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The Impact of Corruption on Economic Growth of Nigeria: A New Evidence

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Abstract: In most African countries, including Nigeria, lack of quality public sector service, disobedience to the rule of law, and poor institutional frameworks are prevalent, and these create an avenue for corruption. Hence, this study investigates the impact of corruption on Nigerian economic growth from 1999 to 2021. While previous researchers concentrated on the causes of corruption and its transmission channels to the economy, the current study focuses on its impacts. Applying the autoregressive distributed lags model, findings show that a 1% increase in corruption decreases the economic growth rate by 0.29%. Among other growth determinants tested in this study, population reveals a positive impact on the economic growth of Nigeria. Thus, the empirical outcome shows that a 1% increase in population increases the country's economic growth by 3%. This is true because population has the tendency to drive aggregate demand and, thus, increase growth. The policy recommendations of the paper are contained in the body of the work.

Keywords: Corruption, Economic Growth, Autoregressive Distributed Lags, Population
JEL Classification: *O40, O50, D73, P48*

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1. Introduction

Good governance and little or no corruption are important for maximizing a country's resources and achieving the macroeconomic goal of economic growth. Policymakers and scholars in the field of economic growth have empirically concluded that citizens around the world can only migrate toward better economic development when there is significant growth in every sector of the economy with little or no corruption. More so, the empirical facts have also demonstrated that backward trends in economic progress, in particular in developing countries like Nigeria, are due to mismanagement of resources arising from corruption (Folarin, 2021). In essence, corruption leads to waste and inequality in income distribution, therefore reducing citizens purchasing power, parity, and standard of living, especially when this is aggravated. On these premises, many studies have intensified efforts to study the effects of corruption on a country`s economic growth, yet no consensus has been reached on this matter, especially in less developed countries. In the quest for further research as to the long-run effect of corruption on economic growth, scholars are making empirical contributions to arrive at logical conclusions on this thematic issue.

Across the globe, many researchers have made a frantic effort to investigate the exact factors that promote or cause corruption, but there has not been a consensus on the long-run effect of corruption on economic growth, especially in developing countries where corruption is rampant. For instance, Rauch and Evans (2000)

opined that the quality of public sector service is the source of corruption, while Van Rijckeghem and Weder (1997) argued that public-sector wage differentials drive the level of corruption. Leite and Weidmann (1999) have concluded that the weakness of laws and legislation, trade openness, and the level of competition are the major factors promoting corruption in most developing countries. In light of these, some scholars concluded that corruption has a negative effect on the growth of countries (see Shleifer and Vishny 1993; Murphy, Shleifer, and Vishny 1993; Mauro 1995; Tanzi and Davoodi, 1998; Wei, 1997).

Others advocated the necessity of corruption as a tool for dismantling unnecessary bureaucratic systems, particularly in the public sector. Thus, efficiency in monetary exchange, market mechanisms, and economic activities promotes rapid efficiency in economic activities (see Lui, 1985**;** Beck and Maher, 1986; Ali, 2015). To this end, the existence of corruption can be linked to inefficient governance and inequality in the allocation of public funds. Hudson and Jones (2008) suggested that, in a country where democratic systems of government are well established and coupled with good governance, corruption is less likely to dominate the activities within the environment. However, the possibility of greater corruption is more likely in a country where democracy, the rule of law, and institutions are not efficiently managed. As a result of the divergence from the long-run effect of corruption on economic growth, particularly in Nigeria, this paper presents new evidence by examining the long-run effect of corruption practices on the Nigerian economy.

The study is divided as follows: Section 1 deals with the introduction. Section 2 presents the literature review. Section 3 presents the methodology, while Section 4 deals with the analyses of the estimated results. Section 5 presents the conclusion and policy recommendations.

