

Do Monetary Policy Instruments Influence Capital Market Returns in Nigeria?

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Abstract

This study concisely examined the relationship between monetary policy variables and performance of the Nigerian Capital Market, analyzed with appropriate econometric tools. After the analysis, the outputs revealed the following; the entire monetary policy variables employed only monetary policy rate has significant relationship with the performance of the capital market in Nigeria. It was also found that the previous information about the all share index has the capacity to predict future returns in capital market in Nigeria. On this note, the researchers are of the opinion to embark on prompt disclosure of the daily all share indexes by regulatory authorities, thereby refurbishing the efficiency of the Nigeria Capital Market. It is also suggested to adopt alternative means of disclosure apart from the national television stations and national daily newspapers because of our technological know-how in Nigeria.

Keywords: Capital Market, Monetary Policy, ARDL, Nigeria.

I. Introduction

In broad terms, beside the service function, the Central Bank of Nigeria (CBN) is saddled with monetary and development functions qua CBN Decree No. 24 of 1991. On the monetary function the CBN in conjunction with the Federal Ministry of Finance is statutorily obliged to advise the Federal Government of Nigeria on suitable monetary policy. The essence of the collaboration is to harmonize monetary and fiscal policy to ensure the stability of the economy. On its development function, the CBN is a promoter of national economic development through, not limited to promoting the growth of financial institutions; power house of every nation and accelerator of a rapidly industrializing economy. An integral part of the financial system is the capital market. The capital market makes long term loans available to economic agents. It can also be recalled from foundations of finance that, the capital market comprises a number of institutions and intermediaries that facilitate the flow of fund to deficit units from the surplus units of the economy. As such developed capital market should be sufficiently large and liquid, with inherent diverse market capitalization and exhibit enough linkage to the performance of the real economic sector (Onoh, 2002; Kamal, 2013).

The analysis and transmission of monetary policy is aimed at facilitating the design of a suitable macroeconomic policy framework that triggers sustainable economic growth, domestic stability and external balance. A good number of instruments are employed in the design of macroeconomic policy. An indispensable role of monetary authorities qua central bank is to exercise a firm control over money supply, generally considered the nerve centre of the economy. It is worthy to note that good control over money supply is only feasible through information obtained from monetary analysis. The central bank must however sufficiently equip for monetary data collection, analysis, storage and retrieval for use when and where necessary. For investors, keeping abreast of changes in the monetary policy would strengthen their knowledge in measuring the intrinsic value of common shares, thereby advert mispricing (Onoh, 2007; Echekeoba, Ananwude and Lateef, 2017).

The global economic meltdown of 2007/2008 was a huge challenge to the CBN, hence had to tighten her seat belt on appropriate policy measure(s) to tackle such intractable hydra headed global mayhem. The incidence aroused the consciousness of finance, economic and political scholars to ascertain the role CBN played amidst the global economic catastrophes that averted the doom days prophesied by many analysts. These interventions were prominent in the money and capital markets. Economic and financial literatures are awash with empirical studies on the relationship between central bank monetary policy

measures and capital market even before, and after the global crisis. Though these studies presented mixed findings. Most of the scholars are of the view that monetary policy variables have significant impact on stock market performance index (Aliyu, 2009; Godwin 2010; Ajie and Nenbee, 2010; Okpara, 2010; Aliyu, 2010; Octavio, Martin and George, 2011; Babaak, Navid, Shabriar and Rozar, 2012; Ahmed and Igbinovia, 2013; Aliyu, 2013; Yosino, 2014; Nwakoby and Alajekwu, 2016; Onyeke, 2016; Adekunle, Alalade and Okulenu, 2016; Nkoro and Uko, 2016; Barakat, Elgazzar and Hanafy, 2016; Bissoon, Seetana, BhattuBabajee, Gopy-Ramdhany and Seetah, 2016). Others disagreed that monetary policy variables have significant impact on stock market performance (Hasan and Javed, 2009; Abaenewe and Ndugbu, 2012; Rifat, 2015; Onyeke, 2016).

In the same vein, investors are also eager to know the happenings in the capital market, as well as the relationship between monetary policy and capital market. This has a theoretical underpinning; Fama, in his Efficient Market Hypothesis (EMH) awakened the consciousness of investors to know all the necessary or relevant information concerning their investment. In addition, issues regarding profit maximization and the macroeconomic variables which might lead to an abnormal profit (supernatural earning). This succinctly informed investors that stock price really mirror images of reactions from monetary policy variables and other macroeconomic variables (Fama, 1981).

