MACROECONOMIC FACTORS' EFFECTS ON THE PERFORMANCE OF THE NIGERIAN CAPITAL MARKET

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Abstract

Capital market is the major component of a modern market-based economic system as it serves as the channel for the flow of long-term financial resources from the savers of capital to the borrowers of capital. Hence, the study was carried out to examine the macroeconomic factors' effects on the performance of the Nigerian capital market. Money supply (M2), exchange rate (EXR), consumer price index (CPI) and prime lending rate (PLR) were used as proxies for macroeconomic factors (explanatory variables), while market capitalization equities (MCE) was used as a proxy for the performance of Nigerian capital market (explained variable). The study made use of monthly time-series data which were sourced from the Nigerian Stock Exchange, Central Bank of Nigeria and Financial Market Dealers Association ranging from 2000M01 to 2019M12. Quantile Regression Technique was utilized to analyze the Quantile process estimates; Quantile slope equality test and Quantile symmetric test. The finding from Quantile process estimates revealed that there were significant variability in market capitalization equities across all quantiles caused by money supply and exchange rate. Also, market capitalization equities (MCE) bore insignificant and significant brunt of consumer price index and prime lending rate across all quantiles. The finding of Quantile slope equality test further confirmed that the connection between explanatory variables and explained variable understudy varies across quantile values, whereas the inter-quantile range proved that the slope equality test does not vary across quantile. More so, the finding of Quantile symmetry test demonstrated evidence of significant asymmetry between quantiles. However, the individual coefficient restriction test values exhibited evidence of symmetry across quantiles for all the variables understudy, except prime lending rate which showed evidence of asymmetry. In line with the findings, the study recommended that the regulatory authorities should intensify efforts towards creating a conducive and enabling environment that will deepen the capital market and enable the market to thrive.

Keywords: *Macroeconomic factors, Quantile Regression technique, Nigerian capital market.*

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Introduction

Macroeconomic factors are factors which are very vital to the broader economy and do affect all economic activities and a large population of people of a country at either regional or national level. It is widely held in view and believed that capital market is influenced and affected by a number of macroeconomic factors such as interest rate, exchange rate, money supply, Gross Domestic Product (GDP), and inflation which are closely monitored by

governments, businesses, and consumers. This means that macroeconomic factors may influence investors' decision on whether to invest in stocks and shares or not and this will in turn affect returns on stocks and overall, the performance of capital market. Hence, both theoretical and empirical literature holds that the growth of the capital market of a country is directly related to the economy, which consists of various macroeconomic factors and/or variables such as foreign direct investment, money supply, remittances, inflation, gross domestic product, interest rate, inflation, exchange rate, and among others (Aduda, Masila & Onsongo, 2012). Capital market is the major component of a modern market-based economic system as it serves as the channel for the flow of long-term financial resources from the savers of capital to the borrowers of capital. An efficient capital market is hence essential for economic growth and prosperity. Thus, a rising capital market is an indicator of an expanding economy. Like any other capital market elsewhere in the world, the Nigerian capital market exists to provide long-term capital for economic and infrastructural development. One major objective for the establishment of the Nigerian capital market was to enable corporate institutions and the government to raise quick capital to accelerate economic development. In line with this objective, the Nigerian capital market has gained prominence by facilitating tremendously the divestiture and privatization of some state-owned enterprises (Nwangwu, 2013; Kolapo & Adaramola, 2012; Akingunola, Adekunle & Ojodu, 2012). According to Gan, Lee, Yong, and Zhang as cited in Etale & Eze (2019) the gauge of the capital market performance is its market index and a number of macroeconomic factors influence this movement ranging from economic, political, socio-cultural, and international. Arguably, some fundamental macroeconomic factors such as interest rate, exchange rate, inflation rate, etc. could play major roles in determining stock prices or stock market index movement which will consequently affect the performance of the capital market.

The Nigerian capital market is a highly organized and specialized market and as a result, remains an essential agent of economic growth and development because of its vital role in facilitating and mobilizing saving for economic activities and investment. However, despite the vital role of the capital market, many businesses in Nigeria today still lack sufficient long-term capital to support and advance their businesses. In furtherance, capital market in Nigeria has been faced with different challenges coupled with some macroeconomic factors which affect its growth and overall performance. Specifically, there has been a decrease in the value of stocks and shares which emanates from the global financial crisis and volatility in macroeconomic factors such as inflation rate and exchange rate. Abdullahi & Fakunmoju (2019) and Kuhe (2018) claimed that the Nigerian stock market is full of high stock return volatility, the decline in market capitalization, and information asymmetry as a result of the constant decrease in gross industrial production, undervalue of local currency (Naira) to foreign currencies and inflation. This has equally contributed to the reduction in the propensity to invest in the Nigerian capital market leading to the poor performance of the market. Consequently, the poor functioning of the Nigerian capital market deters and discourages foreign investors owing to the fact that the market has

become illiquid while trading is equally expensive. In line with the identified problem, this study seeks to examine the macroeconomic factors' effect on the performance of the Nigerian capital market.

