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STOCK MARKET PERFORMANCE AND MACROECONOMIC FUNDAMENTALS IN NIGERIA

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ABSTRACT

Motivated by the need to examine the relationship between stock market performance and macroeconomic fundamentals in Nigeria, the study employed the ex post facto research design and deployed secondary data sourced from the Central Bank of Nigeria statistical bulletin over the period of 1981 to 2018. Crude oil price (COP), Consumer Price Index (CPI), Gross Domestic Product (GDP) and Money Supply (MS) were the research's independent variables while the Annual Market Capitalization (AMC) of the Nigerian Stock Exchange was used as a proxy for stock market performance. Analytical techniques employed for this study included the Unit Root test, Johansen's Cointegration, Error Correction Model, and Granger causality test. The study found a significant positive relationship between COP, MS, and AMC, a significant negative relationship between CPI and AMC, and a significant relationship observed between GDP and AMC. It revealed further the presence of a long-run relationship between the dependent and independent variables and that disequilibrium in the stock market is offset by changes in macroeconomic fundamentals studied in the long run. It also revealed a unidirectional relationship between AMC and MS, a bidirectional relationship between GDP and AMC, and no causality between COP, CPI, and AMC. The study recommends the need for increased output since it is what constitutes a country's GDP which is a vital factor investors look at before investing in a stock market, on the other hand, the stock market should improve on its information dissemination function to enlighten corporate organizations about their core function which if properly utilized, will give corporate organizations access to long-term funds that will enable them to increase stock market performance.

KEYWORDS

Crude Oil Price, Consumer Price Index, Gross Domestic Product, Annual Market Capitalization.



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Introduction

The market for finance is defined as a form of exchange of financial products (Ajie, Ezi, Akekene&Ewubane2006) and has different categories (money and capital market). Financial markets are institutions and arrangements bringing together financial asset buyers and sellers. Economic savings are properly allocated in an economy as a basic function of the financial market. This means collecting funds from an economic saving surplus agent to lend to the economic agents in deficit. In developing countries, the massive transformation within the economic system, fast growth and increasing privatization and globalization make up the role of financial markets very important (Kumar, Deepak & Singh, 2015).

Money market and the capital market are the two categories of the financial markets. Our emphasis is on the capital market as it is a market designed specifically for long term funds. Without a well-functioning stock market, the capital market is like a cell without a nucleus, which Aigheyisi and Edore (2014) describes as being dead! Stock market is an offshoot of the capital market where existing owners of shares can transact with potential buyers through a stock broker. Kumar et al (2015) stressed that the stock market today is seen as a major part of the financial system as a whole. A stock market, which is part of the capital market, plays a major role in financial intermediation in developed and in developing countries by providing the listed companies with long-term capital so that they can pool investors' funds. Ogunde, Elumilad and Asaolu (2007) made it clear that the stock market enables the economies to ensure long-term real capital commitment. In theory and empirical literature, a functional stock market was found to be an important factor for the acquisition of the capital needed for sustainable investment in an economy, because it serves to mobilize capital resources and allocate the capital resources of the country among different alternative competitive uses (Okonkwo, Ogwuoru&Ajudua 2014).

The goal of any particular economy is, among others, to achieve single or multiple macroeconomic goals, such as market stability, strong growth levels, and high savings levels and expenditure. The scope of a full economic system is macroeconomics. The activities in macroeconomics studied within the economy result from the interplay of multiple microeconomic agents. Thus, the microeconomics analysis is well-established in macroeconomics. Onoh, (2007) opined that "economic activities do not emerge in a vacuum but are encouraged to increase or fall to the lowest degree through macroeconomic endogenous policies or fall within a country's domestic borders and through direct or indirect consequences of the non-compliance with other countries' macro-economic policies." The optimal role of a specific sector is primarily due to the favorable indices of such macroeconomic behavior in an economy such as Nigeria.

Ghulam, Sayyed and Abdul (2015) argued that each economy coexists in this modern age with various external and internal shocks. The economic outcome depends upon conventional knowledge on two key factors: national political and macroeconomic stability, which generates investor trust and focuses attention on domestic and international capital, and the evolution and revolution of the current financial sector. Academic literature and stock market performance at both national and international level have been drawn attention to Fama's work (1970), when the phrase 'efficient market' was used to describe a market where all the information available reflects stock prices on the market. In other words, the stock market is informed efficiently.

Stock market performance is one of the most important dynamics affecting a nation's economic progress and may have practical implications in achieving preferred outcomes for macroeconomic foundations. Ideally, macroeconomic principles are fundamental forces that move the stock market to help investors and traders gain a market understanding. Stock market reveals daily, weekly, quarterly and annual behavior and as well as responding to internal and external development (Udoka & Ibor 2014). Researches on stock market performance and macroeconomic fundamentals ranges from national studies (Shohani 2018; Debas & Amalendu 2015; Okoro 2017), etc, to continental studies, or country-specific (Mohamoud, Sara & Khaled 2015; Worlu & Omodero 2017) etc. while in Nigeria, variables such as currency exchange, interest rates, money supply, GDP, the industrial production indicators, and inflation rate were used as different macroeconomic indicators at different interims by Okoro (2017), Omodero and Mlaga (2019) and Mba, Okoli, and Amassoma (2017). The key issue is the prevalence of a wide variety of views on their empirical findings about the link between macroeconomic fundamentals and the performance of stocks, with different macroeconomic bases and proxies for stock market performance.

