

CARBON REDUCTION AND MARKET VALUE OF FIRMS IN NIGERIA

IMAOWAJI THOMAS

**Department of Accounting
Ignatius Ajuru University of Education
Rumuolumeni, Port Harcourt
Nigeria**

MICHEAL BARIGBON

**Department of Accountancy
Ken-Saro Wiwa Polytechnic
Bori, Rivers State
Nigeria**

GOSPEL J. CHUKWU

**Department of Accountancy
Ken-Saro Wiwa Polytechnic
Bori, Rivers State
Nigeria**

ABSTRACT: *This study focused on the relationship between carbon reduction and market value in Nigeria from 2007 to 2016. The research employed carbon dioxide (co2) as proxy for carbon reduction and market value as dependent variable in carrying out the analysis. Data was sourced from Central Bank Bulletin, word bank data base and Ministry of Finance and was analyzed with the help of regression analysis. The result shows that there is no significant relationship between carbon reduction and market value in Nigeria. The study concluded therefore that carbon emission must be control in Nigeria since it does not affect the market value. Whatever is done to reduce the emission level will not positively affect the market value of the firm. It is recommended that It will be a good development which can bring credibility into the emission measurement and reporting in Nigeria, if the firms can introduce carbon emission trading and reporting into the capital markets and Nigeria needs environmental accounting standards to regulate the disclosure of emission reporting system.*

Key Words: Carbon Reduction; Market Value; Legitimacy Theory, NESREA

INTRODUCTION

The debate on climate change has risen in recent time. Carbon emission is a major cause of climate change. Some have argued that it could be accounted for by the integration into financial statement and their investment decision Eccles, Krzus, and Serafeim 2011). The concern in the world today is about risk and carbon emission level from climate-change as expressed by investors, regulators, standard-setting bodies, and other stakeholders and how firm estimates the effects of carbon emissions and of the act of voluntarily disclosing carbon emissions.

This study is important because recent pressure on U.S., China and other firms all around the world to increase transparency through disclosures of new non- financial climate change and environmental information, including carbon emissions. These pressures from organizations such as the Carbon Disclosure Project (CDP), Ceres, the Global Reporting Initiative (GRI) and the Investor Network on Climate Risk (INCR), and the International Integrated

Reporting Committee (IIRC). Thus, corporate managers also face stakeholder's pressure to evaluate and report on the risks and opportunities their companies face with respect to climate change, including the exposure of their firms to regulatory and market environment (Ernst & Young 2011).

Despite this heightened interest, there is fewer researches in Nigeria regarding the association between the disclosure of carbon emissions, and firm value (Matsumura, Prakas and Vera-Muñoz, 2014), and economic growth (Mesagan, 2015), and economy performance (Ogbonna, Ojeaburu, & Ehilegbu, 2019); and financial performance (Ganda, & Milondzo (2018). Isa evaluate an empirical analysis of the impact of greenhouse gas emissions on the oil & gas revenue in Nigeria for the period of 1981-2010. Mesagan evaluates the relationship between carbon emission and economic growth in Nigeria for 1970 to 2013. Ganda, & Milondzo investigated the impact of carbon emissions (Co₂) on the financial performance of 63 South African CDP companies for the 2015 fiscal year and Ogbonna, Ojeaburu, & Ehilegbu checked the relationship between carbon emission and the performance of the Nigerian economy for a period ranging from 1981-2014. Among these researcher listed no know research in area of market value of firm listed in the Nigeria Stock Exchange. In view of the above, the researcher intends to investigate the impact of carbon reduction on market value of firms in Nigeria.

Statement of Problem

Despite the revenue accruing to the government through taxes from oil and gas and few development projects embarked upon by the oil and gas companies to their host communities.

Most oil and gas companies keep deaf ear to the emission from their activities and no policy and programmes are in place to curtail their emission level. The matter gets worse since the agencies are having clashes on whom to regulate the sector among DPR, NESREA and NOSDRA. The Nigerian government established the National Environmental Standard and Regulatory Enforcement Agency (NESREA) to monitor the effect of industrial activities on the environment (Ebimobowei, 2011). But there is, currently, no standard requirement for firms in Nigerian to disclose their environment-related risk much more to reduce their carbon emission, which would have given the public an overall perception of firms' environmental compliance.

Despite the fact that there may be a potential correlation between more disclosure and improvement in corporate performance, the fact that environmental reporting is largely nonexistent and unregulated in Nigeria, means it is not clear what drives firms that dare disclose their environmental information voluntarily (Akanno, Che, Radda, & Uzodinma, 2015). If nothing is done urgently to check the activities of companies operating in Nigeria, a lot of havoc would have be done to the environment which can affect the legitimacy of the companies operating in this sector. In the light of the above, that the researcher intends to investigate the extent of carbon reduction on firm market value in firms in Nigeria.

