Asymmetric Effect of Stock Market Performance on Broad Money Supply in Nigeria

Clement Ikuba Alegu
Department of Economics, Bingham University, Karu, Nasarawa State, Nigeria

Abstract
The role of stock market in the development of any economy has been regarded as crucial most especially in developing nations like Nigeria where mobilization of capital and resources is a pertinent issue. The drive propelling this study was to assess the interaction of the capital market performance with selected macroeconomic variables in Nigeria. The study adopted ex-post facto research design. Data were sourced from secondary sources such as the World Bank, Food and Agricultural Organization, the Central Bank of Nigeria Statistical Bulletin, and the National Bureau of Statistics (NBS). Non-Linear Autoregressive distributed lagged (NARDL) model was used for estimation of data. The study found that capital market performance has no significant effect on cash reserve ratio in Nigeria. In the same way, capital market performance had no significant effect on monetary policy rate in Nigeria. There was however, a significant effect of capital market performance on cash reserve ratio in Nigeria. However, no significant effect existed between capital market performance has and real gross domestic product in Nigeria. the study revealed that capital market performance has significant effect on human development index in Nigeria, even as capital market performance has no significant effect on gross fixed capital formation in Nigeria. The study recommended that government should stir up productivity in the economy to boost gross domestic product while keeping the cash reserve ratio high in order to tackle the spate of inflation within the economy. The apex bank should likewise, lower the monetary policy rate which is normally associated with the performance of all-share index. Also, the government should invest more in the capital market so as to improve the value of government stock (VGS) and use it to improve the human development index of Nigerians.

Introduction

The general expectation in creating the Nigerian Exchange Group (NGX) as the center core of the Nigeria capital market is to promote private capital investment for the purpose of fast-tracking growth and development in Nigeria. This is predicated on the belief that investment which spur economic growth and development normally requires long term funding which in most cases exceed the duration that most savers are willing to commit their funds into. With the provision of the capital market, this need is expected to be addressed as both local and foreign investors provided long-term funds in exchange for long-term financial assets. In any economy, whether developing or developed, the capital markets have been regarded as the heartbeat of the economy as it possesses the capacity to instantaneously respond to fundamental issues in all countries. In a healthy economic environment, the presence of capital market tends to encourage savings and real investment. However, in Nigeria, the NGX is sometimes more often than not be influenced by external shocks that fall outside the realm of capital market. These shocks consist of macroeconomic indicators such as inflation rate, exchange rate, interest rate and so on that normally cause variation in the stock prices

movement. The implication is that the movement in stock prices, liquidity and market index are altered. In most cases, the illiquidity nature of the market has tended to undermine the mobilization and allocation of capital resources thereby hindering the prospects of long-term growth in Nigeria.

Likewise, illiquidity in the Nigerian capital market makes investors to view investment as costly and very risky venture. The level of high risk in the capital market made foreign investors to be patronizing other emerging markets such as the Johannesburg Stock Exchange and Ghana Stock Exchange. This is more so as the market indicators such as market capitalization and all-share index continued to trend downward. For instance, the 2008 financial crises saw market capitalization crashed from ₦13 trillion in 2008 to ₦4.9 trillion in 2009 (Business Day, 2009). This affected the Nigerian economy negatively as a number of macroeconomic variables did not perform very well. They include interest rate and inflation rate which have continued to be double digit over the last one decade. Also, the naira witnessed severe devaluation as the exchange rate which stood at ₦118.6/$1 in 2008 declined to over ₦500 to a dollar in 2022. Similarly, the growth of the GDP deteriorated from 6.8% in 2008 to -1.9% in 2020 before a marginal rise to 3.3% in 2022.Consequently, money supply over the years rose astronomically leading to increase in inflation, unemployment and high level of poverty.

It has therefore become pertinent to find out the nexus between stock market performance ad broad money supply. However, given the existence of a plethora of stock market instruments, the study ascertains extent to which each instrument determines the dynamics affecting broad money supply in the economy by the Central Bank of Nigeria.

Conceptual Review

Stock Market Performance

The term stock return refers to the gain or loss of a security in a particular period. According to Abina (2019), the return consists of the income and the capital gains relative to the investment made, and it is usually quoted as a percentage.

The stock market is the market where equity securities such as stocks, representing ownership shares in particular corporations issuing the securities, are traded (Alajekwu, Ezeabasili & Nzotta, 2013). It is a complex institution imbued with inherent mechanism through which long-term funds of the major sectors of the economy comprising households, firms, and government are mobilized, harnessed and made available to various sectors of the economy (Nyong, 1997).The stock market avail long-term capital to the listed firms by pooling funds from different investors and allow them to expand their businesses (Okoro, 2017). Also, investors have the alternative avenues to invest their surplus funds as they carefully watch the performance of stock markets (Naik&Padhi, 2012).

Stock market performance is evaluated through stock returns which is the return that the investors generate out of the stock market. This return could be in the form of profit through trading or in the form of dividends given by the company to its shareholders from time-to-time. It is the changes in stock prices relative to the initial prices at the point of investor's decision to purchase the stock (Rutto, 2014 and Abina (2019). Jordan and Fischer (2002) cited Abina (2019) define return as the motivating force and the principal reward in the investment process and it is the key method available to investors in comparing alternative investments. They documented that the return has two components in which the basic

component is the periodic cash receipts (or income) on investments, either in the form of interest or dividends. The second component is the change in the price of the asset which is commonly called capital gain or loss.

Indicators of the Stock Market

All-Share Index: In finance, a stock market index refers to index that measures a stock market, or a subset of the stock market that enables investors compare current stock price levels with past prices so as to ascertain the market performance. To this end, All-Share Index is a total market (broad-base) index, reflecting a total picture of the behavious of the common shares quoted on the Exchange. It is calculated on a daily basis to show the movement of stock prices. All share index therefore refers to a series of numbers which shows the changing average value of the share prices of all companies on a stock exchange, and which is used as a measure of how well a market is performing (Adebiyi & Abeng, 2019).

Value of Total Transaction: This refers to the fair market value of all securities or assets indirectly transferred and which shall be determined in accordance with the Valuation Mechanism. Therefore, value of total transaction as the name implies means the aggregate value of all cash, securities and other property (i) paid to a company, its affiliates or their shareholders in connection with any transaction involving any investment in or acquisition of the company or any affiliates (ii) paid by a company or any affiliate in any such transaction involving an investment in or acquisition of another party or its equity holdings by the Company or any affiliate, or (iii) paid or contributed by the company or any affiliate and by the other party or parties in the event of any such transaction involving a merger, consolidation, joint venture or similar joint enterprise or undertaking. The value of any such securities (whether debt or equity) or other property shall be the fair market value thereof as determined by mutual agreement of the Company and the Underwriters or by an independent appraiser jointly selected by the Company and the Underwriters (Afful & Asiedu, 2013). Capital Markets Transaction means any transaction whereby a Company or any of its subsidiaries issues any debt securities whether in a public offering or a private placement. The average value of transaction is calculated by dividing the total value of all transactions by the number of transactions or sales. This can be calculated on a daily, monthly or annual basis (Abina, 2019).

