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Effect of Money Supply on Nigeria Stock Market Performances 1995-2016; An Empirical Analysis.

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ABSTRACT

The main objective of this work was to use ordinary least square technique otherwise regression analysis to study the relationship between money supply and the stock market performance in Nigeria. The quantitative data required for this work was extracted from the statistical bulletin of the central bank of Nigeria for the period spanning from 1995 - 2016. A regression analysis on the data and the study accepted that money supply impact positively on all share index thus the stock market performance. The finding was useful to the government, investors and potential investors, also for the academia. However, this paper took only a macroeconomic variable of money supply in isolation without other variables which must work with others for a complete work. There is therefore need to extend the study to other variables of interest rate, foreign exchange rate and still to global factors, to actually understand the holistic variables that impact on stock market performance.

Keywords: All share index, stock market performance, money supply

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INTRODUCTION

Financial markets play a crucial role in the foundation of a stable and efficient financial system of an economy. Numerous domestic and international factors directly or indirectly affect the performance of the stock market. The stock markets been part of the financial market provide access to cheaper capital to business houses and investors get chance to lucratively invest their savings. Consequently, it has been recognized in economic literature that stock markets play a sizeable role in the development of an economy and form an integral part of the financial markets.

The importance of the stock market in any economy can be seen in its vital role in assessing economic conditions. The stock market basically serves a vital role of mobilizing individual resources and channeling same to investors. Stock markets are conceived to be development- oriented. They enable firms to acquire the much-needed capital quickly, and by so doing helps in facilitating capital allocation, investment, and growth. It also assists in reducing investment risks due to the ease with which equities are traded, and play crucial role in helping to determine

the level of economic activities in most economies [1]. Financial markets in most of the developing countries have grown rapidly throughout the last decades due to various factors such as deregulation, globalization and advances in information technology. During this period, financial markets all over the world have also witnessed growing integration among themselves.

Generally, capital markets are the heartbeat of every economy since their ability to respond instantaneously to fundamental problems change in all countries. Also, it encourages savings and real investment in any healthy economic environment. Aggregate savings are channeled into real investment which increases capital stock and therefore economic growth of the country. These attributes of capital market make it possible for the discerning minds to feed the impulse of such an economy. Nigeria Stock Exchange is not an exemption as it is expected to be influenced by external shocks, which are outside the realm of capital market. The external shocks are the macroeconomic indicators; Money Supply; that are expected to cause variation in the stock prices movement. [2], argued that these changes are often reflected by the magnitude and movement in stock prices, market index and liquidity of the market.

The relationship between stock market performance and macroeconomic variables such as interest rates, exchange rates, GDP and the money supply has been investigated by many researchers [3]; [4]; [5] and [6]. However, stock prices are subjected to fluctuations given the forces of such factors and these fluctuations are expected to influence the performance of the stock market.

The determinants of stock market development can be broadly classified into two categories: macroeconomic determinants and institutional determinants. The institutional determinants consist of three main measures: the quality of governance (which englobes factors like corruption, political rights, public sector efficiency, and regulatory burdens); the legal protection of private property and law enforcement; the accountability and limits on political leaders. On the other hand, macroeconomic determinants, which money supply is a factor, focus on elements such as income level, savings, investments, financial development and inflation. Empirically, adequate analysis need to submitted to the effect of money supply on the movement of stock prices in Nigeria, because of complex and varying dynamics of the economy.

The performance of the stock market in any country is a strong indicator of general economic performance and is an integral part of the economy of any country. With the liberalization of the financial market, introduction of free and open economic policies and

advanced technologies, investors are finding easy access to stock markets around the world. The Nigerian economy has experienced mixed macroeconomic performance over the years. Following the fact that money supply has taken different values over the years alongside the market stock price index, it can be said that there exists some form of relationship between this key macroeconomic variables and stock market index in Nigeria.

