

## **Money Supply, Exchange Rate and Stock Market Performance in Nigeria (1986-2020)**

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### **Abstract**

The stock market has become a critical role in the economy and has captivated investor's attention, as it is to create funds and make an investment decision for companies and investors as well. This study investigates the impact of the money supply and exchange rate on Nigerian stock market performance in the short and long run, as well as the volatility issue. Secondary data was used in the study, which spanned the years 1986 to 2020. The Autoregressive distributed lag (ARDL) and GARCH models are used in the method analysis. The findings revealed that the money supply had a long-run effect on stock market performance. The money supply had a positive effect on stock market performance in the short run. According to the calculated results, there is a significant relationship between the money supply and the performance of the stock market in Nigeria. In the short term, the exchange rate has had a negative impact on the performance of the stock market, indicating that the relationship between the exchange rate and the performance of the stock market in Nigeria is not significant. The study suggested that there should be policies in place that will strengthen corporate governance code of conduct in financial institutions that could boost public confidence in the banking sector as well as the stock market in Nigeria to addressing the inefficiencies and weaknesses in the Nigerian financial system particularly in the banking sector as well as in the stock market.

**Keywords:** Money supply, exchange rate, stock market, market liquidity, performance,

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### **I. INTRODUCTION**

The stock market in an economy is expected to promote efficiency in capital formation and allocation. The stock market allows governments and industries to raise long-term capital for new projects, expansion, and modernization of industrial/commercial enterprises.

Economic growth will suffer if capital resources are not directed toward productive investments in the economy. The provision of long-term, non-debt financial capital is a unique benefit of the stock market to corporate entities. The market allows companies to avoid over-reliance on debt financing by providing equity capital, thereby improving the debt-to-equity ratio (Yartey & Adjasi, 2007).

Furthermore, the stock market is an essential component of the financial system, with an efficient delivery mechanism for the mobilization, allocation, management, and distribution of long-term funds (Alile & Anao, 1986; Paudel, 2005, cited in Shahbaz et al., 2008). The stock market facilitates the flow of funds from surplus funds to needs, as well as the canalization of funds from those who want to invest to those who need them for economic endeavors. Aside from judicious mobilization of idle savings into productive use, the stock market provides a channel for foreign investment and the influx of foreign capital for developing projects that increase the value of the economy. Given the importance of high productivity in the industrial sector in stimulating economic growth and improving population living standards, the degree of liquidity in the stock market cannot be overlooked by policymakers. As a result, Investopedia (2013) defined market liquidity as an asset's ability to be sold without causing a significant price movement or loss of value. Cash in hand appears to be the most liquid asset that can be used immediately to perform economic actions such as buying, selling, or paying off debts, satisfying immediate needs and desires, and so on. A liquid market is one whose assets are easily and rapidly sold with minimum loss of value, at any time within market hours. Also, liquid markets are characterized by ready and willing buyers and sellers at all times.

Stock market liquidity is the likelihood that the next trade will be executed at the same price as the previous one. A market is considered deeply liquid if there are large numbers of ready and willing buyers and sellers. Odita (2009). Market liquidity is defined as the ease and speed with which capital market participants

can convert assets into purchasing power at agreed-upon prices Levine (1997). It should be noted that liquidity is an important indicator of stock market development. This is because it demonstrates how the market aids in the better allocation of capital for investment, thereby improving the prospects for long-term economic growth. The ability of investors to quickly and cheaply alter their portfolio, thereby reducing the riskiness of their investments, opens the door to this possibility. This aids in the facilitation of profitable investments infeasible projects. According to Engle and Lange (1997), liquidity is defined as the ability to complete a transaction without incurring any costs. Kyle (1985) divides liquidity into three components: tightness, depth, and resiliency. As a result, tightness refers to the difference between transaction and efficient prices. Depth, on the other hand, is concerned with the volume that can be traded at the current price, whereas resiliency is concerned with the rate of return to the efficient price following a random deviation.

The exchange rate is the price paid for a country's currency in relation to another country's currency (Olweni & Omondi, 2011). There is evidence of exchange rate studies conducted on emerging markets, such as Okyere, Fosu, & Boakye (2014), Boakye (2014), Insah (2013), Owusu-Nantia & Kuwornu (2013). (2012). According to these studies, there is a significant direct relationship between stock prices, exchange rates, and other macroeconomic variables.

