

Impact of Some Selected Macroeconomic Variables on Stock Market Returns in Nigeria

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Abstract

There has been a growing concern on the role of macroeconomic variables on stock market return in Nigeria, despite the fact that the monetary authorities had embarked on several policies aimed at improving the growth of Nigerian stock market and ensuring stable growth in the economy. The aim of this study is to examine the effect of some selected macroeconomic variables such as gross domestic product (GDP), inflation rate and monetary policy rate on stock market returns in Nigeria. Empirical evidence from the developed and developing economies has shown that a country's macroeconomic variables have the capacity to influence the entire economy through stock market. An ex-post facto design (quantitative research design) was used to carry out this study by employing regression analysis. The results of the study indicate that the level of economic growth over the years have significant positive impact on the stock market return. While, inflation rate and monetary policy rate shows negative significant impact on stock market returns in Nigeria. The implication of this finding is that a decrease in inflation and monetary policy will improve the performance of Nigerian stock market in both long and short run. It is the recommendation of researcher that the Nigerian stock market should be made more attractive to a potential large number of small investors who wish to depend on long term investment during retirement because at the same time, it would enhance the growth of gross domestic product coupled with the implementation of appropriate monetary and fiscal policies that will invigorate long term securities investment in Nigeria.

Keywords: Capital Market, Inflation, GDP, Monetary Policy Rate, Error Correction Model.

Introduction

The relationship between stock market returns and some macroeconomic variables has been a topic of great interest in both theoretical and empirical literature. The genesis of the debate goes back to Fisher (1900) and Solomon (2012). According to the generalized Fisher hypothesis, equity stocks, which represent claims against the real assets of a business, may serve as a hedge against macroeconomic indicators. In such a case, stock prices in nominal terms should fully reflect expected rate of some macroeconomic indicators and the relationship between these two variables should be found positively correlated (Mondher, Olivier and Omar, 2013). The proposition that stock market returns serves as a hedge against macroeconomic variables, implies that investors are fully compensated for increases in the general price level through corresponding increases in nominal stock market returns and thus the

real returns remain unaffected. In other words, the real value of the stock market is immune to inflation and monetary policy pressures (Onyeagba, 2013).

The role of some macroeconomic variables such as GDP, inflation and monetary policy rate on the stock market return in Nigeria has been a growing concern, despite the fact that the government had embarked on several policies aimed at improving the growth of Nigerian economy through the contribution of stock market returns (Eze and Nwankwo, 2013). Emekekwe (2009) defines stock market as part of the financial market that provides facilities for transfer of medium and long-term funds to various economic units. Mbat (2002) in Ewah, Esang and Bassey (2009) also described capital market as a forum through which long-term funds are made available by the surplus unit to the deficit economic units. Stock market is a market for financial assets which have a long or indefinite maturity. Unlike money market instruments, the capital market instruments become mature for the period above one year. It is an institutional arrangement to borrow and lend money for a longer period of time. Globally, stock exchanges were established for the purpose of facilitating, regulating and controlling the business of buying and selling securities which will in turn increase the level of economic growth in the country. Also it provides facility for buying and selling securities that have been listed for trading on the exchange (Azu, 2012).

Based on the nature and importance of the relationship between stock market returns and some macroeconomic variables like Gross Domestic Product (GDP), inflation and monetary policy rate, the study becomes necessary in Nigeria, where policies aimed at controlling macroeconomic variables are unstable. Since stock market play active role in financial intermediation in both developed and developing countries like Nigeria by channelling idle funds from surplus to deficit units in the economy, it is therefore the researcher's interest to ascertain the effect of GDP, inflation and monetary policy rate on stock market returns in Nigeria. Thus, the focus of this paper.

Despite these progresses made by researchers in stylizing the relation between some macroeconomic variables and stock market returns, there is minimal research output documenting evidence of this relation in terms of the relationship between some macroeconomic variables like GDP, inflation and monetary policy rate and stock market returns in Nigeria. The few available evidence on the ability of equity to store wealth against some macroeconomic variables in Nigeria show positive relationship between some macroeconomic variables and stock market returns, though the degree of positivity varies (Nwokoma, 2002; Terfa, 2012; Arodoye, 2012; Ifuero and Esther, 2012). Meanwhile, it is the desire of this study to contribute to this debate for or against this proposition.

The broad objective of this study is to identify and evaluate the determinants of stock market returns in emerging market economies like Nigeria.

