

## MODERATING INFLUENCE OF CORRUPTION ON THE RELATIONSHIP BETWEEN AGGREGATE TAX REVENUE AND ECONOMIC DEVELOPMENT IN NIGERIA AND GHANA

#### Uche Okoro Orji (Ph.D.)

Department of Accounting, Faculty of Economics and Management Sciences,

Abia State University, Uturu, Nigeria.

Email: ucheorji4real@gmail.com

#### Cite this article:

Uche O. O. (2024), Moderating Influence of Corruption on the Relationship between Aggregate Tax Revenue and Economic Development in Nigeria and Ghana. African Journal of Accounting and Financial Research 7(2), 34-45. DOI: 10.52589/AJAFR-7EPYGL26

#### **Manuscript History**

Received: 13 Jan 2024 Accepted: 22 Mar 2024 Published: 23 Apr 2024

**Copyright** © 2024 The Author(s). This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

**ABSTRACT:** The study examines the moderating influence of corruption on the relationship between aggregate tax revenue and economic development in Nigeria and Ghana. Ex-post facto research design was adopted for the study where country specific data extracted from the annual publications of OECD database on tax revenue in Africa, Central Bank of Nigeria and Transparency International (TI) for the periods 1981 to 2022 were used. The dependent variable was economic development measured with Gross Domestic Product at 2015 Constant price while the independent variable was Aggregate tax revenue. The relationship between the dependent and independent variables was moderated by the presence of corruption measured by Corruption perception index for Nigeria and Ghana. Different econometric techniques were applied in the study while the data was analyzed by means of the Autoregressive Distributed Lag (ARDL) model using E views Version 10. The findings showed that in Nigeria and Ghana, aggregate tax revenue had a positive and significant influence on economic development both short and long run whereas corruption had a negative but significant influence on the relationship between tax revenue and gross domestic product of Nigeria and Ghana. The study therefore recommends among others that the respective governments of Nigeria and Ghana should put in place adequate fiscal measures to ensure that revenue generated from taxes are effectively utilized to develop their economies. They should also see the need to tackle corruption in the process of executing projects by ensuring that activities of bad and corrupt leaders are closely monitored through further strengthening the hands of the anti Graft Agencies like the Economic and Financial Crimes Commission (EFCC) and *ICPC* to have the political will to persecute corrupt leaders and managers of public funds.

**KEYWORDS:** Corruption, Economy, Development, Tax revenue, Gross Domestic Product, Ghana, Nigeria.



# INTRODUCTION

It has long been believed that taxes are a crucial instrument for governing the economy. According to Kalaš, Pjanić, Milenković, and Andrašić (2016), stability and predictability are key indicators of their importance in modern business. Taxes on individuals and corporations provide the government with a sizable amount of funding. It is a way for the government to take resources out of an economy and use them either directly or indirectly to promote development (Zucman, 2014; Anyaduba & Aronmwan, 2015). There is a need to have a mix of revenue sources to boost the nation's revenue base (Jones & Ekweme, 2016) and through judicious use of the tax revenues, the government will be able to achieve full employment in the short and long run and other developmental strides of government (Nmesirionye, Jones & Onuche, 2019).

Statistics available from Revenue Statistics in Africa (2022) show that tax revenue contributes between 5.3% to 9.6% of the annual GDP of Nigeria and between 7.8% to 14.1% of the annual GDP of Ghana for the periods under study, but despite the increase in tax revenue, economic development in Nigeria and Ghana has not grown relatively owing to factors bothering on poor governance, corruption and misuse of public funds in the countries. Corruption has been seen to involve taking wealth or securing power through illegal means (Odubunmi & Agbelade, 2014). It cuts across all facets and sectors of society, particularly areas of economic growth and development (Ekokeme, Gbalam & Nelson, 2018).

According to Transparency International (2022), the Corruption Perception Index (CPI) measures the level of corruption in the public sector of countries and ranks countries on a scale of 0–100, with 0 showing a highly corrupt country and 100 showing low level of corruption in the country. The Corruption Perception Index, as published by Transparency International (2022), places Nigeria on the scale ranging from 10.0 to 28.0 while Ghana ranks from 33.0 to 48.0 for the periods 1981 to 2022. This shows the level at which the public sectors of these countries have been engrossed with corruption.

Many studies on the impact of tax revenue on economic development have produced different results. While some researchers found that the relationship between tax revenue and economic development is positive and significant (Abomaye-Nimenibo et al., 2018; Mohammed et al., 2020; Yahaya & Yusuf, 2019), others found the influence of tax revenue on economic growth and development to be insignificant (Uket, Wasiu & Etim, 2020; Ehiriudu, Ugbor & Abia, 2020). On the other hand, some studies that tried to x-ray the influence of corruption on tax revenue (Oluwaseun & Amoo, 2018; Saleh & Daura, 2021) and Calabrese and Eyckmans (2020) and also on economic growth and development (Akanni & Ogunyemi, 2020; Ogbonna & Eke, 2020; Aworinde & Akinfemi, 2020) have no consistency of result in sight. These inconsistent and mixed results motivated this study.

This study aims at determining the moderating influence of corruption on the relationship between tax revenue and economic development of Nigeria and Ghana. The study specifically delved into x-raying the role corruption plays in the utilization of tax revenue to engender development in both countries and a comparative assessment of the extent to which corruption has influenced the relationship between tax revenue and economic development in both countries.



While previous studies have attempted to unravel the influence of corruption on either tax revenue or on economic growth and development, this study pushes to holistically view corruption as a moderating factor to the relationship between tax revenue and economic development. The result of this study will add to the body of knowledge and improve the scope of literature in this area.

The rest of this paper is organized into literature, methodology, data analysis and discussion and also conclusion which includes policy implications, possible limitations to the study and areas of further studies.

# **REVIEW OF RELATED LITERATURE**

Relevant concepts related to the study were discussed to further showcase the conceptual link between corruption, tax revenue and economic development, especially as they affect Nigeria and Ghana.

