IMPACT OF SELECTED MACROECONOMIC DRIVERS ON THE BEHAVIOUR OF THE NIGERIAN STOCK MARKET

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ABSTRACT
The behaviour of macroeconomic variables exerts impact on the operations and happenings in the stock market and by extension the economy in general. This study investigated the impact of some macroeconomic variables (real gross domestic product, foreign direct investment, aggregate government expenditure, and real exchange rate) as drivers and catalyst to the performance of the Nigeria stock market, utilizing the time series data from 1986 – 2020. Stationarity test was conducted to determine the order of integration, Johansen cointegration test for long run relationship among the variables. The ARDL-ECM model was specified and estimated to determine the short and long run impacts of the independent variable on the dependent variable. ECM component of the model shows the speed of adjustment from short run disequilibrium to long run equilibrium. Findings reveal the positive impacts of the selected macroeconomic drivers on the performance of the stock market proxied by All share index (ASI) in both short and long run. The study thus recommends deliberate undertaking of policies that will encourage inflows of FDI as well as increase aggregate spending for sustained positive impact on the stock market.
Key words: Impact, FDI, all share index, RGDP, aggregate, expenditure, exchange rate.
JEL Code; GO;G10;C21.

1. INTRODUCTION
Activities in the stock market have attracted serious attention due to the global financial crisis which has seriously slow down the rate of stock market operation in Nigeria. This occasioned several discourse on the stock market and the factors influencing its growth and the general performance of the market. However, a critical assessment of the macroeconomic environment in which the stock market operates, and its effect on the performance of the market has not attracted the desired attention of scholars. In this regard, there is need for a study on the effect of macroeconomic drivers on the performance of the stock market. This is important because, if the Nigerian stock market is deepened, it will perform efficiently and contribute positively in the development of the economy. Similarly, despite the existence of the Nigerian stock market for more than five decades, its performance is low compared with that of other developed stock markets. The level of sophistication and instruments traded and its general activities are still negligible. African stock markets (with the exception of Johannesburg stock exchange) are usually characterized by low capitalization and are still regarded as infants in the world stock exchanges. The All-Share index in Nigeria stock market in 2016 was 10,430 basic points, 2018 12,612 basic points compared to Johannesburg stock market of 59,504.67 basic points in 2017 and 64,823.03 in 2018. The Johannesburg Stock Exchange, FTSE/JSE Africa Index Series is an index partnership

between JSE and the Financial Time Stock Exchange (FTSE) Group of London. Similarly, the JSE has 400 listed companies trading on its floor; but the NSE has only 163 listed companies trading online real time. The Johannesburg Stock Exchange (JSE) has emerged as one of the best in the world, as it has a more matured stock market and was ranked one of the world's largest stock exchange by market capitalization ($1.007bn) as at the end of 2015 and 2019 (Courage, Andrew and Kin, 2015). The JSE All-Share index called the FTSE/JSE Africa Index Series closed the year 2017 with 59,504.67 basic points, while the Nigerian Stock Exchange (NSE)'s All-Share index closed at 38,243.2 basis points. Though the NSE has put in place strategies to commence trading in other derivatives such as futures options and swaps in the near future.

The stability of the macroeconomic environment is fundamental for businesses and therefore, important for the overall competitiveness of the economy. Besides, it is important to note that, for the stock market to play its role in an economy, it must have significant relationship with the economy. There are several macroeconomic drivers that are identified as potential determinant of macroeconomic stability which by extension dictates the performance of the stock market, such as growth in gross domestic product (GDP), foreign direct investment, government expenditure and real exchange rate. These variables are serious drivers of economic growth and development and variation in any of these variables will influence the performance of the stock market in general. An unstable macroeconomic environment through variation in the rate of any of the selected macroeconomic drivers may have effect on the activities of the stock market and hence its performance. Market capitalization has been on the increase, from N2.1b in 2004 to N14.8b in 2012, with a deep of N9.5b in 20017 and 11.3b in 2019. (Statistical Bulletin, 2020) The Nigerian capital market was largely dominated by cautious and speculative tendencies in 2018, due to Nigeria's economic recession and the uncertainty built around Foreign exchange availability. It is clear that the selected macroeconomic drivers have volatile tendencies to influence the performance of the Nigeria stock market. Thus, the paper draws the motivation and investigated empirically, the plausible effects of the selected macroeconomic drivers on the performance of the Nigeria stock market. The aim of this paper is to assess the Short and long run impact of the selected macroeconomic drivers on the performance of the Nigerian stock market between 1986 and 2020. In addition, to determine the speed of adjustment from short disequilibrium to long run equilibrium for the macroeconomic drivers.

