Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.9, No.6, 2018

Corruption and Economic Growth in Nigeria

James Obilikwu
Department of Economics, Faculty of Management And Social Sciences
Ibrahim Badamasi Babangida University, Lapai

Abstract
This paper studied the effects of corruption on economic growth in Nigeria with the aim of estimating the level of the impact to aid in fine tuneing economic growth policies formation. Data from 1996 – 2016, and Autoregressive distributed lag (ARDL) bound test estimation technique were used for the investigation. Controlling for human capital, physical capital investment and trade openness, findings revealed that corruption exert a significant negative impact on economic growth in Nigeria. A unit improvement in corruption (using Transperance International perception index) increases economic growth by 1.3 percent and 1.95 percent in the short-run and long-run respectively. The paper, thus, recommends that there should be renewed efforts to combat corruption to facilitate economic growth: Nigeria government should make all the necessary efforts to scale up its fight against corruption by strengthening the anti-corruption agencies to improve on their works, provide special courts to try corruption cases speedily, reform the economy to be more market driven, and pay living wage to workers. In addition, Nigerians should ultimately take ownership of the fight against corruption by voting in leaders with integrity, and continually demand good governance form them.
Keywords: Corruption, Economic growth, level of impact, Autoregressive Distributed Lag, (ARDL).

Introduction

There is hardly any discourse on Nigeria's economic growth and development that the issue of corruption is not brought to the fore as the bane of progress. Corruption is said to one of the root causes of the country low economic growth, under development and high level of poverty. Theoretically, the relationship between corruption and economic growth is ambiguous as some schools of thought (Leff, 1964; Nye, 1967; DeSoto, 1989; and Shleifer and Vishny, 1994) are of the view that corruption propel (grease) rather than hinder (sand) the wheel of progress. This school of thought contends that corruption simplifies inefficient government regulations, and cut *red tapeness* thus improves the efficiency of production and the economy.

Be that as it may, the widely held view is that corruption causes more harm than good to an economy. According to World Bank (2011), corruption is one of the greatest obstacles to economic development. It reduces public revenues (Ghura, 1998; Tanzi and Davoodi, 2000), decreases productivity of public investment and quality of public infrastructure (Tanzi and Davoodi, 1997), lower the level of human capital and private investment (Mo, 2000), destroy assets, enthusiasm and idealism necessary for enterprise and production (Smith, 1971), increases cost of doing business and ultimately reduces economic growth (Mauro, 1995 and Mo, 2000).

Due to corruption's endemic nature and its wide spread in Nigeria, there have be studies done on it. However, most of these studies (Salisu, 2000; Onwochei, 2004; Dike, 2005; Folorunso, 2007, Adefarasin, 2009; Aluko, 2009: Omenka, 2013; and Ola *et al*. 2014) examined and analyses its nature, forms, causes, effects, and challenges in combating it. Others (Nwankwo, 2014; Obayelu, 2007; Rotimi *et al.,* 2013; Adewale, 2011; Ade *et al.,* 2011) that studied its effects on economic growth focus only on the relationship between corruption and economic growth without finding the extent of the impact of corruption on growth. Whereas, for economic growth policies and programmes to succeed in a face of corruption, not only that its concepts, nature, classification, causes, and the relationship between it and economic growth be analyzes and understood, its level of impact on economic growth needs to be known as well (Nwaobi, 2004).

This study is an attempt to fulfill that gap; hence it estimates the level of impact of corruption on economic growth in Nigeria using an advanced estimation technique of Autoregressive Distributed Lag (ARDL) Bound Test. The remaining part of the study is divided into four sections. Following this introduction is the literature review which is made up of conceptual clarifications, review of theoretical literature, and empirical studies. The next section presents the research methodology, section four handles the findings and discussion while conclusion and recommendations are presented in the last section; section five.

