

ENVIRONMENTAL TAXATION AND CORPORATE FINANCIAL PERFORMANCE IN LISTED MANUFACTURING COMPANIES IN NIGERIA

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Abstract

This study investigated the impact of environmental taxation on the corporate financial performance (Return on Equity, ROE) of listed manufacturing companies in Nigeria. Specifically, the study examined how carbon tax, energy tax and pollution tax impacted on corporate financial performance of manufacturing companies in Nigeria. An ex post facto research design was employed, using secondary data from three purposively sampled companies (UAC of Nigeria Plc, PZ Cussons Nigeria Plc, and Dangote Cement Plc) listed on the Nigerian Exchange Group (NGX). Multiple linear regression analysis was used to analyze the relationship between the environmental taxes and ROE. The findings revealed a statistically insignificant relationship between the combined environmental taxes and ROE ($R^2 = .086$, $F = .395$, $p = .846$). Furthermore, none of the individual environmental taxes demonstrated a significant relationship with corporate financial performance. The study concludes that, based on the analyzed data, the examined environmental taxes do not appear to have a significant impact on the ROE of the selected manufacturing companies. It is recommended that future research explore other potential determinants of ROE and investigate the complexities of environmental taxation's influence on corporate financial performance, potentially considering non-linear relationships or moderating factors.

Key Words: Carbon Tax, Energy Tax, Pollution Tax, Return on Assets, Nigeria.

INTRODUCTION

Environmental taxation has gained global recognition as a critical policy tool for mitigating environmental degradation while promoting sustainable economic growth. Many countries, including those in Europe and North America, have implemented various forms of environmental taxes to encourage corporate accountability and reduce pollution levels. Empirical studies suggest that environmental taxation influences corporate financial performance, often measured by Return on Equity (ROE), by imposing additional costs that may either hinder profitability or stimulate efficiency and innovation. In Africa, environmental tax policies remain underdeveloped compared to developed economies, but countries such as South Africa and Kenya have implemented carbon and energy taxes to promote sustainability. Within the West African region, Nigeria is gradually adopting environmental taxation measures, though enforcement remains inconsistent. Listed manufacturing companies, which contribute significantly to industrial emissions and resource

consumption, are particularly affected by these policies, raising concerns about their financial sustainability in response to increasing environmental tax burdens (Emmanuel, 2023).

The relationship between environmental taxation and corporate financial performance is multifaceted, as it involves various tax instruments, including carbon tax, energy tax, pollution tax, waste management tax, and water use tax. Carbon tax aims to curb greenhouse gas emissions by charging corporations based on their carbon footprint, potentially increasing operational costs but also driving investment in cleaner technologies. Energy tax is levied on fossil fuel consumption, affecting manufacturing firms reliant on energy-intensive production processes. Pollution tax penalizes industries for discharging pollutants into air, water, or land, encouraging firms to adopt cleaner production methods. The waste management tax targets improper waste disposal, promoting circular economy initiatives, while the water use tax regulates excessive consumption of water resources, impacting industries dependent on high water usage. These tax instruments collectively influence firms' financial performance by altering cost structures, investment decisions, and overall profitability (Eze, 2023).

The interplay between environmental taxation and corporate financial performance can be both restrictive and transformative. While higher tax burdens may reduce short-term ROE by increasing production costs, they can also enhance long-term profitability through improved resource efficiency and reputational benefits. Manufacturing firms that proactively comply with environmental taxation policies may gain competitive advantages by accessing green financing, attracting environmentally conscious investors, and improving market positioning. Conversely, companies that fail to adapt to these fiscal regulations may experience financial strain, reduced investor confidence, and potential legal penalties. In Nigeria, where regulatory enforcement of environmental taxes is still evolving, listed manufacturing firms must balance compliance with cost efficiency to sustain profitability in a competitive market environment (Jolaiya, 2024). Understanding the nuanced effects of different environmental tax instruments on corporate financial performance is therefore essential for policymakers, business leaders, and investors seeking to align financial and environmental sustainability objectives.

LITERATURE REVIEW

Under this section, the various concepts under this under environmental accounting will be reviewed. Also in this chapter we will review the theory underpinning this study as well as empirical studies in this area.