Purpose of the Study

The main purpose of this study is to carry out empirical investigation on the perception of carbon reduction on firm market value of firms in Nigeria. Essentially, specific objective to determine the relationship between carbon dioxide (Co2) on market value of firms in Nigeria.

The Research Questions

To achieve the objectives of this study the following questions are raised:

- ❖ To what degree is the relationship between carbon dioxide (Co2) and firm market value in Nigeria?

Research Hypotheses

From the research questions, the following null hypotheses were drawn and to be tested in the study.

H₀₁: There is no significant relationship between carbon dioxide (Co2) and firm market value in Nigeria.

THEORETICAL REVIEW

Legitimacy Theory

Firm that wants to seem as operating within a boundary will subscribe into the philosophy of Legitimacy theorist. Legitimacy theory came from the concept of organizational legitimacy, which has been defined by Dowling and Pfeffer (1975, p. 122) as: a condition or status which exists when an entity's value system is congruent with the value system of the larger social system of which the entity is a part. When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity's legitimacy". This is to make sure that their activities are seen by stakeholders as being legitimate. The means by which an organization may legitimate its activities according to Dowling & Pfeffer (1975, namely: Adapting its output and goals to conform to prevailing definitions of legitimacy; regular communications, to alter the definition of social legitimacy so that it conforms to the organization's present practices, output and values; Attempt through communications, to become identified with symbols, values or institutions that have a strong sense of legitimacy.

Carbon Reduction and Market Value

Although information on carbon emissions and reduction is self-reported and frequently un-assured, this may or may not be reasonably credible. First, the credibility of the data can be assess from the markets by comparing them to similar data from other firm in the same industry, and some of the data may be assured. Those firms that operate in European Union where emissions are regulated can experience market value of their emission buy comparison. Second, although firm responding to the disclosing its carbon emission which is voluntary, once a firm decides to participate, it is significantly more likely to participate in the future (Stanny, 2013).

Matsumura, Prakas and Vera-Muñoz (2014) stated that firms choose to disclose carbon emissions if they perceived the benefits of doing so outweigh the perceived costs of reporting. Firms are unlikely to disclose their carbon emissions if: they have low carbon emissions such that the cost of measuring and collecting this information exceeds the benefits of doing so; the firms have significant carbon emissions but have yet to implement internal measurement mechanism and processes to collect information on emissions; and the firm have a high level of emissions and therefore are reluctant to disclose this "bad news" to investors and other

outside stakeholders due to proprietary and other related costs and also due to fear of loss in the market value of the firm. Untruthful reporting of carbon emission that is eventually revealed can damage the firm's overall reporting credibility; expose it to litigation risk and have negative impact on the market capitalisation at the Stock Exchange in open market. Market capitalization (also known as market value) is the share price times the number of shares outstanding. In 2018, market capitalization for Nigeria was 31,520 million US dollars. Though Nigeria market capitalization fluctuated substantially in recent years, it tended to increase through 1996 - 2018 period ending at 31,520 million US dollars in 2018.

Empirical Study

Kopidou et al (2016) confirmed that the two major drivers of carbon emissions reduction and employment were financial performance indicators, namely economic growth concerns and resource intensity issues. Gallego-Álvarez et al. (2015) investigated the influence of emission of carbon on corporate financial performance of 89 companies for the period 2006–2009 and posited that a reduction of carbon emissions improved corporate financial returns. Wang et al. (2016) discovered that carbon tariffs (designed to lower emissions) negatively impacted the performance of firm finance in developing economies, thereby threatening the long-term survival of such firms. Robin, Murray, Cameron, John, & Michael (2006) investigated the impact of CO₂ emissions trading on firm profits and market prices. The results showed three future prices of emissions scenarios.

Ogbonna, Ojeaburu, & Ehilegbu (2019) study the nexus between carbon emission and the Nigeria economy performance from 1981-2014 and the study recommends inter alia making earnest effort to reduce green house gas (GHG) by adhering to international protocol. Emissions not connected to production of industrial and consumer goods may be partially avoided if not complete. Precisely focus should be shifted to going green in terms of energy generation. Mesagan (2015) evaluates the relationship between carbon emission and economic growth in Nigeria for 1970 to 2013 and the study recommended to promote green economic in the country.

Research Methodology

This paper evaluates the relationship between carbon reduction and market value. Thus, the study investigated how the degree of these carbon reduction impact market values of all the listed companies in the Nigeria Stock Exchange (NSC). The established hypothesis is analysed using simple regression analysis. Data related to carbon reduction was acquired from the World Bank data base and market value was extracted from Security and Exchange Commission (SEC).

