
Unmasking The Influence Of Macroeconomic Forces On Stock Exchange Market Returns In Nigeria From 1987-2020

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Abstract

This study examined the influence of some selected macroeconomic fundamentals on stock market returns in Nigeria. Times series was used for the analysis which was sourced from Central Bank of Nigeria (CBN) and other recent documents. Time series was analysed with, descriptive analysis, unit root test, co-integration test and auto-regressive distributed lag (ARDL). Stock exchange market returns was proxy by market capitalization (MC) and value of deals (VOD). The selected macroeconomic forces that were analysed are: inflation rate, exchange rate, broad money supply and unemployment rate. The result of the long run analysis of the model shows that exchange rate, inflation rate and unemployment were statistically significant in influencing the stock exchange market returns. While, in the short run, stock exchange market returns was influence by inflation rate, exchange rate and broad money supply and unemployment rate in Nigeria. Based on the findings the study recommends amongst others: exchange rate stabilization, reduction of money in circulation through open market operation (OMO) and fiscal policy measure to control inflationary situation in Nigeria.

Introduction

Market is place where buying and selling takes place. Market could be done in a defined place or undefined place. Meaning that, it could be done anywhere which could be online as the case may be. Hence, stock market is a market where old and new securities could be sold. Securities are Assets that could be traded, such as house, knowledge, shares etc. those that buys share are part-owners owners of the company where the share is bought and dividend is given to the shareholder. Thus, stock market is that market that brings about channeling of local and foreign capital into productivity. This implies that money from stock market can be used for further investment that could bring about production of goods and services. Infact, stock market develop other sectors of the economy as a result of capital generated from the market. However, stock market generate funds for old and new companies for expansion. Considering the fact that it is s sources of fund, it becomes necessary for countries all over the world to manage the development of stock market, so that the purpose for which stock market is established will be achieved. However, this study will complement the existing literature as well as assist in providing technical frame work for policy makers to improve investment decision on stock returns. This study will also provide basic information on inflation, exchange rate, broad money supply and unemployment based on the empirical study on them. This study provides the knowledge that could bring about the insight of the link between these macro-economic variables: exchange rate, money supply. Inflation and unemployment as well as their impact on stock exchangemarket returnsin Nigeria.

It is worthy of note that so many researchers have been carried out on the natureof stock market in Nigeria. These scholars are Johnson, (2018), Okoh, (2017), Morrison, (2018), Roland, (2015), Okoh, (2010). All these studies established positive relationship with selected macroeconomic variable and stock exchange market in Nigeria. However, in contrast Okoh, (2010), Emeka, (2018), Emmason, (2014), Johnbull, (2000) reported negatively significant impact on the stock market returns, based on the selected macroeconomic factors tested. This mixed result called for further investigation on those forces that influence the development of stock exchange exchange in Nigeria. Stock exchange market brings about economic growth and development by making possible ways for foreign direct investment. The market is a medium through which savings is got though from surplus. However, the investment is done through the bonds and other equities for industries in need of finance to expand their business. Purchase of shares in stock exchange market make it possible for the shareholder to be part owner of the business. It is through stock exchange market that an investor can claim part-ownership of the business and dividend will be given based on the level of stock investment obtained. In this instance, the owner remains in the business as long as the company exist. Similarly, the investors can keep the stock as long as possible and can decide to sell or transfer it to someone when he deems necessary. Considering the fact that good returns on stock market will enable the company to expand and the investor to invest in other sectors of the economy. The collapse of the stock market always tends to trigger a financial crisis and push the economy into recession. In this instance local and foreign investors will be discouraged from investing in the economy. This is because instability in the stock market is a sign that the economy is not functioning very well and this could cause fluctuation in sectors. This is why investors are interested in knowing the factors that could indicate when there is fluctuation in the stock market. This will enable them make good decision on when and how to invest in stock. The knowledge of the economic variables will enable one manage stock as well as know when to invest. These variables are: inflation, exchange rate broad money supply and unemployment respectively. The macroeconomic variables are composition of data which are usually used by policy makers and investors to get information on current investment opportunities.

