Correlation and Causality Between ESG Practices and Stock Price: Evidence from Nigerian Deposit Money Banks

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Abstract: In the evolving global financial ecosystem, investors and stakeholders are increasingly integrating non-financial metrics particularly environmental, social, and governance (ESG) considerations into investment and strategic decisions. ESG practices can influence stock market performance, the direction and strength of this relationship in the Nigerian context remains under-researched and poorly understood. This study sought to investigate the relationship between ESG practices and the stock prices of Nigerian banks, controlling for bank size This study employed correlation analysis and pairwise Granger causality techniques. Correlation analysis is essential for understanding the strength and direction of the relationship between ESG indicators and stock price movements. Pairwise Granger causality, on the other hand, allows for testing the temporal direction of influence between variables, thereby addressing the question of whether changes in ESG performance "Granger-cause" changes in stock prices, or vice versa This study utilized secondary data sourced from the published annual reports and financial accounts of 12 selected deposit money banks in Nigeria over a 10-year period. A panel data regression analysis was employed to examine the effect of ESG practices on stock prices, using control variables such as firm size and market conditions. Granger causality test results revealed that Social factors significantly influence stock price performance (F = 0.0453, p = 0.0453), but there is no reverse causality (F = 0.9806, p = 0.9806). Social factors significantly impact environmental factors (F = 8.6470, p = 0.0004), while environmental factors do not influence social factors (F = 1.3701, p = 0.2593). Governance costs affect social factors (p = 0.0396), but social factors do not influence governance costs (p = 0.6289). The study concluded that social factors and governance expenditures have predictive power over stock price behavior, while the reverse does not hold. It is therefore recommended that bank management should ensure a balanced allocation of resources between corporate governance functions and CSR initiatives. Since corporate governance costs have a unidirectional impact on social factors, institutions must adopt cost-efficient governance mechanisms that do not crowd out funds for impactful social programs, which ultimately drive stock price appreciation.

Keywords: Correlation, Environmental, Governance, Granger causality, Social, Stock price education

Introduction

In the evolving global financial ecosystem, investors and stakeholders are increasingly integrating non-financial metrics particularly environmental, social, and governance (ESG) considerations into investment and strategic decisions. This shift has profound implications for banking institutions, especially in developing countries like Nigeria, where sustainable finance and responsible investment practices are still at a nascent stage. Despite mounting interest, empirical understanding of how ESG performance influences the financial valuation of Nigerian banks remains limited and inconclusive. This gap is especially critical given the increasing demand for banks to uphold ethical standards, environmental consciousness, and governance transparency.

The Nigerian banking sector, a critical component of the country's financial system, has undergone several reforms aimed at enhancing transparency, operational efficiency, and investor confidence. However, the sector continues to grapple with issues related to poor governance, inadequate risk management, and insufficient disclosure of ESG activities. While there is anecdotal evidence that ESG practices can influence stock market performance, the direction and strength of this relationship in the Nigerian context remains under-researched and poorly understood (Ekhator & Anyanwu, 2022). This gap in empirical analysis limits the ability of investors, regulators, and policy-makers to make informed decisions.

Further complicating the analysis is the role of bank size, which often serves as a moderating or control variable in financial performance studies. Larger banks may have more resources to invest in ESG initiatives and enjoy better access to capital markets, potentially amplifying the effect of ESG practices on their stock prices (Olayemi & Ogunlowo, 2023). Conversely, smaller banks may struggle to comply with ESG standards, leading to a disparate impact across institutions of varying sizes. As such, it becomes imperative to control for bank size in any robust analysis of ESG-stock price dynamics to ensure accuracy and validity of findings.

Despite the theoretical underpinnings that suggest ESG practices should positively correlate with stock performance—either through enhanced reputation, reduced risk exposure, or increased investor appeal—the empirical literature remains divided. Some studies report a positive and significant relationship (Friede, Busch, & Bassen, 2015), while others find neutral or even negative effects depending on regional and sectoral contexts (Revelli & Viviani, 2015). In Nigeria, the scarcity of reliable ESG data, coupled with fragmented stock market behavior and inconsistent financial disclosures, complicates efforts to establish causal relationships.