Total Listed Equities: This is primarily an equity capital market (ECM) which refers to the arena where financial institutions help companies raise equity capital and where stocks are traded. Equity share is a primary source of finance for any company giving investors rights to vote, share profits as well as claim on assets. Various types of equity share capital are authorized which include issued, subscribed, paid-up, rights, bonus as well as sweat equity and so on. Therefore, equities include common stock, preferred stock, additional paid-in capital, treasury stock, accumulated other comprehensive income / loss and retained earnings. Equity capital is raised by issuing shares in the company, publicly or privately, and is used to fund the expansion of the business. An equity share, normally known as ordinary share is a part ownership where each member is a fractional owner and initiates the maximum entrepreneurial liability related to a trading concern. These types of shareholders in any organization possess the right to vote (Abina, 2019). Two common types of equity exist namely stockholders' equity and owner's equity.

Value of Government Stock: Government stock deals with tradeable debt instruments issued by the government for meeting its financing requirements. It refers to investment products issued by government in the form of bonds, treasury bills, or notes. By buying or selling government securities (usually bonds), the federal government through the apex bank affects the money supply and interest rates. If, for example, the federal government buys government securities, it pays with a check drawn on itself. This action creates money in the form of additional deposits from the sale of government bonds. Government debt securities offer minimal credit risk, high levels of liquidity, a broad range of maturities and well-developed market infrastructure, including active derivative markets. Therefore, government debt securities may play important roles in financial markets that private sector securities may not fulfill.

Money supply

Monetary policy refers to actions actions and inactions taken by government in its attempt to fine turn the economy using monetary variables such money supply, interest rate and inflation rate. Monetary policy is the policy adopted by the monetary authority of a nation to affect monetary and other financial conditions in order to accomplish broader objectives like high employment and price stability which is normally interpreted as a low and stable rate of inflation (Lindsey & Wallich, 2018). According to these authors, monetary policy may be to contribute to economic stability or to maintain predictable exchange rates with other currencies. Today, most central banks in developed countries conduct their monetary policy within an inflation targeting framework, whereas the monetary policies of most developing countries' central banks target some kind of a fixed exchange rate system (*Jahan, 2014)*. A third monetary policy strategy, targeting the money supply was widely followed during the 1980s, but though has diminished in popularity since that, it is still the official strategy in a number of emerging economies including Nigeria.

Theoretical Review

There are a number of theoretical underpinnings in the extant literature that explain the nexus through which capital market affects the economy. Accordingly, some of the theories are presented as follows:

Efficient Market Hypothesis (EMH)

The EMH was developed by Fama (1965). The theory postulated that financial markets are efficient or prices on traded assets that have already reflected all known information and therefore are unbiased because they represent the collective beliefs of all investors about future prospects. The hypothesis states that at any one point in time, prices reflect all available information. This implies that no amount of data mining can predict future prices. Furthermore, an analysis of past or current data cannot identify undervalued stocks. Applying this to the securities markets, the EMH implies that no trading mechanism can consistently beat the market. Hence, for a given level of risk, speculators cannot earn supernormal returns. Similarly, no betting system can consistently earn super normal returns. There are varying degrees of market efficiency by which Fama (1965) provided the traditional framework through which the EMH is examined.

The weak form simply states that all past information is reflected incurrent prices. The semi-strong form states that all publicly available information is incorporated in prices, while the strong form, an extension of the first two, states that all information, including insider information, is included in share prices. In practice, market efficiency is categorized by the strength of the efficiency that can be established with respect to a particular information set. Information sets can be categorized into: i. past price and volume information ii. Public information iii. Public and private information. Empirical tests of the EMH have relied on long-range dependence of equity returns. It shows that past information has been found to be useful in improving predictive accuracy. This assertion tends to invalidate the EMH in most developing countries. Equity prices would tend to exhibit long memory or long range dependence, because of the narrowness of their market arising from immature regulatory and institutional arrangement (Nagayasu, 2003, Nyong, 2003). Note that, where the market is highly and unreasonably speculative, investors will be discouraged from parting with their funds for fear of incurring financial losses. These situations has detrimental effect on economic growth of any country such that investors will refuse to invest in financial assets. The implication is that companies cannot raise additional capital for expansion. Thus, it suffices to say that efficiency of the capital market is a necessary condition for growth and development in Nigeria.

Arbitrage Pricing Theory (APT)

The emergence of this hypothesis has been credited to work of Stephen Ross in 1976 as a theory where multiple risk factors can explain asset returns (Ross, 1976).It is a multi-factor model in which every investor believes that the stochastic properties of returns of capital assets are consistent with factors structure. Ross argues that if equilibrium prices offer no arbitrage opportunities over static portfolio of assets, then the expected returns on the assets are approximately linearly related to the factor loadings or beta. In other words, the expected returns of a financial asset can be modelled as a linear function of various macroeconomic variables or theoretical market indices, where the sensitivity to change in each factor is represented by a factor– specific beta coefficient. The model-derived rate of return will then be used to price the asset correctly and the asset price should equal the expected end of period price discounted at the rate (Okoro, 2017). Ostensibly, the basic assumption of APT is that many macroeconomic factors such as the GDP, inflation rate, interest rate, exchange rate, and money supply among other macroeconomic variables are involved in the determination of risk and return relationship.

Generally, the theory of asset pricing demonstrates how assets are priced given the associated risks. The APT proposed by Ross has shown that there is an approximate relationship between the expected returns and the estimated explanatory variable as demonstrated in the equation below.

$$R_t = \lambda_0 + \lambda_1 \beta_{1i} + \lambda_2 \beta_{2i} + \lambda_n \beta_{nk} + \mu_i$$

Where Ri is the mean excess return for asset i and the $\beta's$ represents the sensitivity of a security's return to the risk factor k. The λn's represents the reward for bearing risk associated with the economic factor fluctuations. The equation simply says that the expected return of an asset is a function of many factors and the sensitivity of the stock to these factors. Interestingly,

APT does not specify the type or the number of macroeconomic factors for researchers to include in their study. According to APT, any new information about the fundamental macroeconomic factors such as real output, inflation, exchange rate, interest rate, foreign investment and so on may influence the stock price or returns through the impact of expected dividends, the discount rate or both (Naik & Padhi, 2012). For example, although Ross (1976) examined the effect of four factors including inflation, gross national product (GNP), investor confidence, and the shifts in the yield curve, they suggested that the APT should not be limited to these factors. Therefore, there is a large body of empirical studies that have included a large number of different macroeconomic factors, depending on the stock market they studied (Abina, 2019). Therefore, this theory is relevant to the current study.