Given the variables gap in recent years and in view of recent data, it becomes imperative to undertake an empirical study in Nigeria to determine how information on macroeconomic fundamentals promotes, strengthens or encourages stock market performance on crude oil prices, consumers' prices, the gross domestic product and the financial supply and to know the order of kinship between macroeconomic fundamentals and stock market performance within Nigeria. Stock market performance was proxied with Annual Market Capitalization (AMC) of the Nigerian Stock Exchange.

Literature Review

Conceptual Review

Nigerian Stock Market Performance

The Nigerian stock exchange according to Wikipedia is the second biggest in Africa, with a combined market capitalization of N21.8 trillion by 169 listed firms in 2018. NSE reports details on listed firms on, weekly, yearly, quarterly and annual basis. Within the 2018 market assessment and 2019 perspectives at Stock Exchange House, the NSE Chief Executive Officer reported that within the year 2019 the exchange began at an all-share index (ASI) record, attaining the high 10-year peak of 45,092.83 in January 2019. He further claimed that the exchange strategy, which was due to distortion in many macroeconomic conditions, decreased the equity-market capitalization and the ASI by 17,81 percent to 13,8 percent to close to 31430,50 and N11,73 trillion.

Onyema (2019) in his 2018 work revision shows that, in an attempt to fund fiscal and infrastructural deficits, the federal government was dominated by capital increase, borrowing ₦1.16 trillion, states ₦ 125.59 billion and ₦ 31.47 trillion by firms. He also pointed out that the Nigerian Federal Government in a bid to fund vital infrastructure across the nation, listed ₦100 billion Ijara Sukuk. The federal and state governments combined were the biggest market seeker of the fund, as during his reporting time they collected ₦142 trillion.

The all-share index improved over the years with 127.3 in 1985, 513.8 and 811.0 in 1990 and 2000. From 2010 to 2013, the boom in crude oil prices coincided with an increase of the all-share index that reported 41,329 in 2012. In 2016 the number decreased by 65% and the foreign crude oil price decreased by 26874.2. NSE reported 2.7 billion Annual Market Capitalization in 1985, 466.10 billion

for 2000 and 13,266.0 billion for 2012, market capitalization dropped by 69.9 percent in 2016 and documented 9,246.92 billion.

In terms of process and operating structure, the Exchange has progressed through the years. Olushegun, Oluwatoyin, and Fagbeminiyi (2011) emphasized that the Automated Trading Method (ATS) is supplemented by bids and offers matched to those of the Exchange's trading floor by the IT network. The computerized trading mechanism currently in operation enables inventors to exchange in their respective offices from computer terminals. The stock exchange's floor is often operational and profits from physical contact with other stockbrokers, an absolute prerequisite within the stock market powered by facts.

Concept of Macroeconomics

The goal of any particular economy is, among others, to achieve single or multiple macroeconomic goals, such as market stability, strong growth levels, and high savings levels and expenditure. The scope of a full economic system is macroeconomics. In a wider scope, it includes data regarding proprietary practices within the economy used within the wider context in determining the economic overall performance. Data obtained and evaluated from the dominant operations help to determine both the aggregate efficiency of an economy and the financial market within the economy. It also discusses cyclical fluctuations and patterns in main variables such as domestic gross output, inflation rate, public expenditures, the price of crude oil etc. The activities in macroeconomics studied within the economy result from the interplay of multiple microeconomic agents. Thus, the microeconomics analysis is well-established in macroeconomics.

Onoh, (2007) found out that "economic activities do not emerge in a vacuum but are encouraged to increase or fall to the lowest degree through macro-economic endogenous policies or fall within a country's domestic borders and through direct or indirect consequences of the non-compliance with other countries' macro-economic policies." The optimal role of a specific sector is primarily due to the favorable indices of such macroeconomic. For example, the total economy production is determined by gross domestic product. Gross domestic product being the amount of products and services produced by a typical economy. This is frequently released quarterly or on an annual basis which takes into account the rate of growth over the stated duration. It is the main measure of an economy's intensity and usually suggests high or low economic development in an economy.

The rate of inflation is also regarded as the price index for customers to calculate price increases dependent on a price level. The measure of consumer prices is the most widely used. A rise within the index on consumer prices suggests inflation and high prices have continued to reduce consumer consumption, which would impact any segment of the economy and its overall output. The probability of deteriorating economic health would be indicated by a consistent rise within the average price cost. Stock of money is one of the instruments accessible to a Central Bank of the Country. Crude oil represents a crude derivative that is naturally unrefined and can be processed in order to create goods that are functional such as gas, diesel and other petrochemicals. It comprises about 99% of the country's export earnings, as well as about 75% of Federal Government income from crude oil-related operations. Nigeria is the largest crude oil production nation in Africa. Crude oil accounts for a large percentage of the GDP of Nigeria, rendering it a big element within Nigerian economy since the shifts in its price have a number of multiplier effects for any segment of Nigeria's economy.

