND GROWTH-LED FINANCE: EVIDENCE FROM NIGERIA ECONOMIC AND FINANCIAL SECTOR DEVELOPMENT

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## *ABSTRACT*

This study investigates the cause-effect relationship between financial sector development and economic growth; in Nigeria through supply-led growth and demand-led growth models. Annualized time-series data extracted from the Central Bank of Nigeria Bulletin from 1999 to 2017 were used in the investigation. The supply-led growth model assumes that financial sector development granger causes economic growth. The demand-led growth model assumes that economic growth Granger causes financial sector growth. Estimating the cause-effect relationship the Autoregressive Distributed Lag (ARDL), and Pairwise Granger Causality was adopted. Findings revealed that the causal relationship is influenced by the stages and level of economic and financial sector growth through the appropriate policy mixes, of the regulators and monetary authorities. The Error Correction Model (ECM) adjusts for disequilibrium caused by the financial and economic factors of lack of economic value, chain effect of export goods, saving-investment gap, and decrease in capital productivity, back to equilibrium at 37% annually. Both the supply-led growth and demand-led growth models hold in Nigeria. The findings differ from previous studies in Nigeria and report that the causality between finance and economic growth is based on stages and the level of economic and financial sector growth and development. The study also supports the argument of Patrick (1966).

**Contribution/Originality:** This study contributes to the extant literature by investigating the cause-effect relationship between the financial sector development and economic growth, through the supply-led growth and demand-led growth models in Nigeria from 1999 to 2017.

## 1. INTRODUCTION

The causal link between the financial sector and economic growth in contemporary times has bred economic and financial argument emanating from the 2008 to 2010 global crisis, and 2015 to 2017 economic and financial recession in Nigeria. The causal relationship was first discussed in 1911 by Schumpeter that financial sector growth Granger causes economic growth through financial intermediation to the real economic sectors.

Robinson (1952) counter-argue that economic growth influences financial sector growth through GDP per capita growth rate. The causal nexus is argued under the "*supply-led growth and demand-led growth models*". Alternatively, denoted by Patrick (1966) as "*finance led-growth and growth led-finance models*".

The core argument is on the causality between finance-led growth and growth-led finance to cushion internal and external economic and financial shocks and spur economic and financial sector development.

Hurlin and Venet, (2008) as cited in Adeyeye *et al.* (2015) opine that resourceful mobilization and circulation of financial resources for investment stimulates economic growth. Pagano (1993) and King and Levine (1993) upheld that economic growth is determined by financial system stability in investment, instruments, domestic saving, services, capital productivity, and efficient information management (Ndubuisi, 2017). The supply-led growth proposes causality from finance to economic growth.

Robinson (1952); Singh (1999) counter that economic growth defines financial sector growth via macroeconomic activities (Kennedy and Nourzad, 2016). The Robinson argument is rooted in the demand-led growth herein referred to as the "*growth-led finance model*". Causality is proposed from economic growth to finance.

Studies conducted by Fosu (2013) in 28 African countries, Mhadhbi (2014) in 27 medium-income countries from 1970 to 2012 and Sunde (2013) in Namibia support finance-led growth, thus financial sector development ganger causes economic growth. Ehigiamusoe *et al.* (2017) examined finance-led growth in Nigeria and Cote D'Ivoire and found strong evidence of finance-led growth in the latter and growth-led finance in the former.

Herwartz and Walle (2014) observed supply-led growth in high-income economies rather than in low-income economies. Results from specific country studies vary from cross-sectional study findings.

Beck and Levine (2004) opined that cross-sectional studies cannot account for specific-country-stages of development. Al-Awad and Harb (2005), Chuah and Thai (2004) substantiate this result, noting that cross-country investigations are profound to model nations and may not explain the economic and financial dynamics in another nation. A specific-country study would be more rigorous in clarifying the causal relationship.

The "*stages of development model*" were promulgated by Patrick (1966) to ascertain the causal nexus in specific-country development. The stages of development model posited that finance must drive growth at the primary stage of economic expansion and declines as the economy expands for the growth-led finance model to triumph. Patrick proposed causality according to stages of development.