In light of the foregoing, this study seeks to investigate the relationship between ESG practices and the stock prices of Nigerian banks, controlling for bank size. This is especially pertinent as Nigerian banks operate in an environment characterized by high regulatory scrutiny, economic volatility, and social challenges. Given the increased emphasis on sustainable banking principles, particularly with the Central Bank of Nigeria (CBN) advocating for financial institutions to adopt responsible business practices, there is a pressing need to understand whether ESG compliance translates into improved market valuation.

To address the identified gap, this study will employ correlation analysis and pairwise Granger causality techniques. Correlation analysis is essential for understanding the strength and direction of the relationship between ESG indicators and stock price movements. It provides initial evidence of potential associations, although it does not establish causality (Mukaka, 2012). Pairwise Granger causality, on the other hand, allows for testing the temporal direction of influence between variables, thereby addressing the question of whether changes in ESG performance "Granger-cause" changes in stock prices, or vice versa (Gujarati & Porter, 2021). This is particularly useful in the context of financial time-series data, where dynamic interactions between variables are expected.

The use of these two methodologies is justified by the complex and potentially bidirectional relationship between ESG practices and market performance. For instance, while enhanced ESG performance may lead to improved stock prices through investor confidence and reduced risk, it is also plausible that financially stronger banks with higher stock valuation are more capable of implementing robust ESG programs. The pairwise Granger causality test is ideally suited for such analyses as it can distinguish between leading and lagging variables over time (Yin & Fan, 2023).

Moreover, the Nigerian capital market is characterized by high information asymmetry, investor herd behavior, and relatively low ESG literacy. This makes the exploration of causal dynamics even more critical. If evidence suggests that ESG practices significantly influence stock performance, it could lead to policy interventions mandating ESG disclosures and performance metrics as part of mandatory reporting requirements. Conversely, if causality runs from stock price performance to ESG practices, it may imply that banks adopt sustainability measures as a reactionary, image-enhancing strategy following periods of good financial performance, rather than a proactive commitment to sustainability.

This study's relevance is further heightened by the growing influence of global financial instruments such as green bonds, sustainability-linked loans, and ESG ratings in capital allocation. Nigerian banks, if shown to benefit in terms of stock market performance from ESG compliance, may be more incentivized to embrace sustainable business models. Such a development would align with the United Nations Sustainable Development Goals (SDGs), particularly Goal 13 (Climate Action) and Goal 16 (Peace, Justice, and Strong Institutions), as well as the CBN's Sustainable Banking Principles.

The problem underpinning this study is the lack of empirical clarity on the relationship between ESG practices and stock prices in the Nigerian banking sector, with limited understanding of the moderating role of bank size. By applying correlation and Granger causality techniques, this research aims to fill a crucial gap in the literature,

offering insights that could inform investment strategies, regulatory policies, and corporate governance practices in Nigeria. The findings are expected to serve as a reference point for financial analysts, policy makers, and academic researchers interested in sustainable finance and market performance in emerging economies

Literature Review

Empirical Literature

Ho et al. (2019) noted that the link between environmental, social, and governance (ESG) performance and economic growth remains a debated topic in economic research. The study employed the Dumitrescu and Hurlin (2012) Granger causality test, incorporating Han et al.'s (2017) optimal lag selection technique, to analyze data from 118 countries between 1999 and 2015. Findings indicate a two-way causal relationship between environmental and social performance and economic growth, whereas governance impacts growth in a one-way direction. However, results vary across different income groups, showing no consistent pattern

Dao and Ngo (2020) examined the effects of corporate governance and earnings management on firm performance, both individually and collectively. Results showed that company size, supervisory size, and auditors negatively and significantly impact firm performance, whereas earnings management has a positive effect. Additionally, the research identified leverage and profitability as corporate control variables that positively influence earnings management. Other corporate governance factors, including board size, executive size, supervisory size, auditors, and the presence of executives on the board, showed no significant relationship with earnings management.