2. Literature Review

The empirical evidence in the literature has revealed a variety of outcomes regarding the relationships between corruption and economic growth. Some scholars have opined that corruption propels the growth of a nation (Leff, 1964; Acemoglu and Verdier, 1998). They believed that through corruption mechanisms, administrative bottlenecks towards speedy private business and government transactions are broken, and this provides a platform for business people to efficiently transact and make huge success. From this angle, corruption acts as a lubricant and engine of economic growth. On the other hand, even when growth is assured, corruption impedes efficient income distribution because a large portion of government resources are channeled to the big shots (contractors), resulting in the country's resources going to unproductive sectors and low development. Moreover, corruption can lead to less efficient innovators winning undeserved contracts meant for the most highly innovative contractors. Similarly, in private establishments, those contractors with the means of paying bribes grow their businesses more than those that cannot raise money to pay bribes, and in most cases, both government and private jobs would be done inefficiently. This reduction in contracting and business opportunities may result in wealth inequality, frustration, and socioeconomic instability, as seen in Nigeria and other African countries.

In his empirical studies on the relationships between business transactions (investment) and corruption, Mauro (1995) investigates 58 countries and concludes that the effect of corruption on the ratio of investment to gross domestic product (GDP) is negative and significant. This implies that corruption reduces economic growth. Though the transmission channel through which this occurred was omitted from his study, similar to the Mauro study, Mo (2001) investigated the relationship between corruption and economic growth. Using the ordinary least squares estimation method to study a set of panel countries, he found out that political instability and corruption negatively and significantly affect economic growth. According to Mo, where there is political stability, corruption may be insignificant.

Gyimah-Brempong (2002) examined the impact of corruption on economic growth and income distribution in Africa. By using a dynamic panel data estimator, corruption was found to be a negative determinant of economic growth. In its indirect form, the effect of corruption was obvious through the falling rate of physical capital. More so, corruption contributed to wide disparities in income distribution in the region. Results further show that corruption affects mostly the poor, who are characterized by low income and zero or little savings. The wealthy use their physical capital to bribe and influence contracts, making them easy targets for corrupt practices.

In an effort by Drury, Krieckhaus, and Lusztig (2006) to empirically investigate what jeopardizes the growth of both developed and developing countries, they conducted research for 100 countries by using the

panel-corrected standard error estimation method. This method allows the study to correct any bias that may inflate the significance measures of variables or data employed in the estimation techniques. They divided their study into two empirical parts. The first empirical part analyzed the impact of corruption on periods of democracy, and the second part dealt with periods of non-democracy. Findings show that democracy indirectly benefits economic growth because the electoral machinery hinders corrupt practices that ought to have been performed during these periods of the political process. In other words, during periods of non-democracy, corruption has a significant and negative effect on economic growth. On these premises, further research is required to empirically test these outcomes by Drury, Krieckhaus, and Lusztig and other researchers in the literature with time series data and in a developing country like Nigeria where corruption is rated very high. In 2019, Nigeria was rated as the 146th most corrupt country out of 198 countries captured by Transparency International's Corruption Perception Index (2019).

Podobnik et al. (2008) investigated the fluctuations in the corruption perception index on economic growth and foreign direct investment for all the countries in the world from 1994 to 2004. The study introduces "honesty per dollar" as a new relative measure of corruption. On average, the study found that an increase in the corruption perception index leads to an above-1% increase in per capita gross domestic product (GDP) growth rates. More so, a relative change in the corruption percept ion index causes a proportional change in the level of foreign direct investment. According to the findings of Podobnik et al., the effect of bureaucracies is relaxed enough for foreign investors to penetrate with little or no friction. Sometimes, long administrative procedures may slow economic activity. Similarly, De Vaal and Ebben (2011) studied the impact of bureaucratic corruption on economic growth. Two layers of models were constructed in their work. Firstly, the corruption-economic growth relationship was considered where institutions were absent. Second, when institutions were present, there was a relationship between corruption and economic growth. They discovered that corruption has a negative impact on economic growth, particularly when some individuals are positioned to steal public goods, as is the case in most African countries, where people seek political power to enrich themselves rather than to serve others. But in a country where institutions are very efficient, corruption tends to have a positive effect on economic growth, according to them.