Literature Review

Theoretical Review of Literature

A number of theories have been developed to explain the macroeconomic factors and the performance of the capital market for countries. For the purpose of this study, some of these theories are adopted and discussed in this section:

a) Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis (EMH) was developed by Fama in 1965. The Efficient Market Hypothesis (EMH) states that all relevant information is immediately and fully reflected in a security's market price. In other words, the Efficient Market Hypothesis (EMH) states that at any one point in time, prices reflect all available information. Furthermore, an analysis of past or current data cannot identify undervalued stocks. Applying this to the securities markets, the Efficient Market Hypothesis implies that no trading mechanism can consistently beat the market. According to Efficient Market Hypothesis, financial markets are efficient on prices of traded assets that reflect all known information and therefore are unbiased because they represent the collective beliefs of all investors about future prospects. The previous test of the Efficient Market Hypothesis has relied on long-range dependence, because of the narrowness of the market arising from the immature regulatory and institutional arrangement (Lo, 1991; Nyong, 2003; Nagayasu, 2003). However, the Efficient Market Hypothesis is classified into three main levels based on the nature of assumed information to be utilized in setting prices in the market. These include the weak form of the Efficient Market Hypothesis, the semi-strong form of the Efficient Market Hypothesis, and the strong form of the Efficient Market Hypothesis. For a capital market to be seen and perceived as being efficient, some assumptions are made. First, for a capital market to be efficient, a large number of participants with increased profit levels must be independent of the other as well as analyze and value the market securities. Secondly, the timing of one announcement of new information with respect to securities that emerge in the market in a unique fashion is mostly independent of others. Thirdly, investors who are high profit-oriented rapidly adjust security prices to reflect the impact of new information.

b) Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) is an economic model developed in the early 1960s by William Sharpe (1964), Jack Treynor (1962), John Lintner (1965a, b), and Jan Mossin (1966) to provide a coherent framework of the relation of the expected return on investment to the possible risk of that investment. The model is an equilibrium model that describes assets' pricing as well as derivatives. In his definition, Van Horne (2004) described the Capital Asset Pricing Model (CAPM) as an equilibrium one that attempts to solve the problematic tradeoff between expected portfolio return and unavoidable risk. Kevin (2011) described the Capital Asset Pricing Model (CAPM) as the relationship between risk and return established by the security market line. The Capital

Asset Pricing Model (CAPM) is based on the notion that not all risks should affect asset prices, and it relates the required return of an asset to the risk of the said asset which measured by variance of the asset's historical rate of return relative to its asset category. The Capital Asset Pricing Model (CAPM) divides a portfolio's risk into systematic and specific risks. This systematic risk refers to the risk inherent to the entire market or market segment. It is also known as un-diversifiable risk, volatility, or market risk, which affects the overall market, not just a particular stock or industry. Whereas, the unsystematic risk or specific risk to an investor, is the specific risk or hazard that applies only to a particular company, industry, or sector. It is the opposite of overall market risk or systematic risk. Specific risk is also referred to as unsystematic risk or diversifiable risk. Capital Asset Pricing Model (CAPM) assumes that the market compensates investors for taking the systematic risk but not for taking the specific risk.

c) Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) was developed by economist Stephen Ross in 1976. In finance, this theory is a general theory of asset pricing which holds that the expected return of a financial asset can be linearly modeled as the function of diverse factors or market theory of indicators, which posits that sensitivity to change in each factor is delineated as the factor-specific beta coefficient. The Arbitrage Pricing Theory predicts a securities market line linking the variance of expected returns to multi-factor risks. This exhibits that Arbitrage Pricing Theory establishes the model link between expected return spread and multi-macroeconomic factors risks. The Arbitrage Pricing Theory relies on three key prepositions; (i) stock returns are explained by the macro-multi-risk factors model (ii) there are sufficient stocks to diversify away unsystematic risk and (iii) well-functioning stock markets do not allow for the persistence of arbitrage opportunities. The Arbitrage Pricing Theory (APT) is a substitute for Capital Asset Pricing Model (CAPM) in that, both of these theories hold the assertion that there is a linear relation between assets' expected returns and their covariance with other random variables. Stephen Ross (1976) addresses the concern and shortcomings of Capital Asset Pricing Model (CAPM) by developing a completely different model called the Arbitrage Pricing Theory (APT). This Arbitrage Pricing Theory involves identifying macroeconomic variables which influence stock risks and returns spread. In most cases, when Arbitrage Pricing Theory is applied by investors it enables them relaxing constraints linked with Capital Asset Pricing Model (CAPM). Hence, the correlation between assets and the macroeconomic risk factors associated with them are used to predict their returns in Arbitrage Pricing Theory. This is achieved by combining exogenous macroeconomic variables in a linear manner (Eita, 2011). Thus, a measurement of an asset's exposure to macroeconomic risk factors is based on the use of factor-beta. Arbitrage Pricing Theory is a one-period model in which every investor believes that the stochastic properties of returns of capital assets are consistent with a factor structure. The model assumes that investors would take advantage of arbitrage opportunities in the broader market. Thus, an asset's rate of return is a function of the return on alternative investments and other risk factors (Ouma & Muriu, 2014). Etale & Eze (2019) argued that if equilibrium

prices offer no arbitrage opportunities over static portfolios of the assets, then the expected returns are approximately linearly related to the factor loadings.

