EFFECTS OF MACROECONOMIC FACTORS ON STOCK RETURNS IN NIGERIA

Akwe, James Ayuba, Garba, Salisu Balago and Dang, Yohanna Dagwom

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EFFECTS OF MACROECONOMIC FACTORS ON STOCK RETURNS IN NIGERIA

[1]*Akwe, James Ayuba, PhD

Securities and Exchange Commission, Nigeria

*Corresponding Author's E-mail: ayubest2007@yahoo.co.uk

[2]Garba, Salisu Balago, PhD

Central Bank of Nigeria

[3]Dang, Yohanna Dagwom, PhD

Plateau State Internal Revenue Service, Nigeria

Abstract

Purpose: This study set out to examine the effects of macroeconomic factors on stock returns for top twenty-five most capitalized quoted equity firms in Nigeria. Emerging markets have different structure and institutional characteristics from developed stock markets, and in view of the fact that investors are interested in getting more insights into the activities of blue chip companies, it is imperative to find out whether stock returns in Nigeria respond differently to effects of macroeconomic factors or not. Hence, the study investigated the effects of inflation rate, interest rate and money supply on stock returns of selected quoted firms in Nigeria from 2007 – 2016.

Methodology: The population comprises top twenty-five most capitalized quoted equity firms, out of which twenty-one companies represent the sample of the study. The study adopted ex-post facto research design. The study used secondary data obtained from the audited accounts of the sampled firms, Central Bank of Nigeria Statistical Bulletin and the Nigerian Stock Exchange database and website. Analysis of data was carried out using panel data regression.

Findings: The panel regression results indicate significant negative effects between inflation rate, money supply and stock returns of selected quoted companies in Nigeria, while insignificant negative effect is revealed between interest rate and stock returns in Nigeria.

Unique contribution to theory, practice and policy: The study recommends among others, taking note of the systematic risks revealed by inflation rate, interest rate and money supply when structuring portfolios and diversification strategies; and intensifying capital market sensitization campaigns by the Securities and Exchange Commission.

Keywords: Inflation rate, interest rate, money supply and stock returns.

1.0 INTRODUCTION

Stock returns from investments in equity are subject to vary because changes in stock prices which are a product of several factors and the impacts could either be positive or negative. These factors could be internal/firm specific or external/macro. The internal factors are firm size, ratio of market/book value, debt/equity financing, firm age, dividend per share, ratio of price-to-earnings, sales-to-price, return on assets, and earning per share. Others include premium growth, loss ratio, interest coverage, dividend yield, firm's riskiness, and profitability (Kazeem, 2015; Anderson, 2016). The external factors are interest rate, world oil prices, foreign reserve, inflation rate, money supply, gross domestic product and output production (Maku & Atanda, 2010; Tripathi & Seth, 2014; Gatuhi, Gekara & Muturi, 2015).

This study provides measurement of stock returns variation that is caused by macroeconomic factors. However, Nigeria as a developing market has diverse structure and institutional features from developed stock markets, and in view of the fact that investors are interested in getting more insights into the activities of blue chip companies in the country, it is imperative to find out whether stock returns in Nigeria respond differently to effects of macroeconomic factors or not. This study, therefore examines the effects of macroeconomic factors on stock returns of some selected quoted firms in Nigeria.

In Nigeria, the area of macroeconomic factors as well as its effects on stock returns have attracted a lot of interest by researchers. Many researchers have attempted to examine the effect of macroeconomic factors on stock returns of quoted firms (Amadi & Odubo, 2002; Osamwonyi, 2003; Uwubanmwen & Obayagbona, 2012; Umar & Musa, 2013; Olowoniyi & Ojenike, 2013; and Kazeem, 2015). The studies however, focused on financial sector and some subsectors of the manufacturing sector (consumer goods in particular), in exclusion of blue chip companies in spite of their strategic importance to the Nigerian economy.

Also, periods covered by previous studies in Nigeria creates a gap in scope in this area of study. For example, the previous works of Adedoyin (2011) covered the period from 2004 to 2009, Uwubanmwen and Obayagbona (2012) covered the period from 1996 and 2010, Bala and Idris (2015) covered the period between 2007 and 2013, and Kazeem (2015) covered the period from 2006 to 2013. The periods of study as used by the aforementioned researchers can be regarded as not too recent. This is because a lot of activities in terms of adoption of International Financial Reporting Standards (IFRSs), introduction of new corporate governance codes, rise in public debt profile and changes in Central Bank of Nigeria (CBN) monetary policy rates have occurred that might render previous findings ineffectual. Therefore, this study adds to existing literature in this area by taking into account estimation period from 2007 to 2016.