2. LITERATURE REVIEW

a. Conceptual Clarification.

Stock Market

According to Drake and Matthews (1974), the term stock market (securities market) connote the market for financial instruments/claims/obligations that are commonly and readily transferable by sale namely, shares, debentures which are issued by companies as well as bonds, bills, and any kind of stock issued by government and public authorities. A security is used as the generic term for these various forms of financial instrument. Drake and Matthews did not also consider the essence of stock market operators, nor the institutions in which the market operates. Their concept of the stock market is restricted to financial instruments, borrowing and lending by companies, government and public authorities. Their definition falls short of the time frame within which lending and borrowing takes effect in the market which is crucial in defining stock market its distinguishing feature from the money market.

Dougal (1975), the stock market is a market where investment decisions among savers and users of funds are carried out and it constitutes a major instruments of a capitalist economy. That is, according to Dougal, the stock market consists of institutions and mechanisms through which intermediate and long-term funds are pooled together and made available to businesses, government and individuals for investment purposes.

All-Share Index

One of the most important tools for the use in performance measurement in the stock market is the market index, for it measures the state of the market. The performance of a market index is useful way of assessing the growth and development pace of the market. An index is a numerical value used to measure changes in financial markets. Aigheyis (2017) That is, an index measures the movement of the underlying assets, reflecting market price and market direction. A stock index reveals the overall trend in the equity market and international investors compare the performance of an index to other indices around the world, in order to arrive at investment decisions. A strong return is likely to increase public awareness and foreign investment in that market. According to Duban (2017), market indices are used as a measure of performance, as investors use the indices to measure how their portfolio has performed.

2.2 Theoretical Literature

Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory was developed by Ross (1976). It is based purely on arbitrage. Arbitrage is the practice of taking positive expected return from overvalued or undervalued security in an inefficient market without any incremental risk and zero additional investments. An inefficient market is a market where prices do not always reflect available information as accurately as possible. Inefficient markets may result from a lag in information dissemination from one place to another and deliberate withholding of information by an insider. Inefficient markets give rise to arbitrage opportunities. Most analysts believe that no market is perfectly efficient and that some inefficiency is inevitable. In such capital markets, investors may not have enough information about the securities in other to make informed decisions about what to buy or the price to pay. In addition, few analysts follow the securities being traded. Similarly, there can be inefficient markets for stocks in new companies, particularly for new companies in new industries that are not widely analyzed. An inefficient market is the opposite of an efficient one, where enormous amounts of information are available for investors who choose to use it.

The APT is a general theory of asset pricing which holds that the expected return, of an asset can be modeled as a linear function of various macroeconomic variables or theoretical market indices, where sensitivity to changes in each factor is represented by a factor specific beta coefficient (Ross, 1976). These macroeconomic variables influencing the price of the assets are called risk factors, in other words, Arbitrage pricing theory asserts if two or more securities or portfolios have identical return or risk, then they should sell for one price. Since Arbitrage pricing theory gives the expected price of an asset, arbitrageurs use the theory to identify and take advantage from is priced opportunities. Burmeister (1994) postulated that, the APT model explains risky asset returns which are believed to follow a bfactor intensity structure as follows:

$$R_j = a_j + b_{j1}F_1 + b_{j2}F_2 + \ldots + b_{jn}F_n + E_j \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:

a_j = is a constant for asset j
F = are systematic factors
b_j = are the sensitivity of the jth asset to factor k, also called factor loading, and
E_j = is the risky asset's idiosyncratic (usual) random shock with zero mean.

The APT states that if asset returns follow a factor structure then the following relationship exists between expected returns and the factor sensitivities;

$$E(r_j) = r_f + b_{j1}RP_1 + b_{j2}RP_2 + b_{j3}RP_3 + b_{j4}RP_4 + \ldots + b_{jn}RP_n \ldots\ldots\ldots\ldots\ldots (2)$$

Where
E(rj) = the asset's expected rate of return
rf = the risk-free rate
bj = the sensitivity of the asset's return to the particular factor
RP = the risk premium associated with the particular factor

The forgoing implies that, the expected return of an asset j is a linear function of the asset's sensitivities to the n factors. However, for this to be correct, there must be perfect competition in the market, and the total number of factors may never surpass the total number of assets.