Environmental Taxation

Environmental taxation is an important aspect of modern regulatory frameworks aimed at encouraging sustainable business practices and mitigating the adverse effects of industrial activities on the environment. It encompasses various fiscal tools and measures designed to internalize the environmental costs of production, consumption, and resource extraction. Governments worldwide are increasingly adopting environmental taxation strategies to address the growing concerns about

climate change, pollution, and the depletion of natural resources. These taxes are aimed at influencing the behavior of companies, especially in high-impact sectors such as manufacturing, by incentivizing them to adopt cleaner technologies, reduce waste, and utilize resources more efficiently (Adebimpe, 2024). The focus of environmental taxation is to balance the need for economic growth with environmental sustainability. By imposing taxes on specific environmental impacts such as carbon emissions, energy consumption, waste generation, and water use, these policies aim to create a financial incentive for companies to reduce their ecological footprints.

Carbon Tax

A carbon tax is a fiscal measure aimed at reducing carbon dioxide (CO₂) emissions by placing a financial charge on the amount of carbon emitted by businesses, particularly those involved in energy-intensive industries. A carbon tax is defined as a tax imposed on fossil fuels based on their carbon content, to internalize the external environmental costs of carbon emissions. The tax encourages firms to reduce their carbon emissions by either adopting cleaner technologies or reducing their dependence on carbon-intensive energy sources. In essence, the carbon tax acts as an economic tool to promote the transition towards a low-carbon economy by making the cost of carbon emissions explicit and incentivizing firms to adopt more sustainable practices (Eze, 2023).

Energy Tax

Energy tax is a financial levy imposed on the consumption of energy, particularly non-renewable sources such as coal, oil, and natural gas. An energy tax is designed to account for the environmental and economic costs associated with energy consumption, with the primary goal of encouraging a shift toward cleaner, renewable energy sources. The tax is often structured to reflect the energy content or carbon emissions associated with various fuels, thus influencing both the demand for energy and the types of energy sources businesses and consumers choose to use. In this sense, energy taxes serve as a financial mechanism to promote energy efficiency, reduce reliance on fossil fuels, and incentivize the development of alternative energy solutions (Aondohemba, 2021).

Pollution Tax

Pollution tax is a financial levy imposed on businesses or individuals based on the amount of pollution they produce, aiming to internalize the environmental costs associated with pollution. According to Bamishe (2024), a pollution tax, also known as a "Pigovian tax," is designed to provide economic incentives for firms to reduce their environmental impacts. This tax is typically levied on activities that release pollutants into the air, water, or soil, such as industrial emissions, waste disposal, and chemical discharges. The goal is to make the polluter bear the cost of the environmental damage caused by their activities, thus encouraging them to adopt cleaner practices or technologies. The pollution tax serves as an economic signal that reflects the societal costs of pollution, making firms consider these costs when making production and consumption decisions.

THEORETICAL REVIEW

There are various theory relating to this subject but the one that mostly relate to environmental taxation is the legitimacy theory.

Legitimacy Theory

Legitimacy Theory, founded by Suchman in 1995, is grounded in the idea that organizations must align their operations with the values and norms of the society in which they operate to gain acceptance and approval from stakeholders. Suchman argued that legitimacy is a resource that organizations seek to attain, maintain, and protect, as it is crucial for their survival and success. The rationale behind the theory is that businesses need to operate within the bounds of societal expectations to avoid potential threats to their existence, such as regulatory interventions or reputational damage. Authors supporting this theory, have emphasized that firms engage in various strategies to gain legitimacy, including aligning their environmental, social, and economic actions with public expectations. In this context, environmental taxation, including carbon taxes, energy taxes, and pollution taxes, can be viewed as a tool that organizations use to maintain their legitimacy by demonstrating environmental responsibility. By complying with these taxes, companies are perceived as adhering to environmental norms, which could enhance their reputation and ultimately improve their financial performance (Mahmud, 2019).

EMPIRICAL REVIEW

Isibor, et al (2023) examined the challenges of carbon disclosure and its impact on the performance of quoted manufacturing firms in Nigeria, focusing on equity return (ROE) as the dependent variable. The study utilized panel data analysis, analyzing secondary data from 2014 to 2020, with the Hausman test suggesting the use of fixed effect regression. Independent variables included carbon performance (disclosure), board response, board climate incentives, and the board environmental committee. The findings indicated that all independent variables positively and significantly impacted ROE. The study concluded that carbon disclosure, coupled with strong board response and climate incentives, can enhance financial performance. The authors recommended that firms regularly disclose carbon data in their annual reports to support both board decision-making and regulatory efforts in managing carbon emissions.