It has been widely established in literature that several macroeconomic variables may affect the performance of stock market and Nigerian experience might not be exceptional. Taking cue from previous studies, three set of variables namely-financial, foreign and real sector are identified to establish such relationship in any economy. For instance, money growth, except accompanied by growth in output of goods and services, leads to inflationary gaps in the economy, thereby affecting stock prices downwards, and vice versa.

This study empirically intends to examine the dependence structure between the Nigerian stock market performance and money supply macroeconomic factor over a period spanning from 1995 to 2016 years.

Thus the objective of this study was to ascertain the effect of money supply on the Nigeria stock market performance.

REVIEW OF RELATED LITERATURE

Money supply refers to the total amount of money in circulation or in existence in a country. There are several standard measures of the money supply, including the monetary base, M1, and M2. The monetary base is defined as the sum of currency in circulation and reserve balances (deposits held by banks and other depository institutions in their accounts at the Federal Reserve). Supply of money affects economic activities and that is why its control has been the chief function of the central monetary authority of any given economy [5]. [6] classifies the supply of money as a leading indicator. M1 refers to currency in circulation plus demand deposits; while M2 is M1 plus near monies, for example, time deposit. The researchers will adopt M2 for this study.

Many studies conducted using data from developed countries, came up with the interesting conclusion that money growth affects stock prices adversely [7]. The consensus in this regard proceeds from the reasoning that money growth, except accompanied by growth in output of goods and services, serves to unleash inflationary spiral on the economy, driving stock prices downwards consequently; as balanced economic agents expand their wealth holdings away from financial assets (such as stocks and shares) to real (tangible) assets [8]. This strategy is often adapted to hedge against the erosive effect of inflation on financial

assets [9]. Following the widely held view and given the explosive growth in the Nigeria's money supply, we expect stock prices to be adversely and significantly exaggerated by changes in variable.

Stock market performance is the assessment of an efficient market. A basic feature of an efficient capital market is constant liquidity, an easy mechanism for entry and exit by investors. This requires sufficient volume and size of transactions in the market [1]. The stock market forms a significant component of the financial sector of any economy. A well-functioning stock market is expected to lead to a lower cost of equity capital for firms and allow individuals to more effectively price and hedge risk. Stock markets can attract foreign portfolio capital and increase domestic resource mobilization, expanding the resources available for investment in developing countries.

As [1] indicate, when recognizing the importance of stock market on economic growth, prudential authorities such as World Bank, IMF and ADB undertook stock market development programs for emerging markets in developing countries during 1980s and 1990s and they found that, emerging stock markets have experienced considerable development since the early 1990s. The market capitalization of emerging market countries has more than doubled over the past decade growing from less than $2 trillion in 1995 to about $5 trillion in 2005 [1].

As a percentage of world market capitalization, emerging markets are now more than 12 percent and steadily growing (Standard and Poor, 2005). The NSE 20 Share Index is a price weight index. The members are selected based on a weighted market performance for a 12 month period as follows: Market Capitalization 40%, Shares Traded 30%, Number of deals 20%, and Turnover 10%. Index is updated at the end of the day (My Stocks, 2014). It represents the geometric mean of share prices of the NSE's 20 top stocks. It has recently been joined by the more broad-based NSE All Share Index (NASI), aimed at capturing the market capitalization of all the NSE's listed equities traded in a day.

On the other hand both theory and empirical literatures hold that the growth of a country is directly related to the economy, which consists of various variables like GDP, Foreign Direct Investment, Remittances, Inflation, Interest rate, Money supply, Exchange rate and many others [10]. These variables are the backbone of any economy. The movements in the stock prices are affected by changes in fundamentals of the economy and the expectations about future prospects of these fundamentals. Stock market index is a way of measuring the performance of a market over time. These indices used as a benchmark for the investors

or fund managers who compare their return with the market return.