2.3 Empirical Literature

Nkechukwu, Onyeagba and Okoh (2013) evaluated the effect of gross domestic product and broad money supply (M2) on capital market prices using annual time series data for Nigeria for the period 1980 – 2013. The employed and used Johansen cointegration and VECM based on APT of Ross (1976). The results of their findings indicated that stock market prices in Nigeria have long-run relationship with the macroeconomic variables used. However, the gross domestic product has significant long run negative effect on stock prices contrary to their a priori expectation that, gross domestic product has significant positive effect on stock prices. Broad money supply on the other hand, had significant long-run positive effect on stock prices, which was consistent with their apriori expectation. Again, there was unidirectional causal effect between gross domestic product and stock prices with direction running from stock prices to the gross domestic product, but there was no causal effect between stock prices and broad money supply. In the short-run however, both the gross domestic and broad money supply have positive, but insignificant effect on stock prices in Nigeria. Their findings suggested that, stock price in Nigeria at the time of their study were informational inefficient.

In a Similar study by by Abaenewe and Ndugbu (2016) who investigated the effect of minimum rediscount rate, treasury bills rate, interest rate, exchange rate and consumer price index (proxy for inflation) on equity prices on the Nigerian stock exchange, using annual data from 1985 to 2010. The OLS method was employed. The results of the study indicated that, minimum rediscount rates and treasury bills rates were highly correlated and cannot be applied simultaneously in monetary policy management. Also a weak correlation existed between monetary policy and equity prices. This reflected in the explanatory variables which accounted only 15.6% in the changes of equity prices in Nigeria. All the explanatory variables were negatively and insignificantly related to equity prices, except the consumer price index that had insignificant positive relationship with equity prices. The study further revealed that monetary policy instruments have not made significant influence on the prices of equities in Nigeria, but however failed short of suggesting to government the way forward.

For more empirical contribution to stock market babavoiur, Ogiri, Amadi, Moshfique and Dubon (2017) investigated the relationship between oil prices and capital market performance in

Nigeria. Different empirical methods including the Johansen's cointegration model, the ADF test, the VEC model, as well as the VAR estimation model, were used in the study. Their results suggested that, changes in oil prices are important factors in explaining stock price movement. Specifically, the findings showed that there were significant links between oil prices and capital market performance. Also, Amadi, Oneyema and Odubo (2017) employed a multiple regression model to estimate the functional relationship between money supply, inflation, interest rate, exchange rate and stock prices in Nigeria, using the Nigeria stock exchange stock prices.

The relationship between real gross domestic product, CPI, credit to privet sector weighted average interest rate on time deposit and the Amman (that is the Jordan) stock exchange (ASE)'s performance, as measured by its' stock price index was examined by Al-Majali and Al-Assaf (2015) employed and used Johansen cointegration and VECM, Impulse Response Function (IRF) and Variance Decomposition (VD). Their empirical results indicated that, there exist a long run equilibrium relationship between stock market index and the selected macroeconomic variables in Jordan. Their findings also revealed that, the speed of adjustment in the VECM is significant and relatively slow. There is also a bi-directional long run relationship between stock price index and credit to the private sector, weighted average interest rate on time deposits, and consumer price index. The evidence implies that, an increase in the weighted average interest rate on time deposits in the banking system has a greater effect on the stock price index, than other macroeconomic and financial variables used.

Contributing further, Elite (2011), investigated the relationship between foreign exchange reserves and market capitalization of Karachi stock exchange market over the period 2001 and 2009. Using quarterly data, Elite employed and used a simple linear regression model in his analysis. The study showed positive but not significant relationship between foreign exchange reserves and the stock market capitalization, foreign reserves of Pakistan have a positive impact on Karachi stock exchange market. Elite's (2011) study did not reveal the long-run and short-run relationship between the variables; neither did the study state the direction of the relationship.

However, Bhattacharya (2014) investigated the "Causal relationship between Indian stock exchange market, exchange rate, foreign reserves and value of trade balance" (Bombay stock exchange sensitive index was used as a proxy for Indian stock exchange market). They employed and used Toda and Yamamoto (1995) Granger non-causality tool for the analysis of their data. The study covered the period of twelve years (April 1990 to March 2012). The analysis revealed interest results in the context of the Indian stock exchange market, particularly with respect to the variables analyzed (exchange rate, foreign reserves and trade balance). The results suggested the absence of causal linkage between stock prices and the three variables under consideration.

The relationship between inflation and stock price movement in India was carried out by Chakravarty and Mitra (2013). Using the VAR framework, based on monthly data for wholesale price index, index of industrial production, exchange rate, stock prices and foreign institutional investment, Chakravarty and Miltra noted that stock prices have impact on inflation, whereas the causality in the reverse direction is not prominent. The results from the impulse response function suggested the existence of a negative relationship between the stock prices and the variables used. However, in the very long run the study revealed that, inflation influences stock prices in a positive direction.