Jolaiya (2024) investigated the effect of green taxation on the financial performance of selected oil and gas firms in Nigeria for the period 2017-2022. The study aimed to assess the impact of carbon emission taxes, petroleum profit tax, and industrial pollution tax on the financial performance of these firms, using total assets as the dependent variable. Adopting an ex post facto research design, the study employed time series data sourced from the annual financial records of the firms and the Federal Inland Revenue Service (FIRS). The Johansen test confirmed a long-run relationship among the model variables and a significant adjustment speed of 32.01% annually. The findings revealed that carbon emission taxes, petroleum profit tax, and industrial pollution tax all had significant negative effects on the financial performance of the oil and gas firms. The study concluded that

green taxation negatively impacts the financial performance of these firms and recommended a review of carbon emission and petroleum profit taxes, alongside an increase in industrial pollution tax to mitigate environmental damage, enhance investor confidence, and stabilize the stock market in Nigeria.

METHODOLOGY

This study employed an ex post facto research design. This design is appropriate because it examines the relationship between environmental taxation (Carbon Tax, Energy Tax, Pollution Tax) and corporate financial performance (Return on Equity, ROE) using existing historical data, without manipulating any variables. This approach was suitable for analyzing the impact of past environmental tax policies and their effects on firm performance.

The population for this study consists of all manufacturing companies listed on the Nigerian Exchange Limited (NGX). According to the NGX Report 2025, there are 39 manufacturing companies listed on the NGX, categorized as Conglomerates: (6) Consumer Goods: (21), Industrial Goods: 12. This data, obtained from NGX Website, forms the basis for defining the population for this study. Given the need for data across different industry sub-sectors, a purposive sampling technique is employed to select 3 companies. This approach allows for representation from each sub-sector while ensuring that the selected companies meet the essential data availability criteria. The companies are: UAC of Nigeria Plc, PZ Cussons Nigeria Plc and Dangote Cement Plc.

In this study, multiple linear regression analysis was used to examine the impact of various environmental taxes (Carbon Tax, Energy Tax and Pollution Tax) on the corporate financial performance of listed manufacturing companies in Nigeria. Multiple linear regression is appropriate because it allows for the evaluation of the simultaneous influence of environmental taxes on corporate financial performance, providing insights into the relative significance of each tax type.

Model Specification

The econometric model is as follows:

$$CFPi = \beta_0 + \beta_1(CT_i) + \beta_2(ET_i) + \beta_3(PT_i) + \epsilon_i \dots \dots \dots 3.1$$

Where:

$CFPi$ = Corporate Financial Performance of company iii (measured by ROE).

CT_i = Carbon Tax for company iii .

ET_i = Energy Tax for company iii .

PT_i = Pollution Tax for company iii .

β_0 = Constant term (intercept).

$\beta_1, \beta_2, \beta_3$ = Coefficients of the independent variables representing the strength of the relationship between each environmental tax and corporate financial performance.

ϵ_i = Error term capturing unaccounted factors affecting corporate financial performance.

DATA ANALYSIS AND INTERPRETATIONS

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.293 ^a	.086	-.132	5.519912750930110	.086	.395	5

Model Summary^b

Change Statistics

Model	df2	Sig. F Change	
1	21	.846	1.649

Source: Researcher's Computation 2025.

a. Predictors: (Constant), Carbon Tax (Million Naira), Energy Tax (Million Naira), and Pollution Tax (Million Naira)

b. Dependent Variable: ROE (%)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.237	5	12.047	.395	.846 ^b
	Residual	639.858	21	30.469		
	Total	700.095	26			

Source: Researcher's Computation 2025.

a. Dependent Variable: ROE (%)

b. Predictors: (Constant), Carbon Tax (Million Naira), Energy Tax (Million Naira), Pollution Tax (Million Naira)

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	19.159	7.996		.026
	Carbon Tax (Million Naira)	-.014	.034	-.108	.677
	Energy Tax (Million Naira)	-.032	.028	-.248	.261
	Pollution Tax (Million Naira)	.005	.047	.025	.920

Source: Researcher's Computation 2025.

