

ANALYSES OF MACROECONOMIC DRIVERS OF STOCK MARKET DEVELOPMENT IN NIGERIA

BY

Innocent Obeten OKOI

Department of Banking & Finance,
University of Calabar.
innobetokoi@gmail.com, 08038971701

Maryjoan Ugboaku IHEANACHO

Department of Business Management,
University of Calabar
adajoan@gmail.com, 08035410532.

and

Suleiman Gbenga LAWAL

Department of Banking & Finance,
University of Calabar.
suleimanlawal24@gmail.com 08034353777.

The paper investigates the long run and short run relationship between the endogenous variable (stock market development) and exogenous variables (economic growth, banking sector development, inflation, stock market liquidity and trade openness) in Nigeria. Annual data were collected using desk survey approach. Autoregressive Distributed Lag (ARDL) test and ARDL error correction regression model was used after preliminary tests were carried out to ascertain stationarity properties. From the result of the analyses, it was discovered that gross domestic product, domestic credit to private sector and trade openness has negative impact on Nigeria stock market development in the long run, whereas inflation rate and total value of shares traded had a positive impact on the development of the Nigeria stock market in the long-run. The results suggested that domestic credit to private sector, stock market liquidity, ratio of credit to private sector, total value of traded stock as well as ratio of trade openness are key drivers of stock market development in Nigeria. As part of recommendations, government should strengthen and solve the weaknesses affecting development of Nigeria's stock market. Policy makers should pursue those policies that stimulate banking sector development so as to promote immediate development of the stock market and government should intensify efforts in stability of inflation rate so as to promote stock market development in the long- run.

Keywords: *Macroeconomic drivers, stock market development, ARDL test.*

INTRODUCTION

The stock market is a platform or avenue for raising needed funds and allocation of funds needed for investment and development. Uford (2017) opines that it is one of the important indicators to assess performance. It is a market that allows trading of stock within a region or country. The stock market is a barometer for economic development. A viable financial market makes an economy to grow. Stock markets that are liquid have the potential to strengthen corporate governance and encourages the stability of the economy (Okoi, Stephen & Orok, 2019). The International Monetary Fund (IMF) maintained that in 2019, the global domestic product stood at 3.7% while developing markets and developing economies grew at 4.7% while Sub-Sahara grew at 3.7% respectively. Africa However, Nigeria expected growth is at 2.3% in 2019. This became the best real GDP growth estimate over the last three years (The Nigeria stock exchange, 2019). In a related development, analyst, stock brokers and other stakeholders in the financial sector believe that the year 2020 promised to be hopeful for equity investors and other traders as regulatory bodies will assist in driving investment for stock capital development. This is because of the macroeconomic inducement of variables like the comparative low interest rate, closure of the border, and timely approval of 2020 budget, reduced valuations of companies based on their fundamentals and banks application of 65% loan to deposit Ratio (LDR) at year end within the economy and equity prices, all things being equal. Other relevant studies which had made meaningful impact on macroeconomic factors that influence stock market development were: (John & Duke II, 2013; Garcia & Liu, 1999; Ayunku & Etale; Umar, Gambo, Dayyaby & Darussalam, 2015; Udoka, Nya & Basse, 2018; Tarus, 2012; Tsurai, 2018 and Azeez & Obalade, 2019). Few other scholars laid emphasis on both macroeconomic factors and institutional qualities of stock market development (Cherif & Gazdar, 2010; and Acquah-Sam, 2016).

Consequently, since stock market development is seen as a catalyst for economic growth and development, it is imperative to identify the key determinants of stock market development in Nigeria. This is why this study is carried out.

Statement of the Problem

The unfavorable economic climate in the last few years has engulfed the Nigerian capital market as witnessed in continuous bearish trend until 2019

before the policy of CBN on open market operations brought a fall in yields on fixed income securities. Nigeria has also witnessed a fragile economy with GDP growth of 2.3 per cent in comparison with the country's population which grows at 2.6 per cent. There have been low savings mobilizations as a result of markets that are not liquid and insufficient stock markets which has affected stock market development in the future. In terms of banking development, credit to firms and individuals as well as private sector was not sustainable and not adequate to get to the targeted priority financial sectors. There have been continuous fluctuations in consumer price index in the economy leading to macroeconomic not being stable on stock market development. Therefore, unstable macroeconomic environments discourage stock market growth. It is imperative to note that sound policies for people and institutions attract value in the market in a sustainable manner. This is critical for both market and economic growth. The challenges identified above have formed the bases for exploring the main drivers of stock market development in Nigeria

The major objectives are to determine the relationship between economic growth and stock market development; examine the effect of banking sector development on stock market development; analyze the effect of inflation (consumer price index) on stock market development; to assess the impact of stock market liquidity on stock market development and to establish the relationship between trade openness on stock market development in Nigeria.