Contemporary empirical data support the Casino Model of Neutrality. Financial sector growth is vital but does not necessarily lead to economic growth and development. Kar *et al.* (2011) in the Middle East and North Africa (MENA) Countries and Grassa and Gazdar (2014) in the Gulf Cooperation Council (GCC) countries observed neutrality in the relationship. Factors other than financial sector growth may stimulate economic growth.

The 2015 to 2017 economic and financial recession in Nigeria is visible to the gap between finance and economic growth to cushion the negative impact of trade and balance of payment deficits caused by lack of value-chain effect on export products, savings-investment gap, a decrease in capital productivity, inefficient information management and financial repression caused by the government.

This study contributes to the extant economic and financial literature by examining the finance-led growth and growth-led finance models in Nigeria as Africa's largest economy and financial sector. The uniqueness of our estimation procedure is another valuable input as it differs from the customary application of Ordinary Least Regression (OLS) and Pairwise causality by previous studies. This study adopts the Autoregressive Distributed Lag (ARDL) model and the Granger Pairwise Causality. The ARDL model outwits some diagnostic impediments associated with OLS and concurrently shows the lagged and the synchronous relationship amongst the variables which makes it the preferred model for analysis.

## 2. LITERATURE REVIEW

The lack of homogeneity in the causal relationship in various studies in developed and emerging economies re-engineer the need to re-examine the models in Nigeria after the 2015 to 2017 recession. The empirical review is based on studies presenting causality between finance-led growth and growth-led finance in developed and emerging economies. Previous studies of Kolapo and Adaramola (2012) support supply-led growth in Nigeria. Torruam *et al.* (2013), Onayemi (2013) and Madichie *et al.* (2014) reported feedback causality between economic growth and finance.

### *2.1. Empirical Evidence from other Countries*

Fosu (2013) studied 28 African countries from 1975 to 2011 and found out that the supply-led growth and demand-led growth models are interdependently related. Sunde (2013) in Namibia found a uni-directional causality flowing from finance to economic growth from the first quarter of 1990 to the fourth quarter of 2014. Menyah *et al.* (2014) studied 21 African countries from 1965 to 2008 and observed strong evidence of financial sector development affecting economic growth in three African countries: Benin, Sierra Leone, and South Africa; and a bi-directional in Nigeria. Bi-directional causality was found in Zambia and no causality in another 15 African countries: Cameroon; Burundi; Central African Republic; Madagascar; Chad; Togo; Gambia; Gabon; Sudan; Congo; , Malawi; Senegal; Burkina Faso; Niger Kenya and Cote D'Ivoire.

Herwartz and Walle (2014) reported stronger evidence of supply-led growth in high-income economies than in low-income economies in the 73 countries they examined between 1975 and 2011. Findings supports the stage development model and supply-led growth. Pradhan *et al.* (2017) examined supply-led growth in ASEAN from 1991cto 2011. Its findings underscore a positive and significant relationship between indicators of financial sector growth and economic growth. The test result revealed uni-directional and bi-directional causality. Ehigiamusoe *et al.* (2017) examined finance-led growth in Cote D'Ivoire and Nigeria and found strong evidence of finance-led growth in Cote D'Ivoire and growth-led finance in Nigeria.

### *2.2. Empirical Evidence in Nigeria*

Nkoro and Uko (2013) applied the Co-integration, and Error Correction Mechanism on the finance-led growth model in Nigeria. Their findings supported finance-led growth from 1980 to 2009. Onayemi (2013) examined the Nigerian economy and observed that economic growth led financial sector development. Torruam *et al.* (2013) report growth led to finance from 1990-2011. A unit increase in real growth rate through the income per capita increases the demand for financial services.

Madichie *et al.* (2014) posited that the growth-led finance model holds sway in the Nigerian economy. Adeyeye *et al.* (2015) examined Supply-Leading Hypothesis in Nigeria and found out that financial sector development led economic growth from 1981 to 2013 and they are interdependent in nature.

The lack of homogeneity in the empirical literature is traceable to variations in the sample period, models, and proxies of measurement. The trailing argument still lingers in Nigeria.