The regression analysis examined the relationship between Return on Equity (ROE) and several independent variables; carbon tax, energy tax, and pollution tax (all measured in millions of Naira). The results indicate a statistically insignificant relationship between the independent variables and ROE. The R-squared value of .086 suggests that the model explains only 8.6% of the variance in ROE, a very weak fit. The adjusted R-squared is negative (-.132), indicating that the model may be overfitted, and including the predictor variables does not improve the model's explanatory power. The F-statistic of .395 (Table 4.2) with a corresponding p-value of .846 (greater than the conventional alpha of .05) demonstrates that the overall model is not statistically significant. Therefore, we fail to reject the null hypothesis that there is no relationship between the combined set of taxes and ROE. This implies that these taxes, as considered in this model, do not collectively predict changes in ROE.

Looking at the individual predictors (Table 4.3), none of the tax variables demonstrate a statistically significant relationship with ROE. For instance, the carbon tax has a coefficient of -.014 with a p-value of .677. This means that for every one million Naira increase in carbon tax, ROE is predicted to decrease by .014 percentage points, but this relationship is not statistically different from zero. Similarly, the energy tax has a coefficient of -.032 ($p = .261$), the pollution tax has a coefficient of .005 ($p = .920$). For all these variables, we fail to reject the null hypothesis that the individual tax has no relationship with ROE. The implications of these findings suggest that the studied taxes, as measured in this model, do not have a significant impact on ROE. This could be due to several factors, including the possibility that the taxes are not substantial enough to affect firm profitability, that firms are able to absorb these costs without impacting ROE, or that other factors not included in the model are more influential determinants of ROE. Future research might explore these possibilities and consider other variables that could influence ROE.

The findings of this study, which indicate a statistically insignificant relationship between various environmental taxes (carbon, energy, and pollution) and ROE, largely disagree with the findings of

the reviewed empirical literature. While Loohuis (2022) found a negative relationship between carbon emissions and financial performance (including ROE), this study found no such relationship with carbon tax, which is intended to disincentivize such emissions. Isibor et al. (2023) found a positive relationship between carbon disclosure and ROE, while this study focused on the impact of taxes, finding no significant link. Jolaiya (2024) and Fakayode and Olayemi (2024) found significant relationships between green taxation/environmental accounting/costs and financial performance measures, albeit sometimes negative, which contrasts sharply with the current study's null findings. Even Adeniyi and Adebayo (2024), who found no significant relationship between green *management costs* and profitability, acknowledged the importance of environmental protection, a factor that should theoretically be linked to taxation policies. The divergence in findings may be due to differences in methodologies, specific taxes studied, sample characteristics (e.g., industry, firm size), or the broader economic context. The current study's negative adjusted R-squared and low explanatory power suggest potential issues with model specification or data limitations, which could explain the discrepancies with previous research.

CONCLUSION AND RECOMMENDATION

This study found no statistically significant relationship between, carbon tax, energy tax, pollution tax, and firm Return on Equity (ROE). The overall model demonstrated a very weak fit, explaining less than 9% of the variance in ROE, and the negative adjusted R-squared suggests the model may be over fitted. Furthermore, the individual tax variables did not exhibit statistically significant relationships with ROE. These findings suggest that the studied environmental taxes, as currently implemented and measured, do not appear to have a significant impact on firm profitability as reflected in ROE. This lack of a significant relationship could be attributed to several factors, including the relatively low magnitude of the taxes, firms' ability to absorb these costs, or the presence of other, more influential determinants of ROE not captured in the model.

Based on these findings, several recommendations are warranted. Future research should explore alternative explanations for ROE variation, potentially including factors such as firm size, industry, management efficiency, or market conditions. Investigating the potential for non-linear relationships between environmental taxes and ROE could also be valuable. From a policy perspective, the current findings suggest that these specific environmental taxes, at their current levels, may not be significantly impacting firm financial performance. If the goal of these taxes is to incentivize environmentally friendly behavior by affecting firms' bottom line, policymakers may need to consider adjusting the tax rates or implementing complementary policies to achieve the desired outcomes. Further research is needed to understand the complex interplay between environmental regulations, firm behavior, and financial performance.

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