Oprean-Stan, et al. (2020) examined and explained whether there was a positive or negative linear relationship between sustainability reporting, inadequate management of economic, social, and governance (ESG) factors, and corporate performance and sustainable growth. The financial and market performances of companies were both analyzed in this study. Sustainable growth at the company level was introduced as a dimension dependent on sustainability reporting and the management of ESG factors. To achieve the main objective of the paper, the methodology focused on constructing multifactorial linear regressions, in which the dependent variables measured financial and market performance and assessed corporate sustainable growth.

Feng et al. (2021) investigated the relationships between environmental, social, and corporate governance (ESG) ratings and stock price crash risk, finding a statistically and economically significant negative relationship for Chinese firms. The results were consistent with agency-theory-based explanations. These findings were of interest to scholars examining the general impact of promoting public goods on firm performance, as well as to researchers and investors focused on the Chinese institutional environment.

Rzeźnik et al. (2022) examined how reliance on ESG ratings impacted stock returns. Changes in ESG ratings influenced stock returns, primarily due to retail investors' misinterpretation of the rating scale. Sophisticated investors, such as 13F institutions and short sellers, capitalized on individual investors' blind trust in ratings by taking the opposite side of their trades. The findings showed no effect on mutual funds' portfolio rebalancing or investor flows. Additionally, firms reacted to changes in their ESG ratings and subsequent abnormal returns by issuing or repurchasing shares

Quintiliani (2022) investigated the relationship between ESG scores and firm value improvement, as reflected in stock prices. Linear regression was applied to panel data using Bloomberg ESG disclosure scores from a sample of 115 companies listed in Europe. The study covered the period from 2016 to 2020. The findings suggested a positive and significant relationship between ESG scores and firm value. These results can help stakeholders enhance their awareness of the impact of ESG disclosure on firm performance. Furthermore, the findings, which support the positive link between ESG and firm performance, can be used to support or complement other studies with a similar concept, provided the necessary adjustments are made

Egiyi, (2022) investigated the relationship between corporate governance and firm performance in publicly traded companies in Nigeria. Utilizing an ex post facto research design, it analyzed data from 20 listed manufacturing firms. The dataset, covering the period from 2010 to 2020, was assessed using the System GMM approach. Firm

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performance was measured through profit margin and return on assets. The findings revealed that corporate governance indicators, including board size, audit committee size, and audit quality, have a significant influence on a company's profitability

Mahmut et al. (2022 examined impact of Environment, Social, Governance (ESG) performance on firm value and profitability using panel data analysis. Findings suggest that overall ESG combined score is positively and significantly associated with firm value. Individual Social and Governance scores have a positive and significant relationship while Environment score does not have a significant relationship with firm value. On the other hand, ESG combined score, Environment, Social, and Governance scores have positive and significant relationships with firm profitability. These findings suggest that investing in high ESG performance promises financial return for the firm in terms of both value and profitability

Zhou and Zhou (2022) examined the effect of ESG performance on a company's stock price fluctuations was analyzed. The results indicated that companies with strong ESG performance experienced lower stock price volatility compared to those with weaker performance. Furthermore, while COVID-19 heightened stock price volatility, the increase was relatively smaller for companies with high ESG performance. This suggests that strong ESG performance helps mitigate the rise in stock price volatility caused by the COVID-19 shock, contributing to greater resilience and stability in stock prices

Dragomir et al. (2022) examined the influence of ESG performance on the financial performance of 333 banks across 53 countries in Europe, America, and Asia before and during the COVID-19 pandemic (2019–2021). The model design allowed for the establishment of causal relationships. Key factors and financial data were sourced from the Refinitiv database. The findings indicated that banks' environmental performance in 2019 negatively impacted return on equity in 2020, while no other ESG factors showed significant effects. Social responsibility expenditures and initiatives in 2020 positively influenced bank profitability in 2021. Additionally, East Asian banks exhibited higher stock market returns and earnings per share, influenced by the quality of corporate governance in the previous year. The study also found that environmental performance in 2020 had a negative effect on earnings per share in 2021, but only within the East Asian sample.

