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Capital Market, Selected Macroeconomic Variables and Nigeria Economic Growth – A Quantile Regression Approach

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ABSTRACT

In many economies, the capital market and macroeconomic variables play vital roles as drivers of economic growth and development. Capital market remains an effective channel of financial intermediation and a stable macroeconomic environment is a promoter of sustainable economic growth. The study therefore assessed empirically how the capital market and selected macroeconomic variables affects Nigeria's economic growth using the quantile regression approach. Specifically, capital market were proxied by market capitalization (MCP), all share index (ASI) and number of shares traded (NOS) while selected macroeconomic variables are inflation rate (INF), exchange rate (EXC), Fiscal deficit (FD), government debt (GD). Time-series quarterly data covering 1985–2022 were obtained for the study from CBN statistical bulletin. Estimation methods used in the study's analysis include Philip-Peron unit root test, descriptive statistics, co-integration analysis and Quantile regression approach. Findings from the study showed that MCP positively impacts economic growth in the long and short run. The ASI affects economic growth positively and insignificantly in the long and short runs, NOS positively impacts economic growth in the long and short run, INF exerts a negative effect on the economic growth of Nigeria. FD positively impacts economic growth but not significant. GD positively impacts economic growth in the long. Hence, the study recommends that the government should as a matter of urgency reform the capital market for optimal productivity of the selected capital market proxies. Secondly, government should ensure stability in macroeconomic variables through promoting macroeconomic policies and reform to achieve expected stability. Thirdly, government should diversify the economy to enable multiple sources of revenue as this will improve public expenditure that will yield growth and development.

Keywords: Capital Market, Macroeconomic Variables, Economic Growth, Quantile Regression.

INTRODUCTION

Financial analysts and economists whether in developed or developing economies consistently emphasize the performance of capital markets and their relationship with macroeconomic variables. In Nigeria, the capital market is shaped by the activities of regulatory agencies such as the Nigerian Securities and Exchange Commission, market institutions like the Nigerian Stock Exchange, and financial entities including development and investment banks. Additionally, insurance companies, pension funds, government bodies, and individual investors play critical roles in the market (Eneisik, Okon, & Egbunike, 2021). Key market indicators such as market capitalization, total new issues, transaction values, equity volume, stock indices, turnover ratio, number of deals, and listed securities—collectively contribute to strengthening capital market activities and, by extension, drive economic growth and national development (Eneisik et al., 2021). Recognizing the importance of strong financial markets for attracting commercial investment, countries like Nigeria have increasingly prioritized their development (Umar, 2022). Economic growth and development remain central goals for all nations, and efficient financial markets are essential to mobilize commercial capital. Accordingly, capital markets have become vital mechanisms for financing infrastructure projects,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

supporting large corporations, and facilitating the growth of small and medium-sized enterprises (SMEs), given their strong linkage to long-term economic growth (Azimi, 2022; Ezeibekwe, 2021; Nkemgha, Onuoha, & Ibe, 2023).

Over time, scholars and experts have conceptualized the capital market as a system composed of financial institutions and infrastructure designed to mobilize and allocate long-term funds across both public and private corporate entities within the economy. This market functions as a crucial bridge between savers and investors, effectively connecting capital providers with capital users through various intermediaries (Didier, Levine, & Schmukler, 2021). As a network of specialized financial institutions and supporting infrastructure, the capital market facilitates the efficient flow of long-term capital among diverse stakeholders (Abayomi & Yakubu, 2022; Omimakinde & Otite, 2022). Additionally, Adereti and Mayowa (2021) emphasize its integrative role in linking the monetary and real sectors of the economy, particularly in enhancing the production of goods and services.

The capital market, as a specialized component of the organized financial system, plays a vital role in promoting economic growth by mobilizing savings and channeling them into productive investments. According to Iyola (2014), access to long-term financing through the capital market is essential for achieving sustained economic growth, supporting external adjustments, and facilitating rapid economic transformation. Through the issuance of various financial instruments by both new and established firms, the capital market enables product development, project financing, and overall business expansion. Its contribution to economic growth is widely acknowledged. For instance, Chinwuba and Amos (2011) underscore the capital market's strategic role in fostering development in underperforming economies, while Ilaboya and Ibrahim (2014) describe it as an economic barometer that stimulates and reflects broader economic activities.

