Does Monetary Policy Determine Stock Market Development in Nigeria?

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Abstract: The aim of this study is to assess if monetary policy variables exert any sufficient effect on stock market development in Nigeria, for the time frame 1986-2015. By adopting the Johansen cointegration and error correction method (ECM) of analysis; it was found that long-term association prevails amongst monetary policy variables, and stock market development variables used in the study for Nigeria. However, going by the short-run result, this study submits that monetary policy has not significantly impacted on stock market development. This is because key monetary variables such as lending rate, deposit rate, and Treasury bills issued, do not show any sufficient effect on stock market development; either in the current or previous periods. Thus, implying that monetary policy in Nigeria should be geared towards repositioning the activities of the stock market in Nigeria, to bring about the desired growth and development in the economy.

Keywords: Monetary Policy; Stock Market; Development; Error Correction Model.

JEL Classifications: E44; E52; E58.

1. Introduction

One of the crucial functions of the stock market in an economy is believed to be the mobilization of domestic resources, for the purpose of channelling them into productive investments. Conventionally, the stock market should be simultaneously conceived as a crucial component of the economy; due to its ability to redistribute financial wealth between heterogeneous economic entities (Nwakoby, 2016). A nation's stock market output can be expected to reflect the level of the nation's

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economic development. That is, if stock prices persistently keep falling, it should be an indication of an imminent economic depression. Similarly, persistent rise in stock prices should depict a potential level of economic prosperity. This is simply because indicators of the stock market operate as the statistical pointers through which the dynamic features of the stock market can be measured. When the nature of the world financial system, which appears to be getting more perplexed, is put into perspective; it also becomes imperative to ascertain the extent to which monetary policies can influence the direction of stock market performance in Nigeria.

Looking at what monetary policy entails, which is, a policy tool designed to impact on the accessibility, quantum, and direction of money and credits; mainly for the purpose of attaining set economic objectives. It embraces a range of approaches or combinations of measures aimed at steering or regulating the quantum, prices, as well as the velocity of money in the economy. Specifically, it filters into all control measures adopted by the monetary authorities to tame the behaviour of money supply and credit; solely to enable the achievement of targeted macroeconomic goals (Ajie & Nenbee, 2010).

The regulatory agencies in Nigeria have instituted numerous policies to stabilize the macroeconomic variables which are expected to have an impact on the Nigerian capital market. The Central Bank of Nigeria (CBN) Act of 1958, establishing the apex monetary authority in the country; authorizes the CBN to manage as well as ensure stability of money supply in the economy, in addition to promoting a healthy financial institution. The CBN as a matter of policy has shown to prefer the adoption of a rule-based technique, in pursuing any of its set monetary policy target (Nwakoby, 2016). In executing monetary policy using the rule-based approach, the CBN adopts direct instruments such as selective credit controls, direct regulation of interest rates and moral suasion (Okwu et al., 2011). On the other hand, executing the market-based approach involves monetary policy instruments such as the reserve requirement, Open Market Operation (OMO), and the discount rate which are often deployed.

Right from the existence of the apex bank, the CBN has conducted the use of both techniques of monetary policy; through diverse combinations of tools applicable to both approaches, and with more or less preference on one over the other. Categorization of these two approaches is a function of the emphasis placed on any of the two. Thus, the evolution of monetary policy in Nigeria can be divided into two phases: first the era of direct controls (1959-1986) and secondly the era of market-based controls (1986-date). This study is most concerned with the impact of the market-based monetary instruments of the CBN on stock market performance.

Using market-based procedure, the apex bank (i.e., CBN) indirectly determines parameters of the economy via its OMO. To effectively carry out these operations, the Nigerian Treasury Bills (TBs) and Repurchase Agreements (REPOs) are being

employed; and further complemented with the addition of the Liquidity Ratio (LR), the Cash Reserve Ratio (CRR), as well as the reserve requirements. The use of these tools is often deployed to impact the monetary aggregates employed for monetary control.