Theoretical Review

Theoretically, this study is based on one of the variants of the Efficient Market Hypothesis (EMH) developed by Fama (1970).

The Efficient Market Hypothesis: The term “efficient market” was first used by Fama (1970) who said that: “in an efficient market, on the average, competition will cause the full effects of new information on intrinsic values to be reflected instantaneously in actual prices”. Fama (1970) defined an efficient market as “a market where prices always reflect all available information”. Indeed, profiting from predicted price movements is unlikely and very difficult as the efficient market hypothesis suggests that the main factor behind the stock market performance is the arrival of new information which might be in respect to some certain changes in the prevailing macroeconomic fundamentals. Kolapo et al (2018) stressed that the concept of Efficient Market Hypothesis was defined as the market which adjusts speedily to the available information. They stressed further that the value of stock in the market is a linear function of the information available to the investing public.

However, there are different kinds of information that influence stock market performance. Consequently, the efficient market hypothesis was stated in three variations namely: the weak form hypothesis, semi-strong form hypothesis and the strong form hypothesis depending on what the term “available information” means. They are further explained below.

- i. **The weak-form or random walk hypothesis:**-The weak form hypothesis states that the current price of any security is fully reflected by historical information of its price sequence. Dependra (2017) logically links random walk hypothesis to a drunken person's path of walking because the person is impaired and his walk will not follow any predictable path and that stock prices change randomly concerning historical information making it impossible to predict.
- ii. **The semi-strong hypothesis:** - This states that the current price of securities is not only a function of historical information but as well a function of all available information about the traded stock in the market. It further implies that share price adjusts to publicly available new information very rapidly and in an unbiased fashion such that no excess return can be earned by trading on that information.
- iii. **The strong-form hypothesis:** - This states that insider information cannot be used to out-do other investors consistently in the stock market. The strong-form hypothesis reflects all information (public and private) and that no one can earn excess returns by privy of that information consistently.

This study is theoretically based on the semi-strong hypothesis since it is the most convenient.

Empirical Review

Several studies linking macroeconomic fundamentals to stock market performance exists in the extant literature. Nijam, Ismail and Musthafa (2015) in investigating the relationship between macroeconomic variables and stock market performance, used the macroeconomic variables of gross domestic product, inflation which they proxied with wholesale price index, interest rate, balance of payment, and exchange rate why stock market performance was measured with the Sri Lanka market index. They employed the multiple regression technique to estimate the parameters of the regression

model. Their results showed that stock market index significantly and positively relates to gross domestic product, exchange rate and interest rate while it was negatively related to wholesale price index and that balance of payment was insignificant in determining stock market performance. Shohani (2018) also reveals that inflation and exchange rate among other variables have an inseparable impact on the performance of the stock market in Sri Lanka. Golam, Wali, Asraful, Sohan and Kanon (2017) studied the effect of macroeconomic variables on the stock market performance of Bangladesh, India, Pakistan, Sri Lanka, Maldives and Nepal. They collected annual panel data for the period covering 2005 to 2016 on independent variables of exchange rate, foreign currency reserve, inflation, money supply and interest rate while the dependent variable was the index of all the stock markets in the various countries stated. They employed the Ordinary Least Square (OLS) multiple regression technique of analysis and reported that all the macroeconomic variables studied are statistically significant in affecting stock market performance in the countries except inflation and money supply.

In a study of the impact of macroeconomic indicators on the Indian stock price within the period of 1979 to 2014, Giri and Joshi (2017) used GDP, oil price, CPI, exchange rate, FDI and interest rate as independent variables while the Bombay stock exchange index was used as the dependent variable. They deployed the ARDL approach to cointegration and the Vector Error Correction Model (VECM) for the long-run causality as well as the variance decomposition to predict long-run exogenous shocks of the used variables. They reported a long-run relationship between the studied variables. They reported further that GDP, inflation rate and exchange rate do have a positive influence on stock price while crude oil price has a negative influence on the stock price. Their VECM showed a short and long-run unidirectional causality from GDP to FDI. In same vain, Dedasish and Amalendu (2015) in their study on the impact of selected macroeconomic variables on the stock market in India for the period of 1997 to 2015 collected monthly time-series data from the reserve bank of India. The study employed the statistical tools of Johansen cointegration, ADF test and the correlation statistics on the independent variables of crude oil price, exchange rate, domestic gold price, real interest rate and the wholesale price index while the indices of the India stock market as the dependent variable. Their result reveals that the Indian stock market indices reactions to shocks in crude oil price, exchange rate, real interest rate and wholesale price index were positive. In similar study in India, Venkatraja (2014) reported that all the explanatory variables studied had high degree of positive influence on the market index and that market index is inversely influence by changes in gold price and all the variables except industrial production index are statistically significant. Seyed, Zamri and Yew (2011) also reported a short and long-run linkage between the studied macroeconomic variables and stock market index in China and India.

