

## **Empirical Analysis of Stock Market Development and Macroeconomic Indices in Nigeria**

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### **Abstract**

*This study examined the long-run relationship between stock market price and some macroeconomic indices in Nigeria. The time series data on stock market price, foreign exchange rate, inflation rate, broad money supply, corruption perception index, and credit to private sector between 1980 and 2021 were used for the study. The data were subjected to diagnostic tests before estimation. To this end, the autoregressive distributed lag method was used to estimate the model. The results of unit root and Johansen co-integration tests showed that stock market price in Nigeria is majorly influenced by macroeconomic factors in the long-run. All the included explanatory variables were found to have a significant effect on stock market price, except inflation and corruption perception index. It is recommended that the monetary authorities and policy makers should be more concerned about the changes in inflation rate due to its negative impact on stock price in Nigeria. To this end, unproductive borrowing by banking sector and/or public expenditure on unproductive items should be discouraged and, businessmen should pay attention to movement of foreign exchange rate, broad money supply and credit to private sector in their decision to invest in stock market in Nigeria.*

**Keywords:** Broad Money Supply, Corruption Perception Index, Error Correction Model, Foreign Exchange Rate, Stock Market Price

**JEL Classification:** E44, C22, C87

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### **1. Introduction**

It has long been established in economic literature that investment which promote economic growth requires long term funding. And capital markets generally are believed to play pivotal role in investment-economic growth relationship given their ability to respond to fundamental paradigm shifts in the economy. Capital market in general and stock market in particular encourages not only private savings but also allocate such savings to real investment given healthy economic conditions. This will lead to increase in the capital stock and therefore economic growth of the country Maku & Atanda, (2010). Given this role, the capital market makes it possible for private investors to feel the impulse of the economy. The Nigeria stock market is not an exception as it is expected to be influenced by and has influence on macroeconomic factors, which are outside the armpit of capital market. These factors, which include

inflation, real interest rate, foreign exchange rate, economic growth, etc, combine in varying degrees to determine the stock price movement in Nigeria over time.

Statistics available in Ogunsakin and Isaac (2021) showed that price of stock which stood at N10.00 in 1980 fell to N 7.00 in 1990. This is because some foreign portfolio investors withdrew their capital from Nigeria in order to meet up with the financial obligations in their home countries. The market peaked up in 2010 with price of stock at N24.00 and plummeted consistently to N16 in 2000. Nigeria entered into recession in 2015 which also had negative effect on stock market that led price of stock to reduce to N13.80 in 2015. Nigerian economy peaked up in 2017, and stock price was positively influenced. It rose from N13.80 in 2015 to N22.20 and N27.20 in 2017 and 2020 respectively. On historical front, the establishment of the Nigeria stock exchange (NSE) in Nigeria dated back to 1961, basically to the development of the capital market Maku & Atanda, (2010); Osisanwo & Atanda, (2012). Since then, the Nigerian economy had experienced booms and depressions at different times. Of particular interest was the global financial meltdown of the mid-2000s that has affected the fundamentals in the economy which has negatively affected some major economic indicators in the country. Consequently, the Nigeria stock market has experienced series of reforms and influx of foreign investment in comparison to other emerging markets in the developing world. Earlier, Omole (1999) argued that liquidity is an important attribute of stock market development, as it essentially improve the mobilization and allocation of capital and thereby enhance the prospects of long-term growth. It enables investors to adjust quickly and with minimal costs, it makes investments less risky. But, Osisanwo and Atanda (2012) observed that the recent financial crisis has made the Nigeria stock market illiquid and this has caused the downward trend in the market. In turn, the capital has become less attractive to long term investment and very risky for investors. As a result of the high risk associated with investing in Nigeria stock market, investors are patronizing other emerging markets in Africa, including Ghana stock exchange (GSE), and Johannesburg stock exchange (JSE). Consequently, the NSE capitalization has dropped from all time high of ₦13 trillion in 2008 (when the financial turmoil started spreading to emerging economies in the world) to ₦ 4.9 trillion in 2009.

