

# Macroeconomic Variables and Stock Price Changes in Emerging Stock Market Evidence from Nigeria

Matthew Osedebamhen Moni, Steve Nkem Ibenta, Victor Ike Okonkwo

Department of Banking and Finance, Nnamdi Azikiwe University, Anambra State, Awka, Nigeria

## ABSTRACT

This study investigated macro-economic variables and stock price changes in emerging stock market: evidence from Nigeria. The main objective of the study was to ascertain the major macroeconomic variables that are determinants of stock prices in Nigerian Stock market. Secondary data was collected from CBN Statistical bulletins and used. The co-integration technique was used for the data analysis. The results of the study or findings revealed that Exchange rate has a positive effect on stock prices; Real GDP has a positive effect on stock prices; money supply has negative effect on stock prices on the long run while interest rate, inflation rate, have no significant effect on stock prices. Based on the findings, it is thus recommended as follows: more attention should be paid to credit control and long term supply of money by monetary authorities to stabilize stock prices instead of adopting price stabilization measures. Concerned authorities should tame inflation and interest rates, check stock prices manipulations, ensure the production and promotion of export products; agents of stock market can also predict stock prices by observing trend of output growth consistently of a particular industry and Nigeria government and entrepreneurs should engage in the production of tradable goods rather than only crude oil to create more export for the country and hence boost stock market trading with more investors.

**KEYWORDS:** Stock prices; macroeconomic variables; emerging stock market

## 1. INTRODUCTION

Prior to the late 1980s, developed government and international donors in developing countries held the notion that entrepreneurial functions could be better managed, controlled and regulated by the state ownership by means of production, taxation, licensing and regulations. The eventual consequent of poor performances of the public sector in misallocation of resources, market inefficiencies and negative economic growth led to the re-evolution of the state led development strategy. This led to the liberalization and privatization becoming dominant themes in development strategies especially in Africa and specifically in Nigeria. There has been a sudden turnaround from the previously perceived attitudes towards the private sector which is now regarded as the engine of growth and development. However, the impact of stock market in an economy cannot be understated. This is due to the fact it is often argued that the strength and size of the capital market of the

*How to cite this paper:* Matthew Osedebamhen Moni | Steve Nkem Ibenta | Victor Ike Okonkwo "Macroeconomic Variables and Stock Price Changes in Emerging Stock Market Evidence from Nigeria" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-6 | Issue-1, December 2021, pp.772-782, URL: [www.ijtsrd.com/papers/ijtsrd47503.pdf](http://www.ijtsrd.com/papers/ijtsrd47503.pdf)



Copyright © 2021 by author(s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)

country, which is the ability to raise capital quickly and efficiently. Stock markets all over the world serve as veritable avenues through which funds for both public and private sectors can be raised, mobilized and channelled to the right sector accordingly. Stock markets all over the world serve as an avenue which the funds from both private and public sectors can be raised. Pearce (1983) described the movement of stock prices as indicative of future economic direction which also impacted on the current movement of the economy. Fama (1990) also emphasized that stock markets act as leading indicators of the business cycle, meaning they were good indicators of economic growth path.

Nigeria has been described by the IMF and the World Bank as one of the eleventh countries to watch out for in the next decade. Lucrative investment ventures are rife and development potentials continue to rise.

Impressive growth has been recorded in the emerging capital markets in this petro-dollar rich-sub-Saharan nation of prestigious natural resources offering very attractive opportunities for market operators and investors. Regarded as the second most impressive after South Africa, these markets that had hitherto being closed to foreign investors (functioning/solely as a government auction/trading post for treasury securities and equity shares of statutory corporations and foreign subsidiary companies) have been restructured to civilian rule to allow the participation of free market institutions (Owoicho, 2007). Ghana, Kenyan, South Africa, Egypt, Pakistan are good examples of emerging economies as well as their respective stock markets. The Nigeria Stock exchange has the source of raising funds (capital) for both existing and new firms since its establishment. This means both secondary and primary sources for the secondary market and primary market respectively. Compared to many developed stock markets, the Nigeria Capital market is respectively young but increasingly being viewed as a market to watch. Macroeconomic variables such as inflation rate, interest rate (lending rate), exchange rate, index of industrial production, money supply GDP (real) have always been a concern to many private and public investors and participants of stock trading in Nigeria. There has been a rapid increase in interest rate, exchange rate, inflation rate in Nigeria over the past few years coupled with the movement in money supply. It will be expedient and worthwhile that finding how these have affected the pricing of stocks and the general performance of the stock market in Nigeria is of major concern.

The importance of stock market in providing and efficiently allocating capital for investment and economic growth cannot be ignored. They provide the avenue for capital accumulation and liquidity and therefore are very important to the financial sector of the economy. This is because emerging capital market of Africa including that of Nigeria are also attracting the world attention as a market of the future with a lot of potentials for investors. The literature on stock prices behaviour still provide inconclusive evidence on the factors that determine stock prices behaviour in the more active exchange of New York, London stock exchange, Tokyo bourse and Paris stock exchange or those emerging ones of Nigeria, Cairo and Ghana, South Africa, Kenya, Bangladesh, Pakistan and other Sub-Sahara African Nations. The economic performance of any nation can be traceable to the activities that go on in the stock exchange. Such activities are regarded as indicators of economic performance. Such flurry of activities is measured by the dynamic movements of stock prices in any stock

exchange based on the forces of demand and supply interplay. Equity price determination and behaviours have been attributed to factors such as dividends, Volume of trading, earnings, exchange rates, inflation rate, interest rates and money supply amongst other. While most authors agree on the importance of these factors, the point of departure tends to remain with the hierarchy of each of these factors (Osaze, 2000). The intention therefore, is to ascertain whether these factors identified in the literature are determinants of equity price in the Nigerian capital market.