Mohammed (2011) investigated the impact of changes in three macroeconomic variables (Inflation (CPI), industrial production index and foreign remittance) and two microeconomic variables (market price/earnings ratio and monthly average growth in market capitalization

measured in percentages). The Dhaka Stock exchange (DSE) all share price index was used as the dependent variable. A multivariate regressions model computed on standard OLS was adopted and employed to estimate the relationship. Based on regression coefficient, it was found that inflation and foreign remittance have negative influence. Industrial production index; market P/E ratio and monthly percent average growth in market capitalization have positive influence on stock returns. All the independent variables jointly explained 44.8% of DSE's-All share price index. No unidirectional granger causality was found between stock price and al the forecasted variables, except the existence of a unidirectional causal relationship between stock price and market P/E ratio. In a nut shell, lack of granger causality between stock price and variables employed ultimately revealed the evidenced of information efficiency available to all operators in the capital market.

Kuwornu and Owusu-Nantwi (2016) examined the relationship between consumer price index (as a proxy for inflation), crude oil price, exchange rate and 91-day treasury bill rate (as a proxy for interest rate) and the capital market's returns of Ghana stock exchange (GSE). Using monthly date over the period of, January 1992 to December, 2013. Full information Maximum Likelihood Estimation (FIMLE) procedure was used in establishing the relationship between the chosen variables and the capital market's returns. The results revealed the existence of a significant relationship between stock market returns and CPI, exchange rate and treasury bills rate. CPI had a positive significant effect, while exchange rate and treasury bills significant influence on the capital market's returns. On the other hand, their findings revealed that crude oil process do not appear to have any significant effect on stock returns.

Akinlo (2015) examined the impact of foreign exchange reserves on Nigerian stock exchange market over the period 1981-2011. Akinlo used a multivariate framework incorporating an interest rate variable. The results of his findings revealed the existence of a long run relationship among his identified variables (foreign reserves, interest rates and stock market development). The findings further revealed that foreign reserve has a positive influence on stock market growth in Nigeria.

In another study, Abakah and Abakah (2016), using high frequency date, investigated the impact of foreign exchange reserves on stock market in Ghana for the period of January 2001 to December, 2015. Just like Akinlo, Abakah used a multivariate framework that integrated interest rate variable in the modeling. The result of their work showed that foreign exchange reserve has a significant reserve has a significant positive impact on stock market capitalization and all the three variables employed in their study (stock market captilisation, foreign exchanged reserve and interest rate) are co-integrated. Unlike Akinlo (2015), their findings showed the existence of a unidirectional relationship between foreign exchange reserve and stock market capitalization at Ghana Stock exchange. Also, market capitalization were seen to Granger cause interest rate. Further test on their work showed that interest is very important in examining the nexus between stock market and international foreign reserves of Ghana.

Yahyazadehfar and Babaie (2018) examined the impact of some macroeconomic variables such as, interest rate, house price and gold price on stock price in capital market of Iran. A sample of monthly data from March 2001 to April 2016 was used for test. The study was based on VAR model and Johansen co-integration technique. Yahyazadehfar and Babaie discovered that a positive relationship exist between stock price and house price at the time of their study, but nominal interest rate and gold price have negative effect on stock prices of the Iranian capital market.

Farsio and Fazels (2018). Investigated the relationship between unemployment rate and stock prices in the US, China and Japan. The study was based on the use of co-integration and Granger causality test and quarterly data covering the period, 1970-2015 were employed. The findings revealed that there was no stable long term causal relationship between unemployment rate and stock prices. Farsio and Fazel therefore believed that, it would make a mistake to rely on unemployment rate forecasts and trends in order to make investment decisions in the capital markets of US, China and Japan.

An examination of the influence of macroeconomic variables on the capital market performance at the Nairobi stock exchange (NSE), Kenya was carried out by Gatuhi, Gatuhi (2019) selected macroeconomic variables (exchange rate, interest rates, inflation and money supply) and investigated the influence of these variablese on stock market performance in Kenya and explored, if the different sectors are affected differently by changes in the macroeconomic variables in Kenya. He adopted a causal research design and targeted all active listed companies on the NSE from January 2004 to November 2017. Time series Regression (TSR) model was used to examine the effect of the selected variables on the performance of the capital market's listings. Gatuhi in his study found that exchange rate had a positive influence on the Nairobi capital market, on a sectoral basis of the market's listings. Gatuhi in his study found that exchange rate had positive influence on the Nairobi capital market's performance in the Agricultural, Banking, Energy and automobile sectors and had a negative on construction, Insurance, Investment and manufacturing sector. Inflation had a positive influence on the market performance.