2. Literature

2.1 Conceptual Clarifications

Corruption having been with societies from antiquity and universal in nature has been variously conceptualized. Generally, it is seen as when something in a good state or order is change from that state or order of goodness to a bad state or order. It connotes deviation from the standard norms of the society. Looking at corruption as more of a political and governance concern, the classical political philosophers such as Plato and Aristotle conceptualize it as a general disease of the body politics. Fredrick (1972), views corruption as any kind of

behaviour that deviates from the norms of the society with the motive of gaining something at the expense of the general public. Onwochei (2004) stressing the ethical dimension of corruption, says that it is a departure from what is original, pure and correct.

Sen (1999) limits corruption to legal issue and conceives it as the violation of established rules for personal gain and profit. The Independent Corrupt Practices Commission (ICPC) in Nigeria provides an elaborate view of corruption. According to ICPC (2000), corruption is immorality, deprivation, bribery, dishonesty false practices, debased changes, gratifications and rottenness. Whichever way corruption is conceptualized, what is basic is that it is about doing what is not appropriate for selfish reasons at the expenses of others. However, for the purpose of this study we follow the World Bank (1997) and Transparence International (2012) conceptualization of corruption as being misuse of public power for private benefits.

Corruption occurs in diverse ways such that what constitute corruption are legion. More so, it is dynamic in nature, thus, making a comprehensive listing of what constitute corruption difficult. However, corruption can be classified based on the sector it takes place, how it takes place, the value of what is involved, the extent of it, and the motive behind it. Hence, there is occasional or systemic corruption, petty or grand corruption, centralized or decentralized corruption.

Dike (2005) using the sectorial approach, classifies corruption into political, electoral, judicial, religious and academic corruption. While Aluko (2009) classifies corruption based on how it is committed. He groups it into political corruption, bureaucratic corruption, electoral corruption, bribery, fraud, embezzlement, favoritism and nepotism. Classifying the acts of corruption on the bases of the motive behind it, Alatas (1990) group them into defensive, extortive, transactive, investive, supportive, autogenic and nepotistic. According to him, corruption is defensive when bribe is given so as to stop an unpleasant consequence of one's action. It is extortive when somebody in a position of providing goods or rendering services demands personal settlement before the product is provided or the work is done. Transactive corruption is a situation where the two parties involve in the corrupt act willingly, and to their mutual benefits, but to the detriment of the society. It is *investive* when it is done not for immediate but for future concerns. Supportive corruption is an act of corruption to provide cover or to strengthen existing corruption. It is said to be autogenic corruption when an individual takes undue advantage of insider information available to him to act for his own personal gain. It is called nepotistic when preferential treatment is accorded in violation of lay down rules and regulations.

Economic growth is about increase in the quantity of goods and services produce in an economy. According to Kuznet (1955) economic growth is a rise in capacity to produce diverse economic goods. According to him, the increase in the capacity to produce more economic goods depends on technological, institutional, attitudinal and ideological changes. Friedman (1960) and Rostow (1960) conceive economic growth as an expansion in one or more dimensions of income generating system without necessarily a change in its entire structure. The expansion of the system must be accompanied by expansion in consumption, capital and volume of trade. Consequently, economic growth is the harbinger of rapid transformation and poverty reduction.

2.2 Theoretical Literature Review

Corruption affects economic growth in several ways. It reduces both foreign and domestic investments because it distorts and increases uncertainty, and risks of investment. Corruption equally increases cost of doing business, thus, discouraging people to invest (Wei, 2000). The reduction in foreign direct investment does not only reduce potential economic growth, but reduces transfer of technology that would have come with such investment. In addition to that, corruption reduces government revenues (Ghura, 1998; Tanzi and Davoodi, 2000; Attila *et al.*, 2009).

Corruption reduces government revenue. Corrupt tax-collectors collect bribe form eligible tax payers rather than collecting tax, grant improper tax exemption, aid tax evasion and may not even remit taxes collected to government. The reduction in revenue, reduce investment that would have been done by government to stimulate growth.

Again, corruption reduces government investment and its productivity through embezzlement, misuse of available public fund, and misapplication of resources as most projects and programmes are often selected on the basis of its economic or social importance, but rather on the basis of *kick back* that the public officer awarding the contract will get. If at all the project or programme is executed, it is poorly done thus lowering the quality of most public infrastructure and investment thereby reducing economic growth (Jain, 2001 and Bayley, 1966).