The significant contributions of this paper include the following: first, it expands literature and add to the existing body of knowledge on the effects of internal and external factors on stock returns of companies quoted on the Nigerian Stock Exchange (NSE). Second, it provides policy directions for the regulators and/or policy makers, particularly the Securities and Exchange

Commission (SEC) and the Central Bank of Nigeria. Finally, it guides capital market operators in their investment advisory services to interested and prospective investors and further provides evidence against relying on only profitability as the main indicator for stock returns by proffering answers to the following research questions:

> Q1: To what extend does interest rate affect stock returns in Nigeria?
> Q2: To what extend does inflation rate affect stock returns in Nigeria?
> Q3: To what extend does money supply affect stock returns in Nigeria?

To answer the above research questions, the following research hypotheses have been formulated and stated in null forms:

H_1: Interest rate has no significant effects on stock returns of quoted equity firms in Nigeria.

H_2: Inflation rate has no significant effects on stock returns of quoted equity firms in Nigeria.

H_3: Money supply has no significant effects on stock returns of quoted equity firms in Nigeria.

The other sections of the study are organized as follow: Section 2 presents the review of prior literature and provides the theoretical perspective of the Study; Section 3 provides the methodological approach for the Study; Section 4 focuses on the study's analysis and discussions; and Section 5 summarizes and concludes the Study.

20 LITERATURE REVIEW

2.1 Interest Rate and Stock Returns

Khalid (2012) investigates the long-run effect of macroeconomic variables on the movement of Karachi Stock Exchange (KSE) return. The independent variables use by the study include exchange rate, inflation and Treasury bill between January 2000 and December 2010. The study utilizes monthly data of Treasury bill, inflation and exchange rate. The study uses Cointegration to test for co-movement between different series. The Augmented Dickey Fuller test reveals that the data were not stationary. Furthermore, the regression results reveals that the three macroeconomic variables do not have significant effect on stock returns of firms listed on KSE. However, the study only captured monetary policy rates. Other macroeconomic variables like government expenditure, GDP savings, real GDP, ratio of government borrowing to GDP among others have been examined and found to influence stock market returns. The study also failed to include other internal financial indicators since performance of stock market is generally considered to be reflective of both financial and economic conditions of a country.

Quadir (2012) examines the effects of macroeconomic factors of industrial production and interest rate on stock returns on Dhaka Stock Exchange (DSE) from 2000 to 20017. The study uses Autoregressive Integrated Moving Average (ARIMA) model to analyze the monthly time series data collected. The findings indicates that both interest rate and output production have positive but insignificant influence on stock returns of firms listed on the DSE. The major limitation of the study is in the lack of usage of critical macroeconomic variables like real GDP, inflation rate, exchange rate, money supply, balance of trade, government expenditure among others. These variables have been examined and found to be influential in determining the value

of stock returns in different jurisdictions. Their inclusion may have altered the statistical insignificance results and the coefficient of determination of 5.4% revealed by the study.

Tripathi and Seth (2014) examine the causal relationship between performance of stock market and macroeconomic factors in India, with monthly data between July 1997 and June 2011. The study used three (3) macroeconomic variables of inflation, interest rate, and exchange rate. The study use Augmented Dickey Fuller (ADF) test, AutoRegressive Conditional Heteroskedasticity (ARCH), Regression, Granger causality and Co-integration test for data analysis. The finding reveals a significant correlation among stock market indicators (market turnover, Sensex returns, and market capitalization) and macroeconomic factors (interest rate, inflation rate and exchange rate). Though, the study used robust data analysis technique, it was conducted in India. The need to expand the horizon to 2016 and conduct similar study in Nigeria is critical in view of monetary policies stance of government in recent times. Nigeria has had unstable exchange rate regimes and skyrocketing inflation rates.

Ouma and Muriu (2014) investigate the influence of macroeconomic factors on stock returns in Kenya during the period 2003 to 2013. The study is independent variables such as exchange rates, money supply and inflation rate. The study applied the Ordinary Least Square (OLS) technique to test the validity of the model. The empirical findings indicates that money supply and inflation are found to be significant effect on the returns at Nairobi Stock Exchange (NSE). The result further reveals a negative impact between exchange rates and stock returns, while interest rate is not important determinant of stock returns in the NSE. However, the study's period only extended to 2013. The need to expand this period using the Nigerian scenario is paramount. More so, the study used OLS in data analysis. The use of OLS does not seek to explain the individual or cross sectional effect of the sampled firms in Kenya given their respective peculiarities.