Thus, goal of this study is to assess the impact of monetary policy variables on stock market development in Nigeria. The stock market as earlier stated is expected to play an essential role in the economy in terms of mobilizing national wealth and channelling them into profitable ventures. Nevertheless, to conduct this function, there must be sufficient association with the economy. Thus, an efficient stock market could be an essential index of a well performing economy (Akingunola et al., 2012). Despite the theoretical assertion anticipating macroeconomic variables potential impact on equity returns, the observed pattern of the influence of macroeconomic variables in terms of direction and impact size on returns to shares, have remained conflicting in various capital markets (Maku & Atanda, 2009).

Furthermore, there are few empirical studies that have examined the relationship between macroeconomic variables and stock market behaviour in Nigeria such as Maku & Atanda (2009), Osisanwo & Atanda (2012), Asaolu & Ogunmakinwa (2011), and Adaramola (2011) with varying outcomes. For instance, Maku & Atanda (2009) observed that the all-share index of the Nigerian Stock Exchange (NSE) is very prone to modifications in macroeconomic variables which could be referred to as external shock. A position supported by Osisanwo & Atanda (2012). However, Asaolu & Ogunmakinwa (2011) maintain that in Nigeria, a weak association is present between the Average Share Price (ASP) and macroeconomic variables. The discord seems to stem from dependent variables used; since both studies employed the macro approach in deducing their study submissions. In a related study by Adaramola (2011), it was revealed that macroeconomic variables have varying significant impact on stock prices of individual firms in Nigeria.

The methodological gaps observed in previous works in the literature stems from the inclusion of monetary policies variables in such studies. The variety of studies for Nigeria have included inflation at rate and level (CPI), money supply, exchange rate, per capita income or real GDP, interest rate or Treasury bill rate; while Adaramola (2011) included the price of oil in his own study. These indicate that previous studies use key monetary policy outcomes of the CBN as the measure of monetary policy. Of all these studies, none has used only the market-based monetary instruments (the minimum rediscount rate/monetary policy rate, Treasury bill rate, cash reserve ratio, liquidity ratio, lending and deposit rates). This study thus intends to bridge the above-identified gap by understanding the effect of this price based monetary policy instruments, capable of influencing the focus of fund prices in the economy. Thus, this study is an improvement in existing extant literature in Nigeria which have adopted different proxies for stock market and produced conflicting findings. The

structure of this study is as follows; after the introduction in section 1, section 2 covers the theoretical framework, section 3 is a review of empirical literature, section 4 covers the study methodology, section 5 contains interpretation of empirical data findings, and section 6 contains conclusion and recommendation of the study.

2. Theoretical Framework

The McKinnon-Shaw (1973) model on finance and development which posit that the macroeconomic and fiscal environment constitute part of the essential measures of success or failure of the securities market. This principle forms the theoretical bedrock of this study. McKinnon (1973) argue in support of a complementary association amongst physical assets, as well as, financial assets. This presupposes that macroeconomic environment determines the performance of securities market. This follows from the notion that an effective macroeconomic surrounding stimulates the prosperity of business. Thus, empowering businesses to a level where they can easily obtain securities for sustained growth.

On the basis of the above postulations, we note that monetary policy can influence the activities of other sectors of the economy. Thus, the monetary authority can influence other macroeconomic indicators by altering some monetary policy instruments by the Minimum Rediscount Rate (currently known as the Monetary Policy Rate). Broadly, the yardstick for gauging the health of the economy could be said to include among others, growth rate of real gross domestic product, the level of inflation, and the exchange rate. Others are the fiscal position, as well as the debt position of the country. By changing the monetary policy rate, these monetary economic indicators can be manipulated. Among these variables, there are those that impact on stock market performance in the country, by distinctively impacting on the level of corporate activities. These are the exchange rate value, the interest rate and the level of inflation.

An obvious fact is the role of interest rate as well as exchange rate, especially when it as to do with the financial cost of credit and foreign currencies, in every economy. The two cost determine the level of allocated wealth, the state of production, price level, and profitability. At long last, volatility in the behaviour of these variables is mirrored in the prices of shares – an index of market output. As an example, reducing the rewards on savings and demand deposits should enhance profitability to foreign exchange (FOREX) investors, in relation to committing to deposit money banks (DMBs). At the same time, restrictions are placed on variables such as risk, and transaction costs. It is thus, anticipated that affected equities should experience increase in their demand, and appreciated share prices; which will affect their performance in the market. Furthermore, the event of investing in FOREX likewise, translates widespread continuous depreciation of the exchange rate. This moves

wealth that should have been invested in the stock market into non-performing assets (like the dollar). The event of falling exchange rate value could likewise translate to a situation of capital flight; thus, the national economy end-up being starved of scarce loanable funds.