In addition, corruption lowers the level of human capital. In a corrupt country, employment, promotion and reward system do not depend on merit, skill, knowledge and ability but on *god fatherism*, *bottom power*, tribalism, favoritism, quota system, and bribery. With this kind of system, emphasizes shift from knowledge and skill acquisition to paper qualification making people not to see the need to adequately develop themselves and contribute meaningfully to growth. Furthermore, it has been observed (Tanzi and Davoodi, 1997) that corrupt government does not spend much on education and health, as spending in those sectors do not bring corrupt officers in government much bribe as other areas such as defense and construction.

Corruption distorts the allocation of a country's talents, as many in corrupt country will prefer to be engaged in places where they can collect bribe or embezzle public fund (Murphy *et al*. 1993; Acemoglu and Verdier, 1998). In such environment there is high tendency for people to work in financial, management and administration areas as against physical and biological sciences, engineering, technology and agriculture. Neglecting high manpower developments in those works which are critical for enhanced productivity definitely hamper economic growth.

Corruption increases the size of the government in terms of government consumption and labour engagement unnecessarily (Tanzi and Davoodi, 1997). This is because as government expenditure increases, so the avenues for corruption increase. Excessive labour that would have been in productivity activities in the private sector are tied down in the public sector, other factors of production that would have been used in producing economically needed goods and services are wasted in producing public goods that may not be needed none increase productivity and economic growth.

Corruption slows down administrative procedures resulting to inefficiency and increase costs of production (Andvig, 1991; Myrdal, 1968). It creates political instability; increases underground economy (Andvig *et al.,* 2001; Rose-Ackerman, 1997; and Tanzi, 1998). Neither production nor economic growth can take place where there is political crisis, insecurity and unstable economic policies. Furthermore, corruption worsens inequality (Li *et al*., 2000; Gupta *et al*., 1998; Johnson, 1989) thus reducing the societal harmony needed for enterprise and productivity. It increases poverty (Chetwynd, *et al*., 2003; Gyimah-Brempong, 2002) reducing effective demand necessary for investment.

Corruption is caused by wide range of factors. These factors can be economic, cultural, psychological, and system-related. Bryce (1921) traces the root causes of corruption to high inequality in distribution of wealth; the use of political office as the primary means of gaining access to wealth; conflict between changing moral codes; weakness of social, governmental enforcement mechanisms; and the absence of a strong sense of nationalism. To Savona and Mezzananotte (1997), it is the level of the discretionary power, the degree of responsibility given to an official, the quality of regulation and the risk involved in engaging in corruption that determine whether people will be corrupt or not.

In Treisman (2007)'s observation, there is less corruption in well established democracies that have free press, trade openness and high number of women in government. Other issues considered to influence corruption are monopoly and economic rent. Emphasizing the existence of monopoly and economic rent as basis for corruption, Klitgaard (1998) contends that corruption increases with economic rent and discretionary powers given to people with less or no accountability. Lotterman (2002) observes that bad rules and ineffective taxing system that makes it difficult for people's financial activities to be tracked encourage corruption.

Narrowing it to Nigeria, Achebe (1983) observes that corruption goes with power, as most powerful people are corrupt. Consequently, he contends that power is the root cause of corruption. That notwithstanding, corruption in Nigeria cannot be a function of power alone. According to Adefarasin (2009), job insecurity and the associated inclination of most Nigerians to build a safety net for the future, greed, quest for self-recognition, high expectation of the society from public office holders, increase in government activities and inadequate and weak justice system are the causes of corruption.

Apart from these factors, poverty, ignorance, weak institutions and some cultural practices such as the custom of not questioning whatever people in position of authority do and giving *kola* to appreciate somebody that had done something good or brought good news provide bases for other factors propelling corruption

Corruption's impact on economic growth can be non-monotonic and non-linear; as such it depends on the prevailing circumstances in an economy. For instance, a corrupt country that has huge natural resources that is globally demanded will still attract foreign investment. Whereas, another country with same level of corruption but without attractive natural resources will not attract foreign investment into its economy. According to Larsson (2006) the organization of corruption, comparative advantage and the nature of economic rents are the critical factors that determine the impact of corruption on economic growth. That is why corruption is more devastating in some countries than others. Whereas, to Aidt *et al*. (2008), it is the quality of political institutions that determines the impact of corruption on economic growth. According to them, in countries with high quality institutions, corruption has a large negative impact on growth, while in countries with low quality institutions; corruption has no impact on growth. Shleifer and Vishny (1993) observe that a strong centralized government reduces the effects of corruption on growth as compared to a decentralized government.