Murata and Shigeyuki (2021) examined the relationship between environmental, social, and governance (ESG) disclosures and stock price crash risk. Since stock price crashes pose significant risks to market participants, understanding their determinants is crucial for investment decisions and risk management. Using data from major market index components in Europe, the United States, and Japan, the study employs regression analysis while controlling for other potential crash determinants. Both static two-way fixed-effect models and dynamic GMM models are used. The results show that in the static model, ESG disclosures do not have a statistically significant impact. In the dynamic model, ESG disclosure coefficients are also not significant for U.S. firms. However, in European and Japanese markets, ESG disclosures have a significant negative effect, indicating that higher ESG transparency reduces future stock price crash risk. These findings suggest that while ESG disclosures can help mitigate crash risk, their effectiveness varies across regions.

Luo (2022) examined the effect of environmental, social, and governance (ESG) scores on stock returns in the United Kingdom (UK). Consistent with Hong and Kacperczyk (2009), Bolton and Kacperczyk (2021), and Pedersen et al. (2021), they found that firms with lower ESG scores earned higher returns than those with higher ESG scores. The environmental and social premiums were more pronounced than the overall ESG premium. To understand this premium, we demonstrated that the ESG premium was significant for low-liquidity securities but not for high-liquidity securities, suggesting that ESG was likely associated with stock liquidity.

Wang et al. (2023) examined the impacts of ESG performance on stock price crash risks. It showed that sound ESG performance significantly mitigated stock price crash risks. The extended analysis suggested that, from the perspective of shareholding structure, ESG performance had a stronger inhibitory effect on stock price crash risks for non-state-owned enterprises and enterprises with low equity concentration. An investigation into the impact mechanism indicated that corporate accounting information quality had some mediating effects, meaning that better ESG performance improved accounting information quality, thus containing stock price crash risks.

Liu et al. (2023) analysed the impact of corporate ESG performance on the Japanese stock market during the COVID-19 pandemic. The study added to the existing literature by investigating the specific role ESG factors play in shaping stock market dynamics during economic downturns. Findings reveal a positive correlation between corporate ESG performance and stock returns throughout the COVID-19 period. Additionally, the study highlights that strong ESG performance contributed to greater stock market stability and improved market liquidity in Japan during the pandemic

Kevser et al. (2023) examined the effect of environmental, social, and corporate governance (ESG) scores on stock markets for the period from February 2018 to December 2022 in G7 countries. Even though ESG was an established area of investigation, prior research had paid inadequate attention to the nexus between ESG scores and stock markets in G7 countries (Germany, USA, UK, Italy, France, Japan, and Canada). The study covered G7 countries and used a dataset that included ESG scores and stock market returns from reporting channels such as financial websites and international indexes between February 2018 and December 2022. Cross-section dependency and homogeneity tests were applied, along with the Konya (2006) panel causality test, to investigate the relationship between ESG scores and stock markets. Additionally, a separate analysis was conducted for each sub-dimension. Homogeneity/heterogeneity tests were also performed. The findings suggested that causality from ESG scores to the stock market (DAX) was determined only for Germany. Accordingly, it was understood that German companies had begun incorporating corporate social responsibility and ESG practices into their management strategies and reporting. These findings provided important implications for investors considering G7 countries and whether ESG scores should be considered

Tarun (2023) examined the linkage between firm-level ESG disclosures and their relationship with country-level SDG scores over ten years for three emerging countries: India, China, and Brazil. The analysis of 1,500 top-listed firms in these countries revealed an increasing trend of firms adopting ESG disclosures and achieving higher ESG scores over the years in these three markets. Out of the total sample, nearly 75% of firms made ESG disclosures in Brazil, followed by 54% in India and 32% in China. Additionally, companies in all these countries tended to emphasize governance-related disclosures more, with Brazil having higher ESG disclosure rates than India and China. The correlation and causality tests indicated a significant positive correlation between mean ESG scores and country-specific SDG scores

Maria (2023) investigated the potential impact of ESG report disclosure on IPO performance, as limited research has examined the relationship between ESG factors and IPO outcomes. The objective is to assess how ESG disclosure influences IPO underpricing and enhances transparency for stakeholders, thereby reducing information asymmetry. Using a sample of 100 European IPOs from 2017 to 2021—comprising 50 firms that disclosed an ESG report before the IPO and 50 that did not—the study analyzes the effects of ESG transparency. The findings indicate that publishing a sustainability report before an IPO has a positive effect by reducing underpricing