Furthermore, when the government runs a fiscal deficit, it creates distortions in the financial markets because of the introduction of more profitable instruments, which crowds-out stocks (Nwakoby, 2016). For instance, a rise in government borrowing via the floating of treasury bills, will impact the stock market by means of investors restructuring the balances in their portfolio. Conversely, low Treasury bill yields are anticipated to promote the transfer of wealth from the domestic money market to the stock market (Nwakoby, 2016). When fiscal deficits become a constant phenomenon, and are maintain through the floating of high yielding but less-risky government borrowing tools such as the Treasury bill, the demand for securities being floated by the private sector for long-term investment gets crowded-out.

When the yield on the government Treasury bills is high, it motivates investors to demand for more of such instruments. Thus, competition ensues between Treasury bills, stocks, and bonds for investors' wealth. The implication is a fall in the accumulation stock market instruments; with a potential effect of creating an eventual fall in stock prices. Thus, an anticipated inverse association between stock prices as well as Treasury bill rates is expected. In addition, Treasury bill rate impact on activities of the stock market is similar to the effect on the interest rate. The study by Agenor (2000) observed these submissions by revealing that high inflation, the interest rate, enormous budget deficits, and volatile real exchange rate, are likely key diagnoses of macroeconomic distortions. These macroeconomic distortions, often dissuade private businesses and savings; thus, promoting inefficient resource distribution through the exchange rate, and adversely impacting on economic performance. As core investors in stock market consider prevailing economic realities, the opportunity cost of investing in the stock market can be influenced by monetary policy.

3. Review of Empirical Literature

The association between monetary policy and stock market performance has been a topic of intense research by both monetary and financial economists in Nigeria; from the period of structural adjustment era of 1986 till date. Despite the interest of monetary economists in expatiating on the influence of monetary policy on stock market behaviour; financial economists, on the other hand, are often curious with determining if equity forms a good hedge against inflation (Galebotswe & Tlhalefang, 2012).

Amadi et al. (2002) adopted the process of multivariate regression analysis to determine the functional association existing between money supply, inflation, interest rate, exchange rate and stock prices in Nigeria. Their study revealed that the existing nexus, between stock prices and macroeconomic variables used in the study, conforms to theoretical stance and empirical submissions in some other countries. Despite having to agree that there is a divergent association in the stock prices-inflation nexus when compared to studies done in other countries.

Nwokoma (2002) examined a long-run association between the stock market and some of the macroeconomic indicators in Nigeria. The study result suggests that industrial production, and the interest rate level, which was captured by the three-month deposit rate of the commercial bank, exert long-run relationship on stock market performance. The study further revealed that stock market in Nigeria reacts to previous prices in the short-term than variations in the macroeconomic variables.

Similarly, Ologunde et al. (2006) conducted a study to examine the association between capitalization of the stock market and the interest rate in Nigeria. Empirical output from the study indicates that existing interest rate impacts positively on stock market capitalization. The study further reports that development stock issued by the government, adversely impacts on stock market capitalization. Further findings showed that prevailing interest rate also adversely influence government development stock.

Maku & Atanda (2010) assessed culpable factors for stock market growth in Nigeria. The study adopted the augmented Engle-Granger based cointegration, in addition to an error correction model. Findings from the study reports that the NSE all-share index is being impacted by macro variables such as exchange rate, the price level, money supply, and real economic output. It was further observed that the macroeconomic variables in the study exert significant effect on the behaviour of the Nigerian capital market in the long-term.

The study by Okpara (2010) evaluated the impact of monetary policy on stock market returns in Nigeria. The study adopted the instrumental variable two stage least square approach; in addition to the vector error correction model. The study found sufficient impact of monetary policy on stock market returns in the long-run. A major finding of the study is the negative effect of Treasury bill rate on stock market returns. Thus, indicating that monetary policy has the potential to reduce the pace of economic growth. The variance decomposition output also supports the position that volatility in Treasury bill returns emanate largely from shocks to stock returns as well as interest rate shocks.