Ijewereme (2015) examined the theoretical and empirical analysis of the effects of corruption on the Nigerian economy. He used the low-risk, high-reward theories to explain why corruption is very persistent in Nigeria despite various institutional frameworks put in place right from the inception n (1999) of democracy in the country. The article concluded that corruption is prevalent in the public sector and that its causes include societal pressure, tribalism, nepotism, low risk/high benefit, and so on. To buttress these findings, the Independent Corrupt Practices and Other Related Offenses Commission stated that "at the time the civilian administration came into power, corruption in Nigeria had indeed become a full-blown cancer." In 1999, the Transparency International Corruption Perception Index rated Nigeria the second-most corrupt nation in the world (ICPC, 2020). Despite the activities of the Economic and Financial Crimes Commission (EFCC) in Nigeria, individuals, firms, and other public sectors still engage in bribery and corruption. For instance, "on Thursday, May 21, 2020, the Sokoto State High Court granted bail to two Chinese: Meng Wei Kun and Xui Kuoi, who were being prosecuted by the Economic and Financial Crimes Commission (EFCC) for offering N100 million (hundred million naira) in bribes to the Sokoto Zonal Head of the EFCC, Abdulahi Lawal" (EFCC, 2020).

Rotimi et. al. (2022) examined the effect of corruption on the economic growth of Nigeria from 1995 to 2019. Using both Johansen cointegration and vector error correction econometric techniques, findings show that there is an equilibrium relationship between corruption and output growth. Also, a one-way and two-way causal relationship occurred among the variables used in the study. Since corruption is causing a backward trend in Nigeria and economic activities are badly affected, the study recommended that governments should further strengthen the anti-corruption institutions in the country because the institutions enforcing the laws related to economic and financial crises are expected to be saddled with men and women of integrity that can ensure sanity in the system. What drives the anti-corruption crusade is beyond the laws, but human capital is paramount before the prevalence of corruption can be reduced. Despite the huge natural and qualitative human resources endowed in Nigeria, the country is still struggling to find its position among the economically viable countries of the world due to the attitude of the people towards bribery and corruption.

3. Methods

1.1. Analytical framework

In investigating the input-output relationship in the growth determinants, the study adopts a Cobb-Douglass production function framework, $Q = Af(K, L)$, where Q is the total output, A is the total factor productivity, K is the physical capital, and L is the labour. Finding the total differentiation of the total output, the result is:

$$dQ = f dA + A(f_K dK + f_L dL) \quad (1)$$

Similar to Solow (1957) and Mo (2001), a decomposed equation form of Eq. (1) will give:

$$\frac{dQ}{Q} = \frac{dA}{A} + Af_K \frac{dK}{Q} + \frac{f_L L}{f} \frac{dL}{L} \quad (2)$$

Eq. (2) is tailored along the Schumpeter (1939) theory of economic development where certain factors stand as growth components and others as economic development components, respectively. In Eq. (2), the growth of physical capital (K) and labour (L) represent the growth components whereas the total factor productivity (A) indicates the economic development. Advancement in technology represents the driving mechanism for total factor productivity growth in the Cobb-Douglass production function. According to Levine and Renelt (1992), four variables are very important in determining the extent of productivity growth rate: investment, population growth rate, human capital, and initial real GDP per capita. Based on the four variables identified by Levine and Renelt (1992), corruption is added to Eq. (3) in order to capture the effect of social changes on growth. Hence, the growth rate equation can be written as:

$$GDPPC_r = f(COR, HUM, POP, GCF) \quad (3)$$

For the purpose of estimation, the study adopts an autoregressive distributed lags (ARDL) model as specified in Equation (4) below:

$$GDPPC_t = \beta_0 + \beta_1 COR + \beta_2 HUM + \beta_3 POP + \beta_4 GCF + \sum_{t=1}^{\rho} \alpha_{1i} \Delta COR + \sum_{t=1}^{\rho} \alpha_{2i} \Delta HUM + \sum_{t=1}^{\rho} \alpha_{3i} \Delta POP + \sum_{t=1}^{\rho} \alpha_{4i} \Delta GCF + \varphi ECT_{t-1} \quad (4)$$

where,

- $GDPPC_t$ is the GDP per capita proxy for economic growth
- COR is an index for corruption,
- HUM is the human capital proxy by School enrolment, secondary (% gross)
- POP is the population
- GCF is the gross capital formation proxy for investment
- $\beta_1 - \beta_4$ are the coefficients of the independent variables
- ECT_{t-1} is a lag of error correction term