Despite the plethora of empirical studies found on the subject matter, the relationship between monetary policy and capital market cannot easily be delineated in practice. This is due to incessant fluctuations in the prices of stock in the Nigeria Capital Market notwithstanding the timely interventions of the regulatory authorities. This actually has incited the researchers to empirically add to existing body of knowledge by unearthing if capital market performance responds appropriately to the monetary policy variables in Nigeria. However, the subsequent sections of this study are decomposed as follows; section two takes care of review of theoretical and empirical literature; section three is all about materials and methods; section four analyses and interprets the data, whereas section five addresses conclusion and recommendations for further studies.

2. Literature Review

2.1 Theoretical Literature

From fundamental approach, there have been controversy among finance and Economic scholars on how monetary policy influence stock price. On one side that restrictive monetary policy, it leads to lower stock prices, while on the side expansionary monetary policy, it leads to higher stock prices. Researchers also are of the opinion that changes in monetary policy have the capacity to predict direction of the stock market. Taking a clue from Friedman's money demand function, origin of the relationship between money supply, interest rates and stock prices; any increase in interest rates qua contraction or restrictive monetary policy offers investors the opportunity to raise funds, the equity market exclusively. In order to enhance the demand for investors stock, the price will fall to a level that will be attractive to an investor at least in the short run, perhaps through public offers (Friedman, 1956; Waud, 1970; Mbutor 2007).

An important concept underlying investment analysis is the idea of efficient capital market. From the dimension of investor, it is necessary to an efficient capital market to ensure that an investor is involved in a fair game, whereas from economic point of view, the efficient capital market is the essential vehicle for optimal allocation of resources. The Efficient Market Hypothesis (EMH), also called Random Walk Theory (Kendall, 1953), is the consideration that the equity value of a listed firm reflects all data regarding the business value. That means the market is efficient when stock prices instantaneously reflect supposed-to-know or available information in the market. "Efficient market" was presented in 1965 by Eugene Fama. He suggested that stocks always trade at fair value. This makes it impossible for investors to buy undervalued stocks or to sell stocks at overestimated prices. A market is efficient if prices adjust rapidly and, on average, without bias to new info. Thus, there isn't a reason to believe that prices are excessively high or low (Fama, 1970; Brealey and Myers, 2003; Fisher and Jordan, 2005; Ibenta, 2005; Ross, Westerfield, Jaffe and Jodan, 2009; Bhalla, 2011).

2.2 Empirical Literature

As already identified, numerous empirical literature are available on the issue of monetary policy variables and capital market performance both in the developed, developing and emerging markets. Previously noted are the mixed outputs in the empirical investigations. For instance, Ajie and Nenbee (2010) applied co-integration and Error correction modeling (ECM) to x-ray if there is relationship between monetary policy and stock prices in the Nigerian stock exchange market. Money supply and interest rate were used as monetary policy variables on stock prices with time series data from 1986 to 2008. The output showed that money supply and interest rate have short run significant effect on stock prices.

Applying the generalized autoregressive conditional heteroscedasticity (GARCH) model, Aliyu (2010) examined the impact of inflation on stock market returns and volatility, evidence from Nigeria and Ghana monthly data from 1998 to 2010. The result of the study revealed as follows; that in Nigeria that bad news exerts more adverse effect on stock market volatility than good news of the same magnitude; while a strong opposite case holds for Ghana. Again, inflation rate has significant effect on stock market volatility in the Nigeria and Ghana.

Employing Augmented Dickey Fuller Unit Root Test and Cointegration Test, Vector Error Correction Model and the Forecast Error Decomposition Analysis. Okpara (2010) investigated the effect of monetary policy on the Nigerian stock market returns between 1985 and 2006 using the Two Stage Least Squared Method on a set of simultaneous equations on stock market return proxied by all share index with monetary policy variables (Treasury bill rate, interest rate and monetary policy rate). The study revealed that stock market returns in Nigeria respond significantly on monetary policy.

With threshold regression model, cointegration test and an error correction model, Chen & Wu (2013) looked at the relationship between interest rate and stock prices. Threshold regression model found that before and after a nonlinear relationship exists between interest rates and the stock index, also that stock index prices are significantly and positively related to the interest rates. The cointegration test and an error correction model revealed that there is a significant cointegration relationship before and after central banks cut interest rates.

