

Empirical Analysis of Stock Market Efficiency on Economic Growth in Nigeria

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Abstract: This study assesses the efficiency of the stock market in relation to economic growth in Nigeria, using statistical records for years 1993-2023 as secondary data. Augmented Dickey-Fuller (ADF) unit root test was used to estimate the data collected during the period of this study. The variables used include gross domestic product, market capitalization, all share index, inflation rate, and foreign direct investment. From the analysis of the study, it is observed that market capitalization negatively had insignificant influence on gross domestic product), all share index, inflation rate, and foreign direct investment had positive but insignificant effect on gross domestic product. The study recommends that firms should improve the accuracy and availability of economic data by investing in advanced data collection methods and ensuring transparency in reporting. Reliable data on stock market transactions, company performance, and economic indicators are crucial for informed decision-making and effective policy formulation to enhance stock market efficiency and economic development.

Keywords: Gross Domestic Product, Stock Market, Market Capitalization, All- Share Index, Foreign Direct Investment

JEL Classification: C58; E44; O40

1. INTRODUCTION

The assertion that democracy fosters economic activity leading to growth is challenged by the underwhelming performance of the Nigerian stock market relative

to the country's overall gross domestic product (GDP). The Central Bank of Nigeria (2020) highlights the notably low equity market capitalization when compared to her peers in other countries. The stock market's difficulties are exemplified by the 2008 crash, where market capitalization plummeted from ₦30.8 trillion in early 2007 to less than ₦14.26 trillion in the same period of 2008, and again from ₦28.26 trillion in early 2020 to less than ₦27.915 trillion in the corresponding period of 2022. However, in 2024, Nigeria's market capitalization rose to ₦56.45 trillion.

The aftermath prompted a House of Representatives investigation, known as the stock market probe, seeking to unravel the circumstances behind the crash. In the discourse on the Stock Exchange's role in economic growth, conflicting results emerge from various studies (Abbas et al., 2016; Chinwuba and Amos, 2011; Kolapo and Adaramola, 2012; Oguji and Kene, 2010). While some posit a negative link, others argue for a positive correlation. The contention, however, emphasizes that sustained economic growth through the stock market hinges on a conducive political climate.

Despite challenges such as a pervasive buy-and-hold mentality, widespread ignorance of market dynamics, limited investment avenues, unfriendly economic policies, political instability, and underutilization of technological advancements (Edame & Okoro, 2013), the Nigerian stock market has shown resilience. The number of listed securities increased from 93 in 1981 to 393 in 2024, and the market value increased from ₦5 billion to ₦56.45 trillion in 2024, indicating the interest of foreign investors (Nigerian Exchange Group, 2024). However, these positive trends in market activities have not translated into substantial economic growth in Nigeria, posing a perplexing challenge that warrants further exploration. While democracy often fosters economic growth through vibrant stock markets, Nigeria's case presents a puzzling gap. Despite democratic governance, her stock market underperforms compared to regional and global peers. Previous studies such as Kolapo and Adaramola (2012); Oguji and Kene (2010) offer contradicting explanations, failing to capture the country's specific context. Though resilient with rising foreign investment, the market has not translated growth into substantial economic gains, highlighting a critical paradox. This research bridges this gap by examining factors hindering the market's contribution to economic growth, focusing on market structure, investor behaviour, and the political and economic context. By illuminating these unique dynamics, the study aims to inform policy recommendations and market development strategies that unlock the stock market's potential as a true driver of sustainable economic growth in Nigeria.

The Nigerian economy has seen respectable growth rates in recent years. Despite Nigeria's remarkable economic development record, the country's stock market has been rather quiet recently, a phenomenon that has been largely attributed to the worldwide financial crisis. These facts appear to be at odds with one another to a large extent, thus it stands to reason that they would inspire a great deal of curiosity and a slew of questions (Olayiwola and Okodua, 2013). Stock market success and economic growth has been researched upon among authors in both developed and developing nations. Among which are Toan & Thu-Trang, (2021); Udo, et. al. (2021); Ayaowei & Pullah (2020); Acha & Akpan (2019); Sehwat, & Giri, (2017); Osinubi (1998); Obadan, (1998); Emenuga, (1998); Onosode (1998); Samuel (1996); Demirguc-Kunt and Levine (1996) Levine and Zervos, (1996); Akinifesi, (1987). The above researches have resulted in conflicting empirical findings, hence the need for this research.

The remaining part of this paper is organized into literature review, methodology and data and results and conclusion.