The expected sign of the corruption index on growth is negative because, in Nigeria, corruption is becoming the norm in almost all sectors. Also, in most previous works in the literature, results showed that corruption impairs economic growth. For example, the work of Mo (2001) revealed that corruption reduces the rate of growth. The expected sign of human capital stock is positive because quality training, imitation, educational globalization, and improvement in modern educational technologies can bridge the knowledge gap between human capital in developed and less developed countries. Also, through the training of available manpower and worker mobility, there could be spillover effects from one firm to another. A large population

will provide a large market for output; hence, a positive sign is expected. Depending on the gravity and return on capital of an investment in and out of the country, it is expected that a positive outcome will occur between gross capital formation and economic growth.

1.2. Data sources

The corruption data was extracted from Transparency International Corruption Perception Index while GDP per capita, human capital, population, and gross capital formation were sourced from the World Bank Development Indicators database (2022).

4. Results and Discussion

1.1. Unit root test results

In order to empirically estimate macroeconomic data without generating the issue of spurious results in economic analysis, it always advisable to check for the stationary of the data used. This approach enables the researcher to have an insight to the best econometric technique to be employed in the data estimation. According to Afriyie et. al., (2020), non-stationary time series exhibits trends, seasonal variations which make models not reliable. By using stationary data, a well-informed conclusion and good policy decision can be made. Therefore, the study employed the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The advantages of using the two tests are: The ADF is a parametric test and suitable to test data with serial correlation. More so, it can handle more complex models than just Dickey-Fuller unit root test. While the Phillips-Perron unit root is a non-parametric test that may not necessarily require the lagged parameter to be included in the model. Also, the PP test is very robust to handle any form of heteroskedasticity in the stochastic term. Table 4.1 presents the results of both the ADF and PP unit root tests used in the study. In both the ADF and PP unit root tests, all the variables are significant at 5 percent statistical level. This implies that these series are suitable to be estimated using autoregressive distributed lags (ARDL) or Johansen cointegration test to establish the long run association among the variables.

Table 4.1. Unit root test results

Augmented Dickey-Fuller (ADF)			Phillips-Perron (PP)	
Variable	**Level**	**1st difference**	**Level**	**1st difference**
GDPPC	0.897(0.12)	0.178(0.011)*	0.907(0.810)	0.178(0.001)*
COR	0.917(0.09)	0.991(0.020)*	0.911(0.191)	0.118(0.021)*
HUM	0.781(0.11)	0.241(0.012)*	0.881(0.111)	0.708(0.032)*
POP	0.817(0.23)	0.671(0.001)*	0.822(0.912)	0.189(0.011)*
GCF	0.767(0.72)	0.878(0.031)*	0.967(0.203)	0.981(0.021)*

Note: The values asterisk in brackets are the probabilities values at 5% significant statistical level

4.2 The ARDL error correction and F-Bounds test results

Table 4. 2 presents the ARDL error correction and F-Bounds test results. The error correction result indicates the speed of adjustment in the short-run to the long-run equilibrium. For instance, the error correction value of -0.17 with the probability value of less than 5% significant level indicates that about 17% of the errors in the short run can be corrected in the long run. While the F-Bounds test result shows the long run association among the series used in this study. According to Pesaran et al. (2001), when the result of the F-statistic value at 5% significant level is greater than both the critical upper and lower bound test results, then, the null hypothesis of there is co-integration can be accepted, otherwise, it is rejected.