Rifat (2015) engaged Johansen Co integration test, Vector Error Correction, and Vector Autoregressive Model to examine the relationship between monetary policy tools (inflation, real output, money supply, exchange rate) and stock market returns in Bangladesh. The study showed that there is no significant relationship between monetary policy variables and stock market returns.

Barakat, Elgazzar and Hanafy (2016) used data spanning from January 1998 to January 2014 to investigate the relationship between the stock market and macroeconomic factors in two emerging economies of Egypt and Tunisia employing ADF, Johansson cointegration, VAR and granger causality tests. The results of the study found a causal relationship in Egypt between market index and consumer price index (CPI), exchange rate, money supply, and interest rate. For Tunisia the same result was applicable except for CPI that had no causal relationship with the market index. Furthermore, it was found that the four macroeconomic variables are co-integrated with the stock market in both countries.

Employing simple and multiple regressions, Adekunle et al (2016) investigated effect of macroeconomic pricing variables (interest rate, inflation rate, and exchange rate) on capital market growth (all share index). The result found that interest rates have an unfavorable effect on capital market growth. Also that inflation rate and exchange rate insignificantly exert on capital market. A negative relationship was also found between interest rate and All Share Index.

Onyeke (2016) investigated the impact of monetary policy on stock returns in Nigeria over a monthly time period covering January 2003 to June 2014. The explanatory variables employed are consumer price index, inter-bank rate, open buy-back, Treasury bill rate, and exchange rate while the all share index is the dependent variable. The dynamic interactions among the variables are based on variance decompositions and impulse response functions generated from the VAR. The estimated results revealed that monetary policy variables did not have a significant impact on the prices of stock in Nigerian equity market. Using Johansen co-integration, OLS and granger causality tests, Nwakoby and Alajekwu (2016) tried to unearth the effect of monetary policies (monetary policy rate, Treasury bill rate, lending interest rate, liquidity ratio and deposit rate) on stock market Volume performance (All Share Index) in Nigeria from 1986 and 2013. First the result revealed that there is long run relationship between monetary policy and stock market performance. Again, monetary policy was found to influence the stock market, though causality test found that monetary policy cannot influence stock market performance, instead stock market performance has influenced the direction of monetary policy via lending and deposit rates.

With GARCH (1, 1) models, Nkoro and Uko (2016) examined the relationship between exchange rate and inflation volatility and stock prices volatility in Nigeria and found a negative relationship between stock market prices volatility and exchange rate and inflation volatility in Nigeria.

Bissoon et al (2016) studied the impact of monetary policies on stock markets with a panel data from five open countries from 2004 to 2014. In this study, interest rate and money supply stood for monetary policy regressed on Mauritius, London, Trinidad, Australia and Japan stock markets. The study employed random effect model for the panel regression and panel vector error correction model to know if short term and long term relationship exist between the variables. Thereafter, it was found that a negative relationship exist between interest rate and stock return and a direct link between money supply and stock return. The output showed that both in the short run and long run monetary variables explain changes in stock return.

Applying mainly the Autoregressive Distributive Lag (ARDL), Echekeba, Ananwude and Lateef (2017) examined effect of monetary policy tools on performance of the Nigerian capital market. The monetary policy engaged are monetary policy rate, cash reserve ratio, liquidity ratio and loan to deposit ratio on the performance of the Nigerian capital market. The results of the analysis revealed that Nigerian capital market performance is not significantly affected by monetary policy announcement by the Central Bank of Nigeria instead monetary policy rate that is significantly influenced by performance of the capital market.

Echekeba, Okaro, Ananwude and Akuesodo (2018) employed Ordinary Least Square (OLS) regression technique and causality analysis to investigate the effect of monetary policy on the performance of Nigerian capital market with time series data from 1986 to 2016. It was found that monetary policy rate negatively and significantly relate with capital market performance, whereas cash reserve ratio has positive and significant impact on performance of the capital market.

Nwokoye and Otu (2018) used Cointegration and vector error correction modelling (VECM) to examine if monetary authorities can stabilize the stock market and reduce its volatility culminating to examination of impact of monetary policy on

the development of the stock market in Nigeria. The results found as follows; the cointegration test showed that there exist long run relationships among the variables of the model. VECM saw that monetary policy, through the growth rate of money supply has impacted positively and significantly on the development of the stock market in Nigeria. Again, prime lending rate has a negative impact on the development of the stock market in Nigeria.