Review of Related Literature

Development of capital market has become imperative and focal point of government at all levels, policy makers, market regulations operators and other stake holders for mobilization of capital formation for organizations, industries, firms and government to promote economic growth and development. A sustained financial system guarantees the flow of funds from surplus economic units to insufficient spending units within a given economy. Capital market enhances the mobilization of domestic and external resources and eases investments outlay. There are two major factors that made the global stock market to pay attention to capital market development globally. One, the rapid growth of capital markets and their significant effects on developed nations of the world. Secondly, the downfall of the Soviet Union in the early 1990's and the speedy growth of capital markets (UNITAR/DFM, 1990). It is worthy of note that capital market started in Nigeria and other African countries through a deliberate national strategy to reorganize and strategize financial institutions as well as private owned institutions that were not operationally viable to contribute to economic growth and wealth of nations.

Acquah-Sam (2016) examined the macroeconomic factors that influence capital market development in Ghana. The study aimed at macroeconomic variables that will boost the capital market in Ghana to develop and alienate the challenges of raising capital for the vulnerable poor. The paper used secondary data that covering from 2001 – 2011. The least square multiple regression model for the study was used. The dependent variable used was market capitalization while gross domestic growth, foreign direct investment, gross capital formation, inflation, capital market liquidity and interest rates were used as independent variables. Principal Component Analysis (PCA) and Structural Equation Modelling (SEM) through Path Analysis and tests of interactions between variables were adopted to test the linear relationship. It was discovered that capital development in Ghana was positively influenced by Treasury bill rates (interest rate) inflation and foreign direct investment proved insignificant in the estimated equation. It was recommended that policy makers in Ghana should set infrastructural development in order to facilitate real growth in income and stock capital development.

Matadeen (2017) investigated the macroeconomic determinants of stock market development from African perspective. A set of 14 Sub-Sahara African countries were used and the scope covered was (1989 – 2016), spanning through 28 years. Descriptive statistic and Panel Vector Error Correction Model (PVECM) were used. The paper noted that long run drivers of stock market development in the region were stock market liquidity, investment, economic growth and banking development. The study added that in the long run stock market development complements banking development while a bi-directional relationship between stock market developments and banking development in the short-run. It was recommended that for African region to become volatile in liquidity, good police measures to strengthen the stock market to stabilize political environment must be taken.

Osaseri and Osamwonyi (2019) examined stock market development and economic growth in BRICS. The study used quarterly time series data for the period 1994Q1 to 2015Q4. The BRICS nations were Brazil, Russia, India, China and South Africa. The study employed the longitudinal research design and dynamic panel estimation generalized least square multivariate method. The study discovered that stock market development exercises a strong significant impact on economic growth of BRICS. Furthermore, the study recommended policy implementation that will heighten the provision of investment in stock.

Ezeibekwe (2019) examined stock market development and economic growth in Nigeria. The paper's main aim was to determine the impact of stock market development on long-run economic growth from 1981 – 2017. Market capitalization was used against real gross domestic product, manufacturing, agriculture, oil export and credit to private sector. The study used pre simple statistics such as graphical analyses and descriptive statistics. The unit root test of Augmented Dickey Fuller (ADF) test was applied. The findings showed that market capitalization to gross domestic product ratio has a positive but significant influence on Nigeria's long run economic growth. It was recommended that policy makers should strive and solve the problems faced by stock market in Nigeria. This study in Nigeria differs from other studies because it incorporated debasing of the macroeconomic variables by using gross domestic product. Moreover, Ezeibekwe (2019), Azeez and Obalade (2019) and few others failed to proxy stock market development by market capitalization.

John and Duke II (2013) examined economic variables that influence stock market development in Nigeria. The scope of the work was from 1970-2011. Specially, the study determined the degree to which increase in prices, stock market liquidity, savings rate, gross fixed capital formation, real gross domestic product and financial sector development influence stock market development. Findings from the Chow test proved that there was no structural break in stock market development. Part of recommendations was a stable financial and economic environment should be the target of the government.

Udoka, Nya and Bassey (2018) explored the effect of macroeconomic determinants of stock price fluctuations in Nigeria. The variables used were gross domestic product, exchange rate and interest rate as independent variables. Absolute stock price was used as dependent variable. The ARDL technique was used in analyzing the data for the period under review. It was revealed that the independent variables- gross domestic product, exchange rate, interest rate and inflation were not jointly co- integrated with the dependent variable, ASTP, hence, no existence of a long run relationship. As part of the recommendations, a favourable business environment should be the target of the policy statement of government.