Empirical Review

The review of the literature is undertaken looking at studies on the determinants of stock market performance and broad money supply. Yuanyuan, et al., (2023) submitted that the primary source of investor interest that disrupts the financial markets is news that reflects the macro-economy. Their study assessed how changes in investors' positive and negative market attention affect stock market returns by examining the print media portrayal of the China–Pakistan economic corridor (CPEC). The daily and weekly coverage of the CPEC by national and international newspapers from the Bloomberg database covering the period of January 2015 to December 2019 was investigated by the study. The study employed the OLS and VAR models and findings revealed that investors react quickly and significantly to positive news as they pay more for the same stock if the positive news stream increases; hence, the stock market return also increases. On the contrary, investors do not react with the same passion to an increase in negative news.

Iheanacho, et al., (2023) investigated the role of institutional structure on asymmetries dynamic impact of financial integration and capital market development on economic performance in SSA countries. The study employed a panel ARDL modeling technique on 16 nations of SSA over the period 1996–2019. The findings of the study revealed that in the long run, a rise in positive shock to the financial integration index leads to a rise in economic growth. Also, the study found that both positive and negative shocks to market capitalization reduced economic growth. In the same vein, the study found that institutional quality index had positive and significant impact on economic growth in the long run.

Tai et al (2022) investigated the differences in the degree of pass-through from the monetary policy rate to lending and deposit rates across Asian countries. Adopting a seemingly unrelated regression (SUR), the study showed that the transmission rate is sluggish, though, the pass-through to the lending rate is slightly higher compared to the deposit rate. Investigating the effect after the 1997 dot-com crisis, the study showed that the adjustment rate was much slower for most countries.

In Turkey, Yildirim (2022) investigated how monetary policies and financial market conditions can result in the asymmetric movement of lending rates. Employing threshold autoregressive models (TAR), the study found that substantial asymmetries exist and that banks adjust their lending rates faster in response to an increase in money market rate, but act slower following a decline in money market rates. It also found sectoral heterogeneities, in that the degree of banks' reluctance to follow decreases in money markets rates varies across lending rates. Adopting a similar econometric approach (the TAR model),

In a related study, Barikui, Collins, Sirah and Solomon (2020) opined that prior studies in the extant literature have tried to evaluate the level and direction existing between monetary policy variables and movement in stock prices particularly in SSA economies but that these studies cannot be generalized to include Nigeria hence the need for country specific study. Their paper examined the relationship between all-share index as proxy for stock price movement and monetary policy variable such as money supply, exchange rate and interest rate for a data period coving 1994-2019. Employing the OLS technique through granger causality, the study found evidence of a unidirectional causality running from monetary policy variables to stock market returns.

In a study documented by Abina (2019), the paper assessed the effect of capital market on performance of Nigerian economy using data covering the period 1985-2017. The study employed the Johansen co-integration and error correction technique for the analysis of the data. The study found evidence of long run relationship between the variables. Also, the study found evidence of significant positive impact of market capitalization and new issue on economic growth in Nigeria. The study concludes that capital market is a strong driver of economic growth as it stimulates public and private entities for medium and long-term investment.

Methodology

The methods are specified under research design, sources of data, method of data analysis, and model specification.

Research Design

This paper adopted an *ex-post-facto* research design. Backlund and Suikki (2015) explain that with an ex post facto research design, the researcher aims to determine the aspects of the problem that are crucial for a thorough analysis. In addition, with an ex post facto research design, the researcher has the opportunity to have a clear view of the problem from other related sources and narrow the research around these important items. In this case, the researcher adopts a technique that leads to exact or almost detailed facts when carrying out the study.

Sources of Data

The nature of data needs for this study is secondary. Data on the capital market indicators, broad money supply ad monetary policy were sourced from the Central Bank of Nigeria publications particularly; the statistical bulletin. Data on cash reserve ratio, statutory liquidity ratio and gross fixed capital formation were sourced from the Nigeria Bureau of Statistics (NBS) while data on human development index were sourced from World Bank data bases. Also, data on all share Index, total listed equities, value of total transactions and value of government stocks were sourced from the central bank of Nigeria.

Method of Analysis

The required formal pre-estimation diagnostics tests used in the paper were Augmented Dickey-Fuller unit root test to ascertain the stationarity of the data and NARDL bound test for co-integration test analysis that would not permit us to obtain a robust estimate of the parameters.

The Non-Linear Autoregressive Distributed Lag Model (NARDL) advanced by Shin, Yu and Greenwood-Nimmo (2014) was used for data analysis. This is in recognition of the non-linear nature of the relationship existing between economic variables as captured by Ezie and Ezie (2021). The relationship between agricultural credit guarantee scheme fund and poverty on the one hand, and inflation and poverty on the other hand, is therefore, expected to be non-linear, hence the adoption of NARDL approach. Also, hierarchical regression analysis was used to estimate the moderating effect of agricultural credit guarantee scheme fund in the relationship between inflation and poverty.

Post-estimation tests employed in the study were Breausch-Godfrey serial correlation LM test, Breausch-Pagan-Godfrey Heteroskedasticity test and stability test.

Model Specification

The study was predicated on two functional models. Firstly, the study assumed broad money supply (BMS) is a function of capital market performance (CMP).

Mathematically, this implies that BMS = f (CMP) (1)

Where BMS = broad money; and

CMP = capital market performance

Transforming equation 1 into Econometrics form leads to:

$$BMS_t = \alpha_0 + \alpha_1 CMP_t + \mu_t \quad (2)$$

Where: CMP is proxied by ASI, TLE, VIT and VGS

Thus, equation 2 becomes:

$$BMS_t = \alpha_0 + \alpha_1 ASI_t + \alpha_2 TLE_t + \alpha_3 VIT_t + \alpha_4 VGS + \mu_t \quad (3)$$

t = Time Trend

α_0 , β_0 , λ_0 = Intercept or Constant Parameter

α_0 ,- α_4 , = Slope of the explanatory variables or parameters to be estimated.

μ_t = Error Term or white noise.

Using interest rate (INT) as control variable, model 3 become:

$$BMS_t = \alpha_0 + \alpha_1 ASI_t + \alpha_2 TLE_t + \alpha_3 VIT_t + \alpha_4 VGS\alpha_4 INT + \mu_t \quad (4)$$

A-priori Expectation

The *a-priori* expectation based on Arbitrage Pricing Model regarding the relationship between stock market performance and monetary policy rate imply that an increase in the performance of stock market indicators, all things being all, will lead to decrease in monetary policy rate in Nigeria, controlling for the negative effect of interest rate.

The a prior expectation of the parameters to be estimated are as expressed below

$$\frac{\Delta ASI}{\Delta BMS}\frac{\Delta TLE}{\Delta BMS}<0;\frac{\Delta VIT}{\Delta BMS}<0;\frac{\Delta VGS}{\Delta BMS}<0$$

Results and Discussion

In this section of the paper, the results of descriptive statistics, trend analyses, the Unit Root test and the NARDL are presented, analyzed and discussed.

Trend Analyses of the Study Variables

This section focuses on the trend analyses of the study variables.

Trend Analysis of Capital Market Indicators and Broad Money Supply in Nigeria

This sub-section shows the trend analyses of capital market indicators (LOGASI, LOGVIT, LOGTLE and LOGVGS) and broad money supply in Nigeria.

