

Does Monetary Policy Affect Stock Market Return? Recent Evidence from the Nigerian Stock Exchange (1986-2018)

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ABSTRACT

The nexus between monetary policy and stock market return has remained a topic of debate in the literature. We determined whether stock market return in Nigerian Stock Exchange (NSE) is affected by monetary policy or not. To this end, we employed the Autoregressive Distribute Lag (ARDL) model using data from 1986 to 2018 bearing in mind that our conclusion in this subject matter may be used to make assertion by other researchers who have interest in this area of study in finance. We are convinced beyond reasonable doubt based on the data we employed that the stock market return in Nigeria is not significantly affected by adjustments in monetary policy instruments of the Central Bank of Nigeria (CBN); the apex regulator of the financial system in Nigeria. This paper wholeheartedly reflects the opinion that the Central Bank of Nigeria should consider reducing the current double digit monetary policy rate to a single digit say 9% at most to attract investments in the stock market. This would reduce the prime lending rate because, high interest rate reduces cash flows of firms quoted in the exchange, and thus contraction in values of securities traded on the market.

Keywords: Monetary Policy; Stock Market Return, ARDL, Nigeria

1. INTRODUCTION

Goswani and Jung (1997) observe that stock prices are negatively correlated to long-term interest rates and positively related to short-term interest rate. Maku and Atanda (2009) argue that changes in stock market return are often reflected by the magnitude and movement on stock prices, market index and liquidity of the market. Lower interest rates increment stock costs, and thus diminish the likelihood of financial distress (Mishkin, 1997). There is no question that the disappointment of monetary policies and fiscal policies are the most reason why most of the past formative programs embraced by the Government has come to a nothing (Ezeoha & Uche, 2010). In show of disdain towards the insignificant impact of monetary policy on stock market return, Mersch (2006) envisages however, that there are numerous conceivable unsettling influences that nourishes the financial system with vulnerability in various regards. This uncertainty in the adjustment of monetary policy rate has been identified as a responsible factor that affects investors' returns in financial asset investment (Abaenewe & Ndugbu, 2012). This study is motivated by the conflicting issue in empirical studies on the nexus between monetary policy and stock market returns in Nigeria. Okpara (2010), Chude and Chude (2013) and Ibrahim and Agbaje (2013) have found that monetary policy is a significant determinant of long-run stock market returns in Nigeria. However, this assertion was refuted by Abaenewe and Ndugbu (2012) whom establish that monetary policy has not made significant influence over the prices of ordinary equities in Nigeria. It became more confusing as Aziza (2010) establish that monetary policy has long-run relationship with stock markets, but this relationship is different in various countries, and thus, rendering the notion of "one rule fits all" invalid.

Studies such as Nwaogwugwu (2018), Nwokoye and Otu (2018), Aliyu (2013), Chude and Chude (2013) and Ibrahim and Agbaje (2013) among others have been carried out in the area of assessing the effect of monetary policy on the Nigerian stock market return. The researcher observe with keen interest that monetary policy rate, cash reserve ratio, liquidity ratio, money supply and exchange rate are the major tools of monetary policy utilized by researchers. In this regard, this study introduced loan to deposit ratio which has been ignored by scholars in the context of Nigeria as an instrument of monetary policy. This study modified the model of Nwakoby and Alajekwu (2016) by applying three core monetary policy tools (monetary policy rate, liquidity ratio and loan to deposit ratio) and using up-to-date data on the relevant variables, and applying a superior ARDL econometric modelling to serve as a contribution to knowledge in the subject area.

2. REVIEW OF RELATED LITERATURE

Monetary Policy in a lay man's understanding is the management of liquidity by the Central Bank to spur economic growth and development in an economy (Echekoba, Okaro, Ananwude & Akuesodo, 2017). Liquidity in the context of monetary policy as noted by Echekoba, Okaro, Ananwude and Akuesodo (2017) deals with the level of money in circulation in an economy otherwise referred to as money supply. The Central Bank of Nigeria (CBN) designs and implement monetary policy in consultation with the Presidency and Federal Ministry of Finance prior to 1986, before the introduction of Structural Adjustment Programme (SAP). With the autonomy of the Central Bank of Nigeria (CBN) through the CBN Act of 2007 amended, the CBN is the agency which is primarily responsible for designing monetary policy proposal for presidential approval, and ensuring implementation of the monetary policy measures accepted by the Federal Government. If there is no returns on stocks traded on the stock market, investors would not invest in the market hence, stock markets are vital to the functioning of an economy, since capital is a critical component for generating economic output. The efficient and proper operation of the stock market strengthened by legal and regulatory framework determine returns in investments in the stock market.