Methodology, Analysis and Discussion of Results

In this paper annual data covering 1980 to 2018 was used. The Autoregressive Distributive Lag (ARDL) approach was used. The choice of this model is premised on Gracia and Liu (1999) and Matadeen (2017) who conducted a similar work on macroeconomic determinants of stock market development and came out with good results. The present model is modified after their model and takes the following form:

$$MCR_t = B_0 + B_1GDP_t + B_2CPSR_t + B_3INFR_t + B_4VTR_t + B_5TONR_t + E_t$$

MCR: It is market capitalization ratio. It is value of listed shares in the stock exchange divided by GDP within the time (t) dimension. It is used as a proxy for stock market development. The debasing of GDP was done because of economic development in the model.

GDP: The main factor of equity growth. Current GDP is used as bases of income level.

CPSR: Credit to private sector expressed as a percentage of GDP. This explains channeling of savings to investors.

IFR: It assesses the impact of macroeconomic volatility on stock market development

VTR: This is the sum total value of shares traded on a country's stock exchange expressed as a percentage of GDP.

TONR: Trade openness is total sum of exports and imports of goods and services ratio. It is believed that an open economy will encounter a great number of adverse shocks because of more international risk sharing between markets

Unit Root Test Result

The Augmented Dickey Fuller (ADF) test presented in table 2 reveals the following:

Table 2. Augmented Dickey-Fuller (ADF) Unit Root Test

| Variables | At Level | At 1st Difference | Order of integration |
|-----------|-----------|-------------------|----------------------|
| LMCR | -8.1569** | - | I(0) |
| LGDP | -1.0402 | -53.790** | I(1) |
| LCPSR | -1.5027 | -5.6064** | I(1) |
| LIFR | -2.7815 | -7.0895** | I(1) |
| LVTR | -4.0233** | - | I(0) |
| LTONR | -11.076** | - | I(0) |

Notes: ** significance at 5% level

Augmented Dickey-Fuller (ADF) unit root test

Table 2 showed result for ADF unit root test that three (3) of the variables (LMCR, LVTR and LTONR) of the regression had no unit root process at various critical levels at 5% level of significance and was found to be stationary at levels. Non-stationary variables were LGDP, LCPSR and LIFR at their levels. As a result of this, the null hypotheses of the presence of unit root cannot be rejected. Variables such as (LGDP, LCPSR and LIFR) became stationary at their first differences, therefore; their null hypotheses can be rejected. As a result of the stationarity integration orders 1(1) and 1(0) in the ADF unit root test, the Autorregressive Distributive Lag test is most suitable to control the long run and short run dynamics of the present study.

ARDL bound test

Table 3. ARDL F-bounds test

| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
|----------------|--------------|---|-----------------------|---------|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| | | | Asymptotic: n=1000 | |
| F-statistic | 7.521319 | 10% | 2.08 | 3 |
| K | 5 | 5% | 2.39 | 3.38 |
| | | 2.5% | 2.7 | 3.73 |
| | | 1% | 3.06 | 4.15 |
| | | | Finite | Sample: |
| Actual Size | Sample 37 | | | |
| | | 10% | 2.306 | 3.353 |
| | | 5% | 2.734 | 3.92 |
| | | 1% | 3.657 | 5.256 |
| | | | Finite | Sample: |
| | | | n=35 | |
| | | 10% | 2.331 | 3.417 |
| | | 5% | 2.804 | 4.013 |
| | | 1% | 3.9 | 5.419 |

ARDL F-bound testing approach

This test the overall significance of the coefficients in the model. The Wald test is made by making constraints on the estimated long-run coefficients of macroeconomic determinants (LGDP, LCPSR, LIFR, LVTR, and LTONR) and stock market development in Nigeria (LMCR). Table 3, showed ARDL F-bound test have small and higher bound is selected based on 5% significance

level. The paper is based on the normal 5% significance level, therefore, the result revealed that macroeconomic drivers-variables (LGDP, LCPSR, LIFR, LVTR, LTONR) are jointly co-integrated with the dependent variable, LMCR, hence, long-run relationship exist. The computed F-statistic is 7.52 at 5% significance level was greater than corresponding ARDL lower (2.39) and upper (3.38) critical bound values. The value revealed that there is an indication of long-run co-integration between macroeconomic determinants (LGDP, LCPSR, LIFR, LVTR, LTONR) and stock market development in Nigeria (LMCR).