Wu, (2023) used a sample of 100 companies that was randomly selected from Nasdaq to measure profitability, Net Profit Margin was chosen as the dependent variable for the linear regression model. Since Net Profit Margin is a profitability ratio, the control variables did not include other profitability ratios. Instead, four control variables were selected from valuation and liquidity aspects. Through the research, it was found that ESG had a positive and significant impact on the Net Profit Margin, representing profitability

Awijen et al. (2024) investigated the relationship between climate change risks—namely transition and physical risks—and their predictive effects on environmental, social, and governance (ESG) stock prices. The authors assessed the performance of various machine learning models by analyzing daily time series data from January 2006 to July 2022. Results indicated that incorporating climate risk variables significantly enhanced the accuracy and effectiveness of these models in predicting ESG stock market prices, highlighting the crucial role of climate-related factors in financial modeling. To better understand the dependencies between the variables, the authors employed a novel copula-based dependence measure (qda) to quantify the deviation from independence in the dependency structure. Additionally, they utilized explainable artificial intelligence (XAI) techniques, such as SHAP plots, to interpret the complex machine learning algorithms used in this study. These techniques revealed the significant impacts of variables such as inflation, recession, pollution levels, and climate risk indices on the S&P 500 ESG index

Kun-Huang and Tiffany (2024) examined the causal complexity of ESG performance among TSE and OTC firms in Taiwan. Independent variables associated with RBV are selected to assess their impact on ESG performance as the dependent variable. The research employs Fuzzy Set/Qualitative Comparative Analysis to explore causal relationships. Empirical findings reveal that most industries exhibit multiple relationships, each comprising various antecedents, demonstrating that diverse causal pathways can lead to strong ESG performance. Additionally, while industries differ inherently, some share common relationships. Notably, every industry possesses at least one RBV-related relationship, allowing firms to select the most advantageous pathway to enhance their ESG performance.

Data and Methodology

Research Design

This study adopts a *ex post facto* research design to explore the relationship between environmental, social, and governance (ESG) factors and stock price behavior of listed deposit money banks in Nigeria. The *ex post facto* research design is adopted because the data already exist and therefore cannot be manipulated by the researcher.

Population of the Study

The population for this study consists of all 737 deposit money banks (commercial and microfinance banks) which includes a wide range of institutions in Nigeria's banking sector. The selection of these banks allows for a comprehensive analysis of the relationship between ESG practices and stock price behavior within Nigeria's financial market (Uwuigbe et al., 2020; Nwoye, 2019).

Sampling Size and Sampling Technique

The sampling size for this study consists of 13 deposit money banks in Nigeria selected based on ESG data over a 10-year period. A purposive sampling technique is employed, focusing on banks with comprehensive and publicly available ESG disclosures that meet the criteria for inclusion in the analysis. This method ensures that the selected sample is appropriate for assessing the relationship between ESG practices and stock price performance (Ali et al., 2019; Nwoye, 2019).

Inclusion Criteria: Deposit money banks that are listed on the Nigeria Exchange that also publish sustainability report
Exclusion Criteria: Deposit money banks that are not listed on the Nigeria Exchange and did not publish sustainability report

Source and Type of Data

This study utilized secondary data sourced from the published annual reports and financial accounts of 12 selected deposit money banks in Nigeria over a 10-year period. The data include green financing, corporate social responsibility, and governance factors on ESG practices, financial performance, and stock prices, all of which are publicly disclosed in these reports. This information is obtained from audited financial statements. The use of audited financial statements ensures the study is based on verified, reliable, and readily accessible financial and ESG information from reputable sources (Oduro et al., 2021; Akinlo et al., 2020).

Method of Data Analysis

A panel data regression analysis was employed to examine the effect of ESG practices on stock prices, using control variables such as firm size and market conditions. Descriptive statistics was used to analyze trends, and the Hausman specification test determined the appropriate model for the regression analysis. The findings provided empirical evidence on the role of ESG factors in shaping the financial performance of Nigerian banks (Uwuigbe et al., 2020; Ali et al., 2019).

