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Abstract: *This study has so far investigated the link between financial deepening and the development of the stock market over the period of 1981 and 2019 using Bound test conintegration ARDL approach on the ground that Nigeria's financial sector is still shallow and lacks the necessary liquidity and capital to bring about the required development of stock markets in Nigeria. The Bounds cointegration test revealed that cointegration existed among the variables under investigation. As a result, both the short and long term models were empirically examined. In the long run, the significant drivers of stock market development in Nigeria are financial development, domestic saving as a ratio of GDP, broad money diversification and GDP as they are all significant determinants in term of signs, magnitude and size. This result parallels the findings of Okeya and Dare (2019). However, from 1981 to 2019, a considerable inverse relationship was seen between broad money diversification and stock market performance, contrary to projections. By implication, Nigerian financial sector lacks financial diversification in the long run. However, the finding supports the popular consensus that money is neutral in the long run as stock market mirrors economic condition of the country it represents. Nonetheless, the short run counterpart of the regression model showed that stock market development follows adaptive expectation in Nigeria as its previous values significantly determined the present values. However, unlike in the long run, financial development indicator exerts negative influence to stock market and but only becomes significant after some lags. This therefore reinforces the reality that private sectors lacks enough liquidity, limiting its beneficial contribution to the development of the stock market in the near term. This, by inference, confirms the shallowness of the Nigerian financial sector, as it lacks sufficient liquidity in the short run. Besides, regardless of model considered be it long run or short run, total domestic saving ratio of GDP has been a good candidate driving stock market development in Nigeria. Based on this conclusion, the Central Bank of Nigeria (CBN) is enjoined to liberate interest rate so as to allow for more robust operations of financial sectors in Nigeria.*

Keywords: Financial Deepening; Financial Sector; Stock Market Development; ARDL; Nigeria

JEL Classification: E44; G20; G23; C50

1. INTRODUCTION

There is no doubt that financial deepening is an integral part of financial intermediation which mainly allocates resources between net savers and net borrowers. It is known for mitigating the cost of information acquisition, stimulating liquidity through credit lines, creation of specialized products, provisions of insurance and risk sharing and thereby encouraging saving. In the literature, financial deepening is defined as financial institutions' capacity to effectively deploy savings for investment objectives; accumulation of financial stock of asset; increasing provision of financial services; engaging finance functions through organized

domestic institution and financial markets (see Nnanna and Dogo, 1998; Oloyede, 1998; and Omole, 1999 (as cited in Godfrey and Agwu (2020) and Alenoghena, Enakali-Osoba and Mesagan (2014)). In a clear term, effectiveness of financial deepening is a prerequisite to the sound development of financial sector and stock market as well as economic development of any country. In the word of Bakang (2015), financial deepening has become a necessity for economic development.

Nonetheless, previous literature (Aye, 2015; Nzotta and Okereke, 2009) has already documented the link between financial deepening and economic growth as positive; however, research on financial deepening and stock market performance/development is scant, with the exception of a few (such as Okoli, 2012; Alenoghena et al, 2014; and Omole, 1999) that have found a positive link. However, there is a growing body of evidence arguing that financial intermediation works better in developed countries with more complex financial systems. Nations with more complex financial systems, according to Levine (2005), experience faster economic growth. Similarly, as Hohana (2004) discovered, economies with a deeper financial system promote growth, which can lead to greater income distribution and wellbeing. Other research, on the other hand, concluded that financial intermediation performs better in emerging nations, and that finance can only stimulate growth in the early phases of economic development (see Eschenbach, 2004). In the midst of economic uncertainty, the question is whether financial deepening can enhance productivity and stock market development in Nigeria. According to Udu-Nddebio (2004), a country's financial depth indicates its potential to generate decent employment, higher production, and growth. However, most emerging countries do poorly as a result of insufficient financial depth induced by inadequate policies. Furthermore, according to Griffith-Jones, Karwowski, and Hlungwane (2013), nations with extensive financial markets are distinguished by robust private domestic lending, particularly large consumer credit extension, which boosts local output and consumption.