The global recognition of the capital market’s essential contribution to national economic growth is well established. By pooling and directing long-term funds toward productive investments, the capital market serves as a critical engine for economic development (Alabede, 2005). Furthermore, the evolution of a country’s financial sector often reflects broader economic transformation. A well-developed financial system not only mobilizes and consolidates savings but also facilitates trade, supports risk management, and influences key economic behaviors such as investment decisions, technological innovation, and overall growth.

Researchers, scholars, and policymakers widely acknowledge the capital market's effectiveness as a financial intermediary that is essential for driving economic growth in both developed and developing countries. According to Ekundayo (1990), achieving sustained economic growth and development requires substantial local and foreign investments, a role that the capital market is uniquely positioned to fulfill. Nonetheless, the persistent scarcity of long-term capital remains a significant barrier to economic development across many African nations, including Nigeria (Osaze, 2015). Osaze further emphasizes that the capital market serves as a catalyst for economic advancement by promoting long-term capital formation, mobilizing savings, and directing them into profitable and self-sustaining investments—functions that are fundamental to fostering national economic progress.

It's undeniable that achieving economic growth requires sufficient long-term capital to fund activities that foster rapid and sustainable economic expansion. This is where the functions of the capital market become invaluable. The capital market functions as a complex institutional arrangement equipped with mechanisms to mobilize, harness, and allocate long-term funds from surplus economic sectors to deficit sectors for productive endeavors. This underscores the capital market's pivotal position within any financial system, as it provides the necessary medium to long-term funds for financing capital projects in both the public and private sectors.

Statement of the Problem

A country's ability to mobilize reasonably priced capital for profitable ventures is largely dependent on its infrastructure, which is facilitated by the stock market, which has historically been a vital conduit for bringing in foreign capital. Despite this, an assessment of the global economic environment shows that developing

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

nations continue to underutilize capital due to weak capital markets and inadequate infrastructure (Nzotta, 2004; Taiwo, Alaka & Afieroho, 2016).

Theoretical perspectives on the relationship between capital markets and economic growth highlight three primary channels of influence. As outlined by Pagano (1993), first, the expansion of capital markets leads to a greater allocation of savings toward productive investments. Second, developments within capital markets can impact the overall savings rate, thereby influencing investment levels. Third, capital market development enhances the efficiency with which resources are allocated across the economy. Beyond their role in raising capital for infrastructure and corporate growth, stock markets are also vital for wealth creation and distribution. They promote financial inclusion and democratize access to economic opportunities (Securities and Exchange Commission [SEC], 2016).

The Nigerian capital market has experienced a series of reforms and policy adjustments over the years, notably beginning with the introduction of the Structural Adjustment Programme (SAP) in 1986, which aimed to promote stable economic growth and development. According to data from the Central Bank of Nigeria (CBN, 2020), the market has recently shown signs of expansion. Current reform initiatives are focused on enhancing the mobilization of funds, improving the efficiency of resource allocation, and providing accurate information for effective market assessment. These reforms are intended to enable the capital market to offer a broader array of financial instruments, thereby facilitating risk pooling, pricing, and exchange among economic agents. Nevertheless, despite these ambitious efforts, concerns persist regarding the actual performance of the Nigerian capital market in driving economic growth and development. An analysis of market activity reveals that the anticipated outcomes have yet to be fully realized.

The slow pace of economic growth observed in many developing countries is frequently attributed to a lack of sufficient resources to support sustained development, as domestic savings in these regions often fall short of investment needs (Akhtaruzzaman, 2019; Emiola & Fagbohun, 2021; Olowe, 2022; World Bank, 2018). As a result, several economies resort to foreign borrowing, while others seek to attract foreign investment through the capital market as a means of stimulating growth. In Nigeria, for example, the capital market played a pivotal role in 2005 by enabling banks to meet the 25 billion naira capital base requirement under the Central Bank of Nigeria’s recapitalization initiative—an equivalent of approximately $156.25 million. Moreover, the capital market has facilitated the mobilization of long-term funds for modernization and expansion projects by both governmental and corporate entities (Nwankwo, 1990).