The Nigeria stock market is made up of the Nigerian economy's financial, industrial, service, and technological sectors. Some studies have used two portfolio models to explain the relationship between the exchange rate and stock market performance: the Flow-Oriented model and the Value-Oriented model (Dornbusch Inflation Rate and Fischer, 1980). The flow-oriented model is concerned with an economy's exchange rate movement, firm output levels, and trade balance. According to the model, share price movements have a tendency to affect aggregate demand via wealth, liquidity effects, and, as a result, the exchange rate. Specifically, a decline in stock prices leads to a decline in the wealth of local investors.

The "Stock-Oriented" model views a country's capital account as a link between the stock market and the exchange rate market. The model equates the exchange rate to the demand and supply for assets (bonds and stocks) and proposes that a depreciation of the local currency (the naira) against a foreign currency (the British pound) increases returns on the foreign currency (the pound). As a result, rational investors will be forced to shift funds away from domestic assets (stocks) and toward pound assets, causing stock prices to fall. The significance of stock exchanges in national economies cannot be overstated. This is because the stock markets act as a conduit in the channeling and diversification of domestic savings and foreign capital for enhanced investments and capital formation. This function of the stock markets complements other efforts in the alleviation of poverty and positive social change since growth is also enhanced.

Exchange rates and stock market prices are inextricably linked, as the world is becoming a global village as a result of trade liberalization and globalization. For example, foreign investors are putting their money into stock markets all over the world. International investment is booming as a result of this process, and capital is moving all over the world. The benefits of these investors are determined by the current exchange rate. Furthermore, volatility in the exchange rate may cause uncertainty or otherwise in these investors. As a result, the exchange rate is a significant determinant of stock market fluctuations. Recently, the naira's value in Nigeria experienced a high degree of volatility. For example, statistical records show that the average value of the Naira to the US dollar was ₦125 from 2006 to 2008, but it depreciated further from ₦150.3 in 2010 to ₦153.90, ₦156.81, ₦ 305.25, ₦ 360.06, and ₦ 378.52 per US dollar in 2011, 2013, and 2017, 2019, and 2020, respectively. In the same vein, the stock market moves in lockstep with the currency exchange rate. Statistically, the stock market fell by roughly 70% between 2008 and 2009. Furthermore, the All-Share Index (ASI), a measure of stock market performance, has steadily declined from 65,652.38 points in 2008 to less than 30,000.00 points in 2012. It did, however, rise from 31,853.19 to 41,210.10 points between 2013 and 2014, before declining to less than 31,853.19 points in 2015 and rising to 40,270.72 points by the end of 2020 to date (Bala and Hassan 2020).

## **II. LITERATURE REVIEW**

### ***Conceptual Framework***

The exchange rate was another variable of interest in the study. As a result of imported goods, open economies experience high imported inflation, according to Terra (1998). Increased imports put pressure on the domestic currency, causing it to depreciate or lose value against trading partner currencies. This is significant for South Africa, which has a small and open economy in comparison to its major trading partners such as the United States of America, Europe, and China. Interest rates are typically raised in times of currency depreciation to prevent higher inflation. According to Bahmani-Oskooee & Malixi (1992), Egypt is regarded as a small open economy, and the stability of the exchange rate is critical for monitoring and regulating price level stability in the Egyptian economy. According to their findings, increases in the level of foreign prices push up domestic inflation, even though such changes in domestic consumer prices do not appear to be highly sensitive to changes in import prices. This has been attributed to the Egyptian government's use of subsidies to protect the poor from

the effects of inflation. In some ways, this confirms that governments must manage exchange rates, which have an impact on domestic prices through imported inflation.

Akinnifesi (1987) investigated the relationship between exchange rate and stock price fluctuations using a disaggregated analysis. He discovered that a falling Naira exchange rate raises stock prices. According to the literature, any change in exchange rates would have an impact on corporate foreign business and profitability. As a result, firm equity prices are affected. Aggarwal (1981) discovered a significant positive relationship between the US dollar and US equity prices, whereas Soenen & Hennigan (1988) discovered a significant negative relationship. The exchange rate is the price of one currency in relation to another. The demand and supply forces determine the exchange rate in a freely operating market, just as they do in any demand and supply model for goods and services. According to the efficient market hypothesis, exchange rates reflect all information about foreign influences on the economy. The Cedi's value (presumably) reflects the fundamentals of the economy. Preferences, GDP differentials, Inflation differentials, Interest rate differentials, and Speculation are the major determinants that cause currency demand and supply changes, according to Jackson & McIver (2001). Because the Nigerian economy is open, the stock market's return is expected to be positive.