Specifically, the following two observations serve as a wake-up call to re-examine the link between financial depth and stock market growth in the Nigerian context: Firstly, Nigerian financial sector’s efficiency is doubted given the fact that it still remains largely shallow and underdeveloped despite the various financial reforms that have been instituted over time, ranging from deregulation of interest rate at the commencement of the structural adjustment programme (SAP), reform lethargy, liberalization (universal banking) era, recapitalization/consolidation/bank restructuring reform, to banks bail out regime and covid-19 special package reform. Second, the Nigerian economy/business climate is stated to lack sufficient liquidity and capital to increase enterprises' operations, undermining the function of capital market development in output growth. However, the findings of this study will finally indicate whether or not Nigeria has an effective financial sector. As a result, there is a need to explore the nexus between financial deepening and stock market development in Nigeria, as well as to assess the extent of financial diversity and depth to stock market growth, both in the short and long run.

The research specifically tries to address the following questions: (i) Does the Nigerian financial sector have adequate liquidity to support the optimal operation or development of the stock market? (ii) Is it diverse enough to completely support the development of the stock market? The following is how the paper is organized: Section two goes over the literature review; Section three goes over the methodology; Section four goes over the results and discussion; and Section five wraps up the study.

2. LITERATURE REVIEW

2.1 Theoretical Issues

Patrick (1966) pioneered the demand following and supply leading hypothesis, contending that the nexus between financial depth and the economy is either (both) demand following or (and) supply leading. When economic progress stimulates financial development, the demand following hypothesis is at work. The second theory exists if it is true that finance sector expansion drives economic growth. However, two distinct groups of leading scholars later emerged with opposing conclusions: while some studies (such as Goldsmith (1969), Hicks (1969), McKinnon (1973), and Shaw (1973)) argued that only growth in financial sectors led to economic growth, others (such as Gurley and Shaw (1955), Goldsmith (1969), and Jung (1986)) argued that the latter drives the former (as cited in Ogun, 2014).

Moreover, past literature (such as Odedokun (1998); Nieh, Chang, Russel, and Hung (2009); Islam and Osman (2011) has well documented two common phenomena of finance and economic growth: in one end it is said that finance drives growth while scholars in other ends affirm that economic growth drives finance. That financial development supports economic growth does not, however, appear to be seriously in contention any longer (Ogun, 2014), as leading scholars like King and Levine (1993), Arestis and Demetriades (1997), Hassan, Sanchez and Yu (2011), and Pan and Wang (2013) lend empirical credence to it that financial sector supports economic growth (as cited in Ogun, 2014).

Furthermore, the Cadelron-Rossell Model of Stock Market Development is the dominant hypothesis in the literature that relates stock market development with other macroeconomic variables. The Cadelron-Rossell Model, established by Calderon-Rossel in 1991 and popularized by Yartey (2008), demonstrates that stock market development is caused by the combined influence of economic growth and stock market liquidity on both stock prices and the number of listings. Since then, the model has been utilized as a baseline in the stock market literature, and it will be better detailed and deferred until the theoretical framework part

2.2 Empirical Review

There is a dearth of literature on financial deepening and the stock market, particularly in Nigeria. The majority of financial deepening research has been on

financial intermediation/deepening and economic growth. Previous empirical studies produced contradictory results: some claimed uni-casuality, while others claimed bi-casuality; some detected a negative connection, while others discovered a positive one. There was always a combination of positive and negative correlations between deepening and economic growth and the stock market. The following important works are discussed in detail:

Aye (2015) employed both the conventional Granger Causality and a bootstrap modified Granger Causality to evaluate the link between financial deepening and economic development in Nigeria. Money supply as a ratio of nominal GDP and real GDP per capita for the period 1961 to 2012 were used as the data. There is no evidence of a causal association between the two series, according to the results. However, the boot strap rolling window results show evidence of a causal direction from financial deepening to economic growth for the years 1973 to 1974 and 1970, and from economic growth to financial deepening for the years 1980 to 1982, 1985 to 1986, 1995 to 1996, 1998, 2000, 2004, 2008, and 2011.

Okoli (2012) investigates the relationship between financial deepening and stock market returns and volatility in the Nigerian stock market from 1980 to 2010 using the GARCH methodological framework and time series data such as stock market prices, the ratio of the value of stock traded to GDP, and the ratio of market capitalization to GDP. The major findings show that the ratio of the value of stocks traded to GDP has no effect on stock market performance.

Using a two-stage least squares approach, Nzotta and Okereke (2009) investigate the link between financial deepening and economic development in Nigeria. They used series that spanned the years 1986 to 2002. They discover that Nigeria has a low degree of financial deepening and that loan rates, financial savings ratios, cheques/GDP ratios, and deposit money banks/GDP ratios all have a strong association with financial deepening.