Aziza (2011) examined the influence of monetary policy on stock market behaviour. The study further verified the relationship monetary policies in a panel study, has on the local stock market behaviour and growth of examined countries. Using data from 1988 to 2008, and adopting the vector error correction method, suggest that monetary

policy variables such as money and quasi-money growth, interest rates measured by the lending rate; and the average target of monetary policy, and inflation rate gauged via the consumer price index, all relate in the long-run, with stock market performance measured by growth of market capitalization.

Eze (2011) assessed the impact monetary policy has on stock market output in Nigeria. The study adopted the ordinary least square approach, as well as the co-integration and error correction model. Evidence form the study proved that the performance of the stock market is sufficiently related to broad money supply, the exchange rate value and the price level both in the short and long terms.

Asaolu & Ogunmuyiwa (2011) investigated the impact of macroeconomic variables on Average Share Price (ASP) and goes further to determine whether changes in macroeconomic variables explain movements in stock prices in Nigeria from1986 to 2007. By employing the Granger Causality test, Co-integration and Error Correction Method (ECM), the study results validated the presence of a weak relationship between ASP and macroeconomic variables in Nigeria. The submission from the study was that ASP does not respond to macroeconomic performance in Nigeria. However, a long-run association happen to exist between ASP and macroeconomic variables.

Adaramola (2011) conducted a panel study to investigate the impact of macroeconomic indicators on stock prices in Nigeria. This work showed unique interest on the individual firm's level. Data for the study on stock prices, where collected on selected firms and six macroeconomic variables. Variables used to proxy macroeconomic indicators, in the study includes money supply, the interest rate, the exchange rate, the inflation rate, oil price, and gross domestic product. The study result supports the conclusion that aside from inflation rate and money supply, other macroeconomic variables used had a varying significant impact on stock prices of individual firms in Nigeria.

Zeph & Michael (2012) examined the impact of monetary policy growth on the price of equity; with the Nigerian stock exchange market as the focal point. By employing time series data spanning from 1985 to 2010; and adopting the OLS technique on five monetary policy variables including minimum rediscount rate, treasury bill rate, interest rate, exchange rate and consumer price index (the proxy for inflation) on the equity prices (proxied by all share price index). The study findings revealed high correlation between the minimum rediscount rates and Treasury bill rates. Thus, submitting that both variables cannot be used simultaneously for the aim of managing monetary policy. As a consequence, the Treasury bill rates were dropped in the course of further analysis. Consequently, the estimated output of the study supports the existence of a fragile correlation association between the prices of equity and monetary policy. Furthermore, the study points to the fact that there is the

absence of sufficient influence from monetary policy in Nigeria, on ordinary equity prices. Thus, suggesting the failure of the equities market in sufficiently incorporating the impulses of monetary policy.

Chude & Chude (2013) investigated the role of broad money supply in determining the returns to stock market in Nigeria. The model employed in the study was the co-integration test alongside an error correction model. Findings from the study suggest the presence of long-run association between broad money supply and stock market returns. Further, broad money supply was found to have been relatively high for the study period, and showing sufficient positive influence on the Nigerian stock market returns.

Chude et al. (2015) examined the impact of some selected macroeconomic variables on stock market returns in Nigeria. The study result indicates that the level of economic growth over the years have significantly impacted positively on stock market return. Observation from the study suggests that inflation rate and monetary policy rate, do adversely and significantly affect the Nigerian stock market returns. Empirical conclusion from the study was that a decline in inflation levels, as well as, monetary policy, will end up improving the performance of the stock market in Nigeria both in the long-run and short-run.

The study by Ogbole and Aladejare (2015) evaluated the role of the Nigerian stock market in terms of promoting the growth of the economy, through the mobilization of savings and investments. Specifically, the paper examined the extent of causal relationship between stock market variables and the performance of the Nigerian economy. Time series analysis and the vector error correction mechanism were used in the analyses. Empirical findings from the study indicates that the behaviour of the economy reacts sufficiently to changes in the level of real interest rate, total number of deals, total value of deals and the market capitalization.