Numerous opinions have continued to emerge on the effect of the monetary policy on the stock market return. The cradle of this evolution is traceable to the fact that there is no notion of "one rule fits-all" in the influence of monetary policy on the stock market, given that it varies with countries and economic conditions (Okpara, 2010). Nevertheless, the efficient market hypothesis has be adjudged to be the most accepted theory that greatly explains the nexus between monetary policy and stock market return. The efficient market hypothesis has been documented to subsist in three forms: weak, semi-strong and strong. Weak form efficient hypothesis prevails when current prices of stock fully reflect past information on prices. The semi-strong hypothesis describes a situation where all publicly available information is depicted current prices of securities while the strong efficient market hypothesis unveils a condition where all available information (past, private and public) are reflected in present prices. Ibenta (2012) viewed capital market efficiency from the roles the capital markets are expected to perform in the economy which are classified into allocation, operational and pricing efficiency. The allocative efficiency centres on effective and efficient allocation of scarce resources to deficit segments of the economy; operational efficiency when the cost of transaction on the capitals is at its barest minimum and pricing efficiency when prices are determined by the inter-play of demand and supply.

A brief empirical literature exploration was done starting with a recent work in Nigeria by Nwaogwugwu (2018) on the impact of macroeconomic policy and stock market behaviour in Nigeria. Broad Money, Interest Rate, Government Expenditure, Tax Revenue and Gross Domestic Product were chosen as indicators of macroeconomic policy while stock prices are used to represent stock market behaviour. The Methodology used was the ARDL bounds testing approach. The empirical findings showed that money supply and interest rate have statistically significant effects on the stock market in the short and the long run. Similarly, government spending and taxation have statistically significant effects on the stock market in the short and the long run.

Li (2018) dissected monetary policy factors and stock market from January 2010 to December 2015, including money supply M1, M2, one-year Benchmark loaning rate for financial institutions, interbank advertised rate, and the stock market price index data, through relationship examination, unit root test, co-integration test, Granger causality test and VAR demonstrate test, experimental test comes about appeared that there's a two-way causal relationship between money supply M1 and stock market, M2 and stock market have a one-way causal relationship from M2 to stock market. One-year benchmark loaning rate for budgetary teach and stock market have a one-way causal relationship from stock market to one-year benchmark loaning rate for budgetary teach. The interbred monetary rate and the stock market have a one-way causal relationship from the stock market to the interbred advertised rate.

Nwokoye and Otu (2018) investigated the impact of monetary policy on the development of the stock market in Nigeria. The study period covered from 1981 to 2015. Co-integration and vector error correction modelling (VECM) were utilized for the investigation. The co-integration test shown that there exist long run harmony relationship among the factors of the demonstrate. VECM result shown that monetary policy, through the development rate of cash supply has affected emphatically and essentially on the improvement of the stock market in Nigeria. Moreover, discoveries encourage demonstrated that prime loaning rate has had a negative effect on the advancement of the stock market in Nigeria.

Atis and Erer (2018) analysed the asymmetric response of stock market returns and volatility to monetary policy in bull and bear markets in Turkey over the period of 2002 to 2016. They used Markov switching model in order to identify bull and bear markets. They employed policy rate as monetary policy instrument. From the empirical results, they deduced that monetary policy is more effective in bull market periods.

Bissoon, Seetanah, Bhattu-Babajee, Gopy-Ramdhany and Seetah (2016) investigated the impact of monetary policies on stock markets based on a sample of five open countries with growing stock market over the period 2004 to 2014. Using a random effect model for the panel regression coupled with a panel vector error correction model to study the short term and long term relationship between the variables, the findings revealed a negative relation between interest rate and stock return and a direct link between money supply and stock return. The results confirm that both in the short run and long run monetary variables explain changes in stock return.

