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Stock Market-Growth Relationship in an Emerging Economy: Empirical Finding from ARDL-Based Bounds and Causality Approaches

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Abstract
This paper tends to establish the short and long run dynamics between stock market and GDP growth in Nigeria utilizing yearly data spanning between 1989 and 2017. The paper deployed the ARDL, FMOLS, DOLS, Toda Yamamoto causality and the variance decomposition techniques to verify these dynamics. The ARDL Bounds test reveals evidence of cointegration in the long run among the variables. The ARDL estimate reveals market capitalization of listed companies affects economic growth positively in the short and long run. Also, stocks market turnover ratio positively impacts economic growth while stock market total value positively affects GDP in the short run. The result of the Toda Yamamoto causality revealed one-way causality from Stocks market turnover ratio to economic growth and from Stock market total value traded to economic growth. The variance decomposition revealed the strength of causality among the variables for a relatively longer period. Based on these findings, recommendations were put forward.

Keywords: Stock Market, Economic Growth, ARDL, Toda Yamamoto, Variance Decomposition

1. INTRODUCTION

The stock market offers prospective investors with equity and direct type finance for financial reasons. This role allows it to work in the process of economic growth as a crucial long-term lubricant. Moreover, stock market performance is often regarded as an important or good barometer to measure the financial power and growth of a nation. Therefore, an economy that has an effective stock market can often use its essential market index to measure changes in the overall production and economic activity of the economy. An estimated wealth of $15

trillion was lost by the financial markets in one year and two months as a result of the Great Recession from 2007 to 2009, thus, making policymakers to focus on the role and relationship of the financial sector with economic growth (Crotty, 2009). Demirgüç-Kunt and Levine (1996) analyzed the relationship between equity market and economic growth in the 1990s, showed a positive correlation between liquidity generation to accelerate the level of savings and investment. Broadly speaking, the financial market is vital for the economic growth of developing or emerging markets, therefore, its importance cannot be overlooked. Most countries government tends to lay more emphasis on the stock market performance because it serves as a factor that triggers growth in most developed economies (Ewah et al. 2009). Financial market liberation drives development on Nigeria's financial market (Ariyo & Adelegan, 2005), attention was not given to its impact on economic indicators. Furthermore, in 2005, the capital market aids the twenty-five Banks to meet up with the least capital prerequisite of 25 billion nairas imposed on them by the Central Bank of Nigeria (CBN) during the consolidation of the banking sector. In Africa, Nigeria's Stock Market is among the top three biggest, however, in 2008, it undergoes deterioration, and this downturn has a negative effect on the growth of Nigeria's Stock Market, while negatively affecting Nigeria's economic growth (Iheanyi & Sotonye, 2017).

The downturn in government expenditure, monetary regime tightening, and possible changes in regulation specifically blended and occasionally messages that are conflicting with respect to the lending margin by banks to operators in the market from the authorities cause the deterioration in the capital market (Azubike, 2017). Assurance in the financial market by investors, coupled with possibly broader indications for stock markets of Nigeria, was crippled by all these problems. According to Anulika (2017) the increase in instability about the market valuation accelerated eye-catching local and international investors exit the stock market. Instead of the proclamation of regulations and activities to calm the problem at hand, it only aggravated it; this also worsens the confidence investors have on the capital market.

In spite of the eye-catching assumption that democracy triggers economic activities that lead to economic and stock market growth, in Nigeria, it is small when compared to the size of the economy (Echekoba et al. 2013). Many researchers such as; Demirgüç-Kunt & Levine, (1996), and Agarwal & Mohtadi, (2004) pinpoint that developed countries had looked into the various directions via mobilizing resources that will affect growth and development in the economy as money and financial market. However, this is not the situation in developing countries like Nigeria, where more attention is allocated to the money market than the capital market (Nyong, 1997). Over the years, the interactions between the capital market and economic growth have produced mixed results from many scholars. Many researchers[1] believe that capital market-economic growth relationship is positive, few researchers[2] opt for no significant relationship, and a minority of the researchers[3] is of the opinion that capital market-economic growth relationship is negative. In any case, under the right political condition, stock market-economic growth relationship is always positive. The problem of macroeconomic instability, stock market gain education to the public on its influence on the country's economic growth and development, the fundamental of acute practices of market operator's minimization, these contribute to an overall understanding of the stock market's benefits in the economy

The motif of this research is to analyze the influence of stock market capitalization, turnover ratio, total value traded on Nigeria's economy. In filling the gap in this literature, our study employed the Autoregressive Distributed Lag (ARDL) cointegration test to ascertain the relationship among the variable used in the long run, and also capture the long and short coefficients. Using the Toda Yamamoto causality test to investigate direction of causality, and the variance decomposition reveal strength of causality among the variables for a relatively longer period.