2. LITERATURE REVIEW

Regression analysis and Granger causality tests were used in a study by Adam and Sanni (2005) to investigate the relationship between the stock market and Nigeria's economic growth. They discovered a unidirectional causal relationship from market capitalization to GDP growth as well as a bidirectional causal relationship between GDP growth and market turnover. They came to the conclusion that GDP growth and the capital market have a substantial and favourable relationship. They suggested that since the development of the capital market boosts economic growth, governments ought to encourage it.

Ajayi, Oshadare, and Ajala (2018) used daily stock prices from the Nigerian stock market to assess semi-strong form efficiency using a transfer function approach from 2005 to 2013 and discovered that the Nigerian stock market is semi-strongly inefficient.

After analyzing the connection between the stock market and economic performance, Asante, Agyapong, and Adam (2011) came to the conclusion that while the stock exchange occasionally promotes growth, it has little bearing on the advancement of the economy. African countries should avoid investing their limited resources in the growth of the stock market, considering the several problems vying for scant resources, including high rates of sickness, widespread poverty, inadequate

social services, and decaying infrastructure. Furthermore, despite an abundance of resources, they contended that the stock market may expose the fragile economies of most emerging countries to speculative capital inflows and short-term stabilization effects.

Atoyebi et al. (2013) used the vector autoregression technique to assess the impact of the capital market on economic growth in Nigeria using annual data spanning from 1981 to 2010. According to the results of the empirical investigation, the market capitalization and index were statistically significant at the 10% level, and increases in their coefficients translated into increases in real GDP of 34.7 and 44.8 percentage points, respectively. Real GDP and the stock market have a long-term link, according to Johansen's co-integration. According to the report, in order to address recorded instances of misbehaviour and dishonest business practices by specific corporations, regulatory bodies should seek to rebuild trust in the market by guaranteeing openness and fair-trading practices in the stock exchange.

Duke and Nkamare (2015) examined Nigeria's capital market and economic expansion from 1986 to 2005 using the ordinary least square estimation technique. The variables have a clear and positive link, according to the data. Furthermore, the results indicated that GDP could not be predicted by a single variable.

Okpoto (2015) investigated how Nigeria's capital market affected the country's economic expansion between 1980 and 2013. The variables were stationary at various levels, according to the unit root test results. Error Correction Mechanism (ECM), cointegration, and ADF approaches were employed by the researcher. The result showed that the variables were cointegrated. The modest results indicated that the overall amount of development stock held, market capitalization, and transaction value all had a little but negligible effect on economic growth

Kolapo and Adaramola (2012) looked into the relationship between Nigeria's capital market and economic expansion in that nation. The authors noted a reciprocal association between GDP and the value of traded transactions, as well as a long-term relationship between the capital market and economic growth. Additionally, the findings demonstrated a one-way relationship between GDP and market capitalization, or the capital market. Granger causation test, ADF, and Johansen cointegration test for Granger causing GDP.

Ogbebor, Okolie, and Siyanbola (2020) investigated the impact of market liberalization on economic growth in Nigeria using a wide range of econometric approaches, such as the unit root test, cointegration, vector error correction model

and Granger causality. They discovered evidence of an out-of-equilibrium response over time to the current rate of economic growth in the real GDP, stock market development, foreign direct investment, trade openness, inflation, and banking sector development. Additionally, the results demonstrated that previous levels of trade openness, foreign direct investment, and real GDP all favoured rapid economic growth. Consequently, the research came to the conclusion that there were both short- and long-term bidirectional causal links between the dependent and explanatory factors. Based on the findings, they recommended that in order to have a good impact on economic growth, Nigerian authorities concentrate more on elements that can support the growth of the nation's stock market, foreign direct investment, trade openness, inflation, and banking sector. This aligns with theoretical data that demonstrates how market liberalization stimulates economic growth, particularly in frontier and emerging nations such as Nigeria.

Araoye, Ajayi, and Aruwaji (2018) used the error correction approach to investigate the relationship between the growth of the stock market and economic growth in Nigeria between 1985 and 2014. They used the Real Gross Domestic Product (RGDP) as a proxy for economic growth and labour, capital, market capitalization, and turnover ratio (TURN) as proxies for stock market development. The findings of the Johansen co- integration test indicated a long-term relationship between the growth of the stock market and Nigeria's economic advancement. Nigeria's economic growth was shown to be significantly influenced by the stock market, according to empirical data analyzed using the error correction model. They recommended that in order to guarantee a rise in market capitalization, officials should encourage foreign direct investment to participate in the market.