Ogunsakin and Isaac (2021) reported that the Nigerian economy witnessed mixed macroeconomic performance especially in the last four decades. In the same way, the Nigeria stock exchange has undergone series of reforms to measure up with other emerging markets in the world and to raise foreign investments in the economy, but to no avail. In the last two decades, more attention has been given to stock market because of its roles in other emerging economies. In this regards, the stock market contribution to the overall economic well-being has been impressive before global financial crisis of 2007. Take for instance, Nigerian stock price was N6.60 and all share index was N117 billion in 1985. They both improved gradually to N18.00 and N3.8 trillion respectively in 1995. During this period, both inflation and interest rate were high, not stable and reached their peak. There was drastic reduction in inflation from 72.8% in 1995 to 29.3% in 1996. This influenced stock market positively as market capitalization rose from N180 billion in 1995 to N285.8 billion in 1996 and all share index also rose from N3.8 trillion to N5.9 trillion around this period. This can also be attributed to flexible exchange rate system introduced through structural adjustment programme in 1986. Stock price and market capitalization witness drastic improvement in 2005. This was as a result of bank recapitalization that was introduced by government in 2004 which made stock price to increase from N24.70 to its peak of N35.40 in 2008 and market

capitalization rose from N2 trillion in 2004 to N13 trillion in 2007. This period also fell into the period of privatization of some public corporations by the Federal Government (Ogunsakin & Isaac, 2021). The regulatory agencies in Nigeria have implemented series of policies to stabilise the economy, which had little impact on the Nigeria stock market. The key macroeconomic indicators are: Gross domestic product (GDP); inflation rate; bank rates, money supply and foreign exchange rate, amongst others. Some specific reforms have been carried out on the Nigerian Stock Exchange (NSE) over the years to make the exchange rate more efficient. Some developments in the NSE are identified in Store (2004), Alabede (2005) and SEC (2005) as follows:

*Automated Trading System (ATS)* – this is one of the most outstanding innovations in the security market in Nigeria. The ATS is a system of security trading arrangement whereby transactions are conducted through a network of computers. Before ATS was introduced, the call over system was used and this system made the settlement cycle on the NSE to be 21 days. ATS was launched on the 27th of April, 1999.

*Central Securities Clearing System (CSCS)* – The NSE commissioned the CSCS in 1997 as a subsidiary but it came into operation on the 14th of April, 1999. According to the Securities and Exchange Commission (SEC, 2005), the CSCS was conceived as primarily a settlement arena for the achievement of the T-3 settlement cycle. The CSCS serves as an interface with the ATS and automatically receives data relating to trade as they take place for settlement.

*On-line Trading* - The NSE has been able to link some of its branches that have large daily transactions to the central server at the Customs House, Lagos, Abuja, Kano, Yola, and Port Harcourt. Branches are now fully integrated to the main trading platform. Stockbrokers residing in these areas do not have to be in the Lagos trading floor to trade anymore.

*Remote Trading* – As part of the reform in the NSE, in order to make it efficient, in 2004, the exchange introduced remote trading. Remote trading is a system where brokers trade from the comfort of their offices. The computers of the stockbrokers are connected to the main trading machines through one of the safest connection devices. This system guarantees safe delivery of data from the mainframe of the trading machine to the computers in the office of stockbrokers. The objective of this system is to eliminate the formal trading floor.

*The Trade Alert* – This was introduced in 2005 and generated a lot of controversy. This system was introduced as a means of protecting the securities market against ever increasing threats from fraudsters. The trade alert is a device which, when subscribed to by a security holder, will send a notice to the security holder's mobile phone indicating elaborately all transactions taking place in his accounts in the CSCS. The aim of this device is to stop any unauthorized trade before it takes place, thereby, protecting the investment.

*E-bonus* – The e-Bonus was put in place to ensure bonuses issued to an investor by companies which are instantly credited to the investors' accounts at the CSCS.

*E-Initial Public Offer (IPO)* – This system ensures that the Initial Public Offer of listed companies are electronically captured on the accounts of the CSCS. After the closure of the offer and allotment by the company, lists of the successful investors would be forwarded to the CSCS for retention in the depository. This system will eliminate the long waiting period which the registrar hitherto took to print and distributes certificates (Briggs, 2020).