The study's significance borne out of the uniqueness of our study which is that no previous study has combined in using the econometric techniques utilized in this study for the of Nigeria based on our own knowledge and the constructive review of literature carried out in different countries. We discover that from our study on Nigeria, the

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[1] Nyong, (1997); Obadan, (1998); Ewah and Bassey, (2009); Ndikumana, (2001); Friedman and Schwartz, (1963); Alam and Hasan (2003); Brasoveanu et al. (2008)
[2] Ewah et al (2009); (Ram, 1999); Guo & Jiang, (2013); Rigobon and Sack (2006).
[3] Anulika, (2017); Dakhlaoui and Aloui (2011); Naceur & Ghazouani, (2007).

existence of a long run equilibrium link between economic growth and the exogenous variables used; (b) the economic growth is triggered by market capitalization of listed companies both in the short and long run; (c) the Toda Yamamoto evidence of a one-way causality from Stocks market turnover ratio to GDP growth, and from Stock market total value traded to GDP growth; and (d) the variance decomposition revealed the strength of causality among the variables for a relatively longer period.

The remaining part of this study will be structured as follows: Literature review is divided into the empirical and theoretical review of the research. Data and methodology segment describes the data and also employed the methodology used in this study, the empirical result segment provides the empirical analysis outcomes and the concluding segment gives a conclusion on the study.

2. LITERATURE REVIEW

This study was carried out on a wide range of research on the side of developed and developing countries; to analyze, a vast empirical and theoretical literature based on the relationship between the stock market and economic growth. To understand this market and growth relationship, we looked at it from the perspective of developed and developing markets. Atje and Jovanovic (1993), were one of the earliest scholars that dug into the stock market and growth relationship. The researchers used cross-sectional data on forty countries covering the period of time from 1980 to 1988 and utilizing the OLS regression technique. The study shows the stock market and growth relationship is positive. To make a clear distinction between the capital market and economic growth, we classified the views of scholars. The first dimension of studies that established a positive relationship between the stock market and economic growth.

Several studies align with this positive capital market and growth relationship (Arestis et al. 2001; Oskooe 2010; Padhan 2007; Enisan and Olufisayo 2009; Autonios 2010; Aigbovo and Andrew 2015; Adamu and Sanni 2005; Naik 2012; Maria and Tomaliwan, 2013). The second segment of studies is those that identify a negative relationship between the stock market and economic growth. Few studies comply with this negative relationship (Mishra et al. 2016; and Nyong, 1997). The final dimension is studies that found insignificant Stock Market-Growth relationship. Few studies comply with this insignificant relationship (Ewah et al. 2009; Seetanah et al. 2012).

Table 1: Summary of Literatures

Author(s)	Country(S)	Variable(s) Utilized	Econometric Technique	Findings
Atje & Jovanovic (1993)	Forty Countries	Y, SM	OLS	SM →Y
Arestis et al. (2001).	Developed Countries	Y, SM, TO, ST	OLS	TO→ Y ST→ Y SM → Y
Oskooe (2010)	Iran	Y, SC, SO, ST	OLS	TO→ Y ST→ Y SM → Y
Padhan (2007)	India	Y, SM, TO, ST	TYDL Granger Causality Test	ST ⟷ Y SM ⟷ Y
Deb and Mukherjee (2008)	Tanzania	Y, SM, ST	Bounds Coint, VAR Granger Causality Test	SM ⟷ Y
Adamu and Sanni (2005)	Nigeria	Y, SM, ST, TO	OLS, Granger Causality Test	SM → Y
Hailemariam & Guotai, (2014).	17 emerging markets and 10 developed markets	Y, SM, ST, TO	OLS	TO→ Y ST→ Y SM → Y

Anulika, (2017)	Nigeria	Y, SM, ST, TO	Bounds Coint Granger causality test	Y ➝ SM Y ➝ TO
Autonios (2010)	67 developing countries	Y, SM, ST, TO	VECM Granger causality test, Johansen coint.	Y ➝ SC Y ➝ ST Y ➝ SO
Hofileña & Tomaliwan, (2014)	Philippine	Y, SM	Bounds Coint, VECM	Y→ SM
Naik (2012)	economies of emerging market	Y, SM	GMM	SM→ Y
Pan and Mishra (2016)	33 highly aid-dependent African countries	Y, SM, TO, ST	Bounds Coint.	Negative Relationship
Seetanah et al. (2010)	27 developing countries	Y, SM, TO, ST	VAR	SC→ Y
Hossain and Kamal (2010)	Bangladesh	Y, SM, TO, ST	Bounds Coint, Granger causality	SM → Y TO → Y
Seetanah, et al. (2012)	10 least developed countries	Y, SC, T0,ST	VAR	No Relationship
Aigbovo and Andrew (2015)	Nigeria	Y, SC, SO, ST	Bounds Coint. VECM, Granger causality	TO→ Y ST→ Y SM → Y
Nyong (1997)	Nigeria	Y, SC, SO, ST	Bounds Coint	Negative Relationship
Ewah et al. (2009)	Kenya	Y, SC, SO, ST	OLS	No Relationship
Nguyen et al. (2014)	Canada and Australia	Y, SC, SO, ST	Bounds Coint., Granger causality	TO→ Y ST→ Y SM → Y