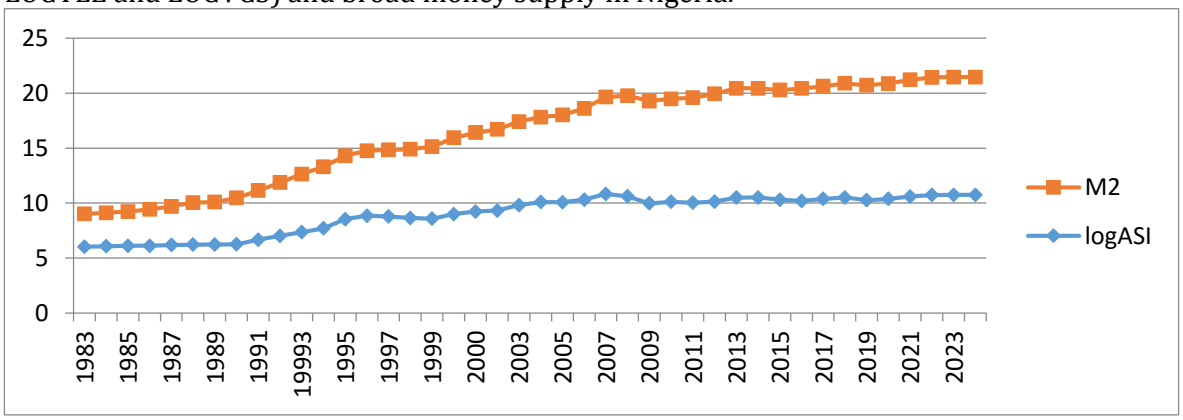

Figure 1: Trends of Log of All Share Index and Broad Money Supply in Nigeria
Source: Extract from Results of Microsoft Excel, 2025

The trend analyses of Figure 1 shows that log of all share index (LOGASI) rallied below broad money supply throughout the study period. This suggests that all share index has not exerted remarkable effect on broad money supply in Nigeria.

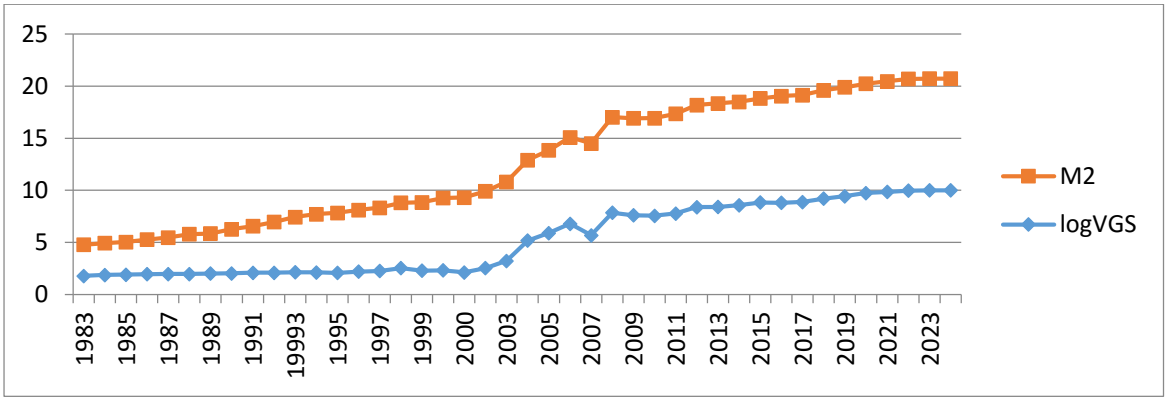

Figure 2: Trends of Log of Value of Government Stocks and Broad Money Supply in Nigeria
Source: Extract from Results of Microsoft Excel, 2025

The trend analyses of Figure4.1 show that log of value of government stocks (LOGVGS) rallied below broad money supply throughout the study period. This suggests that value of government stocks has not exerted remarkable effect on broad money supply in Nigeria.

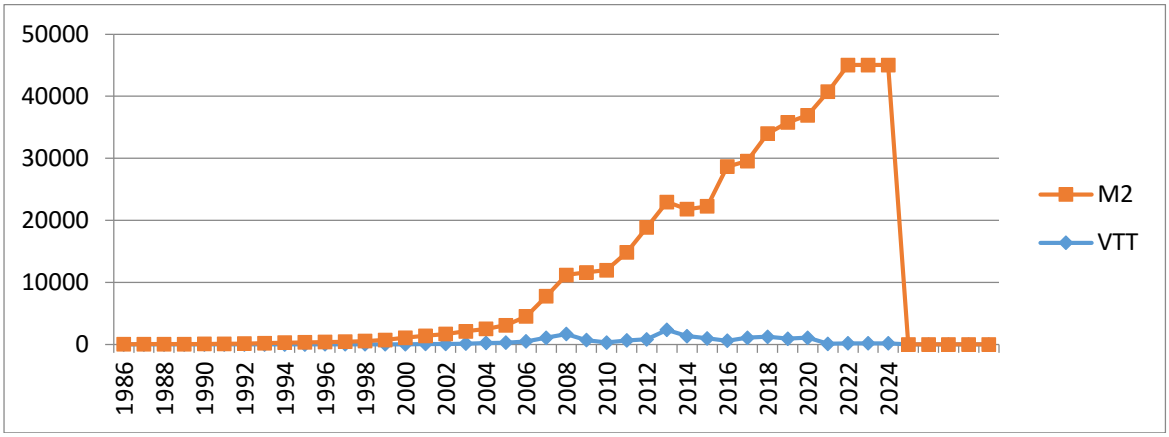

Figure 3 Trends of Log of Value of Total Transactions and Broad Money Supply in Nigeria
Source: Extract from Results of Microsoft Excel, 2024

The trend analyses of Figure 3 show that log of Value of Total Transactions (LOGVTT) maintained a similar trend with money supply from 1986 to 2004 after which money supply skyrocketed above the Value of Total Transactions (LOGVTT) until it came to equilibrium in 2024. The period of 2004 coincides with the consolidation of the banking sector in Nigeria. This suggests that Value of Total Transactions (LOGVTT) has exerted any remarkable effect on broad money supply in Nigeria.