Human capital development, physical capital investment, and trade openness are other factors that also influence economic growth. Human capital development in form of education, health and training raise output and contribute to economic growth (Schultz, 1961; Becker, 1962). Apart from its direct participation as a factor in the production process (level effects), it contributes by raising technical progress (rate effect), thus, strengthen other factors that influence growth (Romer, 1990; Aghion and Howitt, 1998). As such, it is considered to be one of the main determinants of economic growth (Mankiw *et al*. 1992; Barro, 2001).

Investment in physical capitals such as infrastructures, factories, machines, vehicles, tools and other

productive equipments make it possible for producers to produce more, and to engage modern technology there by stimulating further productive activities. Most of economic growth model considered physical capital as one of the two critical factors needed for growth. According to World Bank (1989), countries with higher physical capital investment to GDP ratio have higher growth rate.

Trade openness leads to expansion in production and economic growth as the movement in goods and services facilitates transfer of knowledge and skills encourage international competition thus resulting in efficiency in production (Black, 1997).

2.3 Review of Empirical Studies

Studies to determine the impact of corruption on economic growth has been on the increases since the introduction of a quantitative estimation of the level of corruption using the corruption perception index by several reputable organizations. For instance, Mauro (1995) investigated the impact of corruption on economic growth using a data set of 67 countries for the period 1980-1983. He found that corruption reduces economic growth through lowering private investment. A one-standard-deviation in improvement in reducing corruption increase investment rate by 4 percentage point and a 0.5 percentage point increase in per capita income growth.

Similarly, Rahman *et al.* (1999) examined the impact of corruption on economic growth and gross domestic investment for Bangladesh. They found out that corruption negatively affect economic growth through reduction in foreign direct investment and gross domestic investment. Mo (2001) estimated the effects of corruption on economic growth using OLS regression analysis for 45 countries for the period 1970- 1985. He reported that a one percent increase in the corruption level reduces the growth rate by about 0.72 percent. Hodge *et al.* (2011) found that a one standard deviation increase in the corruption index leads to a 0.4711 percentage point decrease in economic growth. Pellegrini and Gerlagh (2004) found that a decrease in the corruption level of one standard deviation increases economic growth by approximately 1.05 percentage points per year.

The Word Bank (2004) estimated that more than US$ 1 trillion is paid in bribes each year and that countries that tackle corruption could increase per capita incomes by 400 percent.

In Nigeria, Nwankwo (2014) used Granger Causality test to investigate the impact of corruption on economic growth and development. He found that corruption negatively affect economic growth and development. Similarly, Rotimi *et al.* (2013); Adewale (2011); Ade *et al.* (2011); and Obayelu (2007) reported a negative relationship between corruption and economic growth.

3. Methodology

Economic growth is generally a function of several factors of production, hence, there have been several theories of economic growth ranging from the classical growth model which emphasizes capital, the neoclassical model that incorporated labour and an introduced an independent variable (technology) into the growth model (Solow, 1956; and Swan, 1956). Apart from that, there is an endogenous growth model that view economic growth as being a function of innovation resulting from investment in knowledge (Romer, 1986).