Where: Y: GDP→ indicates a positive relationship; ⟷ indicates bidirectional causality; ➝ indicates uni-directional causality Stock market total value traded(ST), Stocks market turnover ratio (TO), Stock Market capitalization (SM)

Source: Authors Compilation

3. DATA AND METHODOLOGY

3.1. Data Description

This study utilized yearly data spanning between 1989 and 2017 gathered from central bank of Nigeria (CBN) and World Bank (WB) data base. The tables below illustrate basic description of data utilized.

Table 2: Descriptive Statistics

	Y	ST	TO	SM
Source	WB	CBN	CBN	CBN
Mean	3.229261	1.397103	7.764759	15.21483
Median	3.154395	0.869000	7.583000	11.71000
Maximum	3.408764	8.647000	29.40200	35.83000
Minimum	3.094380	0.017000	0.429000	3.840000
Std. Dev.	0.126482	1.988487	6.596997	9.912182
Skewness	0.231508	2.494676	1.497003	0.990684

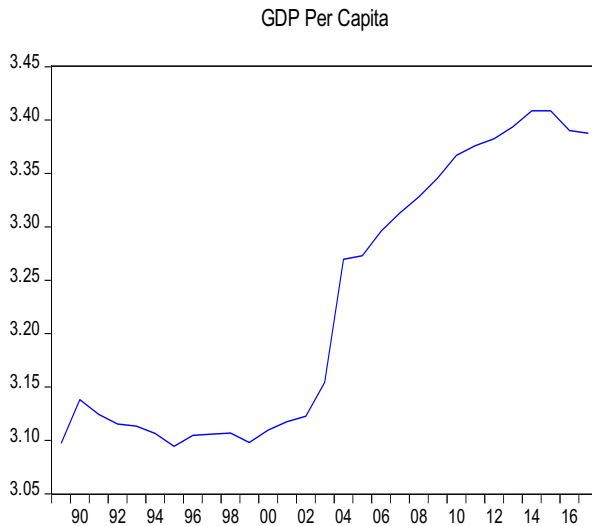|				
Kurtosis	1.265023	8.518568	5.747814	2.900853
Jarque-Bera	3.896308	66.87911	19.95508	4.755578
Probability	0.142537	0.000000	0.000046	0.092755
Observations	29	29	29	29