Although Nigeria's aspirations for economic growth and development are commendable, achieving them would remain elusive if the capital market and the behavior of macroeconomic variables fail to improve. In other words, the ability of a country to propel economic growth and development significantly hinges on the evolving dynamics between the capital market, macroeconomic variables, and the development process. This suggests that despite efforts to implement capital market reforms aimed at fostering stable economic growth, the desired outcomes have not materialized in Nigeria. Additionally, the volatility of macroeconomic variables such as inflation rates and exchange rates over the past three decades, despite government reforms and policies, has contributed minimally or adversely to Nigeria's economic growth. It is therefore the aim of this paper to examine why the capital market and macroeconomic variables with all the reforms and policies have not yielded expected results in Nigeria.

Objectives of the Study

The main objective of the study is to examine how capital market and macroeconomic variables at different quantiles affect the growth of Nigeria economy. The specific objectives of this study are:

Investigate the relationship between market capitalization and Nigeria economic growth at different quantiles.

Estimate the effect of all share index on the economic growth of Nigeria at different quantiles.

Compute the relationship between number of shares traded on the economic growth of Nigeria at different quantiles.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

Research Questions

Based on the problem statement and objective of the study, the following research questions are raised;

What is the relationship between market capitalization and economic growth in Nigeria at different quantiles?

How significant is the effect of all share index on the economic growth of Nigeria at different quantiles?

To what extent does number of shares traded affect economic growth of Nigeria at different quantiles?

Research Hypotheses

In this research work, the following hypotheses will be examined.

$H0_1$: There is no significant effect of market capitalization on Nigeria's economic growth.

$H0_2$: All share index has no significant effect on Nigeria's economic growth.

$H0_3$: There is no significant effect of number of shares traded on Nigeria's economic growth

REVIEW OF THEORETICAL LITERATURE

Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis (EMH), introduced by Eugene Fama in 1965, is a foundational concept in financial economics. It posits that asset prices fully reflect all available information, thereby making it impossible to consistently achieve returns that exceed average market performance on a risk-adjusted basis (Fama, 1970). In other words, because prices respond only to new information, it is theoretically impossible to "beat the market" through prediction or analysis of historical or current data. According to the EMH, no trading strategy can reliably outperform the market, as prices at any given time incorporate all known information.

The hypothesis further suggests that financial markets are efficient in processing information, making asset prices unbiased indicators of the collective expectations of investors about future prospects. In early empirical tests, particularly in emerging markets, the applicability of EMH was questioned due to institutional underdevelopment and regulatory constraints, which often led to market inefficiencies and long-range dependencies (Lo, 1991; Nagayasu, 2003; Nyong, 2003).

Fama (1970) classified the EMH into three forms—weak, semi-strong, and strong—based on the nature of information reflected in prices. For a capital market to be considered efficient, several assumptions must be met: market participants must act independently, there should be a large number of profit-driven investors, and all relevant information must be quickly and accurately incorporated into securities prices. Furthermore, the arrival of new information should be random and not dependent on prior announcements, and investors should promptly adjust prices to reflect any new developments.

Arbitrage Pricing Theory (APT)

Ross was the main developer of the Arbitrage Pricing Theory (1976a, 1976b). In this one-period model, all investors hold the belief that a factor structure is consistent with the stochastic features of capital asset returns. Ross contends that the expected returns on the assets are roughly linearly correlated with the factor loadings assuming equilibrium prices do not present arbitrage opportunities over static portfolios of the assets. The covariances between the returns and the factors determine the factor loadings, also known as betas.)

According to APT, a financial asset's expected return can be expressed as a linear function of a number of macroeconomic variables or theoretical market indices, with each factor's beta coefficient serving as a proxy for the factor's susceptibility to change. It is generally seen as an alternative to the Capital Asset Pricing Model

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

(CAPM), since it includes more flexible assumptions. The APT uses the expected return of risk assets and the risk premium of certain macroeconomic indicators, whereas the CAPM requires the market's projected return. These variables may be company-specific or macroeconomic in nature. APT directly links the price of the security to the underlying forces that drive it, rather than depending on assessing the performance of the market (Ross, 1976).