## 2. LITERATURE REVIEW

The stock market and money market are the major bed rocks of the financial system of any country. The stock market is the market for medium and long term financial securities such as share and bonds. The market is seen as the pivot of major activities geared towards economic development through the role of financial intermediation and the consequent allocation of the resources. The traditional view sees the market as the hand maiden of the industry while the modern view sees the industry as the hand maiden of the stock market, (Odife, 2003). This however, underscores the importance of stock market in economic development. However, there are certain processes that are very indispensably relevant to the success of the stock market. A major process is the price mechanism. History has shown that the price (value) of share and other financial assets are an important aspect of the dynamics of the economic activity performing a vital role in national economies. Stock prices can be an indicator of social mood and are used as a leading indicator of the real economic activity. Rising share prices, for instance tend to be associated with increased business investments and vice versa. Share prices also affects the wealth of households and their consumption. Therefore, economic policy makers keep an eye on the control and behaviour of the stock market and the smooth and risk free operation is essential for economic and financial stability, (Kpanie et al, 2014). Several studies have found a correlation between changes in world economy and macroeconomic variables. The movement of stock market indices is highly sensitive to the changes in expectation about future prospects (Kpanie et al, 2014).

Different theoretical frameworks have been employed by many researchers to link changes in macroeconomic variables with stock market prices/returns variation. These include the semi-strong efficient market hypothesis developed by Fama (1970), the capital asset model (CAPM) developed by Sharpe (1964), Litner (1965) and Mossin (1966) amongst others. CAPM was proposed as a model of

risk and return and the Arbitrage Pricing Theory (APT) developed by Ross (1976). However, this study is restricted to the Efficient Market Hypothesis (EMH). This theory is popularly known as Random walk theory. The theory assumes market prices should incorporate available information at any point in time. The term “efficient market” was first used by Eugene Fama (1970) who said that “in an efficient market on the average competition will cause the new effects of new information on the 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 EMH the efficient market hypothesis suggests that the main factor behind price changes is the arrival of new information.

However, there are different kinds of information that affect security values. The efficient market hypothesis are of three variation- weak form hypothesis, semi strong form hypothesis and strong form hypothesis subject to the term “available information” means. Weak form efficiently implies that information available is restricted to past share prices, returns and trading volumes hence future prices cannot be predicted from historical price data. If the market is weak form efficient, no investors can earn any excess or abnormal return based on historical price or return information. In a weakly efficient market, past price and volume data are already impounded in security prices and no amount of chart reading or any other trading device is likely to outperform the buy and hold strategy (Khoury, 1983, Olowo, 1996) as cited in Ibenta (2005). A market is semi-strong form efficient if all publicly available information is reflected in market prices, hence no investor can beat the market to earn abnormal returns from publicly available information. A market is strong form efficient if all relevant information (public or private) is reflected in market prices; hence nobody can ever profit from any information, not even insider information or information produced by the highly original analyst. Assumptions underlying market efficiency are; there is no transaction cost of trading in securities; information is freely available to all the market participants, all investors have homogenous expectations as to the implications of current information for the current price and distribution of future prices of each security; all the investors have the same time horizon.

With regard to empirical studies, we focused majorly on emerging and developing economies of the world. Arnod (2002). Mohammad (2011) uses multivariate regression model computed on standard OLS formula

and Grange causality test to model the impact of changes in selected microeconomic and macroeconomic variables on stock returns in Bangladesh. He examines monthly data for all the variables under study covering the period from July 2002 to December 2009. The study finds a negative relationship between stock returns inflation as well as foreign remittance while market price/earnings and growth in market capitalization have a positive influence on stock returns. However no unidirectional Granger causality is found between stock returns and any of the independent variables; and the lack of Granger causality reveals the evidence of an informally inefficient market.

Gay (2008) investigates the relationship between stock market index price and the microeconomic variables of exchange rate and oil price for emerging countries (Brazil, Russia, Indian and China) using the Box-Jenkins ARIMA model. He finds no significant relationship between respective exchange rate and oil price on the stock market prices in any of the emerging countries. He concludes that this result suggests that the market of Brazil, Russia, Indian and China exhibit the weak form of market efficiency.

Sabapriya (2012) uses a simple linear regression model and Granger causality test to measure the relationship between foreign exchange reserves and stock market capitalization in India. The results show that causality is unidirectional and it runs from foreign exchange reserves to stock market capitalization and that foreign exchange reserves have a positive impact on stock market capitalization in India.

Fifield et al. (2002) empirically investigates the extent to which global and local economic factors explain returns in thirteen (13) emerging stock markets (EMSMs) and this including Greece, Korea, Mexico, Portugal, Singapore, Thailand, India, Turkey, Chile, Hong-Kong, Malaysia, the Phillipines and South Africa from 1987-1996. This employ the method of principal component analysis and selected six domestic factors, inflation, foreign exchange rates, short term interest rates, gross domestic product, the money supply and the trade balance and six global variables of world market returns, world inflation, commodity prices, world industrial production, oil price and U.S interest rates. A principal component analysis is applied to a large set of domestic and world economic variables in order to reduce the dimensionality in the economic data set to a limited number of core factors and the dominant factors components are extracted and used inputs into regression analysis to explain index returns. The results suggest that three domestic factors including



gross domestic products, money supply, inflation and short term interest rates are priced while only global variables, world industrial production and world inflation hold significant explanatory power of stock returns.