Source: Authors Compilation

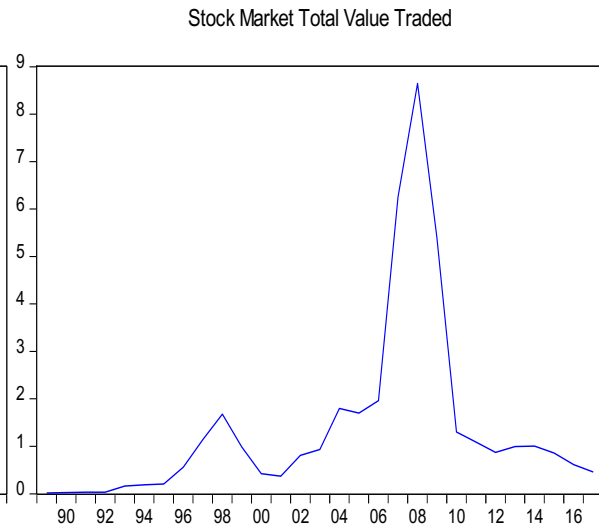**Figure 1:** Economic Growth

Figure 2: Stock market total value traded
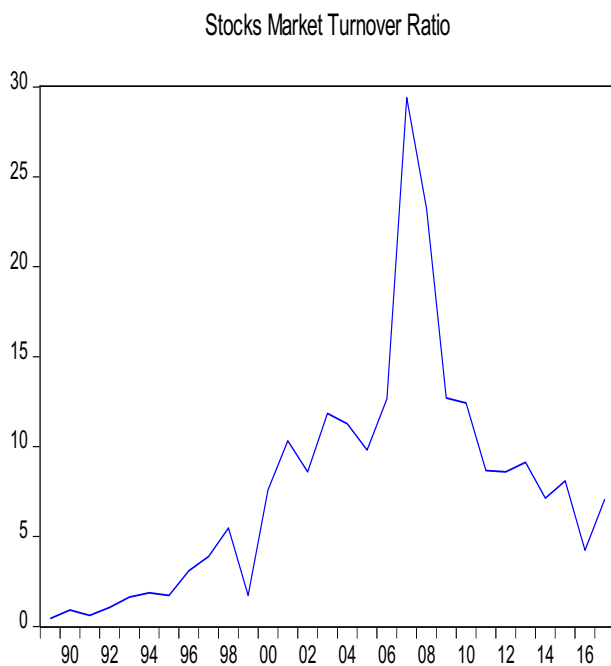
Figure 3: Stocks market turnover ratio
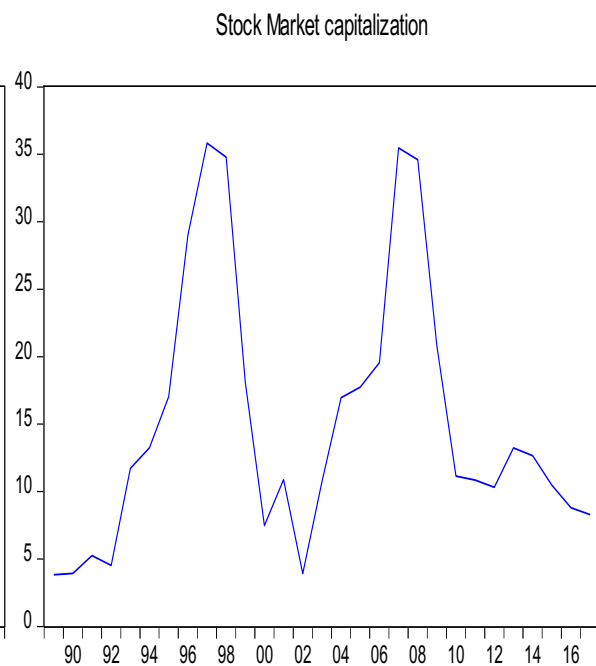
\ **Figure 4:** Stock Market capitalization

3.2. Model

In line with the works of Aigbovo and Andrew (2015) and Azubike (2017), in which SC, ST and SO are been denoted as stock market indicators, leading to the construction of the first model

$$Y = f(SC, ST, SO) \tag{1}$$

$$Y_t = \beta_0 + \beta_1 \, InSC_t + \beta_2 \, ST_t + \beta_3 InSO_t \tag{2}$$

Incorporating the error term, the econometric model is as follow:

$$InY_t = \beta_0 + \beta_1 \, InSC_t + \beta_2 \, ST_t + \beta_3 InSO_t + \varepsilon_t \tag{3}$$

Where: Y represents GDP per Capita (constant $ 2010), **SC** represent Market capitalization of listed companies (% of GDP), **ST** represents Stock market total value traded to GDP, **SO** represent Stocks market turnover ratio, ε_t represents error term, $\beta_0, \beta_1, \beta_2,$ and β_3, are the parameters and while In indicates natural logarithms and t is for time. For the research time series covering the time period between 1989 and 2017 was employed.

3.3. Cointegration Methodology

Before establishing the cointegration among the variable used, it is important that all these variables are stationary. It concluded that variables which are non-stationary tend to generate spurious regression analysis. In implementing ARDL procedures, none of the variables must be integrated at an order of I(2) (Granger & Newbold, 1974). Testing for long-run relationship existence using the ARDL bound test technique will be the next step. Pesaran and Shin (1995), and Pesaran et al. (1999, 2001) developed the ARDL bound test technique. Unlike other cointegration test (Engle-Granger, 1987; Johansen, 1988; Johansen-Juselius, 1990; Johansen, 1991) in which their application is based on only variables that are stationary at same level, while the ARDL bounds test is applicable at mix integration order either at I(0) or I(1), and it will also produce the long and short-run coefficient in a single framework. It adopts various lag-lengths to the variables employed. The results from the bounds test under the ARDL approach follows an F-distribution. Narayan and Narayan (2005) built up the critical values for bounds test following an F-distribution, which accommodates small samples. The ARDL model is established by equation 4 below as follows;

$$\Delta InY_t = \theta_0 + \sum_{i=1}^{t} \theta_1 \Delta InY_{t-i} + \sum_{i=1}^{t} \theta_2 \Delta InSC_{t-i} + \sum_{i=1}^{t} \theta_3 \Delta InST_{t-i} + \sum_{i=1}^{t} \theta_4 \Delta InSO_{t-i} + \beta_1 InY_{t-1}$$
$$+ \beta_2 InSC_{t-1} + \beta_3 InST_{t-1} + \beta_4 InSO_{t-1} + \varepsilon_t \qquad (4)$$

The null hypothesis guarding the ARDL model is (Ho = $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$) against the alternate hypothesis (Ho $\neq$ $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$). The null hypothesis will not be accepted in a situation when the F-statistics surpasses the upper bound critical values, confirming that there is a long-run relationship between the variables. We do not reject the null hypothesis in the event when the F-statistics is lower than the lower bound critical value, affirming that there is no long-run relationship between the variables used. When the value of the F-statistics lies within the upper and lower bound critical value, the analysis turns out to be inconclusive.