Other financial sector reforms in the Nigerian economy which impacted positively on the performance of the stock market include:

*Privatisation of Government Corporations* – The privatization of government-owned companies started at the time of the Structural Adjustment Programme (SAP), in 1986. The privatization of the government-owned parastatals helped to boost trading on the NSE as long-term funds are mobilized to pay for the privatized corporations. The privatization process was motivated by the desire to increase government revenues, promote economic efficiency, and reduce government interference in the economy. Domestic capital market development was also an implicit objective of privatization (Adelegan, 2001).

The review above indicated that macroeconomic variables and stock market price have experienced non-regular changes over the last four decades. Is there any relationship between some key macroeconomic variables and price of stock in Nigeria during the 1980-2021? This study is germane for financial investment decision so that the economic specific factors determining the movements of stock market prices can be identified. This is the purpose of this study.

## **2. Literature Review**

### *Conceptual and Theoretical Issues*

The issue of determinants of stock market development has stem up controversies among researchers with mixed findings. Conceptually, stock market is defined as the aggregation of buyers and sellers of stocks (also called shares) which represents ownership claims on businesses. These may include securities listed on a public stock exchange as well as those only traded privately. Examples of the latter include shares of private companies which are sold to investors through equity crowd funding platforms. Stock exchanges list shares of common equity as well as other security types, e.g. corporate bonds and convertible bonds Wikipedia, (2018).

A stock market is conceived by Agrawal (2017) as a place or an organization through which individuals and organizations can trade stock. Many large companies have their stocks listed on a stock exchange; this makes the stock more liquid and thus more attractive to many investors. The exchange may also act as a guarantor for settlement. Other stock may be traded “over the counter” (OTC) that is through a dealer. Some large companies will have their stock listed on more than one exchange in different countries, so as to attract international investors. Stock exchange may also cover other types of securities, such as fixed interest securities (bonds). The purpose of stock exchange is to facilitate the exchange of securities between the buyers and sellers, thus providing a marketplace. The term stock price refers to the current price that a share of stock is trading for on the market. When the shares of every publicly-traded company are issued, it is given a price – an assignment of their value that ideally reflects the value of the company itself. The price of a stock will go up and down in relation to a number of different factors, including changes within the economy as a whole, changes within industries, political events, war, and environmental changes (Briggs, 2020). Stock prices are first determined by a company’s initial public offering (IPO) when it first puts its shares into the market. Investment firms use a variety of metrics, along with the total number of shares being offered, to determine what the stock’s price should be. Afterward, the several reasons mentioned above will cause the share price to rise and fall, driven largely by the earnings that can be expected from the company.

Traders use financial metrics to constantly determine the value of the company, including its history of earnings, changes in the market, and the profit that it can reasonably be expected to bring. It will cause traders to bid share prices up and down.

Traders aim to make a return on their investments. It is done in two primary ways:

Dividends – If the company’s stock pays dividends, regular payments are made to shareholders for every share held; and purchasing shares when they are at a low price and selling them back once the price goes up (Corporate Finance Institute, 2022). Macroeconomic variables are described by Akers (2017) as indicators or main signposts signalling the current trends (or performance) in the economy. They include: economic output (gross domestic product); Unemployment rate; inflation rate; interest rate; foreign exchange rate and money supply. It has been argued that there is bidirectional relationship between macroeconomic variables and stock market performance. But, Osisanwo and Atanda (2012) stated that over the years, the observed pattern of the influence of macroeconomic variables (in terms of sign and magnitude) on share returns varies from one study to another in different capital markets.

On theoretical grounds, this study is anchored on rational expectation theory propounded by Muth (1961). The theory is a building block for the “random walk” or efficient market theory of security prices. According to the theory, the price of stock or bond depends partly on what prospective buyers and sellers believe it will be in the future. A sequence on observation on daily stock price is said to follow a random walk if the current value gives the best possible predictions of future values. Using this theory, investors would buy stocks they expect to have a higher-than-average return and sell those they expect to have lower-than-average returns. When they do so, they bid up the prices of stocks expected to have higher-than-average returns and drive down the prices of those expected to have lower-than-average returns. More precisely it means that stock prices change so that after an adjustment to reflect information like dividends, bonuses, the time value of money and the different risks, they equal the market’s best forecast of the future price. Thus, the only factors that can influence stock price are those that might not be known in advance (Malaolu, et al. 2013). Some other authors including Mukherjee & Naka (1995; Maysami & Koh (2000) identified market forces such as demand and supply and profitability as factors that affect stock price movements. Besides, DeFina (1991) identified inflation as one of the determinants of changes in stock prices.

