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MACROECONOMIC POLICIES AND STOCK MARKET PERFORMANCE IN NIGERIA

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Abstract

This study investigates the impact of fiscal and monetary policies on stock market performance in Nigeria using the Structural Vector Autoregressive (VAR) techniques. Using Yearly data covering the period 1981-2013, the VAR procedure was employed to empirically show the impact of fiscal and monetary policies on stock market performance. Results from the empirical analysis show that monetary policy has the capacity to influence stock market performance in Nigeria. Also, monetary policy shocks are not unstable in their effects on stock market. The results also show that fiscal policy impacts on stock market performance. In comparative terms, monetary policy appears to have a stronger effect on stock market performance than fiscal policy. However, there appears not to be any unsystematic response of stock market performance to shocks in both policies. It is therefore recommended that attention should be given to stock market reaction to monetary and fiscal policy moves. Consequently, the policy direction in this regard should be such that is able to stimulate the performance of the stock market.

Keywords: Fiscal policy, monetary policy and stock market performance.

1. Introduction

The pragmatic inter-relations between fiscal and monetary policy actions from the typical IS-LM framework suggest that the stock market cannot be completely independent and elusive to fiscal and monetary activities. The influence of monetary policy on stock markets has been argued theoretically as passing through certain channels, namely; the interest rate channel, the credit channel, the wealth effect and the monetary channel (Mishkin, 2001; Sousa 2010). The interest rate channel suggests that a change in interest rates will have an impact on the corporate cost of capital, which will eventually influence

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the present value of firms' future net cash flows. The credit channel suggests that the central bank can influence the level of investment by altering availability of credit. The wealth channel infers that a shift in monetary policy changes asset prices, consequently the change in value of assets held by household and firms would affect their spending habits and hence demand for investment consumption. The monetary channel stipulates that investors attempt to hold an equilibrium position among all assets, including money and equities (Gali & Gertler 2007; Bjornland & Leitemo, 2009). Theoretically, fiscal policy actions such as changes in government expenditure or taxes are important determinants of stock prices (Laopodis, 2008). Besides, increases in government borrowing would lead to a rise in the short term interest rates, which in turn lower the discounted cash flow value from an asset. This may culminate in a decline in stock market activity due to lower expected returns.

However, a key research issue necessitating this study is that there has been conflicting results on the effects of fiscal and monetary policies on stock market across developed and developing economies. Studies from developed economies such as Vafa and Matin (2011) for Japan, Francesco (2008) for Italy, Gregoriou, Kontonikas, Macdonalds and Montagnoli (2009) for the United Kingdom, Bernanke and Kutter (2005) for the United states, Bjornland and Leitemo (2009) for the United states and Corallo (2006) for Germany have not shown any consistent unanimity in the reactions of stock markets to policy variables. For developing economies, studies such as, Goodness , Mehmet, Rangan, Charl, Stephen and Zeynel (2012) for South Africa, Okpara (2010), Aliyu (2008) for Nigeria, Obonye and Jonah (2011) for Botswana, Babak, Navid, Shahriar and Roza (2012) for Malaysia, Ahmad and Husain (2007) for Pakistan and Geraldo (2011) for Ghana have also not shown any consistent unanimity of stock market reaction to policy shocks in the reaction. The findings tend to range from weak, strong or no significant response in certain cases. Hence this study attempts to contribute to existing empirical findings by ascertaining what the case is for Nigeria.

The research objectives are to examine the impact and relative effectiveness of fiscal and monetary policies on stock market performance in Nigeria.

2. Review of Literature

This section reviews the theoretical and empirical literature on the effects of monetary and fiscal policies on stock market performance.

Theoretical Literature

Indeed, different perceptions about outcomes of policy actions emanates from the fact that different schools of thought hold distinct assumptions about how the overall

economy works. The views of different schools of thought about how fiscal and monetary policies alter real output are discussed hereunder**.**

According to Hillier (1997), implicit in the classical model is the view that the price system works, so that price adjustment ensures that all markets clear, including, of course, the labour market, where the real wage may be viewed as the price of labour. The classical model in its purest form assumes that the labour market clears via real-wage adjustment, and that the demand for labour depends only on the properties of the production function. This gives rise to the classical dichotomy, or the property of the value of the real variables in the model being determined independently of the value of the nominal money stock. Hence government control of the money stock allows it to control only nominal variables. Acceptance of this view implies little role for government in macroeconomic management of the economy. Any unemployment which occurs in the economy is seen as being caused by rigidities in the way of the price system's success. If the demand for money is purely a function of the level of income, then the demand for money will equal the supply of money at some level of income regardless of the value of the interest rate. With an interest inelastic demand for money of this type, the income velocity of circulation of money is constant as in the classical model; hence the label 'the classical case'. However, one needs to note that the key feature of the classical model is the assumption of real wage adjustment and market clearing in the labor market, rather than the constancy of the income velocity of circulation. Hillier (1997), notes further that the relevance of the classical case for policy is that it implies that fiscal policy cannot affect the level of income, but can affect only the rate of interest. The effect is only to push up the interest, leaving the level of income unchanged. The rising interest rate does nothing to release funds from idle to active balances, and causes total or complete crowding out, since the interest rate rises until private investment spending is cut by as much as government spending has been increased.

In Neoclassical models, a shock to government spending generates negative wealth effect on the infinitely lived representative household (higher government spending means higher taxation in present discounted terms), as the household feels poorer, labour supply increases and consumption and real wage falls. Baxter and King (1993) showed how discretionary fiscal policy affects the macro economy in a neo-classical framework assuming lump-sum tax to finance higher government spending. Assuming that leisure and consumption are normal goods, labour supply increases as households feel poorer. Given the labor demand is constant, marginal labour productivity and real wages decline. As a result, consumption decreases while output rises. If the shock persists, marginal productivity of capital rise and hence private investment would increase. Ultimately, a new steady state is reached where real wages have returned to their initial level and private consumption has been lower than before. If, on the other hand, the tax is

distortionary, the outcome would be different due to the intratemporal and inter-temporal substitution effect in labor supply. The result depends on the manner in which the tax rate is designed.

In neoclassical models, the key channels through which fiscal policy affects the private economy are wealth effects, intertemporal substitution effects, and distortions to first-order conditions (e.g. Barro & King 1984; Baxter & King 1993; and Aiyagari, Christiano, and Eichenbaum 1992).