In capturing the short run divergence from the model's long-run equilibrium, the Error Correction Model (ECM) was employed. By employing the error correction mechanism, the short-run imbalance was corrected. When the ECM is incoporated into the framework, the model will reflect equation 5;:

$$\Delta InY_t = \theta_0 + \sum_{i=1}^{t} \theta_1 \Delta InY_{t-i} + \sum_{i=1}^{t} \theta_2 \Delta InSC_{t-i} + \sum_{i=1}^{t} \theta_3 \Delta InST_{t-i} + \sum_{i=1}^{t} \theta_4 \Delta InSO_{t-i} + \omega ECT_{t-i} + \varepsilon_t$$
$$(5)$$

3.4. Robustness Check

Fully modified ordinary least squares (FMOLS) introduced by Phillips and Hansen (1990), and dynamic ordinary least squares (DOLS) models introduced by Phillips and Loretan (1991), Saikkonen (1991), and Stock and Watson (1993) are also employed. The Dynamic OLS and Fully Modified OLS were used to check the robustness of the long-term relationship between the variables. Co-integrating regressions have become one of the standard tools for analyzing integrated variables since Engle and Granger (1987). Although the ordinary least squares estimator (OLS) is preferable because it investigates if there is presence of serial correlation or not, it does contain a second order bias. The bias OLS estimation is resolved by these techniques. An uncomplicated method of creating an asymptotically efficient estimator that deletes the cointegrating system response is proposed by Saikkonen (1992) and Stock & Watson (1993) respectively. The DOLS method requires an increase in co-integrating regression with lags, and the equation of the co-integrating error term associated with past stochastic regressor innovations is the result of some ΔX_t.

3.5. Granger Causality

The advantage the Toda Yamamoto Granger causality test by Toda & Yamamoto (1995) has over ARDL approach is that it can detect direction of causality while ARDL can only detect long and short run interactions among variables. When variables are integrated at different orders, it makes inference valid. The fundamental reason behind this technique is to exaggerated the right correct order of VAR, p, with additional lags, where d signifies the maximum integration order of the variables. Therefore, the estimated VAR is formulated as follows:

$$B_t = \alpha_o + \sum_{i=1}^{m} \alpha_i B_{t-1} + \sum_{i=m+1}^{m+dmax} \alpha_i B_{t-1} + \sum_{i=1}^{m} \beta_1 A_{t-1} + \sum_{i=m+1}^{m+dmax} \beta_1 A_{t-1} + e_t \qquad (6)$$

$$A_t = \alpha_o + \sum_{i=1}^{m} \alpha_i A_{t-1} + \sum_{i=m+1}^{m+dmax} \alpha_i A_{t-1} + \sum_{i=1}^{m} \beta_i B_{t-1} + \sum_{i=m+1}^{m+dmax} \beta_i B_{t-1} + \mu_t \qquad (7)$$

The two time series variables are B, and A respectively, the framework parameters are denoted by α's and β's. The maximum order integration is represented by dmax , the model error term are illustrated by μ_t and ε_t. AIC, SC, FPE, and HQ are the metrics for lags election.

4. EMPIRICAL RESULTS

4.1. Unit Root Result

The Augmented Dickey-Fuller (ADF), the Phillips–Perron (PP), DFGLS and Zivot-Andrew (ZA) tests was employed in this paper to verify the stationarity properties of the variable used. Variables are said to be stationary when it is mean and variance over time is constant (Gujarati & Porter, 2004).

Table 3: Unit root test results with intercept and Trend

Variables	Y	SC	SO	ST
ADF	I(1)*	I(1)*	I(1)*	I(0)*
PP	I(1)*	I(1)*	I(0)*	I(1)*
DF-GLS	I(1)*	I(1)**	I(0)	I(1)*
ZA	I(1)*	I(1)*	I(1)*	I(0)*
	<2003>	<1997>	<2008>	<2007>

Note: *, ** and *** portray 1%, 5% and 10% significant level respectively

From table 2 above, it is evident that the variables used are stationary at mixed integration order (either I(0) or I(1)).

The Eq. (3) was estimated through the procedure of OLS to perform the bound tests. To reduce the degree of freedom in estimating the parameters in Eq. (3), the maximum lag-lengths was set to 2. Table 3 reveals that the computed F-statistics is greater than the critical bounds values, hence the null hypothesis will be rejected at a 1% significance level. Thus, this establishes a long-run relationship is strongly demonstrated among the variables used. Hence, a long-run interaction between the dependent variable and independent variables is clearly illustrated.

4.2. Cointegration Result

Table 3: ARDL bound test for co-integration

Model estimation	$Y = f$(SM, ST, TO)	
Lag structure	2, 2, 2, 1	
F-statistics	23.05*	
Level of Significant	Critical bounds levels	
	I(0)	I(1)
10%	2.12	3.23
5%	2.45	3.61
1%	3.15	4.43

Note: 1%c level of significant stands for ∗

Since the ARDL bounds model establishes co-integration among the variables. Furthermore, the short and long run run interactıon is estimated utilizing the ARDL as depicted in table 4.