# **Concept of Tax Revenue and Economic Development**

Tax has been seen as a compulsory contribution made by citizens to the government whose refusal to pay goes with punishment meted to such defaulters (Abomaye-Nimenibo, 2017). Nigeria's National Tax Policy (NTP) (2020) explains it as a monetary burden placed on property, legal entities and individuals by a given country to support government spending. Revenues are derived from payments of taxes ranging from company income tax derived from companies and business entities; personal income tax paid by individuals; petroleum profit tax; stamp duties, custom and excise; value added tax, etc. These taxes form a significant form of revenue to governments globally (Ogbonna & Appah, 2016).

Economic development is a programmatic initiative aimed at improving the population's economy and the citizens' social well-being (Salmon Valley Business Innovation Centre, 2014). Its goal centres on realizing peoples' well-being socially and economically and also positioning the people on a better growth route (Adegbie et al, 2020; Akwe, 2014). With more money in the economy, the government may concentrate more on infrastructure, i.e., repair of bad roads and the upgrading of public buildings such as schools, hospitals, recreation centres, and many more.

# Link between Corruption, Tax Revenue and Economic Development

Corruption would not be considered a social problem worthy of analytical and policy attention if its effects on the economic system were neutral but corruption not only significantly retards developing economies, its effect is equally devastating (Okon & Okon, 2017). Ogbonna and Eke (2020), Aworinde and Akinfemi (2020) and Akanni and Ogunyemi (2020) have found corruption to harm economic growth and development by discouraging entrepreneurship, reducing foreign investment and increasing the cost of doing business.

Corruption has also been found to be responsible for a high level of tax evasion, low tax revenue due to revenue from tax not entering into government purse and reduced compliance to tax laws (Saleh & Daura, 2021; Calabrese & Eyckmans, 2020). In summary, corruption negatively affects tax revenue accruable to the government.



# **Theoretical Review**

The study is built on Atkinson-Stiglitz Efficiency Theorem and Extractive Corruption theory. These theories form the theoretical background that underpins the study.

# Atkinson-Stiglitz Efficiency Theorem

The Atkinson-Stiglitz Efficiency Theorem was developed by economists Anthony Atkinson and Joseph Stiglitz in 1976. The Atkinson-Stiglitz Efficiency Theorem is relevant to tax policy and economic development as it suggests that taxes should not distort economic behaviour and generate revenue for public goods and services. Thus, the theory promotes efficient and equitable tax policies that can foster economic development. It agrees to the fact that taxation can indeed affect economic growth and development and therefore can be accepted as a policy advice to countries like Nigeria and Ghana on the optimal tax mix which they can employ for better working of their economy.

## **Extractive Corruption Theory**

The extractive theory, which was propounded by Daron Acemoglu and James A. Robinson, argues that economic institutions play a key role in determining the success or failure of a country's economy. Extractive institutions, which concentrate power and wealth in the hands of a few, are harmful to economic growth and development. The extractive theory applies to studies concerning corruption and governance.

Acemoglu and Robinson's theory proposes that extractive institutions can have adverse effects on economic development. Therefore, policies promoting transparency and accountability in governance and utilization of government funds can be more effective in fostering economic development in Nigeria and Ghana.

# **Empirical Review**

Edori et al. (2022) investigated the influence of tax revenue on economic development in Nigeria using secondary data extracted from relevant studies from 2011 to 2020. The personal judgment sampling techniques were used to pick three tax revenue sources and one measure of economic development. The study concluded that tax revenue has an influence on economic development.

Saleh and Daura (2021) investigated the effect of corruption on tax revenue in Nigeria using annual data from 1980 to 2019. The study finds that corruption harms tax revenue in Nigeria, which suggests that reducing corruption can increase tax revenue and promote economic development in the country.

Ehiriudu, Ugbor and Abia (2020) studied the impact of taxation as an aid to economic development in Nigeria. Simple percentages were used to analyze the response from the distributed questionnaires and ANOVA was used in analyzing the table. Findings revealed that there is poor tax administration; tax evasion and avoidance were also the order of the day. The study therefore revealed that taxation is the main source of revenue in Nigeria.

Abiloro, Olawole and Adeniran (2019) studied the relationship between corruption, income inequality, and economic development in Nigeria using secondary data extracted from World Bank Data, CBN Statistical Bulletin, Transparency International and United Nation



Publications from 1999 to 2017. A factorial research design was used. The study adopted the least square regression model. The study found that income inequality and corruption have an effect on economic development.

Omedero (2019) investigated the implication of corruption on the economic progress of Nigeria using secondary data extracted from World Bank Development Indicators and Transparency International from the period of 2008 to 2018. The regression result shows that the country's corruption ranking has a negative influence on economic growth in Nigeria while the rate of corruption is positive. The study concludes that the image of Nigeria has been damaged due to a high level of corruption in the country.

Ben, Udo, and Abner (2018) used secondary data from 1999 to 2016 to investigate the impact of corruption on economic development and sustainability in Nigeria. The association between corruption, exchange rate, inflation rate, gross domestic product, and unemployment was examined in the study using a standard regression model. 94% of the volatility in the GDP was accounted for by the model's corruption. Economic growth and corruption had a negative and substantial association.

# METHODOLOGY

This study adopted the ex-post facto research design where a time series data from the annual publications of Nigeria and Ghana from OECD database on revenue statistics in Africa, Central Bank of Nigeria Statistical bulletin and Transparency International were obtained. The aforementioned design guarantees the acquisition of pre-existing, less manipulated data for the purpose of quantitatively assessing the impact of corruption on the correlation between aggregate tax income and economic development in Ghana and Nigeria.

The whole economies of Ghana and Nigeria comprise the study's population, and its main objective was to evaluate the impact of corruption on the relationship between aggregate tax income and economic development in both nations. Nigeria and Ghana share the characteristic of being two of the powerful West African economies that are being severely impacted by the growing influence of corruption.