Empirical Review of Literature

This section takes a critical review of the works of previous researchers on macroeconomic factors and the performance of the Nigerian capital market. Academic scholars have over the years carried out studies to investigate this relationship but arrived at different results. Some found a positive relationship, some found a negative relationship while others found no relationship; hence, a few of these studies are discussed in this section as follows:

Pole & Cavusoglu (2021) investigated the effect of macroeconomic factors on stock return in the Nigerian stock market, employing monthly secondary data which were obtained from the Nigerian Stock Exchange (NSE) factbook and Central Bank of Nigeria (CBN) statistical bulletin between the periods of 1998 and 2019. The study adopted Autoregressive Distributed Lag (ARDL) as a method of data analysis. The findings of the study revealed that money supply and aggregate industrial production positively and significantly affect stock return while exchange and inflation rates negatively affect stock return in the Nigerian stock exchange market respectively. The study concluded that macroeconomic factors significantly affect stock return in the Nigerian stock market in the short run and long run.

Sanya & Isaac (2020) investigated the macroeconomic determinants of stock market performance in Nigeria between 1985 and 2018; sourcing their data from the World Bank Development Indicator, 2020 edition and Central Bank of Nigeria statistical bulletin. The study applied ARDL co-integration method as an estimation technique. The results of the findings of the study reported that inflation rate, real interest rate, world oil price, and real effective exchange rate were the major determinants of Nigeria's stock market performance within the periods of study. Based on these findings, the study, therefore, concluded that both endogenous and exogenous macroeconomic variables determine Nigeria's stock market performance.

Josiah & Akpoveta (2019) empirically examined the influence of key macroeconomic variables on stock market returns in Nigeria. In the course of the study, they employed co-integration tests, error correction model mechanism, and Granger causality test to investigate the nature of the relationship the independent variables and dependent variables. The findings revealed that the sound macroeconomic environment is the reflection of sufficient money supply (liquidity), a coherent exchange rate, hence exchange rate, increased output, and financial openness stimulate market return in Nigeria. On the basis of the findings, the study recommended that government and statutory capital market regulators should open up the Nigerian financial market and economy, so that more capital inflows will lead to economic and industrial development.

Etale & Tabowei (2019) investigated the effect of macroeconomic variables on market capitalization in Nigeria. The Nigerian stock market capitalization was used as the dependent variable, whilst gross domestic product, interest rate, inflation, and exchange rate

were used to measure macroeconomic variables (independent variables). Annual time-series data on the study variables were sourced from the Central Bank of Nigeria Statistical Bulletin and the Nigerian Stock Exchange factbook for the period 2001 to 2018. The study multiple regression analysis based on E-views 10 computer software as the techniques for analysis. The results of the findings portrayed that gross domestic product has a significant positive effect on market capitalization; meanwhile, the exchange rate has a significant negative effect on market capitalization; while interest rate and inflation have insignificant negative effects on Nigerian market capitalization. As a result of the findings, the study, therefore, recommended that the regulatory authorities should formulate policies that would increase national output as it was revealed that gross domestic product was seen to have positively impacted market capitalization.

Etale & Eze (2019) examined the impact of some selected macroeconomic variables on stock market performance in the Nigerian Stock Exchange (NSE). All share index (ASI) was used as a proxy for stock market performance and the dependent variable, whilst broad money supply (BMS), interest rate (ITR), inflation rate (IFR), an exchange rate (EXR) were used as the independent variables to capture selected macroeconomic variables. Using Secondary data for the variables which were sourced from Central Bank of Nigeria (CBN) Statistical Bulletins covering the periods 1985 to 2017. The study utilized multiple regression techniques, Augmented Dickey-Fuller unit root test, Johansen co-integration test, and Error Correction Model (ECM) as methods for analyzing the relationship between variables under study. E-views 9.0 software was used as a tool to facilitate this analysis. The results of the finding revealed that an existed long-run equilibrium and short-run relationships between the selected macroeconomic variables and stock market performance in the Nigerian Stock Exchange. The results further displayed that all the independent variables under study had a significant influence on stock market performance. However, the impact of the individual macroeconomic variables indicated that exchange rate and broad money supply had a significant positive effect on all share-index, whilst inflation rate and interest rate showed an inverse relationship with the all-share index. Thus, the study recommended that the monetary authorities should put in place sound monetary policies that would bring about positive developments in the stock market.