#### *Empirical Review*

Several studies have been conducted on the determinants of stock market performance all over the world. Campbell and Shiller (1988) undertook a study on the relationship between stock prices, earnings and expected dividends in the U.S. Time series data on stock price, earning, and expected dividends, covering 1871-1986 were used. A Vector Autoregressive was used as estimation technique. The study found that a long term moving average earnings estimate predicted dividends and the ratio of this earning variable to current stock price is powerful in predicting stock return over several years. Ibrahim and Aziz (2003) investigated the relationship between stock prices and industrial production, money, supply, consumer price index, and exchange rate in Malayasia using ordinary least squares as technique of estimation. Secondary on the included variables between 1990 and 2002 were used for the study. Stock prices are found to have positive long-term relationship with industrial production and consumer price index. On the contrary, the study found that stock prices have a negative association with money supply and exchange rate. Serkan (2008) investigated the role of macroeconomic factors in explaining Turkish stock returns by employing macroeconomic factor model from the period of 1997 Q2 to June 2005 Q4. The macroeconomic variables consider growth rate of industrial production index, change in

consumer price index, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil prices and return on the MSCI world Equity Index. The study employed ordinary least squares as technique for estimation. The study found that exchange rate, interest rate and world market return seem to affect all of the portfolio returns, while inflation rate is significant for only three of the twelve portfolios. Also, industrial production, money supply and oil prices do not appear to have significant effect on stock returns in Turkey.

Adam and Tweneboah (2008) examined the impact of macroeconomic variables on stock prices in Ghana using quarterly data from 1991 Q1 to 2007 Q4. The study examined both the long-run and short-run dynamic relationship between the stock market index and the economic variables-foreign direct investment, treasury bill's rate, consumer price index, average oil prices and exchange rates using co-integration test, and vector Error Correction Model (VECM). The study found that there is co-integration between macroeconomic variables and stock prices in Ghana indicating a long-run relationship. The VECM analysis shows that the lagged values of interest rate and inflation have a significant influence on the stock market. Also, the inward foreign direct investment, oil prices, and the exchange rate demonstrate weak influence on price changes. Akinnifesi (1987) used a disaggregated analysis to investigate the relationship between exchange rate and stock prices fluctuation in Nigeria in the 1972-1985. The ordinary least squares techniques was used as estimation techniques. The study found that a depreciating Naira exchange rate increases stock prices Soyode (1993) made an attempt to test the association between stock prices and macroeconomic variables such as exchange rate, inflation and interest rate in Nigeria in the 1981-1992. The ordinary least square technique was used as estimation technique. The study found that the economic variables are cointegrated with stock prices and consequently related to stock returns. Amadi, Oneyema and Odubo (2000) investigated the relationship between money supply, inflation, interest rate, exchange rate and stock prices. The study employed multiple regression as technique to estimate the relationship between money supply, inflation, interest rate, exchange rate and stock prices. The study revealed that the relationship between stock prices and the macroeconomic variables are consistent with theoretical postulation and empirical findings in some countries. But, the study found that the relationship between stock prices and inflation does not agree with some other works done outside Nigeria. Nwokoma (2002) examined a long-run relationship between the stock market price and industrial production and level of interest rate in Nigeria in covering 1980-2000. The ordinary least squares techniques was used as estimation techniques. The results showed that only industrial production and level of interest rate, as represented by the 3-month commercial bank deposit rate have a long-run relationship with the stock market. The study also found that the Nigeria market responds more to its past prices than changes in the macroeconomic variables in the short-run.