Table 4. ARDL long run form

| Dependent Variable: D(LMCR) | | | | |
|--|-------------|------------|-------------|--------|
| Selected Model: ARDL(1, 1, 2, 2, 2, 0) | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LGDP | -0.155176 | 0.071724 | 2.163508 | 0.0411 |
| LCPSR | -0.285010 | 0.293614 | 0.970696 | 0.3418 |
| LIFR | 0.159948 | 0.139402 | 1.147385 | 0.2630 |
| LVTR | 0.287511 | 0.084120 | 3.417862 | 0.0024 |
| LTONR | -0.039852 | 0.152386 | -0.261520 | 0.7960 |
| C | -2.120585 | 0.835673 | -2.537579 | 0.0184 |

$$EC = LMCR - (-0.1552*LGDP - 0.2850*LCPSR + 0.1599*LIFR + 0.2875*LVTR - 0.0399*LTONR - 2.1206)$$

ARDL long run form estimates

With reference to the unit root test order of integrations ‘I (0)’ and ‘I (1)’, this study seeks to confirm the assertion that there is a possibility of a long run cointegration. The long run coefficient measures the long run effect of the independent variables on the dependent variable. From table 4, long run estimates showed that the independent variables (GDP, CPSR, IFR, VTR, and TONR) have a combined significant positive effect on stock market development in the long run. This means that an increase in these variables will have a significant positive effect with changes in stock market development in Nigeria in the long run. Also, stock market development in Nigeria will reduce by 2.12 per cent as a result of the upsurge in macroeconomic drivers (GDP, CPSR, IFR, VTR, and TONR) in the long run, all things being equal. Similarly, in the long run, economic growth will have a significant negative effect on the stock market development in Nigeria all things being equal. There was a negative but insignificant relationship between

banking development and stock market development in the long run. In the same vein, trade openness has an insignificant and negative effect on stock market development. Inflation rate has insignificant positive effect on stock market development in Nigeria all things being equal. Lastly, stock market liquidity has a significant positive effect on stock market development in the long run. The outcome is not in line with the result from the long run coefficients of Yartey (2008) and Ho & Odhiambo (2017).

Table 5. ARDL short run dynamics result

| Dependent Variable: LMCR | | | | |
|--|-------------|-----------------------|-------------|-----------|
| Method: ARDL | | | | |
| Selected Model: ARDL(1, 1, 2, 2, 2, 0) | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
| LMCR(-1) | 0.289898 | 0.226115 | 1.282081 | 0.2126 |
| LGDP | 1.046853 | 0.581242 | 1.801062 | 0.0848 |
| LGDP(-1) | 0.936663 | 0.578666 | 1.618657 | 0.1192 |
| LCPSR | 0.544980 | 0.318636 | 1.710351 | 0.1007 |
| LCPSR(-1) | -0.639305 | 0.299757 | -2.132745 | 0.0438 |
| LCPSR(-2) | 0.296711 | 0.257940 | 1.150312 | 0.2618 |
| LIFR | -0.004118 | 0.071505 | -0.057584 | 0.9546 |
| LIFR(-1) | -0.025824 | 0.064308 | -0.401571 | 0.6917 |
| LIFR(-2) | -0.135286 | 0.072948 | -1.854558 | 0.0765 |
| LVTR | 0.207467 | 0.071398 | 2.905807 | 0.0080 |
| LVTR(-1) | -0.002777 | 0.087932 | -0.031586 | 0.9751 |
| LVTR(-2) | -0.000528 | 0.040600 | -0.012995 | 0.9897 |
| LTONR | 0.028299 | 0.109238 | 0.259058 | 0.7979 |
| C | 1.505832 | 0.749984 | -2.007818 | 0.0565 |
| R-squared | 0.963949 | Mean dependent var | | 2.088433 |
| Adjusted R-squared | 0.943573 | S.D. dependent var | | 0.778644 |
| S.E. of regression | 0.184963 | Akaike info criterion | | -0.255991 |
| Sum squared resid | 0.786859 | Schwarz criterion | | 0.353546 |
| Log likelihood | 18.73583 | Hannan-Quinn criter. | | -0.041101 |
| F-statistic | 47.30669 | Durbin-Watson stat | | 1.978624 |
| Prob(F-statistic) | 0.000000 | | | |

*Note: p-values and any subsequent tests do not account for model selection.