Also, several prior empirical studies from developed economies have shed light on the effect of various factors on the share price of firms but few of these have focused on emerging markets [10]. Their findings indicate that share price determination is very diverse and conflicting. From the basic philosophy (share prices determined by market forces of demand and supply) to the econometric models (share prices determined by a number of economic factors), there are different schools of thought [11]. In assessing the determinants of stock market performance, this paper will mainly consider money supply. Money supply and inflation have positive relationship among themselves. However, money supply and inflation have a dual effect on stock returns. Theory holds that an increase in money supply will increase inflation, which is noted to increase expected rate of return. Also, increase in money supply and inflation increases future cash flow of the firm, which in turn, increases expected dividend, and will increase stock prices.

Empirically, [12] based on 164 monthly observations, investigated the dynamic relationship between macroeconomic variables and Indian stock market by employing Johansen's cointegration test and vector error correction model. The study proved that in the long run Indian stock market is positively related to the performance of real economic variables. As expected, money supply and interest rates expounded negative relationship with stock market. Consumer price index may be stock depressing variable in the short period; however, it may trigger the real activities in the economy and reflected positively in the stock market in the long-period.

[13], investigated the influence of varying macroeconomic variables on stock return of Turkey in a 2-stage regression analysis and found that industrial production and exchange rates were positively related with the stock return. On the other hand, Circulation in Money (M1) had no any significant impact on stock return. [14], examined the relationship between stock prices and macroeconomic variables for New Zealand. The variables are long-run and short-run interest rate, inflation rate, exchange rate, GDP, money supply and domestic retail oil price. Their findings suggest that there exist a long-term relationship between stock prices and selected variables in New Zealand. However, the Granger causality test suggests that New Zealand stock exchange is not a good indicator for macroeconomic variables in New Zealand.

[15], used vector error correction models (VECM) to identify the influence of macroeconomic changes on the stock market from an emerging market in

South Asia. They examined monthly data for all variables under the research covered from January 1985 to December 2001. The study revealed that the lagged values of macroeconomic determinants such as the MS and CPI have shown significant influence on the share price index (SPI).

[4], employed the VECM approach and VAR framework to analyse the dynamic interaction between Kuala Lumpur Composite Index (KLCI) and selected macroeconomic determinants such as MS and ER. The study proved that both determinants; MS and ER were negatively affecting the stock prices in Malaysia.

[16] used Johansen's cointegration to investigate the long run equilibrium interaction between selected macroeconomic determinants toward Istanbul Stock Exchange (ISE) index. The researcher employed monthly data for all the determinants covering the period from January 2003 to December 2012. The study found that both determinants; MS and ER depicted a long run equilibrium interaction toward ISE index.

[17], aimed to elaborate the stock return using Arbitrage Pricing Model by addressing the selected macroeconomic determinants such as MS and ER in the case of Pakistan. The regression analysis showed that both MS and ER have a significant relationship toward KSE 100 index and as expected, ER positively influenced the stock index while MS influenced the stock index negatively.

[18], examined the role and impact of macroeconomic variables on the Iranian stock market. Using historical data from 2007 to 2011 and applying regression analysis, the paper showed evidence that ER pose a greater effect on the stock market compared to inflation and MS. However, the paper failed to depict a significant relationship between MS and CPI towards the stock index except for ER that showed a significant positive relationship to Iranian stock index.

Model Specification

The empirical research design here is a linear stochastic form All share index (LNASI) and Broad money supply (LNM2) in Nigeria for the period 1995-2016. The data was culled from Central Bank of Nigeria statistical Bulletin and the research desk of Afrivest Assest Management Limited. The study adopted a simple linear regression model, represented thus:

$ASI_t = a + b_0 + {}_{b1}M2_t + + e_t$.....(1)

Where ASI = All-Share Index. [LNASI]

M2 = Money Supply. [LNM2]

E = Error term.

b_0, b_1, b_2 = Rate of change

t = period

Technique of Analysis

The Ordinary Least Squares (OLS) or regression analysis was applied to test the hypothesis. The signs of the coefficients were relied upon in describing the direction and strength of

linear relationship between the variable while the t-statistics and p-value or significance value were relied upon in determining the effect and significance between the variables.