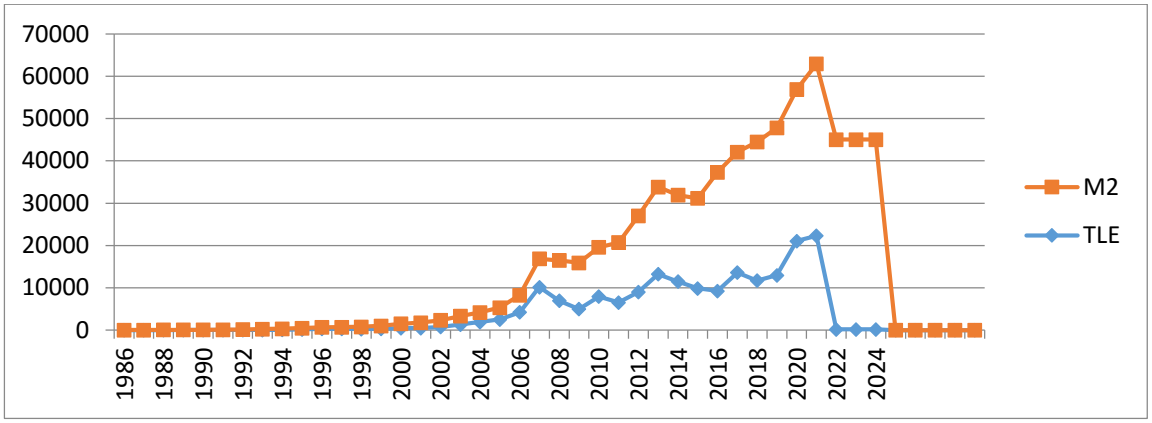

Figure 4: Trends of Log of Total Listed Equities and Broad Money Supply in Nigeria
***Source*:** Extract from Results of Microsoft Excel, 2025

The trend analyses of Figure 4 show that log of Total Listed Equities (LOGVTT) maintained a similar trend with money supply from 1986 to 2004 after which money supply skyrocketed above Total Listed Equities (LOGVTT) until it came to equilibrium in 2024. The period of 2004 coincides with the consolidation of the banking sector in Nigeria. This suggests that Total Listed Equities (LOGVTT) has exerted any remarkable effect on broad money supply in Nigeria.

Table 1: Summary of Descriptive Statistics of the Study Variables

	BMS	ASI	TLE	VIT	VGS	INT
Mean	23.98824	18313.54	5789.914	388.2351	3556.306	3.172540
Median	26.95000	18332.40	1325.700	98.40000	25.20000	4.310290
Maximum	66.10000	50331.20	23168.00	2350.900	22161.20	18.18000
Minimum	2.900000	430.9100	384.3000	0.090000	6.600000	-15.92000
Std. Dev.	12.08911	16168.69	7375.798	575.5581	6548.857	7.522836
Skewness	0.935237	0.381773	1.234626	1.696792	1.927521	-0.142726
Kurtosis	5.861420	1.802678	3.272252	5.414958	5.302423	2.828473
Jarque-Bera	16.55573	2.940849	8.999855	25.29980	29.40365	0.161736
Probability	0.000254	0.229828	0.011110	0.000003	0.000000	0.922315
Sum	815.6000	640974.0	202647.0	13588.23	124470.7	111.0389
Sum Sq. Dev.	4822.835	8.89E+09	1.85E+09	11263081	1.46E+09	1924.164
Observations	38	38	38	38	38	38

Source: Extract from Results of E-views 10, 2024

The statistics presented in Table 1 on the summary description of the variables used in the study were used to test for normality properties of residuals in the data set. To achieve this purpose, the study compared skewness values with the standard value of skewness of a symmetric distribution, such as normal distribution, which is zero. Results reveal that the skewness values for all the series were close to zero, suggesting that they were skewness normal.

The Kurtosis of a distribution which measures the peakness of the distribution that is assumed to be normal is 3.0. In Table 1, the series values did not depart substantially from the standard value of 3.0. Thus, the series do not exhibit characteristic of a distribution with a high peak and flat tails called leptokurtic (k>3). They do not also have substantially flat-topped curves and thinner tails called platykurtic (k<3), but they have generally exhibited mesokurtosis (k=3) suggesting a normal distribution.

The standard rule is that the probability values of Jarque – Bera should be greater than 0.05 (p>0.05). Results of Jarque – Bera show that the series failed to reject the null hypothesis of a normal distribution (p>0) except INF. It is therefore, clear that the series are subject to distribution that is not different from the normal one.

From the results presented in Tale 1, there were 36 observations which represents the study period covering the time frame of 1983 – 2024. The standard deviations of all the variables were less than their mean values. This suggests that the data set were clustered and exhibit homogenous characteristics among the study variables. The implication of this is that there is no wide variation in the dataset used for each of the study variables. This is further confirmed from the median scores which lied within the central regions of the maximum and minimum of each variable, suggesting the absence of outliers in the dataset.

Unit Root Test Result

In order to ensure a stable trend of series and estimate its direction, unit root test was conducted to ascertain the stationary properties of the variables using Phillips Perron (PP) technique. The results of the unit root tests are presented in Table 2:

Table 2: Summary of Unit Root Test Result

Variable	PP Test Statistics	Critical Values	Order of Integration
BMS	-1.682627	-2.938987	I(1)
LOGASI	-1.433034	-2.936942	I(1)
LOGTLE	0.027936**	-2.926622	I(1)
LOGVIT	-1.709300	-2.936942	I(1)
LOGVGS	0.092262**	-2.936942	I(0)
INT	-3.892398**	-2.936942	I(1)

Note: The tests include intercept and trend; ** significant at 1%; ** significant at 5%*
Source: Authors Computation, 2024 (Eviews-10)

As shown in Table 2, results of PP test indicate that one of the variables (LOGVGS) was found stationary at levels and at 5% level of significance. However, the remaining five variables (BMS, LOGASI, LOGTLE, LOGVIT and INT) were stationary at first difference. Hence, the unit roots PP test for the variables were accepted at levels for the four variables of interest. They were however, found to be stationary at level when considered at 5 percent level of significance. Thus, the study variables were found to integrate in a mixed order which satisfies the condition for using asymmetric bounds approach to co-integration test.

Table 3: Lag Length Criteria
Dependent Variable: BMS

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
1	-126.350446	7.386866	7.990187	7.601523	0.563355	ARDL(3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
2	-128.722185	7.459062	8.019289	7.658387	0.525089	ARDL(2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)
3	-132.823598	7.622295	8.139427	7.806286	0.433334	ARDL(1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0)

Source: Extracts from E-views 12.0, 2023.
Note: * Denoted the optimal lag length @ 5 % level of significance.

In Table 3, the most appropriate lag length was lag 3 based on the Akaike information criteria (AIC). This lag 3 was chosen in row one (3) with minimum value of 7.622295*. Therefore, the optimal lag length was lag 3 which was used to estimate NARDL Bound test, Normal NARDL, long-run and short-run results of the BMS model.

4.4.2 NARDL Bounds Testing using the BMS Model

The result of co-integration Bounds test is presented in Table 4

Table 4: Summary of Co-integration Estimates

F-Bounds Test	Null Hypothesis: No Levels Relationship			
Test Statistic	Value	Signif.	I(0)	I(1)
F—statistic	3.504035	10%	1.76	2.77
K	10	5%	1.98	3.04
		1%	2.41	3.61

Source: Authors Computation, 2023 (Eviews-10)

As shown in the result of bounds test presented in Table 4, the F statistic value of 3.504035 is greater than the upper and lower bounds of 3.04 and 1.98 at 5% level of significance. This implies that there was long-run relationship among the variables. This suggests the rejection of the null hypothesis of no co-integration among the variables. Hence, there is asymmetric long-run nexus between the dependent variable (broad money supply) and the independent variables (all share index, total listed equities, value of total transactions, value of government stocks and interest rates) in Nigeria. The study therefore, proceeds to analyze the long-run and short-run estimates of the NARDL Regression estimates.