Table 4. 2. ARDL error correction and F-Bounds test results

Error Correction Regression Result				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CoinEq(-1)	-0.17	0.14	-835	0.00
F-Bounds Test				

Test Statistic	Value	Significant	Lower Bound I(0)	Upper bound I(1)
F-statistic	6.98	5%	2.39	3.38

4.3 Analysis of the ARDL estimation results

The result in Table 4.3 shows that corruption is a major cause of low or negative economic growth in Nigeria. At 5% significant level, corruption figure indicates -0.29. This implies that a 1% increase in corruption level reduces Nigeria economic growth by 0.29 percent. This result correlates with the high level of corruption in Nigeria. This is corroborated with Transparency International Corruption Perception Index results as Nigeria ranked 146th, 149th, and 154th out of 180 countries ranked in 2019, 2020, and 2021, respectively. The outcome of the finding supports the result of Gyimah-Brempong (2002) who also found that corruption deters economic growth in Africa. The results further show that neither human capital nor gross capital investment is responsible for growth in Nigeria. Nigeria population attested to the little growth that occurred in the recent years. Outcome of the result shows that population is positive and statistically significant at 5% level. At 1 percent increase in population, economic growth increases by 3 percent. This high population in the country is a major market driven force for the investors to penetrate and invest in Nigeria. The result supports the work of Khan et. al. (2021**)** that concluded that population promotes economic growth, especially in the long run.

Similarly, in the short-run, corruption reveals a negative impact on economic growth. Although, the impact is not statistically insignificant to explain the direction of growth. Outcome of population in the short-run reveals the same positive and significant result. A 1% increase in population promotes economic growth by 0.02%. In Nigeria, the importance of population is enormous because high population results to increase in aggregate market demand especially when the purchasing power parity of people is high. Foreign investors consider market size before moving their resources to a particular environment. Although, high population may not be the sufficient condition for an enhanced economic growth because country where per capita income is relatively low, there might not be a significant on economic growth.

Table 4.3. ARDL estimation results

Long-run results				
Dependent Variable = $GDPPC_r$				
Variable	Coefficient	Std. Error	T-Statistic	Prob-Value
Long-run results				
Constant	−0.14	0.01	−1.05	0.18
COR	−0.29	0.02	1.13	0.02*
HUM	0.56	0.08	−0.02	0.91
POP	0.03	0.33	2.11	0.01*
GCF	0.87	0.12	2.10	0.81
Short-run results				
ΔCOR	−0.24	0.20	1.17	0.21
ΔHUM	2.19	0.08	−0.80	0.98
ΔPOP	0.02	0.31	2.34	0.01*
ΔGCF	0.53	0.23	2.14	0.13

Note: The asterik values represent the probability values at 5% significant level