4.3. ARDL Long and Short Run Result

Table 4: ARDL Long and Short-run estimate

Panel A: Long run estimation		
Variable	**Coefficient**	**T (Prob)**
Y(-1)	0.682496	(6.598)*
SM	0.036497	(2.188)**
ST	0.018941	(0.940)
TO	-0.177456	(-1.767)***
C	0.866270	10.562
Panel B: Short run estimation		
ΔSM	0.036497	(2.862)**
ΔST	0.018941	(1.617)*
ΔTO	-0.015439	(-1.623)
ECM(-1)*	-0.122190	(-10.465)*
R^2	0.99	
Adj R^2	0.99	
F-stat(Prob)	(401.32)*	

Note: 1%, 5% and 10% level of significant mirrors ∗, ∗∗ & *** correspondingly

The estimated elasticity of GDP per capita with respect to the market capitalization of listed companies is 0.036 at a 5% level of significance in the long run. For every 1% increase in market capitalization of listed companies, GDP per capita would rise by 0.036%. Long-run elasticity estimates of GDP per capita in relation to stocks market turnover ratio is 0.177 at 10% significance level, showing that for each 1% increase in stocks market turnover ratio, GDP per capita rises by 0.78%.

In the short run, at a 1% significance level, Stock market total value traded to GDP has a positive effect on GDP per capita. It implies that for each increase in Stock market total value traded to GDP by 1%, GDP per capita will increase by 0.018. At 5% level of significance, GDP per capita elasticity with respect to market capitalization of listed companies is 0.036, indicating an increase in market capitalization of listed companies by 1% will lead to GDP per capita rising by 0.036%. The coefficient of ECT is -0.12, having the expected sign and also significant at 1% level, after the previous year's imbalance, approximately 12% speed adjustment converges to the long-run equilibrium.

Table 5: Diagnostic tests for ARDL model

Tests	F-Stat (P-Value)
J–B normality test (Prob-value)	0.85 (0.65)
Breusch–Godfrey LM test (A)	0.61 (0.83)
Breusch-Pagan Heteroscedasticity test (B)	1.58 (0.18)
Ramsey RESET (U)	0.13 (0.71)

Table 6 reveals the several diagnostic tests of the estimated ARDL model for Eq(4), which indicates the model's residuals are distributed normally, not serially correlated and heteroscedasticity, and not misspecification. In terms of structural changes in Nigeria's economy, one or more structural breaks in these variables can be possible. Brown et al. (1975) proposed the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) test so as to examine the stability of the short and long-run coefficients. The CUSUM and CUSUMSQ plots fall within the critical bounds of 5% significance are presented in Figures 1 and 2 respectively. The implication is that the estimated parameters over the periods are stable. Thus, a meaningful conclusion can be drawn from our model.
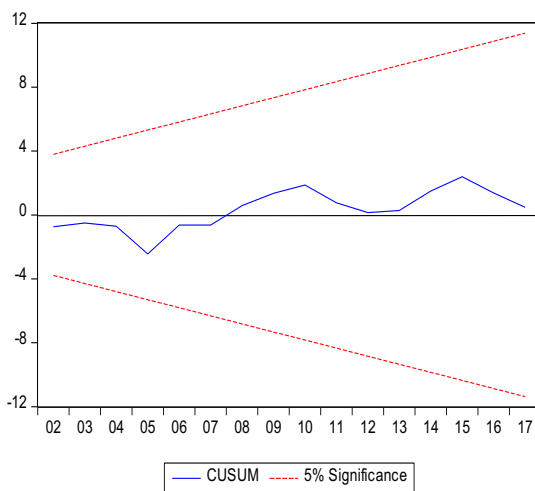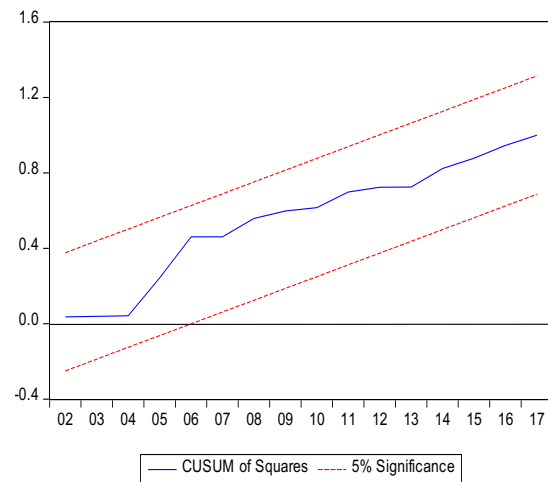
Fig 1: CUSUM