Secondary data were used for the study spanning from 1981 to 2022 which were obtained from OECD data base on revenue statistics in Africa for aggregate tax revenue and Gross Domestic Product for Ghana, Central Bank of Nigeria for data on Gross Domestic Product and Transparency International for data on Corruption Perception Index.

# **Model Specification**

The model for this study was formulated to capture the moderating influence of corruption as the moderating variable. The model only represented aggregate tax revenue for the independent variable and GDP as the measure for economic development. The model for the study is presented in its functional form as:

GDP = f(TOTAX, CPI)

(1)

The econometric form of the stated model is given below:



$INGDPnt = b_0 + b_1INTOTAXnt + b_2INCPInt + b_3(INTOTAX*INCPInt) + (t) $ Mode
--

 $INGDPgt = b_0 + b_1INTOTAXgt + b_2INCPIgt + b_3(INTOTAX*INCPIgt) + (t)$  Model 2

where GDP, TOTAX and CPI represent gross domestic product, aggregate tax revenue and corruption perception index respectively in each selected country (n and g) and at different years (t).

# DATA PRESENTATION AND ANALYSIS OF RESULT

The time series data analysis started with the preliminary analyses are in two parts: Descriptive Statistics and Stationarity Test.

# Table 4.1: Descriptive Statistics

# NIGERIA

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-
Bera(P-value	e)				-
LNTOTAX	8.030486	0.843538	-1.347310	3.549767	
8.508624(0.0	14203)				
LNCPI	3.011523	0.349016	-1.506514	4.788195	
13.81048(0.0	01003)				
LNGDP	10.	46827 1.253	-0.421660		
1.793630	2.437333	(0.295624)			
GHANA					
Variable	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-
Bera(P-value	e)				-
LNTOTAX	3.804884	0.115283	-0.108918	1.796369	
1.558520(0.4)	58745)				
LNCPI	13.96978	0.870660	-0.041100		
	1.84884	8 1.3874	03(0.499723)		
LNGDP	24.	30367 0.4379	-0.029716		
1.560526	2 16210	2(0.339239)			

Source: Authors' Computation Using E-views 10.0 (2024).

The outcome of the descriptive statistics for the time series data are presented in Table 4.1 above. The result shows that LNTOTAX has a higher mean value in Nigeria than in Ghana whereas LNGDP has a higher mean value in Ghana than in Nigeria. The result also shows that the variables are negatively skewed in both countries going by the result of the skewness.

All the variables are platykurtic in nature as their values for kurtosis are less than 3, except for LNTOTAX and LNCPI in Nigeria which are leptokurtic in nature as their kurtosis are greater than 3. This indicates a lower than normal distribution and also implies that the distributions produce fewer or less extreme outliers than does the normal distribution. The P-value of the Jarque-Bera test for Log TOTAX and log CPI in Nigeria are not normally distributed whereas Log GDP in Nigeria and all the variables in Ghana are normally distributed at 5% level of



significance. These discrepancies in results of normality create reasons to subject all the variables to unit root test.