Table 5: Long-run Estimates of the NARDL Regression Result using the MPR Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	53.70161	12.33214	4.354604	0.0002
BMS(-1)*	-1.767781	0.340176	-5.196666	0.0000
LOGASI_POS**	15.98980	12.65046	1.263970	0.2184
LOGASI_NEG**	24.31319	20.61705	1.179276	0.2498
LOGTLE_POS**	-13.65531	10.04794	-1.359016	0.1868
LOGTLE_NEG**	22.07719	16.47296	1.340207	0.1927
LOGVIT_POS**	-7.775392	6.845037	-1.135917	0.2672
LOGVIT_NEG**	-3.175686	3.374018	-0.941218	0.3560
LOGVGS_POS**	6.338515	4.264608	1.486307	0.1502
LOGVGS_NEG**	-31.53233	11.47795	-2.747210	0.0112
INT_POS**	0.105164	0.271312	0.387612	0.7017
INT_NEG**	0.280242	0.324897	0.862556	0.3969
D(BMS(-1))	0.757173	0.246628	3.070105	0.0053
D(BMS(-2))	0.366123	0.204961	1.786308	0.0867

Source: Authors Computation, 2024 (Eviews-10)

Table 5 shows that the 15.98 percent positive long-run effect of log of all share index had a corresponding 24.313 percent long-run negative effect on broad money supply. This implies that an increase in log of all share index leads to more than proportionate decrease in broad money supply in the long-run. Thus, all share index has not contributed positively to broad money supply. The negative long-run effect of log of all share index on broad money supply was however, not significant at 5% level (p, 0.2184>0.05). Regarding log of total listed equities, the table reveals that the -13.7 percent positive long-run effect of log of total listed equities had a corresponding 22.1 percent long-run negative effect on broad money supply, implying that log of total listed equities has contributed negatively to broad money supply. Again, the negative long-run effect of log of total listed equities on broad money supply was not significant at 5% level (p, 0.1957>0.05).

As shown in the table, the -7.8 percent long-run positive effect of value of total transactions on broad money supply had a corresponding -3.2 % long-run negative effect on broad money supply. Thus, an increase in log of value of total transactions leads to more than proportionate increase in broad money supply. This suggests that the log of value of total transactions has contributed positively to broad money supply in the long-run. The positive effect of log of value of total transactions on broad money supply was not significant at 5% level (p, 0.2672>0.05). With respect to the log of value of government stocks, the table shows that the 6.3 percent positive effect of the log of value of government stocks on broad money supply had a corresponding 31.5 % negative effect on broad money supply. Thus, an increase in log of value of government stocks leads to more than proportionate increase in broad money supply. This means that log of value of government stocks has contributed positively to broad money supply. The positive effect of log of value of government stocks on broad money supply was not significant at 5% level (p, 0.1502>0.05).

Results revealed that, the 0.10 percent positive long-run effect of inflation on broad money supply had a corresponding 0.28 % negative long-run effect on broad money supply. Thus, an increase in inflation leads to more than proportionate increase in broad money supply. This suggests that inflation contributes positively to broad money supply. The positive long-run effect of inflation was not significant (p, 0.3969>0.05).

Table 6: Short-run Estimates of the NARDL Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGASI_POS	9.045126	6.561902	1.378431	0.1808
LOGASI_NEG	13.75351	12.31520	1.116791	0.2751
LOGTLE_POS	-7.724551	5.088877	-1.517928	0.1421
LOGTLE_NEG	12.48865	8.949245	1.395497	0.1756
LOGVIT_POS	-4.398392	3.581175	-1.228198	0.2313
LOGVIT_NEG	-1.796425	1.965166	-0.914134	0.3697
LOGVGS_POS	3.585578	2.141828	1.674073	0.1071
LOGVGS_NEG	-17.83724	5.347977	-3.335325	0.0028
INT_POS	0.059489	0.152632	0.389756	0.7002
INT_NEG	0.158527	0.177967	0.890768	0.3819
C	30.37798	2.958137	10.26929	0.0000

Source: Authors Computation, 2024 (Eviews-10)

Results presented in Table 6 show that the 9.0 percent positive short-run effect of log of all share index had a corresponding 13.7 percent long-run negative effect on broad money supply. This implies that an increase in log of all share index leads to more than proportionate decrease in broad money supply in the short-run. Thus, all share index has contributed negatively to broad money supply. The negative short-run effect of log of all share index on broad money supply was however, not significant at 5% level (p, 0.2751>0.05). Also, the table reveals that the -7.7 percent positive short-run effect of log of total listed equities had a corresponding 12.5 percent short-run negative effect on broad money supply, implying that log of total listed equities has contributed negatively to broad money supply. Again, the negative short-run effect of log of total listed equities on broad money supply was not significant at 5% level (p, 0.1756>0.05).

From the result, it was shown that, the -4 percent short-run positive effect of value of total transactions on broad money supply had a corresponding -1.7 % short-run negative effect on broad money supply. Thus, an increase in log of value of total transactions leads to more than proportionate decrease in broad money supply. This suggests that the log of value of total transactions has contributed negatively to broad money supply in the short-run. The negative effect of log of value of total transactions on broad money supply was not significant at 5% level (p, 0.3697>0.05). With respect to the log of value of government stocks, the table shows that the 3.6 percent positive short-run effect of the log of value of government stocks on broad money supply had a corresponding -37.8 % negative effect on broad money supply. Thus, an increase in log of value of government stocks leads to more than proportionate increase in broad money supply. This means that log of value of government stocks has

contributed positively to broad money supply. The positive effect of log of value of government stocks on broad money supply was not significant at 5% level (p, 0.1071>0.05).

Results revealed that, the 0.05 percent positive short-run effect of inflation on broad money supply had a corresponding 0.16 % negative short-run effect on broad money supply. Thus, an increase in inflation leads to more than proportionate decrease in broad money supply. This suggests that inflation contributes negatively to broad money supply. The negative short-run effect of inflation was not significant (p, 0.3819>0.05).

Table 7: NARDL Result of Error Correction

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BMS(-1))	0.757173	0.147457	5.134865	0.0000
D(BMS(-2))	0.366123	0.129866	2.819243	0.0095
CointEq(-1)*	-0.767781	0.225749	-7.830748	0.0000

Source: Authors Computation, 2024 (Eviews-10)

Results of NARDL Result of Error Correction presented in tale 7 show that the model satisfies the necessary conditions of being negative, less than unity and significant at 0.05% level. The results reveal that any disturbance in the system will return to equilibrium by 76.781%. Thus, the model demonstrates high speed of adjustment to equilibrium.