Osakwe and Chukwunulu (2019) used OLS regression technique to unravel if monetary policy (money supply, interest rate and exchange rate) influences stock market performance in Nigeria from 1986 to 2015. The results of the study indicated that money supply and exchange rate have positive and significant effect on stock market price movement whereas Interest rate has insignificant negative effect on stock market price movement.

3. Method of Study

3.1 Sample Data Collection

This study obtained annual data from the Central Bank of Nigeria (CBN), Nigerian Stock Exchange (NSE) Annual Report Books from 1989 to 2018 for Capital Market return as performance index proxied by All Share Index (ASI) as dependent variables, while the independent variable is Monetary Policy variables (Monetary Policy Rates (MPR), Cash Reserve Ratio (CRR), Liquidity Ratio (LDR) and Savings Deposit Rate (SDR)).

3.2 Trend Analysis of Data

This estimation of the model specified in this study started with trend analysis of data. The time series plot of the data is shown in figure I below. The figures below indicated that all the variables recorded period of peaks and troughs suggesting non-stationarity of the variables as expected.



Figure I. Trend Analysis of ASI, MPR, CRR, LDR and SDR



3.3 Techniques

To examine presence of multicollinearity, the correlation matrix is engaged in this study and Ordinary Least Square (OLS) technique to examine and determine the global utility of the specified model. To determine the stationarity of the data obtained, the Augmented Dickey Fuller (ADF) unit root test is employed. To estimate the model, the Autoregressive Distributive Lags (ARDL) is engaged.

3.4 Model Specification

Commencing with functional specification as seen below;

$$\text{Stock Market Performance} = f(\text{Monetary Policy Variables}) \quad (1)$$

$$\text{All Share Index} = f(\text{Monetary Policy Rates, Cash Reserve Ratio, Liquidity Ratio, Savings Deposit Rate}) \quad (2)$$

$$\text{ASI} = f(\text{MPR, CRR, LDR, SDR}) \quad (3)$$

Next is the explicit form;

$$\text{ASI} = \alpha_0 + \alpha_1 \text{ASI}_{t-1} + \alpha_2 \text{MPR} + \alpha_3 \text{MPR}_{t-1} + \alpha_4 \text{CRR} + \alpha_5 \text{CRR}_{t-1} + \alpha_6 \text{LDR} + \alpha_7 \text{LDR}_{t-1} + \alpha_8 \text{SDR} + \alpha_9 \text{SDR}_{t-1} + \epsilon_{t-1} \quad (4)$$

$$\text{ASI} = \alpha_0 + \alpha_1 \ln \text{ASI}_{t-1} + \alpha_2 \ln \text{MPR} + \alpha_3 \ln \text{MPR}_{t-1} + \alpha_4 \ln \text{CRR} + \alpha_5 \ln \text{CRR}_{t-1} + \alpha_6 \ln \text{LDR} + \alpha_7 \ln \text{LDR}_{t-1} + \alpha_8 \ln \text{SDR} + \alpha_9 \ln \text{SDR}_{t-1} + \epsilon_{t-1} \quad (5)$$

Where ϵ_{t-1} are stochastic terms

3.5 Operational form (Apriori Expectation)

α_1 , α_2 , α_3 , and α_4 are coefficient of MPR, CRR, LDR, and SDR respectively. It is expected that monetary variables influence capital market returns both ways.

4. Results and Analysis

Next is descriptive statistical analysis.

4.1 Description of Variables

Table I below is a summary of statistics that describe the distributional features of all the data. The capital market has average price index of 17208.87, with 13.88%, 9.37%, 40.12% and 6.71% of MPR, CRR, LDR and SDR respectively. ASI, LDR and SDR exhibited Kurtosis lower than 3 indicating platykurtic distributions while MPR and CRR showed Kurtosis greater than 3, suggesting a leptokurtic distribution. At 5% significant level Jarque-Bera P-value for ASI, CRR and LDR are 0.3937, 0.0531 and 0.4173 respectively; an evidence of normal distribution, whereas MPR and SDR recorded 0.0319 and 0.0460 indicating abnormal distribution.