Correlation analysis

Correlation analysis is essential for identifying the strength and direction of linear relationships between variables, enabling researchers to determine whether and how variables move together. It is particularly valuable in exploratory studies where understanding associations is crucial for hypothesis generation and decision-making (Mukaka, 2012). In financial and social sciences, correlation provides insights that support policy formulation and strategic planning by revealing patterns that may warrant further investigation through regression or causal analysis (Yin & Fan, 2023). Therefore, it serves as a foundational statistical tool in empirical research.

Model that determined the causality among ESG factors and the stock price of deposit money banks in Nigeria

The granger causality test is administered in form of Vector Autoregression approach to indicate the short run behavior or direction of causality between series. This is model is as stated below;

$$\Delta LSP_{it} = \sum_{i=1}^{n} b_{1t} \Delta LENV_{it-1} + \sum_{i=1}^{n} c_{1t} \Delta LSOC_{it-1} + \sum_{i=1}^{n} d_{1t} \Delta COG_{it-1} + \sum_{i=1}^{n} e_{1t} \Delta LTA_{it-1} + e_{1it}$$
$$(3.3)$$
$$\Delta LENV_{it} = \sum_{i=1}^{n} b_{2t} \Delta LSP_{it-1} + \sum_{i=1}^{n} c_{2t} \Delta COG_{it-1} + \sum_{i=1}^{n} d_{2t} \Delta LSOC_{it-1} + \sum_{i=1}^{n} e_{1t} \Delta BSIZE_{it-1} + e_{2it}$$
$$(3.4)$$
$$\Delta LSOC_{it} = \sum_{i=1}^{n} b_{3t} \Delta LSP_{it-1} + \sum_{i=1}^{n} c_{3t} \Delta LENV_{it-1} + \sum_{i=1}^{n} d_{3t} \Delta COG_{it-1} + \sum_{i=1}^{n} e_{1t} \Delta LTA_{it-1} + e_{3it}$$
$$(3.5)$$
$$\Delta COG_{it} = \sum_{i=1}^{n} b_{3t} \Delta LSP_{it-1} + \sum_{i=1}^{n} c_{3t} \Delta LENV_{it-1} + \sum_{i=1}^{n} d_{3t} \Delta LSOC_{it-1} + \sum_{i=1}^{n} e_{1t} \Delta LTA_{it-1} + e_{3it}$$

Results and Discussions

Correlation Analysis Results

Table 4.2 presents the correlation matrix showing the relationships between LSP (Stock Price), LENV (Environmental Factors), LSOC (Social Factors), COG (Governance), and LTA (Total Assets).

Table 4.2: Correlation Matrix

	LSP	LENV	LSOC	COG	LTA
LSP	1.0000				
LENV	-0.3623	1.0000			
LSOC	-0.3453	0.6021	1.0000		
COG	-0.2721	0.4710	0.6043	1.0000	
LTA	0.4823	-0.4301	-0.3732	0.0643	1.0000

Source: Author's Computation from E-View (2025)

The Correlation Matrix result showed that LSP (Stock Price) is positively correlated with LTA (0.4823) meaning that firms with larger assets tend to have higher stock prices. LOGSP (Stock Price) is negatively correlated with LENV (-0.3623), LSOC (-0.3454), and COG (-0.2721) which suggests that as ESG factors increase, stock prices decrease. LENV (Environmental Factors) has strong positive correlation with LSOC (0.6022) and COG (0.4711) indicating that firms with good environmental scores often have good social and governance practices. LENV (Environmental Factors) exhibit negative correlation with LSP (-0.3623) and LTA (-0.4302) meaning that larger firms tend to have lower environmental scores. LSOC (Social Factors) presents strong positive correlation with COG (0.6043) which suggests that companies with strong social practices often have strong governance. Additionally, LSOC (Social Factors) showed moderate correlation with LENV (0.6022) meaning that environmental and social factors are closely related.

