Sing. J. Bus. Eco. & Mng, 10(2)2024,345-47
ISSN: 3009-0024 (Online)
Open Access

Singaporean Journal of Business Economics and Management

Research Paper

Green financing initiatives and economic stability in Nigeria

Dr. Ismail Alhassan
Department of Accounting, Iconic University, Sokoto State, Nigeria. Email: alhassan1412@gmail.com

ARTICLE INFO

KEYWORDS:
Green financing, economic stability, Nigeria, green evaluation cost, robust least squares

Received: 21 May 2024
Accepted: 20 Jul 2024
Available Online: 05 Sep 2024

ABSTRACT

This study examined the relationship between green financing initiatives (GFI) and economic stability in Nigeria from 2020 to 2023. The independent variables are Green Prevention Costs (GNPC), Green Evaluation Costs (GNEC), and Green Internal Failure Costs (GNIC), while economic stability being a dependent variable was measured by Real Gross Domestic Product (RGDP) and Trade Openness (TROP) was used as a control variable. Secondary data was collected from the World Bank's Pollution Management database and the Central Bank of Nigeria Statistical Bulletins, with analysis conducted using Robust Least Squares (RLS) in E-Views 9.0. The results indicated that both GNPC and GNIC had a significant positive effect on economic stability, while GNEC had an insignificant effect. The study concluded that GFI, particularly GNPC and GNIC, plays a crucial role in enhancing Nigeria's economic stability. It recommended that regulatory authorities allocate more funds toward Green Prevention Costs and re-assess the emphasis on Green Evaluation Costs. This research contributes to ongoing efforts to align firm activities with environmental sustainability in the context of the Nigerian economy.

1 | INTRODUCTION

The world is facing significant challenges related to climate stabilization due to climate change, global warming, and environmental degradation. Major contributors include greenhouse gas emissions, the burning of hydrocarbons, deforestation, and industrial emissions, all of which damage the ozone layer. These activities lead to flooding, power shortages, economic losses, health crises, and food scarcity. Nigeria has yet to recover from the economic impacts of recent floods and other environmental harzards. Research by Dafermos et al. (2018) shows that climate change can adversely affect both financial and non-financial sectors. Policymakers are increasingly focusing on reducing emissions through investments in environmentally responsible projects. Green financing initiatives (GFI) are aimed at mobilizing private sector funds for activities that promote a green economy. GFI plays a key role in addressing environmental damage caused by fossil fuel emissions and in promoting projects related to renewable energy, resource efficiency, and clean production. Green financing instruments such as green bonds, stocks, and insurance are central to supporting a low-carbon economy. Green bonds, first introduced by the European Investment Bank in 2007, specifically fund climate and environmental projects. Nigeria issued its first green bond in 2017 to support ecological protection and reduce environmental stress, in line with the Paris Agreement's climate goals. Mark Carney, the former Governor of the Bank of England, warned in 2015 about the financial risks posed by climate change. The need for funding initiatives that promote a healthy society and a stable economy has been a global concern. Various green financing schemes have emerged, including green bonds, green mortgages, and green banking. Given Nigeria's reliance on non-renewable energy sources, it is crucial to explore sustainable financing options for renewable energy to support industrial development. Although studies on green financing have been conducted globally, most focus on the growth of green finance in developed countries, overlooking its effect on economic stability. This study aims to fill this gap by assessing the quantitative impact of GFI on Nigeria's economic stability, a developing nation.

The following research questions guide this study:

- Does Green Prevention Cost (GNPC) influence real GDP (RGDP)?
- What is the effect of Green Evaluation Cost (GNEC) on real GDP?
- How does Green Internal Failure Cost (GNIC) affect real GDP?

The following hypotheses are formulated for the study:

- Ho1Green Prevention Cost (GNPC) has no significant effect on real GDP (RGDP)
- Ho2Green Evaluation Cost (GNEC) has no significant effect on real GDP (RGDP)
- Ho3Green Internal Failure Cost (GNIC) has no significant effect on real GDP (RGDP)

2 | LITERATURE REVIEW

2.1 | Overview of Green financing initiatives-GFI and Economic Stability

Green financing initiatives (GFI) involve the allocation of resources to projects that promote environmental sustainability and economic development. GFI includes various financial products that support low-carbon and environmentally responsible investments. Green finance involves channeling funds from public, corporate, and non-profit sectors into sustainable development activities. Similarly, green finance, also known as environmental finance, is just an investment in the environment through the use of eco-friendly methods that are intended to protect the immediate environment. As a result, it falls under the category of sustainable finance. Given its current relevance, it is spreading around the world (Tang, 2020). It is important to remember that green finance initiatives, or GFI, can be supported by nations modifying their GFI laws and standardizing public financial incentives, which will raise the economy's degree of competitiveness (Ehiedu & Priscilla, 2022). As a subset of sustainable finance, green financing focuses on preserving the environment through environmentally friendly practices. Key components of GFI include:

- The expenses involved in preventing manufacturing waste that could harm the environment are known as "green prevention costs" (GNPCs). The company makes sure that any operations that pose a risk to the environment in which it operates are either completely avoided or minimized. The costs of conducting environmental research, employee training, and product recycling are all included in GNPC.
- Green Evaluation Costs (GNEC): These are the expenses made by the company to track how its operations affect the environment in which it operates (Adedayo & Oguntuase, 2019).
- Green Internal Failure Costs (GNIC): GNIC are expenses related to the actions that a company is supposed to take when it produces trash and toxins but does not discharge them into the environment. GNIC involves installing equipment to reduce gaseous emissions and caring for workers who might be impacted by emissions from the company's operations (Lee, Park, & Tian, 2021). The aforementioned study made it abundantly evident that green financing appears to be a key instrument available to economic policymakers if the Nigerian economy is to be stable. According to Ehiedu (2015), economic stability is essentially the capacity of an economy to remain stable in the face of economic fluctuations, including high rates of inflation and currency depreciation. For Nigerian economy to achieve stability, GFI can play a pivotal role. Economic stability is defined as the ability of an economy to remain stable despite fluctuations in key indicators like inflation or currency depreciation.

2.2 |Theoretical Underpinning

This study is grounded in stakeholder theory, which emphasizes the importance of firms addressing the needs and expectations of all stakeholders, including shareholders, employees, local communities, and governments. Ansoff (1979) first applied this theory to describe socially responsible business behavior. The theory suggests that firms should consider green finance to contribute to the economic stability of their country. The stakeholder idea serves as the foundation for this study project. The stakeholder theory was first applied by Ansoff (1979) to explain the concept of socially responsible behavior. According to Ehiedu (2022), this theory emphasizes that managers have an obligation to attend to the demands of all parties involved in a business, including shareholders, the host community, employees, and government agencies. The idea also emphasizes how important it is for business management to think about green finance if they want to make a significant contribution to a nation's economic stability. Furthermore, according to this idea, the manager must make sure that the interests of all shareholders are in line if the company is to develop and keep momentum. Ighosewe and Akpokerere (2015) rightly emphasized that no organization can function without taking into account the demands and expectations of its stakeholders, among which the needs of the immediate environment are a critical issue that has to be taken into account. This is where the study stands.

2.3 |Empirical Review

The Republic of Korea provided evidence for Lee, et. al, (2021) investigation on green finance, innovation, and company performance. Descriptive statistics and ordinary least square estimate were used in the study to examine data on 11,221 firm-year observations and 1,863 listed firms from 2011 to 2017. According to the study, corporate patent stock had a favorable impact on revenue between 2011 and 20107, but a negative impact on market value (Tobin's Q). It was found that, throughout the period under consideration, Korean companies who issued green bonds were more inventive than those that did not. Tang (2020) assessed how social and green finance affected businesses, markets, and the economy. Data was gathered from 60 nations, including major economies worldwide, and it was found that businesses having access to social and green funding were better equipped to survive the COVID-19 epidemic. Green and social finance have been found to stabilize economies rather than stimulate economic growth in normal times. Additionally, they discover that since the introduction of the green bond, the nation's overall carbon dioxide emissions have decreased. Finally, social and green finance has a positive impact both in normal times and during the pandemic. In 2020, Kanu, et. al, assessed Nigerians' knowledge of green banking, its obstacles, and its sustainability. The results show that although Nigerian banks offer a range of green banking solutions, their employees know very little about green banking. According to the study, illiteracy, age, lack of basic ICT skills, and educational attainment all have a detrimental impact on Nigerians' awareness of and use of green banking. Using a thorough research methodology. Adedayo and Oguntuase (2019) investigated green-banking regulation for financial stability in Nigeria. A pre-tested questionnaire that was completed by 277 bank employees in Lagos, Nigeria, was used in the study. The association between the questionnaire indices was ascertained using Pearson correlation. The study showed a substantial positive correlation between all the indices, including perceptions of climate change as a financial risk, knowledge of climate change, and greening of banking regulations. Mohammed and Kaushal (2018) used a documentary technique to investigate how green money affects India's sustainable development. The study demonstrated how important green money is to India's sustainable growth.

While there is considerable research on green finance, few studies have focused on its impact on economic stability, particularly in Nigeria. This study addresses this gap by using a robust panel data methodology (RLS) to evaluate the predictive effect of green financing on Nigeria's economic stability.