Within the context of multiple regression, Omole (1999) investigates the link between financial depth and stock market development in Nigeria. The sample ranges from 1970 to 1994. The study hypothesizes that the stock market's development is influenced by the money supply, interest rate, and exchange rate. The findings suggest that, while financial depth in Nigeria is limited due to the magnitude of total economic activity, it has the potential to boost the development of the stock market.

According to Nnanna (2014), there is a positive association between the ratio of market capitalization to GDP and stock market returns, whereas there is a strong relationship between the value of traded stocks to GDP and stock market returns. The discovery is similar to that of Alenoghena et al (2014). However, according to Okeya and Dare (2020), financial deepening is only in the long run significantly and favorably associated to stock market development in Nigeria.

Balogun, Dahalan, and Hassan (2016) use a panel dataset spanning 1990-2013 to study the long-run impacts of interest rate liberalization and institutional quality on the growth of stock markets in seven chosen Sub-Saharan African (SSA) nations.

The dynamic heterogeneous panel approach with the pooled mean group methodology was used. The findings show that, on average, interest rate liberalization has a negative long-run influence on the growth of stock markets in the seven chosen SSA economies. Songole (2012) also discovered a negative association between market capitalization and the market interest rate, consumer price index, and exchange rate. On the contrary, Jahur, Quadir, and Khan (2014) found that macroeconomic factors such as the consumer price index and interest rates had a considerable influence on market capitalisation.

Only a handful of the papers examined focused on financial depth and stock market development, particularly in the Nigerian setting. They were largely concerned with economic growth. In fact, those who concentrated on stock market development were particularly concerned about the causal link. Furthermore, given the dynamic character of financial variables, they did not use proper approaches and procedures; the bulk of them used identical methodologies (Johansen cointegration test, Engle-Granger test, Ordinary Least Squares (OLS), etc.) and reached similar findings. Most also considered narrow money (M1) as a proxy for financial diversity. Furthermore, earlier research evaluated paid less attention to liquidity availability and the degree of financial diversification in the Nigerian environment. Overall, the current study fills identified gaps and contributes to knowledge by assessing the level of financial diversity and depth to stock market development in Nigeria, both in the short and long run, utilizing acceptable methodology of autoregressive distributed lag model.

2.3 Theoretical Framework

The current analysis is based on the Cadelron-Rossell Stock Market Development Model. Calderon-Rossel created the Calderon-Rossel Model in 1991, which was later refined and popularized by Yartey (2008). At the heart of the model, both economic growth and liquidity levels influence stock market development. In other words, economic growth and stock market liquidity are regarded as the primary determinants of stock market development. Thus, market capitalization is defined as follows:

$$C = KZ \quad (1)$$

Where:
C denotes the market capitalisation in local currency.
K is the number of publicly traded businesses on the stock exchange; and
Z is the average price of listed firms in local currency.
The model is thus written as follows:

$$C = KZ = C(G,T) \quad (2)$$

$$Z = Z(G,K),\ K = K(T,Z) \quad (3)$$

The exogenous variable G denotes per capita GNP in local currency, and T denotes the turnover ratio. K, Z, and C are the endogenous variables. The structural equations are then stated in the simplified behavioral model shown below:

$$LogC = \theta 1 LogG + \theta 2\ LogT \quad (4)$$

The reduced forms of endogenous variables are expressed as follows:

$$LogZ = \alpha 1 LogG + \alpha 2\ LogT \quad (5)$$

$$LogK = \varpi 1 LogG + \varpi 2\ LogT \quad (6)$$

Equation 4 can be written as:

$LogC = Log\ (KZ) = \alpha 1 LogG + \alpha 2\ LogT + \varpi 1 LogG + \varpi 2\ LogT$ (7)

Factorizing we have:

$LogC = (\alpha 1 + \varpi 1) logG + (\alpha 2 + \varpi 2) logT$ (8)

$LogC = \theta 1 logG + \theta 2 logT$ (9)

Where:

$\theta 1 = \alpha 1 + \varpi\ 1$ (10)

and

$\theta 2 = \alpha 2 + \varpi 2$ (11)

The influence of economic growth, G, and stock market liquidity, T, on stock market development, C, is depicted in Equation 9. According to the concept, the development of the stock market is the consequence of the combined influence of economic growth and liquidity on both stock prices and the number of listings.