A similar study was carried out to investigate the macroeconomic determinants of share price in the stock market of Vietnam by Duy & Hau (2017), using a VECM as a technique. The results from the findings indicated that the share price index in the stock market of Vietnam was determined by some selected macroeconomic variables, which include exchange rate, money supply, consumer price index, and market price index. The result further revealed that the share price index is directly related to the money supply and market price index. It also indicated that an increase in money supply invariably leads to improvement or development of an economy based on that cash flow rises and share price will gain from the expansionary policy.

Likewise, Worlu & Omodero (2017) evaluated the impact of macroeconomic variables on stock market performance in four major countries in Africa, such as Kenya, Ghana, Nigeria, and South Africa. The study employed the application of the ordinary least square technique. The result of the findings demonstrated that the real exchange rate, GDP, and inflation rate exerted negative effects on the stock price index in Nigeria. The result indicated that South Africa's stock market had an inverse relationship with the inflation rate and GDP and no effect of the real exchange rate was witnessed on the stock market. Ghana's stock market has a negative GDP while the others show no effect. A negative relationship was witnessed between the real exchange rate and the Kenyan stock market, but both the inflation rate and GDP had no effect on the Kenyan stock market.

Adekunle, Alalade & Okulenu (2016) investigated the impact of macroeconomic variables on capital market growth with particular emphasis on the effect of macroeconomic pricing variables such as interest rate, inflation rate, and exchange rate on capital markets growth. The study utilized multiple regression analysis of the ordinary least square to determine the impact of interest rate as well as other macroeconomic variables like as exchange rate, inflation rate, on capital market growth and pooled data regression method to estimate the specified model equations for the periods between 1985 and 2013. The result of the findings revealed that interest rates had a negative effect on capital market growth. The Regression analysis results reveal that a 1% increase in interest rate will lead to a 44% decrease in all share price indexes; this implies that as the rate of interest increases, the performance of the capital market deteriorates. Whereas, the inflation rate and exchange rate were not significant at the 5 percent level. The study revealed further that the negative linkage between interest rate and All Share Index sufficiently proved when independently examined, multiple regression with variables such as inflation rate and exchange rate shows it dominant effect on the dependent variable. The study recommended that the capital market should be strategically positioned to exploit the opportunities in the market, by engaging professionals and setting mechanisms that will enable it with challenges of macroeconomic variables.

Osamwonyi & Evbayiro-Osagie (2012) determined the relationship between macroeconomic variables and the Nigerian capital market index. The study considered the yearly data of several macroeconomic variables of interest rates, inflation rates, exchange rates, fiscal deficit, GDP, and money supply from 1975 to 2005. The Vector Error Correction Model (VECM) was employed to analyze the short-run dynamics as well as the long-run relationship between the stock market index and the six selected macroeconomic variables from the Nigerian economy. The results revealed that the variables under study had a relative influence on all share indexes of the Nigerian capital market.

In the same vein, Elly & Oriwo (2012) examined the relationship that exists between macroeconomic variables and stock market performance in Kenya with the intention of determining whether changes in macroeconomic variables can be used as a predictive factor for the future of Kenya's stock market. In determining the relationship, three macroeconomic variables examined are inflation

rate, lending interest rate, and 91-day Treasury bill rate. Their study applied Autoregressive distributed lag (ARDL) as an estimation method. The findings of the study showed that the nine-one-day Treasury bill rate had a negative relationship with the Kenya stock, while the inflation rate displayed a weak positive relationship with the Kenya stock. The study concluded that the macroeconomic environment strongly influenced Kenya's stock and should be consciously monitored to ensure economic stability.

Gap in Literature

Some related empirical studies on macroeconomic variables and the Nigerian capital market (Etale & Tabowei, 2019; Josiah & Akpoveta, 2019; Etale & Eze, 2019: Adekunle, Alalade & Okulenu, 2016; Osamwonyi & Evbayiro-Osagie, 2012) have been reviewed in this study. However, based on the researchers' knowledge, there seems to be no well-established conclusion regarding the direction and extent of macroeconomic factors' effects on the performance of the Nigerian capital market as most of the related studies generated mixed findings and showed a lack of consensus in their findings. In furtherance of this, some gaps in knowledge (data and methodology) were identified and this study ultimately bridged these gaps. With respect to data, none of the studies reviewed made use of monthly time-series data in their works. Methodologically, none of the related studies adopted the Quantile regression approach. Hence, the lack of consensus among literature coupled with the identified gap clearly showed that further study needed to be carried out in this area. Therefore, the point of departure in this study is that efforts were devoted by the researchers to empirically examine macroeconomic factors' effects on the performance of the Nigerian capital market. Also, this present study makes use of monthly time-series data which cover up to 2019 and adopts a Quantile regression approach for its data analysis