3 | METHODOLOGY

This study adopts an ex-post facto research design, as the data under investigation are secondary and have already occurred. The study's population and sample size are both Nigeria, using a census sampling approach. Data were collected from the World Bank's Pollution Management database and the Central Bank of Nigeria's Statistical Bulletin. The green financing variables include GNPC, GNEC, and GNIC, while RGDP serves as the dependent variable. Data span from 1989 to 2021. The Robust Regression Analysis was used, preceded by pre-estimation tests, including Variance Inflation Factors (VIF), Ramsey Reset Test (RRT), and Heteroskedasticity Test (HET). The model used for analysis is:

$RGDP = \beta_0 + \beta_1 GNPC + \beta_2 GNIC + \beta_3 GNEC + \beta_4 TROP + uit.$

Where:

β_0 = Constant

RGDP = Real Gross Domestic Product

GNPC = Green Prevention Cost measured by the volumes of GNPC

GNEC = Green Evaluation Costs measured by the volumes of GNEC

GNIC = Green Internal Failure Costs measured by the volumes of GNIC

TROP = Trade Openness measured by the sum of total imports and exports to GDP

This study used Econometric Views (E-Views) 9.0, a widely recognized software for panel data analysis.

4 | RESULTS AND ESTIMATIONS

This section is divided into descriptive statistics, correlation analysis, pre-estimation tests (Variance Inflation Factors (VIF), Ramsey RESET Test (RRT), and Heteroskedasticity Test (HET)), result estimation, and discussions. These steps ensure the model's suitability for prediction.

Table 1: Descriptive Statistics

Variables	Mean	Maximum	Minimum	Std. Dev	JarqueBera	Prob	Obs.
RGDP	45189.39	156543.80	17456.56	28297.33	3.997234	0.134110	45
GNPC	85932.88	394600.0	13221.00	74327.52	30.29331	0.000023	45
GNEC	214520.5	845762.0	2742.420	198802.8	6.364239	0.025542	45
GNIC	170974.9	436122.0	7113.000	132928.2	4.662430	0.051365	45
TROP	39.46733	64.31500	10.36490	10.22810	0.221927	0.939237	45

Note: Values are presented in Million

Source: E-views Output (2024)

The descriptive statistics in Table 1 show 45 observations. The mean values for RGDP, Green Prevention Costs (GNPC), Green Evaluation Costs (GNEC), Green Internal Failure Costs (GNIC), and trade openness are N85,932.88, N214,520.50, N170,974.90, N39.60%, respectively. The standard deviations are N28,297.33, N74,327.52, N198,802.80, N132,928.20, and 10.33%, respectively, indicating low variability across the variables. This suggests that these variables follow a nearly normal distribution. The highest values recorded were N156,543.80 for RGDP, N394,600.00 for GNPC, N845,762.00 for GNEC, and N436,122.00 for GNIC, while the minimum values were N17,456.56, N13,221.00, N2,742.42, and N7,113.00, respectively.

Table 2: Correlation Analysis

	RGDP	GNPC	GNEC	GNIC	TROP
RGDP	1.0000				
GNPC	0.7823	1.0000			
GNEC	0.8519	0.0658	1.0000		
GNIC	-0.5479	0.0222	0.1349	1.0000	
TROP	0.6465	0.3498	0.1239	0.02398	1.0000

Source: E views Output (2024)

Table 2 presents correlation statistics. The GNPC has a strong positive correlation (0.7823) with RGDP, meaning that an increase in GNPC contributes significantly to Nigeria's economic stability. GNEC also shows a positive and strong relationship with RGDP. However, GNIC is inversely related to RGDP, meaning that higher GNIC is associated with lower economic stability in Nigeria.

4.1 |Diagnostic Tests

Several diagnostic tests were performed, including VIF, Ramsey RESET Test (RRT), and Heteroskedasticity Test (HET), as shown in tables 3 and 4 below:

Table 3: Multiculinearity Test

Variables	VIF	1/VIF
GNPC	3.9851	0.2509
GNEC	1.3640	0.7331
GNIC	2.6923	0.3714
TROP	1.7490	0.5717
Average	2.4476	0.4085

Source: E views Output (2024)

The results in table 3 indicate the VIF values for GNPC, GNEC, GNIC, and trade openness (TROP) are 3.9851, 2.6923, 1.7490, and 2.4476, respectively, indicating no issues with multicollinearity. Thus, the model is appropriate for forecasting and the study variables do not suffer from multicollinearity, confirming that the model is suitable for prediction.

Table 4: Ramsey RESET and Heteroskedasticity tests

Ramsey Reset Test	F-statistic	1.6254	(1, 34)	0.1835
Heteroskedasticity Test	F-statistic	0.3487	Prob. F(4,27)	0.8743

Source: E views Output (2024)

Table 4 shows that both the Ramsey RESET and Heteroskedasticity tests confirm the model is correctly specified and that its variance is homogenous, as evidenced by p-values greater than the 5% significance level.