NARDL Post-Estimation Diagnostic Tests Results

Robustness tests conducted in this study were Breusch-Godfrey-Serial-Correlation Test, Heteroscedasticity-ARCH Test, Ramsey RESET Test and Cumulative Sum (CUSUM) of Recursive Residuals Stability Test.

Table 4.12: Robustness (Test) Result

Test		Outcomes	
		Coefficient	Probability
Breusch-Godfrey-Serial-Correlation Test	F-stat.	0.01681	0.0810
Breusch-Pagan-Godfrey Heteroscedasticity Test	F-stat.	1.935859	0.0804
Ramsey RESET Test	F-stat.	1.061592	0.5063

Source: *Extract from E-views 10*.

The results of post-estimation test of NARDL model presented in Table 4.12 showed that there was no evidence of serial correlation and heteroscedasticity in the estimated model as the p-values of both (0.7008 and 0.1951) were found to be greater than 0.05. The result of Ramsey Reset test shows that the predicted value of the normalized NARDL regression was properly specified as the coefficients on all powers of the predicted were not jointly significant (F= 1.06159, P = 0.5067). Thus, the study model was linear; hence the set of probability

distributions considered in the study included the distribution that generated the observed data. The study also examines the stability level of the model vis-à-vis the distribution of the observed data.

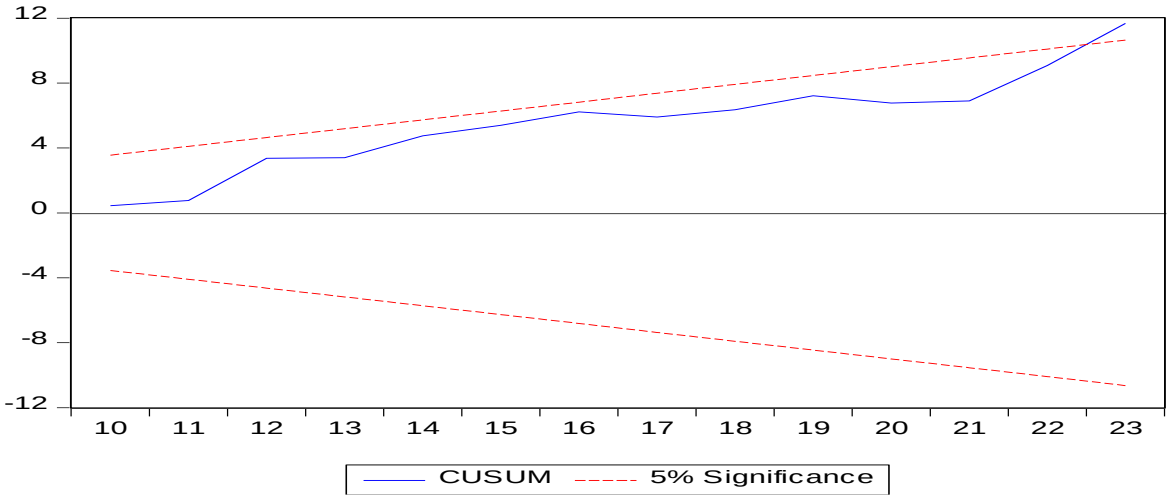

Figure 4.12: Cumulative Sum (CUSUM) of Recursive Residuals Stability Test.

The results of Recursive Residuals presented in Figure 4.12 indicated that the model is stable and the regression equation is correctly specified as the plot of the chart lies within the critical bounds at 5% significant level. Thus, the hypothesis of stability is not rejected, suggesting that the model was stable and hence suitable for estimation of data.

Tests of Hypotheses

Table 4.34: Lagged Regression Results of the Asymmetry Wald Test

Variables	Wald Statistic	Evidence of Asymmetry
BMS	2.63185 (0.5913)	No

Note: The tests include intercept and trend; ** significant at 1%; ** significant at 5%*
Source: Authors Computation, 2024 (Eviews-10)

Ho1: Stock market performance has no significant effect on broad money supply in Nigeria.
From the result of Wald test presented in Table 4.34, the stated null hypothesis is accepted (t=5.5038; p, 0.0361<0.05). This suggests that capital market performance has significant effect on broad money supply in Nigeria.

Discussion of Findings

The aim of the study was to examine the effect of stock market performance on broad money supply in Nigeria. Specifically, the study analyzed the effect of all share index, total listed equities, value of total transactions, and value of government stocks on broad money supply in Nigeria.

Results of the study showed that capital market performance has significant effect on broad money supply in Nigeria. While share index and total listed equities have negative effect on broad money supply, value of total transactions and value of government stocks have positive effect on broad money supply in Nigeria. This finding disagrees with that conducted by Afful and Asiedu (2013) which showed a positive and significant relationship between fiscal policy and the spread and stock market activity. Also, results from the study conducted by Barikui, Collins, Sirah and Solomon (2020) found evidence of a unidirectional causality running from monetary policy variables to stock market returns. Consequently, Abina (2019) concluded that capital market is a strong driver of economic growth as it stimulates public and private entities for medium and long-term investment.

Conclusion and Policy Recommendations

The study focuses on the effect of capital market performance broad money supply in Nigeria. The conclusion drawn is that stock market performance has long run positive and negative asymmetric effects on broad money supply in Nigeria. While share index and total listed equities have negative effect on broad money supply, value of total transactions and value of government stocks have positive effect on broad money supply in Nigeria.

On the basis of this conclusion, the study recommended as follows:

3. There is need for the government through the central bank to implement policies that will increase the level and size of market capitalization at the capital market. Such increase will provide the needed funds for local investors for further investments and hence increased productivity thereby stimulating economic development through a rise in real gross domestic product.
4. The continuous fall in the value of the local currency occasioned by rising exchange rate does not augur well for the capital market. Accordingly, government, through the apex bank should consider a stable currency value by developing policies to improve foreign exchange market stability. This may take the form of swinging currencies and lowering the monetary policy rate which is normally associated with the performance of all-share index and money market instruments such as Certificate of Deposit Issued, Notes and Deposit Certificates. These are the indices often targeted by foreign investors.

References

Aarseth, A., &Skare, H. B. (2022). The effects of oil price shocks on bank profitability and financial stability in Norway [Master's thesis, Norwegian School of Economics]. Retrieved from https://www.nhh. no/en/about-nhh/contact/

Abduh, M., &Baharoom, A. M. (2016). Oil prices and determinants of Islamic and conventional banks' profitability in Saudi Arabia. *Journal of Islamic Economics, Banking, and Finance, 2* (2).

Abdulazeez, Y. H., Saif, A., Asish, S., &Rohani, M. (2017). Impact of oil and gas prices shocks on banks' deposits in an oil and gas-rich economy: Evidence from Qatar. *International Journal of Emerging Markets*, *12*(4), 442-460. https://doi.org/10.1108/IJoEM-07-2017-0266.

Adetutu, M. O., Odusanya, K. A., Ebireri, J. E., &Murinde, V. (2020). Oil booms, bank productivity and natural resource curse in finance. *Economics Letters*, *186*, 108517.