Muthama (2014) examined the relationship between stock market returns and monetary policy position in Kenya utilizing time arrangement information for the period 2003 to 2013. The think about utilized the ordinary least square method and conducted fitting symptomatic test to guarantee legitimacy of the discoveries. Evaluated comes about appeared that money supply multiplier includes a positive and noteworthy impact on stock market returns. The comes about uncovered that treasury bills rate, cash reserve requirement and Repo rate as pointers of monetary policy approach don't essentially impact Kenyan stock market returns.

Aliyu (2013) assessed the reactions of Nigeria's stock market to monetary policy innovations during the period of global financial crisis on the basis of monthly data over the period January, 2007 to August, 2011. In particular, stock market return was regressed against major monetary policy instruments; money stock (M1, and M2) and monetary policy rate (MPR). Using the GARCH methodology, results from the empirical analysis revealed that the unanticipated component of policy innovations on M2 and MPR exerts destabilizing effect on NSE's returns, whereas the anticipated component does not.

Chude and Chude (2013), studied the effect of money supply on the stock market returns in Nigeria using stationary test, co-integration test and error correction model. It discovered that there is long run relationship between broad money and stock market returns in Nigeria, and that broad money supply has been relatively high over the years and has significant positive impact on the stock market returns in Nigeria. Thus, it is recommended that government should provide policies that will encourage the growth of broad money supply and also provide incentives to the various multinational corporations in oil and gas as well as telecommunication industry to list their shares and this will lead towards enhancing the all share index.

Ibrahim and Agbaje (2013), examined the long run relationships and dynamic interactions between stock returns and inflation in Nigeria using monthly data of the All Share Price Index from the Nigerian Stock Exchange and Nigerian Consumers Price Index from January 1997 to 2010. The analytical technique of Autoregressive Distributed Lag (ARDL) bound test as proposed by Pesaran and Pesaran (1997); and Pesaran et al. (2001) were exploited. From the results, it is evident that there is the existence of a long run relationship between stock returns and inflation. The short run dynamic model also reveals that the speed of convergence to equilibrium is moderate implying that there is a short run relationship between stock returns and inflation. This is attributable, perhaps to the instability of prices of stocks noticed over time.

Galebotswe and Tlhalefang (2012) applied standard Vector Auto-Regressions (VAR) technique to quarterly data for Botswana for the period 1993-2010 to investigate the impact of monetary policy shocks on stock returns. Monetary policy was measured by changes in the 91 day Bank of Botswana Certificates rate. Results indicated that positive interest rate innovations are associated with increases, rather than decreases, in the aggregate stock returns of companies listed on the Botswana Stock Exchange (BSE).

Abaenewe and Ndugbu (2012) whom studied the analysis of the effect of monetary policy development on equity prices in Nigeria using annual data from 1985 to 2010. The ordinary least square regression model was used on five monetary policy variables. The study revealed that monetary policy has not

made significant influence over the prices of ordinary equities in Nigeria. Therefore, recommended that policy makers should make their decisions in a more crusadious, and effective manner that can link monetary policy to equities market to ensure price stability and encourage investors.

Osisanwo and Atanda (2012), studied the determinants of stock market return in Nigeria: A time series analysis. The ordinary least square method was used based on the sourced time series data from the CBN which spans from 1984 to 2010. The funding indicated that interest rate, previous stock return levels, money supply and exchange rate are the main determinants of stock return in Nigeria. Therefore, proffer that the need to adopt a mixed policy approach between capital and money market instruments is important in order to enhance the returns on equities in the Nigeria Stock Market.

Okpara (2010) examined monetary policy and stock market returns: evidence from Nigeria. The study employed two-stage least square methods, augmented dickey fuller unit root test, co-integration test, and vector error correction model and forecast error decomposition analysis. It reveals that monetary policy is a significant determinant of long-run stock market returns in Nigeria. Thus, more innovations on rate of interest can be a better predictor of stock market returns in Nigeria.