Capital Market Theory

By adding a risk-free asset to the portfolio mix, William Sharpe expanded upon the principles of Modern Portfolio Theory to promote the Capital Market Theory (CMT) in the 1960s (Sharpe, 1964). It makes the same logical mean-variance optimization assumption about investors as the Markowitz Portfolio Theory. According to Qi et al., (2023) the CMT aims to forecast and explain how capital (and occasionally financial) markets will evolve over time. It is a methodology intended to price assets, usually shares, by weighing the risks involved against the returns investors hope to achieve. Managers emphasize the relevance of the CMT research by addressing topics including the function of capital markets, major capital markets, initial public offerings, and the role of venture capital in capital markets.

Endogenous Growth Model or Economic Based Theory

The theory as developed by Lucas (1988), marks a significant shift from traditional growth models by highlighting growth is driven not only by external factors such as labor and capital accumulation but also by internal factors within the control of economic agents and policymakers. The core idea of this theory is that growth is self-sustaining and can be generated internally through investments in human capital, stability in capital markets, innovation, a stable macroeconomic environment, and technological progress. This theory advances our understanding of economic growth by focusing on these internal factors, providing a more comprehensive framework for analyzing growth dynamics and guiding policy decisions aimed at fostering long-term growth and development.

Given this context, our study is anchored in the endogenous growth theory because it effectively addresses critical issues related to capital market operations and the macroeconomic environment that contribute to economic growth

Theoretical Framework

Endogenous Growth Model: Lucas (1988) created the AK model, which holds that knowledge production and dissemination become easier as human capital increases. These AK models are significant because they explain the role that capital plays in the long-term expansion of economies. The following is the central production function of the AK model:

Y equals AK.

Y is the economy's total production, or GDP; K denotes the total amount of capital in the economy; and A denotes a constant that indicates the productivity or degree of technology in the economy.

According to this approach, the technological factor (A) multiplied by the level of capital (K) yields the total production (Y).

Empirical Literature

Abayomi and Yakubu (2022) used the Autoregressive Distributed Lag (ARDL) model to examine how the capital market affected Nigeria's economic growth between 1990 and 2020. Variables including real GDP (RGDP), equities, bonds, government securities, and preference shares were all evaluated in the study. The results showed a sustained correlation with economic growth. The ARDL showed that equities and government stock had a high positive association with economic growth, while preference shares, bonds, and government stock had a small negative effect.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

Omimakinde and Otite (2022) used the OLS technique to evaluate Nigeria's economic growth and capital market from 1985 to 2020 in a study that was comparable but used different variables. GDP, market capitalization, the all-share index, transaction value, the number of listed businesses, the number of deals, the inflation rate, and the interest rate were among the variables. The findings indicated that while the all-share index, the number of listed businesses, the transaction value, and the inflation rate were found to impede growth, market capitalization, interest rates, and the number of deals had a strong beneficial impact on Nigeria's GDP.

Eneisik, Ogbonnaya, and Onuoha (2021) investigated the impact of capital market indicators on Nigeria's economic growth over the period from 1989 to 2019. They used market capitalization, all-share index, and total value of transactions traded as proxies for capital market indicators and GDP. The study employed descriptive statistics, ordinary least squares, Johansen co-integration, and pairwise Granger causality tests for analysis. The findings revealed a bi-directional relationship between them. Market capitalization had a positive and significant impact on real GDP, while the all-share index and total value of transactions traded had positive but insignificant impacts on real GDP.

Omodero and Alege (2022) investigated the effects of several government bond kinds on Nigeria's economic expansion between 2003 and 2019. They discovered that FGN bonds and Treasury bills had a favorable and significant impact on Nigeria's economic growth by using multiple regression analysis on annual time series data, which included GDP, Treasury bills, FGN bonds, Treasury bonds, and the inflation rate. On the other hand, Treasury bonds and inflation both significantly hampered growth, whereas the influence of other government bonds on economic expansion was negligible.