Issahaku, Ustarz and Domanban (2013) in examining the existence of causality between macroeconomic variables and stock returns in Ghana using monthly time series data from January 1995 to December 2010, employed the analytical tools of unit root test to determine the stationarity of the data, the Vector Error Correction Model (VECM) to establish long and short-run relationship between stock performance and macroeconomic variables, the Granger causality test as well to determine the existence of causality and the impulse response test to establish the stability of the relationship between the dependent and independent variables. They reported the existence of a long-run relationship between inflation, money supply, Foreign Direct Investment (FDI) and stock market performance. They reported further that in the short run, a significant positive relationship exists between stock returns and macroeconomic variables of interest rate, inflation and money

supply and that causality flows from inflation and exchange rate to stock returns and as well from stock returns to money supply, interest rate and FDI. Gatsimbazi, Jaya, Patrick and Amos (2018) in Rwanda observed that GDP, inflation rate and exchange rate have a negative significant relationship with stock market performance while interest rate was negatively insignificant to Rwanda's stock market performance proxied by its market capitalization. Khanyisa, Kapingura and Makletha (2016) through their study stressed that changes in money supply, interest rate, inflation rate, exchange rate and government expenditure are transmitted into the stock market in South Africa.

In the study of macroeconomic factors and stock market performance in Nigeria for 1986 and 2015 using GDP, money supply, interest rate, and exchange rate as the explanatory variables, while the all-share index was used as a measure for the independent variables on the statistical tool of the Ordinary Least Square (OLS), Okoro (2017) observed that the combination of the selected macroeconomic factors cannot be used to predict performance in Nigerian stock market. He concluded that stock prices cannot be explained by macroeconomic factors. In similar study, Omodero and Mlanga (2019) reported that exchange rate and interest rate do not have a significant impact on all share price index while inflation rate has a significant negative impact on all share price index and they reported GDP to have a significant positive relationship on stock market performance in Nigeria while Mba, Okoli and Amassoma (2017) employed VAR model and observed a response of all share index to one standard deviation in inflation rate, interest rate and GDP and that the said independent variables were all fluctuating while those of exchange rate and industrial production index were found to be stable over the period of their study. Kolapo, Oke and Olaniyan (2018) reported that money supply and GDP have a significant impact on stock market performance. They stressed further that all the features in their study except money supply and interest rate related positively to stock market performance and they also observed the presence of a long-run relationship between the dependent and independent variables. Daasi, Dimoji, Collins and Sira (2015) through their study also reported existence of strong relationship between selected macroeconomic variables and stock market performance in Nigeria and they conclude that stock market might be very sensitive to macroeconomic factors.

Mahmond, Sara and Khaled (2015) studied the impact of macroeconomic variables on stock market of an emerging markets focusing on Egypt and Tunisia for the period of 1998 to 2014. They deployed the statistical tools of the unit root test, Vector Auto Regression (ADR) and the cointegration on the explanatory variables of interest rate on deposit, consumer price index, exchange rate and money supply while the market index were used to proxy stock market performance for the respective countries. They reported a causal relationship between market index and consumer price index, exchange rate, money supply and interest rate in Egypt market and same for Tunisia except for consumer price index. Both markets according to the findings showed a long-run relationship between the dependent and independent variables. In a comparative analysis of macroeconomic variables and stock market performance in Africa focusing on Ghana, Kenya, South Africa and Nigeria, Worlu and Omodero (2017) used the various market index as a measure for stock market performance and the independent variables of GDP, inflation rate, and exchange rate were deployed on a multiple regression analysis. They reported a negative impact of GDP, inflation rate and exchange rate on the share index of Nigeria and they also reported an insignificant relationship for all the variables. Their South Africa result revealed a negative relationship between GDP and inflation the South Africa stock market index while exchange rate showed no impact. They reported further

that exchange rate had a negative impact on the market index while GDP and inflation had no impact in their analysis for Kenya.

Masood (2014) studied oil price fluctuation and stock market performance in Pakistan with the Pakistan stock market index as a measure for stock market performance. He included exchange rate and foreign private portfolio investment to strengthen the predictive power of his model, the result showed that oil price, exchange rate and foreign private portfolio investment have a positive correlation with stock market performance. In the same vein, Tarak and Kalpataru (2014) in their study on crude oil price, exchange rate and emerging stock market with evidence from India reported a long-run cointegrating relationship between crude oil price and Indian stock indices. Udoka and Nkamare (2016) observed that crude oil domestic production had a positive and insignificant effect on market capitalization and that crude oil export had a small inverse effect on the Nigerian capital market. Yosua and Taufik (2016) reported that there was no relationship between crude oil price and Indonesian stock. Iheanacho (2016) studied the dynamic relationship between crude oil price, exchange rate and stock market performance in Nigeria, employed a multivariate vector error correction model and testified a short-run positive relationship between stock market and crude oil price and that the directional relationship is from crude oil price to stock market.