The influence of the money supply on inflation is also linked to an increase in stock prices via portfolio substitution or inflationary expectations. An increase in the money supply may cause interest rates to rise due to inflationary expectations, lowering stock prices as investors shift their investments away from the stock market. It should be noted, however, that other researchers discovered that increasing the money supply could boost stock prices via the liquidity effect, which means that increased liquidity in the economy leads to increased demand for stocks, which leads to higher stock prices (Cheung & Ng, 1998)

In our study, the money supply, represented by M2, measures the degree of liquidity in the economy, and any change in it is likely to influence both individual and institutional investors investment decisions. According to Pearce & Roley (1985), unexpected monetary policy announcements have a significant impact on stock prices, whereas Jain (1988) found that announcements about the money supply and the consumer price indexes are significantly associated with stock price changes. According to Boyle (1990), changes in monetary uncertainty alter the stock price risk premium in order to replicate the additional expected prices that investors demand assuming the risk of holding stocks. In this way, monetary uncertainty is thought to have a negative relationship with stock prices. The empirical relationship between money supply and the stock market has been studied. Cheng (1995) and Groenewold (1997) demonstrated that the money supply influences stock market performance.

El-Nader & Alraimony (2012) studied the impact of macroeconomic factors on the Amman stock market between 1991 and 2010. The CPI, real money supply, the weighted average real interest rate on loans and advances, real GDP, real exchange rate, and a dummy variable were chosen as macroeconomic variables.

The GARCH model was used in the study, which found a strong correlation between selected macroeconomic variables and stock market returns. The study's findings demonstrate the significance of macroeconomic indicators in stock market performance and their implications for investment returns. According to Du & Hu (2012), a declining currency has a negative impact on stock market returns. In addition, an analysis of the variables using a composite index will help with the dissertation objectives. They used monthly data to apply the EGARCH model (used to determine and forecast variance) to the GSE and concluded that variability in stock returns is not the only cause of exchange rate volatility. According to the findings, there is an inverse relationship between exchange rate volatility and stock market returns. These findings emphasized the importance of investors considering the macroeconomic environment when making future investment decisions.

### ***Theoretical Framework***

This study employs the school of thought of macroeconomic assumptions, which holds that stock prices are sensitive to changes in macroeconomic variables. According to stock valuation models, such as Ross' Asset Price Theory (APT), the current price of a stock is approximately equal to the present value of all future cash flows to equities. As a result, any economic variable that affects cash flows and the required rate of return has an impact on the stock price. The long-run relationship between macroeconomic variables and stock market prices is emphasized in the model. The APT model is used in this study to theoretically explain the relationships between macroeconomic variables and stock market prices. Asset pricing describes how financial assets are priced, why prices change, and how prices are related to underlying macroeconomic variables. The APT model is a general theory of asset pricing that has gained traction in asset pricing. The APT model is based on a multi-factor model in which each investor believes that the stochastic properties of capital asset returns are consistent with the factor's structure.

APT is based on the assumption that investors will take advantage of arbitrage opportunities in the broader market. As a result, an asset's rate of return is determined by the return on alternative investments as well as other risk factors. He contends that a financial asset's expected returns can be modeled as a linear

function of various macroeconomic variables or theoretical market indices, with the sensitivity of each factor to change represented by a factor-specific beta coefficient. APT also claims that financial assets are correctly priced based on a modeled-derived rate of return. As a result, if the price diverges, arbitrage should bring it back into line. The APT model can be summarized as follows:  $E(R_i) = R_f + \beta_{i1} R_{P1} + \beta_{i2} R_{P2} + \beta_{i3} R_{P3} + \dots + \beta_{in} R_{Pn}$  (1) Where,  $E(R_i)$  = risky assets expected returns  $R_f$  = risk-free rate  $\beta_{in}$  = sensitivity of the asset to factor  $n$  (or factor loading)  $R_{Pn}$  = risk premium.

As previously stated, the stock price is related to future expected cash flows and the future discount rate used to discount future expected cash flows. The net earnings of corporations determine stock prices. If a company is expected to perform well in the near future, its stock price will rise to reflect that expectation. If it is expected that corporate cash flows will fall in the future, the stock price may fall. All of these changes are a result of macroeconomic factors.

### **Empirical Review**

In theory, volatility in the money supply changes the equilibrium position of the money supply, altering the structure of assets in an investor's portfolio. According to Rogalski & Vinso (1977), money supply innovation may affect real economic variables, resulting in a delayed positive impact on stock market prices. Early research in developed countries suggests that the money supply is negatively related to stock market prices. According to Fama (1981), the negative relationship can be observed by looking at the direct relationship between money supply and inflation, where an increase in money supply raises the discount rate, which in turn lowers stock prices. Many researchers believe that the negative effects of money supply on stock prices are caused by money supply innovation that isn't accompanied by a proportionate increase in output growth.