The stationary (unit root) properties of the time series data were ascertained before the models will be estimated. Therefore, stationary status of the variable was investigated using the Augmented Dickey Fuller (ADF) unit root test to guard against spurious regression results.

Data Presentation

The datasets used for the empirical analyses are collected from the Central Bank Statistical Bulletin and are presented in a comprehensible manner. More so, it is log transformed to create a common base for the different variables and make analyses easier as shown in appendix I.

Data Description

The statistical properties of the data sets are seen as vital determinants of their behaviors when used in econometric analyses. On the basis of this, the researcher presented in this section, the basic descriptive statistics of the variables under study as well as some analytical tools like regression as shown in appendix II

From the above appendix (table 4.2), the measures of central tendency like mean, median for ASI, and M2 which are clearly presented. These two averages are indicators of the closeness of the observations to themselves. To show the variableness or spread of the series, measures of dispersion like standard deviation, minimum and maximum are presented.

Stationary Test

In an attempt to confirm the order of integration of the series under thereby confirming their suitability for a linear combination in the form of a model, the unit root test following the form specified as Augmented Dickey Fuller Test. Table 4.3, presents a summary of the unit root result as shown in appendix III;

From the result of the unit root test contained in appendix III, All share index and broad money supply are integrated of order given that they required one differencing respectively to attain stationary as reported. Given this different orders of integration, the Ordinary Least Square Regression Method was used in preference for the Autoregressive Distributed Lag Model which tolerates such stationary property combination. In addition the sample size is also good enough for the OLS given that its estimates remain robust and consistent in the face of not too large sample size.

Test of Hypothesis

The formulated hypotheses were tested using the Ordinary Least Square Regression Method In a stepwise testing process, the following steps was adopted by the researcher:

Step I: Restatement of the hypotheses in null and alternate form,

Step II: Presentation and discussion of the results arrived at using the estimation technique.

Step III: Taking a decision on the rejection or acceptance of the null hypothesis based on the
appropriate decision rule.

Test of Hypothesis One

Ho: Broad Money Supply did not has positive and significant effect on All share Index in
Nigeria.

H_1: Broad Money Supply has positive and significant effect on All share Index in Nigeria.

From the Ordinary Least Square Regression Method result as shown in appendix IV, we have the R-square value of 77% which shows that the independent variables jointly explain about 99% of the M2 with an unexplained variation of 33% which is attributable to other variables not included in the model. The adjusted R^2 which is 76% indicates that with the inclusion of more variables, the R^2can reduce maximally to 76%. The Durbin-Watson statistic value of 0.76 indicates that there is suspicion of autocorrelation in the model. The F-statistics which is 67 and a P-value of 0.000<0.05, also shows that the overall regression is significant and can be used for meaningful analyses.

Based on this, Auto correlation result as shown in appendix v, is treated looking at the Durbin Watson statistics which is 1.57.Hence, the hypothesis shows the result from the regression analysis.

Step II: Presentation and discussion of the results arrived at using the estimation technique

Result reveals that broad money supply positively but non-significantly affected on all share index by 11% and the probability value is non-significant.

Decision for Hypothesis

Given that the correlation coefficient of LNASI and LNM2 is strongly and positively signed (11)% approx.) and the t-statistics is non-significant as shown by the associated p-value (0.34) we reject the null hypothesis and conclude that a strong positive and non-significant correlation exist between all share Index and Broad Money Supply in Nigeria.

Findings

The following findings are:

All share Index had a strong positive and non-significant correlation effect on Broad Money Supply in Nigeria. Findings were made in line with the estimation techniques employed. These findings arising from the study agrees with existing evidence that broad money supply improves all share indexes. There is a consensus that the effect is positive and non-significant, this is in line with the model adopted and the sample space evaluated within the

Nigerian economic environment. It should be noted that this study can be employed for the purposes of generalization and can be expanded to capture other economic environments with distinctive peculiarities.