## 3. METHODOLOGY

The *ex-post facto* research design was employed to test the supply-led growth and demand-led growth models in Nigeria. The datasets are of secondary nature, sourced from the Central. Bank of Nigeria (CBN) Statistical bulletins from 1999 to 2017. The dataset was analyzed via the ARDL long-form approach, Error Correction Model (ECM), and the Granger Causality, to test for the directional causality.

The underlying assumption of autoregressive distributed lag model (ARDL) as established by Pesaran *et al.* (2001); Pesaran and Shin (1999) is that all variables are integrated of Order I (1) and Levels I (0).

### *3.1. Model Specification*

Ascertaining the cause-effect among the variables is the major concern of this study. To achieve this, the baseline long-run model equation was estimated thus:

$$GDP_t = \beta_0 + \beta_1 PSC_t + \beta_2 MCP_t + \beta_3 MPR_t + \beta_4 TSR_t + \beta_5 MSP_t\, u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

GDP =Gross Domestic Product growth (economic output).

PSC = Private sector credit provided by deposit money proxy for the financial sector.

MCP = Market capitalization proxy for the size of stock market development.

MPR = Monetary Policy Rate lending rate of the apex bank and anchor for all lending rates in the economy within and outside the interbank.

TSR = The ratio of total savings mobilized to GDP.

MSP = Total money in circulation within the economy.

Equation 1 is the baseline long-run model that determine the supply-led growth and demand-led growth in Nigeria. In establishing a long-run relationship, there is a need to incorporate the short-run error correction procedure. Based upon this the ECM model was developed by modifying Equation 1 as follows:

$$\Delta \text{LogGDP}_t = \alpha_0 + \sum_{I=1}^{n} \alpha_{1i}\, \Delta\text{LogGDP}_{t-1} + \sum_{I=0}^{n} \alpha_{2i}\, \Delta \text{LogMCP}_{t-1} + \sum_{I=0}^{n} \alpha_{3i} \Delta \text{LogMSP}_{t-1} + \sum_{I=0}^{n} \alpha_{4i} \Delta \text{MPR}_{t-1} + \sum_{I=0}^{n} \alpha_{5i} \Delta \text{LogPSC}_{t-1} + \sum_{I=0}^{n} \alpha_{6i} \Delta \text{TSR}_{t-1} + \beta_1 \text{LogGDP}_{t-1} + \beta_2 \text{LogPSC}_{t-1} + \beta_3 \text{LogMCP}_{t-1} + \beta_4 \text{TSR}_{t-1} + \beta_5 \text{MPR}_{t-1} + \beta_6 \text{MSP}_{t-1} + U_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where; $\Delta$ = first difference operator.

The parameters $\alpha_1$ - $\alpha_6$ = short-run relationship parameters.

The parameters $\beta_1$ - $\beta_6$ = long-run relationship parameters.

All other variables are defined as above.

This is denoted as ratio of GDP:

*Ho:* $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$ *i.e there is no co-integration among these variables.*

*Ha:* $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 = \beta_6 \neq 0$ *i.e there is co-integration among these variables.*

According to Pesaran *et al.* (2001) the decision rules are the lower critical bound values denote all the variables are 1(0) signifying no co-integration. The upper bound values denote that all variables are 1(1) signifying co-integration.

## 4. DATA PRESENTATION AND ANALYSES

### *4.1. Data Description*

Basic descriptive statistics as they concern the variables under study are presented in Table 1.

**Table-1.** Variables description and characteristics.

| Variables | GDP | MCP | MS | PSC | MPR | TSR |
|---|---|---|---|---|---|---|
| Mean | 10.390 | 8.469 | 8.628 | 8.386 | 12.533 | 10.741 |
| Median | 10.575 | 9.165 | 8.988 | 8.845 | 13.000 | 10.807 |
| Std. dev. | 0.982 | 1.4074 | 1.205 | 1.399 | 3.331 | 4.216 |
| Skewness | -0.434 | -0.702 | -0.366 | -0.304 | -0.023 | 1.3595 |
| Kurtosis | 1.897 | 2.032 | 1.715 | 1.534 | 2.641 | 5.188 |
| Observations | 19 | 19 | 19 | 19 | 19 | 19 |

Table 1 explains the aggregative averages of the mean, median and standard deviation, a measure of spread and variation. Skewness measures the degree of symmetry and kurtosis measures the degree of peakedness.