Ogiri, Amadi, Uddin and Dubon (2013) in their study on oil price and stock market performance in Nigeria, adopted the econometric data analysis procedure for the period of 1980 to 2009 and employed econometric tools of cointegration, unit root test and the vector error correction mechanism. They used the stock prices, market capitalization and the number of listed stocks to represent stock market performance and the explanatory variables of oil price, GDP, exchange rate, Investment and monetary policy rate. Their results showed that changes in oil price exert an important factor in explaining stock price movements and that there exists a significant link between oil price and stock market performance. Ojikutu, Onolemhemhen and Isehunwa (2017) reported that fluctuation in oil prices does not directly affect the performance of stock market and that oil price and exchange rate do have an impact on all share index which they used to measure stock market performance.

In a study on the impact of oil price on stock markets with evidence from Gulf Cooperation Council (GCC) comprising of Kuwait, Bahrain, Qatar, Oman, KSA and UAE, Abdulrahman and Ahmed (2016) employed analytical tool of Auto Regressive Distributive Lag model (ARDL) to analyze monthly oil and stock market data between November 2006 and February 2015 for the listed GCC countries. They reported that they were no evidence of cointegration in all GCC countries studied except for Oman where a cointegrating relationship existed. They further reported the presence of a short-run relationship between oil prices and stock market prices. In exploring the relationship between crude oil price and stock prices in Sub-Saharan Africa with Nigeria as a case study and using econometric tools of cointegration and the restricted vector autoregressive approach. Amassoma and Ogbuagu (2018) proxied stock price with the Nigerian stock exchange all share index while the independent variables include the real exchange rate and oil price. They reported a very little correlation between oil price and stock indices and that causality is flowing from crude oil price and real exchange rate to stock indices.

Furthermore, Izunobi, Nzotta, Ugwuanyi and Ozurumba (2019) studied the effect of exchange rate, interest rate and inflation on stock market return volatility in Nigeria using monthly data from 1995

to 2014. They the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) and the Exponential GARCH model (EGARCH) to capture the effect of exchange rate, interest rate and inflation on stock market return volatility. Their results showed that the interest rate has a negative relationship with stock market returns while the inflation rate and exchange rate showed a positive relationship with the stock market return. In determining the impact of stock market performance in Zimbabwe between 1980 and 2008, Mbulawa (2015) employed the Vector Error Correction Model (VECM) approach to test for the dynamic relationship in the short and long run among the variables. The findings according to them supports Fisher's Hypothesis and those stocks did not offer perfect protection from the effect of inflation over the long period. While Ahmed and Igbinovia (2015) observed through their study that the inflation rate has a negative but weak impact on stock returns. In other words, inflation is not a strong predictor of stock market returns in Nigeria and Lawal (2016) reported an absence of a long-run relationship between stock returns, inflation and exchange rate.

Materials and Methods

Research Design: The ex-post facto research design (after-the-fact) in line with econometric procedure was adopted in this study because the study was based on published data from the Central Bank of Nigerian (CBN) statistical bulletin and Organization for Petroleum Exporting Countries (OPEC) website for the variables under study for the period of 1981 to 2018.

Data and Variable Description

Data on Annual Market Capitalization in Billion Naira, Annual Average Crude Oil Price in Naira, Consumer Price Index, Gross Domestic Product in Billion Naira and Money Supply in Billion Naira for the period of 1981 to 2018 is used in data analysis (See Appendix I).

Model Specification

Relying on the efficient market hypothesis (semi-strong hypothesis) as earlier stated, the functional model is thus stated below.

Stock Market Performance = f (Macroeconomic Fundamentals)..... (1)

This can be further expressed as follows by introducing Annual market Capitalization of the Nigerian Stock Exchange as our proxy for stock market performance which is justified following the works of Dassi, Dimoji, Collins and Sira (2015) and Gatsimbazi, Jaya, Patrick and Amos (2018) and the inclusion of crude oil price, consumer price index, gross domestic product and money supply as our selected macroeconomic fundamentals justified through studies of Debasish and Amalendu (2015), Khanyisa, Kapingura and Makhetha (2016), Giri and Joshi (2017), Okoro (2017), Shohani (2018). The model is

$AMC = f(COP, CPI, GDP, MS)$ (2)

The above mathematical expression can further be transformed into an econometric equation as follows;

$AMC = \beta_0 + \beta_1 COP_t + \beta_2 CPI_t + \beta_3 GDP_t + \beta_4 MS_t + e_t$ (3)

Where:

AMC = Annual Market Capitalization

COP = Crude Oil Price

CPI = Consumer Price Index

GDP = Gross Domestic Product

MS = Money Supply

β = Beta Coefficient

e_i = Error Term of the Estimate.