Ihenetu and Iwo (2022) evaluated Nigeria's capital market and economic growth between 1999 and 2020 in a related study. They discovered that market capitalization had a positive and significant impact on GDP by using the OLS approach on annual time series data for GDP, market capitalization, the all-share index, and newly launched funds. Newly issued funds had no discernible influence on GDP throughout the study period, but the all-share index had a negative and considerable impact.

Araoye, Ajayi, and Aruwaji (2018) looked into how the Nigerian stock market affected the country's economic expansion between 1985 and 2014. They used the Johansen cointegration test to ascertain whether a long-term relationship existed, using GDP as a proxy for economic growth and market capitalization and turnover ratio as proxies for the size and liquidity of the stock market. Using the error correction model, the results showed that although the stock market has a considerable impact on economic growth, its overall effect was determined to be negligible. According to the report, small and medium-sized businesses should be encouraged to access the market for investible funds and use their strong grassroots ties to raise capital.

Anthony and Ogbuabor (2018) investigated how foreign capital inflows and economic growth are supported by the expansion of Nigeria's capital market. They employed market capitalization, all-share index, aggregate savings, foreign capital inflow, trade openness, and real exchange rate as independent variables and real GDP as the dependent variable. They discovered a long-run equilibrium link in the model by using ordinary least squares and Johansen cointegration approaches to analyze historical data from 1985 to 2016. The findings of the error correction revealed that, at the 5% level, market capitalization positively and significantly boosts economic growth, while the foreign exchange rate has an adverse and small impact.economic expansion.

Ngong et al. (2022) expanded the analysis to include rising economies in Africa and looked at the connection between stock market expansion and agricultural growth between 1990 and 2020. Botswana, Egypt, Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania, Tunisia, Uganda, and Zambia were among the countries included in the study. They applied Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS) estimators, using labor, physical capital, and broad money supply (M2/GDP) as control variables. Agricultural value added to GDP was used as a measure of agricultural growth, and market capitalization and stock value traded were used as proxies for stock market development. They discovered that while stock value traded has a favorable effect, market capitalization has a negative impact on agricultural growth. Additionally, the study showed a one-way causal relationship from agricultural value to labor and a bidirectional relationship between labor and agricultural value added.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

Using quarterly data from 2003Q1 to 2019Q1, Azimi (2022) examined the effects of capital and money market drivers on economic development in China using Nonlinear Autoregressive Distributed Lags (NARDL) and Dynamic Multiplier techniques. Gross fixed capital creation, net foreign direct investment, money market rate, real interest rate, broad money growth rate, total stock traded, market capitalization, and growth in per capita GDP were among the variables. The results showed that although negative shocks promote economic growth, positive shocks to the money market rate diminish it. On the other hand, short-term growth is supported by negative shocks to the real interest rate and total liquidity, which underpins the long-term asymmetry relationship among the variables. Furthermore, whereas shocks to total stock trading impede economic growth, both positive and negative shocks to market capitalization and stock market turnover enhance it. The error-correction component demonstrated that short-run asymmetries reliably lead to long-run equilibrium, indicating that enhanced financial institutions draw superior financial projects, which in turn promote long-term, steady economic growth.

Churchill, Arhenful, and Agbodohuhu (2013) used a four-month periodic time series covering the years 1991 to 2006 to perform research in Ghana on the relationship between economic growth and the stock market. They employed the Granger-causality standard to ascertain the association between variables and Johansen multivariate integration strategies with error correction method to monitor the duration of the operation and the relationship with the short-term variability of the variations. The study found that real estate investment by Ghanaian enterprises, real estate prices, and economic growth all had a favorable correlation. One important measure of the development of the Ghana Stock Exchange has been economic growth. Regional bank developments, on the other hand, revealed a negative link with business development, suggesting that corporate investment in Ghana is being replaced. The "following demand" theory was supported by the Granger-causality test results, which indicated that economic expansion causes commodity capitalization without any reaction. The study came to the conclusion that Ghana has the ability to raise both local and foreign money for investment in the future, even in spite of its recent and mostly ignored financial reforms. Therefore, any policy of the government that encourages economic expansion, rising commodity prices, and domestic investment are essential for the export of Ghanaian goods.