Ologunde, Elumilade and Asaolu (2006) examined the relationships between stock market capitalization rate and interest rate in Nigeria between the year; 1980-2000. The ordinary least squares multiple regression was used as estimation techniques. The study found that prevailing interest rate exerts positive influence on stock market capitalisation rate. It also found that government development stock rate exerts negative influence on stock market capitalisation rate and prevailing interest rate exerts negative influence on government development stock rate. Garcia and Liu (1999) studied the macroeconomic determinants of stock market development during the period 1980 to

1997 using pooled data on real income, saving rate, financial intermediary development and stock market liquidity from 15 industrial and developing countries. The study employed the ordinary least squares multiple regression as estimation techniques. The study found that real income, saving rate, financial intermediary development and stock market liquidity are important determinants of stock market capitalisation. The study observed that macroeconomic volatility does not prove significant and that stock market development and financial intermediary development are complements and not substitutes. Yartey (2008) examined the institutional and macroeconomic determinants of stock market development using a panel data on income level, gross domestic investment, banking sector development, private capital flows and stock market liquidity from 42 emerging economies for the period of 1990 to 2004. The study employed the ordinary least squares multiple regression as estimation techniques. The study revealed that income level, gross domestic investment, banking sector development, private capital flows and stock market liquidity are important determinants of stock market development in emerging market countries. The results further indicate that political risk, law and order and bureaucratic quality are important determinants of stock market development because according to him they have the viability of external finance. Ogunsakin and Isaac (2020) investigated the macroeconomic determinants of stock market performance in Nigeria between 1985 and 2018. The source of the data for the study were from World Bank Development Indicator, 2020 edition and Central Bank of Nigeria statistical bulletin. The study employed ARDL co-integration approach as estimation technique. Findings from the study showed that inflation rate, real interest rate, real effective exchange rate and world oil price were the major determinants of Nigeria stock market performance during the study period. Based on these findings, the study therefore concludes that both endogenous and exogenous macroeconomic variables determine Nigeria stock market performance. Hence, the activities in the global oil market should be monitored in formulating policies to enhance stock market performance in Nigeria.

Also, Kemboi and Tarus (2012) studied the macroeconomic determinants of stock market development in emerging, markets, using quarterly data for the period 2000 to 2009 by applying Johansen-Juselius co-integration analysis. The result indicate that macroeconomic factors such as income level, banking sector development and stock market liquidity are all important determinants of the development of Nairobi stock market. The study also found that macroeconomic stability is not significant predictor of the development of the securities market. Nacuer, Omran and Ghazouani (2007) examined the determinants of stock market development in the Middle Eastern and North African region using unbalanced panel data on savings rate, financial intermediary, stock market liquidity and stabilization variables in the 1987-2006. The study employed the vector autoregressive (VAR) as estimation techniques. The study found that savings rate, financial intermediary, stock market liquidity and stabilization variables are the important determinants of stock market development and that financial intermediary and stock markets are complements rather than substitutes in the growth process. John, Ojong and Akpan (2010) studied the determinants of stock market development in Nigeria covering 1990-1009. The study used Error correction mechanism (ECM) approach as estimation techniques. The study found that stock market liquidity, savings rate and one-period lagged stock market development were significant predictors of stock market development in Nigeria.

In Nigeria, a number of empirical studies have been carried out on the determinants of stock market development. But, from the review of literature above, no empirical studies on the determinants of stock market price in Nigeria exists. Besides, none of the empirical studies reviewed above has been carried out between 2021 and 2022. Hence, this study contributes to an increasing body of knowledge furnishing evidence of the impact of macroeconomic indices on stock market price in Nigeria. This study will fill these gaps.

**3. Methodology**

The study adopted ex-post facto design to investigate the impact of selected macroeconomic variables on stock market price in Nigeria during the period 1980-2021. To achieve this, the research used time series data on included variables and the method of autoregressive distributed lag (ARDL) to carry out the analysis. The research used data from secondary sources of information. The adoption of this research design is based on the fact that the study relied on historic data obtained from National Bureau of Statistics (NBS), and Central Bank of Nigeria (CBN).

The model used in this study was adopted from the work of Ogunsakin and Isaac (2021). On macroeconomic Determinants of Stock Market Performance in Nigeria. The model is given as:

$$\text{LnASI}_t = \alpha_0 + \beta_1 \text{LnGDP}_t + \beta_2 \text{LnINF}_t + \beta_3 \text{LnMS}_t + \beta_4 \text{LnREEXH}_t + \beta_5 \text{LnINT}_t + \beta_6 \text{LnWGDP}_t + \beta_7 \text{LnWOP}_t + U_t \dots\dots\dots 1$$

Where: ASI = All Share Index, GDP = Gross Domestic Product, INF = Inflation Rate, MS2 = Broad Money Supply, EXH = Exchange Rate, RINT = Real Interest Rate, WGDP = World Gross Domestic Product, WOP = World Oil Price; and Ln = Logarithm.