Typically the Keynesians have held that fiscal policy is much more effective policy tool, and this view was particularly strong in the early years of Keynesianism. The Keynesian model says that increase in government expenditure leads to higher economic growth. This implies that it enhances domestic output and stimulates the economy. This is contrary to the neo-classical growth models that argue that government fiscal policy does not have any effect on the growth of national output. However, it has been argued that government fiscal policy helps to improve failure that might arise from market inefficiencies

At its most extreme of the Keynesian view, the demand for money was depicted as perfectly interest elastic, a condition known as the liquidity trap which gives rise to a horizontal LM curve. In addition, investment and consumption were regarded as more or less invariant with respect to the interest rate. The liquidity trap is the name which was given to the special case where, no matter how much the money supply is increased; the rate of interest refuses to fall to a level which induces a level of investment sufficient to generate full employment (Rebmann et al., 1982). The liquidity trap may be represented in the IS-LM diagram as a horizontal segment of the LM curve at a certain minimum interest rate. At that level the interest rate is so low that everybody expects it to rise in the future and so expects capital losses on bond holdings. Therefore, once the rate of interest reaches the minimum level, any increase in the money stock will be added to idle balances, and no one will use the money to buy bonds. In Keynes's words, 'liquidity preference may become virtually absolute in the sense that almost everyone prefers cash to holding a debt which yield so low a rate of interest'(Rebmann et al., 1982).

This framework explains the effects of fiscal policy in developing countries. It emphasizes the positive role of active fiscal policy as resources are underutilized in these economies. Public expenditure in these countries crowds in private spending either by directly complimenting it or indirectly through increasing aggregate demand. Weeks (2009) summarized the role of fiscal policy in these economies in particular in Sub-Saharan Africa into three: short run, medium run and long-run. In the short run, increase in public expenditures can compensate for the fall in domestic private spending or export demand and prevents losses in output due to insufficient aggregate demand. In the

medium-term, this short-run policy can be used systematically and purposefully as a countercyclical instrument to reduce fluctuation and maintain output close to full potential. In the long-term, public investment increases the growth rate by increasing capacity and lowering costs.

Although this theory was developed by David Ricardo in the 19th century, in the 1970s Barro (1974) adapted Ricardo's views into more complex versions of the same concept. Ricardian equivalence is different from the new classical view in terms of the effect of policy on aggregate demand: Fiscal effects involving changes in the relative amounts of tax and debt finance for a given amount of public expenditure would have no effect on aggregate demand, interest rates, and capital formation (Barro, 1974). The reason is that the private sector will save its excess money for paying the future tax expected in order to pay off the debt from the increase in government spending.

According to Tsoulfidis (2006) in the Ricardian sense, an increase in private saving can compensate for the public deficit. As a result, interest rates remain constant, and so private investment remains stable. Moreover, because households reduce private consumption to save more money, a decrease in private consumption will offset an increase in government spending. Thus, output is unchanged. If there is a reduction in income tax, people expect that taxes will be increased in the future so they save the reduction in taxes. The reduction of public saving from the policy can therefore be offset by an increase in private saving, which means interest rates are unchanged (Arestis& Sawyer, 2003). In addition, because private consumption is unchanged by tax policy, aggregate demand is also unchanged, and so output and price level will not be changed by the policy shock. In conclusion, fiscal policy has no effect on output, prices, interest rates, private investment or private consumption because of rational expectations.

Empirical Literature

Javed and Akhtar (2012) investigated the risk-return relationship between money supply, interest rate and term structure with stock returns of fifty (50) firms listed on the Karachi Stock Exchange in Pakistan for the period July, 1998 to December, 2008.The study which employed the GARCH model demonstrates, among others, that money supply positively affects stock returns. The findings also show that the sensitivity co-efficient of term structure of interest rate is negative implying that term structure adversely affects stock returns.

Udegbunam and Oaikhenan (2012), in their empirical study of the effects of persistent rising fiscal deficits on the stock market in Nigeria find out that money- financed deficits have an ambiguously positive effect on stock prices in the short-run. On their part, Asaolu and Ogunmuyiwa (2011) in their study of the impact of macroeconomic

variables on stock market movement in Nigeria, observe an inverse relationship between budget deficits and the average share prices for the period 1986-2007.

Ali, Hasan and Aynul (2007) investigated whether fiscal stance or monetary policy is effective for economic growth in south Asian countries. The study utilized autoregressive distributed lag model (ARDL), a co-integration (panel) test, and error correction method (ECM). To capture the impact of policy variables on economic growth (measured by GDP growth rate). The study used nominal values mentioning the advantage of avoiding the difficulty of identifying an appropriate deflator for the series of variables. Time series data that ranged from 1990 through 2007 of four south Asian countries: namely Pakistan, India, Bangladesh and Sri Lanka was employed in the study. The study disclosed that money supply is a significant variable while fiscal balance is reported to have insignificant effect both in the short run and long run. In a nutshell, the study concluded that monetary policy is more powerful tool than fiscal policy in order to enhance economic growth in the case of south Asian economies.

Rahman (2005) examined the relative effectiveness of monetary and fiscal policies on output growth in Bangladesh using vector autoregressive approach. He based his study on the St. Louis equation and utilized an unrestricted vector autoregression (VARs) framework to compute variance decompositions (VDCs) and impulse response functions (IRFs) through 1000 Monte Carlo simulations. The vector of the VAR model he estimated contained annual data from 1975 through 2003 of the variables: Real Government Expenditure (g), Real Money (m), Real Interest Rate (r) and Real GDP (y). The study used variance decompositions (VDCs) and impulse response functions (IRFs) derived from vector autoregression (VARs) approach to examine the relative impact of monetary and fiscal policy on real output growth. The study revealed that monetary policy alone had a significantly positive impact on real output growth in Bangladesh, and the impact of fiscal policy on real output growth was reported to remain broadly insignificant.

Gap in Previous Studies

There appears not to be adequate indigenous studies that have focused on the effect fiscal and monetary policy on stock market performance. The focus of most domestic studies for example (Ogbole, Amadi, and Essi, 2011; Abata, Kehinde and Bolarinwa 2012; Olopade and Olopade 2010; Medee and Nenbee 2011) have been in the area of the effect of fiscal policy on economic growth and therefore not much is known about the reaction of stock market in Nigeria to fiscal and monetary policies. Also for the few studies that have attempted to examine similar issues such as Udegbunam & Oaikhenan (2012) and Asaolu & Ogunmuyiwa (2011) comparisons regarding the relative effectiveness of fiscal

and monetary policy and the systematic response of stock market to provide a robust perspective was lacking.