Ahmed, H. I. (2003). Trend in the profitability of banks in Nigeria before and during interest rate deregulation: A comparative analysis. *NDIC Quarterly*, *13*(1), 62.

Achema, F., Nyor, T. &Agbi, E. S. (2022). Assets quality and profitability of listed deposit money banks in Nigeria. *Journal of Economics and Finance, 13*(4), 19-29.

Ahmed, K., Mahalik, M.K., &Shahbaz, M. (2016). Dynamics between economic growth, labor, capital and natural resource abundance in Iran: An application of the combined cointegration approach. *Resour. Pol.*, *49*(1), 213–221.

Allen, D. E., &McAleer, M. (2020). A nonlinear autoregressive distributed lag (NARDL) analysis of West Texas intermediate oil prices and the Dow Jones index. *Energies,13*, 4011, 1-11.

Akinola, G. O. (2008). Effect of globalization on market structure, conduct and performance in Nigerian banking industry. Ph.D [Unpublished post field seminar paper], Department of Management and Accounting, Obafemi Awolowo University, Ile –Ife.

Alao, D. O. (2023). Impact of oil prices on stock market performance. [A dissertation submitted to the guildhall school of business & law, london metropolitan university].

Albulescu, C. (2022) Bank financial stability and international oil prices: Evidence from listed Russian public banks. https://hal.archives-ouvertes.fr/hal-02554299v2.

Isabwa, H. K., &Mabonga, M. W. (2020). Effect of Non-Performing Loans on Profitability of the Banking Industry in Kenya. *International Journal of Finance and Banking Research, 6(*2), 28-36. doi: 10.11648/j.ijfbr.20200602.12.

Jensen, M. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, *76*, 323-29.

Jensen, M, &Meckling, W. (1976). Theory of the firm: managerial behaviour, agency costs and capital structure. *Journal of Financial Economics, 3*, 305-60.

Jones, C. M., &Kaul, G. (1996). Oil and the stock markets. *The Journal of Finance*, *51*(2), 463–491.

Jreisat, A., & Al-Mohamad, S. (2022). Bank efficiency and oil price volatility: A view from the GCC countries. *Emerging Science Journal*,*6* (3).

Kaffash, S. (2014). Oil price movement and bank performance in the Middle Eastern oil exporting countries. Dissertation submitted in fulfilment of the requirement for the Degree of Doctor of Philosophy, Brunel Business School, Brunel University,

Kaffash, S, Aktas, E, &Tajik, M. (2020). The impact of oil price changes on efficiency of banks: An application in the Middle East oil exporting countries using SORM-DEA. *RAIRO Operations Research*, *54*, 719. https://doi.org/10.1051/ro/2019009.

Kandil, M, &Markovski, M. (2018). UAE banks' performance and the oil price shock: Indicators for conventional and Islamic Banks, *The Economic Research Forum Working Paper No. 1284.*

Kankpang, A., Lawal, S., Nkiri, J. &Iwara, O. (2023). A conceptual analysis of price movement, stock determinants and their effects on economic growth in Nigeria*. AKSU Journal of Management Sciences. 8*(1). 203-224. 10.61090/aksujomas.2023.014.

Katircioglu, S. (2009). Revisiting the tourism-led-growth hypothesis for Turkey using the bounds test and Johansen approach for cointegration. *Tourism Management*, *30*(1), 17–20.

Katircioğlu, S. (2010). International tourism, higher education, and economic growth: The case of North Cyprus. *The World Economy*, *33*(12), 1955–1972.

Katırcıoglu, S, Ozatac, N, &Taspınar, N. (2018). The role of oil prices, growth and inflation in bank profitability, *The Service Industries Journal*, 1-18 DOI:10.1080/ m02642069.2018 .1460359.

Khan, M.A., Abdulahi, M.E., Liaqat, I., & Shah, S.S.H. (2019). Institutional quality and financial development: The United States perspective. *J. Multinatl. Financ. Manag*, *49*, 67–80.

Khandelwal, P., Miyajima, K., & Santos, A. (2017). The impact of oil prices on the banking system in the Gulf Cooperation Council. *Journal of Governance & Regulation*, *6*(2), 32-47. doi: 10.22495/jgr_v6_i2_p4.

Said, A. (2015). The influence of oil prices on Islamic banking efficiency scores during the financial crisis: Evidence from the MENA. *International Journal of Finance & Banking Studies*, *4*(3), 35–43.

Saif-Alyousfi, A. Y. H., Saha, A., Md-Rus, R., &Taufil-Mohd, K. N. (2021). Do oil and gas price shocks have an impact on bank performance? *Journal of Commodity Markets*, *22(1)*, 100–147. https://doi.org/10.1016/j.jcomm.2020.100147

Sanni, M. R. (2006). *Consolidated Accounts Made Simple*. Ilaro, Ogun State, Nigeria, IPS Educational Press, 178-180.

Sanusi, L. S. (2010). The Nigerian banking industry: What went wrong and the way forward. *Convocation Lecture at Bayero University, Kano.*

Sanni, M. R. (2009). The effects of the 2006 consolidation on profitability of Nigerian Banks. *Nigerian Research Journal of Accountancy*, *1*(1), 107-120.

Shaeri, K., Adaoglu, C., & Katircioglu, S. (2016). Oil price risk exposure: A comparison of financial and non-financial subsectors. *Energy*, *109*(1), 712–723.

Sharma, E., & Mani, M. (2012). Impact of macroeconomic and financial market indicators on the banking sector: Some evidence from India. *International Journal of Research in Finance Marketing, 2*(2), 171-185.

Staikouras, C. K., & Wood, G. E. (2004). The determinants of European bank profitability. *International Business Economics Research Journal, 3*(6).

Sufian, F., &Habibullah, M. S. (2010). Assessing the impact of financial crisis on bank performance: Empirical evidence from Indonesia. *ASEAN Economic Bulletin*, 245-262.

Titman, S., &Wessels, R. (1988). The determinants of capital structure choice. *Journal of Finance*, 43, 1-19.

Trujillo-Ponce, A. (2012). What determines the profitability of banks? Evidence from Spain. *Accounting & Finance*, *53*(2), 561-586.

Uchendu, O. A. (1995). Monetary policy and the performance of commercial banking in Nigeria. *Monograph, Research Department, CBN*.

Vidal, M. C. L., & Vidal, E. B. R. (2021). Oil price change: Its effects to the stability and profitability of banks in the Sultanate of Oman, *Saudi J Econ Fin, 5*(7): 290-311.

Wang, Y. S. (2013). Oil price effects on personal consumption expenditures. *Energy*3 *Economics*, *36(1)*, 198-204.

Xu, C; &Xie, B. (2015). The impact of oil price on bank profitability in Canada. Published Master of Science in Finance Program, Simon Fraser University, 1-38.

Yuliana, C. W. P. (2020). Factors affecting return on assets (ROA) in banking companies listed in Indonesia stock exchange (IDX) period 2015-2018. *Asian Journal of Social Science and Management Technology, 2*(1).