Statement of the problem

Studies have shown that Nigeria had recorded some level of losses as a result of fluctuations in some macroeconomic variables. This led to a shift of investment by stock investors to other alternative portfolio investment with less risk and more returns. Based on this, investment in the stock market has failed to achieve the reason for its establishment which would have led to the development of small scale industries that may need capital for expansion. Studies have shown that Nigeria stock returns went below the expectation of the investors within the level of 28,770.52 in 2012 March. In the same vein, the market capitalization of the year 1990 listed equities lost 18.5 percent from #9.81 billion at the onset of the year to #7.63 billion, as at November 29, 2012. The fact still remains that the study on the relationship between the macroeconomic variables and stock returns has been widely carried out. Okoh, (2012) is among others that carried out study on the effects of macroeconomic variables on stock market returns, using descriptive/trend statistics. Similarly, Johnson and Morrison (2000) used integration tests using augmented Dickey-Fuller and Phillip-Parron Model to evaluate the relationship between Nigeria stock exchange changes in returns and the United Kingdom and discovered that there is a co-integrating relationship in stock returns and the macroeconomic variables like inflation, interest rate, exchange rate. The worries are that to what extent do macroeconomic variables influence stock returns in Nigeria? Therefore, this calls for an empirical investigation.

Aim and objectives of the study

The broad objective is to investigate the relationship between some selected macroeconomic fundamentals and stock exchange market returns in Nigeria (proxy as Market Capitalization and value of deals). The objectives of the study are as follows:

1. Examine the correlation between inflationary rate and stock returns in Nigeria (proxy as Market Capitalization and value of deals).
2. Investigate the level of impact of exchange rate on the stock market returns in Nigeria (proxy as Market Capitalization and value of deals).
3. Examine the link between broad money supply and stock market returns in Nigeria (proxy as Market Capitalization and value of deals).
4. Evaluate the correlation between unemployment and stock market returns in Nigeria (proxy as Market Capitalization and value of deals).
5. Examine the link between broad money supply and stock exchange market returns (proxy as Market Capitalization and value of deals).

Scope, limitation and delimitation of study

The study examines the relationship between selected macroeconomic variables and stock exchange market returns in Nigeria. The need for this is born out of the dwelling nature of the stock exchange market in Nigeria. The study will basically limit its study within the stock exchange market in Nigeria. The selected macroeconomic variables will be tested to know their relationship with stock market returns. Though, some factors like government institutions, corruption, legal framework, political instability could influence stock exchange market returns but this study limits its scope on macroeconomic fundamentals; inflation rate, exchange rate, broad money supply and unemployment.

Research questions

This study examined the link between the selected macroeconomic fundamentals and stock market returns in Nigeria. These variables are: exchange rate, broad money supply, unemployment and inflation. The questions are to address the relationship between macroeconomic variables and stock exchange market returns in Nigeria.

1. Does change in exchange rate have significant influence on stock market returns in Nigeria?
2. Does change in inflation rate have significant effect on stock market returns in Nigeria?

3. Does change in broad money supply have significant effect on stockmarket returns in Nigeria?
4. Does change in unemployment rate have impact on stock market returns in Nigeria?

Research hypotheses

This study is guided by the following hypotheses.

Hypothesis 1

H₀₁: Change in the exchange rate have no significant effect on stock market returns in Nigeria.

⇒ H₀₁: $\beta_1 = 0$

Hypothesis 2

H₀₂: Change in inflation rate have significant effect on stock market returns in Nigeria.

⇒ H₀₂: $\beta_2 = 0$

Hypothesis 3

H₀₃: change in broad money supply have no effect on stock market returns in Nigeria

⇒ H₀₃: $\beta_3 = 0$

Hypothesis 4

H₀₄: change in unemployment have no effect on stock market returns in Nigeria

⇒ H₀₄: $\beta_4 = 0$

Literature Review

This chapter focus on related and relevant literature on the subject matter. This chapter consist of the component of literature; conceptual clarifications, theoretical frame work, and empirical review.