3. Research Methodology

Data and estimation Techniques

The data for this study were sourced from the Central Bank of Nigeria (CBN) statistical bulletins and National Bureau of Statistics (NBS) for the period 1980-2013. The method of data analysis utilized in the study involves several econometric applications often used in most contemporary economic time-series studies. First, the data description, Pearson correlation analysis and the Variance inflation test are conducted. Next, the unit root test is applied to examine the stationarity condition of the variables in a time–series analysis. In this study we adopt the Augmented Dickey-Fuller (ADF) statistics to test for stationarity of the data. Thereafter, we conduct the VAR estimation and then the impulse response and variance decomposition follows.

Model Specification

The model for the study is specified below:

$$MKTCAP = \gamma_0 + \gamma_1 MS + \gamma_2\ INTR + \gamma_3\ \frac{GEXP}{GDP} + \gamma_4 \frac{GDEB}{GDP} +\ \ e \quad (1)$$

Where MKTCAP= Stock Market Capitalization

MS= Money supply, INTR = Interest rate, GEXP/GDP= Government Expenditure-GDP ratio, GDEBT/GDP= Government debt-GDP ratio and e = the stochastic disturbance or error term.

The VAR Specification

The shocks from both fiscal and monetary variables considered on stock market performance were analyzed using the Vector Autoregressive Model (VAR). The Vector Autoregressive Model can be expressed as:

$$A_O y_t = a_o \sum_{i=1}^{p} A_i y_{t-1} + e_t \quad (2)$$

Accordingly the baseline VAR model with p lags VAR(p) is specified in its reduced form as:

$$Y_t = a_0 + a_1(t) + A_1 Y_{t-1} + A_2 Y_{t-2} + \cdots + A_p Y_{t-p} + e_t \quad (3)$$

where a_0 is the is a (k ×1) vector of constants; $a_1(t)$ is a (k ×1) vector of linear time trend;

t=1,…T; A_i are (k X k) coefficient matrices, K being the number of endogenous variables in the system and Y_t= $(MS, INT, \frac{GEXP}{GDP}, \frac{GDEB}{GDP}, e)$ is the vector of endogenous variables. The K x 1 vector $e_t = (e_t^{ms}, e_t^{intr}, e_t^{gexp}, e_t^{gdebt},)$ consists of reduced form residuals ordered with their corresponding observed endogenous variables in vector Y_t. Furthermore, each residual is a mean zero white noise process that is serially uncorrelated, i.e. $e_t \sim N(0, \varepsilon_\mu)$. Applying OLS on each equation in the model yields consistent estimates of the reduced form parameters.

In order to get the reduced form of our structural model (15) we multiply both sides with ${A_0}^{-1}$ such as that:

$$y_t = a_o \sum_{i=1}^{p} B_i y_{t-1} + e_t \quad (4)$$

where, $\mathbf{a}_0 = \mathbf{A}_0^{-1}\mathbf{c}_0$, $\mathbf{B}_i = \mathbf{A}_0^{-1}\mathbf{A}_i$, and $\mathbf{e}_t = \mathbf{A}_0^{-1}\boldsymbol{\varepsilon}_t$, i.e. $\boldsymbol{\varepsilon}_t = \mathbf{A}_0\mathbf{e}_t$. The reduced form errors $\mathbf{e}_t$ are linear combinations of the structural errors $\boldsymbol{\varepsilon}_t$, with a covariance matrix of the form $E[\mathbf{e}_t\mathbf{e}_t'] = \mathbf{A}_0^{-1}\mathbf{D}\mathbf{A}_0^{-1'}$.

The structural disturbances can be derived by imposing suitable restrictions on $\mathbf{A}_0$. The short-run restrictions that are applied in this model as the following:

$$\begin{bmatrix} \varepsilon_t^{gexp} \\ \varepsilon_t^{gdebt} \\ \varepsilon_t^{ms} \\ \varepsilon_t^{int} \\ \varepsilon_t^{Mktcap} \end{bmatrix} = \begin{bmatrix} \alpha_{11} & 0 & 0 & 0 & 0 \\ \alpha_{21} & \alpha_{22} & 0 & 0 & 0 \\ \alpha_{31} & \alpha_{32} & \alpha_{33} & 0 & 0 \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & \alpha_{44} & 0 \\ \alpha_{51} & \alpha_{52} & \alpha_{53} & \alpha_{54} & \alpha_{55} \end{bmatrix} \text{X} \begin{bmatrix} e_t^{gexp} \\ e_t^{gdebt} \\ e_t^{ms} \\ e_t^{int} \\ e_t^{Mktcap} \end{bmatrix}$$

Where: ε_t^{Mktcap}, ε_t^{gexp}, ε_t^{gdebt}, ε_t^{ms}, ε_t^{int} denote the shock in market capitalization, government debt-GDP ratio, government expenditure-GDP ratio, money supply and interest rate respectively. Furthermore, $(e_t^{ms}, e_t^{intr}, e_t^{gexp}, e_t^{gdebt},)$ consists of reduced form residuals ordered with their corresponding observed endogenous variables in vector Y_t. The analysis will concentrate on the interaction between the monetary and fiscal policies and stock market performance. Our restrictions and indentication of the VAR model is based on the recursive approach using Cholesky decomposition that decomposes a given positive definite matrix. To investigate the relative impact of monetary and fiscal policies on stock market performance, impulse response functions (IRFs) derived from vector autoregression (VARs) approach was used.