Nwakoby (2016) investigated the effect of monetary policies on stock market performance in Nigeria. The study covered a period of 28 years (1986 – 2013). The method of data analyses used includes the Johansen co-integration, OLS and the Granger causality tests. The OLS regression result showed that monetary policy significantly accounts for changes in stock market performances in Nigeria. However, Monetary Policy Rate (MPR) has an insignificant positive effect on All-Share Index (ASI) while Lending Rate (INT) has a significant positive effect on All-Share Index (ASI). Furthermore, Treasury Bill Rate (TBR) and Liquidity Ratio (LR) have an insignificant negative effect on All-Share Index (ASI) in Nigeria; and Deposit Rate (DR) has a significant negative effect on All-Share Index (ASI) in Nigeria. The Granger causality analyses showed that All-Share Index (ASI) has no causal relationship with monetary policy rate (MPR), Treasury bill rate (TBR), and liquidity ratio (LR) in Nigeria. However, All-Share Index (ASI) has a causal relationship with lending and deposit rates in Nigeria. The study, therefore,

concluded that monetary policy has the potential to influence the stock market; however, the causality analyses showed that monetary policy cannot influence stock market performance but rather stock market performance has influenced the direction of monetary policy in Nigeria through lending and deposit rates.

Ekene (2016) evaluated the influence possessed by monetary policy on stock returns in Nigeria. The study findings were reached through the use of a six-variable standard VAR model, incorporating six lags. Variables used include the consumer price index, inter-bank rate, open buy-back, Treasury bill rate, exchange rate, and the all share index. The dynamic relations between the variables were founded on the use of the variance decompositions, in addition to the impulse response functions gathered from estimating a VAR framework. Further, the study result showed that monetary policy variables do not have sufficient effect on the prices of stock in the equities market.

Lawal & Nwanji (2018) examined the interactive impact of fiscal and monetary policies on stock market behaviour in Nigeria. The study further evaluated the impact of fluctuations in both policies on the Nigerian stock market. Methodologies adopted for the study are the autoregressive distributive lag (ARDL) model and the exponential generalized autoregressive conditional heteroscedastic (EGARCH) model. The study found significant long-run interaction between both policies and the all share index. While, the fluctuation result shows significant relationship between the all shares index volatility and both policies.

From the above empirical literature review, it is evident that the monetary policy instruments adopted by this study has not been used empirically to measure the impact of monetary policy on stock market performance. Hence, this study will bridge gap; especially as it concerns Nigeria.

4. Data Source and Methodology

4.1 Data Source

This study is based on secondary data sourced from the Central Bank of Nigeria (CBN) statistical bulletin. In other words, this study adopts the application of time series data sets, comprising the annual frequencies of All-Share Index (ASI), Monetary Policy Rate (MPR), Treasury bill rate (TBR), Lending interest rate (INT), Liquidity ratio (LR) and deposit rate (DR) from 1986 to 2015

4.2 Model Specification

The study methodology adopted is the Error Correction Method (ECM), which was first adopted by Sargan and later emphasized by Engle and Granger to control for equilibrium. An essential theorem known as the Granger representation theorem

states that if two variables *Y* and *X* are cointegrated, then the relationship between the two can be expressed as ECM. The variables of interest used in this study are All-Share Index (ASI) used as proxy measure for stock market development; while the lending rate (LRATE), deposit rate (DRATE), Treasury Bills Issue (TBI), consumer price index (CPI) proxy for inflation, and exchange rate (EXCH) all represent monetary policy variables. Data were sourced from Central Bank of Nigeria's statistical bulletin for various years.

The study model can be represented as shown below.

$$dlogASI_t = \beta_0 + d\beta_1 LRATE_t + d\beta_2 DRATE_t + dlog\beta_3 TBI_t + dlog\beta_4 CPI_t + dlog\beta_5 EXCH_t + dlog\beta_6 MKCAP_t + dlog\beta_7 ASI_{t-1} + d\beta_8 LRATE_{t-1} + d\beta_9 DRATE_{t-1} + dlog\beta_{10} TBI_{t-1} + dlog\beta_{11} CPI_{t-1} + dlog\beta_{12} EXCH_{t-1} + dlog\beta_{13} MKCAP_{t-1} + \emptyset_1 ECM_{t-1} + \varepsilon_t \quad (Equ.1)$$