Table I. Descriptive Statistics for ASI, MPR, CRR, LDR and SDR

	ASI	MPR	CRR	LDR	SDR
Mean	17208.87	13.88133	9.373333	40.12667	6.711333
Median	17702.59	13.50000	8.150000	40.10000	4.140000
Maximum	45908.88	26.00000	27.50000	64.10000	18.80000
Minimum	325.3000	6.130000	1.000000	25.00000	1.410000
Std. Dev.	13692.81	3.865720	6.891621	10.79955	5.318112
Skewness	0.459073	0.711373	1.067086	0.425798	1.092443
Kurtosis	2.194921	4.866871	3.375811	2.179709	2.613412
Jarque-Bera	1.863932	6.886764	5.869901	1.747618	6.153972
Probability	0.393779	0.031956	0.053133	0.417359	0.046098
Sum	516266.0	416.4400	281.2000	1203.800	201.3400
Sum Sq. Dev.	5.44E+09	433.3699	1377.339	3382.279	820.1871

Authors' computation output using E-view I0.



4.2 Global Utility Examination and Determination

In finametric analysis, determination of global utility or usefulness of the specified models gives a research confidence to making inference that can be referred for policy making. To achieve this, the researchers used correlation matrix and Ordinary Least Square (OLS) as shown below.

4.2.1 Multicollinearity Test

Table 2 below depicts the correlation matrix of the variables employed. The correlations between ASI, MPR, CRR, LDR and SDR are from -0.730474 to 0.635569; suggesting no linear correlation. Hence, multicollinearity is not a concern in this model.

Table 2. Correlation Matrix

Variables	ASI	MPR	CRR	LDR	SDR
ASI	1.000000	-0.601275	0.357605	-0.402143	-0.730474
MPR	-0.601275	1.000000	0.072084	0.415718	0.635569
CRR	0.357605	0.072084	1.000000	-0.177207	-0.376283
LDR	-0.402143	0.415718	-0.177207	1.000000	0.118386
SDR	-0.730474	0.635569	-0.376283	0.118386	1.000000

Authors' computation output using E-view IO.

4.2.2 Ordinary Least Square (OLS) Method

Table 3 is an output of the Ordinary Least Square (OLS) estimate for the relationship between monetary policy and capital market return. Though other indexes are satisfied both Durbin-Watson statistics is 0.970034, suggesting autocorrelation is found. This is an uncomfortable posture for further analysis and policy formulation, therefore ignored and subjected to stationarity test to choose an appropriate method for model estimation.

Table 3. Ordinary Least Square (OLS) method

Dependent Variable: LNASI				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMPR	-1.992927	0.793792	-2.510642	0.0189
LNCRR	0.626251	0.194299	3.223131	0.0035
LNLDR	0.425481	0.499423	0.851944	0.4023
LNSDR	-1.061547	0.269908	-3.932994	0.0006
C	13.28905	1.699087	7.821284	0.0000
R-squared	0.835014	F-statistic		31.63196
Adjusted R-squared	0.808616	Prob(F-statistic)		0.000000
Durbin-Watson stat	0.970034			

Authors' computation output using E-view IO.

4.3 Stationarity/Unit Root Test

Here, the researchers employed Augmented Dickey Fuller (ADF) unit root test as depicted below;

Table 4 below shows the stationary test for ASI, MPR, CRR, LDR and SDR variables. The results show MPR, CRR, LDR and SDR are difference once to be stationary or integrated at order one, while ASI is stationary at level. The variables have different orders of integration, justifying the adoption of ARDL technique.

Table 4. ADF Unit Test

Variables	Lag SCI	ADF Statistic		CRITICAL VALUES		Remarks
		With Prob. Value	5%	10%	Stationarity	
LnASI	7	-3.280648 (0.0253)	-2.967767	-2.622989	@1(0)	
LnMPR	7	-6.183067 (0.0000)	-2.971853	-2.625121	@1(1)	
LnCRR	7	-4.908116 (0.0005)	-2.971853	-2.625121	@1(1)	
LnLDR	7	-5.748665 (0.0001)	-2.971853	-2.625121	@1(1)	
LSDR	7	-5.206266 (0.0002)	-2.971853	-2.625121	@1(1)	

Authors' computation output using E-view I0.

The researchers having certified adoption Autoregressive Distributive Lag (ARDL) for estimation of the specified model then moved to model selection using Akaike Information Criterion (AIC) as shown below in Figure 2 below;

4.4 Model Selection

Figure 2 below depicts ARDL model selection based on Akaike Information Criterion (AIC). Information criteria select models that minimize their values. From figure I below, the best model, according to AIC, is an ARDL (1, 2, 0, 0, 1). This implies that a model that includes lagged value of the dependent variables as an additional regressor is the best description of researchers' data.