Review of Related Literature

Theoretical Framework

There are many theories which seek to explain the relationship between macroeconomic variables and stock market returns in various economies around the world. For the purpose of this study, the theory that is considered relevant include: Efficient Market Hypothesis (EMH).

Efficient Market Hypothesis

In exposition, Efficient Market Hypothesis (EMH) which was developed by Fama in 1965 and used by Ewah, Sang and Bassey (2009) states that financial markets are efficient or that the prices on traded assets have already reflected all known information about the market, and therefore is unbiased because they represent the collective beliefs of all investors about future prospects of the capital market. This study is anchored on this theory because it explains the relationship between macroeconomic economic variables and stock market return.

Empirical Review

While there have been several studies on the link between some major macroeconomic variables and stock market returns in both developed and developing countries, mixed results have been generated; some are in support of a positive link. On the other hand, some are in support of negative link.

Maku and Atanda (2009) examined the long-run and short-run macroeconomic shocks effect on the Nigerian capital market between 1984 and 2007. The study made use of exchange rate, inflation rate, money supply and real output as macroeconomic variables while all share index were used as dependent variable. They examined the properties of the time series variables using the Augmented Dickey-Fuller (ADF) test and Error Correction Model (ECM). However, the empirical analysis showed that the NSE all share index is more responsive to changes in exchange rate, inflation rate, money supply and real output. Therefore, all the incorporated variables that serve as proxies for external shock and other macroeconomic indicators have simultaneous significant impact on the Nigerian capital market both in the short and long-run.

Aisyah, Noor and Fauziah (2009) examined the macroeconomic determinants such as money supply, interest rate, exchange rate, reserves and industrial production index of Malaysian stock market using vector autoregression (VAR) framework. The result shows that changes in Malaysian stock market index do perform a co-integrating relationship with changes in money supply, interest rate, exchange rate, reserves and industrial production index. Samy, Samir and Mohamed (2007) investigate the determinants of stock market development in the Middle-Eastern and North African region using random effects specifications. The result observed that savings rate, financial intermediary, stock market liquidity and the stabilization variable are the important determinants of stock market development. In addition, it was found that financial intermediaries and stock markets are complements rather than substitutes in the growth process.

John and Owusu-Nantwi (2011) in a study of the relationship between Macroeconomic Variables and Stock Market Returns in Ghana using Full Information Maximum Likelihood Estimation Procedure. Inflation rate, exchange rate and treasury bill were considered as the major macroeconomic variables and serves as the independent variables, while stock market returns were proxied as all share index. It was found that inflation rate had a positive significant effect on stock market returns while exchange rate and treasury bill had negative effect on stock market returns. The study failed to incorporate all the microeconomic variables in their study which is a research gap.

Robert and Gay (2008) investigated the Effect of Macroeconomic Variables on Stock Market Returns for Four Emerging Economies: Brazil, Russia, India, and China using Box-Jenkins ARIMA model. The result revealed that no significant relationship was found between respective exchange rate and oil price on the stock market index prices of either BRIC countries, which may be due to the influence of other domestic and international macroeconomic factors on stock market returns, warranting further research. Adamopoulos (2010) examined the Stock Market and Economic Growth in Germany using Vector Error Correction Model (VECM). All share index were used as dependent variable while GDP and inflation rate were used as independent variables. The results of Granger causality tests indicated that there is a unidirectional causality between stock market development and economic growth with direction from stock market development to economic growth.

In a recent study by Mondher, Olivier and Omar (2013) on impact of macroeconomic factors on stock exchange prices: Evidence from USA, Japan and China using Autoregressive Distributive LAG ARDL Co-integration approach. They considered GDP, interest rate, exchange rate and money supply as the major macroeconomic variables. While stock price were used as dependent variable. The study found different result from one country to another. The result shows that USA Economy was most affected by financial crises in 2007; Japanese economy slump after 1990 and China is least affected economy by financial crises, 2007.

Arodoye (2012) studied an econometric analysis of the effect of macroeconomic variables on stock prices in Nigeria using Vector Autoregressive (VAR) model approach. Stock market prices were used as dependent variable while inflation and real gross domestic product (GDP) were used as

independent variables. The result observed that there is a long-run relationship between stock prices, inflation and real gross domestic product (GDP) for the period under review. The study failed to use monetary policy rate and exchange rate as macroeconomic variables.