Garcia and Liu (1999) discovered that additional macroeconomic factors such as real income, savings rate, financial intermediary development, and stock market liquidity are major predictors of stock market development and adjusted the Cadelron-Rossell (1991) model to account for them. As a result, these two models are an excellent fit for the current task.

3. METHODOLOGY

3.1 Model Specification and estimation technique

As stated above, the Calderon-Rossel Model is adopted in this study. The Calderon-Rossel Model was built by Calderon-Rossel in 1991 and was developed and popularized by Yartey (2008). At the core of the model, both economic growth and liquidity level determine stock market development. To that purpose, the current study amended the Calderon-Rossel Model to include other financial deepening indicators such as financial development, a credit-to-private-sector-to-GDP ratio; broad money supply diversification, an M3-to-GDP ratio; and a total domestic saving-to-GDP ratio. Based on the previous equation (9), the equation (9) is therefore adjusted as follows:

$$SMD_t = \beta_0 + \beta_1 LGDP_t + \beta_2 FID_t + \beta_3 BMD_t + \beta_4 TSV\_GDP_t + \varepsilon_{1t} \quad (12)$$

Given the combination of stationary and integrated nature of the series involved, as well as the presence of a long-run as confirmed by the Bound test, the estimate approach most appropriate for this model is the Autoregressive distributed lag model (ARDL). ARDL is a least squares technique with lags of the explained variables (referred to as the autoregressive terms) and the explanatory factors (called the distributed lag terms). In notational terms, ARDL models are designated as ARDL (p, q1.... qK), where p is the number of lags of the dependent variable, q1 is the number of lags of the first explanatory variable, qK is the number of lags of the Kth explanatory variable, and K is the number of explanatory variables (X1...XK).

Hence, the autoregressive distributed lag versions of eq. (12) proposed by Shin, Yu, and Greenwood-Nimmo (2014) are as follows:

$$\Delta SMD_t = \beta_1 SMD_{t-1} + \beta_2 LGDP_{t-1} + \beta_3 FID_{t-1} + \beta_4 BMD_{t-1} + \beta_5 TSV\_GDP_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta SMD_{t-i} + \sum_{j=0}^{q_1} \gamma_j \Delta LGDP_{t-j} + \sum_{j=0}^{q_2} \delta_j \Delta FID_{t-j} + \sum_{j=0}^{q_3} \pi_j \Delta BMD_{t-j} + \sum_{j=0}^{q_4} \psi_j \Delta TSV\_GDP_{t-j} + \varepsilon_{4t} \quad (13)$$

The error correction representation is derived as follows

$$\Delta SMD_t = \beta_1 (SMD_{t-1} - [\beta_{\frac{2}{\beta_1}} LGDP_{t-1} - \beta_{\frac{3}{\beta_1}} FID_{t-1} - \beta_{\frac{4}{\beta_1}} BMD_{t-1} - \beta_{\frac{5}{\beta_1}} TSV_{GDP\,t-1}]) + \sum_{i=1}^{p} \alpha_i \Delta SMD_{t-i} + \sum_{j=0}^{q_1} \gamma_j \Delta LGDP_{t-j} + \sum_{j=0}^{q_2} \delta_j \Delta FID_{t-j} + \sum_{j=0}^{q_3} \pi_j \Delta BMD_{t-j} + \sum_{j=0}^{q_4} \psi_j \Delta TSV\_GDP_{t-j} + \varepsilon_{4t} \quad (14)$$

By letting,

$$\text{ECT} = SMD_{t-1} - \mu_1 LGDP_{t-1} - \mu_2 FID_{t-1} - \mu_3 BMD_{t-1} - \mu_4 TSV_{GDP\,t-1}$$

Where,

$$\mu_1 = -\beta_{\frac{2}{\beta_1}},\ \mu_2 = -\beta_{\frac{3}{\beta_1}},\ \mu_3 = -\beta_{\frac{4}{\beta_1}},\ \mu_4 = -\beta_{\frac{5}{\beta_1}} \quad (15)$$

Eq. (13) therefore becomes

$$\Delta SMD_t = \beta_1 \text{ECT} + \sum_{i=1}^{p} \alpha_i \Delta SMD_{t-i} + \sum_{j=0}^{q_1} \gamma_j \Delta LGDP_{t-j} + \sum_{j=0}^{q_2} \delta_j \Delta FID_{t-j} + \sum_{j=0}^{q_3} \pi_j \Delta BMD_{t-j} + \sum_{j=0}^{q_4} \psi_j \Delta TSV\_GDP_{t-j} + \varepsilon_{4t} \quad (16)$$