Conceptual clarifications

This study is centered on the relationship between macroeconomic fundamental: inflation, interest rate, exchange, unemployment rate, broad money supply and stock market returns in Nigeria. The macroeconomic variables are explanatory variables while the stock market returns is the dependent variable respectively. However, the conceptual framework of Okoh, (2017) was adopted in this study which aims at examining the impact of independent and dependent variables.

Exchange rate

In cause of exchanging a country's currency for another, price is paid. This price paid is the rate for which the currency is exchange for another country's currency. From the example certain amount is paid in exchange of Naira for dollars and other foreign currencies. There have been studies on the relationship between stock returns and macroeconomic variables as carried out by Owusu, Nanti and Kuwornu (2018).

Inflation rate

There has been rippling impact on the world financial system as a result of instability in the American Stock Market which is characterized by inflationary situation which leads to crash in America economy in the year 2008. It is worthy to note that the effect of inflation could be negative or positive.

Unemployment rate

This is a situation whereby those that are willing and able to work could not find employment opportunities. Unemployment situation pose a lot of danger to an economy. This is why countries all over the world are trying as much as possible to end or reduce unemployment situation considering it danger. Unemployment and poverty are the same in nature.

Broad money supply

The need to carry out studies on broad money supply is for the society to improve on their financial index, which includes monthly cash flow and profit investment in the economic sector. In any economy, shares and stock market appears to be sensitive in controlling the pricing in the economy.

Theoretical framework

Under this heading different theories that supported the need for stock market and its returns will be examined.

Modern portfolio theory

So many scholars have advocated and used this theory to explain and support the link between macroeconomic fundamentals and stock market returns in Nigeria. One of those theories that supported the study of macroeconomic variable and stock returns is the portfolio theory. This theory advocates that investors are rational in their decisions, such that they invest on portfolios that will give them maximum profit or returns with minimized risk. Thus, this is based on the information got on the returns from the stock as regards to expected benefit from security. This theory was formulated by Fama (1970). It advocated that price is the function of investment and gives signal to the level of economic returns. Fama (1970) sported the different categories of market based on the information on the price which determines the price of the asset. However, knowing the past prices as mentioned does not mean that one can predict the future price of the stock market returns. The theory gives the knowledge that investors will decide on how to invest based on the previous price of stock and dividend that might be got. Public information includes not only information about an assets past price, but also includes all information related to the company's returns, expectations regarding macroeconomic fundamentals (inflation, exchange rate, broad money and unemployment etc). It is on this premise that this study accepts this theory as buses for this study.

Empirical literature review

Different empirical studies have been carried out on the link between macroeconomic fundamentals and stock market returns. The studies were done on developed and emerging economies, though less is done in Nigeria stock exchange market. The studies of the following scholars are examined. Okoh, (2017) investigated some selected macroeconomic factors such as: interest rate, inflation rate money supply as methodical control on stock market proceeds in Nigeria from 1985-2016 by modeling equity profit as a purpose of macroeconomic factors and non-equity assets profit for US. It was empirically revealed that the macroeconomic factors capitulate increase in stockexchange market returns in the long and short run which significantly explained the stock market returns. Ordinary least square was adopted for the study. The researcher proved that the macroeconomic factors scientifically influence the stock exchange market returns through their result on future dividends and price cut rates and the paper advocated for more pragmatic investment in US stock market for better returns. Maysami and Sims (2016) engaged the Error-Correction Modeling method to scrutinize the link between macroeconomic factors and stock market returns in Hong Kong and Malaysia secondary data was used and the result revealed that the selected macroeconomic forces influence stock market returns.