### **Stationarity Test**

### **Table 4.2: Augmented Dickey Fuller Unit Root Test**

#### NIGERIA

VARIABLES         ADF         CRITICAL         Prob         REMARK         VARIABLE         ADF         CRITICAL           Prob         REMARK         VALUE         VALUE         VALUE           INCPI         -7.633704         -3.012363         0.0000         Stationary         0(CPI)         7.633704         -3.012363           0.0000         Stationary         Jacobia         D(CPI)         7.633704         -3.012363           0.0000         Stationary         D(CPI)         7.633704         -3.012363         0.0000           MGTV         -1.734973         -2.935001         0.4066         Non-stationary D(AGTV)         -6.721434         -2.936942           0.0000         Stationary         GDP         -1.816596         -2.935001         0.3675         Non-stationary D(GDP)         -3.067878         2.936942           0.0372         Stationary         MG-COR         -2.97486         -2.986225         0.1864         Non-stationary D(AG-COR)         -8.009540         -2.986225           0.0000         Stationary         GHANA         @IEVELS         @IST DIFFERENCE           VARIABLES         ADF         CRITICAL         Prob         REMARK         VALUE           VACUE         VALUE         VALU	@LEVELS		@1ST DIFF	ERENCE
VALUE         VALUE           INCPI         -7.633704         -3.012363         0.0000         Stationary         -3.012363           0.0000         Stationary         -3.012363         0.0000         Stationary           AGTV         -1.734973         -2.935001         0.4066         Non-stationary D(AGTV)         -6.721434         -2.936942           0.0000         Stationary         -1.816596         -2.935001         0.3675         Non-stationary D(GDP)         -3.067878         2.936942           0.0372         Stationary         -2.986225         0.1864         Non-stationary D(AG-COR)         -8.009540         -2.986225           0.0000         Stationary         -2.986225         0.1864         Non-stationary D(AG-COR)         -8.009540         -2.986225           0.0000         Stationary         -2.97486         -2.986225         0.0000         stationary           GHANA	VARIABLES ADF CRITICAL	Prob REMARK	VARIABLE ADF	CRITICAL
INCPI         -7.633704         -3.012363         0.0000         Stationary         -3.012363           0.0000         Stationary         AGTV         -1.734973         -2.935001         0.4066         Non-stationary D(AGTV)         -6.721434         -2.936942           0.0000         Stationary         GDP         -1.816596         -2.935001         0.3675         Non-stationary D(GDP)         -3.067878         2.936942           0.0372         Stationary         AG-COR         -2.277486         -2.986225         0.1864         Non-stationary D(AG-COR)         -8.009540         -2.986225           0.0000         Stationary         AG-COR         -2.277486         -2.986225         0.1864         Non-stationary D(AG-COR)         -8.009540         -2.986225           0.0000         Stationary         GHANA         CRITICAL         Prob         REMARK         VALUE         VALUE           VARIABLES         ADF         CRITICAL         Prob         REMARK         VALUE         VALUE           AG-COR         -1.730242         -2.991878         0.4041         Non-Stationary D(AG-COR)         -6.913871         -2.998064           0.0000         Stationary         GDP         0.201797         -2.936942         0.9694         Non-stationary D(GD	Prob REMARK			
0.0000 Stationary AGTV -1.734973 -2.935001 0.4066 Non-stationary D(AGTV) -6.721434 -2.936942 0.0000 Stationary GDP -1.816596 -2.935001 0.3675 Non-stationary D(GDP) -3.067878 2.936942 0.0372 Stationary AG-COR -2.277486 -2.986225 0.1864 Non-stationary D(AG-COR) -8.009540 -2.986225 0.0000 Stationary GHANA GLEVELS @1ST DIFFERENCE VARIABLES ADF CRITICAL Prob REMARK VARIABLE ADF CRITICAL Prob REMARK VALUE VALUE AG-COR -1.730242 -2.991878 0.4041 Non- Stationary D(AG-COR) -6.913871 -2.998064 0.0000 Stationary AGTV -0.363430 -2.935001 0.9060 Non-stationary D(AGTV) -8.399392 -2.936942 0.0000 Stationary GDP 0.201797 -2.936942 0.9694 Non-stationary D(GDP) -5.440880 -2.936942 0.0001 Stationary INCPI -1.800851 -2.991878 0.3711 Non-stationary D(INCPI) -6.977500 -2.998064	VALUE			VALUE
AGTV       -1.734973       -2.935001       0.4066       Non-stationary D(AGTV)       -6.721434       -2.936942         0.0000       Stationary       GDP       -1.816596       -2.935001       0.3675       Non-stationary D(GDP)       -3.067878       2.936942         0.0372       Stationary       AG-COR       -2.277486       -2.986225       0.1864       Non-stationary D(AG-COR)       -8.009540       -2.986225         0.0000       Stationary       GHANA	INCPI -7.633704 -3.012363 0	.0000 Stationary	D(CPI) 7.633704	-3.012363
0.0000       Stationary         GDP       -1.816596       -2.935001       0.3675       Non-stationary       D(GDP)       -3.067878       2.936942         0.0372       Stationary       AG-COR       -2.277486       -2.986225       0.1864       Non-stationary       D(AG-COR)       -8.009540       -2.986225         0.0000       Stationary       GHANA       @1ST DIFFERENCE         VARIABLES ADF CRITICAL Prob       REMARK       VARIABLE ADF       CRITICAL         Prob       REMARK       VALUE       AG-COR       -1.730242       -2.991878       0.4041       Non- Stationary       D(AG-COR)       -6.913871       -2.998064         0.0000       Stationary       AGTV       -0.363430       -2.935001       0.9060       Non-stationary D(AG-COR)       -6.913871       -2.998064         0.0000       Stationary       GDP       0.201797       -2.936942       0.9694       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0001       Stationary       GDP       0.201797       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       INCPI       -1.800851       -2.991878       0.3711       Non-stationary       D(INCPI)	0.0000 Stationary			
GDP       -1.816596       -2.935001       0.3675       Non-stationary       D(GDP)       -3.067878       2.936942         0.0372       Stationary         AG-COR       -2.277486       -2.986225       0.1864       Non-stationary       D(AG-COR)       -8.009540       -2.986225         0.0000       Stationary       GHANA       @IST DIFFERENCE         WARIABLES ADF CRITICAL Prob       REMARK       VARIABLE ADF       CRITICAL         Prob       REMARK       VALUE       VALUE         AG-COR       -1.730242       -2.991878       0.4041       Non-stationary D(AG-COR)       -6.913871       -2.998064         0.0000       Stationary       AGTV       -0.363430       -2.935001       0.9060       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0000       Stationary       GDP       0.201797       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       INCPI       -1.800851       -2.991878       0.3711       Non-stationary D(INCPI)       -6.977500       -2.998064	AGTV -1.734973 -2.935001 0	).4066 Non-stationa	ry D(AGTV) -6.721434	-2.936942
0.0372       Stationary         AG-COR -2.277486 -2.986225       0.1864       Non-stationary D(AG-COR) -8.009540       -2.986225         0.0000       Stationary       GHANA       GHANA         @LEVELS       @1ST DIFFERENCE         VARIABLES       ADF       CRITICAL       Prob       REMARK       VALUE         Prob       REMARK       VALUE       VALUE       VALUE         AG-COR -1.730242       -2.991878       0.4041       Non- Stationary D(AG-COR) -6.913871       -2.998064         0.0000       Stationary       AGTV       -0.363430       -2.935001       0.9060       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0000       Stationary       GDP       0.201797       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       INCPI -1.800851 -2.991878       0.3711       Non-stationary       D(INCPI) -6.977500       -2.998064	0.0000 Stationary			
AG-COR -2.277486 -2.986225 0.1864       Non-stationary D(AG-COR) -8.009540       -2.986225         0.0000       Stationary       GHANA         @LEVELS       @1ST DIFFERENCE         VARIABLES ADF CRITICAL Prob       REMARK VARIABLE ADF       CRITICAL         Prob       REMARK       VALUE         AG-COR -1.730242 -2.991878       0.4041       Non- Stationary D(AG-COR) -6.913871       -2.998064         0.0000       Stationary       AGTV       -0.363430       -2.935001       0.9060       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0000       Stationary       GDP       0.201797       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       INCPI -1.800851 -2.991878       0.3711       Non-stationary D(INCPI)       -6.977500       -2.998064	GDP -1.816596 -2.935001 0	.3675 Non-stationa	ury D(GDP) -3.067878	2.936942
