

Impact of Monetary Policy on Value of Stock Traded: Short Run and Long Run Evidence from Nigerian Stock Exchange (1987- 2017)

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ABSTRACT

This study examined the effect of monetary policy on value of stock traded in Nigerian Stock Exchange. Specifically, we ascertained the effect of monetary policy rate, liquidity ratio and loan to deposit ratio on value of stock traded using the Autoregressive Distribute Lag (ARDL) based on annual data from 1986 to 2017. Our findings showed that monetary policy rate, liquidity ratio and loan to deposit ratio have no significant effect on value of stock traded. Monetary policy rate maintained a negative relationship with value of stock traded, while liquidity ratio and loan to deposit ratio positively correlated with value of stock traded. We are vehemently of the view that expansionary monetary policy that guarantees adequate liquidity in the economy should be pursued vigorously by the Central Bank of Nigeria. Adequate level of liquidity offers firms' in the stock market better access to financial resources which will increase their revenue and thus appreciation in their stocks trading.

Keywords: Monetary Policy; Stock Market Performance

1. INTRODUCTION

Every year, monetary authority set macroeconomic targets, and these targets are usually tied to two principal macro policy frameworks (fiscal and monetary). The uncertainty over policy direction influences the performance of a nation's capital market. Monetary policy is a forward looking economic reform tool specially applied to expand or contract money supply or achieve price stability. The effect of the monetary policy on the Nigeria stock market has been a source of worry for individual(s) and institutional investor(s). This intellectual argument gained ascendancy in the last two decades due to the increasing belief that economic activities often impact on stock prices (Smith, 1990). Okpara (2010) posits that monetary policy is a significant determinant of long-run stock market returns in Nigerian. Smith (1990) did a study on United States economy, and found that stock prices jump immediately after (and sometimes before) the Federal Reserve announces a cut in the interest rate or discount rate or Chase Manhattan announces a drop in its prime loan rate.

The relationship between stock prices and the economy can be of a reversible model. The stock market may influence the economy as found by Smith (1990), or the economy may influence the stock market (Amadi & Odubo, 2002). However, the relationship between monetary policy and the stock market has been linked to transmission mechanism of the monetary policy [19]. Goodhart and Hofman (2000) posit that the stock market is a transmission mechanism of the monetary policy actions that affect stock prices. They are linked to real economy through their influences on consumption spending (wealth effect channel) and investment spending (statement of financial position channel). Napolitano (2006) states that several proposed transmission mechanisms link changes in Central Bank policy to stock market, which in turn affects output, via consumer expenditure as well as investment spending. All these scholars seem to believe that stock market is a real transmission mechanism for monetary policy. Globally, the influence of the monetary policy on the stock market varies in accordance with the peculiarity and prevailing economic conditions as well as efficiency of the stock market in response to available information and inflationary trend. As a matter of fact, the influence of the monetary policy transmission mechanism may differ across countries due to the differences in the extent of financial intermediation, i.e. the size, concentration of the banking system, the development of the capital market and structural economic conditions. The effect of the monetary policy tools on stock prices may vary equally across countries. The stock market therefore is expected to establish the price which includes the monetary policy actions (Abaenewe & Ndugbu, 2012). Put differently, the Nigerian Stock Market is an emerging market. It has its own behaviour due to the changes in the structural economic conditions in Nigeria economy, via under developed nature of the stock market, poor banking and saving habit, etc. As a result of the above, effort will be made in this study to place greater emphasis on the effect of the monetary policy via monetary policy rate, liquidity ratio, loan to deposit ratio on the value of securities traded.

This study is divided into five sections. Sections one reveals the introduction; section two dealt with the review of related literature. The method of analysis was explained in section three; section four gave insight on basic findings, while section five concluded the study.