Where:

d = indicates first difference or short-run factor

ε = white noise error term

β_0 = Intercept

β_1 *to* β_{13} = are parameter estimates

$\emptyset$ = error correction speed of adjustment parameter

log = logarithm transformation

t-1 = lagged by one variable

5. Result and Interpretation

5.1 Unit Root Test

Most often, researchers find it difficult deciding on the best unit root test to adopt. Enders (1995) proffer a solution, which involve the adoption both the Augmented Dickey–Fuller (ADF) unit root test, alongside the Phillips–Perron (PP) (1988) unit root test. A situation where both test reinforce each other, is indicative of valid statistical inferences from the results. Thus, to ascertain the stationarity of this study variable, the two widely employed unit root techniques—the ADF and the Phillips–Perron (PP) test are adopted. The unit root tests were performed at levels and 1st difference for the intercept and trend term respectively. A summary of the PP unit root test result is presented in Table 1 below. The ADF test result shows the variables being of 1(1) stationarity. The ADF unit root test (see; Table 2) also upheld the PP test results. The PP test statistic indicates that ASI, LRATE, DRATE, TBI, CPI, EXCH and MKCAP are stationary at 1st difference. The ADF unit root test also

supports the results of the PP of stationary at 1st difference. Therefore, we conclude that the variables included in the model are stationary at their 1st difference; since this study uses rejection of the null hypothesis of unit root at least by one test to assume a verdict of stationarity.

Table 1. PP Stationarity Test on Study Variables

Variable	Level			First difference		
	With Intercept	With Intercept & Trend	Without Intercept & Trend	With Intercept	With Intercept & Trend	Without Intercept & Trend
Log(ASI)	-2.7242*	-0.3699	1.9289	-3.7887***	-4.9498***	-3.0546***
LRATE	-3.2955**	-3.8740**	-0.1287	-6.1277***	-6.2905***	-6.2531***
DRATE	-2.6984*	-3.86383**	-0.5947	-7.0513***	-6.9611***	-7.1754***
Log(TBI)	-1.0466	-2.3448	0.9542	-5.2716***	-5.1688***	-5.1467***
Log(CPI)	-3.2408**	-1.3069	1.7780	-2.6869*	-3.2198	-1.0626
Log(EXCH)	-3.1905**	-2.1009	1.5172	-5.4073***	-6.4959***	-4.6472***
LOG(MKCAP)	-1.2985	-1.4142	2.8935	-4.0367***	-4.1918**	-2.6381**

Source: Author's Estimated Result

Note: *, **, *** Significant at 10%, 5% and 1% level.

Table 2. ADF Stationarity Test on Study Variables

Variable	Level			First difference		
	With Intercept	With Intercept & Trend	Without Intercept & Trend	With Intercept	With Intercept & Trend	Without Intercept & Trend
Log(ASI)	-2.4899	-0.7584	2.4259	-3.7440***	-4.7677***	-3.1484***
LRATE	-3.2256**	-5.5551***	-2.8706***	-9.0990***	-8.2537***	-7.1882***
DRATE	-0.9632	-4.5873***	-1.2152	-4.1375***	-3.9940**	-4.0240***
Log(TBI)	-1.0249	-2.2625	0.8549	-5.2658***	-5.1680***	-5.1450***
Log(CPI)	-3.3662**	-6.0318***	0.7093	-1.4267	-0.7134	-1.2365
Log(EXCH)	-2.6115	-2.1028	1.6940	-5.4081***	-5.6920***	-4.6474***
LOG(MKCAP)	-1.2511	-1.1123	3.5220	-4.1290***	-4.2611***	-2.7647***

Source: Author's Estimated Result.

Note: *, **, *** Significant at 10%, 5% and 1% level.

5.2. Cointegration Analysis

Since the variables are stationary, the next step is to use Johansen (1988) full information maximum likelihood to test for cointegration. The Cointegration test results are presented in table 3 and 4 below.

Table 3. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob. Value
None	0.962731	251.2680	125.6154	0.0000
At most 1	0.913332	159.1595	95.75366	0.0000**
At most 2	0.740875	90.68086	69.81889	0.0005**
At most 3	0.569485	52.86842	47.85613	0.0157**
At most 4	0.406596	29.27079	29.79707	0.0574

At most 5	0.310138	14.65814	15.49471	0.0666
At most 6	0.141218	4.262735	3.841466	0.0389**

Source: Author's Estimated Result

Trace test indicates 4 cointegrating equation at the 0.05 level of significance.