0.0000         Stationary           GHANA         @1ST DIFFERENCE           VARIABLES         ADF         CRITICAL         Prob         REMARK         VARIABLE         ADF         CRITICAL           Prob         REMARK         VALUE         VALUE         VALUE           AG-COR         -1.730242         -2.991878         0.4041         Non- Stationary D(AG-COR)         -6.913871         -2.998064           0.0000         Stationary         AGTV         -0.363430         -2.935001         0.9060         Non-stationary D(AGTV)         -8.399392         -2.936942           0.0000         Stationary         GDP         0.201797         -2.936942         0.9694         Non-stationary D(GDP)         -5.440880         -2.936942           0.0001         Stationary         INCPI         -1.800851         -2.991878         0.3711         Non-stationary         D(INCPI)         -6.977500         -2.998064	5			
GHANA         @LEVELS         @1ST DIFFERENCE           VARIABLES ADF CRITICAL Prob         REMARK         VARIABLE ADF         CRITICAL           Prob         REMARK         VALUE         VALUE           AG-COR -1.730242         -2.991878         0.4041         Non- Stationary D(AG-COR)         -6.913871         -2.998064           0.0000         Stationary         AGTV         -0.363430         -2.935001         0.9060         Non-stationary D(AGTV)         -8.399392         -2.936942           0.0000         Stationary         GDP         0.201797         -2.936942         0.9694         Non-stationary D(GDP)         -5.440880         -2.936942           0.0001         Stationary         INCPI         -1.800851         -2.991878         0.3711         Non-stationary D(INCPI)         -6.977500         -2.998064	AG-COR -2.277486 -2.986225 0.1	1864 Non-stationary	y D(AG-COR) -8.009540	) -2.986225
@LEVELS         @1ST DIFFERENCE           VARIABLES ADF CRITICAL Prob         REMARK VARIABLE ADF         CRITICAL           Prob         REMARK         VALUE           AG-COR -1.730242         -2.991878         0.4041         Non- Stationary D(AG-COR) -6.913871         -2.998064           0.0000         Stationary           -2.998064           0.0000         Stationary           -2.936942           0.0000         Stationary          -2.936942         -2.936942           0.0000         Stationary           -2.936942           0.0001         Stationary           -2.998064	0.0000 Stationary			
VARIABLES         ADF         CRITICAL         Prob         REMARK         VARIABLE         ADF         CRITICAL           Prob         REMARK         VALUE         VALUE         VALUE           AG-COR         -1.730242         -2.991878         0.4041         Non- Stationary D(AG-COR)         -6.913871         -2.998064           0.0000         Stationary         AGTV         -0.363430         -2.935001         0.9060         Non-stationary D(AGTV)         -8.399392         -2.936942           0.0000         Stationary         GDP         0.201797         -2.936942         0.9694         Non-stationary D(GDP)         -5.440880         -2.936942           0.0001         Stationary         INCPI         -1.800851         -2.991878         0.3711         Non-stationary         D(INCPI)         -6.977500         -2.998064	CHANA			
Prob         REMARK         VALUE         VALUE           AG-COR -1.730242         -2.991878         0.4041         Non- Stationary D(AG-COR) - 6.913871         -2.998064           0.0000         Stationary         -         -         -2.998064           0.0000         Stationary         -         -         -2.998064           0.0000         Stationary         -         -         -2.936942           0.0000         Stationary         -         -2.936942         -2.936942           0.0001         Stationary         -2.991878         0.3711         Non-stationary         D(INCPI)         -6.977500         -2.998064	UIIANA			
VALUE         VALUE           AG-COR -1.730242         -2.991878         0.4041         Non- Stationary D(AG-COR) - 6.913871         -2.998064           0.0000         Stationary         -2.935001         0.9060         Non-stationary D(AGTV)         -8.399392         -2.936942           0.0000         Stationary         -         -         -2.936942         -2.936942           0.0000         Stationary         -         -         -2.936942         -2.936942           0.0001         Stationary         -         -         -2.936942         -2.936942           0.0001         Stationary         -         -         -2.936942         -2.936942           0.0001         Stationary         -         -2.936942         -2.936942         -2.936942           0.0001         Stationary         -         -2.936942         -2.936942         -2.936942           0.0001         Stationary         -         -2.998064         -2.998064			@1ST DIFF	ERENCE
AG-COR -1.730242       -2.991878       0.4041       Non- Stationary D(AG-COR) -6.913871       -2.998064         0.0000       Stationary       -2.935001       0.9060       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0000       Stationary       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       -2.991878       0.3711       Non-stationary D(INCPI)       -6.977500       -2.998064	@LEVELS	Prob REMARK		
0.0000       Stationary         AGTV       -0.363430       -2.935001       0.9060       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0000       Stationary       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       -2.991878       0.3711       Non-stationary D(INCPI)       -6.977500       -2.998064	@LEVELS VARIABLES ADF CRITICAL	Prob REMARK		
AGTV       -0.363430       -2.935001       0.9060       Non-stationary D(AGTV)       -8.399392       -2.936942         0.0000       Stationary       -0.201797       -2.936942       0.9694       Non-stationary D(GDP)       -5.440880       -2.936942         0.0001       Stationary       -0.36311       Non-stationary       D(INCPI)       -6.977500       -2.998064	@LEVELS VARIABLES ADF CRITICAL Prob REMARK	Prob REMARK		CRITICAL
0.0000       Stationary         GDP       0.201797       -2.936942       0.9694       Non-stationary       D(GDP)       -5.440880       -2.936942         0.0001       Stationary       INCPI       -1.800851       -2.991878       0.3711       Non-stationary       D(INCPI)       -6.977500       -2.998064	@LEVELS VARIABLES ADF CRITICAL Prob REMARK VALUE		VARIABLE ADF	CRITICAL VALUE
GDP       0.201797       -2.936942       0.9694       Non-stationary       D(GDP)       -5.440880       -2.936942         0.0001       Stationary       INCPI       -1.800851       -2.991878       0.3711       Non-stationary       D(INCPI)       -6.977500       -2.998064	@LEVELSVARIABLES ADF CRITICALProb REMARKVALUEAG-COR -1.730242 -2.991878 0.		VARIABLE ADF	CRITICAL VALUE
0.0001 Stationary INCPI -1.800851 -2.991878 0.3711 Non-stationary D(INCPI) -6.977500 -2.998064	@LEVELSVARIABLES ADF CRITICALProb REMARKVALUEAG-COR -1.730242 -2.991878 0.0.0000 Stationary	.4041 Non- Stationar	VARIABLE ADF y D(AG-COR) -6.91387	CRITICAL VALUE 1 -2.998064
INCPI -1.800851 -2.991878 0.3711 Non-stationary D(INCPI) -6.977500 -2.998064	@LEVELSVARIABLES ADF CRITICALProb REMARKVALUEAG-COR -1.730242 -2.991878 0.0.0000 StationaryAGTV -0.363430 -2.935001 0.9	.4041 Non- Stationar	VARIABLE ADF y D(AG-COR) -6.91387	CRITICAL VALUE 1 -2.998064
	@LEVELSVARIABLES ADF CRITICALProb REMARKVALUEAG-COR -1.730242 -2.991878 0.0.0000 StationaryAGTV -0.363430 -2.935001 0.90.0000 Stationary	.4041 Non- Stationar 9060 Non-stationary	VARIABLE ADF y D(AG-COR) -6.91387 y D(AGTV) -8.399392	CRITICAL VALUE 1 -2.998064 -2.936942
	@LEVELS           VARIABLES ADF CRITICAL           Prob REMARK           VALUE           AG-COR -1.730242 -2.991878 0.           0.0000 Stationary           AGTV -0.363430 -2.935001 0.9           0.0000 Stationary           GDP 0.201797 -2.936942 0.9	.4041 Non- Stationar 9060 Non-stationary	VARIABLE ADF y D(AG-COR) -6.91387 y D(AGTV) -8.399392	CRITICAL VALUE 1 -2.998064 -2.936942
0.0000 Stationary	@LEVELS           VARIABLES ADF CRITICAL           Prob REMARK           VALUE           AG-COR -1.730242 -2.991878 0.           0.0000 Stationary           AGTV -0.363430 -2.935001 0.9           0.0000 Stationary           GDP 0.201797 -2.936942 0.           0.0001 Stationary	.4041 Non- Stationar 9060 Non-stationary .9694 Non-stationary	VARIABLE ADF y D(AG-COR) -6.91387 y D(AGTV) -8.399392 y D(GDP) -5.440880	CRITICAL VALUE 1 -2.998064 -2.936942 -2.936942
0.0000 Stationary	@LEVELS VARIABLES ADF CRITICAL Prob REMARK VALUE AG-COR -1.730242 -2.991878 0. 0.0000 Stationary AGTV -0.363430 -2.935001 0.9 0.0000 Stationary	.4041 Non- Stationar 9060 Non-stationary	VARIABLE ADF y D(AG-COR) -6.91387 y D(AGTV) -8.399392	CRITICAL VALUE 1 -2.998064 -2.936942