2. LITERATURE REVIEW

Monetary Policy and Value of Stock Traded

Monetary policy is a major economic stabilization weapon which involves measures designed to regulate and control the volume, cost, availability and direction of money and credit in an economy to achieve some specified macroeconomic policy objectives (Anyawu, 1993). That is, it is a deliberate effort by monetary authorities (the Central Bank) to control the money supply and credit conditions for the purpose of achieving certain broad economic objectives (Wrightsmen, 1976). Monetary policy is administered by the Central Bank, in some cases with some degree of political, government interference. The Monetarist school is led by Milton Friedman, their point of departure with the Keynesians is with respect to government intervention. While the Keynesians argue for direct government intervention, to them policy changes are best not pre-announced, so as to prevent speculation. The Monetarist argues for the contrary- an indirect government intervention through the use and manipulation of monetary policies. The monetarist believes that this macroeconomic problem is rooted in disturbance in the monetary sector of the economy. They emphasize money as causal agent in depression and inflation in which case the government could deal with these problems by manipulating the monetary elements in the economy (Nwaru, 2002). The monetary instruments to be manipulated include interest rates, lending rates, increase or decrease in money supply, etc. Market participants can learn certain features about the stock market from information collected at stock exchanges. Stock exchanges record the value of shares traded in a particular company or floor, which is an indication of interest in a particular stock or the level of conviction that investors demonstrated in purchasing or selling shares. Stock exchanges also generate total stock market value statistics based on buying and selling activity in the companies that lists their shares on that platform.

Efficient Market Hypothesis

Scholars believe that trading activities on the stock market is largely aligned to the efficient market hypothesis also known as the Random Walk Theory was propounded by E. F. Fama in 1970. The theory states that the current prices of assets quoted in the capital market fully signify the available information about the firm's value, and making profit in excess of what is obtainable in the market is completely out of place. In other words, stock prices having fully reflect the available information about the value of a firm, investor making additional profit outside what prevail in the market based on these information is impossible. The present of many investment analyst and adviser, different information on firms' values, availability of many investors, stock prices immediately adjustments to latest/new information. Based on background of globalisation and mobilisation, this hypothesis becomes increasingly important as the information flow is getting steadily faster with new technologies which make it possible to have access to information all over the world (Lindner, Fischer, Félix, Scherer & Warkentin, 2010). A capital market is said to be efficient when prices of stock incorporate and adjust to availability of information: both past and new information. In an efficient capital market, the net present value of all transaction is zero.

A Concise Empirical Review

Osamwonyi and Evbayiro-Osagie, (2012) investigated the relationship between macroeconomic variables and stock market index in Nigeria using yearly data of several macroeconomic variables which spans from 1975 to 2005. The vector error correction models were employed to study the short-run dynamics as well as long-run relationship between the stock market indexes. The major finding is that macroeconomic variables influence stock market index in Nigeria.

Aziza (2010) looked into the effects of monetary policy on stock market performance: A cross country analysis which spans from 1988 to 2008 using vector error correction model (VECM) and graph for each country. The result of the analysis disclosed that although monetary policy has long-run relationship with stock markets, this relationship is different in various countries, and thus, rendering the notion of "one rule fits all" invalid.

Terfa (2009) studied stock market reactions to selected macroeconomic variables in the Nigerian economy using error correction model. It was found that a significant negative short run relationship exists between the stock market and the minimum rediscounting rate, and it was also found that exchange rate stability on the long run improves the performance of the stock market.

Nwakoby and Alajekwu (2016) examined the effect of monetary policies on stock market performance in Nigeria from 1986 to 2013. An ex post facto research design was adopted using data from the Central Bank of Nigeria Statistical Bulletin. The method of data analyses used is Johansen co-integration, OLS and Granger Causality tests. All share index was used as the indicator of stock market performance, while the explanatory variables included monetary policy rate, treasury bill rate, lending interest rate, liquidity ratio and deposit rate. The co-integration result indicates that there is long run relationship between monetary policy and stock market performance in Nigeria. Monetary policy rate has insignificant positive effect on all share index while lending rate has significant positive effect on all share index.

Muktadir-Al-Mukit (2013) investigated the effect of monetary policy variables on the performance of the stock market of Bangladesh using monthly data over the period of January, 2006 to July, 2012. As a dependent variable, DSE General (DGEN) Index was used as a proxy for stock market performance and four independent variables-money supply, repo rate, inflation rate and three-month Treasury bill rate were used as proxy for monetary variables. Employing co-integration technique it was observed that in the long run, a one percent increase in inflation, in money supply, in T-bill rate and in repo rate contributes 1.69 %, 0.38 % and 1.09 % increase and 2.37% decrease in market index respectively.

Mohamadpour et al. (2012) examined the relationship between monetary policy and stock market performance for sample data from first quarter of 1991 to first quarter of 2011 in Malaysia. Co-integration analysis and Vector Error Correction Models (VECM) were also suggested a possibility of merely one long-run equilibrium relationship between real Kuala Lumpur Composite Index regards to M1, M2, M3, and real interest rate. The Vector Error Correction Models analysis showed a statistically significant relationship between M1 and M2 as a monetary supply variable included in the model; so that M1 and M2 has long term influence on Kuala Lumpur Composite Index.