2.2 Inflation Rate and Stock Returns

Attari and Safdar (2013) examine the relationships among the macroeconomic variables and stock returns analyzed in Pakistan. The independent variables consider by the study include interest rate, inflation and gross domestic product. The study applies Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) to analyze time series collected between December 1991 and August 2012. The findings reveals that the aforementioned variables have substantial influence on stock returns in Pakistan. Attari and Safdar (2013) did not consider some fundamental variables and the use of series data by the study could suffer from the problems of multicollinearity and autocorrelation, hence the need for post diagnostic tests. These tests were not carried out by the study.

Kilbria, Mehmood, Kamran, Arshad, Perveen and Sajid (2014) investigate the influence of five macroeconomic variables on stock Karachi Stock Exchange (KSE) 100 index between 1991 and 2012. The study uses correlation analysis, descriptive analysis, Granger causality, and regression analysis to examine the effects of inflation, GDP savings, GDP Per Capita, Exchange rate and Money supply on the KSE 100 index in Pakistan. The findings reveals a significant and positive influence of inflation, money supply, exchange rate, GDP savings and GDP per capita on KSE

100 index. However, the study is criticized for using two variables that are GDP related. Though, they measure different indicators, a different choice of variable would have been better. For example, high interest rate regimes can lead to high cost of borrowing and hence a reduction in economic activity. Due to its effect on corporate profit, future cash flow and dividend, an investigation of interest rate and KSE 100 index, alongside one GDP related measure to ascertain position would not have been out of place.

Zaighum (2014) explores the influence of macroeconomic factors, namely, consumer price index, market returns, risk free return, industrial production index, and money supply on stock returns of nine non-financial sectors quoted in Karachi Stock Exchange (KSE) for the period between 2001 and 2011. The study employs panel analysis using pooled Ordinary Lease Square (OLS). The findings show that stock returns have negative relationship with money supply, consumer price index, and risk free rate, while market returns and industrial production index indicate a positive relationship. However, the study suffers from two major limitations. First, dividends paid within the investment horizon were not captured in the measurement of the dependent variable. Dividends are one of the major determinants of stock returns, as investors beyond expecting capital appreciation, will also expect dividend yield. Second, in spite of the usage of panel data regression analysis, the study failed to carryout pre and post diagnostic tests with a view to testing the classical linear regression assumptions of multicollinearity, autocorrelation, heteroscedasticity and normality.

Nijam, Ismail and Musthafa (2015) investigate the relationship between macroeconomic variables and performance of stock markets in Sri Lanka. Independent variables such as GDP, inflation, balance of payment, interest rate, and exchange rate for the period from 1980 to 2012 are tested. The study utilizes the Ordinary Lease Square (OLS) to examine the parameters of the regression model. The study finds that GDP, exchange rate and interest rate have positive and significant effect on stock returns in Sri Lanka, while inflation has negative and significant effect on stock returns. A further finding shows that balance of payment has insignificant effect on stock market performance in Sri Lanka. However, the study used OLS which seems not to have captured the individual or cross sectional effect of the sampled firms in Sri Lanka given their respective peculiarities, and that, panel data stand to tackle a more set of problems and address more sophisticated issues than either pure time series or pure cross sectional data alone would address.

Amtiran, Indiastuti, Nidar and Masyita (2017) investigate the effect of inflation rate, GDP, interest rate and exchange rate on stock returns of manufacturing companies listed in Indonesia Stock Exchange (ISE) between January 2007 and 2014. The study uses OLS to analyze the data collected. The findings shows that GDP, interest and exchange rates have positive relationship with stock returns, while inflation has a negative correlation with stock returns of firms listed on ISE. The use of OLS to analyze the data was inappropriate. This is because since OLS is concerned with minimizing the sum of the squared error and considering the size of GDP vis-à-vis other variables of study, the effect on stock returns could be disproportionate. Also, the OLS does not seem to explain the individualistic effects of the listed manufacturing firms in ISE.