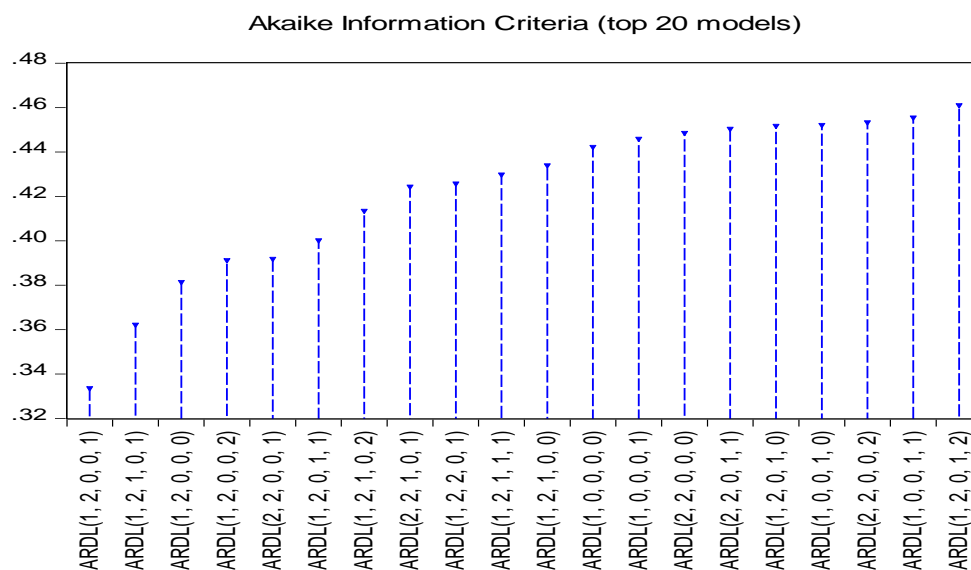


Figure 2. Model Selection based on AIC

Authors' computation output using E-view I0.

The researchers now commence estimation of the models with ARDL, aimed at proffering dynamic solution to the static problem of time series. This is shown in table 5 below.

4.5 Model Estimation and Results

Having confirmed the preliminary finometric statistical test, the researchers confidently proceeded to estimating the relationship between stock market performance (ASI) and monetary policy variables (MPR, CRR, LDR and SDR) in Nigeria with ARDL framework.

Table 5 below found that ASI has p-value of 0.0000 indicating that ASI reinforces itself or is autoregressive. It is statistically confirmed evidence showing that ASI in the past can predict future returns in capital market in Nigeria. It was found that MPR has coefficient of 0.724611 with p-value of 0.0256 at lag 2 indicating that MPR has positive and significant

relationship with ASI, while other monetary policy variables have insignificant relationship with ASI. The adjusted R-square is 0.949880 revealing that the estimated ARDL (1, 2, 0, 0, 1) model is moderately fitted, with the explanatory variable jointly accounting for 94.9% of total variation of ASI. The probability of F-Statistic is 0.000000, evidence that the estimated model is highly significant. Durbin-Watson Statistics (Dw) is 1.682484 suggesting absence of autocorrelation.

Table 5. ARDL Estimation Results

Dependent Variable: LNASI				
Method: ARDL				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (2 lags, automatic): LNMMPR LNCRR LNLDR LNSDR				
Selected Model: ARDL(1, 2, 0, 0, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNASI(-1)	0.852353	0.056070	15.20145	0.0000
LNMMPR	-0.158215	0.326985	-0.483859	0.6337
LNMMPR(-1)	-0.081640	0.329247	-0.247961	0.8067
LNMMPR(-2)	0.724611	0.300541	2.411018	0.0256
LNCRR	0.035349	0.089174	0.396401	0.6960
LNLDR	0.143261	0.268741	0.533081	0.5999
LNSDR	0.144891	0.302112	0.479593	0.6367
LNSDR(-1)	-0.353063	0.221791	-1.591870	0.1271
R-squared	0.962874	Durbin-Watson stat		1.682484
Adjusted R-squared	0.949880			

Authors' computation output using E-view I0.