Chen and Xie (2016) ascertained how responsive China's stock market is to the monetary policies. This study utilized event study methodology and studies the response efficiency of Chinese stock market to those monetary policies issued by Central Bank. From the outcomes of the models, they found that there are varying degrees of feedback of Shanghai and Shenzhen stock market when the policies were enacted, and the impacts of every stimulation starts to fade out in the third trading days after the enactment dates of each monetary policy.

Hsing (2013) assessed the potential impacts of fiscal and monetary policies on stock market performance in Poland. Applying the GARCH model during 1999.Q2 to 2012.Q4, the study depicted that Poland's stock market index is not affected by the ratio of government deficits or debt to GDP and is negatively influenced by the money market rate. The stock index and the ratio of M₃ to GDP showed a quadratic relationship with a critical value of 46.03%, suggesting that they have a positive relationship if the M₃/GDP ratio is less than 46.03% and a negative relationship if the M₃/GDP ratio is greater than 46.03%.

3. METHODOLOGY

We estimated the model using the Autoregressive Distribute Lag (ARDL). The value of stock traded is the dependent variable. We measured monetary policy by monetary policy rate, liquidity ratio and loan to deposit ratio. Our model is stated thus:

$$VST = f(MPR, LR, LDR) \quad (1)$$

The econometric form of Equ.1 is stated as

$$VST_t = \beta_0 + \beta_1 MPR_t + \beta_2 LR_t + \beta_3 LDR_t + \varepsilon_t \quad (2)$$

With the aid of the Autoregressive Distribute Lag (ARDL), Equ.1 was estimated as:

$$VST_t = \beta_{0i} + \beta_{1i} VST_{t-1} + \beta_{2i} MPR_{t-1} + \beta_{3i} LR_{t-1} + \beta_{4i} LDR_{t-1} + \sum_{i=1}^p a_{1i} VST_{t-i} + \sum_{i=1}^q a_{2i} MPR_{t-i} + \sum_{i=1}^q a_{3i} LR_{t-i} + \sum_{i=1}^q a_{4i} LDR_{t-i} + \varepsilon_t \quad (3)$$

When estimated in the long run, Equ.1 is translated as:

$$VST_t = a_0 + \sum_{i=1}^p a_{1i} VST_{t-i} + \sum_{i=1}^{q_1} a_{2i} MPR_{t-i} + \sum_{i=1}^{q_2} a_{3i} LR_{t-i} + \sum_{i=1}^{q_3} a_{4i} LDR_{t-i} + \varepsilon_t \quad (4)$$

While the short run estimate of Equ.1 is expressed as:

$$VST_t = a_0 + \sum_{i=1}^p a_{1i} VST_{t-i} + \sum_{i=1}^q a_{2i} MPR_{t-i} + \sum_{i=1}^q a_{3i} LR_{t-i} + \sum_{i=1}^q a_{4i} LDR_{t-i} + \alpha ECM_{t-i} + \varepsilon_t \quad (5)$$

Where:

VST = Value of traded in period t ,

MPR = Monetary policy rate,

LR = Liquidity Ratio,

LDR = Loan to deposit ratio

β_i = unknown parameters to be estimated,

a_{1i} - a_{4i} = coefficient of the model's short run dynamics convergence to equilibrium,

α = the speed of adjustment,

ε = the usual random disturbance term.

4. ESTIMATED OUTPUT AND DISCUSSION

Descriptive Properties of the Data

The descriptive properties of the variables in the models are contained in Table 1. The mean values of the VST, MPR, LQR and LDR are 395796.2, 7.832813, 44.69156 and 65.49313, while 58545.25, 7.650000, 44.30000, and 67.70000 reflecting the median respectively. The maximum values of the variables are 2350876 for VST, 24.00 for MPR, 64.10 for LQR and 85.70 for LDR. In the same vein, the minimum statistics are 225.4000 for VST, 6.00 for MPR, 29.10 for LQR and 38.00 for LDR. The standard deviation was observed to be 586166.0 for VST, 5.771588 for MPR, 9.220252 for LQR and 12.19458 for LDR. All the variables were positively skewed towards normality as evidenced by the positive values of the skewness statistic except for LDR. The Kurtosis value shows that it is only VST and MPR that are leptokurtic in nature as evidenced by the Kurtosis statistic which is more than three (3). The Jarque-Bera suggests that all the variables were normally distributed as the p-values are significant at 5% level of significance.