Fig 2: CUSUMSQ

Table 6: Robustness Check

	FMOLS model		DOLS model	
Variable	Coefficient	T-stat	Coefficient	T-stat
Y(-)	0.7375	(9.214)*	0.682	(3.131)**
SM	0.0357	(3.088)*	0.0364	(2.211)**
ST	0.0152	(1.105)	0.018	(1.298)
TO	-0.0136	(-1.992)***	-0.015	-(1.833)***
C	0.836	9.8178	0.866	7.106
R^2	0.996		0.996	
*, **, *** depicts the 1%, 5% and 10% level of significant correspondingly				

Table 5 above demonstrates the long-run coefficients of FMOLS and DOLS models. FMOLS and DOLS were estimated using our ARDL estimation to verify the robustness. The outcome of the FMOLS supports the outcome of the long-run ARDL estimate, which shows SC and SO is related to Y in the long-run at 1% significant level but the DOLS models show a different outcome. In support of the long-run ARDL estimate, the SC was related while SO was not.

4.4. Toda Yamamoto Causality Test

Findings from the table below illustrates the result of the Toda Yamamoto. There is evidence of a one-way causality from stocks market turnover ratio and stock market total value traded to GDP per capita.

Table 7: Toda Yamamoto causality Test

	Causality Direction	Lag	Mvalt
Toda	Y → SM	3	3.024
Yamamoto	SM→ Y	3	3.151
Causality	Y → TO	3	0.506
	TO → Y	3	20.861*
	Y → ST	3	0.385
	ST → Y	3	14.228*

Note: → direction of causality. The optimal lag is selected using AIC. *, ** and *** denote statistically significant at 1%, 5% and 10% levels, correspondinly

4.5. Variance Decomposition

The relative power of the causality between the two time series ahead of the time frame specified cannot be detected by the Granger causality test. This weakness is corrected by the variance decomposition to verify the causality ahead of the time specified.

Table 7: Variance Decomposition

Variance Decomposition of Y				
Period	S.E.	Y	ST	TO	SM
1	0.017825	100.0000	0.000000	0.000000	0.000000
2	0.022124	91.41626	0.563528	0.338225	7.681986
3	0.022965	88.51044	0.539264	3.026160	7.924133
4	0.025531	71.85878	6.451614	13.99029	7.699316
5	0.028717	57.50200	8.190113	19.01669	15.29120
6	0.031155	48.85414	7.056895	24.31841	19.77056
7	0.034461	39.99733	10.14850	31.92341	17.93076
8	0.037951	33.54133	13.90914	37.76210	14.78742
9	0.041562	30.20922	14.02895	42.02375	13.73807
10	0.046732	27.51818	14.22669	43.27579	14.97934
11	0.051873	26.58350	14.30973	42.64215	16.46461
12	0.056448	27.33798	13.83909	41.45907	17.36385
Variance Decomposition of ST				
Period	S.E.	Y	ST	TO	SM
1	1.085835	1.157304	98.84270	0.000000	0.000000
2	2.211031	0.838894	96.67672	2.310038	0.174344
3	2.484827	1.776328	94.26074	3.073959	0.888976
4	2.511141	2.837324	92.29632	3.477633	1.388725
5	2.530361	3.339909	91.34395	3.785285	1.530852
6	2.537947	3.474547	90.93413	3.833584	1.757741
7	2.547046	3.568693	90.28607	3.847970	2.297265
8	2.560878	3.568308	90.05015	3.942629	2.438918
9	2.570313	3.575330	89.97691	4.016125	2.431636
10	2.577877	3.675307	89.49326	4.074499	2.756934
11	2.591451	3.825221	88.57554	4.129346	3.469897

| 12 | 2.601477 | 3.994563 | 87.89447 | 4.131327 | 3.979644 |

Variance Decomposition of TO					
Period	S.E.	Y	ST	TO	SM
1	5.215565	0.514719	94.14563	5.339652	0.000000
2	6.473602	1.284796	93.11970	5.149242	0.446257
3	6.601444	3.074435	90.30865	6.179778	0.437141
4	6.721419	3.646343	87.77233	7.839958	0.741367
5	6.755608	4.011711	86.88681	8.323192	0.778289
6	6.807740	4.814150	85.73136	8.649004	0.805489
7	6.909665	5.281678	84.37428	9.277923	1.066115
8	6.985040	5.677232	83.46299	9.484040	1.375742
9	7.046651	6.386157	82.09541	9.582899	1.935534
10	7.127760	6.915867	80.65742	9.678436	2.748282
11	7.174660	7.341952	79.79133	9.637227	3.229487
12	7.202533	7.786115	79.17909	9.575973	3.458819