Khan and Khan (2018) on their study of the impact of macroeconomic variables on stock prices in Karachi stock exchange in Pakistan, analyse the monthly data from May 2000-August 2016, using the ideal ARDL approach of bound testing to check the short term and long term co-integration of the macroeconomic variables on stock prices. The findings show that stock prices in the market in the long term are significantly affected by money supply, exchange rate and interest rate. In the short term, all the variables are insignificant except the exchange rate which is negatively co-integrated with stock prices.

Maku and Atanda (2010) conducted a critical analysis of the long run macroeconomic determinants of stock market performance in Nigeria between 1984 and 2007. The augmented Engle-Granger Co-integration Test result revealed that the stock market performance in Nigeria is mainly affected by macroeconomic forces in the long run. However, the empirical analysis shows that the Nigerian stock exchange all share index is more responsive to changes in exchange rates, inflation rates, money supply and real output and hence recommends that investors should pay close attention to exchange rate, inflation, money supply and economic growth rather than treasury bill rate in the long run in their investment decision.

Maysami et al. (2004) examined the long run relationship between stock prices in Singapore and a set of economic variables including exchange rate, money supply, inflation, and industrial production. They found that the stock market index forms a co-integration relationship with changes in the short and long term interest rate, industrial production, prices levels, exchange rate, and money supply.

Garcia and Liu (1999) used pooled data from fifteen industrial and developing countries from 1980 to 1995 to examine the macroeconomic determinants of stock market development, particularly market capitalization. Their study established that that real income, saving rate, financial intermediary development, and stock market liquidity are important determinants of stock market capitalization. Also, they established that macroeconomic volatility does not affect stock market performance. Further, they established that stock market development and financial intermediary development are complements but not substitutes.

Ting et al. (2012) examined the relationships between Kuala Lumpur Composite Index in Malaysia and four macroeconomic variables from January 1992 to December 2011, which contains a monthly data set of 240 observations. Using Ordinary Least Squares (OLS), the results indicated that KLCI is consistently influenced by interest rate, money supply and consumer price index in the short run and long-run. For the crude oil price, the study established that there is a long run linkage with KLCI but it turns to be insignificant in the short run.

Mehwish (2013) conducted a study on Determinants of Stock Market Performance in Pakistan. The data was analysed quantitatively through regression analysis using E-views. Using a time series data for the period between 1988 and 2008, the study established that there is a negative relationship between real interest rate and stock market performance, whereas the banking sector development has no significant impact on stock market performance.

Jahur et al. (2014) studied determinants of stock market performance in Bangladesh. The study used secondary data sources, and applied descriptive measures and linear regression model to analyse the data. The study found that all macro-economic variables such as Consumer Price Index, Interest Rate and Exchange Rate have significant impact on the stock market performance. They concluded with some pragmatic policy measures such as sound macro-economic policy are essential for monitoring interest rate and exchange rate movement.

Aduda, Masila, and Onsongo (2012) investigated the determinants of stock market development. Using secondary data for the period 2005 and 2009. The regression analysis reported no relationship between stock market development and Macro-economic stability - inflation and private capital flows. The results also show that institutional quality represented by law and order and bureaucratic quality, democratic accountability and corruption index are important determinants of stock market development because they enhance the viability of external finance. They concluded that political risk is an important determinant of stock market development.

Mongeri (2011) examined the impact of foreign exchange rates and foreign exchange reserves on stock markets performance at NSE using monthly time series data of NSE share index, foreign exchange rates and reserves for the period 2003-2010. The study established that foreign exchange rates had negative significant impact on stock market performance. Also, the study established that foreign exchange reserves had positive significant impact on

stock market performance. The study also revealed that there is no significant relationship between Foreign exchange rates and foreign exchange reserves.

Songole (2012) examined the relationship between selected macroeconomic variables and stock return at the Nairobi securities exchange. The study focused on Consumer price index (CPI), market interest rate, Industrial Production Index (IPI) and Foreign exchange rate (FEX) using monthly data for a nine-year period between January 2003 and December 2011. The study concluded that market interest rate, consumer price index and exchange rate have a negative relationship with stock return, while industrial production index exhibited a positive relationship.

Ochieng and Adhiambo (2012) contributed to DBA Africa Management Review 2012 with an article, which investigated the relationship between macroeconomic variables on NSE All share index (NASI) seeking to determine whether changes in macroeconomic variables can be used to predict the future NASI. Three key macroeconomic variables included lending interest rate, inflation rate and 91 day Treasury bill (T bill) rate. The secondary data was for the periods March 2008 to March 2012. They established that 91 – day T bill rate has a negative relationship with the NASI while inflation has a weak positive relationship with the NASI. Based on these findings, the study recommended a closer monitoring of the macroeconomic environment since their changes have an effect on the stock market performance.