4.5.1 Test of long run Relationships and cointegration between Monetary Policy Variables and Capital Market

To examining if there is long run relationship in the model, table 6 summarizes the output for long run effect and cointegration of the dependent and independent variables. MPR has p-value of 0.0256, the result confirms that MPR significantly relate with ASI both in the short run and long run. Table 6 also shows the ARDL Bound cointegration. From the bound test, it can be seen that the F-Statistics is 4.902550, which is greater than all the critical values at I(0) and I(1) bound at 1%, 5% and 10%. These reject the null hypothesis of no levels of relationship. With this result the researchers have sufficient evidence to declare a cointegration between capital market performance proxied by All Share Index (ASI) and Monetary Policy variables (Monetary Policy Rates (MPR), Cash Reserve Ratio (CRR), Liquidity Ratio (LDR) and Savings Deposit Rate (SDR)) in Nigeria within the scope of this study.

Table 6. ARDL Long Run Form and Bounds Test

Dependent Variable: D(LNASI)				
Selected Model: ARDL(1, 2, 0, 0, 1)				
Long run Test				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNASI(-1)*	-0.147647	0.056070	-2.633241	0.0159
LNMMPR(-1)	0.484756	0.560427	0.864977	0.3973
LNCRR**	0.035349	0.089174	0.396401	0.6960
LNLDR**	0.143261	0.268741	0.533081	0.5999
LNSDR(-1)	-0.208172	0.228098	-0.912642	0.3723
D(LNMMPR)	-0.158215	0.326985	-0.483859	0.6337
D(LNMMPR(-1))	-0.724611	0.300541	-2.411018	0.0256
D(LNSDR)	0.144891	0.302112	0.479593	0.6367
EC = LNASI - (3.2832*LNMMPR + 0.2394*LNCRR + 0.9703*LNLDR - 1.4099 *LNSDR)				

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.902550	10%	1.9	3.01
K	4	5%	2.26	3.48
		2.5%	2.62	3.9
		1%	3.07	4.44

4.5.2 Correction Short Run Error Test

Table 7 below revealed that error correction equation, $\text{CointEq}(-1)$ has expected negative sign of -0.147647 and p-value of 0.0000 suggesting the model is statistically significant. It can also be adduced that 14.7% of errors from the equilibrium can be corrected in the next period, and speed of adjustment is 14.7% .

Table 7. ARDL Error Correction Regression

ARDL Error Correction Regression				
Dependent Variable: D(LNASI)				
Selected Model: ARDL(1, 2, 0, 0, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNMPR)	-0.158215	0.198721	-0.796166	0.4353
D(LNMPR(-1))	-0.724611	0.207990	-3.483876	0.0023
D(LNSDR)	0.144891	0.181716	0.797348	0.4346
$\text{CointEq}(-1)^*$	-0.147647	0.027223	-5.423587	0.0000

Authors' computation output using E-view I0.

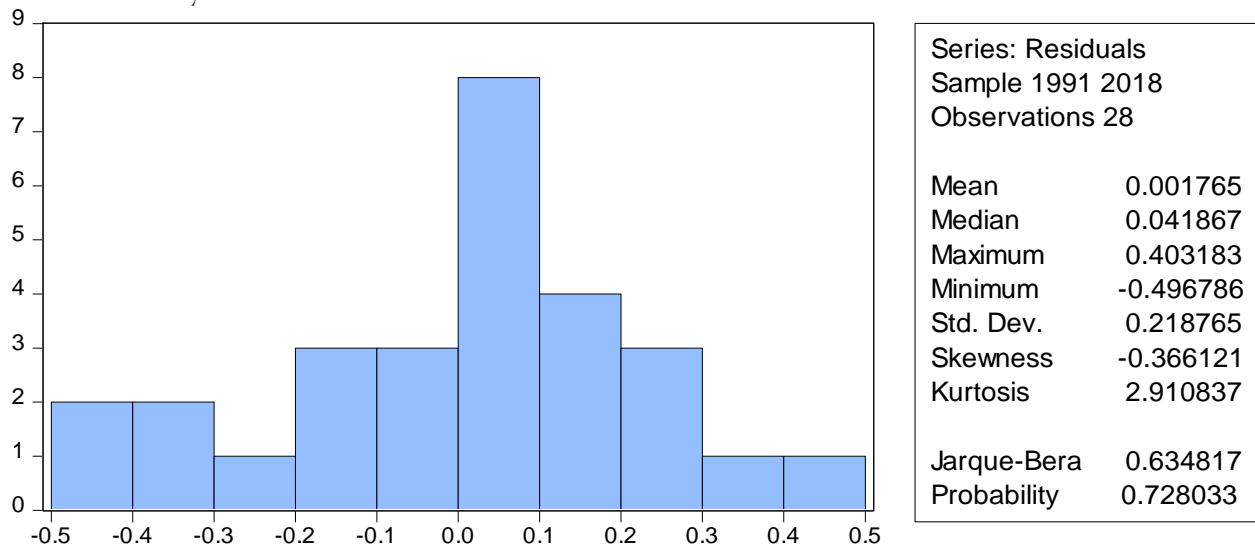
Next is to run some residual diagnostic test; Normality Test, Serial Correlation Test and Heteroscedasticity Test as seen tables 8, 9 and 10 below;