Conclusion

The broad objective of this study is to ascertain the effect of Broad Money Supply on All share index in Nigeria between the period 1995 to 2016. In conclusion, OLS regression model was used to explain the relationship between broad money supply and All share index. ASI and M2 were stationary in their differences while all other variables were level stationary, therefore, based on this, Auto correlation was conducted and the result shown in appendix v, is treated looking at the Durbin Watson statistics which is 1.57.Hence, the hypothesis shows the result from the regression analysis. The research concludes by noting a negative DW has been corrected.

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Appendix 1: Data showing All share index and Broad money supply in Nigeria 1995 to 2016

YEAR	ASI	M2
1995	5092.2	289.09
1996	6992.1	345.85
1997	6440.5	413.28
1998	5672.7	488.15
1999	5266.4	628.95
2000	8111	878.46
2001	10963.1	1269.32
2002	12137.7	1505.96
2003	20128.9	1952.92
2004	23844.5	2131.82
2005	24085.8	2637.91
2006	33189.3	3797.91
2007	57990.2	5127.4
2008	31450.78	8008.2
2009	20827.17	9411.11
2010	24770.52	11034.94
2011	20730.63	12172.49
2012	28078.81	12172.49
2013	41329.19	12172.49
2014	34657.15	12172.49
2015	28642.25	12172.49
2016	26875.2	12172.49

Where:

ASI = All share index, M2 =Broad money supply.

Appendix II: Basic Descriptive Statistics

	ASI	M2
Mean	21694.37	5588.919
Median	22335.84	3217.910
Maximum	57990.20	12172.49
Minimum	5092.200	289.0900
Std. Dev.	13592.92	5061.456
Skewness	0.705008	0.331972
Kurtosis	3.382809	1.327609
Jarque-Bera	1.956799	2.967903
Probability	0.375912	0.226740
Sum	477276.1	122956.2
Sum Sq. Dev.	3.88E+09	5.38E+08
Observations	22	22

Source: Author's Computation e-view 1

Appendix III: SUMMARY OF UNIT ROOTS TEST RESULTS

Variable	ADF Statistic	Critical Values @ 5%	Probability Value	Inference
LNASI	-3.9014	-3.0207	0.000	I(1)
LNM2	-2.8013	-1.8539	0.000	I(1)

Source: Extract from Appendix one e-view 10 e-view 10

Appendix IV: (4.4): OLS Estimation Results for Hypothesis one .(see appendix iv)

Dependent Variable: All share Index (LNASI)

Dependent Variable: LNASI
Method: Least Squares
Date: 01/25/18 Time: 11:57
Sample: 1995 2016
Included observations: 22

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.964406	0.469810	12.69537	0.0000
LNM2	0.476365	0.058187	8.186771	0.0000

R-squared	0.770176	Mean dependent var	9.758125
Adjusted R-squared	0.758685	S.D. dependent var	0.738668

S.E. of regression	0.362862	Akaike info criterion	0.896919
Sum squared resid	2.633375	Schwarz criterion	0.996105
Log likelihood	-7.866110	Hannan-Quinn criter.	0.920284
F-statistic	67.02323	Durbin-Watson stat	0.724838
Prob(F-statistic)	0.000000		

Source: Extract from Appendix two e-view 10

Appendix V: OLS Estimation Results for autocorrelation.

Hypothesis one.

Dependent Variable: All share index (LNASI)

Dependent Variable: LNASI
Method: Least Squares
Date: 01/25/18 Time: 12:05
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.272236	1.179318	1.926737	0.0700
LNM2	0.112340	0.115654	0.971348	0.3442
LNASI(-1)	0.681634	0.199119	3.423249	0.0030

R-squared	0.839995	Mean dependent var	9.816347
Adjusted R-squared	0.822217	S.D. dependent var	0.703284
S.E. of regression	0.296535	Akaike info criterion	0.538261
Sum squared resid	1.582794	Schwarz criterion	0.687478
Log likelihood	-2.651735	Hannan-Quinn criter.	0.570645
F-statistic	47.24826	Durbin-Watson stat	1.576689
Prob(F-statistic)	0.000000		

Source: Extract from Appendix two e-view 10