Studies in developing and emerging markets have grown rapidly in the last few years. Kutty (2010) examined the relationship between stock prices and exchange rates in Mexico using the Granger causality test. He documented that stock prices large relationship with exchange rates in the short run with no long run relationship between these two variables. Similarly, Ali et al. (2010) investigated the relationship between macroeconomic indicators and stock prices in Pakistan. Their results concluded that stock prices co-integrated with industrial production. However, no causal relationship is documented with other macroeconomic variables.

Ahmet and Hasen (2010) examined the long relationship between stock prices and inflation, exchange rate, industrial production, and money supply to find that there is long run causality between those determinants and stock prices in Turkey. In South Africa, Jefferies et al. (2000) tested the influence of economic fundamentals or drivers of stock return in South Africa, Botswana, and

Zimbabwe adopting co-integration and error correction techniques and utilizing quarterly data throughout the 1985 to 1995 period. The finding of the study revealed that the stock market is influenced by economic growth and other variables such as exchange rate and interest rate. Exchange rate has a positive relationship with stock prices and real GDP and is negatively related to interest rate.

Van Rensburg (2005) in a study to uncover the expected influence on macroeconomic variables on the South African stock exchange in Johannesburg using data from 1980 until 1994. The vector autoregressive (VAR) technique was employed and the result reported that stock returns mainly follow the industrial sector. Moolman (2004) investigated whether there is a relationship between stock return and macroeconomic variables using Markov's switching model. The findings documented that stock return is influenced by economic variables. Arjoon et al. (2011) in South Africa tested the long run association between inflation and stock prices using the bivariate VAR. The results indicated that stock prices are invariant to permanent changes in inflation rate. The impulse responses reveal a positive real stock price response to a permanent inflation shock in the long run which implies that any deviations in short run real stock prices will be corrected towards the long run value. Further, Ocran (2007) found that there is co-integration relationship between South Africa stock prices, US stock prices, and exchange rate.

Khanyisa et al (2016) examine the relationship between the stock market and macroeconomic policy variables in South Africa for the period from 1994-2012. The Johansen co-integration test and the restricted VAR model were employed to analyse the relationship between the variables of interest. The chosen method explicitly calculate the disturbance by inverting the estimated structural VAR of the relationship among the contemporaneous VAR residuals. The findings show that there exist a long term relationship between the selected macroeconomic variables and the stock market in South Africa. The results also show that the changes in money supply interest rates, inflation, exchange rate and government expenditures are transmitted into the stock market.

Kibria et al. (2014) examines the impact of macroeconomic variables on stock market return in Pakistan. They considered five macroeconomic variables: inflation, money supply, GDP per capita, GDP savings and exchange rate and found that they all have positive impact of KSE 100 index. They used descriptive analysis, correlation analysis, causality

and regression analysis. Forson et al. (2014) investigated on the topic selected macroeconomic variables and stock market movements. Empirical evidence from Thailand and examine the long run relationship between selected macroeconomic variables and Thai Stock Exchange Index (SETI) using monthly series data from January 1990-Dec. 2009. Money supply (MS), the consumer price index (CPI), interest rate (IR) and the industrial production index (IP) (as a proxy for GDP) macroeconomic variables were included in the analysis. They found that the SET index and the selected macroeconomic variables are co-integrated and have a significant equilibrium relationship with the SET index over the long run whereas the industrial production (IP) and consumer price index (CPI) show negative long run relationships with the SET index.

Establishing the relationship between stock prices and macroeconomic variable. Masrin and Syed (2011) using Dhaka Stock Exchange (DSE), adopting co-integration and Granger causality test found that co-integration exists between stock prices with M1, M2 and inflation rate indicating a long run relationship and unidirectional causality exists from stock market exchange rate and M<sub>1</sub> in the short run, and from bivariate error-correction models long-run causality exists from M<sub>1</sub>, M<sub>2</sub> to stock market and from stock market to inflation rate.

### 3. METHODOLOGY

The *ex post facto* research design was adopted. Secondary data was used. Data were sourced from CBN statistical bulletins. These data include all share index; interest rates, inflation rates, exchange rates, index of industrial production, money supply and GDP. Besides, Nigerian Stock Exchange (NSE) files and publications, as well as some journal publications served as another sources of data for the study. Population include firms listed in Nigerian Stock Exchange (1985-2017). The co-integration technique and the error correction model will be adopted for data analysis justification being that for such data of such trends, and for the avoidance of spurious regression outputs. The co-integration method includes the ordinary least square (OLS) regression method and the unit root test (URT) approach. Time series data are often assumed to be non-stationary and thus it is necessary to ensure that there is a stationary co-integrating relationship among the variable to avoid the problem of spurious regression.

The model of Moni, Ibadi & Okotie (2015) was modified to have the model for the study. The model of Moni, Ibadi and Okotie is as follows

$$ASI = f(INTR, ExCHR, GDP, INFR, IINDP)$$

Where ASI = All share Index which is proxied as equity price, in the Nigeria Stock market and as dependent variable

INTR = Interest rate

ExCHR = Exchange rate

GDP = Gross Domestic product

INFR = Inflation rate

IINDP = Index of industrial production

Hence, the modified model for this study is specified as follows

$$ASI = f(INR, EXCHR, GDP, MS, INFR)$$

$$ASI = \alpha_D + \alpha_1 INTR + \alpha_2 EXCHR + \alpha_3 GDP + \alpha_4 INFR + \alpha_5 MS + e$$

Where ASI = All Share Index of Nigerian stock exchange representing equity prices in the stock market as dependent variable. ASI proxied as stock prices