Where

ECT is the error correction term, and its corresponding coefficient β_1 is the adjustment speed. It measures how quickly a stock market index adjusts from its short-run fluctuations to its long-run equilibrium value. It is said to be negative and statistically significant at any of the conventional level. MDS is the stock market development, a ratio of Market capitalization to GDP; LGDP is the natural log of gross domestic product; FID is the financial development, a credit-to-private-sector-to-GDP ratio; BMD is the ratio M3 to GDP; while TSVR_GDP is the ratio of total domestic saving to GDP; $\alpha_i, \gamma_j, \delta_j, \pi_j, \psi_j$ are short run parameters while $\mu_1, \mu_2, \mu_3, \mu_4$ are parameters for long run; p is the general lag length for the dependent variable whereas qs are the general lag lengths for the explanatory variables, ε is the error term, with "t " representing the time dimension, L is logarithmic operator and Δ equals first difference operator

A priori Expectations

Based on the ARDL model, that is, eq. (16), we have the following restrictions on the regression coefficients

$\alpha_i, \gamma_j, \delta_j, \pi_j, \psi_j > 0$ and $\mu_1, \mu_2, \mu_3, \mu_4 > 0$. Short and long term coefficients are thus expected to have a positive influence on stock market growth.

3.2 Scope of the study

The study gathered annual data on the variables used from sources such as the Nigerian Central Bank (CBN) and the Nigerian Stock Exchange (NSE) from 1981 to 2019. (NSE). The variables gathered in the study are best explained in the table below:

Table 1: Data Description and Sources

Variable	Description	Source
MDS	Stock Market Development (ratio of market capitalization to GDP)	Nigerian Central Bank (CBN, 2020)
LDGP	Natural log of gross domestic product	Nigerian Central Bank (CBN, 2020)
FID	Financial Development (a credit-to-private-sector-to-GDP ratio)	Nigerian Central Bank (CBN, 2020)
BMD	M3/GDP	Nigerian Central Bank (CBN, 2020)
TSVR_GDP	Total Domestic Saving/GDP	Nigerian Central Bank (CBN, 2020)

***Source**: Author's Compilation, 2021*

4. RESULTS PRESENTATION AND DISCUSSION

4.1 The Unit Root Test Result

The results of the augmented Dickey-Fuller (ADF) unit root test on the five variables used in the study are shown in Table 2. While the stock market development variable (MDS) is stationary at levels, meaning that it is integrated of order zero, other variables such as the natural log of GDP and Financial deepening data (FID, BMD, and TSV GDP) become stationary after initial differencing. It should be noted, however, that only test regressions that are on the verge of rejecting the null hypothesis of nonstationarity are given. The combination of stationary and nonstationary variables as employed makes the consideration of ARDL cointegration Bounds test for plausible.

Table 2: The ADF Unit Root Test Result

Variables	Levels	First differences	(d)
MDS	-3.293*[a]	----------?	(0)
LGDP	-0.0285[a]	-3.209**[b]	(1)
FID	-1.87[a]	-4.986***[c]	(1)
BMD	-2.165[a]	-2.629***[c]	(1)
TSV_GDP	-2.713[a]	-6.738***[c]	(1)

Nota bene: ***, **, * denote the rejection of the null hypothesis of a unit root at 1%, 5%, and 10%, respectively. I(d) is the order of integration and it relates to the number of differencing necessary for a series to become stationary; signifies that a series that is stationary at levels does not require reporting of its initial difference. Models with intercept and trend, model with intercept alone, and model with none are denoted by superscripts a, b, and c, respectively.

***Source**: Author's Computation, 2021*

4.2 The Bounds Cointegration Test Results

Table 3 shows the result of the ARDL Bounds test for cointegration. Results indicated that since the computed F-stat is greater than I1 critical bound at all levels of significance, it can be concluded that there exists long-run relationship between Stock market development and its determinants. Consequently, both short run and long run model will be estimated.