4. Analyses of Empirical Results

The unit root test for the variables is examined and the results are presented below:

Table 1: Unit root test Results

Unit root test at levels			
Variable	ADF-Test Statistic	95% Critical ADF Value	Remark
MKTCAP	-0.6238	-2.96	Non-stationary
MS	-2.106	-2.96	‘’
INTR	-2.092	-2.96	‘’
GEXPGDP	-1.728	-2.96	‘’
GDEBT/GDP	-1.846	-2.96	‘’
Unit root test at 1st difference			
Variable	ADF-Test Statistic	95% Critcal ADF Value	Remark
MKTCAP	-4.419	-2.96	Stationary
MS	-20.408	-2.96	‘’
INTR	-5.918	-2.96	‘’
GEXP/GDP	-6.664	-2.96	‘’
GDEBT/GDP	-3.771	-2.96	‘’

Source: Eviews 7.0 Output (2015)

The result indicates that all of the variables at levels, have ADF values that are less than the 95% critical ADF value of 2.96. The implication of this is that the time series for these variables are non-stationary in their levels. Moving forward, we take the first differences of the respective variables and perform the unit root test on each of the resultant time series. The rationale behind this procedure is that the Box and Jenkins (1976) have argued that differencing non-stationary time series will make it attain stationarity. The result of the unit root test on these variables in first differencing shows that the ADF values in absolute terms is greater than the 95% critical ADF values. With these result, these variables are adjudged to be stationary. Thus we accept the hypothesis that the variables possess unit roots. Indeed the variables are integrated of order one i.e. I(1).

Lag length Selection

To obtain a reasonable conclusion, the selection of lag length is a key determinant factor to establish the appropriate VAR model. The optimal lag length criteria selection is based on the highest value of likelihood ratio (LR) LR and lowest information criteria (IC). From the criteria selection output in Table 2, lag length of four (4) appears to be the optimal lag length and hence it is used in the VAR procedure.

Table 2: Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-904.835	NA	1.15E+22	64.98824	65.22613	65.06097
1	-776.31	201.968	7.33E+18	57.59359	59.02095	58.02995
2	-760.112	19.66982	1.66E+19	58.22226	60.83909	59.02225
3	-714.543	39.05914	6.68E+18	56.75304	60.55934	57.91667
4	-602.941	55.80060*	5.85e+16*	50.56724*	55.56301*	52.09450*

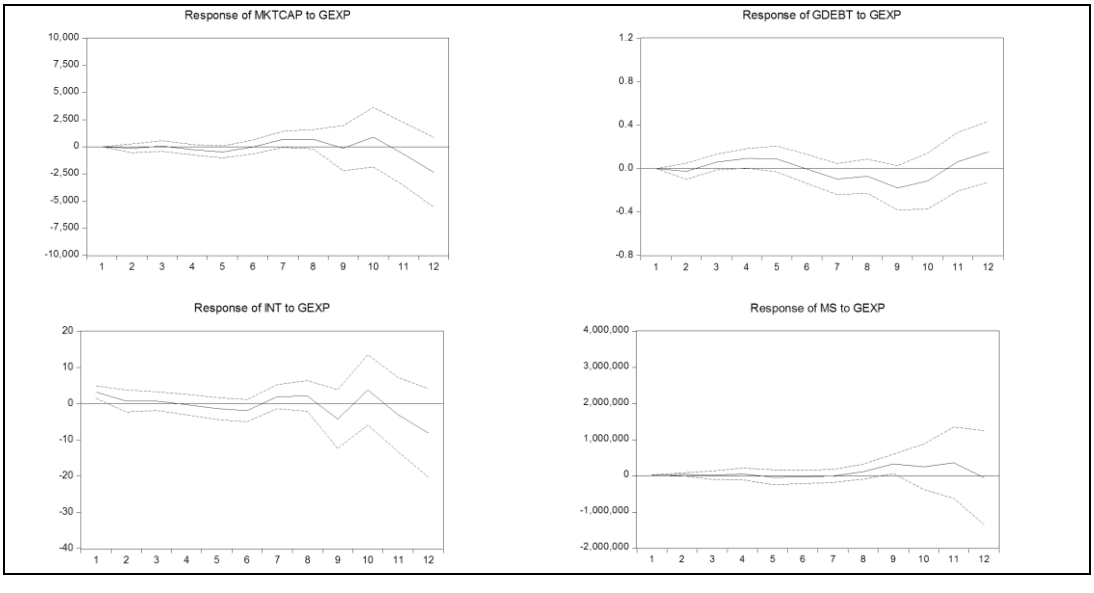
Source: Eviews 7 Output (2015)* indicates lag order selected by the criterion

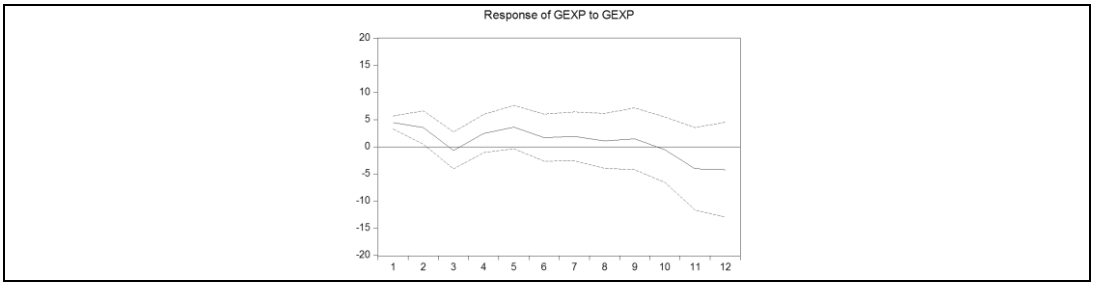
LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion

Impulse Response Functions

Graph1. Responses of one standard deviation shocks to Government expenditure

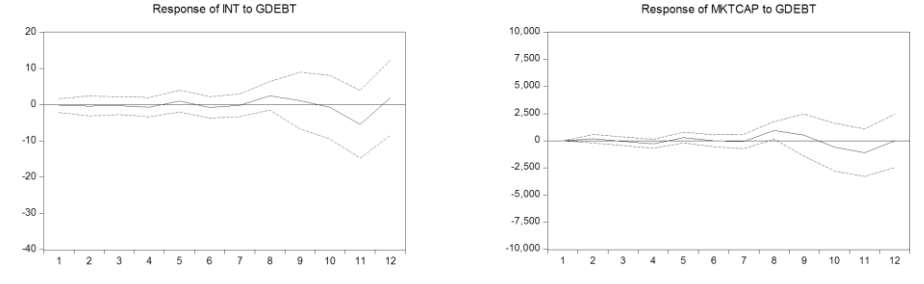


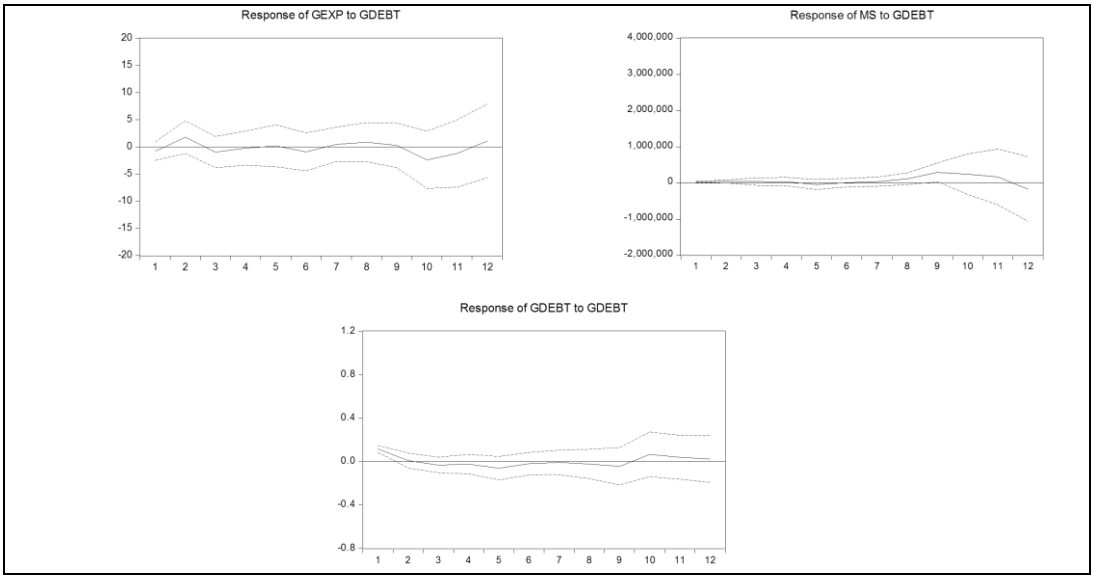


Source: Eviews 7 Output (2015)

Graph 1 displays the responses of all variables in the VAR to innovations in government expenditure. As observed, Market Capitalization used as a proxy for stock market performance appears to maintain it stability beginning from the first quarter and even up to the six quarter. Afterwards, it fluctuates slightly though non-negatively until the 11th quarter where it begins to slide towards disequilibrium. We observe a delayed response of market capitalization to shocks in Government expenditure and the tendency for asymptotic disequilibrium. We also consider the responses of government debt to government expenditure shocks. The response is quite unsteady as the path seems to fluctuate continuously over the period. Specifically, we observe that government debt drops slightly at the first quarter and then rises immediately till about the sixth quarter and then begins to fall up to the eleventh quarter where it again begins to rise. This suggests that any sensible attempt at ensuring debt sustainability must take government expenditure patterns into serious consideration. With respect to interest rates, the fluctuations observed resulting from government expenditure shocks seem to be quite benign up till the sixth quarter. Indicating that interest rates does not react immediately to government expenditure shocks but with a significant lag. The sensitivity of interest rate appears to be slightly heightened from the seventh quarter leading the path eventually towards disequilibrium. Money supply in appear to be stable in response to government expenditure shocks from the first and down to the eight quarter. Finally, the persistence of government expenditure which shows the pattern of development the variable within a protracted period caused by a shock to itself is fairly stable.

Graph 2: Responses of one standard deviation shocks to Government Debt

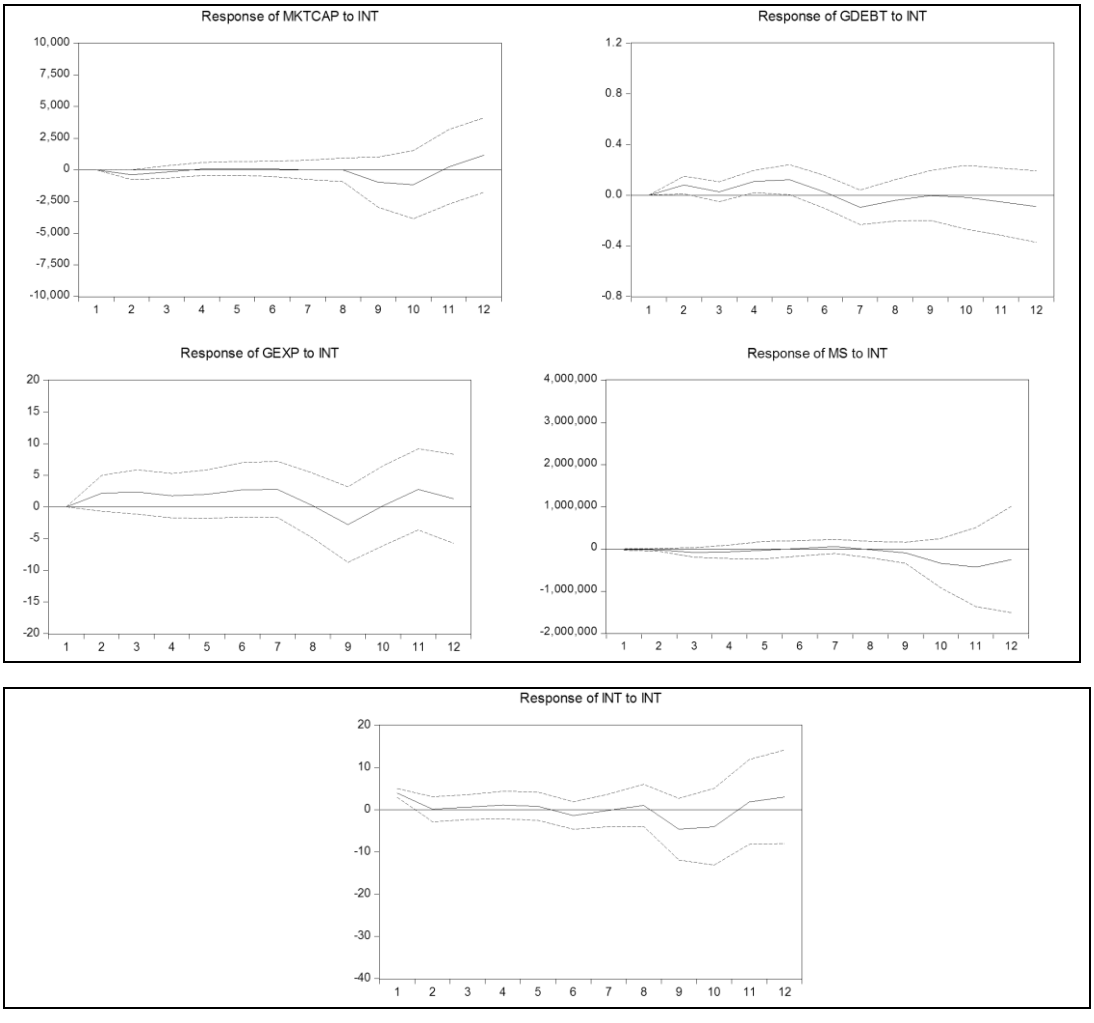




Source: Eviews 7 Output (2015)