Methodology

Data source and Study variables

This study empirically examines the macroeconomic factors' effects on the performance of the Nigerian capital market with the utilization of the Quantile regression model, and the use of E-Views 10 Software to facilitate the analysis of the hypothetical relationship between variables under study. The study makes use of monthly time-series data on the study variables ranging from the periods 2000M01 to 2019M12. The data for market capitalization equities (dependent variable) is sourced from Nigerian Stock Exchange, market capitalization equities (explained variable) are used as a proxy for the performance of the Nigerian capital market and its value is in billions of Naira, but a log transformation of it **is** taken and thus it is denoted as LMCE. Also, the explanatory variables in our model include the money supply, its data are sourced from the Central Bank of Nigeria and its value is in billions of Naira, but a log transformation of it is taken thus it is denoted as LM2. Also, data for exchange rate are sourced from the Central Bank of Nigeria and are in the unit of Naira, a log transformation of it is taken and thus it is denoted as LEXR. Data for prime lending rate are sourced from the Central Bank of Nigeria and Financial Market Dealers Association (FMDA) and its

value is in percentage, a log transformation of it is not taken and thus it is denoted as PLR. Lastly, data for the consumer price index (a proxy for inflation rate) are sourced from Central Bank of Nigeria and its value is in percentage, a log transformation of it is not taken and thus it is denoted as CPI

Model Specification

The functional form of the model for macroeconomic factors' effects on the performance of the Nigerian capital market is specified as follows:

LMCE = f (LM2, LEXR, PLR, CPI)   (1)

Quantile Regression is described by the following equations;

$y_t = \chi_t \beta_q$ (2)

Where β_q is the vector of unknown parameters associated with the qth quantile

The OLS minimizes $\sum_t e^2_t$, the sum of squares of the model prediction error, e_i

The median regression also called least absolute-deviation regression minimizes $\sum_t Ie_tI$

The quantile regression minimizes $\sum_t qI^e_tI + \sum_t(1 - q) Ie_tI$ which is a sum that produces the asymmetric penalties qIe_iI representing under-prediction and $(1 - q)Ie_tI$ for over-prediction.

Essentially, the estimator of the qth β_q minimizes over β_q the objective function expressed as;

$min_{b£R}{}^{K}[\sum_{t£(t:yt \geq}x^t_t \beta)$ qIy$_t$ - x^t_t β_qI + $\sum_{t£(t:yt<}$ x^t_t $_\beta)$ $(1 - q)$Iy$_t$ - x^t_t β_qI   (3)

Where; $0<q < 1$ denotes the conditional quantile function for the $\theta—th$ quantile. Indicating with x$_i$ the $i—th$ regressor (i=1,..,κ), the conditional quantile Q$_\theta$ (y/x$_i$) = χ_t β_q is the inverse of the conditional distributional function of the response variable, F^{-1} y/x$_i$).

Results and Data Analysis

Ordinary Least Square (OLS) residuals

In this section, linear ordinary least square regression is conducted to ascertain the linearity of the variables under study. But, if its assumptions of multivariate normality, no serial correlation, and Homoscedasticity in the data fail, then the Quantile regression model is applied. Table 1 presents the results of Ordinary Least Square (OLS) residual or pre-estimation tests.

Table 1: OLS Residuals Tests

Tests	F-statistics	P- Value	Conclusion
Jarque-Bera	79.14250	0.0000	Not normally distributed
Breusch Godfrey	187.5813	0.0000	Serially correlated
Breusch-Pagan Godfrey	19.38331	0.0000	Heteroscedastic

Source: *Authors' Compilation with EViews10 Software.*

From the results in Table 1 above, there is evidence that the residual tests failed the assumptions of OLS. In this regard, Quantile regression is required.

Quantile Regression
Quantile regression is applied to estimate the conditional *median* of the performance of the Nigerian capital market as captured by market capitalization equities. It is worthy to note that Quantile regression is an extension of linear regression when the conditions of linear regression are not met. The results of residuals or pre-estimation tests in Table 1 above show that the strong distribution of Ordinary Least Square (OLS) is not found. This necessitates the use of quantile regression analysis. Table 2 displays the results of quantile regression:

Table 2: Quantile Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.969332	1.087507	4.569469	0.0000
LM2	0.532477	0.177338	3.002605	0.0030
LEXR	0.476299	0.292396	1.628950	0.1047
CPI	-0.065636	0.049883	-1.315789	0.1895
PLR	-0.208341	0.025444	-8.188117	0.0000

Pseudo R-Square = 0.533326; Sparsity = 1.211431; Prob(Quasi-LR stat) = 0.000000; Quasi-LR statistic = 373.3926