INTR = Interest or lending rates

EXCHR = Exchange rates

GDP = Gross Domestic Product

INFR = Inflation rates

MS = Money supply

e = Stochastic term or error term

A priori expectation

$$a_1, a_2 < 0, a_3, a_4, a_5 > 0$$

a<sub>1</sub>, a<sub>2</sub> has negative relationship

a<sub>4</sub>, a<sub>5</sub>, a<sub>6</sub> has positive relationship

## 4. RESULT OF DATA ANALYSIS

### 4.1. Descriptive Statistics

The characteristics and the summary of statistics of the data series used in the study are presented in the Table 4.1. It provides information about the means and standard deviations of the variables. The mean ASI stood at 14670.94, while those of EXCHR, GDP, INFR, INTR and M2 are 96.65, 34965.95, 18.94, 23.05 and 5567.45 respectively. All of these variables recorded values of standard deviation that is lower than the values of their respective means with the exception of ASI which is the dependent variable. The probability values of the Jarque-Bera Statistics as presented in the table show that ASI, EXCHR, GDP, INFR, INTR and M2 are normally distributed. All the employed variables have 33 data point observations. Thus, the data set is a long term data.



**Table 4.1: Descriptive Statistics**

|              | ASI      | EXCHR    | GDP      | INFR     | INTR     | M2       |
|--------------|----------|----------|----------|----------|----------|----------|
| Mean         | 14670.94 | 96.65394 | 34965.95 | 18.93879 | 23.05364 | 5567.450 |
| Median       | 7638.600 | 111.9400 | 25267.54 | 12.60000 | 22.39000 | 1269.322 |
| Maximum      | 50424.70 | 359.9900 | 69023.93 | 72.80000 | 36.09000 | 24140.63 |
| Minimum      | 117.3000 | 0.890000 | 14953.91 | 5.380000 | 11.75000 | 22.29924 |
| Std. Dev.    | 14836.19 | 83.66846 | 18828.30 | 17.22972 | 5.153615 | 7732.270 |
| Skewness     | 0.754565 | 0.899775 | 0.668501 | 1.752047 | 0.169233 | 1.222413 |
| Kurtosis     | 2.389514 | 4.133516 | 1.927201 | 5.041677 | 3.455593 | 3.063881 |
| Jarque-Bera  | 3.643978 | 6.219448 | 4.040403 | 22.61479 | 0.442921 | 8.224228 |
| Probability  | 0.161704 | 0.044613 | 0.132629 | 0.000012 | 0.801348 | 0.016373 |
| Sum          | 484141.0 | 3189.580 | 1153876. | 624.9800 | 760.7700 | 183725.9 |
| Sum Sq. Dev. | 7.04E+09 | 224013.2 | 1.13E+10 | 9499.621 | 849.9120 | 1.91E+09 |
| Observations | 33       | 33       | 33       | 33       | 33       | 33       |

#### 4.2. Test for Unit Root of the Variables

Here the study checks whether or not all variables used in the study are stationary. This is presented in the Table 4.2a and 4.2b. Table 4.2a shows that only ASI is stationary while other variables (INTR, EXCHR, M<sub>2</sub>, INFR, GDP) are non-stationary. Therefore, they are highly influenced by time. As a result, the study has to detrend all the variables by taking their first difference. The unit root test shows that all the variables, except DGDP, are stationary, since both DF and ADF statistics are greater than the critical value of -2.9750 in absolute terms. Thus, the influence of trends which characterizes time series data, has been removed.

**Table 4.2a: Unit Root Text at Level**

| Variable       | DF       | ADF      | Critical Value | ADF Lag | Remark         |
|----------------|----------|----------|----------------|---------|----------------|
| ASI            | -4.8919  | -5.1994  | -3.5796        | 1       | Stationary     |
| INTR           | -3.3861  | -3.0239  | -3.5796        | 1       | Non stationary |
| EXCHR          | -1.0314  | -0.91641 | -3.5796        | 1       | Non stationary |
| M <sub>2</sub> | -0.25370 | 0.35866  | -3.5796        | 1       | Non stationary |
| INFR           | -2.6685  | -3.4219  | -3.5796        | 1       | Non stationary |
| GDP            | -1.9273  | -2.5796  | -3.5796        | 1       | Non stationary |

Source: Author's computation

**Table 4.2b: Unit Root Test at First Difference**

| Variable         | DF       | ADF     | Critical Value | ADF Lag | Remark         |
|------------------|----------|---------|----------------|---------|----------------|
| D ASI            | -6.7845  | -7.5789 | -2.9750        | 1       | Stationary     |
| D INTR           | -6.8224  | -6.7900 | -2.9750        | 1       | Stationary     |
| D EXCHR          | -5.0594  | -3.4465 | -2.9750        | 1       | Stationary     |
| D M <sub>2</sub> | -3.4969  | -1.1517 | -2.9750        | 1       | Stationary     |
| D INFR           | -5.0902  | -4.7116 | -2.9750        | 1       | Stationary     |
| D GDP            | -1.96091 | -1.7255 | -2.9750        | 1       | Non stationary |

Source: Author's computation

#### 4.3. Ordinary Least Square

From the Ordinary least square estimation results. The R- square value of 81.3% and the adjusted R square value of 77% shows that about 77 % of variation in the dependent variable ASI is Attributable to changes in the independent variables. While 23% is attributable to unexplained factors as represented by the error term. The F statistics value of 23.54 with a probability value of p = 0.000000 shows that the overall model is significant at 5% level. However, the Durbin Watson value of 0.87 reveals the presence of autocorrelation. Hence the need for further tests.