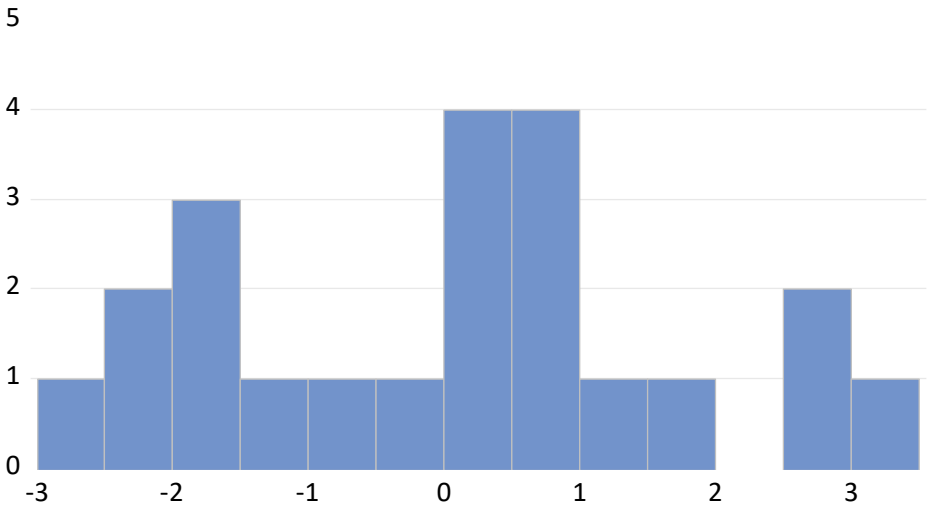
4.4. Diagnostics test results

To establish the fitness and reliability of the autoregressive distributed lags model employed in this study, a recursive coefficients diagnostic test was used to check the extent of the stability of the model. Furthermore, the histogram-normality test was used to check whether the residuals of the model are normally distributed. Also, the Breusch-Godfrey serial correlation LM test was employed to ensure autocorrelation does not exist in the distribution. The classical linear regression model assumes that such autocorrelation does not exist in the distribution. The Heteroskedasticity Test: The Breusch-Pagan-Godfrey diagnostic test checks whether the

population regression function is homoscedastic, that is, if they have the same variance. Figure 1 presents the stability of the diagnostic test by using recursive coefficients. From this result, the ARDL model established a stable one. More so, from the histogram-normality test in Figure 2, the probability value of 0.75 indicates that the data used in the ARDL model are normally distributed. Table 4.4 presents the Breusch-Godfrey serial correlation LM and the heteroskedasticity test results for the Breusch-Pagan-Godfrey diagnostics test. From the results, the probability values of 0.3027 and 0.5896 show that there are no issues of serial correlation or heteroskedasticity in the series. It can be concluded that the data used in the ARDL model are suitable for the study.

Fig. 1. Stability diagnostics test using recursive coefficients

Fig. 2. Histogram-Normality Test



Series: Residuals	
Sample 2000 2021	
Observations 22	
Mean	-1.59e-15
Median	0.186688
Maximum	3.247618
Minimum	-2.839563
Std. Dev.	1.675635
Skewness	0.126346
Kurtosis	2.220737
Jarque-Bera	0.615178
Probability	0.735217

Table 4.4 shows the Breusch-Godfrey serial correlation LM and Heteroskedasticity Test: Breusch-Pagan-Godfrey test results

Breusch-Godfrey serial correlation LM		**Heteroskedasticity Test: Breusch-Pagan-Godfrey**	
F-statistics value	Prob. Value	F-statistics value	Prob. value
1.3223	0.3027	0.8154	0.5896

5. Conclusions and Recommendations

Given the importance of economic growth and dynamism in the growth process, especially in developing countries like Nigeria, it is pertinent to continuously find out the impact of corruption and other growth determinants on a country's economy. Based on this, this study examines the impact of corruption on the economic growth of Nigeria, spanning from 1999 to 2021. The empirical outcome indicates that a 1% increase in the corruption level decreases the growth rate by about 0.29%. The Transparency International Corruption Perception Index results show that Nigeria ranked 146th, 149th, and 154th out of 180 countries ranked in 2019, 2020, and 2021, which are strong indications that corruption is prevalent in the country. Based on these rankings, the tendency for corruption to be rampant in Nigeria is certain, unless governments put necessary corrective measures in place through active anti-graft mechanisms. The weak institutions and ineffectiveness of the administrations, especially in the government parastatals, may contribute to high corruption in the country. The population rate showed a positive influence on the economic growth of Nigeria. In fact, in Africa, Nigeria is regarded as the most populous and giant country on the continent. By implication, a high population drives aggregate market demand and can have influence in promoting both local and foreign investments. The result shows that a 1% increase in population increases economic growth by 3%. Although the increase in population must match the resources available in the country, otherwise, among others, corruption, stealing, and social vices would be on the high side because some people may have a wrong perception of the common saying "survival of the fittest" and act ignorantly. As part of the policy recommendations, the government should strengthen the institutions and other transmission channels of corruption. To also avert the effect of overpopulation in the future, the government should promote policies geared towards the expansion of production in the country in order to meet the needs of the growing population.

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