2.3 Money Supply and Stock Returns

Ali (2013) investigates the influence market oriented indicators and macroeconomic indicators on stock returns in Dhaka Stock Exchange (DSE) between July 1986 and December 2010. Market oriented indicators use by the study include price to earnings, dividend yield, market capitalization, earnings per share, and trading volume. Macroeconomic indicators use by the study include foreign exchange reserve, consumer price index, foreign exchange rate, interest rate, export receipt, import payment, per capital gross domestic product, industrial production index, broad money supply, investment at current market price, foreign remittances, national income deflator, and total domestic credit. The study utilizes multivariate time series regression analysis, Johansen's cointegration test, Toda-Yamamoto Granger causality test and Vector Error Correction Model (VECM) for data analysis. The findings reveal that market capitalization, import payment, have significant and positive relationship on stock returns, while dividend yield, earnings per share, trading volume, consumer price index, export receipt, foreign exchange reserve, industrial production, and total domestic credit have insignificant and positive effect on stock returns. Further results indicate that price to earnings multiples, foreign exchange rate, per capita GDP, aggregate investment, national income deflator, foreign remittance have significant and negative relationship with stock returns, while deposit interest rate, money supply have insignificant and negative relationship with stock returns. However, this study with a set of modified micro and macroeconomic variables and 2016 data needs to be replicated in Nigeria with a view to ascertaining position.

Ntshangase, Mingiri and Palesa (2016) empirically explore the relationship between the stock market and macroeconomic variables in South African from 1994 to 2012. The independent variables of interest are inflation, interest rate, money supply, exchange rate and government expenditure. The study uses the restricted VAR model and Johansen cointegration test to analyze the connection between the variables. The study finds an existence of a long-run relationship between the selected macroeconomic indicators and the stock market in South Africa. However, the study fails to analyze the impact as well as it significance of each independent variable on the stock market in South Africa. Also, the study fails to capture some key fiscal policy variables. This would have helped users of this study find other exogenous variables that also affect stock returns in South Africa.

Okoro (2017) investigates the influence of macroeconomic factors on performance of stock market in Nigeria from 1986 to 2015. The study used GDP, money supply, interest rate, exchange rate and inflation rate as proxies for the independent variables. The study employs the Ordinary Lease Square (OLS) regression for data analysis. The results indicates that macroeconomic factors on stock market performance in Nigeria from 1986 to 2015. The study uses GDP, money supply, interest rate, exchange rate and inflation rate do not have predictive abilities on stock market performance in Nigeria. This study suffer from three limitations among others. First, study of this nature in Nigeria should have included impact of government spending as well as ratio of public debt to GDP. This is against the backdrop of increased national budget, its impact on the economy, particularly, the capital market needs to be investigated. Also, the

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increase debt profile in recent time calls for an empirical investigation to ascertain position. Second, the study failed to include other internal financial indicators since performance of stock market is generally viewed as reflective of both financial and economic conditions of a country. Third, the study did not mention specific macroeconomic factors that are considered more relevant than others in influencing stock returns in Nigeria.

Nisha (2015) investigates the relationship between interest rate, exchange rate, gold price, money supply and stock market returns in India. The study used Vector Auto Regression (VAR) to analyze the monthly time series data collected between January 2010 and December 2015. The study finds a considerable effect of interest rate, gold price, exchange rate and money supply on stock returns of firms listed on the Bombay Stock Exchange (BSE). However, like other foreign-based studies, this study suffers from a major limitation. The effect of firm level characteristics and macroeconomic factors were not combined in the study. This implies that the contribution of the two in relationship to the effect of the other on stock returns of firms quoted on BSE was ignored. Considering the role of firm level characteristics play in enhancing the value of firm, the importance of combining these macroeconomic factors with firm attributes in one study is too big to be ignored.

2.4 Arbitrage Pricing Theory

Arbitrage Pricing Theory (APT) developed by Ross (1976) as a Capital Asset Pricing Model (CAPM), is premised on the basis that the stock returns are caused by a specific number of economic variables. The theory further suggests that there are different risks in the economy that cannot be eradicated by sole diversification. CAPM was introduced by Sharpe (1964), Lintner (1965) and Mossin (1966). The theory states that non-diversifiable market risk impacts expected security returns. According to Al-Shami and Ibrahim (2013), the general notion behind the APT is that compensation is provided for the investors due to the time value of money or systematic risk which is characterized by the risk-free rate (rf). Another compensation for taking up extra risk can be calculated through a risk measure (Beta) by comparing the asset returns with the market for a time period and with the market risk premium.