**Source:** *Researchers' Computation* (2024)

From the unit root test result presented, we observed that at levels, all the variables were non stationary at 5% significance level in both countries except for LNCPI which was stationary at level in Nigeria. Also, all the variables were stationary at first difference in both countries. This leads to testing for the long run co-integrating relationship among the variables. This test is presented below.

### **Co-integration Test Result**

After establishing the stationarity of the variables at first difference and lag length structure, the study proceeded to test for co-integration among the variables. The ARDL Bounds Co-integration test was employed for this purpose. This test is reactive to the length of the lag; therefore, in order to reduce misleading or spurious results, the optimal lag length was



automatically generated by the system and used as generated. The summary of the result of the Co-integration test is presented in Table 4.3.

Variables	Coef	T-stat	P-valu	e	F-stat		Upper bound
NIGERIA							
INCPI	-0.456212	3.32	3615	0.0035	i	34.06380 *	<
4.66							
AGTV	3.060734	3.3	13322	0.0129			
GDP	-0.218311	-6.7	21191	0	0.0003		
AG-COR	-0.881622	-3.1	19606	0	0.0169		
С	-5.480388	-0.5	520117	0	0.6190		
GHANA							
INCPI	8.142530	3.492447	0.1775	5		215.6018	332*
4.66							
AGTV	0.612980	26.69498		0.0238			
GDP	-0.436387	-22	.04510	0	0.0289		
AG-COR	-2.40	6577	-13.02	830		0.0488	
С	-2.143754	-1.15	0512	0.4555			
а D	1 10	(202	1)				

## **Table 4.3: ARDL Bounds Co-integration Test**

**Source:** *Researchers' Computation* (2024)

Table 4.3 above shows the results of the ARDL Bounds Test performed on the variables for both Nigeria and Ghana. From the results above, Nigeria and Ghana are significant at 1% with their F-stat value (34.06380) and (215.601832) respectively being higher than the upper bounds value at 1% (4.66). This shows that there exists co-integration between tax revenue and the economic development moderated by corruption in these countries.

Tracing the long run effect of the independent variable on GDP, aggregate tax revenue (AGTV) in both Nigeria and Ghana had a positive and significant long run effect on GDP, implying that a one percent increase in the value of aggregate tax revenue will lead to 3.06% and 0.61% increase in GDP in Nigeria and Ghana respectively, while Corruption (CPI) shows a negative but significant effect on GDP of both countries. Corruption also had a negative and significant effect on the relationship between tax revenue and economic development in both countries, implying that a one percent change in Corruption (CPI) will lead to 0.88% and 2.4% decrease in the effect of aggregate tax revenue on GDP of Nigeria and Ghana respectively. The outcome of the study confirms the study of Mohammed et al. (2020) and Calabrese and Ecyckmans (2020).