Graph 2 shows the responses of all variables in the VAR to innovations in government debt. As observed, interest rates appear to maintain it stability beginning from the first quarter up to the seventh quarter. Afterwards, it oscillates slightly about its natural path eventually maintain asymptotic stability over the horizon. This suggests that government debt shocks may not be critical in the behaviour of interest rates. In relation to market capitalization, we observe that market capitalization remains largely stable and unperturbed by with relatively benign fluctuations which do not take the path away from stability. We also consider the responses of government expenditure to shocks in government debt. The response is quite steady with minor fluctuations which do not seem to pose significant threats to the stability of the time path and this holds over all quarters. With respect to Money supply, the time path observed resulting from government debt shocks seem to also be quite stable though rising slightly upwards in the eight quarter and eventually declining. Finally, the persistence of government debt which shows the pattern of development the variable within a protracted period caused by a shock to itself is fairly stable.

Graph 3: Responses of one standard deviation shocks to Interest rate

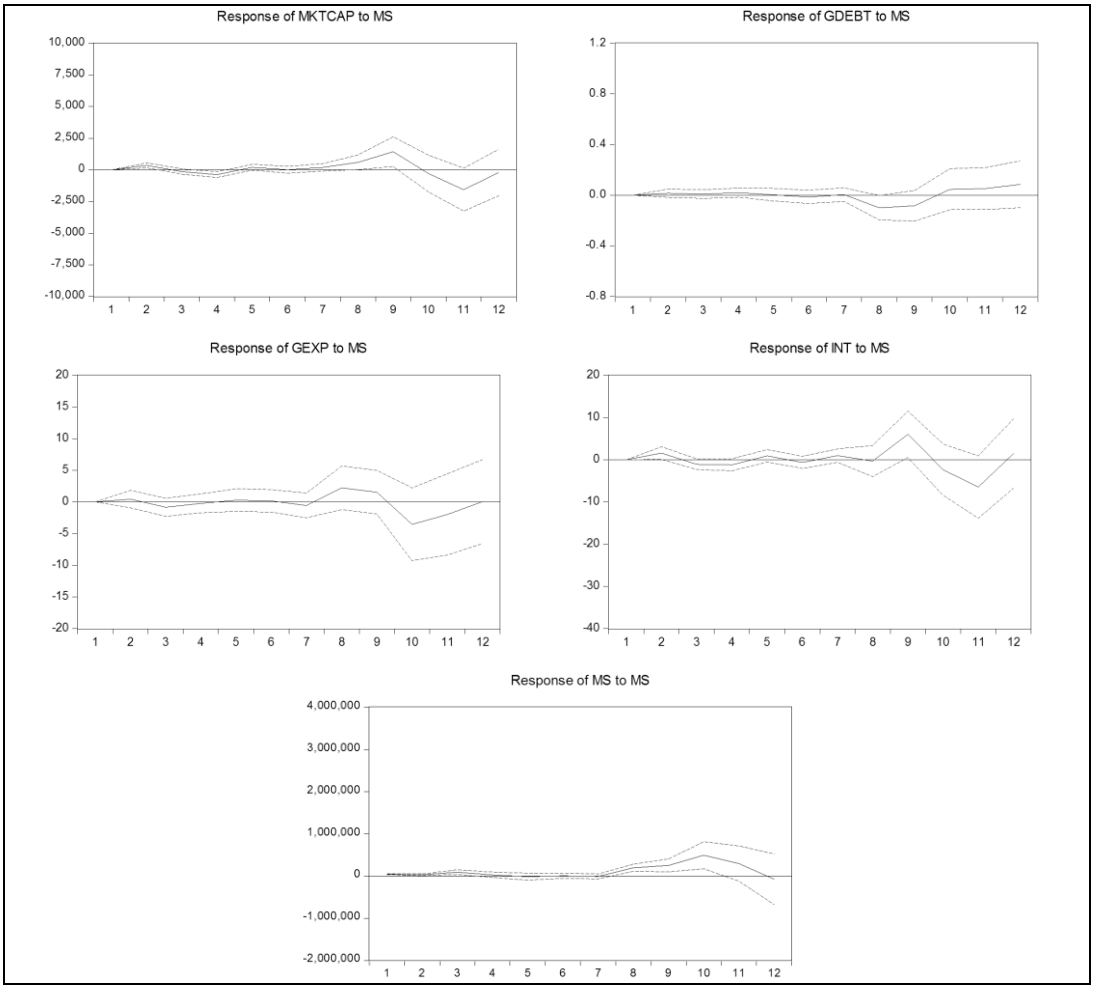


Source: Eviews 7 Output (2015)

Graph 3 displays the responses of all variables in the VAR to innovations in interest rate. As observed, innovations in interest rates leave the time path of market capitalization largely stable beginning from the first quarter up to the eight quarter. Afterwards, it slides downwards and then rises again at the eleventh quarter with fluctuations that appear to be quite benign. Clearly, there is a delay in the response of market capitalization to interest rate shocks and when it does react, the response do not appear to be very strong. government debt appears to be sensitive to interest rate shocks from the on-set. However

this again seems not be strong enough to deviate the time path significantly away from a stable path. Government expenditure shows a sustained rise from the on-set to interest rate shocks until the eight quarter when it tends downwards and rises immediately. Despite this, the time path remains largely stable. We also consider the responses of money supply to shocks Interest rates. The time path of money supply appears very much stable until the ninth quarter where it exhibits some response fluctuating slightly (negatively). Finally, the persistence of interest rate shocks which shows the pattern of development of the variable within a protracted period caused by a shock to itself is fairly stable.