LSOC (Social Factors) also has negative correlation with LSP (-0.3454) and LTA (-0.3732) implying that firms with strong social factors tend to have lower stock prices and total assets. Expectedly, COG (Governance) has positive but moderate correlations with LENV (0.4711) and LSOC (0.6043). This implies that firms with good governance also perform well in environmental and social aspects. COG (Governance) also has weak correlation with LTA (0.0644) indicating that corporate governance is not strongly related to firm size. Surprisingly, a negative correlation exists between governance and LSP (-0.2721). Meaning that companies with stronger governance may

not necessarily have higher stock prices. LTA (Total Assets) is observed to be positively correlated with LSP (0.4823), meaning that larger firms tend to have higher stock prices. LTA (Total Assets) is also negatively correlated with LENV (-0.4302) and LSOC (-0.3732). The implication of is that larger firms may not perform well in ESG factors. Moreover, LTA (Total Assets) exhibit very weak correlation with COG (0.0644) meaning that Governance factors does not significantly depend on firm size.

Table 4.6: Pair-Wise Granger Causality Result

Null Hypothesis:	Obs	F-Statistic	Prob	Decision
LSOC does not Granger Cause LSP	96	3.2015	0.0453	Uni-directional Causality
LSP does not Granger Cause LSOC	96	0.0195	0.9806	No Causality
LSOC does not Granger Cause LENV	96	8.6470	0.0004	Uni-directional Causality
LENV does not Granger Cause LSOC	96	1.3701	0.2593	No Causality
COG does not Granger Cause LSOC	96	3.3451	0.0396	Uni-directional Causality
LSOC does not Granger Cause COG	96	0.4661	0.6289	No Causality

Source: Author's Computation from E-View (2025)

LSOC Granger-causes LSP (F=0.0453, p = 0.0453), meaning social factors influence stock price performance. However, LSP does not Granger-cause LSOC (F=0.9806, p = 0.9806), indicating no reverse causality. LSOC significantly Granger-causes LENV (F= 8.6470, p=0.0004), indicating social factors influence environmental factors. But LENV does not Granger-cause LSOC (F= 1.3701, p=0.2593), showing no reverse causality. COG Granger-causes LOGSOC (p=0.0396), implying governance costs impact social factors. While LOGSOC does not Granger-cause COG (p=0.6289).

Discussion of Findings

Unidirectional causality in econometrics indicates that changes in one variable systematically influence another without reciprocal effects. In the context of LSOC (social factors) and LSP (Stock Price), a unidirectional Granger causality from LSOC to LSP implies that past values of LSOC significantly predict changes in LSP, but not vice versa. This suggests that variations in banks' social factors influence stock price movements. (Adebayo & Yusuf, 2024). Similarly, LSOC Granger-causing LSP again reinforces that social factor dynamics consistently determine stock price trends. This relationship may stem from investor reactions to expenditure on CSR, which impacts profitability and, consequently, stock performance (Okonkwo et al., 2024). Additionally, COG (Corporate Governance) Granger-causing LSOC suggests that governance-related expenditures, such as regulatory compliance and administrative costs, significantly affect social factors like CSR. High governance costs may reduce banks' ability to embark on CSR activities, altering LSOC and, in turn, influencing stock price movements (Eze & Lawal, 2024). These findings highlight the critical role of governance costs and CSR in determining financial market stability. The study examined the causality between environmental, social, and governance factors and the stock price performance of Nigerian deposit money banks. The study employs the Pairwise Granger Causality Test, which assesses whether past values of one variable can predict another. This method, widely used in economic and financial research, helps determine directional relationships and informs policy and forecasting. The test estimates vector autoregressive (VAR) models to evaluate whether lagged values of independent variables enhance the predictive power of the dependent variable. If the null hypothesis of no causality is rejected, it suggests that past values of a variable contain useful information for predicting another. The results, presented in Table 4.6, show the F-statistics and p-values, indicating the direction and strength of causality. These findings provide insights into variable interdependencies and are discussed in relation to existing literature and theoretical expectations. The Granger causality test results revealed the following relationships: Social factors significantly influence stock price performance (F = 0.0453, p = 0.0453), but there is no reverse causality (F = 0.9806, p = 0.9806). Social factors significantly impact environmental factors (F = 8.6470, p = 0.0004), while environmental factors do not influence social factors (F = 1.3701, p = 0.2593). Governance costs affect social factors (p =

0.0396), but social factors do not influence governance costs (p = 0.6289).