# Short Run relationship

The short run relationship among the variables was ascertained using the ARDL Error correction regression. The result of the short run effect between the aggregate tax revenue and economic development in Nigeria and Ghana is as presented in Table 4.4 below.

Variables	Coef	t-stat	P-value	) )	
NIGERIA					
LNGDP(-1)	0.781689	)	24.06607	0.0000	
LNAGTRV	3.060734	3.31	3322	0.0129	
LNAGTRV(-1)	-2.018990		-2.219476	0.0619	
LNCORRIDEX	7.523163		3.323615	0.0127	
LNCORRIDEX(-1)	-4.728627		-2.067441	0.0775	
INAG_INCORR	-0.881622		-3.119606	0.0169	
INAG_INCORR(-1)	0.587841		2.142337	0.0694	
С	-5.480388	-(	).520117	0.6190	
R-squared	0.999652				
Adjusted R <sup>2</sup>	0.998906				
Prob(F-Stat)	0.000000				
D-W stat	3.192308				
Variables	Coef	t-stat	P-val	ue	
GHANA					
LNGDP(-1)	2.760526	)	14.55288	0.0437	
LNAGTRV	2.898671		13.77652	0.0461	
LNAGTRV(-1)	-3.723642		-12.97679	0.0490	
LNCORRIDEX	83.85645		12.95232	0.0491	
LNCORRIDEX(-1)	-54.57945		-10.37302	0.0612	
INAG_INCORR	-5.541346		-13.02830	0.0488	
INAG_INCORR(-1)	3.559417		10.56594	, 0.0601	
С	-4.936188		-1.150515	0.4555	
R-squared	0.999997				
Adjusted R <sup>2</sup>	0.999949				
Prob(F-Stat)	0.005484				
FIOD(F-Stat)	0.005101				

**Source:** *Researchers' Computation* (2024)

Table 4.4 above shows the results of the ARDL regression performed on the variables for both Nigeria and Ghana. From the results above, in both countries, the coefficient of the error correction term or co-integrating equation is negative but statistically insignificant. This result explains that the speed of conversion to the stable path of long run equilibrium is 5.48% in Nigeria and 4.93% in Ghana, implying that the short run disequilibrium is reversed in one year.

Tracing the short run effect of aggregate tax revenue sources on GDP shows that aggregate tax revenue affects economic development in the short run positively and significantly in both Nigeria and Ghana. This implies that a percent increase in aggregate tax revenue in Nigeria will lead to a 3.06% rise in GDP and will reduce by 0.88% when there is a one percent increase



in the rate of corruption in aggregate tax revenue generation and utilization; in the same vein, a percent increase in aggregate tax revenue in Ghana will lead to a 2.89% increase in GDP and will decrease by 5.54% when there is a one percent rise in the rate of corruption in aggregate tax revenue generation and utilization. The outcome of the study confirms the studies of Abomaye-Nimenibo et al. (2018) and Yahaya and Yusuf (2019), and contradicts the study of Uket et al. (2020).

Corruption is also found from the result to have reduced significantly the effect of aggregate tax revenue on economic development in the short run in both countries, implying that one percent change in corruption will lead to 0.88% and 5.54% reduction in the effect of aggregate tax revenue on GDP in Nigeria and Ghana respectively in the short run. The study confirms the study of Saleh and Daura (2021).

Also, from Table 4.4, the overall ARDL regression given by the P-value of the F-statistics (0.0000) in Nigeria and (0.005484) in Ghana are highly significant at 5% level of significance while the models are free from autocorrelation with Durbin Watson of 3.19 in Nigeria and 2.93 in Ghana, which are a little above 2.0. The  $R^2$  values of 0.999 in both Nigeria and Ghana imply that 99.9% of the variation in the dependent variable is explained by the independent variable, while the remaining 0.1% is accounted for by the error term in both models.

# **Post Estimation/Diagnostic Tests**

Several diagnostic test techniques were deployed, namely Heteroskedasticity ARCH test and the Ramsey RESET test. The results of these diagnostic tests are presented in Table 4.5 below.

Table 4.5. Tost Estimation and Diagnostic Tests					
Tests	Nigeria	Ghana			
Hect ARCH	0.0398	0.5184			
Ramsey Reset	0.8580				
Source: Research	hers' Computation (2024)				

<b>Table 4.5: Post Estimation and Diagnostic</b>	Tests
--	-------

**Source:** Researchers' Computation (2024)

Table 4.5 shows the results of the post estimation and diagnostic tests conducted. From the results above, the diagnostic test confirms the reliability and strength of the estimations for policy making. However, the ARCH test of Nigeria proved otherwise although it was strengthened by the outcome of the Ramsey Reset Test for Nigeria.

# **CONCLUSION AND RECOMMENDATIONS**

The major aim of the study was to assess the influence of aggregate tax revenue on economic development of Nigeria and Ghana and also to examine the mediating role of corruption on the relationship between aggregate tax revenue and economic development of Nigeria and Ghana. From the result of the study above, aggregate tax revenue has a positive and significant influence on the Gross Domestic Product (GDP) of both Nigeria and Ghana in both the long and short run. This implies that the aggregate tax revenue collected by both Nigeria and Ghana for the periods under review has both short and long run effects on their economic development.

The study also shows that corruption in the management and utilization of the tax revenue waters the influence of tax revenue on the economic development of both countries. This means



that when corruption is introduced in the management of tax revenue collected by these countries, the generated tax revenues have a declining impact on economic development in both countries. Based on the above study outcomes, the study recommends that: The respective governments of both Nigeria and Ghana should put in place adequate fiscal measures to ensure that revenue generated from taxes are effectively utilized to develop their economies. They should also find the need to tackle corruption in the process of executing projects by ensuring that activities of bad and corrupt leaders are closely monitored by further strengthening the hands of the anti Graft Agencies like the Economic and Financial Crimes Commission (EFCC) and ICPC, which have the political will to persecute corrupt leaders and managers of public funds.