According to Gatuhi, Gekara and Muturi (2015), APT assumes that various market and industry related factors contribute towards returns on stocks. Theses multi factor models have been developed with the assumption that stock returns are based upon several economic factors which include market return as well as other factors, and can be grouped into industry wide and macroeconomic forces. The industry related variables can vary with the nature of industry and economic conditions. The exact number of industry related variables is not identified so far. The frequently used macroeconomic and industry variables in existing literature are interest rate, exchange rate, money supply, consumer price index, risk free rate, industrial production, balance of trade, dividend announcements, and unexpected events in national and international markets. Amtiran, Indiastuti, Nidar and Masyita (2017) in their study conclude that model APT one factor is valid more than multi-factor APT. Other studies that found APT useful in relating changes in returns on investments to unanticipated changes in a range of key value drivers for these investments include Acikalin, Aktas and Unal (2008), Ali (2013), Ibrahim and Musah (2014), Kirui, Wawire and Onono (2014), and Zaighum (2014).

3.0 RESEARCH METHODS

In undertaking this study, ex-post facto research design was adopted. The justification is that the research involves panel data on multiple phenomena of 25 companies observed over multiple periods of ten (2007 - 2016) years, which events have already taken place.

The population of the study is the top twenty-five (25) most capitalized equity firms that have been listed on the premium and main boards of the NSE. This constitutes about ninety (90) percent of the total market capitalization as at December 31, 2016.

While selecting sample of companies from the top twenty-five (25) most capitalized quoted equity firms, a company had been regarded eligible for inclusion in sample if it satisfied the following conditions:

   i.   The earnings per share for any four successive years was not zero or negative during the period 2007 to 2016;

   ii.   The company did not erode its shareholders' fund for more than three successive years from 2007 to 2016;

   iii.   Furthermore, only company whose price data was available for the years (2007 to 2016) was retained in the sample size;

   iv.   The company must have been in existence from 2007 to 2016;

   v.   The currency in which the financial statements were prepared was the local (Naira) currency; and

   vi.   The company was listed on the NSE as at December 31, 2016.

The study adopts the purposive sampling technique. The period of sample is ten (10) years; from 2007 – 2016. This sample period of 10 years in my opinion, is sufficient to draw reliable and verifiable conclusions and/or findings.

The study was based on secondary data. The main data source was the Nigerian Stock Exchange (NSE) database and website, the 2016 edition of the Central Bank of Nigeria (CBN) Statistical Bulletin and the annual published accounts of the affected companies.

In achieving the objective of the study, panel regression analysis was used. The Jarque-Bera statistic was used to describe the normality of the residuals. Correlation matrix was used to describe the degree of relationship linking the regressors (macroeconomic factors) with the dependent parameters/variable (stock returns). Post-residual diagnostic (multicollinearity and heteroscedasticity) tests to check for validity of model assumptions were carried out.

The econometric model to measure the effects of macroeconomic factors on stock returns of twenty-one (21) most capitalized quoted equity firms in Nigeria are stated below in line with the study objective:

$$SR_{it} = \beta_0 + \beta_1 INT_t + \beta_2 INF_t + \beta_3 LnMS_t\, \mu_{it}$$

Where:

SR_{it}:   represents the yearly All-Share Index (ASI) of the NSE;

INT_t: represents the domestic interest rate in time t;

INF_t: represents the domestic inflation rate in time t;

$LnMS_t$:   represents natural logarithm of money supply in time t;

β_0:   represents the constant;

$B_1 - \beta_3$:   represents the coefficient of the regressors;

μ_{it}:   represents the error term;

i: represents the cross-sectional dimension;

t: represents the time series effect.

Table 1: Measurements of Variables

Variables	Measurements	Expected Sign	Reference
SR	NSE Index	Not Applicable	Tripathi & Seth (2014), Ntshangase, Mingiri & Palesa (2016), Khalid & Khan (2017).
INT	Domestic Interest rate	-	Tripathi & Seth (2014), Ouma & Muriu (2014), Nijam, Ismail & Musthafa (2015).
INF	Domestic Inflation rate	-	Okech (2016), Amtiran, Indiastuti, Nidar & Masyita (2017), Okoro (2017).
LnMS	Natural logarithm of Money Supply in the economy	+	Ntshangase, Mingiri & Palesa (2016), Okoro (2017).

Source: Author's Compilation (2018)

4.0 RESULTS AND DISCUSSION

4.1 Preliminary Analysis

In order to examine inter-relationships of the variables, this section begins by evaluating the summary statistics. This gives a good idea of the patterns in the data. The summary statistics and correlation matrix are presented below.