Table 5: RLS Estimates

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.622764	0.212443	4.746536	0.0011
GNPC	0.873972	0.257349	3.722878	0.0012
GNEC	0.055424	0.146615	0.437185	0.5944
GNIC	0.776771	0.272874	3.281947	0.0032
TROP	0.129479	0.322987	0.138710	0.8391
Robust Statistics				
R-squared		0.512213	Adjusted R-squared	0.501437
Rw-squared		0.611449	Adjust Rw-squared	0.601231
Rn-squared statistic		10.61243	Prob.(Rn-squared stat.)	0.013286
Akaike info criterion		5.712753	Schwarz criterion	5.021672
Hannan-Quinn criter.		10.60116	Durbin-Watson stat	2.082219

Source: E views Output (2024)

An R Square value of 0.512213, an Adjusted R-squared value of 0.501437, a Rw.-squared value of 0.611449, and an Adjust Rw.-squared value of 0.601231 were reported by the RLS Estimate in Table 5. This indicates the great predictive (explanatory) power of the studied variables. The Prob. (Rn. -squared stat.) value of 0.013286, on the other hand, indicates that green finance had a significant statistical impact on Nigerian economic stability. This suggests that Nigerian economic stability is greatly enhanced by green finance. In the meantime, the Durbin Watson Test unequivocally shown that there is no auto (serial) correlation in the model. Based on this assumption, the following research hypotheses are examined:

Table 6: Summary of Test Hypothesis Testing

Testable Form	Coefficient	Prob.	Conclusion
$GNPC \neq RGD$	0.873972	0.0012	$ENP = RGD$
$GNEC \neq RGD$	0.055424	0.5944	$ENEC \neq RGD$
$GNIC \neq RGD$	0.776771	0.0032	$ENIC = RGD$

Source: E views Output (2024)

The RLS estimates indicate that GNPC has a positive coefficient of 0.873972, suggesting that increased spending on Green Prevention contributes to greater economic stability, assuming trade openness remains favorable. This aligns with prior research and expectations, particularly those of Lee, Park, and Tian (2021), Tang (2020), Adedayo and Oguntuase (2019), and Mohammed and Kaushal (2018), who found that green finance is essential for sustainable development. However, the study contrasts with the findings of Kanu et al. (2020), who noted that green financing may harm economic stability. Additionally, while higher spending on Green Evaluation Costs (GNEC) positively impacts economic stability, the effect is statistically insignificant, suggesting that such costs only modestly influence Nigerian economic growth. Conversely, Green Internal Failure Costs (GNIC) were found to have a significant predictive effect on Nigeria's economic stability, emphasizing the need for policymakers to incorporate these costs more effectively into their strategies.

5 | CONCLUSION

This study explored the impact of green financing on Nigeria's economic stability, driven by the need for countries to align their economic activities with global best practices. The RLS estimates revealed that both GNPC and GNIC significantly affect Nigeria's economic stability. However, GNEC showed a direct but statistically insignificant impact. Nigeria has a number of governmental policy and strategy frameworks that offer a platform for enlisting private sector funding for climate change and green growth.

5.1 | Policy Recommendations

Based on the study findings, the following policy recommendations are suggested:

- Government should improve green grants and debt policies, institutional capacity, green technological innovation as well as public-private partnerships to be able to achieve sustainable economic development.
- To put these policies and strategies into practice, the government needs to create an implementation framework. In order to address the issue of climate change and promote green growth, it will also be possible to establish a synergy between sector-specific mandates and the general development agenda by aligning these policies and initiatives with Vision 2050.
- The ETP offers challenging goals, including funding, for reaching the net zero transition. The ETP's costing gives private investors, both domestic and foreign, a clear indication of the resources required to support Nigeria's goals for green growth and climate change. Stronger governance and institutional accountability systems would guarantee that private sector financing goes to relevant sectors with the largest resource needs and potential to generate the expected and maximum impact for green growth. Nevertheless, it is crucial that the authorities closely monitor and update the costs and indicator targets and ensure close alignment across all sectors outlined in the ETP, namely energy, transportation, housing, and infrastructure.
- The issue of green bonds indicates that Nigeria's financial industry is sufficiently complex and reasonably dynamic to manage green finance products. To encourage market innovation and guarantee that advancements in green finance align with legal requirements, the supervisory and regulatory environment must be updated on a regular basis.
- By investing in non-oil and green economic sectors, encouraging private enterprise, removing growth barriers (energy, finance, infrastructure, and regulations), and using resource rents to support green economic sectors through national tools like the Sovereign Wealth Fund, it is imperative to accelerate economic diversification.
- There is a need for increased funding for Green Internal Failure Costs, which has a strong positive effect on economic stability.

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