Model (1) above is modified by replacing All Share Index (ASI); Gross Domestic Product (GDP); Real Interest Rate (RINT); World Gross Domestic Product (WGDP); and World Oil Price (WOP), with Stock price in Nigeria (SPR); Inflation rate (INF); Corruption perception index (CPI); and Credit to private sector (CPS) respectively. Thus, that was used in this study is specified as:

$$\text{SPR} = f(\text{FER}, \text{INF}, \text{MS}_2, \text{CPI}, \text{CPS}) \dots\dots\dots 2$$

Where SPR = Stock price in Nigeria, FER = Foreign exchange rate, INF = Inflation rate, MS2 = Broad money supply, CPI = Corruption perception index; and CPS = Credit to private sector.

The log-linear form of the model is stated as:

$$\text{LnSPR}_t = \beta_0 + \beta_1 \text{LnFER}_t + \beta_2 \text{LnINF}_t + \beta_3 \text{LnMS}_{2t} + \beta_4 \text{LnCPI}_t + \beta_5 \text{LnCPS}_t + U_t \dots\dots\dots 3$$

Where  $U_t$  = Error term, and  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$  (a priori)

Before estimation, the time series data was subjected to diagnostic tests which commenced with Augmented Dickey-Fuller (ADF) and Philips Perron (P.P) unit root tests for the variables included, and Johansen co-integration method, and to error correction mechanism (ECM). The data used in this study is secondary, and covered the period 1980-2021. The choice of this period is due to the fact that it witnessed both global financial crisis and COVID-19 pandemic of 2020 which have affected both global financial market as well as those developing countries. The time series data were collected from various sources including Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) annual reports and statement of accounts, various years.



Stock price is the current price that a share of stock is trading for on the market. It is measured in Naira (#). Foreign exchange rate is the rate at which Nigerian currency-the Naira is exchanged with other international currencies. It is measured in Naira (#). Inflation rate is the rate at which general prices grow over time. It is measured in percentage (%). Broad money supply is the total money in circulation. It is measured in Naira (#). Corruption perception index is the position of a country in global ranking. Corruption perception index is included among the explanatory variables because the Nigerian financial sector has also been bedevilled by corruption. It is measured by using index. Credit to private sector is the total credit advanced to private individuals and corporate organizations. It is measured in Naira (#).

**4. Results**

According to Augmented Dickey-Fuller (1979) and Philips and Perron, there is likelihood of obtaining a spurious results if the series that generated the results are non-stationary. This is why we investigated the time series properties of the data by conducting unit root test for stationary using ADF method. The results are presented in table 1 below.

Table 1: Augmented Dickey-Fuller (ADF) Unit Root Test.

Series	ADF test Statistics	5% Critical Value	1% Critical Value	Order of Integration
SPR	5.972531	-1.958	-2.682	I (1)
FER	-2.875370	-1.958	-2.682	I (1)
INF	4.873225	-1.958	-2.682	I (1)
MS2	3.019231	-1.958	-2.682	I (1)
CPI	-0.966382	-1.958	-2.682	I (1)
CPS	-2.642752	-1.958	-2.682	I (1)

*Source: Authors Computation 2022,*

The result of unit root test shown in table 1 above indicated that all the included variables in the model were integrated of same order, that is, I(1), see column 5.

Table 2: Philips Perron (pp) Unit Root Test Results

Series	PP test stat.	5% Critical Value	1% Critical Value	Order of integration
SPR	-4.3221130	-1.958	-2.682	I (1)
FER	-5.64972	-1.958	-2.682	I (1)
INF	-8.408963	-1.958	-2.682	I (1)
MS2	-4.328721	-1.958	-2.682	I (1)
CPI	-2.832573	-1.958	-2.682	I (1)
CPS	-5.059353	-1.958	-2.682	I (1)

*Source: Authors Computation 2022*

The Phillips Perron (PP) test in table 2 also showed that the variables are integrated of order I (1). This implies that the variables are all stationary and cointegrated.