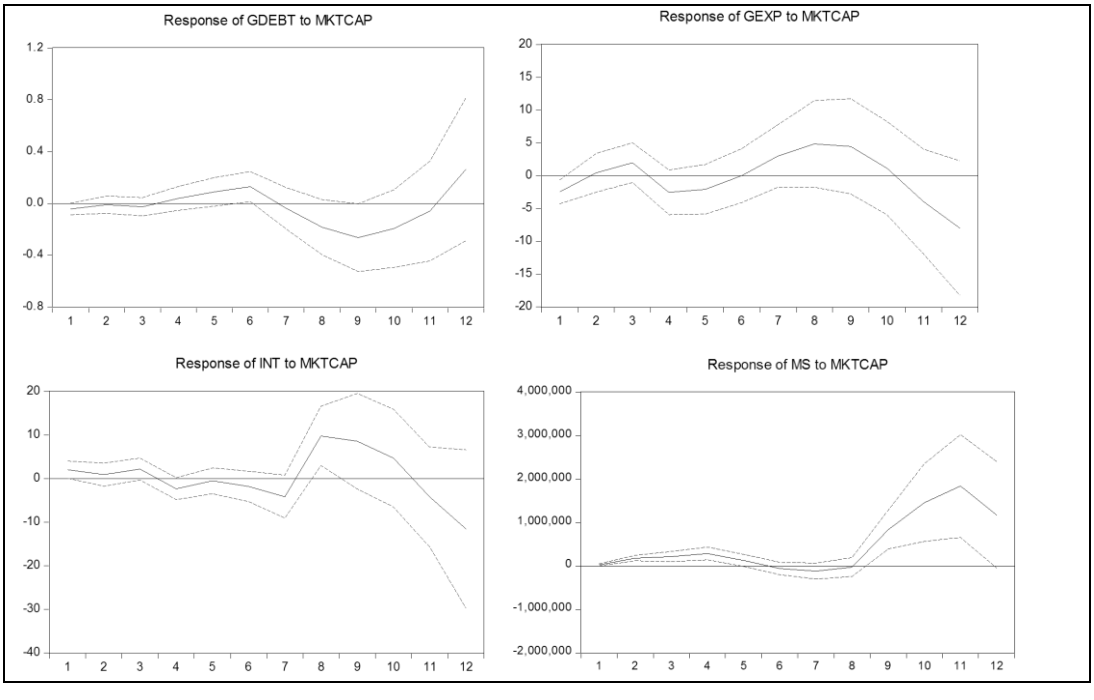
Graph 4: Responses of one standard deviation shocks to Money Supply

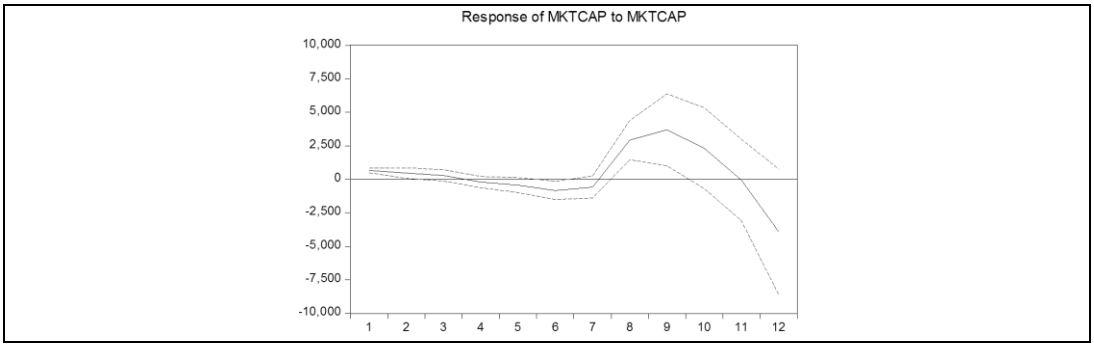


Source: Eviews 7 Output (2015)

Graph 4 displays the responses of all variables in the VAR to innovations in money supply. As observed, market capitalization used appears to maintain it stability beginning from the first quarter up to the seventh quarter. Afterwards, it oscillates slightly about its natural path eventually maintain asymptotic stability over the horizon. This suggest that Market capitalization does not react immediately to Money supply shocks but with a significant lag and response is not strong such as to be able to distort the time path from equilibrium over time. In relation to government debt, we observe that government debt remains largely stable and unperturbed until the seventh quarter where relatively benign fluctuation is observed. This suggests that government debt does not react immediately to money supply shocks but with a significant lag. We also consider the responses of government expenditure to shocks in money supply. The response is quite steady with minor fluctuations which do not seem to pose significant threats to the stability of the time path and this holds over all quarters. With respect to interest rates, the time path observed resulting from money supply shocks seem to also be quite stable with minor fluctuations occurring up to the eight quarter and then more relatively intense fluctuations over the remaining period. Finally, the persistence of money supply which shows the pattern of development the variable within a protracted period caused by a shock to itself is fairly stable.

Graph 5: Responses of one standard deviation shocks to Market Capitalization





Source: Eviews 7 Output (2015)

Graph 5 displays the responses of all variables in the VAR to innovations in market capitalization. As observed, government debt is stable up to the third period. Afterwards, it responds by moving slightly upwards for 3 periods and then declines and then stabilizes at the eleventh period. In relation to government expenditure, the variable reacts cyclically following Market Capitalization shock. Interest rate is characterized by minor fluctuations over the trend line from the on-set of innovations to market capitalization. However at the eight quarter it rises sharply and then declines indicative of an unstable time path. We also consider the responses of money supply to market capitalization shocks. The response is quite steady with minor fluctuations from the first to the seventh quarter. However, from the eight quarter, money supply appears to react strongly to market capitalization shocks as it exhibits a sharp and sustained rise over the remaining horizon declining slightly at the eleventh quarter though still positive. Finally, the response of market capitalization to its own shocks shows no threating response up to the seventh quarter where it immediately rises and then begins to decline though still positive until the eleventh quarter where it turns negative.

Variance Decomposition Analysis

Variance decomposition is estimated for 12 quarters. The main focus of this analysis is investigating the relative importance of shocks from the fiscal variables and monetary variables in explaining the forecast error variance of the endogenous variable in the model. Shocks in the table such as (ε_t^{Mktcap}, ε_t^{gexp}, ε_t^{gdebt}, ε_t^{ms}, ε_t^{int}) denote the shock in market capitalization, government debt-GDP ratio, government expenditure-GDP ratio, interest rate and money supply respectively.