ARDL short run estimates

The result of the short run coefficients indicated the major macroeconomic drivers of stock market development in Nigeria were gross domestic product, credit to private sector, market capitalization ratio, inflation, total value of shares traded and trade openness ratio. Table 5 above indicated that the value of the intercept is 1.50 revealed that stock market development in Nigeria will experience 1.50% increase when all other variables remained constant. The goodness of fit of that is R-squared has the value 0.9639 (96.39%), approximately 96%. This is a good fit. Moreso, the high value of F-statistics (47.30) showed that the overall model is statistically significant. The overall significance of the ARDL short-run model implies the joint significance of all explanatory variables. This is not in line with findings of Bolanle & Adefemi (2019) who did a similar work. Furthermore, variations in the current period and the previous lagged period of economic growth had an insignificant positive effect on stock market development. This means that, a percentage increase in economic growth will enhance stock market development in the short run. Similarly, the current period and the previous two lagged periods of banking sector development was found to have an insignificant positive impact on stock market development. On the other hand, the previous lagged period of banking sector development had a significant negative effect on stock market development in the short run. This means that, a percentage increase/decrease in banking sector development will increase/decrease stock market development respectively in the short run. This is in confirmation that banking development promotes stock market development (Levine & Zerves, 1996).

The ARDL result added that changes in the current period and the previous period of inflation rate had an insignificant negative effect on stock market development while the previous two lag period was negative and insignificant. This implies that, a proportionate increase in inflation rate will decrease stock market development accordingly in the short run. However, the current period of stock market liquidity had a significant positive effect on stock market development in the short run. On the other hand, the previous lagged period and the previous two lagged periods of stock market liquidity both had an insignificant negative effect on stock market development in Nigeria in the short run. This means that, a percentage increase/decrease in market liquidity will increase/decrease stock market development accordingly in the short run. Lastly, the result showed that variations in the current period of trade openness had a positive influence on stock market development in the short-run. This implies, a proportionate increase in trade openness will increase stock market development. Trade openness is important factor that transmit and predict

volatility of stock market development between countries (Nikmanesh & Mohd Nor, 2016).

Table 6. ARDL error correction regression result

| ECM Regression | | | | |
|----------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| D(LGDP) | 1.046853 | 0.230929 | 4.533227 | 0.0001 |
| D(LCPSR) | 0.544980 | 0.237981 | 2.290014 | 0.0315 |
| D(LCPSR(-1)) | -0.296711 | 0.194591 | -1.524793 | 0.1409 |
| D(LIFR) | 0.004118 | 0.042456 | 0.096984 | 0.9236 |
| D(LIFR(-1)) | -0.135286 | 0.043979 | -3.076180 | 0.0053 |
| D(LVTR) | 0.207467 | 0.054482 | 3.807979 | 0.0009 |
| D(LVTR(-1)) | 0.000528 | 0.032257 | 0.016356 | 0.9871 |
| CointEq(-1)* | -0.710102 | 0.193788 | -3.664327 | 0.0013 |

ARDL error correction regression (ect)

The ECT discloses the speed of change to restore equilibrium in the model in the short run. The ECT tells the speed with which our mathematical model returns to equilibrium in the short run following an exogenous shock in the long run. It is negatively signed, implying a move back near equilibrium; a positive sign shows movement away from equilibrium. The highly significant ECT which is negative further confirms the existence of a stable and significant long run relationship. This affirms the presence of the long run significant relationship between macroeconomic drivers and stock market development with their various lags. The coefficient of ECT (-0.7101) as shown in the above table 6 that deviation away from the long run macroeconomic drivers is deemed adjusted by 71.01 % by the following year. Therefore, this study subjected the ARDL model and results to further post-test analysis in order to meet the condition of stability and reliability.

Summary of Findings, Conclusion and Recommendations

The study found out that long-run and short- run relationship exist within and between macroeconomic determinants (LGDP, LCPSR, LIFR, LVTR, LTONR) and are together co-integrated with the endogenous variable, LMCR. The long run coefficient measures the long run effect of the independent variables on the dependent variable. The study discovered that macroeconomic determinants of stock market development in the short run and long run were banking sector development, stock market liquidity and. income level (GDP). Inflation rate that measures whether the economy is stable or not

do not significantly elucidate stock market development in long term period, nevertheless, inflation in the short run is negative and related to stock market development. This is translated as instability of macroeconomic variables within the environment erodes the confidence of investors and other stakeholders. Though, it does not meaningfully directs the development of the stock market. Overall, the paper is consistent with previous studies by Sin -Yu Ho (2018). Summarily, the finding explains that in the long run, banking sector and stock market act like substitutes for investment financing. In the short run, banking sector and stock market plays complementary roles for investment purposes. Government should strengthen and solve the weaknesses affecting development of Nigeria's stock market. Policy regulators should pursue those policies that motivate banking sector development so as to promote immediate development of the stock market and government should increase efforts in stability of inflation rate so as to promote stock market development in the long- run.

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