Similar findings were made by Babatunde et al. (2021), who used the OLS technique to analyze the effects of capital market development on the Nigerian economy from 1987 to 2018. They found that while market capitalization had a negative and negligible influence on GDP, the value of transactions had a positive influence on GDP.

Oloyede and Essi (2017) conducted a study on the effects of currency rate shocks on imports and exports in Nigeria between 1996 and 2015. They discovered that imports and exports were not impacted by the exchange rate by using the Vector Auto Regression (VAR) modeling technique to regress the exchange rate on both imports and exports.

Anidiobu, Okolie, and Oleka (2018) looked into how inflation affected Nigeria's economic progress between 1986 and 2015 using data from the Central Bank of Nigeria (CBN) website. They combined descriptive statistics with an estimating method known as Ordinary Least Square (OLS). Real Gross Domestic Product, a proxy for economic growth, was the dependent variable, and the independent variables were interest rate, inflation rate, and exchange rate. Their results showed that Nigeria's inflation rate had a modestly favorable effect on the country's economic growth.

Adaramola and Dada (2020) looked into the impact of inflation on economic growth from 1980 to 2018. They conducted their investigation using time series data on the real GDP, interest rate, money supply, government consumption spending, inflation rate, and degree of openness. Using the ARDL model in conjunction with tests for normality, cumulative sum, heteroscedasticity, and serial correlation LM, they found an inverse association between the exchange rate and inflation as well as an inverse relationship between the interest rate and money supply with economic growth.

Kandir (2008) examined the Turkish stock exchange and examined the ways in which macroeconomic factors explained the returns of Turkish stocks from July 1997 to June 2005. A range of macroeconomic indicators, including the growth rate of industrial output, the change in the consumer price index, the growth rate of the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

money supply, the change in the exchange rate, the interest rate, the growth rate of the price of crude oil, and the return on the MSCI World Equity Index, were used to analyze stock portfolios. The findings indicated that only three out of twelve portfolios had a significant impact from the rate of inflation, while all portfolio returns were influenced by the interest rate, currency rate, and world market return.

Using monthly data for the Stockholm stock exchange from 1993 to 2012, Talla (2013) examined the effects of macroeconomic variables on share prices for the Stockholm stock exchange. Using the ordinary least squares method and Granger causality tests, the study discovered that unidirectional Granger causality was identified between all variables except inflation, and that returns were negatively impacted by the money supply and the interest rate, exchange rate, and inflation.

Okorontah and Odoemema (2016) investigated how changes in exchange rates affected the growth of the Nigerian economy. Using the Johansen co-integration test, error-correction mechanism (ECM), and ordinary least squares (OLS) approach, the researchers were unable to establish a direct correlation between Nigeria's economic development and exchange rate.

Employing VAR and Granger causality tests, Barakat, Elgazzar, and Hanfy (2016) examined the relationship between macroeconomic variables and stock returns in Egypt and Tunisia from 1998 to 2014; the study found co-integration of the four macroeconomic variables with the stock market in both countries and a causal relationship between macroeconomic variables and stock prices in Egypt, with the consumer price index being the only variable that did not show a causal relationship with stock returns in Tunisia.

Research Design

This study examines Capital Market, macroeconomic variables and economic growth in Nigeria by means of adopting the basic concept for the econometrics model specification taken from Koenker and Bassett (1978). It will adopt the ex-post facto research design which is commonly and ideal method in time series analysis. This research design is used to explore cause-and-effect relationships and to determine the impact of certain factors on a particular outcome. The study is systematic and objective enquiry into events, development and experiences of the past. Macroeconomic variables and proxies to capital market will be used to simultaneously analyze their effect on Nigeria economic growth and thus will employ appropriate statistical tools of ECM Quantile Regression if all variables are integrated of order 1 or ARDL Quantile for mixed order of integration.