Table 3: Result of ARDL Bounds Test for Cointegration

F-stat	12.86254	
	Critical Values	
Significance levels	Lower (I0) Bound	Upper (I1) Bound
10%	3.03	4.06
5%	3.47	4.57
2.5%	3.89	5.07
1%	4.4	5.72

***Source**: Author's Computation, 2021*

4.3 Discussion of Regression Results

Estimated long run coefficient using ARDL approach

This particular study established long and short run model of stock market development and its determinants in Nigeria as revealed by ARDL bound test for cointegration. Table 4 and 5 below present the two respective phenomena. In the long run, the significant driver of stock market development in Nigeria are financial development, domestic saving as a ratio of GDP, broad money diversification and GDP as they are all significant determinants in term of signs, magnitude and size. Financial development, GDP, and domestic saving all have a favorable and considerable impact on stock market performance. Their coefficients are statistically significant at the 1% significance level, suggesting that credit to the private sector and domestic saving boost overall long-run stock market development. This result parallels the findings of Okeya and Dare (2019). However, contrary to a priori expectation, there is a considerable inverse relationship between broad money diversification and stock market development in Nigeria from 1981 to 2019. By implication, Nigerian financial sector lacks financial diversification in the long run. However, the finding supports the popular consensus that money is neutral in the long run as whatever happens in stock market reflects other market fundamentals including economic growth.

Table 4: Result of Long Run Estimation

Dependent Variable	SMD_t
FID	0.941073***(0.236809)
BMD	-1.155872***(0.306370)
LGDP	4.451332***(1.110488)
TSV_GDP	1.718661***(0.158710)
C	-27.834176***(6.494197)
@TREND	-0.505188***(0.278608)

The symbols ***, **, and * denote the statistical significance of coefficients at 1%, 5%, and 10%, respectively; the numbers in parenthesis represent the standard errors.
***Source**: Author's Computation, 2021*

In the short run, however, the expectation formation of stock market in Nigeria is said to be adaptive as its previous values significantly determined the present values. The autoregressive coefficient is statistically significant at 1% conventional level. However, financial development indicator (a credit-to-private-sector-to-GDP ratio) exerts negative influence to stock market and becomes highly significant after some lags. This therefore reinforces the reality that private sectors lacks enough liquidity, limiting its beneficial contribution to the development of the stock market in the near term. This, by inference, confirms the shallowness of the Nigerian financial sector, as it lacks financial diversification and sufficient liquidity in the short run.

Unlike in the long term, broad money diversification is important in the short run since it has a favorable impact on the growth of the Nigerian stock market. After minor delays in the short term, it became noticeable and significant. However, fluctuations in GDP in the short run reduce stock market activity, as the impact coefficient (-3.382715) means that for every one percent rise in GDP, market capitalization share reduces by 0.034 percentage point on average, while all other factors remain constant. While the coefficient for current GDP is not statistically significant at the 10% level, the coefficients for the first and second lags are at 10% and 1%, respectively. This finding suggests that, even in the short run, the stock market does not react immediately to GDP, but rather with a lag. The implication is that GDP is yet to produce desire outcome in the stock market in the short run due to frequent fluctuation.

Irrespective of whether short run or long run, total domestic saving ratio of GDP has been a good candidate driving stock market development in Nigeria. From the impact coefficient, a slight change in saving rate amount to doubling impact (with positive multiplier effect) in stock market. The effect is statistically significant at the 1% significance level, showing that domestic saving supports development in stock market with multiplier effect in line with Keynesian theory.

Moreover, the adjusted R^2 of 0.977 implies that 98% of total variation in stock market development is explained by financial development, broad money supply diversification, GPP, and domestic saving ratio to GDP after accounting for the

number of degrees of freedom. The entire model is also significant, as evidenced by the very high F-statistics value of 67.20322 [0.00000]. Similarly, the post-estimation diagnostic tests revealed that the results of the normality, serial correlation, and heteroscedaticity tests follow the rules because their respective test statistics p-values are greater than 0.1.