4.6 Residual Diagnostic Test

4.6.1 Normality Test

From Table 88 below, it is seen that Jarque-Bera Statistic is 0.6348817 with P- value of 0.728033 clear evidence of normal distribution.

Table 9. Normality Distribution



Authors' computation output using E-view I0.



4.6.2 Serial Correlation Test and Heteroscedasticity Test

The table 9 below shows that Heteroscedasticity Test: ARCH F-Statistic has P-value of 0.30888, suggesting no presence heteroscedasticity in the model. Also, table 10 depicting Breusch-Godfrey Serial Correlation LM Tests with F-Statistic P-value of 0.4594, which shows of non-rejection of the null hypothesis, an indication of absence of serial correlation.

Table 9. Heteroscedasticity

Heteroskedasticity Test: ARCH				
F-statistic	1.079507	Prob. F(1,25)	0.3088	
Obs*R-squared	1.117609	Prob. Chi-Square(1)	0.2904	

Table 10. Serial Correlation Tests

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.570331	Prob. F(1,19)	0.4594	
Obs*R-squared	0.815994	Prob. Chi-Square(1)	0.3664	

Authors' computation output using E-view I0.

4.7 Causality Relationship

From the table 11 below, ASI granger cause MPR (F-stat_{ASI} = 3.23061; Prob_{ASI} = 0.0580, significant at 10%), a unidirectional causality between ASI and MPR. Whereas, CRR, LDR and SDR have no traceable causal relationship with ASI since their p-values are greater than the significant levels of 5% and 10%.

Table 11. Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
MPR does not Granger Cause ASI	28	0.08726	0.9167
ASI does not Granger Cause MPR		3.23061	0.0580
CRR does not Granger Cause ASI	28	2.16887	0.1371
ASI does not Granger Cause CRR		0.53241	0.5943
LDR does not Granger Cause ASI	28	0.11887	0.8885
ASI does not Granger Cause LDR		2.16953	0.1370
SDR does not Granger Cause ASI	28	2.51592	0.1028
ASI does not Granger Cause SDR		0.01519	0.9849

Authors' computation output using E-view I0.

5. Concluding Remarks

The concern on whether monetary policy tools could influence the performance of the Nigerian Capital Market with suitable statistical tools made the following remarkable findings: that all the monetary policy variables employed in this study; only monetary policy rate has significant relationship with the performance of the capital market in Nigeria. The veracity is not in doubt because economic and finance scholars have already confirmed that the efficacy of the monetary policy transmission from CBN is mainly conspicuous in the money market, mostly deposit money banks (Onoh, 2007). This output collaborate the findings of Okpara (2010) and Echekoba et al, 2017, 2018, also with the fundamental hypothesis reviewed in the theoretical literature. It was all found that the previous information about the all share index has the capacity to predict future returns in capital market in Nigeria. This makes the market efficient by adopting the efficient market hypothesis reviewed in this study. On this note, the researchers are of the opinion to embark on prompt disclosure of the daily all share indexes by regulatory authorities, thereby refurbishing the efficiency of the Nigeria Capital Market. It is also suggested to adopt alternative means of disclosure apart from the national television stations and national daily newspapers because of our technological know-how in Nigeria. Again, having confirmed that Monetary Policy Rate has significant relationship with the performance of the capital market in Nigeria, the researchers are of the opinion that Central Bank of Nigeria should revisit the issue of MPR rates and

grant a special MPR to commercial banks in relation to Margin loans which must be applied mandatorily in the capital market to further boost the capital market performance.

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