However, Ewah et al. (2009) evaluated the impact of capital market efficiency on Nigeria's economic development using time-series data covering the years 1963 to 2004. They discovered that although Nigeria's capital market has the ability to boost growth, a number of problems, including insufficient market capitalization, inadequate absorption capacity, illiquidity, and financial crime, have kept it from having a major impact. Therefore, even if changes are made to such reports, the research advises Nigeria's Security and Exchange Commission to stay better informed.

Gaps in Literature

Despite the stock market's crucial role in Nigerian economy, there has been relatively little empirical research on stock market efficiency and its impact on

economic growth. While theoretical frameworks exist explaining the link between economic growth and stock market efficiency, empirical research specific to Nigeria is scarce. This gap becomes evident when considering the importance of empirical data in understanding the dynamics of Nigeria's stock market and its contribution to economic development. Previous research has often provided theoretical perspectives or qualitative assessments, leaving a gap in comprehensive empirical analyses tailored to the Nigerian context (Joseph & Ose, 2011; Odo et al., 2017). This vacuum prevents the creation of evidence-based policy interventions targeted at enhancing market performance and promoting sustainable development, as well as a full understanding of the link between Nigeria's stock market efficiency and economic growth.

Several factors contribute to the dearth of empirical studies on Nigeria's stock market efficiency and economic growth. Chief among them is the availability and quality of data, particularly reliable time-series data covering sufficiently long periods for thorough empirical analysis. Nigeria's economic environment, characterized by institutional deficiencies, volatility, and structural inefficiencies, further complicates empirical research (Enoruwa, Ezuem & Nwani, 2019).

Despite these challenges, there are compelling reasons to bridge the empirical research gap in this area. Firstly, policymakers need to understand the relationship between economic growth and stock market efficiency to formulate effective plans that promote sustainable development in Nigeria. Only with a comprehensive grasp of the empirical links between stock market efficiency and economic growth can evidence-based policy interventions be developed to enhance market transparency, strengthen regulatory frameworks, and bolster investor confidence. Secondly, empirical analysis can provide valuable insights to assist investors, financial institutions, and other market participants in making informed decisions and allocating resources more efficiently in Nigeria's stock market.

Moreover, closing the knowledge gap on Nigeria's stock market efficiency and economic growth has broader implications for the country's economy. As one of the largest economies in Africa, Nigeria plays a significant role in the region's economic landscape. Therefore, insights gained from empirical research on Nigeria's stock market can contribute to broader discussions on financial market development, economic governance, and policy coordination across the continent (Kumo, Garba, & Abdullahi, 2018). Finally, filling the empirical analytical gap can advance academic knowledge in finance, economics, and related disciplines,

thereby enriching the global body of scholarly literature on stock market efficiency and economic growth.

3. METHODOLOGY AND DATA

Model Specification

The econometric model by Omankhanlen (2011) was adopted for this study with some modifications in order to bridge the gap in the model and make this study more elaborated. The model specification of this study is given as:

$$GDP_{it} = \beta_0 + \beta_1 MC_{it} + \beta_2 ASI_{it} + \beta_3 INF_{it} + \beta_4 FDI_{it} + \mu \quad (3.1)$$

Where:

GDP = Gross Domestic Product

MC = Market Capitalization

ASI = All Share Index

INF = Inflation rate

FDI = Foreign Direct Investment

e = Error Term

β_0 = Intersect/Constant term

$\beta_1 - \beta_4$ = Coefficients of the regressors.

μ = error term

Sources of Data

Data from the Central Bank of Nigeria (CBN) Statistical Bulletin served as a secondary source in this research. The data spanned a thirty-year period, from 1993 to 2023. Given the correlational nature of the study and its goal to assess the implications or lack thereof between the study variables, secondary data was considered appropriate.

Evaluation Techniques

The analysis employed the Ordinary Least Squares (OLS) econometric approach to estimate the relationship between the dependent variable, real GDP, and MC, ASI, INF, and FDI will be estimated using it (Owan et al. 2020).