Table 1: Descriptive Properties of the Data

	VST	MPR	LQR	LDR
Mean	395796.2	7.832813	44.69156	65.49313
Median	58545.25	7.650000	44.30000	67.70000
Maximum	2350876.	24.00000	64.10000	85.70000
Minimum	225.4000	1.000000	29.10000	38.00000
Std. Dev.	586166.0	5.771588	9.220252	12.19458
Skewness	1.665385	1.097849	0.234025	-0.613464
Kurtosis	5.350436	4.017709	2.630238	2.740070
Jarque-Bera	22.15811	7.809101	9.474393	7.097220
Probability	0.000015	0.020150	0.028836	0.040424
Sum	12665477	250.6500	1430.130	2095.780
Sum Sq. Dev.	1.07E+13	1032.648	2635.405	4609.938
Observations	32	32	32	32

Source: Computer analysis using E-views 10.0

Unit Root Test

This Augmented Dickey-Fuller (ADF) Test and Phillips Perron (PP) were the unit root test adopted. The unit root test was performed at first difference and in two sets: intercept and trend intercept. The results of the ADF and PP tests show that all the variables are stationarity at first difference. The unit root test are detailed in Table 2 and 3.

Table 2: Result of ADF Test

Variables	Intercept	Trend and Intercept	Remark
VST	-2.276481 (0.03)**	-2.266706 (0.03)**	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 3: Result of PP Test

Variables	Intercept	Trend and Intercept	Remark
VST	-4.711611 (0.00)*	-4.769737 (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.

Diagnostic Test Result

The diagnostic test of serial correlation, heteroskedasticity and Ramsey Specification were conducted as required in econometric to make a statistically reliable result. As can be seen in Table 4, there is no diagnostic issue in the model estimated based on the fact that the p-values of the f-statistic are insignificant at 5% level of significance.

Table 4: Diagnostic Test

Regression Equation: VST → MPR + LR + LDR	F-statistic	P-value
Serial Correlation LM Test	0.000193	0.9891
Heteroskedasticity Test	1.492973	0.2143
Ramsey Reset Specification	1.147824	0.0622

Source: Data output via E-views 10.0

ARDL Long Run Estimation

The ARDL co-integration takes into account the mixed order of integration of variables and eliminates possible bias alleged by non-integration at same order. The ARDL result as shown in Table 5 provides a clear evidence that monetary policy tools are not co-integrated with value of stock traded in Nigeria. This assertion is on the argument that the f-statistics of 2.429310 is less than upper and lower bound values of 4.35 and 3.32 respectively. With this result, the estimation of the speed of adjustment to equilibrium is hereby altered.

Table 5: Bound Test for VST, MPR, LR and LDR

T-Test	5% Critical Value Bound		Remark
F-Statistic	Lower Bound	Upper Bound	
2.429310	3.23	4.35	Null Hypothesis Accepted

Source: Data output via E-views 10.0

ARDL Short Run Estimation

Regarding the ARDL result in Table 6, there is a liquidity ratio and loan to deposit ratio have positive relationship with value of stock traded, while monetary policy rate has negative significant relationship with value of stock traded. Assuming monetary policy rate, liquidity ratio and loan to deposit ratio are held constant, value of stock traded would amount to ₦344315.70 million. A unit appreciation in liquidity ratio and loan to deposit ratio swell value of stock traded by ₦33980.41 million and ₦993.42 million respectively, whereas value of stock traded would be down by ₦64358.20 million following a percentage rise in monetary policy rate. The Adjusted R-square shows that 69.57% changes in value of stock traded was as a result of fluctuation in monetary policy rate, liquidity ratio and loan to deposit ratio. This is statistically significant as depicted by the F-statistic and P-value of 9.0 and 0.00 respectively. The Durbin Watson value of 1.8 shows no autocorrelation in the model.