Model Specification

The model specified to test the hypotheses of the study is presented below in its functional form:

RGDP = f (MCP, ASI, NOS, EXC, INF, FD, GD, FDI)

This study will adapt the quantile regression model developed by Koenker and Bassett (1978) to analyze the relationship between Capital market, selected macroeconomic variables and economic growth in Nigeria. Following Koenker and Bassett (1978) the general form of quantile regression is expressed as:

$$Q_t(y/x) = x'\beta_{(t)} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

The conventional quantile regression estimator by Koenker and Bassett (1978) is stated as

$$\beta_{(t)} = \text{Min}\frac{1}{n}\sum_{i=1}^{n} P_t\,(y_i - x_i'\text{b}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

The quantile regression minimizes $\sum_t q/e_t/ + \sum_t (1 - \text{q})/e_t/$ which is the sum that produces the asymmetric penalties $q/e_i/$ representing under prediction and $(1 - \text{q})/e_t/$ for over prediction. Importantly, the estimator of the q^{th} $\hat{R}_q$ minimizes over R_q the objective function as:

$$^{Min}b\varepsilon R^k \left[\sum_t \varepsilon(t:y_t \geq x'_t\boldsymbol{\beta})\, q/y_t/ - x'_t\boldsymbol{\beta}_q/ + \sum_t \varepsilon(t:y_t < x'_t\boldsymbol{\beta})(1\text{-}q)/y_t - x'_t\boldsymbol{\beta}_q\right) \ldots\ldots\ldots \quad (3)$$

Where $0 < q < 1$

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

Based on relevant theories and previous related studies, the model variables that will be chosen are real gross domestic product, market capitalization, all share index, number of share traded, inflation rate and exchange rate.

$RGDP = (MCP, ASI, NOS, EXC, INF, FD, GD, FDI)$…….. (4)

Equation 4 can be rewritten thus linearly:

RGDP= α_0+ β_1MCP + β_2ASI + β_3NOS + β_4EXC + β_5INF + β_6FD + β_7GD + + β_8FDI + ei …….. (5)

Where,

RGDP = Real Gross Domestic Product MCP = Market Capitalization

ASI = All Share Index NOS = Number of Shares Traded

INF = Inflation Rate EXC = Exchange Rate

FD = Fiscal Deficit (% of GDP) GD = Government Debt (% of GDP)

FDI = Foreign Direct Investment

α_0 = Constant $\beta_1 - \beta_8$ = Coefficient

ei = Error term

We can specify the Quantile Regression model for the functional form thus:

RGDP= f (*MCP, ASI, NOS, EXC, INF, FD, GD, FDI*)

$Q\tau$RGDP= α_0+ $\beta_1(\tau)$MCP + $\beta_2(\tau)$ASI + $\beta_3(\tau)$NOS + $\beta_4(\tau)$EXC + $\beta_5(\tau)$INF + $\beta_6(\tau)$FD + $\beta_7(\tau)$GD + β_8 (τ)FDI + ei …….. (6)

$Q\tau$(*RGDP|MCP, ASI, NOS, EXC, INF, FD, GD, FDI*) = $\alpha_0\tau$+β1τ*MCP*+β2τ*ASI*+β3τ*NOS*+β4τ*EXC*+β5τ*INF* +β6τ*FD* +β7τ*GD* +β8τ*FDI*+ ei ..(7)

Quantile Regression Result

Variable	Relationship to RGDP	Significance	Notable Points
MCP (-1)	Positive	Significant (p < 0.05)	↑ 1% → ↑ 0.07% in RGDP.
ASI	Negative	Insignificant	No significant effect on RGDP across quantiles.
NOS (-1)	Positive	Significant (p < 0.05)	↑ Share volume → ↑ Economic growth.
EXC / EXC(-1)	Mixed (positive/negative)	Significant (p < 0.05)	Impact varies with lags and quantiles.
INF / INF(-1)	Negative	Partially significant	↑ Inflation → ↓ RGDP (especially at Q0.25).
FD / FD(-1)	Mixed	Not significant	Positive at lower quantiles, negative at

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

			Q0.75.
GD / GD(-1)	Positive	Highly significant	↑ Government debt → ↑ RGDP (across quantiles).
FDI / FDI(-1)	Positive	Significant at Q0.75	↑ FDI → Strong increase in RGDP (up to 333%).
ECM(-1)	Negative	Marginally significant	Validates long-run adjustment mechanism.