Macroeconomic Variables and Stock Market Returns

The issue of causality between macroeconomic variables and stock market returns over the years has caused controversies among researchers based on their different findings. Theoretically, macroeconomic indicators are expected to affect stock market returns. A brief overview of studies using macroeconomic factor models is presented in this sub section. The findings of the empirical literatures suggest that there is a significant linkage between macroeconomic variables and stock market returns in the countries reviewed. In a study carried out by Ibrahim and Aziz (2003) that investigated the relationship between stock prices and industrial production, money supply, consumer price index, and exchange rate in Malaysia. The study found out that stock market returns have positive long-term relationships with industrial production and CPI. On the contrary, they found that stock prices have a negative association with money supply and exchange rate.

Also, Serkan (2008) investigated the role of macroeconomic factors in explaining Turkish stock market returns. He employed macroeconomic variables model from the period of 1997 to 2005. The macroeconomic variables considered are growth rate of industrial production index, change in consumer price index, growth rate of narrow money supply (M1), change in exchange rate, interest rate, growth rate of international crude oil prices and return on the MSCI World Equity Index. He found that exchange rate, interest rate and world market return seem to affect all of the portfolio returns, while inflation rate is significant for only three of the twelve portfolios. Also, industrial production, money supply and oil prices do not appear to have significant effect on stock returns in Turkey. In Nigeria, it was found by Amadi, Onyema and Odubo (2010) that the relationship between stock market returns and macroeconomic variables are consistent with theoretical postulation and empirical findings in some other countries.

Conceptual Review

Capital market is defined as the market where medium to long-term finance can be raised (Akigbo, 1996). In the opinion of Ekezie (2002), capital market is the market for dealings (that is, lending and borrowing) in long-term loanable funds. Mbat (2002) in Ewa et al (2009) also described capital market as a forum through which long-term funds are made available by the surplus unit to the deficit economic units. Emekekwe (2009) defines capital market as part of the financial market that provides facilities for transfer of medium and long-term funds to various economic units. It is also imperative to note that all the surplus-saving economic units have access to capital market, but not all the deficit economic units have the same easy access to it. The restriction on the part of the borrowers is simply to enforce the security of funds provided by the lenders.

Methodology

The data that have been used for this study were collected through the secondary source. The data were generated from Statistical Bulletin, publication of Central Bank of Nigeria (CBN) and various Academic Journals in related areas. The data that have been generated were analyzed and interpreted using relevant statistical formulations based on the objectives of the study. Objective of the study was tested with the use of error correction model, co-integration test and unit root test. The results of the analysis were used to assess the impact of macroeconomic variables on stock market returns in Nigeria.

The general equation for ECM and Co-integration test is $Y_t = \beta_0 + \beta_1 X_{1t} + \dots + \beta_n X_{nt} + U_t$ and $\Delta Y_t = \beta_1 + \beta_2 \Delta X_{1t} + \dots + \beta_n \Delta X_{nt} + \delta u_{t-1} + \varepsilon_t$. Y_t is the dependent variable, β_0 is the intercept term, β_1 is the regression coefficient, X_t is a set of explanatory variables and μ_t is the error term. We therefore re-specify the model above to capture the objective of our study.

$ASI = f(GDP, INFL, MPR, \dots)$. Where ASI is the Nigerian all share index, GDP is gross domestic product, INFL is inflation rate and MPR is the monetary policy rate.

Considering table 1 below, there is a long run relationship between dependent variable (ASI) and the independent variables (GDP, INFL, MPR) within the period under review 1990-2012.

Table 1: Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability
None*	0.940627	187.1919	88.80380	0.0000
At most 1*	0.825665	99.65069	63.87610	0.0000
At most 2*	0.526567	45.50069	42.91525	0.0269
At most 3*	0.379365	32.32059	25.87211	0.0000

Source: E-View 7.0

Table 2 below also displays a regression result of the effect of macroeconomic variables on stock market returns in Nigerian. As specified above, the results were obtained using the ECM and the Ordinary Least Square (OLS) method of estimation which test for the short run equilibrium dynamics of the variables. From the empirical evidence, we can infer that the coefficient of the regression which is the coefficient that depicts the estimated coefficient appears to be good while standard error and the values of t-statistic have been shown.