An examination of table 3 showed that the Eigen value statistics are less than Trace statistics respectively at all levels. This showed existence of six unique co-integrating equations between the variables; SPR, FER, INF, MS<sub>2</sub>, CPI and CPS at 5 percent level. Thus, it can be concluded that there is long-run relationship between stock price and macroeconomic indices in Nigeria during the 1980-2021.

Table 3: Johansen co-integration test

No. of CE (S)	Eigen value	Trace stat.	5% critical value	Prob **
None	0.089956	310.7792	96.57388	0.0000
At most 1	0.993051	182.0231	70.31420	0.0000
At most 2	0.989375	99.1989	48.56820	0.0000
At most 3	0.786336	56.0023	28.978081	0.0000
At most 4	0.385821	16.9935	14.94741	0.0000
At most 5	0.2003911	5.312474	4.42853	0.0000

Source: Authors Computation 2022

The results on table 4 indicates that the coefficient of ECM test is negative as was expected. This implies that, the system corrects itself to previous period equilibrium at a speed of 82.83% annually, meaning that the speed of adjustment to equilibrium is 83% approximately. This further underscores the long-run equilibrium relationship between the variables.

Table4: Ordinary least square parsimonious (ECM) Results

Variables	Coefficient	t-stat.	Prob.	5% critical value
Constant (C)	2230.12	4.8252	0.0049	2.042
D (FER)	423.4331	4.51828	0.5314	2.042
D (INF)	-98.6528	-0.84750	0.4063	2.042
D (MS <sub>2</sub> )	6.7677	4.18821	0.5929	2.042
D (CPI)	0.06831	0.3278	0.4382	2.042
D (CPS)	-181.2751	-6.41539	0.5891	2.042
ECM (-1)	-0.82831	-4.99231	0.0000	2.042

R-square 0.6013521

R-square (adjusted) 0.589925

F-stat. 5.821103

Akaikein for criteria 23.68952

Durbin-Watson stat. 1.152284

Source: Authors Computation 2022

The result also showed that while variables such as: FER, MS<sub>2</sub>, and CPI have positive impact on SPR, others like INF and CPS have negative impact on it. Besides, FER, MS<sub>2</sub>, CPS and ECM are all statistically significant. Consequently, this study concludes that SPR can be said to be positively determined by changes in FER, MS<sub>2</sub> and CPI with the exception of INF, and CPS which had negative effect. These findings are consistent with the findings of Kemboi and Tarus, (2012) and Peter and Lyndon (2015). The coefficient of multiple determination,  $R^2 = 60.13\%$  indicates that the included explanatory variables accounted for about 60 percent of the changes in SPR. This means that the regression model has a good fit. Besides, the small value of Durbin-Watson statistic (1.15) implies that there is absence of first order autocorrelation.

### 5. Conclusion and Recommendations

This study empirically examined the determinants of stock market performance in Nigeria during the 1980-2021. The study investigated both the short-run and long-run relationship between the variables by using Johansen co-integration and Error correction model. From the analysis of the results, it can be concluded that while foreign exchange rate, broad money supply and corruption perception index have positive effect on stock market performance (stock market price), inflation and credit to private sector have negative impact on it. Thus, it can be concluded that foreign

exchange rate, broad money supply, corruption perception index, inflation, and credit to private sector have mixed impact on stock price in Nigeria

Based on the findings of this study, the following recommendations are made that businessmen should pay attention to movement of foreign exchange rate, broad money supply and credit to private sector in their decision to invest in stock market in Nigeria. Government of Nigeria should adopt policies that will lead to rise in foreign exchange value of naira. To this end, frantic efforts should be directed to create enabling environment that will encourage foreign investors to come and invest in the economy and/or Producing manufactured goods for foreigners to come and buy. This will lead to rise in the demand and value for our currency and stock price. Nigeria government should adopt policies that will lead to increase in broad money supply. To achieve this, the banking sector should be encouraged to increase lending to the private sectors (particularly those that are participants in stock marketing). Government should also increase its expenditure. That the monetary authorities and policy makers should be more concerned about the changes in inflation rate due to its negative impact on stock price in Nigeria. To this end, unproductive borrowing by banking sector and/or public expenditure on unproductive items should be discouraged. The serious fight against corruption should be sustained and all embracing. This will assist in reducing corruption in the Nigerian financial sector.

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