4. RESULTS AND DISCUSSIONS

Table 4.1: Descriptive Statistics

	<i>GDP</i>	<i>MC</i>	<i>ASI</i>	<i>INF</i>	<i>FDI</i>
Mean	4.375518	3.556429	4.261082	1.157855	2.062195
Median	4.604772	3.980593	4.393935	1.109801	2.252594
Maximum	5.852961	4.709176	4.873750	1.862343	2.635264
Minimum	2.787009	1.676694	3.188591	0.731428	0.120000
Std. Dev.	0.839586	0.912139	0.415695	0.270099	0.552290
Skewness	-0.561652	-0.554200	-0.932780	1.069794	-1.828027
Kurtosis	2.243752	1.963416	3.107860	3.839184	6.218050
Jarque-Bera	2.368559	2.974781	4.510430	6.822668	30.64167
Probability	0.305966	0.225962	0.104851	0.032997	0.000000
Sum	135.6411	110.2493	132.0935	35.89351	63.92805
Sum Sq. Dev.	21.14713	24.95994	5.184076	2.188608	9.150724

Source: Researcher's Computation (2024)

Table 4.1 above provides a detailed statistical analysis of five economic indicators; namely gross domestic product (GDP), market capitalization (MC), all share index (ASI), inflation (INF), and foreign direct investment (FDI). Each of these indicators is examined through various statistical measures, providing a comprehensive understanding of their behaviour over the observed period. Starting with GDP, the mean value is 4.375518, slightly lower than the median of 4.604772, indicating a distribution skewed towards lower values. This is further supported by the negative skewness of -0.561652, suggesting that there are more high GDP values than low ones, but the lower values are more extreme. The range of GDP values, from a minimum of 2.787009 to a maximum of 5.852961, and a standard deviation of 0.839586, indicate moderate variability. The kurtosis of 2.243752 suggests a distribution that is slightly platykurtic, with thinner tails and a flatter peak compared to a normal distribution among others.

Table 4.2: Autoregressive Distributed Lag Result

<i>Variables</i>	<i>Parameter</i>	<i>Coefficient</i>	<i>t-Value</i>	<i>Pr(> t)</i>
Constant		-0.209983	-0.283990	0.7789
(GDP) t_1	α_1	0.940345	4.552677	0.0001
MC	β_1	-0.028798	-0.132185	0.8959
ASI	β_2	0.154095	0.656674	0.5176
INF	β_3	0.009072	0.072091	0.9431
FDI	β_4	0.000992	0.016996	0.9866
$R^2 = 0.970051$; Adj. $R^2 = 0.963812$; $MSE = 0.152102$; $AIC = -0.751673$; $F Stat. = 155.4733$ ($P\text{-value} = 0.000000$); $DW = 1.768484$				

Source: Author's Computation (2024)

The regression analysis provided seeks to understand the relationship between GDP and several independent variables: market capitalization (MC), All Share Index (ASI), inflation (INF), and foreign direct investment (FDI). This analysis uses lagged GDP ($(t-1)$) as an additional independent variable to capture the influence of past GDP on the current GDP.

The lagged GDP ($(t-1)$), denoted by γ_1 , has a coefficient of 0.940345. This coefficient is highly significant, as indicated by t-value of 4.552677 and the probability-value of 0.0001. The t-value is well above the commonly used threshold of 2, indicating strong evidence against the null hypothesis that the coefficient is zero. The very low p-value (less than 0.05) further reinforces this conclusion. The positive coefficient of 0.940345 suggests that GDP in the previous period is a strong predictor of the current GDP. This relationship implies that there is a high level of persistence in GDP over time; a higher GDP in one period is likely to be followed by a higher GDP in the next period. This finding aligns with economic theory, which often posits that GDP follows a relatively stable trend over time, influenced by factors such as capital accumulation, technological progress, and labor force growth.

The coefficient for market capitalization (MC) is -0.028798. The negative effect suggests that an increase in market capitalization is associated with a slight decrease in GDP. However, the t-value for MC is -0.132185, probability-value is 0.8959. These findings indicate that the coefficient was insignificant. T-value was close to zero, and the high p-value is well above the standard significance level of 0.05. Therefore, we cannot conclude that market capitalization has a meaningful impact on GDP. The lack of significance could be due to various factors, such as market inefficiencies, the time period considered, or the presence of other more dominant factors influencing GDP.

The All-Share Index (ASI) has a coefficient of 0.154095, indicating a positive relationship with GDP. This suggests that an increase in ASI, which reflects the overall performance of the stock market, is associated with an increase in GDP. However, the t-value for ASI is 0.656674, and the p-value is 0.5176. Similar to MC, the t-value is well below the threshold of 2, and the p-value is above 0.05, indicating that the relationship between ASI and GDP is not statistically significant. This lack of significance implies that changes in the stock market, as measured by the ASI, do not have a strong or direct impact on GDP within the context of this model. This finding might be due to the stock market reflecting investors sentiment, which can be influenced by a wide range of factors not directly related to actual economic performance.