According to Ogiyi (2013), the money supply has a long-run significant positive relationship with stock market prices in Nigeria. On-time series annual data from 1980 to 2012, the study employs cointegration and error correction model tests. Nkoro & Uko (2013), on the other hand, found that money supply has no effect on stock market price changes in Nigeria. We anticipate a positive relationship between money supply and stock market prices in Nigeria and other developing economies. Kpanie, Vivian, & Sare (2014) examined quarterly time series data for Ghana from 1995 to 2011 using ECM and ADF cointegration analysis. According to the findings, Ghana's money supply is statistically significantly related to stock prices. The findings also point to a long-run inverse relationship between stock market prices and money supply.

According to Muktadir Al-Mukit (2012), there is unidirectional causality between the market index and the exchange rate, as well as between the interest rate and the market index. Md-Yusuf and Abd Rahman's (2012) findings contradicted Muktadir Al-Mukit's (2012) findings by confirming the existence of bi-directional causality between the equity market and exchange rate in the industrial and finance sectors only. Interest rates had a one-way effect on exchange rates (interest rates would be used to correct exchange rates). Zia (2011) discovered no evidence of a short or long-run relationship between the stock market index and exchange rates, as well as no causal relationship. These findings differ from those of Muktadir Al-Mukit (2012), who discovered a unidirectional relationship, and Dimitrova (2005), who discovered a mixed relationship the following year. As a result, their findings are inconclusive. According to Nath & Samanta (2003) using Indian data, there is no causal link between exchange rates and stock prices.

Damankeshideh & Shanasaei (2013) questioned the impact of exchange rate uncertainty on stock market indexes as well. All explanatory variables except GDP had a negative impact on the Stock Index, according to the findings. Their findings are not consistent with Muktadir Al-Mukit (2012) but they are in agreement with Dimitrova (2005). Mlambo et al (2013) findings contradicted Karoui (2006), their study found a weak relationship between currency volatility and stock market performance. Currency volatility was found to have a negative relationship with prime overdraft rate and total mining production. Interest rates in the United States boosted market capitalization. However, their findings were consistent with those of Beirne et al. (2009), who discovered that interest rates had a negative impact on the stock market. According to Jamil & Ullah (2013), the relationship between stock market returns and exchange rates in the short run is natural, which contradicts earlier findings by Maku & Atanda (2010), but confirms earlier findings by Karoui (2006) that exchange rates have a significant impact on stock returns using the Vector Error Correction Model.

### **III. METHODOLOGY**

The secondary data used in this study were sourced from Central Bank of Nigeria Statistical Bulletin and Nigeria Stock Exchange database, National Bureau of Statistics, and Securities and Exchange Commission. The data used in this study are yearly time series data for the period of study 1986-2020. The data were converted to rates for uniformity's sake. In this study, stock market performance is proxied by All-share Index (ASI), while the two variables chosen are exchange rate ( proxied EXR ) and broad money supply ( proxied by M2).

$$LNSEDX_t = \beta_0 + \beta_1 LEXR_t + \beta_2 LCPI1 + \beta_3 LTBR + \beta_4 LM2_t + U_t \quad (1)$$

Where: LNSEDX = Log of NSE all share index;  
 LEXC= log of Official Exchange rate (#1=\$)  
 M2g= Annual growth rate of Broad money supply  
 $\beta_0$ = Intercept  
 $\beta_1-2$  = slope of the explanatory variables  
 $u$  = Stochastic or error term.

Where  $D_0$  is constant  $D_1$  are parameters to be estimated and  $U_t$  is the stochastic error terms.  
 However, this study shall make modifications to the existing model to be;  
 $ASI = f ( EXR, M2)$

#### IV. DATA ANALYSIS, RESULTS AND DISCUSSION OF FINDINGS

##### Analysis of Augmented Dickey-Fuller (ADF) Unit Root Result

The standard Augmented Dickey-Fuller (ADF) unit root test was used to check the order of integration of the variables.