t = Implies that the data are times series

Methods of Data Analysis

The objective of this study has been to empirically determine how information on selected macroeconomic fundamentals promotes, reinforce or supports stock market performance and to determine the direction of the association if any between them. To ascertain that, the following statistical tools with the aid of econometric software (Eviews 10) were employed to aid the analysis. They are discussed below;

Stationarity Test: Brooks (2008) defines stationarity test as one with a constant mean, constant variance and constant auto-covariance for each given lag. The stationarity test ensures that there is no presence of shock in a series and to avoid spurious regression results. The Augmented Dickey Fuller (ADF) test developed by two statisticians (David Dickey and Wayne Fuller) is widely deployed to determine the stationarity of a series. It is accepted that the series is stationary should the ADF statistics be greater than the given critical values at 1%, 5% and 10% levels of significance respectively.

Cointegration Test: Two or more variables are expected to have some long-run association with one another. Brooks (2008) defined the long run employed in econometric as variables that have converged upon some long-term values and are no longer changing. The Johansen cointegration test will be deployed to determine if there represents a presence of converged long-term values that are no longer changing between our dependent and independent variables. A higher value for the trace statistics, when compared with the associated critical value, will signify the presence of a converged long term values that are no longer changing.

Error Correction Model or Equilibrium Correction: The error correction model represents a time series regression model deployed to exhibit an equilibrium relationship. It links the equilibrium association between two-time series implied by cointegrated variables towards their long term equilibrium value. This will be deployed to determine the speed at which the explained variables adjust back to equilibrium after distortions.

Granger Causality Test: According to Wikipedia, the granger causality test was first proposed in 1969 by Clive Granger. It describes the causal association between variables in econometric models. The application of this tool will help us to determine the directional causality between our dependent and independent variables. In other words, it will help us to know how the dependent and independent variables supports each other within the growth processes. It is expected that there represents a presence of causality should the probability value of the result be less than a 5% level of significance.

Presentation of Results

Unit Root Test

The Unit Root Test tests the study's variables to determine their order of integration and to avoid spurious results. The Augmented Dickey Fuller (ADF) test is deployed to determine the stationarity of our time series data set employed within the course of this research. The summary of the ADF test is presented within the Table 2 below.

Table 1: Unit Root Test Result

Variables	ADF Statistic	Mackinnon Critical value at			Probability	Order of Integration
		1%	5%	10%		
AMC	6.119	3.627	2.946	2.612	0.0000	1(1)
COP	4.423	3.633	2.948	2.613	0.0012	1(1)
CPA	6.306	3.627	2.946	2.612	0.0000	1(1)
GDP	7.785	3.627	2.946	2.612	0.0000	1(1)
MS	4.758	4.235	3.540	3.202	0.0026	1(1)

Source: Extract from E-views 10 Output

From the above result (Table 1), it could be observed that all the variables became stationary after first differencing at critical values of 1%, 5% and 10% respectively. This implies that we are 99% confident that our data set are stationary after first differencing within the order of 1(1) since their various ADF statistics is higher than the critical values at 1%, 5% and 10% respectively.

Johansen's Cointegration Test

The result of the Johansen's cointegration is presented in Table 2 below. Having confirmed the stationarity of the variables within the order of 1(1), we can test for the presence or non-presence of a long-run association between our dependent and independent variables.

Table 2: Johansen's Cointegration Result

Obs	Series	Hypothesized No. of CE(s)	Eigenvalue	Trace statistics	0.05 critical	Prob**
35	D (AMC)	None*	0.893621	164.7022	60.01641	0.0000
35	D (COP)	At Most 1*	0.709592	86.27619	40.17493	0.0000
35	D (CIP)	At Most 2*	0.646897	42.99974	24.27596	0.0001
35	D (GDP)	At Most 3	0.160249	6.564923	12.32090	0.3706
35	D (MS)	At Most 5	0.012836	0.452181	4.129906	0.5647

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Extract from E-views 10 Output

The Johansen's cointegration test is carried out to enable us determine the long-run association between our dependent and independent variables. Brooks (2008) defines long-run in econometrics as variables that have converge upon some long term values and are no longer changing. According to the rule of thumb, a higher trace statistic values when compared with its associated critical value implies the presence of a long run relationship. At 5% critical value, we observed the presence of three cointegration equation and hence conclude that there is presence of long-run association between our dependent and independent variables. In other words, we can conclude that our dependent and independent variables have converged upon some long term values and are no longer changing.

Error Correction Model

The Error Correction Model is deployed to enable us evaluate the speed as the explained variables adjust back to equilibrium after distortions. The table below shows the result of the Error Correction Model.