The impact of foreign direct investment foreign exchange rate and inflation on stock returns Karachi stock exchange (KSE), Pakistan was investigated by Kabeer, Iqbal, Najaf and Najaf (2019). They employed the OLS technique to test the impact of these variables. The results of the study indicated that there was significant negative direct investment on the stock returns of Karachi stock exchange in Pakisttan. The drawback of this work is that, the magnitude of the collective impact of these variables on the stock exchange of Karachi was not revealed in the study.

Another work on Nairobi securities exchange was done by Ouma and Muriu (2017). They conducted a study on the impact of money supply, exchange rate, interest rate and inflation rate on stock returns on Nairobi stock exchange, Kenya for the period 2003- 2015. In testing the impact of these variables, Ouma and Muriu employed and used the APT and the CAPM. They also applied and used the OLS technique in testing the validity of the model and the relative importance of different variables selected, and their possible impact on stock returns in Kenya. The empirical analysis revealed that, with the exception of interest rates, there existed a significant relationship between stock returns and the remaining variables. Money supply, exchange rates and inflation affected stock returns at Nairobi stock exchange rates is however, found to have a negative impact on stock returns. However, like the work of Wycliffe and Peter (2018) also on the Nairobi securities exchange, they failed to disclose to their readers the suitability or otherwise of any of the two capital market theories, the APT and the CAPM which were employed and tested in their study.

Asekome & Agbonkhese (2019) conducted a study on the macroeconomic variables, stock market bubble, meltdown and recovery: Evidence from Nigeria during the period from 2007 to 2016. Relying on the Ordinary Least Square (OLS) regression technique, the result showed that the coefficients of gross domestic product and money supply were statistically significant while the remaining three; exchange rate, capacity utilization and inflation were not significant. The paper observes that the post melt down macroeconomic policies including banking sector reforms

contributed to the gradual recovery of the stock market. The paper therefore recommends the need for policies that could further strengthen and stabilize the banking sector, ensure low but steady interest rates, favourably exchange rate, low inflation and consistent policy environment that could boost a steady growth in the real sector.

GAP IN THE LITERATURE

Empirical studies reviewed on the subject mather like Nkechukwu, Oyeagba and Oko (2013), Abaenewe and Ndugbu (2019), and some others. All the studies centered on stock price fluctuations and exchange rate behaviour, like Okon and Adie, (2020) with no emphasis on the effects of macroeconomic variable on the general performance of the stock market. Though studies like Odubo (2017), used the general market capitalization as indicator for the performance of the stock market instead of the all share index. This is a gap which the study has identified and filled in this study.

3. METHODOLOGY

Model Specification

The model specified and estimated was based on the strength of the Arbitrage Price Theory (APT). The Arbitrage Price Theory provides the frame work that explained how the stock market behaviour is influenced by other macroeconomic variables. Ouma and Muriu (2017), Wycliff and Peter (2018), adopted the same theory in carrying out their respective studies on capital market operations. Data used for the study was purely secondary data sourced from: World Bank Development Indicators (WBDI), CBN bulletins and from facts books of Nigeria Stock Exchange (NSE). Thus, the functional form of the model is specified as: ASI = f (RGDP, FDI, GEXP, EXR) ---------- (1)

Where;

ASI	=	All-Share index
RGDP	=	Real gross domestic product
FDI	=	Foreign direct investment
GEXP	=	Aggregate government expenditure
EXR	=	Exchange Rate

The stochastic and semi-logarithmic form of equation 2 is expressed as;

$InASI = \beta_0 + \beta_1 lnRGDP + \beta_2 lnFDI + \beta_3 InGEXP + \beta_4 EXR + \varepsilon$ ---- (2)

Where

In is the natural logarithm:

β_0 is the intercept or constant term

$\beta_1 - \beta_4$ are the parameter estimates and

ε is the stochastic or white noise error term

A dynamic Autoregressive Distributed Lag ARDL(p,q) form of the model capable of estimating long-run and short-run impact of the captured macroeconomic drivers on the performance of Nigeria stock market. Thus, the ARDL model is specified as;

$$\Delta InASI_t = \beta_0 + \sum_{1-0}^{p} q1ASI_{t-1} + \sum_{i=0}^{q} \varphi 2 \Delta RGDP_{t-1} + \sum_{i=0}^{q} \varphi 3 \Delta FDI_{t-1} + \sum_{i=0}^{q} \varphi 4 \Delta GEXP_{t-1}$$

$$+\sum_{i=0}^{q}\varphi_5\Delta EXR_{t-1}+\lambda ECM_{t-1}+\varepsilon_t$$

Where

Δ is the difference operator, q is the lag length of the dependent variable and p the lag length for independent variable and ε_t is the serially uncorrelated error term. λ is the speed of adjustment parameter and ECM is the error correction mechanism.