Model Specification

$$MAV = \beta_0 + \beta_1(CAE) + \epsilon_{i,t}$$

Where,

MAV= Market value

CAE=Carbon Emission

PRESENTATION AND DATA ANALYSIS

The Appendix 1 shows the Carbon (CO₂) as independent variables and market value represent dependent variables. The study used simple regression analysis to check the relationship between independent variable and dependent variable.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.554 ^a	.307	.220	16358671945 .9139060000 00000	1.549

a. Predictors: (Constant), CarbonEmissionCO2MetricTonsPercapitam

b. Dependent Variable: MarketValue

Source: SPSS Output 2019.

The above model summary table 1 produced a correlation coefficient; 'R' of 0.554^a show there is a positive correlation between carbon emission and market value. And our R² stood 0.307 which implies that about 30.7% variations in the dependent variable (market value) are attributed to changes in the independent variable (carbon emission). The Durbin-Watson d=, 1.549, which is between the two critical values of 1.5 < d < 2.5 and therefore we can assume that there is no first order linear auto-correlation in the data. Hence the model is of good fit.

Table 2: Coefficients

Model		Unstandardized Coefficients		Stand Coef	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25676728993.579	42342832745.483		.606	.561
1	CarbonEmissionCO2MetricTonsPercapitam	142242815456.132	75585693140.688	.554	1.882	.097

a. Dependent Variable: MarketValue

Source: SPSS Output 2019.

The above Table 2 coefficient shows a model constant (*a*) value of 25676728993.579 and CarbonEmission (*bx*) value of 142242815456.132, indicating that, for every one-unit increase of the independent variable value (142242815456.132), the dependent variable (Marketvalue) value will rise by 142242815456.132%. On the other hand, Beta (β) values of 0.554. T-value produced 1.882, is not significant at P value (0.097), which is greater than the chosen alpha of α (0.05). Thus; the null hypothesis is accepted (P-Value > 0.05). Hence, there is no significant relationship between carbon dioxide (Co2) and firm market value in Nigeria.

FINDINGS AND CONCLUSION

This paper investigated the impact of carbon emissions on market value in Nigeria. From the secondary data sourced the use of regression approaches were used to analyze the data. The result shows that carbon emission and market value in Nigeria are non linear related. This means that carbon emission must be control in Nigeria since it does not affect the market value. Whatever is done to reduce the emission level will not positively affect the market value of the firm. It also means firms may not lose his capital being traded upon in the open market.

RECOMMENDATIONS

Based on our findings, the study recommends as follows:

- It will be a good development which can bring credibility into the emission measurement and reporting in Nigeria, if the firms can introduce carbon emission trading and reporting into the capital markets,
- Nigeria needs environmental accounting standards to regulate the disclosure of emission reporting system.

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Appendix 1

	Independent variables	Dependent variable
Year	Carbon Emission (CO2) Metric Tons Per capita (mt))	Market Value
2007	0.65	84,894,570,000.0

2008	0.64	48,062,280,000.0
2009	0.5	32,223,400,000.0
2010	0.58	50,546,400,000.0
2011	0.59	39,028,390,000.0
2012	0.59	56,205,200,000.0
2013	0.57	80,609,900,000.0
2014	0.55	62,766,310,000.0
2015	0.45	49,973,880,000.0
2016	0.44	29,792,434,000.3

Sources: SEC, 2016; World Bank database 2018; Federal Ministry of Finance and Central Bank of Nigeria Statistical Bulletin 2016; <https://knoema.com/atlas/Nigeria/CO2-emissions-per-capita>.

Appendix 2

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
CarbonEmissionCO2	10	.44	.65	.5560	.07214	-.521	.687
MarketValue	10	29792434000.3	8489457000.0	53410276400.030010	18524949457.12738000000000	.575	.687
Valid N (listwise)	10						

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	CarbonEmissionCO2MetricTonsPerCapitamt ^b		Enter

a. Dependent Variable: Market Value

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.554 ^a	.307	.220	16358671945.913906000000000	1.549

a. Predictors: (Constant), CarbonEmissionCO2MetricTonsPerCapitamt

b. Dependent Variable: MarketValue

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	94771458882 9871000000. 000	1	94771458882 9871000000. 000	3.541	.097 ^b
1 Residual	21408491826 72245200000 .000	8	26760614783 4030650000. 000		
Total	30885637715 02116000000 .000	9			

a. Dependent Variable: MarketValue

b. Predictors: (Constant), CarbonEmissionCO2MetricTonsPercapitam

Coefficients^a

Model	Unstandardized Coefficients		St. Coeffs	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	25676728993.579	42342832745.4 83		.606	.561
1 CarbonEmissionCO2MetricTonsPercapitam	142242815456.13 2	75585693140.6 88	.554	1.882	.097