Table 6: OLS Regression of Value of Stock Traded and Monetary Policy

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VST(-1)	0.518067	0.173237	2.990513	0.0072
VST(-2)	0.274943	0.202256	1.359376	0.1892
VST(-3)	0.469397	0.192374	2.440020	0.0241
MPR	-64358.20	17854.27	-3.604640	0.0018
LQR	33980.41	8542.047	3.978017	0.0007
LDR	993.4018	7526.598	0.131985	0.8963
LDR(-1)	-6583.370	8895.708	-0.740061	0.4679
LDR(-2)	-16068.38	8085.590	-1.987286	0.0608
C	344315.7	795544.8	0.432805	0.6698
R-squared	0.782632	Mean dependent var		436680.9
Adjusted R-squared	0.695685	S.D. dependent var		601612.0
S.E. of regression	331877.6	Akaike info criterion		28.51205
Sum squared resid	2.20E+12	Schwarz criterion		28.93638
Log likelihood	-404.4247	Hannan-Quinn criter.		28.64494
F-statistic	9.001255	Durbin-Watson stat		1.836028
Prob (F-statistic)	0.000035			

Source: Computer analysis using E-views 10.0

Granger Causality Analysis

The granger analysis was employed to ascertain the effect of monetary policy tools on value of stock traded in Nigeria. The result as detailed in Table 7 unveils that there is no causal relationship flowing from monetary policy: monetary policy rate, liquidity ratio and loan to deposit ratio to value of stock traded at 5% level of significance. This implies that monetary policy rate, liquidity ratio and loan to deposit ratio have no significant effect on value of stock traded. However, we discover that it the value of traded that exerts significant effect on one of the monetary policy tool: liquidity ratio.

Table 7: Granger Causality Estimation

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
MPR does not Granger Cause VST	31	0.08844	0.7684	No Causality
VST does not Granger Cause MPR		2.30681	0.1400	No Causality
LR does not Granger Cause VST	31	0.32768	0.5716	No Causality
VST does not Granger Cause LR		5.84628	0.0224	Causality
LDR does not Granger Cause VST	31	2.21911	0.1475	No Causality
VST does not Granger Cause LDR		1.56397	0.2214	No Causality

Source: Data output via E-views 10.0

Results Discussion

The result found in this study is interspersed with the presence of a negative relationship between monetary policy rate and value of stock traded. This points to the important of monetary policy rate in propelling real economic activity which in turn affects investors' investment in the stock market. This also brings to light the inefficiency of the Central Bank of Nigeria to use monetary policy to influence considerable investment in the stock market. A higher monetary policy rate, results in high lending rate which makes investment in the capital market less attractive leading to frequent volatility in securities prices owing to variation in cost of capital. This is consistent with Muktadir-Al-Mukit (2013), Mohamadpour, Behravan, Espahbodi and Karimi (2012), Chen and Xie (2016) and Hsing (2013) on the negative correlation between monetary policy rate and stock market performance. On the other hand, it disagrees with the result of Nwakoby and Alajekwu (2016) who found a positive insignificant relationship existing between monetary policy rate and all share index in Nigeria.

The Granger analysis in Table 7 provides evidence that monetary policy instruments of monetary policy rate, liquidity ratio and loan to deposit ratio have no significant effect on value of stock traded. Surprisingly, value of stock traded exerts significant effect on liquidity ratio. This may be unconnected with the uncertainty in the macroeconomic fundamentals in Nigeria. Liquidity ratio following the direction of value of stock traded may points to the notion that the Central Bank of Nigeria, perhaps considers the performance of the Nigerian stock market in making adjustment to monetary policy instruments. Furthermore, it reflects the mandate of the Central Bank of Nigeria in providing the necessary regulatory framework for mobilization of capital to spur economic growth in Nigeria.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study examined the effect of monetary policy on value of stock traded from 1986 to 2017. Specifically, this study ascertained the effect of monetary policy rate, liquidity ratio and loan to deposit ratio on value of stock traded and the finding showed that monetary policy rate, liquidity ratio and loan to deposit ratio have no significant effect on value of stock traded. Monetary policy rate maintained a negative relationship with value of stock traded, while liquidity ratio and loan to deposit ratio positively correlated with value of stock traded.

The role of monetary policy in the financial development and enthronelement of financial stability is undisputed. Nigerian capital market is still in its developing stage, thus requiring carefully and appropriate policy implementation by the Central Bank of Nigeria to enhance its development and competitiveness in the global economy. This study has concludes that monetary policy tools of the monetary authority with respect to adjustments in monetary policy rate is critical for increasing the depth of development in the Nigeria stock market and the financial system in general.

6. RECOMMENDATIONS

Following the research findings, we are vehemently of the view that expansionary monetary policy that guarantees adequate liquidity in the economy should be pursued vigorously by the Central Bank of Nigeria. Adequate level of liquidity offers firms' in the stock market better access to financial resources which will increase their revenue and thus appreciation in their stocks trading.

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