4. RESULTS AND DISCUSSION OF FINDINGS

Stationarity Test Result.

Included observations: 40

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.*| . |	.*| . |	1	-0.071	-0.071	0.2143	0.643
**| . |	**| . |	2	-0.271	-0.277	3.4607	0.177
**| . |	**| . |	3	-0.260	-0.331	6.5238	0.089
. | . |	.*| . |	4	0.047	-0.131	6.6264	0.157
. |*. |	. | . |	5	0.136	-0.061	7.5164	0.185
. | . |	.*| . |	6	-0.010	-0.127	7.5209	0.275
.*| . |	.*| . |	7	-0.131	-0.183	8.3977	0.299
.*| . |	**| . |	8	-0.112	-0.231	9.0546	0.338
. |*. |	. | . |	9	0.153	-0.052	10.320	0.325
. |** |	. |*. |	10	0.246	0.119	13.710	0.187
. | . |	. |*. |	11	0.024	0.095	13.742	0.248
***| . |	**| . |	12	-0.350	-0.209	21.081	0.049
.*| . |	.*| . |	13	-0.106	-0.104	21.781	0.059
. |*. |	. | . |	14	0.182	0.022	23.919	0.047
. |*. |	. | . |	15	0.127	-0.054	25.001	0.050
. | . |	. | . |	16	-0.017	-0.015	25.022	0.069
. | . |	. |*. |	17	-0.054	0.090	25.232	0.090
. | . |	. | . |	18	-0.032	0.038	25.312	0.117
. | . |	. | . |	19	0.022	-0.040	25.352	0.149
. | . |	**| . |	20	-0.065	-0.217	25.709	0.176

The correlogram approach to stationarity test result in table one shows that the variables are stationary at first difference as all the P.values are more than 5% which revealed the same order of integration I(1).

Optimal Lag Selection

Lag	LogL	LR	LPE	AIC	SC	HQ
0	-385.8727	NA	21995.82	27.02571	27.30859	27.11430
1	-296.4422	135.6877	585.1598	23.34084	25.32106	23.96102
2	-251.3534	49.75309	444.9418	22.71403	26.39159	23.86580
3	-169.9422	56.14570*	60.61750*	19.58222*	24.95711*	21.26557*

* indicates lag order selected by the criterion

The result of the optimal lag selection using the Akaike Information Criterion (AIC) and Schwarz Criterion (SC), shows that three lag is the optimal lag and appropriate lag for the model, hence, the model estimation is based on three lags.

Cointegration

Series: RGDP FDI GEXP EXCH
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.819668	103.7767	47.85613	0.0000
At most 1 *	0.392626	36.97135	29.79707	0.0063
At most 2 *	0.353772	17.52552	15.49471	0.0244
At most 3	0.012688	0.498015	3.841466	0.4804

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.819668	66.80534	27.58434	0.0000
At most 1	0.392626	19.44582	21.13162	0.0846
At most 2 *	0.353772	17.02751	14.26460	0.0178
At most 3	0.012688	0.498015	3.841466	0.4804

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The cointegration result shows three cointegration equations at the trace test and one cointegrating equation at max eigen value which established the existence of long run relationship among the variables in the model.

LONG-RUN AND SHORT-RUN ANALYSIS

The results of the long-run and short-run estimates of the ARDL model in Equation 10 are presented on Table 4 The long-run and short-run estimates are separated to the constant term. The short-run estimates came after the long-run estimates and are presented in bold fonts.