3. TECHNIQUE OF ESTIMATION

We estimated our model using the Autoregressive Distribute Lag (ARDL) model. The data were carefully obtained from the Central Bank of Nigeria (CBN) and Nigerian Stock Exchange (NSE) annual reports as relevant. Monetary Policy Rate (MPR), Liquidity Ratio (LQR) and Loan to Deposit Ratio (LDR) were the three monetary policy variables utilized. We measured Stock Market Return (SMR) using the percentage changes in the all share index. A period of thirty three (33) years was covered in the course of this study. The Autoregressive Distribute Lag (ARDL) modified model of Nwakoby and Alajekwu (2016) is sated as:

$$\Delta y_t = \alpha_0 + \beta_1 y_{t-1} + \lambda_k \sum_{k=1}^k \Delta SR_{k,t-1} + \sigma_k \sum_{k=1}^k LR_{k,t-1} + \mu_t \quad (1)$$

Where: Δ denotes first difference of variable, μ_t is a random "disturbance" term, y_t is the dependent variable, while SR is the short-run dynamics of explanatory variables, LR is the long-run dynamics of the explanatory variables. β, λ and σ are the parameters to be estimated; α_0 is the constant parameter.

4. RESULTS AND DISCUSSION

Stationarity of Data

The stationary features of the data were ascertained with the aid of the Augmented Dickey-Fuller (ADF) Test and Phillips Perron (PP). Intercept and trend intercept were the two criteria employed in unit root estimation. From the result in Tables 1 – 2, there is no stationarity defect in the data that would affect the output of the regression.

Table 1: Result of ADF Test

Variables	Intercept	Trend and Intercept	Remark
SMR	-5.300172 (0.00)*	-5.193517 (0.00)*	Stationary
MPR	-6.105213 (0.00)*	-5.984285 (0.00)*	Stationary
LQR	-4.567333 (0.00)*	-4.523443 (0.00)*	Stationary
LDR	-5.300172 (0.00)*	-5.193517 (0.00)*	Stationary

Source: Data output via E-views 10.0

Note: The p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 2: Result of PP Test

Variables	Intercept	Trend and Intercept	Remark
SMR	-6.381376 (0.00)*	-6.241616 (0.00)*	Stationary
MPR	-10.35370 (0.00)*	-10.56588 (0.00)*	Stationary
LQR	-5.065653 (0.00)*	-5.027367 (0.00)*	Stationary
LDR	-8.896325 (0.00)*	-6.241616 (0.00)*	Stationary

Source: Data output via E-views 10.0

Note: The p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Sensitivity Analysis

We employed Ramsey Specification, heteroskedasticity and serial correlation tests to diagnose the model as presented in Table 3. We found from the diagnostic test that the model is absolved of any problem relating to mis-specification of model, heteroskedasticity and serial correlation as the p-values of the f-statistics are insignificant at 5% level of significance.

Table 3: Sensitivity Analysis

Sensitivity Analysis	F-statistic	P-value
Ramsey Reset Specification	0.107139	0.9161
Heteroskedasticity Test	0.220591	0.9973
Serial Correlation LM Test	0.827537	0.4574

Source: Data output via E-views 10.0

Long Run and Short Run ARDL Output

In the long run output in Table 4, we found evidence that stock market return in the Nigerian Stock Exchange (NSE) is not related in the long run with our three instruments of monetary policy: monetary policy rate, liquidity ratio and loan to deposit ratio. This is on the basis that the f-statistic of 1.11176 is lower than the lower and upper critical bound value of 3.23 and 4.35 respectively. In the short run output as shown in Table 5, monetary policy rate and loan to deposit ratio have negative insignificant relationship with stock market return, while there is a positive relationship between liquidity ratio and stock market return. Holding monetary policy rate, liquidity ratio and loan to deposit ratio constant, stock market return would be valued at 8.842236%. A unit increase in monetary policy rate and loan to deposit ratio lead to 9.14749% and 24.49933% decrease in stock market return, whereas a unit rise in liquidity ratio raises the stock market return by 1.654707%. The Adjusted R-squared reveals that 79.20% variation in stock market return was due to changes in monetary policy instruments of monetary policy rate, liquidity ratio and loan to deposit ratio. The significant value (5% significance level) of the F-statistic entails that monetary policy instruments significantly explained that changes in stock market return within the period of the study. The Durbin Watson statistic of 2.1 unveils that there is no autocorrelation in the model

Table 4: ARDL Long Run Estimation

T-Test	5% Critical Value Bound		Remark
F-Statistic	Lower Bound	Upper Bound	
1.11176	3.23	4.35	Null Hypothesis Accepted