Table 2: Descriptive Statistics Results

	INFL	INT	LNMS	SR
Mean	10.75	16.845	9.417	31495.34
Median	11.19	16.819	9.4731	28058.82
Maximum	15.7	18.991	9.9808	58669.43
Minimum	5.386	15.135	8.5424	20664.03
Std. Dev.	2.894	0.944	0.4164	10821.25

Source: Researcher's Computations (2018)

Table 4.1 displays the summary of descriptive statistics of the variables included in the model. The variables are stock returns as proxied by NSE ASI, inflation rate, interest rate and money supply. The above table reveals that NSE ASI has a mean of 31,495.34 over the study period, with a maximum and minimum values of 58,669.43 and 20,664.03 respectively. This connotes that averagely, the market gained up to 28,058.82 between 2007 and 2016. The minimum value indicates that the market did not perform fairly during the period.

Figure 1: Normality Test

Series: Residuals
Sample 1 210
Observations 210

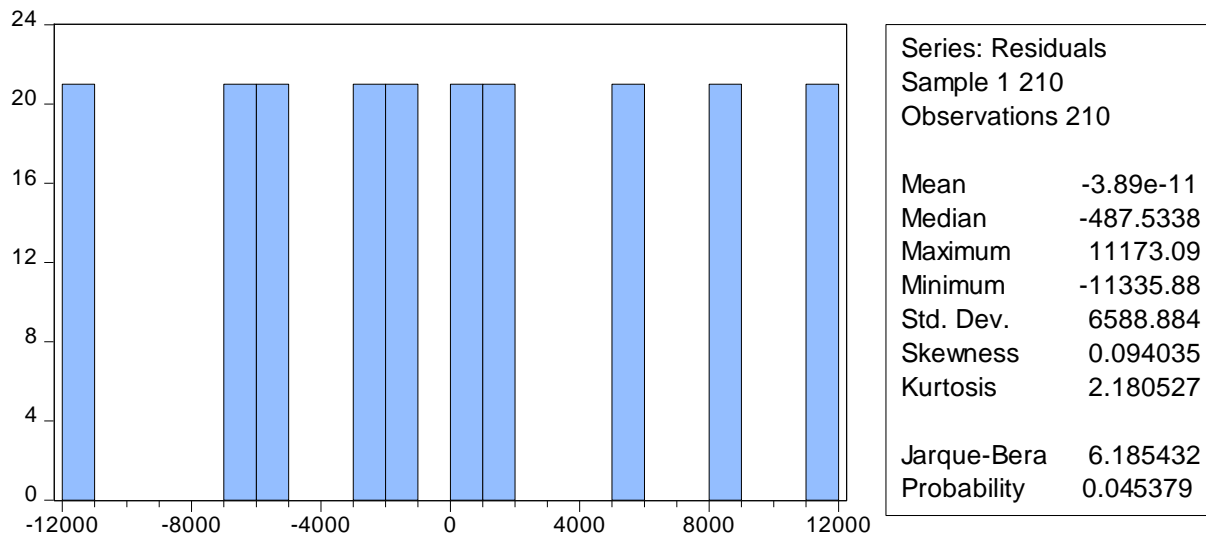|	
Mean	-3.89e-11
Median	-487.5338
Maximum	11173.09
Minimum	-11335.88
Std. Dev.	6588.884
Skewness	0.094035
Kurtosis	2.180527
Jarque-Bera	6.185432
Probability	0.045379

Table 4.2 is the histogram table for test of normality. Jarque-Bera test showed that the residuals are all not normally distributed variables since the probability value is less than 5%. The probability value is 4.5%. This could be attributable to the persistent increase in explanatory variables. However, the study can be continued in spite of this.

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Table 3: Correlation Matrix

Variables	SR	INFL	INT	LnMS
SR	1.000000			
INFL	-0.759552	1.000000		
INT	-0.183603	0.190034	1.000000	
LnMS	-0.477435	0.358619	-0.030355	1.000000

Source: Researcher's Computations (2018)

The above matrix depicts the degree and direction of the association between each pair of variables being analyzed. A correlation coefficient with negative sign reveals that there is an opposite relationship between the two variables. The correlation result indicates that all the three external factors (inflation, interest rate and money supply) are negatively correlated to stock return. These correlations are given by the respective coefficients of -0.7596, -0.1834 and -0.4774 for inflation, interest rate and money supply respectively.