**Table 4.3: OLS Estimation**

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.    |
|--------------------|-------------|-----------------------|-------------|----------|
| C                  | -3493.375   | 6092.556              | -0.573384   | 0.5711   |
| INTR               | -330.0356   | 283.6021              | -1.163727   | 0.2547   |
| EXCHR              | -0.019189   | 0.021780              | -0.881048   | 0.3861   |
| M2                 | -1.07E-07   | 6.26E-08              | -1.704794   | 0.0997   |
| INFR               | -29.26084   | 84.69565              | -0.345482   | 0.7324   |
| GDP                | 8.16E-07    | 9.23E-08              | 8.838180    | 0.0000   |
| R-squared          | 0.813412    | Mean dependent var    |             | 15686.30 |
| Adjusted R-squared | 0.778858    | S.D. dependent var    |             | 15205.53 |
| S.E. of regression | 7150.508    | Akaike info criterion |             | 20.75072 |
| Sum squared resid  | 1.38E+09    | Schwarz criterion     |             | 21.02281 |
| Log likelihood     | -336.3869   | Hannan-Quinn criter.  |             | 20.84227 |
| F-statistic        | 23.54070    | Durbin-Watson stat    |             | 0.874397 |

#### 4.4. Co-integration Test

Table 4.4 show the long run estimation of the model. From the result EXGHR, M<sub>2</sub> and GDP are the only variables that are statistically significant at the 5% level, while INTR and INFR are not statistically significant. Reporting the significant variables, EXCHR has a positive impact on ASI, showing that as EXCHR increases, ASI also increase. The increase in EXCHR actually shows a depreciation of the Nigerian currency. This depreciation increases the share prices in the stock exchange market. On the other hand money supply has a negative impact on ASI. This means that as the CBN increases money supply through its monetary policy instrument, share prices fall. Although, it is expected to have a positive effect on ASI, because as money supply increases, interests rate is supposed to fall, thereby increasing asset prices. But in this study, reverse is the case. Finally, GDP has a positive impact on ASI which is actually expected. As GDP increases, ASI increase as well.

**Table 4.4: Estimation of Long Run Coefficients**

|                | Coefficient | P- Value |
|----------------|-------------|----------|
| INTR           | -322.13     | 0.103    |
| EXCHR          | 71.52       | 0.019    |
| M <sub>2</sub> | -0.2224E-5  | 0.042    |
| INFR           | -35.7871    | 0.633    |
| GDP            | 0.1467E-5   | 0.001    |
| INT            | -17016.4    | 0.016    |

Source: Author's computation

#### 4.5. Error Correction Test (ECM)

The estimation uses a time of 3 periods. This is to examine the model adjust to equilibrium of any time there is disturbance in the system. Table 4.5a shows the short run estimation of the model used. Here the R<sup>2</sup> is 0.97 showing that about 97% of the total variation in the dependent variable can be explained by the independent variables used. The F statistic of 11.9 shows that the model is properly specified. Finally, the error correction value of -3.14 is statistically significant even at the 5% level. This shows that anytime there is disturbance in the model, it will always adjust to fall back to equilibrium. The coefficient of -3.14 shows that the speed of adjustment to equilibrium is quick and fast.

Table 4.5b shows the long run estimation of the model. From the result EXGHR, M<sub>2</sub> and GDP are the only variables that are statistically significant at the 5% level, while INTR and INFR are not statistically significant. Reporting the significant variables, EXCHR has a positive impact on ASI, showing that as EXCHR increases, ASI also increase. The increase in EXCHR actually shows a depreciation of the Nigerian currency. This depreciation increases the share prices in the stock exchange market. On the other hand money supply has a negative impact on ASI. This means that as the CBN increases money supply through its monetary policy instrument, share prices fall. Although, it is expected to have a positive effect on ASI, because as money supply increases, interests rate is supposed to fall, thereby increasing asset prices. But in this study, reverse is the case. Finally, GDP has a positive impact on ASI which is actually expected. As GDP increases, ASI increase as well.



**Table 4.5a: Error Correction**

| Variable                    | Coefficient | P-Value |
|-----------------------------|-------------|---------|
| <b>Dependent Variable</b>   |             |         |
| <b>ASI</b>                  |             |         |
| <b>Independent Variable</b> |             |         |
| dASI1                       | 0.96573     | 0.110   |
| dASI2                       | 0.32869     | 0.253   |
| Dintr                       | 564.4055    | 0.104   |
| dINTR1                      | 542.6950    | 0.337   |
| dINTR2                      | 614.8904    | 0.065   |
| Dexchr                      | 221.9442    | 0.000   |
| dEXCHR1                     | -360.6258   | -0.015  |
| dEXCHR2                     | -158.8408   | 0.037   |
| dM2                         | -0.1670E-4  | 0.002   |
| dM <sub>2</sub> 1           | 0.6348E-5   | 0.135   |
| dM <sub>2</sub> 2           | 0.1520E-4   | 0.022   |
| dINFR                       | -267.0182   | 0.111   |
| dINFR1                      | 149.4533    | 0.272   |
| dINFR2                      | 230.9854    | 0.042   |
| dGDR                        | -0.7377E-5  | 0.26    |
| dGDP1                       | -0.2145E-5  | 0.209   |
| dINP1                       | -53426.3    | 0.004   |
| ecm (-1)                    | -3.1397     | 0.000   |

$$R^2 = 0.97; F(17;12) = 11.9; Dw. stat = 2.3$$

Source: Author's computation

**Table 4.5b: Estimation of Long Run Coefficients**

|                | Coefficient | P-Value |
|----------------|-------------|---------|
| INTR           | -322.13     | 0.103   |
| EXCHR          | 71.52       | 0.019   |
| M <sub>2</sub> | -0.2224E-5  | 0.042   |
| INFR           | -35.7871    | 0.633   |
| GDP            | 0.1467E-5   | 0.001   |
| INT            | -17016.4    | 0.016   |