Source: Data output via E-views 10.0

Table 5: ARDL Short Run Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SMR(-1)	0.881362	0.099613	8.847896	0.0000
MPR	-9.147488	504.0466	-0.181481	0.8579
MPR(-1)	-10.26996	749.8554	-1.369593	0.1868
MPR(-2)	25.50880	770.0415	3.312653	0.0037
MPR(-3)	-21.45772	885.8216	-2.422353	0.0256
MPR(-4)	11.37331	735.4660	1.546409	0.1385
LQR	16.54707	168.4598	0.982256	0.3383
LDR	-24.49933	156.9789	-1.560677	0.1351
C	8.842236	14564.09	0.607126	0.5510
R-squared	0.853623	Mean dependent var		18416.96
Adjusted R-squared	0.791991	S.D. dependent var		14639.65
S.E. of regression	6676.848	Akaike info criterion		20.70577
Sum squared resid	8.47E+08	Schwarz criterion		21.13398
Log likelihood	-280.8808	Hannan-Quinn criter.		20.83668
F-statistic	13.85028	Durbin-Watson stat		2.111630
Prob (F-statistic)	0.000002			

Source: Data output via E-views 10.0

Granger Causality Test

We relied on the granger causality analysis in determining whether stock market return is affected by monetary policy or not. From the granger causality output in Table 6 we found evidence that stock market return in Nigeria is not affected by adjustment in monetary policy instruments of the Central

Bank of Nigeria. We make this assertion on the conviction that the p-values of the f-statistics for the variables of interest as less than 0.05 (insignificant at 5% level of significance).

Table 6: Granger Causality Output

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
MPR does not Granger Cause SMR	32	1.25995	0.2712	No Causality
SMR does not Granger Cause MPR		0.43653	0.5142	No Causality
LQR does not Granger Cause SMR	32	1.47166	0.2352	No Causality
SMR does not Granger Cause LQR		1.00429	0.3249	No Causality
LDR does not Granger Cause SMR	32	1.62248	0.2132	No Causality
SMR does not Granger Cause LDR		1.74538	0.1972	No Causality

Source: Data output via E-views 10.0

Brief Discussion of Our Findings

The consistent result found in this study is the presence of a negative relationship between monetary policy rate and stock market return. This is an indication that monetary policy rate which influences interest rate of deposit money banks charge to extend fund to clients is critical to determining the level of investment in the Nigerian stock market. This finding supports the empirical works of Bissoon, Seetanah, Bhattu-Babajee, Gopy-Ramdhany and Seetah (2016). The inability of monetary policy rate to influence returns in the Nigerian Stock Exchange is an affirmation of Muthama (2014) and Galebotswe and Tlhalefang (2012) whom established that in Kenya and Botswana, monetary policy rate does not in any way affect stock market return. Back to our dear country Nigeria, the negative nexus between an instrument of monetary policy: monetary policy rate and the performance of the stock market via variation in all share index which was a measurement of the stock market performance does not tally with the result of Nwakoby and Alajekwu (2016) and Aliyu (2013). This inconsistency considering the sharp difference covered by both studies perhaps is attributed to different forms of monetary policy measurements and the number of monetary policy variables employed in each study.

5. CONCLUSION AND RECOMMENDATIONS

The essence of our study is to ascertain **if** stock market return in Nigeria is affected by monetary policy adjustments or not. In the course of this, we employed the ARDL econometric technique to aid us in making an empirical conclusion regarding the bone of contention bearing in mind that our conclusion in this subject matter may be used to make assertion by other researchers who have interest in this area of study in finance. With this in mind, we are convinced beyond reasonable doubt based on the data we employed that stock market return in Nigeria is not significantly affected by adjustments in monetary policy instrument of the Central Bank of Nigeria (CBN): the apex regulator of the financial system in Nigeria. **The major implication is that investment in the stock market is independent of the Central Bank of Nigeria (CBN). Even though the apex bank has made investors in the stock market believe that its policies are geared towards the development of the market, such is the not the case based on reality of data used in our analysis.**

Having look at the finding from this study, we (authors) are wholeheartedly of the opinion that the Central Bank of Nigeria should consider reducing the current double digit monetary policy rate to a single digit say 9% at most to attract investments in the stock market. This would reduce the prime lending rate because, high interest rate reduces cash flows of firms' quoted in the exchange, and thus contraction in values of securities traded on the market.

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