Table 3: Error Correction Model Result

Dependent Variable: D(AMC)
 Method: Least Squares
 Date: 02/21/20 Time: 16:47
 Sample (adjusted): 1983 2018
 Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	295.8867	350.9943	0.842996	0.4059
D(COP)	0.440401	0.150626	2.923806	0.0065
D(CPI)	-98.13709	25.25776	-3.885423	0.0005
D(GDP)	0.041942	0.035122	1.194156	0.2418
D(MS)	0.947102	0.424927	2.228859	0.0335
ECM(-1)	-0.459905	0.206573	-2.226356	0.0357
R-squared	0.602627	Mean dependent var		608.3067
Adjusted R-squared	0.519732	S.D. dependent var		2108.097
S.E. of regression	1605.850	Akaike info criterion		17.75171
Sum squared resid	77362618	Schwarz criterion		18.01563
Log likelihood	-313.5307	Hannan-Quinn criter.		17.84382
F-statistic	6.063389	Durbin-Watson stat		1.952390
Prob(F-statistic)	0.000542			

Source: Extract from E-views 10 Output

From the Error Correction Model result above, the coefficient of the ECM is 0.459905 with its associated negative sign. This shows that 45.99% of disequilibrium in Annual Market Capitalization (AMC) is offset within the year by changes in our independent variables (Crude oil Price, Consumer Price Index, Gross Domestic Product and Money Supply). The coefficient of determination adjusted R-squared of 0.519732 indicates that about 51.97% of the variations in Annual Market Capitalization within the long-run, is accounted for by variations within the independent variables of the study. All our explanatory variables (Crude Oil Price Consumer Price Index, Gross Domestic Product and Money Supply) agree with our Apriori expectation. Though Gross Domestic Product is positive, it is insignificant. The Durbin-Watson statistics is within the acceptable region of 1.5 and 2.0.

Pair-wise Granger Causality Test

The Pair-wise Granger Causality test is presented within the Table 5 below to determine the direction of causation (if any) between the variables.

Table 4 Pair-wise Granger Causality Test Result

Pairwise Granger Causality Tests
 Date: 02/21/20 Time: 16:50
 Sample: 1981 2018
 Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
D(COP) does not Granger Cause D(AMC)	36	2.37288	0.1330
D(AMC) does not Granger Cause D(COP)		3.13671	0.0858
D(CPI) does not Granger Cause D(AMC)	36	1.76346	0.1933
D(AMC) does not Granger Cause D(CPI)		3.35665	0.0760
D(GDP) does not Granger Cause D(AMC)	36	14.4793	0.0006
D(AMC) does not Granger Cause D(GDP)		6.25443	0.0175

D(MS) does not Granger Cause D(AMC)	36	1.80653	0.1881
D(AMC) does not Granger Cause D(MS)		9.19180	0.0047

Source: Extract from E-views 10 Output

Having stated our causality objective, questions and hypotheses, it is imperative we conduct the causality test as to know the directional association between our dependent and independent variables. From Table 4 above, we observed that causality is not flowing between Crude Oil Price and Annual Market Capitalization and Consumer Price Index and Annual Market Capitalization given their respective probability value of above 5% critical value. In other words, it shows that the variables (Consumer Price Index and Crude Oil Price) do not promote nor support Annual Market Capitalization within the growth process either does Annual Market Capitalization promote nor support them. The Gross Domestic Product and the Annual Market Capitalization appears to have a bi-directional causality given their less than 5% probability figure observed. This implies that both promote/support each other within the growth process. The Annual Market Capitalization and Money Supply recorded a uni-directional association which implies that causality is flowing from Annual Market Capitalization to Money Supply. It reveals further that Annual Market Capitalization supports/reinforce Money Supply while Money Supply does not support nor reinforce Annual Market Capitalization within the growth process.

Discussion

The result revealed the presence of a long run association between our dependent variable (annual market capitalization) and the independent variables (crude oil price, consumer price index, gross domestic product, and money supply). This implies that the dependent and independent variables have converged upon some long-term values and are no longer changing. The result of the causality test carried out also reveals the presence of a parasitic association between annual market capitalization and money supply while a complimentary association was also observed between annual market capitalization and gross domestic product within Nigeria.

The error correction estimate showed a negative coefficient and was significant which implies that the disequilibrium in annual market capitalization is offset by changes in our explanatory variables. Within the estimate, crude oil price and money supply showed a significant and positive association with the dependent variable which implies that an increase in them will bring about a change in annual market capitalization while consumer price index which showed a negative and significant association meaning that an increase in consumer price index will negatively affect annual market capitalization. The gross domestic product showed an insignificant association with annual market capitalization implying that changes in gross domestic product do not have impact on annual market capitalization.

Conclusions

The association between stock market and macroeconomic fundamentals has been established theoretically and empirically. It has been reported in developed countries the consistency within the findings while the case of the developing countries is not the same with findings of the association between stock market and macroeconomic fundamentals. The findings of this study is not far from that as we conclude from the findings of this study that stock market and macroeconomic fundamentals do exhibit a long-run association between them and that disequilibrium within the stock market is offset by changes in macroeconomic fundamentals studied. The study also concludes

that changes in crude oil price and money supply have a direct positive association with stock market within Nigeria and can be said to be valuable in explaining stock market performance within Nigeria. Whereas, changes in consumer price index which was our proxy for inflation rate have a negative effect on stock market within Nigeria while changes in gross domestic product do not have effect on stock market within Nigeria between the period the study covered.