Table 3: Variance Decomposition

	Period	S.E.	ε_t^{Mktcap}	ε_t^{gexp}	ε_t^{gdebt}	ε_t^{ms},	ε_t^{int}
VD OF MKTCAP	1	655.8994	23.25968	11.36562	22.70122	25.93068	16.7428
	3	1055.065	20.78622	6.229071	21.5597	10.60836	40.81664
	6	1646.891	24.6888	13.76935	16.71478	12.6965	32.13057
	9	5552.718	14.83323	3.145434	19.22028	17.21475	45.58629
	12	8068.812	27.60305	8.572107	9.454726	13.63532	40.73479
VD OF GDEBT	1	0.123769	0	99.96576	0.03424	0	0
	3	0.170118	13.52122	55.28201	17.2626	10.63874	3.295438
	6	0.32339	7.160618	27.95519	14.525	48.59018	1.769003
	9	0.535014	9.1706	11.72889	7.223831	45.476	26.40068
	12	0.683007	15.47588	12.46683	5.771198	35.08891	31.19718
VD OF GEXP	1	5.172475	0	0	100	0	0
	3	7.682558	0.130554	7.787968	59.7901	29.1159	3.175474
	6	10.36046	3.506215	5.999737	61.57459	24.78772	4.131745
	9	13.81448	8.212804	4.786093	36.24037	29.21285	21.54789
	12	18.44922	18.3956	8.936052	21.04197	22.07864	29.54775
VD OF INT	1	5.462768	0	3.323145	11.21702	85.45983	0
	3	6.372917	6.976406	6.214788	8.754449	71.43297	6.621391
	6	7.993298	9.916942	6.001342	9.748719	57.83543	16.49757
	9	18.55384	12.39981	2.746393	27.131	25.43455	32.28826
	12	26.80052	26.22916	8.618362	13.6462	17.74382	33.76245
VD OF MS	1	64122.6	0	11.11928	0.789921	5.213372	82.87743
	3	326843	18.04398	2.163416	10.61182	12.83831	56.34247
	6	473064.3	25.19171	6.322194	12.14964	13.15851	43.17795
	9	1132468	20.1322	2.568321	4.913641	23.2531	49.13273
	12	3033894	24.56275	6.898619	10.89407	14.76027	42.8843

Source: Eviews 7 Output (2015)

In evaluating the variance decomposition result in table 3, we are particularly interested in the forecast error variance in market capitalization. The variance decomposition for market capitalization shows that in the first quarter 23.259 % of the forecast error variance in market capitalization is explained by the shock in itself declining by 2.473% to explain 20.786% in the third quarter and rising by 3.90% to explain 24.688% of forecast error variance in the sixth quarter. It declines further in the ninth quarter and then eventually pushing up to 27.60% in the twelfth quarter. This confirms that market capitalization shocks are highly dependent on other shocks in the economy. As shown in table 3 above, government debt shocks explains 11.365% in the first quarter and then declines by 5.137% to explain 6.229 % of the error variance in market capitalization in the third quarter. In the sixth quarter it rises by 7.540% to explain 13.769% and declines in the ninth quarter to 3.145% and then rises again to 8.57% in the twelfth quarter. Government Expenditure shocks explain about 22.70% of the forecast errors of Market Capitalization in one quarter and then declines by 1.142% to explain 21.559 % of the error variance in Market Capitalization in the third quarter. From third quarter, it declines by 4.844% to explain 16.714% in the sixth quarter and 19.22% in ninth quarter and 9.455% in the twelfth quarter respectively. From the variance decomposition evaluation, we find that shocks in fiscal policy variables; (government expenditure and government debt) exert some influence on forecast errors of market capitalization and this suggest that fiscal policy may not be neutral in its effect on Stock market performance as proxied by market capitalization.

Interest rate shocks explain about 25.93% of the forecast errors of market capitalization in one quarter and then declines by 15.32% to explain 10.608 % of the error variance in the third quarter. From third quarter, it rises by 2.088% to explain 12.6965% in the sixth quarter. In the ninth and twelfth quarter Interest rate variable explains 17.214% and 13.635% % of the forecast errors of market capitalization in respectively. Money supply shocks explains about 16.743% of the forecast errors of Market Capitalization in the first quarter and then rises to 40.8166% in the third quarter. From third quarter, it declined by 8.68607% to explain 32.13057% in the sixth quarter. In the ninth and twelfth quarter, money supply variable explains 45.586% and 40.735% of the forecast errors of market capitalization respectively.

Policy Implications

The results obtained in the empirical analysis above are quite interesting and suggest certain policy direction issues. Firstly, the result revealed that both monetary policy impacts stock market performance as proxied by market capitalization in Nigeria.

Specifically, the result indicates that causality runs from interest rate to market capitalization and also from money supply to market capitalization. The very strong correlation between market capitalization and money supply suggest that the coordination of monetary policy will be important in stimulating stock market performance Secondly, monetary policies are not unstable in their effects on stock market and hence cannot cause destabilization in the stock market. This suggests that monetary policy moves may not have adverse effects on the market and the long-run stability of the market would not be threatened. Thirdly, market capitalization does not react immediately to money supply but reacts with a significant time lag. Though this is not the case for interest rates. Fourthly, market capitalization does not react immediately to fiscal policy but reacts with a significant time lag. Fifthly, monetary policy tends to have a stronger effect on stock market performance than fiscal policy variables. This suggests that there is the need for effective fiscal policy coordination and increased efficiency of institutions that are expected to facilitate the fiscal policy execution. Finally, though monetary policy tends to have a stronger effect on stock market performance than fiscal policy there appears not to be any unsystematic response of stock market performance to shocks in both policies.

5. Conclusion

All over the world, the capital market has played significant roles in national economic growth and development. Essentially, the stock market provides liquidity, contributes to capital formation, and investment risk reduction by offering opportunities for portfolio diversification. However, equity investments are generally very liquid and the time horizons of equity investors are often relatively short. As a result, changes in government policies can trigger a swift response by investors. The result of this study reveals that both monetary and fiscal policies impacts stock market performance in Nigeria. However, monetary policy tends to have a stronger effect on stock market performance than fiscal policy. In addition, there appears not to be any unsystematic response of stock market performance to shocks in both policies. The study recommends that policy coordination between monetary authorities and the government be improved. The gains from policy coordination will be useful in improving stock market performance.

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