Table 2: Error Correction Model (Ecm) Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	546371.24	0.170337	24.24008	0.0000
GDP	67.12893	0.867326	7.251280	0.0000
INFL	-24.47942	0.085921	6.294336	0.0000
MPR	-42.67532	0.157118	0.208263	0.0360
ECM(-1)	0.985624	0.524071	5.872836	0.0000
R-squared	0.964301	Mean dependent var		11.99239
Adjusted R-squared	0.949348	S.D. dependent var		1.318795
S.E. of regression	0.438689	Akaike info criterion		1.333888
Sum squared resid	6.158342	Schwarz criterion		1.592454
Log likelihood	-19.34387	F-statistic		39.61866
Durbin-Watson stat	2.541626	Prob(F-statistic)		0.000000

Source: E-View Econometrics 7.0

The results of other important statistical tools revealed that: the coefficient of determination (R^2) as used to measure the success of the regression in predicting the value of the dependent variable within the sample and tests the goodness of fit, which is considered high in this study over 96%; the adjusted R-square, the Durbin-Watson statistic, and the entire regression test is statistically significant including the F-test. All results were obtained empirically and the test was conducted at five percent level of significance.

The result indicates that the level of economic growth over the years have significant positive impact on the stock market return. On the other hand, inflation rate and monetary policy rate shows negative significant impact on stock market returns in Nigeria. This means that a decrease in inflation and monetary policy will improve the performance of Nigerian stock market in both long and short run. The one (1) period lag of ASI was also shown to have significant positive impact on the selected macroeconomic variables in Nigeria.

A close examination at the result of the equation reveals that some signs were in line with the opinion expectation in literature review. From the result, GDP satisfy one condition by having positive sign while INFL and MPR which is negative satisfies another condition. This means that the independent variables are in line with the opinion expectation in the model.

From the result, the difference in beta coefficient of the variables representing the macroeconomic variables shows the different contributions of the variables to the stock market returns in Nigeria (ASI). In this result, using the beta coefficient, ASI is positive at constant of 546371.24. This means that when all variables are held constant, there will be a positive variation up to the tune of 546371.24 units in ASI. Similarly, a unit change or decrease in inflation rate (INFL) and monetary policy rate (MPR) when all variables are held constant will lead to a decrease in ASI by -24.47942 and 42.67532 units respectively. This is because of its negative impact to the ASI.

Conclusion

This study investigates the effect of some selected macroeconomic variables like GDP, inflation and monetary policy rate on stock market returns in Nigeria. The all share index was used as a proxy for the stock market returns and serve as dependent variable while inflation, GDP and monetary policy rate were the selected macroeconomic variables considered and as well serve as independent variables. Employing error correction model, it was found that there is a significant negative short run relationship between the stock market returns, inflation and monetary policy rate implying that, a decrease in the INFL and MPR, improves the performance of the Nigerian stock market returns. It was also found that GDP had positive effect on stock market returns in Nigeria. Though the results for monetary policy rate and inflation rates were not significant, the results suggests that they were negatively related to the stock market in both short and long run thus, achieving low rates of inflation and keeping monetary policy rate low might be good for the performance of the Nigerian stock exchange.

The regression result reveals that about 96% of the systematic variation in the dependent variable is explained by the three (3) independent variables such as GDP, INFL and MPR. The F-statistic is significant at the 5% level showing that there is a linear relationship between ASI and three (3) independent variables. The implication of this is that a change in these variables will have a great change in Nigerian stock market returns in both long and short run.

The researcher concluded that by achieving stable low inflation rates and maintaining low monetary policy rates, macroeconomic variables could be effective in improving stock market performance in Nigeria.

Recommendations

Based on the findings of this study, the following recommendations are hereby proffered:

1. Nigerian stock market should be made more attractive to investors who wish to depend on long term investment during retirement because at the same time, it would enhance the growth of gross domestic product coupled with the implementation of appropriate monetary and fiscal policies that will invigorate long term securities investment in Nigeria.
2. Inflation targeting has become important while adequate securities market supervision should be quickly internalized. In line with this, the results also suggest the need for policy makers to design policies that will help to curtail rapid growth in inflation rates. This is because of level of effect of inflation on stock market returns in Nigeria.
3. Investors should be sensitized on the effect of inflation rates and monetary policy rates on stock returns in the short-run. This will encourage long-term investment in shares thereby providing the required long-term fund for economic development of Nigeria.
4. The NSE and SEC also need to strengthen their regulatory capacities to enhance investor confidence. This will ensure that investors are confident enough to allow their investments for periods long enough to reap positive real returns.

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