Hendry (2000) examined the short-run link between macroeconomic factors: inflation rate, interest rate, money supply and exchange rate from 1987-2019. Autoregressive distributed lag (ARDL) was applied in the study. It was revealed that there is a long run significant effect on stock exchange returns. The study analyzed the control of interest rate, money supply, exchange rate of Japan. The results established the control of macroeconomic factors on the stock market returns. Hence, the paper advocates that more investment should be made on the stock market of Japan for better returns. Islam (2015) investigated the relationship between macroeconomic fundamentals and stock exchange market returns of United Kingdom. The study adopted Johansen co-integration model, using time series data, from 1987-2017. The studies look at the short-run change adjustment and the long-run equilibrium links between four macroeconomic factors (exchange rate, inflation rate, interest rate, and the industrial productivity). The result revealed that there existed a statistically significant relationship in the short-run and long-run interaction between the macroeconomic factors and the Nigeria stock market returns. Thus, the paper recommended that there should be massive investment on stock exchange market in Nigeria. Grambovas (20017), investigated the correlation between macroeconomic forces and the extent of stock market returns in Nigeria. Secondary data of time series were adopted. The paper employed trend analysis, the Johansen co-integration and ordinary least square technique was employed. Empirical findings show that there is a long run relationship between the explanatory variables and dependent variables. Hence, the paper recommends that government should invest more on stock market in Nigeria. Aziz (2018) examined the connection between stock returns and macroeconomic forces in Ghana for the period of 1982-2010 by using simultaneous equation model. As a result of ordinary least square technique. The paper revealed that there is significant correlation between stock market and select macroeconomic variables in Ghana: exchange rate, inflation rate, consumer price index, and production price index were used for the study and it was discovered that macroeconomic variables can make or mar stock market returns in Ghana. Hence, government should try as much as possible to control the fluctuations of macroeconomic forces. Maghayreh (2017) examined the long run correlation with the Jordanian stock prices and preferred macroeconomic factors by using Johansen's methodology of co-integration investigation and publication of time series data for the period of 1977 to 2017. The work revealed that macroeconomic factors such as, foreign reserves, interest rates, inflation, and industrial production were linked in stock market returns in the Jordanian capital market. The paper recommended that government of Jordan should investigate those macroeconomic variables that are not functioning very well in the economy and proffer solution to that effect, since the variables influence general activities of the economy. Gunasekarage and Power (2016) tested the co-integrating long-term connection between All Share indicator such as the treasury bill rate, the consumer price indicator (proxy inflation), and the exchange rate for developing country (Sri Lanka). The time from January 1985 to November 2001 was studied using the Johansen assessment for co-integrating vectors as well as for succeeding VECM to assess the long-term links with the macroeconomic factors and the stock market price. Their studies gave indication that the lagged values of the consumer price indicator, and treasury bill rate had a considerable influence on the All-Share indicators and recommended better management of the stock market.

Methodology

This part of the paper consists of various methods that could be used for the data analysis.

Research design

The type of design to be adopted will be quasi-experimental design, which is commonly used in social science. The reason for this type of research design is that it gives room for examination of two or more independent and dependent variables. Johnson, (2017).

Model specification

The stock exchange market is the dependent variable (proxy of market capitalization and value of deals) and explanatory variable are some selected variables, inflation rate, exchange rate, broad money supply and unemployment rate. The frame work adopted is similarly, to Hendry, (2017) whose study was limited to 1980-1990 with selected macroeconomic variables; interest rate, exchange rate broad money supply. However, this study did some modification in the area of extention of year from 1987 to 2020 with the inclusion of inflation rate and unemployment rate. Hendry, (2017) used All Share Index proxy stock exchange market returns. But in this study market capitalization (MC) and value of deals (VOD) were proxied for stock exchange market returns.

Therefore;

$$MC = F(\text{inflr}, \text{Excr}, \text{Bms}, \text{Unempr}) \text{ ----- (1)}$$

$$VOD = F(\text{inflr}, \text{Excr}, \text{Bms}, \text{Unempr}) \text{ ----- (2)}$$

Given the functional relationship, the econometric models are specified below:

$$MC = a_0 + a_1 \text{inflr} + a_2 \text{Excr} + a_3 \text{Bms} + a_4 \text{Uempr} + \epsilon_i \text{ (1)}$$

$$VOD = a_0 + a_1 \text{inflr} + a_2 \text{Excr} + a_3 \text{Bms} + a_4 \text{Uempr} + \epsilon_i \text{ (2)}$$

Where: MC = Market Capitalization

VOD = Value of Deals

inflr = Inflation Rate

Excr = Exchange Rate

Bms = Broad Money Supply

Uempr = Unemployment rate

Methods of data analysis

Based on the fact that the time series are non-stationary descriptive analysis, unit root test, co-integration and Auto-regressive distributed lag (ARDL).