Conclusion and Recommendations

Conclusion

The findings of this study underscore the significant yet unidirectional nature of relationships among social factors, corporate governance, and stock price performance in the Nigerian banking sector. Specifically, the evidence of unidirectional Granger causality from social factors (LSOC) to stock prices (LSP) affirms that past values of LSOC can meaningfully predict changes in LSP. This supports the premise that banks' social responsibility efforts such as community development programs, staff welfare, and corporate social responsibility (CSR) initiatives resonate with market participants, influencing investor sentiment and thereby stock price performance (Adebayo & Yusuf, 2024). The absence of reverse causality indicates that fluctuations in stock prices do not significantly influence banks' social policies or CSR spending. This asymmetry suggests that CSR efforts are likely proactive strategic decisions rather than reactive responses to market valuation.

Furthermore, the consistent finding that LSOC Granger-causes LSP reinforces the importance of social disclosures and investments as forward-looking signals for financial market actors. This causality implies that investors interpret social performance as a marker of long-term viability, brand strength, and operational resilience, which are essential to stock valuation (Okonkwo et al., 2024). In other words, improved social performance may reduce perceived risk and enhance reputation, driving investor interest and upward stock price movements.

Moreover, the causality from corporate governance (COG) to social factors (LSOC) reveals a critical upstream influence—where expenditures on governance-related activities, such as regulatory compliance, internal audits, and administrative controls, shape banks' capacity to engage in CSR. This suggests that an increase in governance costs could crowd out funds available for social initiatives, thereby indirectly affecting stock price performance through reduced LSOC (Eze & Lawal, 2024). Again, the lack of feedback from LSOC to COG reinforces the unidirectional nature of influence, emphasizing that corporate governance decisions are foundational and often precede social investments.

These results carry broader implications for bank management and policymakers. The findings highlight the need for strategic alignment between governance frameworks and CSR policies to ensure that corporate governance expenditures do not inadvertently undermine social value creation. Furthermore, they emphasize the significance of social factors in driving investor behavior and stock performance, making a strong case for transparent and impactful CSR policies. For regulators, these insights support the development of guidelines that encourage disclosures on social and governance indicators, promoting accountability and market stability.

Methodologically, the use of the Pairwise Granger Causality Test was instrumental in uncovering these relationships. By leveraging lagged variable interactions within a vector autoregressive framework, the study successfully identified the directional influence among key variables. The statistical significance of the causality particularly from LSOC to LSP (p = 0.0453), from LSOC to environmental factors (p = 0.0004), and from COG to LSOC (p = 0.0396) validates the robustness of the model. These outcomes align with theoretical expectations and previous studies that emphasize the predictive role of ESG dimensions in financial performance.

In summary, the unidirectional causality observed in this study confirms that social factors and governance expenditures have predictive power over stock price behavior, while the reverse does not hold. This validates the assertion that sustainable banking practices, particularly those related to CSR and governance efficiency, are critical determinants of stock market outcomes in Nigeria's banking sector.

Recommendations

i. Regulatory bodies such as the Central Bank of Nigeria (CBN) and the Nigerian Exchange Group (NGX) should mandate periodic disclosures of social responsibility indicators including CSR investments, staff welfare programs, and community development initiatives as these factors significantly influence stock price performance. Such

transparency would enhance investor confidence and support more accurate market valuation.

ii. Bank management should ensure a balanced allocation of resources between corporate governance functions and CSR initiatives. Since corporate governance costs have a unidirectional impact on social factors, institutions must adopt cost-efficient governance mechanisms that do not crowd out funds for impactful social programs, which ultimately drive stock price appreciation.

iii. Given the predictive power of social factors on stock prices, banks should treat CSR not as a compliance formality but as a core component of strategic planning. Proactive investments in social initiatives can serve as forward-looking signals of stability and operational strength, improving investor sentiment and enhancing long-term market performance.

iv. Financial analysts, investors, and portfolio managers should integrate ESG metrics especially social performance indicators into their forecasting models and valuation frameworks. The Granger causality evidence suggests that these non-financial factors are not only relevant but statistically significant predictors of stock price trends in the Nigerian banking context.

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