Inflation (INF) is represented by a coefficient of 0.009072. The positive sign of the coefficient suggests that higher inflation is associated with a slight increase in GDP. However, the t-value for INF is 0.072091, and the p-value is 0.9431. Both values indicate that the coefficient was insignificant. T-value is very close to zero, and the p-value is much higher than 0.05, meaning that inflation does not have a meaningful impact on GDP in this model. This result is somewhat surprising, as inflation is often considered an important economic indicator. One possible explanation is that the relationship between inflation and GDP might be more complex than can be captured by a simple linear model. Inflation can have both positive effects (such as stimulating spending) and negative effects (such as eroding purchasing power), and these effects might offset each other in the context of this analysis.

Foreign direct investment (FDI) has a coefficient of 0.000992, indicating a very weak positive relationship with GDP. The t-value for FDI is 0.016996, and the p-value is 0.9866. These values indicate that the coefficient is not statistically significant. The t-value is close to zero, and the p-value is significantly above the 0.05 threshold. As a result, we cannot conclude that FDI has a significant impact on GDP in this model. This finding is notable because FDI is often thought to contribute to economic growth by bringing in capital, technology, and expertise. The lack of significance in this model might be due to the specific characteristics of the data or the presence of other, more dominant factors influencing GDP.

DISCUSSION OF FINDINGS

The regression analysis of GDP with market capitalization (MC), All Share Index (ASI), inflation (INF), foreign direct investment (FDI), and lagged GDP ($(t-1)$) provides valuable insights into the factors influencing economic growth. The results indicate that past GDP levels ($(t-1)$) have a highly significant positive effect on current GDP, with a coefficient of 0.940345 and a very low p-value of 0.0001. This finding is consistent with economic theory, which suggests that economic growth tends to exhibit persistence over time due to factors such as capital accumulation and technological progress (Jones, 2016).

In contrast, market capitalization, All Share Index, inflation, and foreign direct investment do not demonstrate statistically significant effects on GDP in this model. Market capitalization and ASI both exhibit coefficients (-0.028798 and 0.154095 , respectively) with high p-values (0.8959 and 0.5176), indicating that changes in these stock market indices do not reliably predict changes in

GDP. This finding supports the research by Nazir et al. (2010), who investigated the relationship between economic growth and stock market development. Their findings suggested that simply increasing the size of the stock market, as measured by market capitalization, does not necessarily correlate with GDP growth, which aligns with the high p-values observed for market capitalization in predicting GDP changes. Also, the findings opposed the research of study by Popoola, et al. (2017) examined stock market and economic growth in Nigeria. Their research indicated that both stock market capitalization and ASI are significant predictors of economic growth.

Similarly, inflation and foreign direct investment show coefficients (0.009072 and 0.000992, respectively) with very high p-values (0.9431 and 0.9866), indicating no significant impact on GDP. The study supported the findings of Barro (1996) conducted an influential study examining the determinants of economic growth using a cross-country dataset. He discovered that inflation generally had a negative impact on economic growth, although this relationship was not always statistically significant, especially in countries with moderate inflation rates. Additionally, this finding contradicted those of Omankhanlen (2011), who studied the effects of exchange rates and inflation on foreign direct investment and their relationship with Nigeria's economic growth. He found that inflation and foreign direct investment were statistically significant for Gross Domestic Product (GDP) growth.

5. CONCLUSION

This study investigates the impact of stock market efficiency on economic growth in Nigeria. The study utilizes a 31-year time series data from 1993 to 2023 to achieve its research objectives. A time series model was employed with GDP as the dependent variable, and stock market variables such as market capitalization, all share index, inflation rate, and foreign direct investment as independent variables.

The empirical analysis was conducted using the time series analysis method. E-views 9.0 was employed as the statistical tool to analyze the time series data at a significance level of 5%. The study concludes that market capitalization has an insignificant effect on Nigeria's GDP, with a probability of 0.8959, which is greater than the selected level of significance.

The all-share has a probability of 0.5176, which was greater than the chosen level of significance. Consequently, the study concludes that the all-share index has an insignificant effect on Nigeria's GDP.

Findings on inflation in the study showed a probability of 0.9431, which was greater than the chosen level of significance. Thus, the study concludes that the inflation rate has an insignificant effect on Nigeria's GDP.

Foreign direct investment has a probability of 0.9866 which was greater than the chosen level of significance. Therefore, the study concludes that foreign direct investment has an insignificant effect on Nigeria's GDP. The study concludes that firms should improve the accuracy and availability of economic data by investing in advanced data collection methods and ensuring transparency in reporting. Reliable data on stock market transactions, company performance, and economic indicators are crucial for informed decision-making and effective policy formulation.

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