Long-run and short-run estimates of the ARDL Model

Dependent variable = InASI (2, 3, 3, 2, 2)				
Variables	Coefficient	Standard error	T-statistic	P-value
Long-run Estimates				
LnRGDP	0.1117	0.3128	3.4100	0.0014
InFDI	0.0824	0.0632	-2.5878	0.0210
InGEXP	0.1601	0.0648	5.5560	0.0016
EXR	0.0147	0.0317	-4.8731	0.0023
Constant	0.0895	0.0659	2.3588	0.0013
Short-run Estimates				
RGDP	0.0224	0.0087	2.5881	0.0322
LnFDI	0.0304	0.0057	-6.2934	0.0007
InGEXP	0.1061	0.1684	5.0063	0.0256
EXR	-0.0785	0.1885	-3.0249	0.0038
ECM(-1)	-0.5238	0.0510	-5.3159	0.0000
Adjusted R^2	0.9049			
S.E. of regression	0.2378			
F-Stat	14.857			
Prob. (F-Stat)	0.0000			
Durbin-Watson	2.7952			

** indicates significance at 5%

The results of the long-run estimates show that lnRGDP, InFDI GEXP and EXR have positive and statistically significant long-run impact on the performance of the stock market in Nigeria. That is, 1% increases in RGDP growth will lead to about 0.11% increase in ASI in the long-run ceteris paribus. This entails that the long-run performance of the stock market can be influenced by the rate of economic growth in Nigeria. Also, evident from the results is that, 1% increase in foreign direct investment will lead to about 0.08% increase in the performance of the stock market in the long-run which also suggests that, in the long-run, foreign direct investment can exert positive impact on the operation of the stock market. The result in addition revealed that increase in government aggregate expenditure will simultaneously increase the performance of the Nigeria stock market by 0.16% in the long run, ceteris paribus.

Similarly, the long-run estimates indicates that, 1% increase in exchange rate result to increase in the performance of the stock market by 0.01% implying that increase in exchange rate may actually be incentive for investing in the stock market for long run positive impact, especially for foreign investors..

For the short-run behaviour, the results indicated that RGDP have positive and statistically significant impact on ASI, FDI is positive but statistically insignificant impact on ASI. This implies that 1% increase in RGDP, FDI and GEXP will result to increase in the performance of the capital market in the short-run by 0.02%, 0.03% and 0.10% respectively. On the other hand, the short-run estimates showed that EXR have negative and statistically insignificant impact on the performance of the Nigeria stock. That is, 1% increase in EXR will lead to decrease in the performance of the stock market by 0.08% ceteris paribus.

The error correction term (ECM) indicates that, the coefficient of the ECM (-1) – 0.5238 is negative and statistically significant at 5% level as required. This shows that, the deviation that occurs in ASI in the short-run is corrected by 52.38% towards the long-run equilibrium path every year, through the immense contribution of the macroeconomic variables.

The adjusted R^2 value of 0.9049 indicates that about 90.49% of the total variations in the performance of the stock market is explained by the combined influence of the explanatory

variables, while the remaining 9.11% is the explained variation due to variables not captured in the model. This implies that the performance of the Nigerian stock market is highly influenced by macroeconomic drivers captured in the model. Also, the overall standard error of regression, which measures the total errors incurred in estimating the relationship, is 0.2378 which is relatively low, implying a high level of precision in the estimation of the model. Similarly, the Durbin-Watson statistic as a test for detecting the presence or otherwise of serial or autocorrelation in a model has a value of 2.3952 which is within the acceptable region of 1.5 – 2.4 for a model to be adjudged free from autocorrelation. Hence, the estimated ADRL model for this study can be said to be free from serial correlation. The results tallied with Odudo (2017) and Afolabi (2019).

It can be observed from the findings of the study that all the variables satisfied their a priori expectations both in the short and long run. This implies that stock market response to the variation pattern of the macroeconomic drivers captured in the model.

DIAGNOSTICS AND TESTS.

To establish the reliability of the parameter estimates, diagnostic tests for the residuals as well as the stability test of the coefficients were conducted and the results of the diagnostics tests are presented below.