Source: *Authors' Compilation with EViews10 Software*

From the result in Table 2 above, it is revealed that the median value of the money supply possesses a positive sign which is 0.532477 with its probability value being 0.0030 at the 5% level of significance. This suggests that 1% increase in the median value of money supply (LM2) will significantly cause about 53.25% increase in the median value of the performance of capital market as captured by market capitalization equities (LMCE) on the average. Furthermore, it is revealed that the median value of the exchange rate (LEXR) is 0.476299 and its corresponding P-value being 0.1047, which is not significant at 5% level; hence, the exchange rate has no significant effect on the median value of the performance of capital market as captured by market capitalization equities (LMCE). Again, it is revealed that the median value of the consumer price index (CPI) is -0.065636 and its P-value of 0.1895 which is insignificant at 5% level; thus, the result shows that the consumer price index has no significant effect on the performance of capital market as captured by market capitalization equities (LMCE). It is further revealed that the median value of the prime lending rate possesses a negative sign which is -0.208341, while its probability value is 0.0000 at the 5% level of significance. This implies that 1% increase in the median value of prime lending rate (LPLR) significantly leads to about 20.83% decrease in the performance of capital market as measured by market capitalization equities (MCE), ceteris paribus. More so, the goodness of fit of quantile regression reports that the result of Pseudo R-square is 0.533326. This implies that about 53.3% variation in the condition median of the performance of capital market as measured by market capitalization equities (LMCE) is due to changes in money supply (LM2), exchange rate (LEXR), consumer price index (CPI) and prime lending rate (PLR). Also, the result further reports that the value of Quasi-LR statistic is 373.3926 and the Prob (Quasi-LR stat) is 0.000000; this indicates that the model is stable.

Test of Quantile Process Estimates
As a result of the stability condition of the model, the next step is to conduct test of Quantile process estimates as displayed in Table 3

Table 3: Quantile Process Estimates Results

	Quantile	Coefficients	Std. Error	t-Statistic	Prob.
LM2	0.100	0.191601	0.048479	3.952258	0.0001
	0.200	0.178771	0.045208	3.954440	0.0001
	0.300	0.233563	0.073948	3.158472	0.0018

	0.400	0.406063	0.121289	3.347895	0.0009
	0.500	0.532477	0.177338	3.002605	0.0030
	0.600	0.588662	0.165269	3.561835	0.0004
	0.700	0.649849	0.166475	3.903584	0.0001
	0.800	0.529455	0.198233	2.670875	0.0081
	0.900	0.450009	0.176714	2.546543	0.0115
LEXR	0.100	1.439347	0.251833	5.715492	0.0000
	0.200	1.247725	0.245309	5.086346	0.0000
	0.300	0.917800	0.177480	5.171287	0.0000
	0.400	0.727231	0.228718	3.179602	0.0017
	0.500	0.476299	0.292396	1.628950	0.1047
	0.600	0.350330	0.270936	1.293034	0.1973
	0.700	0.148506	0.254370	0.583819	0.5599
	0.800	0.205247	0.280613	0.731422	0.4653
	0.900	0.199038	0.248020	0.802506	0.4231
CPI	0.100	-0.029105	0.016334	-1.781892	0.0761
	0.200	-0.036530	0.023648	-1.544751	0.1238
	0.300	-0.040543	0.040438	-1.002605	0.3171
	0.400	-0.112514	0.038689	-2.908182	0.0040
	0.500	-0.065636	0.049883	-1.315789	0.1895
	0.600	-0.055757	0.042493	-1.312145	0.1908
	0.700	-0.053099	0.038052	-1.395431	0.1642
	0.800	-0.020496	0.046321	-0.442488	0.6585
	0.900	-0.035022	0.055577	-0.630159	0.5292
PLR	0.100	-0.238338	0.076866	-3.100682	0.0022
	0.200	-0.286528	0.066569	-4.304205	0.0000
	0.300	-0.336193	0.042799	-7.855206	0.0000
	0.400	-0.270983	0.046423	-5.837284	0.0000
	0.500	-0.208341	0.025444	-8.188117	0.0000
	0.600	-0.201264	0.023246	-8.658041	0.0000
	0.700	-0.205026	0.026147	-7.841143	0.0000
	0.800	-0.215643	0.023087	-9.340430	0.0000
	0.900	-0.210281	0.029157	-7.212053	0.0000
C	0.100	3.001494	3.038152	0.987934	0.3242
	0.200	5.114629	2.548539	2.006887	0.0459
	0.300	7.374861	1.498521	4.921428	0.0000
	0.400	5.791283	1.341348	4.317511	0.0000
	0.500	4.969332	1.087507	4.569469	0.0000
	0.600	5.033666	1.090980	4.613894	0.0000
	0.700	5.706824	1.237516	4.611516	0.0000
	0.800	6.823446	1.090997	6.254323	0.0000
	0.900	7.616717	0.894692	8.513224	0.0000

Source: *Authors' Compilation with EViews10 Software*

Table 3 displays the results of quantile process estimates of money supply (LM2), exchange rate (LEXR), consumer price index (CPI), and prime lending rate (PLR): hence, it is demonstrated from the median value of money supply (LM2) that in the 10th quantile, market capitalization equities (LMCE) significantly increases by about 19.16 percent. After the 20th quantile, market capitalization equities (LMCE) significantly decline by 17.87 percent; then in the 30th quantile, market capitalization equities (LMCE) significantly increase by 23.35 percent. After which 40th quantile, 50th quantile, 60th quantile, and 70th quantile witness significant increase with 40.60 percent, 53.24 percent, 58.86 percent, and 64.98 percent respectively but then significantly declines in the 80th quantile and 90th quantile with 52.94 percent and 45.0 percent respectively.