The Kurtosis of GDP, MCP, MS, PSC and MPR are less <3 and they are *platykurtic* in nature. The distribution produces fewer and less extreme outliers than the normal distribution.

The Kurtosis of TSR is >3 and the variable is *leptokurtic* in nature. It means the dataset produces more outliers than normal distribution.

### *4.2. Unit Root*

To certify stationarity of the datasets for meaningful analysis according to the Gauss-Markov conditions for unbiased estimation, the variables were subjected to Augmented Dickey-Fuller (ADF) unit root test. The results are presented below:

The result in Table 2 demonstrates that the study variables attained stationarity at Order 1 and Levels of integration. A combination of I (1) and I (0) order of integration gives the ARDL model creditability to test for co-integration.

The p-values of the variables are all less < 0.05, for which cause the null hypothesis of the presence of unit root is convincingly rejected. This test essentially meets the Gauss-Markov conditions for unbiased estimation.

**Table-2.** Summary of ADF unit root tests.

| Variable | ADF test statistics | 5% critical value | Order of integration | Inference |
|---|---|---|---|---|
| GDP | -8.925 | -3.040 | I (0) | Stationary |
| MCP | -5.781 | -3.733 | I (1) | Stationary |
| MS | -6.915 | -3.040 | I (0) | Stationary |
| PSC | -5.192 | -3.710 | I (1) | Stationary |
| MPR | -5.762 | -3.710 | I (1) | Stationary |
| TSR | -5.475 | -3.710 | I (1) | Stationary |

### *4.3. Estimation of the ARDL Regression Model*

**Table-3.** The ARDL model result.

| Variable | Coefficient | Std. error | t-statistic | Prob.* |
|---|---|---|---|---|
| GDP(-1) | 1.3788 | 0.228 | 6.028 | 0.000 |
| MCP | 0.0235 | 0.051 | 0.453 | 0.660 |
| MS | -0.675 | 0.272 | -2.48 | 0.034 |
| GPSC | 0.187 | 0.153 | 1.224 | 0.251 |
| MPR | 0.021 | 0.007 | 2.933 | 0.016 |
| MPR(-1) | -0.014 | 0.006 | -2.285 | 0.048 |
| TSR | 0.002 | 0.004 | 0.517 | 0.617 |
| TSR(-1) | 0.017 | 0.005 | 3.168 | 0.011 |
| C | 0.081 | 0.580 | 0.140 | 0.891 |
| **Other parameters estimate** | | | | |
| $R^2$ | F-stat | DW | Prob. | |
| 0.99 | 1116.72 | 2.75 | 0.000 | |

**Table-4.** The ARDL long run cointegrating result.

| F-Bounds test | | | | |
|---|---|---|---|---|
| Selected model: ARDL | | (1, 0, 0, 0, 1, 1) | | |
| Test statistic | Value | Signif. | I(0) | I(1) |
| | | | Asymptotic: n=1000 | |
| F-statistic | 55.083 | 10% | 2.08 | 3 |
| K | 5 | 5% | 2.39 | 3.38** |
| | | 2.5% | 2.7 | 3.73 |
| | | 1% | 3.06 | 4.15 |

**at 5% level of significance.

The result in Table 3 displays the $R^2$ of 99 percent measuring the goodness of fit of the ARDL regression line model in the tested hypothesis. $R^2$ of 99 percent indicates model reliability. The difference in the dependent variable is accounted for by the independent variables. The F- statistic of 1116.72 and probability value of 0.000,

substantiate the model's reliability. The Durbin Watson Stat of 2.57 rules out possible first-order positive autocorrelation according to the rule of thumb.

The F-statistic value of 55.083 in Table 4 is greater than the upper and lower bound critical value at 5% probability level. The Bound test result authenticates the presence of a long-run co-integrating relationship.