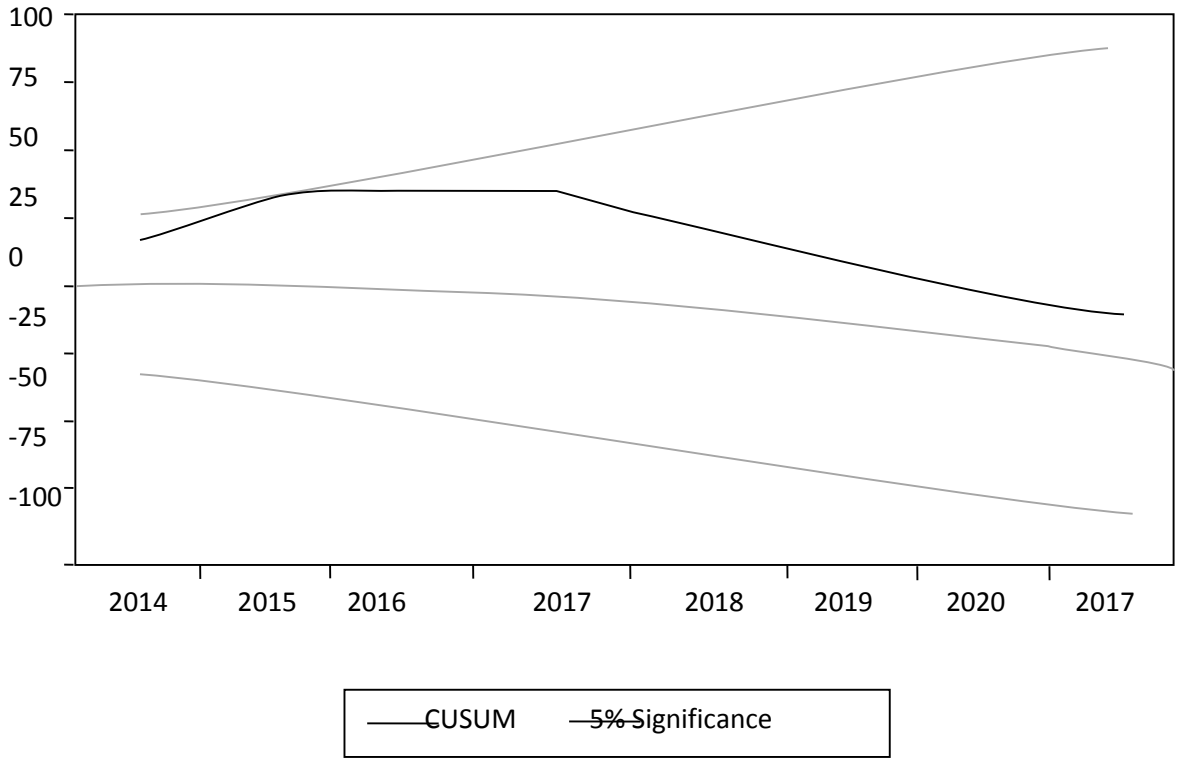
Result of the Diagnostics Test

Test statistics	F-statistic	P-value
Serial Correlation (χ^2 SERIAL)	1.7595	0.2504
Heteroskedasticity (χ^2 ARCH)	0.7106	0.4069
Ramsey Reset (χ^2 RESET)	1.4969	0.1781
Jarque-Bera (χ^2 NORMAL)	1.4978	0.4729

Source: Author's compilation using E-views 10.0

The results of the diagnostic tests using the Breusch-Godfrey LM test and the ARCH conditional heteroscedasticity test for serial correlation and heteroscedasticity shows the absence of serial correlation and the presence of homocedasticity. Furthermore, the result of the Ramsay RESET and the Jarque-Bera normality tests, also report probability values greater than 0.05 swhich implies that, the functional form of the models is correctly specified and the stochastic error term is white noise; thereby making the estimates from the model consistent and reliable for policy recommendation.

In addition, the stability test of the model was conducted using Cumulative Sum of Recursive Residuals (CUSUM) The CUSUM test is suitable at detecting systematic departure of the coefficients. The CUSUM statistics is zeros, which implies that, the expected value of a distance is always zero, a set $\pm$ 2 standard error bands. The plot of the CUSUM is shown in the figure below.



5. CONCLUSION AND POLICY RECOMMENDATIONS.

The main aim of this study is to investigate the impact of some selected macroeconomic drivers on the behaviour of the Nigeria stock market from 1986 to 2020. The selected macroeconomic drivers are; real GDP, foreign direct investment, aggregate government expenditure and the real exchange rate. All share index is used as proxy for stock market. The correlogram approach to stationarity was conducted to determine the order of integration of the variables, and all were stationary at first difference I(1) based on the P. values. This implies that the variables were integrated of the same order.

The ARDL along with ECM was applied to establish the short and long run impact as well as the speed of adjustment. Some diagnostic checks were carried out to determine the reliability and dependability of the model as a base for policy recommendation. On the bases of the findings, the study thus makes the following recommendations:

i. Government should often undertake deliberate policy reforms that will increase the inflow of foreign direct investment in the country.
ii. Increased aggregate government expending to boost the performance of the stock market.
iii. Flexible exchange rate policies for sustained long run positive impact on the stock market performance.
iv. Increase in economic activities that could transmit to positive impact on stock market behaviour.

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