**, Denotes rejection of the hypothesis at the 0.05 level of significance

Table 4. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob. Value
None	0.962731	92.10846	46.23142	0.0000**
At most 1	0.913332	68.47866	40.07757	0.0000**
At most 2	0.740875	37.81244	33.87687	0.0161**
At most 3	0.569485	23.59763	27.58434	0.1494
At most 4	0.406596	14.61265	21.13162	0.3170
At most 5	0.310138	10.39540	14.26460	0.1872
At most 6	0.141218	4.262735	3.841466	0.0389**

Source: Author's Estimated Result

Max- eigenvalue test indicates 4 cointegrating equation at the 0.05 level of significance.

**, Denotes rejection of the hypothesis at the 0.05 level of significance

Based on the statistical results, the maximum Eigenvalue statistics and the trace test rejects the null hypothesis at 0.05 level of no cointegration; stating otherwise, that there exist cointegrating vectors, suggesting a linear model with intercept but no trend. The trace test suggests that long-run cointegration between these variables does persist. In other words, monetary policy variables and stock market performance do relate in the long-run.

5.3. ECM Result Analyses

Table 5. ECM Estimated Output

Dependent Variable: dlog(ASI)				
Independent Variable	Coefficient	Std. Error	T-Statistic	Prob.
DLOG(TBI)	0.015135	0.032739	0.462290	0.6494
DLOG(CPI)	-0.165198	0.188436	-0.876683	0.3922
DLOG(EXCH)	-0.062253	0.076643	-0.812253	0.4273
DLOG(MKCAP)	0.865149	0.075040	11.52920	0.0000***
DLOG(ASI(-1))	0.961402	0.384096	2.503023	0.0222**
DLOG(TBI(-1))	0.002483	0.030875	0.080414	0.9368
DLOG(CPI(-1))	0.291969	0.201694	1.447585	0.1649
DLOG(EXCH(-1))	0.134108	0.066668	2.011591	0.0595*
DLOG(MKCAP(-1))	-0.990641	0.325804	-3.040607	0.0070***
ECM(-1)	-0.366259	0.453848	-0.807008	0.0302**
R-squared	0.925912	Adj. R-squared	0.888869	
Residual Test				
Normality test	Jarque-Bera	1.630836	Prob.	0.44245
Serial correlation	Obs R-squared	0.056916	Prob.	0.8114
Heteroscedasticity	Obs. R-squared	2.650064	Prob.	0.9885

Source: Author's Estimated Result

Where *, **, and *** represents significance level at 10%, 5% and 1% levels respectively

From the above estimated result, it could be seen that Treasury bill, inflation as well as exchange rate at the current levels do not impact in any way on the development of the stock market. Likewise, lagged Treasury bill and inflation also do not impact on the stock market development. However, the lagged capitalisation of the stock market as well as the lagged all share index which was used to proxy stock market development; both showed sufficient positive effect on the development of the stock market. Similarly, lagged exchange rate and lagged market capitalisation both impact the development of the stock market. The speed of adjustment factor (i.e., ECM) shows that in the case of short-run disequilibrium, it will take about 2 years and 7 months for long-run equilibrium to be restored. The adjusted R-squared shows that about 89 percent variations in the dependent variable can the explained by variations in the independent variables.

The diagnostic test conducted on the residual of the model, reveals that residuals are normally distributed, devoid of serial correlation problem and also are homoscedastic. These decisions were base on the probability values for the three tests; which validates the acceptance of the null hypotheses of the test.

6. Conclusion and Policy Recommendation

This study assessed the impact of monetary policy on the development of the Nigerian stock market. It was found that long-term association prevails between monetary policy and stock market development in Nigeria. However, going by the short-run result, we conclude that monetary policy has not significantly impacted on stock market development in the short-run. This conclusion aligns with findings by Ekene (2016), who also found no impact of monetary policy on the stock market performance. This is because key monetary variables used in the study such as lending rate, deposit rate, and Treasury bills issued do not show any effect on stock market development; either in the current or lagged periods used in the study. This implies that monetary policy in Nigeria should be geared towards repositioning the activities of the stock market in Nigeria to bring about the desired growth and development in the economy.

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