Table 4: Hausman Specification Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	3	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.
** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
INFL	-2468.034586	-2468.034586	0.000000	1.0000
INT	-751.263008	-751.263008	-0.000000	NA
LNMS	-6307.686278	-6307.686278	-0.000000	NA

The possibility that error may cluster and correlate overtime can bias the outcome variables or even the explanatory variables, and as such fixed effect and random effect regressions were ran. The Hausman Specification Test in Table 4.4 above reveals that Random Effect Model is most appropriate to Fixed Effect Model in view of the Chi-Square value of 18.943966 and its corresponding P-value of 1.0000 which is more than the critical value of 0.05000.

Table 5: Panel Regression (Random Effect Model)

The study carries out random effect panel regression to determine the effects of macroeconomic factors (inflation, interest rate and money supply) on stock returns of selected quoted companies in Nigeria. The summary of the Random Effect panel regression result can be shown on the table below:

Variables	Random Effect Panel Regression		
	Coefficients	T-values	P-values
Constant	86973.51	6.788338	0.0000
INFL	-2468.035	-13.47719	0.0000
INT	-751.2630	-1.432886	0.1534
LNMS	-6307.686	-5.045512	0.0000
R^2	0.629261	-	-
Adj. R^2	0.623861	-	-
F-Stat	116.5488	-	0.0000

Source: Researcher's Computations (2018)

Table 5 above shows the Random Effect regression model after the Hausman result in Table 4.4. Therefore, the regression line of SR = 86973.51 − 2468.04INFL − 751.26INT − 6307.67LnMS indicates that stock returns of selected quoted companies in Nigeria decreases with increase in inflation rate (INFL), interest rate (INT) and money supply (LnMS). The probability values of 0.0000, 0.1534 and 0.0000 indicate significant negative effect of inflation, insignificant negative effect of interest and significant negative effect of money supply on stock returns of selected quoted companies in Nigeria at 5% level of significance. The coefficient of determination of 0.6292 indicates that about 63% of variation in stock returns of selected quoted companies in Nigeria is explained by external factors (INFL, INT and LnMS). The remaining 37% is explained by error term and other variables not captured in the model. These variables could be external or internal that also have the capacity to explain change in stock returns in Nigeria. The result of the regression indicates that the model is fit with F-statistic of 116.5488 and a probability value of 0.0000. The result implies that the overall effect of the independent variables (inflation, interest rate and money supply) on stock return in Nigeria is statistically significant at 5% level, with 95% confidence level.

Table 6: Summary of Post Diagnostic Tests

These diagnostic checks are hinged on the null hypotheses that: there is no heteroscedasticity for the Breusch-Pagan-Godfrey heteroscedasticity test and there is no multicollinearity between the variables for the Variance Inflation Factors test.

	Statistics	P-values	
Breusch-Pagan-Godfrey Test	5.617162	0.1318	
Mean Variance Inflation Factors	1.137994	-	

Source: Researcher's Computations (2018)

The test from table 4.6 implies that the problem of heteroscedasticity is absent, with the chi-square value of 5.61716 and the p-value of 0.1318. Thus the p-value of 13% is greater than 5% level of significance, gives the study proof to accept the hypothesis that the residuals are homokesdastic and the model is good. Also, multicollinearity test using the Variance Inflation Factors (VIF) reveal a mean VIF of 1.137994 with the VIFs for INFL, INT and LnMS as 1.203389, 1.049591 and 1.161001 respectively. This implies that the mean VIF is less than 10. Thus, the study agrees that there is no problem of multicollinearity and suggests that the mode is appropriate in fitting the explanatory variables of the study. The general rule of thumb is that, multicollinearity exists only when the VIF is greater than 10.

4.7 Test of Research Hypotheses

H_1: Interest rate has no significant effects on stock returns of quoted equity firms in Nigeria.

H_2: Inflation rate has no significant effects on stock returns of quoted equity firms in Nigeria.

H_3: Money supply has no significant effects on stock returns of quoted equity firms in Nigeria.

The probability values of 0.1534 for interest rate gives evidence to accept the null hypothesis that interest rate has no significant effect on stock returns of selected quoted companies in Nigeria. The probability values of 0.0000 each for inflation rate and money supply give evidence to reject the null hypothesis that interest rate has no significant effect on stock returns of selected quoted companies in Nigeria.

4.8 Discussions

The cumulative result shows that the R^2 has a value of 63%. The coefficient of determination indicates that about 36% of variation in stock returns of selected quoted companies in Nigeria is explained by INFL, INT and LnMS. The remaining 37% is explained by error term and other variables not captured in the model. These variables could be other external or internal that also have the capacity to explain change in stock returns in Nigeria. The result of the regression indicates that the model is fit with F-statistic of 116.5488 and a probability value of 0.0000. The result implies that the overall effect of the independent variables on stock return in Nigeria is statistically significant at 5%.