Data presentation

Descriptive analysis

Table 1: Descriptive Statistics of Stock Market Variables and Some Selected Macroeconomic Variables in Nigeria; 1987-2020.

	VOD	MC	INFL	EXC	BMS	UNEM
Mean	450888.1	83.15412	13.58382	118.4327	26.62726	13.38235
Median	96843.91	86.10700	12.90000	123.2000	22.45000	12.65000
Maximum	2350876	134.7200	29.30000	358.8110	87.80000	28.90000
Minimum	225.4000	50.18500	5.400000	4.000000	-0.800000	1.800000
Std. Dev.	590123.7	20.91273	4.920962	99.31779	18.29412	9.266900
Skewness	1.389559	0.283782	0.858541	0.738503	1.203591	0.344002
Kurtosis	4.497504	2.506284	4.369659	2.841481	5.127448	1.711164
Jarque-Bera	14.11852	0.801670	6.834479	3.126125	14.62079	3.023801
Probability	0.000859	0.669761	0.032803	0.209493	0.000669	0.220491
Sum	15330196	2827.240	461.8500	4026.711	905.3270	455.0000
Sum Sq. Dev.	1.15E+13	14432.29	799.1236	325512.8	11044.27	2833.889
Observations	34	34	34	34	34	34

Source: Researcher’s computation using E-View 9.0.

The descriptive result in the table 4.1 indicates that there is a serious instability in both stock exchange market variables and selected macroeconomic variables in Nigeria over the period under review. This is evidenced in the standard deviation minimum and maximum value of all share index, value of deals, market capitalization, inflation rate, exchange rate, broad money supply and unemployment rate. This calls for further probe of the features of the data hence the unit root.

Table 2: ADF unit root test of all variables (with constant and trend).

Variable	Data in Level	Data in Difference	Order of Integration
VOD	-6.128443*	-	I(0)
MC	-3.238924***	-6.934473*	I(1)
INFL	-3.668377**	-	I(0)
EXC	-0.726306	-4.349002*	I(1)
BMS	-3.675521	-	I(0)
UNEM	-3.115308	-4.088469**	I(1)

*Significant at 1%, **Significant at 5% and ***Significant at 10%.

Source: Researcher's Computation Using E-View 9.0.

Table 2: Shows unit root test result for the variables using Augmented Dickey Fuller (ADF) method. The result shows that value of deals (VOD), inflation rate (infr) and broad money supply (BMS) were stationary at 5% at level, I(0). This implies that these variables attained their stationarity of 5% at level. While market capitalization (MC), exchange rate (Exc) and unemployment rate were stationary at first difference, I(1). This implies that these variables attained their stationarity of 5% at first difference.

Table 3: Bound test result for the value of deals (VOD) model

Test Statistic	Value	K
F-statistic	5.5460	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Researcher's Computation Using E-View 9.0.

A cursory examination of Table 3, revealed that there is an existence of long run relationship amongst the under listed variables in the VOD model.

Table 4: Bound test result for the market capitalization (MC) model

Test Statistic	Value	K
F-statistic	5.0461	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Researcher's Computation Using E-View 9.0.

The bound test in Table 4 revealed that there is long run relationship between the dependent and the explanatory variables in the mc model.