The scope of the study was limited to only Nigeria and Ghana, particularly in the area of data collection, analysis and empirical discoveries. As such, the study was unable to broaden the data scope to her liking by covering the entire African countries. In consideration to this limitation, the study suggests a similar study that accommodates data from the entire African countries or other continents to see possible effects that should be considered in further studies.

# REFERENCES

- Abiloro, T.O., Olawole, A., Adeniran, T.E. (2019). Corruption, income inequality, and economic development in Nigeria, *International Journal of Academic Research in Accounting, Finance and Management Sciences* 9 (4): 304-319.
- Abomaye-Nimenibo, W.A.S., Michael, J.E.M. & Friday, H.C. (2018), An empirical analysis of tax revenue on economic growth in Nigeria from 1980-2015, *Global of human* social science, political science, 18(3), 8-40.
- Abomaye Nimenibo, W.A.S. (2017). The concept & practice of taxation in Nigeria, Port Harcourt, Nimehas Publishers.
- Adegbie, F.F, Nwaobia, A.N. & Osinowo, O. (2020), Non-oil tax revenue on economic growth and development in Nigeria, *EJBMR*, *European Journal of Business and Management Science Research*, 5(3), 1-10.
- Akwe, J. (2014). Impact of non-oil tax revenue on economic growth: The Nigeria perspective, *European Union of social sciences*, 22(2), 1-10
- Akanni, S. O., & Ogunyemi, O. A. (2020), Corruption and economic growth: Evidence from Nigeria. *Journal of Economic and Sustainable Development*, 11(10), 26-33.
- Anyaduba, J., & Aronmwan, E. (2015), Taxes and infrastructural development in Nigeria, *Nigerian Journal of Banking, Finance and Entrepreneurship Management*, *1*(1), 14-28.
- Aworinde, O.B., & Akinfemi, A. (2020), Corruption and economic growth in Nigeria: Empirical evidence. *Journal economics and sustainable development*, 11(5), 1-11.
- Ben, E. U., Udo, E. S. and Abner, I. P. (2018), Effect of corruption on economic sustainability and growth in Nigeria, *International Journal of Economics, Commerce and Management* 6(4), 657-669.
- Calabrese, R., & Eyckmans, J. (2020).corruption, tax evasion and optimal taxation in developing countries, *International tax and public finance*, 27(3), 586-616.
- Edori D. S, Des-Wosu, Chika & Chuku, Ukehinakachi (2022), The influence of tax revenue on economic development in Nigeria, *European Journal of Accounting, Finance and Investment*, 8(10).



- Ehiriudu, J.A, Ugbor, R.O & Abia, O.P (2020), Impact of taxation as an aid to economic development in Nigeria: problems and prospects. (A Study of South East States in Nigeria), *European Journal of Business and Management*, 12(17).
- Ekokeme, T. T., Ghalam, E. P. & Nelson, J. (2018), Effect of corruption on corporate financial performance: a case study of the banking industry in Nigeria. *International journal of latest research in humanities and social sciences*, 1(8), 96-119.
- Kalaš, B., Pjanić, M., Milenković, N., & Andrašić, J. (2016). Comparative Analysis Paying Taxes Indicator: Evidence from Western Balkans Countries and Turkey. *International Journal of Management, Accounting and Economics*, 3(4), 222-232.
- Mohammed, J.I., Karimu, A., Fiador, V.O., Abor, J.Y. (2020). Oil revenues and economic growth in oil-producing countries: The role domestic financial markets. *Recourses policy*, 69 101832.
- National Tax Policy (NTP) (2020) finance policies, FIRS, Abuja, Nigeria.
- Nmesirionye, J.A., Jones, E., & Onuche, E.V.S. (2019), Impact of indirect taxes economic performance of Nigeria, *Journal of Accounting, Finance and Investment*, 5(4), 32-39.
- Ogbonna, G., & Appah, E. (2016), Effect of tax administration and revenue on economic growth in Nigeria, *Research journal of finance and accounting*, 7(13), 49-58.
- Ogbonna, E.N., & Eke, C.E. (2020). The impact of corruption on economic growth in Nigeria, Unpublished undergraduate project, department of economics.
- Odubunmi, A. S. & Agbelade, L.I. (2014). Corruption and economic growth in Nigeria, *Journal of economics and sustainable development*, 5(6), 45-46.
- Okon, J. & Okon, J.U. (2017), Influence of corruption on economic development. *Journal of public policy and administration*, 1(1), pp. 10-21.
- Oluwaseun, A., & Amoo, R. (2018), Corruption, Tax Revenue and Economic Growth in Nigeria, *International Journal of Social Sciences and Management Research*, 4(3), 22-33.
- Omedero, C. O. (2019). The Implication of Corruption on Economic Progress of Nigeria, *Review of European Studies; Vol. 11* No. 2, <u>https://doi.org/10.5539/res.v11n2p110.</u>
- Revenue Statistics in Africa (2020), Retrieved from <u>http://www.oecd.org/tax/revenue-statistics-in-africa-9789264253308- enfr.htm</u>
- Saleh, A. S., & Daura, I. S. (2021), The Effect of Corruption on Tax Revenue in Nigeria, *Journal of Accounting and Financial Management*, 7(1), 1-12.
- Salmon Valley Business Innovation Centre, (2014), what is economic development? Retrieved from <u>www.subic.com/node/2</u>
- Transparency International (TI) (2022), Corruption perception index, how does countries measure up? https://www.transparency.org/en/cpi/2022
- Uket E. E, Wasiu A. A, & Etim N. E (2020). Impact of Tax Revenue on Economic Development in Nigeria, *International business research*, 13(6).
- Yahaya, K.A. & Yusuf, K. (2019), Impact of non-oil tax revenue on economic growth in Nigeria. *The journal of accounting and management*, 9(2), 56-69.
- Zucman, G. (2014). Taxing across borders: tracking personal wealth and corporate profits, *Journal of economic perspectives*, 28(4), 121-148.