In the case of the exchange rate (LEXR), it is revealed that in the 10th quantile, market capitalization equities (LMCE) significantly increase by 1.43 percent and then decline by 1.24 percent and 0.91 percent in the 20th quantile and 30th quantile respectively. Whereas in the 40th quantile, 50th quantile, 60th quantile, 70th quantile, 80th

quantile, and 90th quantile, there is no significant impact in the conditional median value in market capitalization equities (LMCE).

The result further indicates that in the 10th quantile, 20th quantile, 30th quantile, 40th quantile, 50th quantile, 60th quantile, 70th quantile, 80th quantile, and 90th quantile, market capitalization equities (LMCE) is negatively affected by inflation as captured by consumer price index (CPI).

More so, it is portrayed that the conditional median value of prime lending rate (PLR) has a significant bearing on market capitalization equities (LMCE). Hence, in the 10th quantile, 20th quantile, 30th quantile, 40th quantile, 50th quantile, 60th quantile, 70th quantile, 80th quantile, and 90th quantile, market capitalization equities (LMCE) is negatively affected.

Slope Equality Test
This section discusses the slope equality test across quantile levels. Table 4 below presents the results of the slope equality test:

Table 4: Slope Equality Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Wald Test	120.5221	32	0.0000	
Restriction Detail: b(tau_h) - b(tau_k) = 0				
Quantiles	**Variable**	**Restr. Value**	**Std. Error**	**Prob.**
0.1, 0.2	LM2	0.012830	0.043170	0.7663
	LEXR	0.191621	0.205370	0.3508
	CPI	0.007425	0.017651	0.6740
	PLR	0.048190	0.059486	0.4179
0.2, 0.3	LM2	-0.054792	0.050804	0.2808
	LEXR	0.329925	0.186502	0.0769
	CPI	0.004013	0.027692	0.8848
	PLR	0.049665	0.046842	0.2890
0.3, 0.4	LM2	-0.172500	0.078108	0.0272
	LEXR	0.190569	0.164636	0.2471
	CPI	0.071970	0.025510	0.0048
	PLR	-0.065210	0.029851	0.0289
0.4, 0.5	LM2	-0.126414	0.120560	0.2944
	LEXR	0.250932	0.191361	0.1898
	CPI	-0.046878	0.039054	0.2300
	PLR	-0.062642	0.032890	0.0568
0.5, 0.6	LM2	-0.056185	0.105078	0.5929
	LEXR	0.125969	0.173715	0.4684

	CPI	-0.009879	0.028916	0.7326
	PLR	-0.007077	0.015097	0.6392
0.6, 0.7	LM2	-0.061187	0.106528	0.5657
	LEXR	0.201824	0.168777	0.2318
	CPI	-0.002658	0.026186	0.9192
	PLR	0.003762	0.016245	0.8169
0.7, 0.8	LM2	0.120394	0.133845	0.3684
	LEXR	-0.056741	0.195646	0.7718
	CPI	-0.032602	0.031754	0.3046
	PLR	0.010618	0.017706	0.5487
0.8, 0.9	LM2	0.079446	0.155552	0.6095
	LEXR	0.006209	0.218300	0.9773
	CPI	0.014526	0.044314	0.7431
	PLR	-0.005362	0.024068	0.8237

Source: *Authors' Compilation with EViews10 Software.*

Table 4 shows the Wald test summary of Chi-Sq. statistic value of 120.5221 is statistically significant at the 5% level. Therefore, there is a rejection of the null hypothesis of slope equality across quantiles. This finding confirms that the relationship between the explanatory variables (money supply, exchange rate, consumer price index, and prime lending rate) and the explained variable (market capitalization equities) varies across quantile values. However, the inter-quantile range fails to reject the null hypothesis of slope equality and this implies that slope equality does not vary across quantiles. The next section discusses the symmetric Quantile test.