Table 5: ARDL error correction (ECM) result of marketcapitalization (MC) model with selected ARDL (1, 2, 0, 3, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Probability
D(INFL)	-0.805786	0.586820	-1.373140	0.1899
D(INFL(-1))	-1.803772	0.720795	-2.502477	0.0244
D(EXC)	0.292932	0.165821	1.766555	0.0976
D(EXC(-1))	0.650178	0.392934	1.654673	0.1188
D(EXC(-2))	-0.707502	0.258475	-2.737212	0.0153
D(BMS)	-0.081532	0.125668	-0.648791	0.5263
D(UNEM)	-0.323676	0.547154	-0.591563	0.5630
ECM(-1)	-0.923928	0.207528	-4.452068	0.0005

From Table 5, inflation lag one, exchange rate lag two have significant negative effect on market capitalization over the period under-review. While current year exchange rate is not significant at 5% but at 10%. This implies that inflation rate, exchange rate retired MC in Nigeria during the period of under study. This result is an agreement with Walter (2019).

Table 6: ARDL error correction (ECM) value of deals (VOD) modelwith selected ARDL(2, 3, 3, 3, 1, 3)

Variable	Coefficient	Std. Error	t-Statistic	Probability
D(VOD(-1))	-0.351317	0.250605	-1.401877	0.2336
D(INFL)	-47217.831262	16814.246409	-2.808204	0.0484
D(INFL(-1))	46433.303514	29069.308181	1.597331	0.1854
D(INFL(-2))	85839.335388	46147.510802	1.860108	0.1364
D(EXC, 2)	-18563.212464	6574.797915	-2.823389	0.0477
D(EXC(-1), 2)	-12798.699621	8274.735212	-1.546720	0.1968
D(EXC(-2), 2)	6732.407272	9056.912869	0.743345	0.4986
D(BMS)	3372.938861	7135.435494	0.472703	0.6611
D(UNEM, 2)	57951.465285	32764.767962	1.768713	0.1517
D(UNEM(-1), 2)	49514.970196	69440.269863	0.713058	0.5152
D(UNEM(-2), 2)	165228.614155	98350.944956	1.679990	0.1683
ECM(-1)	-0.948333	0.351135	-2.700762	0.0541

From the Table 6, the result revealed that current year inflation, two year lag, interest rate and two year, years lag exchange rate have significant negative impact on VOD. While, other variables exhibited non-significant impact on VOD. This shows that at the short run only inflation and interest rate have impact on VOD. The coefficient of ECM is significant and rightly signed and also revealed the rate of adjustment as high (0.948) to change long run equilibrium.

Conclusion

In carrying out this study some statistical tools were employed for the analysis. These are: Descriptive analysis, unit root test, Auto-regressive distributed lag and co-integration. The findings of the result revealed the following. Based on the co-integration bound test, it was revealed that there is long run relationship between market capitalization and the underlined variables in the model. In the short run one year lag inflation, current year exchange rate and two year lag exchange rate have effect on market capitalization while, broad money supply and unemployment shows no significant effect on MC. The paper also revealed that co-integration bound test shows that there is long run relationship between the selected macroeconomic variables and value of deals.

In the short run inflation rate has significant negative impact while, exchange rate has positive significant effect on value of deals broad money supply and unemployment have a non-significant effect on value of deals. Based on the above result the paper conclude that, there is a long run relationship between market capitalization, value of deals with selected macroeconomic variables. Similarly, in the long run exchange rate, impacted significantly on market capitalization (MC) while in the short run inflation rate and exchange rate impacted significantly on MC. In the same vein, in the long run inflation rate, and exchange rate significantly influenced value of deals (VOD) while in the short run inflation rate, exchange rate impacted value of deals (VOD).

Recommendations

Based on the above statistical result, the paper recommends for policy makers as follows:-

1. Stabilization of exchange rate through the encouragement of exportation of non-oil product for more foreign exchange earning in Nigeria.
2. Reduction of inflationary situation, by engaging on high level of productive activity to reduce the tendency or possibility of too much money chasing few goods in Nigeria.
3. Provision of loan for infant industries, so as to promote employment opportunities as well as reduction of unemployment situation in Nigeria.
4. Regulation broad money supply through the application of fiscal and monetary policies so to control the level of m1 and m2 as well as control inflationary situation in Nigeria.

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