Source: Author's computation

#### 4.6. Discussion of Findings

Based on the a priori expectation interest rates has negative relationship and the result shows that interest rate is statistically insignificant as expected. Exchange rate on a priori expectation has negative relationship with ASI contrary to expectation, Exchange rate has positive relationship with ASI. Inflation rate (INFR) on the a priori expectation has positive relationship. Contrary to expectation, result shows it is negatively significant. Money supply (M<sub>2</sub>), RGDP on the a priori expectation have positive relationship with stock prices (ASI). Result shows that a priori expectation is right. In the study of Maku and Atanda (2010) conducted on macroeconomic determinants of stock market performance in Nigeria between 1984 and 2007, test result revealed that the Nigerian Stock exchange all share index (ASI) is more responsive to changes in inflation rates, money supply though contrary to this study broad money

supply (M<sub>2</sub>) lead to increase in interest rates which lead to M<sub>2</sub> having negative impacts on stock prices due to recession (instead of interest rate to fall), exchange rates and real output. The result of this study further confirms their investigation. This study is also in line with that of Khan and Khan (2018) on the impact of macroeconomic variables on stock prices in Karachi stock exchange in Pakistan where their findings shows that stock prices in the long run are significantly affected by money supply, exchange rate and interest rate. The result of this study confirms the study of Ting et al. (2012) in Malaysia on macroeconomic variables as determinants of stock prices in Kuala Lumpur stock market, where result shows that money supply, interest rate and consistently influenced both in the short run and long run the stock prices. The result of this study is partly in line with that of Mehwish (2013) on the determinants of stock market performance in Pakistan Stock market, where the study established a negative relationship between real interest rate and stock market performance on the long run.

#### 5. CONCLUSION

AND

#### RECOMMENDATIONS

Determinants of stock prices in the short and long run implies that a firm with impressive output performance is very likely to experience higher stock prices both in the short and long run and investors most often consider the performance of a firm in terms of turnover in determining investment decision. Another implication is that the level of economic activities (Real GDP) has a strong positive impact on stock prices, therefore a growing economy would experience increased participation in the stock market with spill over to equity prices. The exchange rate has a positive impact on stock prices. However as the exchange rate depreciates, stock prices tend to rise. The rationalisation for this outcome may be observed from the fact that depreciation renders the movement of financial capital from Nigeria to other nations very expensive, hence encouraging investors to invest more in domestic stock market thus leading to increase equity prices, Rising interest rate implies tightening of money supply hence reducing of money supply thereby reducing participation in stock market transaction. This will transmit into fall in the prices of stock. Implying that the government the monetary policy of credit control to impact the price of stock in the stock exchange. Above all, the level, the level of economic activities seems to be very critical in determining stock prices both in the short run and in the long run.

Based on the findings, it is thus recommended as follows: more attention should be paid to credit

control and long term supply of money by monetary authorities to stabilize stock prices instead of adopting price stabilization measures. Concerned authorities should tame inflation and interest rates, check stock prices manipulations, ensure the production and promotion of export products; agents of stock market can also predict stock prices by observing trend of output growth consistently of a particular industry and Nigeria government and entrepreneurs should engage in the production of tradable goods rather than only crude oil to create more export for the country and hence boost stock market trading with more investors.