Furthermore, the study also finds insignificant negative effect of interest on stock returns of twenty-one most capitalized quoted equity firms in Nigeria. This implies that stock returns of quoted firms in Nigeria decreases with increase in domestic interest rate. High interest rate leads to increase in borrowing cost and a decrease in economic activities. This impacts negatively on corporate profit, business' future cash flow and dividend to shareholders. A rise in domestic interest rate have led to depressed corporate profits in Nigeria over the years. This has negative consequence for discount rate applied to equity investors. The result contradicts those of Quadir (2012) and Ouma and Muriu (2014). The finding supports the study's a priori expectation and

agrees with the Arbitrage Pricing Model (APT) which assumes that there are various macroeconomic related factors that explain stock returns.

The study also finds a significant negative effect of inflation on stock returns of twenty-one most capitalized quoted equity firms in Nigeria. This implies that stock returns of quoted firms in Nigeria decreases with increase in inflation rate as proxied by consumer price index. A rise in inflation rate rises the living cost and shifts productive resources from investments to consumption. This gives rise to a reduction in demand for financial instruments (particularly, ordinary shares), which in turn brings about decrease in the stocks volume traded. Also, inflation in Nigeria has been on the increase, which comes with tightening monetary policies by the Central Bank of Nigeria. This in turn pushes upward the nominal risk-free rate and increases the discount rate which give rise to decrease of present value of cash flows. The result is in agreement with theoretical prediction and empirical findings of Zaighum (2014); Nijam, Ismail and Musthafa (2015); and Amtiran, Indiastuti, Nidar and Masyita (2017). However, the finding Kilbria, Mehmood, Kamran, Arshad, Perveen and Sajid (2014). The finding supports the study's a priori expectation and agrees with the Arbitrage Pricing Model (APT) which assumes that there are various macroeconomic related factors that explain stock returns.

Finally, evidence from regression results indicate a significant negative effect of money supply on stock returns of twenty-one most capitalized quoted equity firms in Nigeria. This implies that stock returns of quoted firms in Nigeria decreases with increase in money supply. There is a consensus that growth in money supply, except supported by increase in output of goods and services, may lead to inflation in the economy. In consequence, as investors move their investment and/or portfolio holdings away from financial assets to real assets, stock returns move downwards. The implication of negative relationship in Nigeria could mean that domestic investors tend to invest their financial resources more on physical assets, perhaps due to lack of financial literacy, and confidence in the capital market. The result is in agreement with theoretical prediction and empirical findings of Ali (2013) and Nisha (2015). However, the finding of the study contradicts those of Ntshangase, Mingiri and Palesa (2016) and Okoro (2017). The finding does not support the study's a priori expectation but agrees with the Arbitrage Pricing Model (APT) which assumes that there are various macroeconomic related factors that explain stock returns.

CONCLUSION

The study concludes in relation to the significant negative effect of inflation on stock returns in Nigeria that, a rise in inflation rate rises the living cost and shifts productive resources from investments to consumption. The study concludes in relation to the insignificant negative effect of domestic interest rate on stock returns in Nigeria that, high interest rate leads to high borrowing cost and a decrease in economic activities. This also impacts negatively on corporate profit, business's future cash flow and dividend to shareholders. Based on the significant negative effect of money supply on stock returns in Nigeria, the study concludes that domestic investors tend to invest their financial resources more in physical assets, perhaps due to lack of financial literacy, and confidence in the financial market.

RECOMMENDATIONS

In line with the findings of the study, the following recommendations are made:

The Investment advisers and investors in the Nigeria stock market should take note of the systematic risks revealed by inflation, interest rate and money supply when structuring portfolios and diversification strategies. Government can also encourage domestic production of goods and services and diversification of the economy. This has the capacity to reduce inflation rate, stimulate growth and economy activities, particularly in the capital market.

The Central Bank of Nigeria should try as much as possible to reduce the anchor rate (Monetary Policy Rate) thereby reducing the cost of borrowing by quoted companies in Nigeria. The reduction in the domestic interest rate can increase corporate profitability and enhance firm value.

The Securities and Exchange Commission should intensify her capital market development mandate through sensitization campaigns on the gains of investing in the capital market as well as putting measures in place that will engender investors' confidence in Nigeria. This is against the background that investors in Nigeria do not invest in the capital market in spite of increase in economic activities and money supply in the economy.

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