**Table-5.** ARDL model short run error correction model result.

| Variable | Coefficient | Std. error | t-statistic | Prob. |
|---|---|---|---|---|
| D(MPR) | 0.021 | 0.003 | 6.828 | 0.00 |
| D(TSR) | 0.002 | 0.001 | 1.063 | 0.31 |
| CointEq(-1)* | -0.378 | 0.014 | 25.35 | 0.00 |

The CointEq(-1) coefficient of -0.37 in Table 5 is statistically significant and the p-value of 0.000 directly estimates the dependent variable short-run speed of adjustment from disequilibrium caused by financial repression and economic growth crisis back to long-run equilibrium by 37%, supporting both supply-led growth and demand-led growth in Nigeria.

**Table-6.** Pairwise Granger causality tests result.

| **Pairwise Granger causality tests** | | | | |
|---|---|---|---|---|
| **Sample: 1999 2017** | | | | |
| **Lags: 3** | | | | |
| **Null hypothesis:** | **Obs** | **F-statistic** | **Prob.** | |
| MCP →GDP | 16 | 0.045104 | 0.0001** | Reject $H_0$ |
| GDP →MCP | | 3.12909 | 0.0090** | Reject $H_0$ |
| MS →GDP | 16 | 0.14606 | 0.0012** | Reject $H_0$ |
| GDP → MS | | 3.52501 | 0.0023** | Reject $H_0$ |
| PSC →GDP | 16 | 0.17693 | 0.8426** | Reject $H_0$ |
| GDP →PSC | | 2.27683 | 0.1456** | Reject $H_0$ |
| MPR →GDP | 16 | 0.25458 | 0.0049** | Reject $H_0$ |
| GDP →MPR | | 3.07022 | 0.0033** | Reject $H_0$ |
| TSR →GD | 16 | 0.18334 | 0.0027** | Reject $H_0$ |
| GDP →TSR | | 0.52234 | 0.5633 | Accept $H_0$ |
| MS →MCP | 16 | 0.26869 | 0.7689 | Accept $H_0$ |
| MCP →MS | | 9.00604 | 0.0941** | Reject $H_0$ |
| PSC →MCP | 16 | 0.64737 | 0.5531 | Accept $H_0$ |
| MCP →PSC | | 10.4731 | 0.0016 | Accept $H_0$ |

** Suggests causality at the given level of Significance.

The Granger causality test reports two-way directional causality. The criteria for Granger causality between variables are determined by the probability value. If the P-value of the two variables is < 5% significance, then there is Granger causality. From the result above, it can be inferred that two-way directional causality exists between indices of financial sector growth and economic growth GDP. Granger causes MCP, MS, MPR, and MCP, Granger cause MS, and PSC the P <5% significant.

## 5. DISCUSSION OF RESULTS

From the result shown above, it can be inferred there is a positive, statistical and significant long-run relationship between financial sector development and economic growth in Nigeria. The explanatory variables of financial sector development and economic growth revealed that market capitalization, money supply, and private sector credit stimulate economic growth. The ECM result revealed the speed of revision from disequilibrium caused by financial repression, unnecessary invention, regulatory lapse, and economic crisis are revised back to long-run equilibrium at 37% annually. Granger Causality Test shows that there is a two-way directional causality among the variables. Granger causality between variables is determined by the probability value.

## 6. CONCLUSION AND RECOMMENDATIONS

Empirical findings indicate that the causal relationship is influenced by the degree of economic and financial sector growth. The stages of growth, development, and efficiency of the economic and financial climate rest solely on appropriate policy mixes of the central bank and monetary authorities in Nigeria.

Indicators of financial sector development of MCP, MSP, and PSC determine the rate of economic growth based upon the rate of development in Nigeria. On the contrary, economic growth indicators of MPR, TSR, and PSC drives financial sector growth that is also based upon the rate of development. The co-integrating relationship revealed a long-run relationship. By implication, both supply-led growth and demand-led growth are present in Nigeria. The findings support Patrick's (1966) argument. The also corroborate the findings of Kolapo and Adaramola (2012), Torruam *et al.* (2013), Onayemi (2013) and Madichie *et al.* (2014).

Based on these findings, it is recommended that indices of financial development such as banks' credit to the private sector should be made more accessible and cheaper to the real sectors of the economy, and monetary policy should be reviewed quarterly to enhance credit supply. Adequate project evaluation and monitoring should be ensured to drive financial sector growth via effective and efficient utilization of credit facilities.

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