Symmetric Quantile Test

Table 5: Symmetric Quantile Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.		Prob.
Wald Test	48.62461	20		0.0003
Restriction Detail: b(tau_h) - b(tau_k) = 0				
Quantiles	**Variable**	**Restr. Value**	**Std. Error**	**Prob.**
0.1, 0.9	LM2	-0.423344	0.335807	0.7663
	LEXR	0.685786	0.589332	0.3508
	CPI	0.067144	0.096147	0.6740
	PLR	-0.031938	0.083086	0.4179
	C	0.679548	3.250904	0.8344
0.2, 0.8	LM2	-0.356728	0.300506	0.2352
	LEXR	0.500374	0.527217	0.3426
	CPI	0.074245	0.082631	0.3689
	PLR	-0.085489	0.066775	0.2005
	C	1.999412	2.607381	0.4432
0.3, 0.7	LM2	-0.181542	0.246858	0.4621
	LEXR	0.113708	0.412452	0.7828
	CPI	0.037629	0.070383	0.5929
	PLR	-0.124537	0.042620	0.0035
	C	3.143021	1.661655	0.0586
0.4, 0.6	LM2	-0.070229	0.181358	0.6986

LEXR	0.124963	0.290862	0.6675
CPI	-0.036999	0.056458	0.5123
PLR	-0.055565	0.034134	0.1036
C	0.886285	1.188768	0.4559

Source: *Authors' Compilation with EViews10 Software.*

Table 5 also displays the results of the Chi-square test for symmetry between quantiles. Hence, this test's null hypothesis states that the distribution is symmetric. The test statistic is statistically significant at the 5% level, which shows significant asymmetry and rejects the hypothesis of null symmetry between quantiles. These findings confirm the heterogeneity of the macroeconomic factors' effects such as money supply, exchange rate, consumer price index, and prime lending rate on the performance of the Nigerian capital market as captured by market capitalization equities. However, the individual coefficient restriction test values show evidence of symmetry across the quantiles 0.1, 0.9; 0.2, 0.8; 0.3, 0.7; and 0.4, 0.6 for all the variables under study. This is because their respective P-values are above 5% level which is not statistically significant, except the prime lending rate that shows evidence of asymmetry in quantile 0.3, 0.7 because its P-value is 0.0003 which is significant at 5% level.

Discussions of Findings

Having empirically analyzed the monthly time series data sourced with respect to the macroeconomic factors' effects on the performance of the Nigerian capital market, the findings generated are discussed in this section as follows: First, the results of this study revealed that the money supply has a positive and significant effect on market capitalization equities (LMCE) of the Nigerian capital market. This is in agreement with the a priori expectation of money supply. The finding is in tandem with that of Duy & Hau (2017) who provided empirical evidence that the share price index is directly related to money supply and market price index. Thus, an increase in economic activities and money supply raised the price of the stock market. This finding is also related to the finding of Etale & Eze (2019) which stated that the impact of the individual macroeconomic variables indicated that broad money supply and the exchange rate had a significant positive effect on all share indexes of the Nigerian Stock Exchange (NSE).

Secondly, the results of this study revealed that exchange has a positive and insignificant effect on market capitalization equities (LMCE) of the Nigerian capital market. The finding is in consistence with the result of Evans (2014) which established that a sound macroeconomic environment reflective of a coherent exchange rate positively stimulates stock market returns in Nigeria. This finding also negates the finding of Etale & Eze (2019) which stated that the impact of the individual macroeconomic variable such as the exchange rate had a significant effect on all share indexes of the Nigerian Stock Exchange (NSE).

Furthermore, the findings of this study showed that the consumer price index has an insignificantly negative effect on market capitalization equities (MCE) of the Nigerian capital market. This is in agreement with the a priori expectation. The result showed

consistency with the earlier findings of Worlu & Omodero (2017). Worlu & Omodero (2017) in their study on the impact of macroeconomic variables on stock market performance in Africa found that there was a negative effect of inflation rate on the stock price index in Nigeria.

Lastly, the findings of this study showed that the prime lending rate has a significantly negative effect on market capitalization equities (MCE) of the Nigerian capital market. The finding concurred with that of Adekunle, Alalade & Okulenu (2016) who provided empirical evidence that interest rates have an adverse effect on capital market growth.

Conclusion and Recommendation for Policy Inference

Capital market has been understood as the major component of a modern market-based economic system as it serves as the channel for the flow of long-term financial resources from the savers of capital to the borrowers of capital. In line with the foregoing, the study has examined the macroeconomic factors' effects on the performance of the Nigerian capital market. The study made use of monthly time-series data on money supply (LM2), an exchange rate (LEXR), consumer price index (CPI), and prime lending rate (PLR) which were used as explanatory variables to capture macroeconomic factors on market capitalization equities (LMCE) which was used as explained variable to capture the performance of Nigerian capital market and were all sourced from the Nigerian Stock Exchange, Central Bank of Nigeria and Financial Market Dealers Association ranging from 2000M01 to 2019M12. Based on the findings, the study concluded that macroeconomic factors exerted significant effects on the performance of the Nigerian capital market as captured by market capitalization equities. In line with the findings, the study recommended the regulatory authorities should intensify efforts toward creating a conducive and enabling environment that will deepen the capital market and enable the market to thrive.

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