**Table 1: Results of Augmented Dickey-Fuller ( ADF ) Stationarity Test**

Variable	ADF Statistic	Critical value	DW	Lag	Inference
ASI	-4.0369	-2.9862	1.96	1	I(1)
EXR	-5.1195	-2.9718	2.0	1	I(1)
MS	-3.5401	-2.9718	1.96	1	I(1)

Source: Author Computation, 2021

**Table 2: Multiple Regression Results**

Dependent Variable: LASI  
 Method: Least Squares  
 Date: 03/09/18 Time: 15:06  
 Sample: 1986 2020  
 Included observations: 30  
 HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LMS	1.452547	0.148487	9.782285	0.0000
EXR	-0.003582	0.003914	-0.915266	0.3688
C	0.978129	0.611345	1.599961	0.1222

  

R-squared	0.965698	Mean dependent var	8.634297
Adjusted R-squared	0.960209	S.D. dependent var	1.852007
S.E. of regression	0.369430	Akaike info criterion	0.997302
Sum squared resid	3.411967	Schwarz criterion	1.230835
Log likelihood	-9.959531	Hannan-Quinn criter.	1.072011
F-statistic	175.9542	Durbin-Watson stat	0.811400
Prob(F-statistic)	0.000000	Wald F-statistic	92.00308
Prob(Wald F-statistic)	0.000000		

Source: Author computation, 2021

##### Test of Hypothesis

$H_0$ : There is no significant relationship between exchange rate and stock market performance in Nigeria

**Table 3: Regression co-efficient Analysis Result 3**

Model	Co-efficient	Standard error	T-statistic	Probability
Constant	0.978129	0.611345	1.599961	0.1222
Exchange rate	-0.003582	0.003914	-0.915266	0.3688

Source; Author's computation, 2021

From Table 3 above, the p-value of the relationship between exchange rate, and stock market performance is 0.3688 which is greater than 0.0005 ie 5% level of significance. Therefore, the relationship between exchange rate and stock market performance is not significant, hence we accept the null hypothesis which states that there is no significant relationship between exchange rate and stock market performance in Nigeria, and we reject the alternative hypothesis which states that there is a significant relationship between exchange rate and stock market performance in Nigeria.

Also the beta co-efficient of interest rate, which is the slope/gradient or rate of change between exchange rate and stock market performance is -0.003582 which is negative. Hence, the result reveals that there is a negative relationship between exchange rate and stock market performance that is the higher the exchange rate the lower the stock market performance and vice visa, Though this relationship, is not significant as P-value of 0.3688 is greater than alpha value 0.0005 (i.e 5% level of significance

There is no significant relationship between money supply and stock market performance in Nigeria.

**Table 4; Regression Coefficient Analysis Result 4**

Model	Co-efficient	Standard error	T-statistic	Probability
Constant	0.978129	0.611345	1.599961	0.1222
Money supply	1.452547	0.148187	9.72285	0.0000

Source; Author's computation, 2021.

From Table 4 above, the p-value of the relationship between money supply, and stock market performance is 0.0000 which is lesser than 0.0005 ie 5% level of significance. Therefore, the relationship between money supply and stock market performance is significant, hence we reject the null hypothesis which states that, there is no significant relationship between money supply and stock market performance in Nigeria, and we accept the alternative hypothesis which states that it is significant relationship between money supply and stock market performance in Nigeria.

Also the beta co-efficient of money supply, which is the slope/gradient or rate of change between money supply and stock market performance is 1.452547 which is positive. Hence, the result reveals that there is a positive relationship between money supply and stock market performance that is the higher the money supply the higher the stock market performance and vice visa, This relationship is significant as P-value of 0.0000 is less than alpha value of 0.0005 (i.e 5% level of significance).

## V. CONCLUSION AND RECOMMENDATION

The study examined significant macroeconomic variables that affect industrial/equities stock, government stocks, and the total stock transaction in the Nigerian stock exchange market. Time-series data were used in the study that covers the period 1986 to 2020. Unit root test (Augmented Dicker Fuller test) was conducted on the data to ascertain their stationarity. The result reveals that some variables were stationary at a level and some were not. This invalidates the use of co-integration and error correction models and implies that only static relationships could be established among the specified variables.

Furthermore, the money supply had a significant impact on the total stock transactions. As a result, a long-term policy package focusing on the stabilization of real and monetary policy variables in the Nigerian economy are required. Furthermore, institutional and operational reforms in the country's capital market are unavoidable in order to improve subsector efficiency.

Because of the mixed results, we conclude that money supply is positively related to stock market performance while the exchange rate is not.

Based on the empirical findings, some of the following policy, recommendations include the need to invigorate and strengthen the real sector participation in the capital market by encouraging more companies to get listed on the floor of the market.

There should also be policies to enhance stock market performance such as addressing the inefficiencies and weaknesses in the Nigerian financial system particularly in the banking sector which accounts for a large percentage of the Nigerian stock market capitalization by strengthening the corporate governance code of conduct in financial institutions that could boost public confidence in the banking sector as well as the stock market in Nigeria.

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