Recommendation

Given that the Stock market is saddled with the responsibility of providing an enabling environment and the needed machinery that will facilitate borrowing by both the government and the corporate world for investment purposes and given our findings of insignificant association between gross domestic product and stock market. The study recommends that individuals, corporate organizations and public corporations should work harmoniously in increasing the value of goods and services within Nigeria as it is what constitutes a country's gross domestic product since it represents a vital tool investors look at before investing in a stock market and on the other hand, the stock market should improve on their information dissemination function as to enlighten corporate organizations about their core function which if properly utilized, will give corporate organizations access to long-term funds that will enable them invest in activities that will enable them produce more goods and services which will in turn increase gross domestic product and possibly improve the association between gross domestic product and stock market within Nigeria.

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Appendix I

Data on Annual Market Capitalization in Billion Naira, Average Annual Crude Oil Price in USD, Average Annual Naira to USD Exchange Rate, Consumer Price Index, Gross Domestic Product in Billion Naira and Money Supply in Billion Naira for the period of 1981 to 2018.

YEAR	1 AMC (N'B)	2 COP(\$)	3 ER (N -\$)	4 = 2x3 COP (N)	5 CPI	6 GDP (N'B)	7 MS(N'B)
1981	5	34	0.62	21.08	0.49	15,258.00	14.47
1982	5	32.38	0.67	21.69	0.53	14,985.1	15.79
1983	5.7	29.04	0.72	20.91	0.66	13,849.7	17.69
1984	5.5	28.2	0.77	21.71	0.77	13,779.3	20.11
1985	6.6	27.01	0.89	24.04	0.83	14,953.9	22.30
1986	6.8	13.53	2.02	27.33	0.88	15,238	23.81
1987	8.2	17.73	4.02	71.27	0.98	15,263.9	27.57
1988	10	14.24	4.53	64.51	1.51	16,215.4	38.36
1989	12.8	17.31	7.39	127.92	2.69	17,294.7	45.90
1990	16.3	22.26	8.04	178.97	2.44	19,305.6	47.42
1991	23.1	18.62	9.91	184.52	2.75	19,199.1	75.40
1992	31.2	18.44	17.30	319.01	3.98	19,6208.2	111.11
1993	47.5	16.33	22.05	360.08	6.26	19,928	165.34
1994	66.3	15.53	21.89	339.95	9.82	19,979.1	230.29
1995	180.4	16.86	21.89	369.72	20.96	20,353.2	289.09
1996	285.8	20.29	21.89	444.15	23.97	21,177.9	345.85
1997	281.9	18.86	21.89	412.85	26.41	21,789.10	413.28
1998	262.6	12.28	21.89	268.81	29.56	22,332.9	488.15
1999	300	17.44	92.69	1616.51	29.63	22,449.4	628.95
2000	472.3	27.6	102.11	2818.24	33.93	23,688.3	878.46
2001	662.5	23.12	111.94	2588.05	59.53	25,267.5	1,269.32
2002	764.9	24.36	120.97	2946.1	44.93	28,957.7	1,505.96
2003	1,359.30	28.1	129.36	3635.02	54.89	31,709.4	1,952.92
2004	2,112.50	36.05	133.50	4812.68	60.39	35,020.5	2,131.82
2005	2,900.06	50.59	132.15	6685.47	67.37	37,474.9	2,637.91
2006	5,120.90	61.00	128.65	7847.65	73.13	39,995.5	3,797.91
2007	13,181.69	69.04	125.83	8687.3	27.93	42,922.4	5,127.40
2008	9,562.97	94.1	118.57	11157.3	89.66	46,012.5	8,008.20
2009	7,030.84	60.85	148.88	9159.35	102.15	49,856.1	9,411.11
2010	9,918.21	77.38	150.30	11630.21	114.22	54,612.3	11,034.94
2011	10,275.34	107.45	153.86	16533.8	125.97	62,980.4	12,172.49
2012	14,800.94	109.45	157.50	17238.38	141.06	71,714.0	13,893.22
2013	19,077.42	105.87	157.31	16654.41	152.29	80,092.6	15,154.64
2014	16,875.10	96.29	158.55	15266.78	164.40	89,043.6	16,238.52
2015	17,003.39	49.49	193.28	9565.43	180.15	94,145.0	18,525.22
2016	16,185.73	40.76	253.49	10339.86	213.56	101,489.6	21,624.63
2017	21,128.90	52.51	305.79	16057.03	246.38	113,711.6	22,363.43

2018	21,904.04	69.78	306.08	21358.26	261.58	127,762.6	25,079.72
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Source: Central Bank of Nigeria Statistical Bulletin (2018), and OPEC Oil Price Annually (1960-2020)
(www.statista.com/statistics/262858/change-in-opec-crude-oil-price-since-1960/)