## REFERENCES

- [1] Aduda, J., Masila, J.M. & Onsongo, E.N (2012). The Determinants of Stock Market Development: The Case for the Nairobi stock. *International Journal of Humanities and Social Science*, 2(9), 214-227.
- [2] Ahmet, B. & Hasen, A. (2010). The causal relationship between stock price and Macroeconomic variables: A case study for Turkey. *International Journal of Economic Perspectives*, 4, 601-610.
- [3] Amold (2002). An examination of the effect of macro-economic variables on Ghana
- [4] Stock Market Returns in Ghana: An unpublished Thesis Submitted to the Dept. of Economics, Kwame Nkrumah University of Science and Technology, Ghana.
- [5] Arjoon, R., Botes, M., Chesang, L. & Gupta, R. (2011). The long-run relationship between inflation and real stock price: Empirical evidence from South Africa. Department of Economics working paper series, University of Pretoria.
- [6] Fama, E. (1990). Stock returns, expected returns and real activity. *Journal of Finance*, 45(4), 1089-1108.
- [7] Fifield, S.G.M., Power, D.M. & Sinclar, C.D. (2002). Macroeconomic factors and share returns: An analysis using emerging market data. *International Journal of Finance and Economics*, 7(8), 51-62.
- [8] Forson, J.A. & Janrantanagul, J. (2014). Selected macroeconomic variables and stock market movements: empirical evidence Thailand". *International Journal of Management, IT and Engineering*. Retrieved from [ssrn.com](http://ssrn.com)
- [9] Garcia, V.F., & Liu, L. (1999). Macroeconomic Determinant of stock prices. *Journal of Applied Economics*, 2(1), 29-59.
- [10] Gay, R. (2008). Effect of Macroeconomic variables on stock market return for four emerging economic: Brazil, Russia, India, and China. *International Business and Economic Research Journal*, 7, 1-8.
- [11] Ibenta, N.I. (2005). Investment analysis and financial management strategy. Institute for Development Studies UNN, Enugu.
- [12] Jahur, M.S., & Khan, M.A (2014). Determinant of stock market performance in Bangladesh. *Indonesian Management and Accounting Research*, 13(1), 16-28.
- [13] Khan, J. & Kham, I. (2018). The impact of macroeconomic variables on stock prices: A case study of Karachi stock exchange. *Business and Economic Journal Online*. Retrieved from [ssrn.com](http://ssrn.com).
- [14] Khanyisa, N., Kapinguru, F.N. & Palesa, M.M. (2016). The interaction between the stock market and macroeconomic policy variables in South Africa. *Journal of Economics*, 7(1), 1-10.
- [15] Kibria, U., Mehmood, Y., Kamran, M., Ashad, M.U., Pervene, R. & Sajid, M. (2014). The impact of macroeconomic variables on stock market returns: A case of Pakistan. *Research Journal of Management Sciences*, 3(8), 1-7
- [16] Kpanie, A.F., Sampson, V.E. & Yakubu, A.S. (2014). Relationship between stock market performance and macroeconomic variables in Ghana. *Issues in Business Management & Economics*, 2(1), 46-53.
- [17] Kutty, (2010). The relationship between stock market price and exchange rate. *North American Journal of Finance and Banking Research*, 4, 1-12.
- [18] Maku, O.A. & Atanda, A.A. (2010). Determinants of stock market performance in Nigeria: Long run analysis. *Journal of Contemporary Research in Business*, 4(5), 1017-18.
- [19] Maysami, R., Howe, L. & Hamzah, M. (2004). Relationship between Macroeconomic variables and stock market indices: co-integration evidence from stock exchange of Singapore's A11-S sector indices. *Journal Pengurusan*, 24, 47-77.

- [20] Mehwish, Z. (2013). Determinant of stock market performance in Pakistan". *Interdisciplinary Journal of Contemporary Research in Business*, 5(5), 1017-1018.
- [21] Mohammed, B.A. (2011). Impact of micro and macroeconomic variables on emerging stock market returns: A case on Dhaka stock exchange (DSE). *Interdisciplinary Journal of Research in Business*. Retrieved from [ssrn.com](http://ssrn.com).
- [22] Mongeri, O. (2011). The impact of foreign exchange rates and foreign exchange reserves on the performance of Nairobi stock exchange share index. Nairobi: university of Nairobi.
- [23] Moni, O.M., Ibadi, A.L. & Okotie, W. (2015). Macroeconomic variables as major determinants of equity values: Evidence from the Nigerian stock market (1989-2013). *African Banking & Finance Review*, 2(1), 15-30.
- [24] Moolman, H. (2004). An asymmetric economic model of the South African Stock market. *University of Pretoria*.
- [25] Motflrnan H. (2004). An asymmetric econometric model of the South African stock market. University of Pretoria.
- [26] Nasrin, A. & Syed, S.H. (2011). A empirical analysis of the relationship between macroeconomic variables and stock prices in Bangladesh. *Bangladesh Development Studies*, 30(4), 40-50.
- [27] Ochieng, D.E. & Adhiambo, E.O. (2012). The relationship between macroeconomic variables and stock market performance in Kenya. *DBA Africa Management Review*, 3(1), 38-49.
- [28] Odife, D.O. (2003). Changing trends in stock exchange and capital market development. Lesson for Africa. Retrieved November 6, 2018 from <http://www.unitar.org.odmresourcescentre/documentseries/doc12/odife>.
- [29] Osaze, B.E. (2000). Nigerian Capital market in the Africa and Global financial system, Benin City. Bofic Consulting Group Ltd.
- [30] Owoicho, A. (2007). Memorial lecture, Reserve Bank of Indian Mumbia, [ww.ecb.int/press/cey/date/2007/html/spot71126/\\_ren.html](http://www.ecb.int/press/cey/date/2007/html/spot71126/_ren.html).
- [31] Pearce, K.D. (1983). Stock Prices and the economy. *Economic review, Federal Reserve Bank of Kansas City*, 9, 7-22.
- [32] Sarbapriya, R. (2011). Foreign Exchange Reserve and its impact on Stock market capitalization: Evidence from India". *Research on Humanities and Social Sciences*, 2(2), 60-72.
- [33] Songole, R.K. (2012). The relationship between selected macroeconomic variables and stock return at the Nairobi securities exchange. Nairobi: University of Nairobi.
- [34] Ting, W. L., Feng, S. C., Weng, T. W. & Lee, W. K (2012). Macroeconomic Determinant of stock market return: The case in malaises. Kuala Lumpur: University Tunku Abdul Rahman.
- [35] Van Rensburg P, & Robertson, M. (2005). Style Characteristics and the Cross-Section of JSE Return. *Investment Analysis Journal*, 57, 7-15.