Variance Decomposition of SM					
Period	S.E.	Y	ST	TO	SM
1	6.360914	0.261803	47.54190	2.105870	50.09042
2	9.882405	0.643953	56.28535	2.509357	40.56134
3	11.02883	4.939937	47.05136	2.564832	45.44387
4	11.34989	7.468381	44.42965	2.779459	45.32251
5	11.40583	8.141458	44.00438	2.752265	45.10190
6	11.70499	7.788694	41.92791	2.852847	47.43055
7	11.99190	7.463055	40.40135	2.783237	49.35236
8	12.19403	7.533922	40.18826	2.730796	49.54702
9	12.21116	7.662180	40.09589	2.761233	49.48070
10	12.24438	7.644813	39.91916	2.746277	49.68975
11	12.31621	7.555908	39.58167	2.714338	50.14808
12	12.38119	7.502987	39.59473	2.699739	50.20254

To ascertain the actual effects of the Stock market total value traded(ST), Stocks market turnover ratio (TO), Stock Market capitalization (SM), and GDP Per Capita (Y) for a relatively longer period, this study allowed variance decomposition for 12 consecutive periods. Utilizing the variance decomposition for 12 continuous periods, this study investigates the causal effect among SC, TO, SM, and Y for a long timeframe. The innovation in Y in the first period is explained by itself alone. However, has we go into the twelfth period, it can only explain 27% of it variation while ST, TO, and SM can explain 13.83%, 41.45% and 17.36% of it variation. Also for ST, 98% of innovation in ST in the first period is explained by itself alone. However, has we go into the twelfth period, it can still explain a large percentage (87%) of it innovation while other variables such as Y, TO, SM only account for a smaller percentage of 3%, 4%, and 3% respectively. In respect to TO it can explain it can only explain 94% of it variation in the first period and as the years dwindles into the twelfth year, it can only account for 79% of its variable and Y, ST and SM accounts for 7%, 9% and 3% respectively. Finally, concerning SM, in the first period, it can account for 50% of it variation in the first period while ST also account for 39%. In the last period which is the twelfth period, it can only account for 50% of itself and ST account for 395 followed by Y with 7% and TO with 2%.

5. CONCLUSION

This study investigates the dynamics between GDP growth and Stock market total value traded (ST), Stocks market turnover ratio (TO), Stock Market capitalization (SM) in Nigeria utilizing yearly data between 1989 and 2017. The study employed the ARDL techniques to examine the long and short run interaction between GDP growth and the other variables. Furthermore, the Toda Yamamoto causality test was utilized to verify the causality direction, and the variance decomposition techniques which is utilized to ascertain the actual effects of the ST,

TO, SM, and GDP growth for a relatively longer period. Findings from the ARDL long run estimate shows; (i) there is positive interaction between SM and GDP growth which aligns with the findings of Arestis et al. (2001), Oskooe (2010), Padhan (2007), Hofileña & Tomaliwan, (2014), and Anulika, (2017); (ii) the interaction between GDP growth and Stock market total value which complies with findings of Oskooe (2010), Aigbovo and Andrew (2015), and Nguyen et al. (2014); and (iii) no significant interaction was found between Stocks market turnover ratio (and GDP growth this outcome complies with the findings of Seetanah, et al. (2012), and Ewah et al. (2009). The Toda Yamamoto causality test shows; (i) evidence of a one-way causality from Stocks market turnover ratio to GDP growth, and from Stock market total value traded to GDP growth. Finally, the outcome of the Variance decomposition revealed; (i) The innovation in Y in the first period is explained by itself alone. However, has we go into the twelfth period, it can only explain 27% of it variation while ST, TO, and SM can explain 13.83%, 41.45% and 17.36% of it variation; (ii) However, has we go into the twelfth period, it can still explain a large percentage (87%) of it innovation while other variables such as Y, TO, SM only account for a smaller percentage of 3%, 4%, and 3% respectively; (iii) In respect to TO it can explain it can only explain 94% of it variation in the first period and as the years dwindles into the twelfth year, it can only account for 79% of its variable and Y, ST and SM accounts for 7%, 9% and 3% respectively. Finally, concerning SM, in the first period, it can account for 50% of it variation in the first period while ST also account for 39%. In the last period which is the twelfth period, it can only account for 50% of itself and ST account for 395 followed by Y with 7% and TO with 2%.

Of course if global financial crisis affects the result negatively, Nigeria cannot find solution. Though, in the case of internal political crisis, Nigerian government can find solutions to prevent insurgencies like Boko Haram. Because the cost of the economy is very high, it takes time to create confidence for the investors of the Nigeria stock Market. The stock market is an important factor that will affect economic growth of Nigeria as an emerging economy. It is not possible to prevent external risks but the politicians should focus on creating more stable political and economic environment in the country. Developing more liberal economic policies which will encourage both foreign and domestic investors into channeling their resources into the capital market. Many studies found out similar results in general but most of them fail to utilized variance decomposition techniques which is used to ascertain the actual strength of causality between variables for a relatively longer period.

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