Pseudo R^2 = 0.53, Adjusted = 0.48 – indicates reasonable model fit.

Quasi-LR statistic is significant, confirming **model stability**.

Source: Authors Computation

Quantile regression confirms that market capitalization, share trading volume, exchange rate, government debt, and foreign direct investment significantly influence economic growth in Nigeria. The distribution-sensitive approach provides more nuanced insights than OLS, especially given the data's non-normality and structural heterogeneity.

CONCLUSION

These findings are consistent with previous studies by Ewah et al., (2009), Osinubi and Amaghionyeodiwe (2003), and Nyong (1997), which suggested that while the capital market holds the potential to positively influence economic growth; its impact has been hindered by factors such as low market capitalization, limited market size, and illiquidity. Additionally, the results align with the conclusions drawn by Ihenetu and Iwo (2022) and Bello et al. (2022), indicating that the expected impact of capital markets on economic growth in developing countries may not always materialize as anticipated, suggesting insignificant impacts.

Furthermore, our empirical analysis suggests that the efficacy of macroeconomic variables in driving changes in economic growth in Nigeria may not be sufficiently robust to significantly contribute to the economy's development. This finding corroborates the results of Asekome and Agbonkhese (2015), whose study revealed statistically significant coefficients for gross domestic product and number of shares traded, while exchange rate, capacity utilization, and inflation were not significant. Similarly, it concurs with Vieira et al. (2013), who found that high fluctuations in the exchange rate negatively correlate with economic growth, while moderate volatility exhibits a positive correlation.

RECOMMENDATIONS

It is therefore recommended that there should be improvement on:

Touching distance of All Share Index: When examining the effects of the capital market proxies—market capitalization, all-share index, and number of shares traded—it is evident that none of them—especially all-share index (ASI)—contributed much to the expansion of the economy. It is worth noting that ASI tracks the general market movement of all listed equities on Nigerian capital market regardless of capitalization and when skeptics or investors suffer calamity it passes a believe that the capital market of today is more volatile. This tends to scare away investors and reduce its impact. Investors' confidence should be strong on the notion that capital market has transited from a mono product market to that with multiple products offering. The ASI's positive but negligible contribution to economic development suggests that the touching distance can be crossed. This can achieved through strengthening regulatory oversight, enhancing corporate governance standards, and promoting investor education.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue VI June 2025

Market Capitalization: An increasing market capitalization shows that laws are creating an atmosphere that makes it easier for companies to prosper and draw in investment. An improved market capitalization helps to evaluate the size, value, growth potential and risk profile of different companies. Based on this, government should ensure adequate environment with goal and risk tolerance where 'striving business can buy large stock, mid stock and low stock for the growth of the economy.

Direct impact of Exchange rate: To maintain macro-economic stability, the government must ensure the economy must be less susceptible to external shocks. The government must support macroeconomic policies with structural reforms that will strengthen and improve the functioning of macroeconomic variables in both financial markets and key economic sectors. From our findings exchange rate as a macroeconomic variable contributed positively to the economic growth but indirectly. With direct impact, there would have been a more significant impact on the economy. For example, if exchange rate had a direct impact on the economy, the negative effect of inflation would have been reduced thereby making imported goods cheaper. Also it could have encouraged foreign investment as the Country's assets will appear more valuable to investors.

Enact Policies that will improve Number of Shares Traded: The stock market is a mood indicator that can affect the gross domestic product (GDP) either adversely or favorably. The trades determine stock prices, reflecting the perceived value and market conditions. From our result, number of shares traded contributed positively to economic growth but was not as expected as seen in the 18% impact. There should be policy that will increase trading activity that could stimulate economic growth by providing businesses with easier access to capital through equity financing.

Sustain judicious government debt: In situations where raising taxes and cutting spending are difficult, the government can effectively fund capital development, maintain public expenditures, and promote economic growth by using debt. It is noteworthy, based on our research, that if government expenditure is wisely directed toward beneficial endeavors, it may serve as a catalyst for economic expansion.

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