Table 5: Estimates from the Error Correction Mechanism

	Dependent Variable	SMD_t
D(MDS(-1))	1.607270***(0.467791)	
D(MDS(-2))	0.599646(0.376049)	
D(FID)	-0.251819(0.623569)	
D(FID(-1))	-1.417925**(0.583560)	
D(FID(-2))	- 2.806558***(0.641715)	
D(BMD)	0.344720(0.597667)	
D(BMD(-1))	2.146880***(0.615025)	
D(BMD(-2))	2.680911***(0.799447)	
D(BMD(-3))	-1.881137***(0.391505)	
D(LGDP)	-3.382715(7.927418)	
D(LGDP(-1))	-32.210742*(17.902855)	
D(LGDP(-2))	33.429023***(9.693536)	
D(TSV_GDP)	2.062892***(0.508026)	
D(TSV_GDP(-1))	-1.573435***(0.533801)	
D(TSV_GDP(-2))	1.062105***(0.300891)	
D(@TREND())	-1.621244*(0.809717)	
CointEq(-1)	-3.209188[0.0001]	
Cointeq = MDS - (0.9411*FID -1.1559*BMD + 4.4513*LGDP + 1.7187 *TSV_GDP -27.8342 -0.5052*@TREND)		
Adj. R^2	0.977	
F-statistic	67.20322 [0.00000]	
Breusch-Pagan-Godfrey heteroscedasticity test	1.830594[0.1316]	
Jarque-Bera normality test	0.433766[0.805024]	
Ramsey RESET linearity test	26.17516[0.0003]	
Breusch-Godfrey serial correlation LM test	2.412977[0.1352]	

***, **, * denote statistical significance of coefficients at 1%, 5%, and 10%, respectively; the values in parentheses and block brackets are the standard errors and the probability value, respectively.
***Source**: Author's Computation, 2021*

5. SUMMARY AND RECOMMENDATION

This study has so far investigated the link between financial deepening and the development of the stock market over the period of 1981 and 2019 using Bound test conintegration ARDL approach on the ground that financial sector in Nigeria is still shallow and lacks enough liquidity and capital necessary to bring required development to stock markets in Nigeria. The following variables were used in the study: a market capitalization-to-GDP ratio, a credit-to-private-sector-to-GDP ratio (known as Financial Development), a natural log of gross domestic product, broad money supply diversification (ratio of M3 to GDP), and total domestic saving/GDP, all of which were obtained from the Nigerian Central Bank (CBN). The augmented Dickey-Fuller (ADF) unit root test results on the five variables show that stock market development variable (MDS) is of order I(0) while the remaining variable orders are I(1). Hence, the combination of stationary and nonstationary variables as employed made the adoption of ARDL Bounds test for cointegration credible. The findings of the Bounds cointegration test, on the other hand, revealed that a cointegration/long-run link existed among the variables under consideration. As a result, both the short and long term models were empirically estimated.

In the long run, the key driver of stock market development in Nigeria are financial development, domestic saving as a ratio of GDP, broad money diversification and GDP as they are all significant determinants in term of signs, magnitude and size. Financial development, GDP and domestic saving all have a favorable and considerable impact on stock market performance. At the 1% significance level, their effects are statistically significant, suggesting that credit to private sector and domestic saving improve long-run stock market development. This result parallels the findings of Okeya and Dare (2019). However, from 1981 to 2019, a considerable inverse relationship was seen between broad money diversification and stock market performance, contrary to projections. By implication, Nigerian financial sector lacks financial diversification in the long run. However, the finding supports the popular consensus that money is neutral in the long run as whatever happens in stock market reflects other market fundamentals including economic growth.

However, the short run counterpart of the regression model showed that stock market development follows adaptive expectation in Nigeria as its previous values significantly determined the present values. Also, in the short run, the available liquidity is not enough as reflected in the negative impact of financial development to stock market. Unlike in the long run, Broad money diversification plays a prominent role in the short run as it exerts positive influence in development of stock market in Nigeria. Besides, regardless of model considered be it long run or short run, total domestic saving ratio of GDP has been a good candidate driving stock market development in Nigeria. From the impact coefficient, a slight change in saving rate amount to doubling impact (with positive multiplier effect) in the stock market. The impact is statistically significant at the 1% significance level, indicating that domestic saving promotes stock market development through a multiplier effect, as predicted by Keynesian theory.

Lastly, diagnostic tests such as linearity, normality, serial correlation, and heteroscedasticity were performed. Though there is a fear that the model might be wrongly specified due to the fact that it is one of its kind in Nigerian context, the results of heteroscedaticity, correlation and normality tests supported the appropriateness of the models for policy prescription because probability values of the different test statistics are more than 0.1

Based on the findings and conclusions, the following recommendations becomes imminent: Since the model of stock market development follows adaptive expectations, it is suggested that Nigerian monetary authority should be very proactive and credible in terms of its monetary policy rule so that role of expectations in stock market can be made ineffective; the monetary authority is enjoined to liberate some of its economic fundamentals (such as interest rate) to allow for more robust operation of financial sectors especially intermediary; commercial banks should find every means to persuade people to improve on their saving habit; lastly, liquidity threshold should be augmented and determined for Nigerian economy.

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