The impact of corruption on economic growth is mostly examined using the endogenous growth model. The endogenous growth model itself has different variants such as Barro (1990) model, Jones and Mauelelli (1990) model, and Lucas (1988) model. Out of these variants, Barro (1990) model which uses a production function that incorporates total factor productivity parameter, physical capital, labour contribution, and capital contribution as the determinants of total output is mostly applied as it allows the inclusion of several policy variables including corruption into the growth model. Based on this, and in line with Levine and Renelts (1992), Sachs and Warner (1997), in this study, economic growth (GRWT) is postulated to depend on human capital (HUMN), physical capital investment (DOIV), trade openness (TOP), and corruption (CORP). Hence, the functional form of the econometric growth model is formulated as:

$$GRWT_t = \beta_0 + \beta_1 CORP_t + \beta_2 HUMN_t + \beta_3 DOIV_t + \beta_4 TOP_t + \mu_t.$$

Where;

Economic growth (GRWT) is measured as annual GDP growth rate, corruption (CORP) taken as the corruption perception index provided by *Transparency International* with score ranging from 0 to 10. An index of 0 indicates a highly corrupt country, while, an index of 10 indicates a highly clean country, human capital (HUMN) is proxy by ratio of annual government capital expenditure on education, health and social service to GDP, capital investment (DOIV) is measured as annual gross fixed capital formation as a percentage of GDP, trade openness (TOP) is measured as the ratio of the sum of exports and imports to GDP. Based on literatures the a priori expectations of the parameter estimate are; $\beta_2, \beta_3 > 0$, while β_1, β_4 can be < 0 or > 0.

This study employed Auto Regressive Distributed Lag (ARDL) bound test procedure which was developed by Pesaran and Pesaran (1997), and improved upon by Pesaran *et al.* (2001) for the estimation. Auto Regressive Distributed Lag itself is based on co integration concept introduced by (Granger, 1981), along with Granger and Weiss (1983) which states that two or more series can form a long run equilibrium relationship if they tend to move together over time even though each of the series are not stationary.

Auto Regressive Distributed Lag has the advantages of being applied without investigating the stationarity properties of the variables (Pesaran and Pesaran, 1997). It gives better results for small sample data set as compared to other approaches (Engle and Granger, 1987; Johansen and Juselius; 1990 and Phillips and Hansen, 1990) to co integration, and takes satisfactory lags that captures the data generating process into general-to-specific framework of specification (Laurenceson and Chai, 2003). The equation of the unrestricted Error Correction Model (ECM) is thus stated as:

$$\Delta \mathrm{GRWT}_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i}\, \Delta \mathrm{GRWT}_{t-i} + \sum_{i=1}^{n} \beta_{2i}\, \Delta \mathrm{CORP}_{t-i} + \sum_{i=1}^{n} \beta_{3i}\, \Delta\, \mathrm{HUMN}_{t-i} + \sum_{i=1}^{n} \beta_{4i}\, \Delta \mathrm{DOIV}_{t-i} + \sum_{i=1}^{n} \beta_{5i}\, \Delta \mathrm{TOP}_{t-i} + \delta_1 \mathrm{GRWT}_{t-1} + \delta_2 \mathrm{CORP}_{t-1} + \delta_3\, \mathrm{HUMN}_{t-1} + \delta_4 \mathrm{DOIV}_{t-1} + \delta_5 \mathrm{TOP}_{t-1} + ECT_{t-1} + \varepsilon_1$$

Where Δ is the first difference of a variable, α_0 is a constant, n is the maximum lag order, $\beta_{1i.....}$ β_{5i} are shot-run coefficients, $^{\delta}{}_1 \ldots .^{\delta}{}_5$ represents the long-run dynamics, t is the time trend and ε_1 is the white noise error.

Diagnostic tests comprising of Breusch-Godfrey Serial Correlation LM test and Durbin-Watson statistics, Breusch-Pagan-Godfrey heteroskedasticity test were carried out. Cumulative Sum of Recursive Residual (CUSUM) and the Cumulative Sum of Squares ($\mathrm{CUSUM_{Sq}}$) of recursive residual were applied to detect changes, and for long and short run stability of the ARDL estimates.

4. Results and Discussions

4.1 Unit Root Test

The investigation started with stationarity test to be sure that either the variables entering the model are stationary at levels or after first differencing and not after second differencing to meet the requirement for employing the Pesaran *et al.* (2001) bound testing approach. Augmented Dickey-Fuller unit root test was applied, and the result presented in Table 1.

Table 1: Unit Root Test

Variables	ADF Stat.	5% Critical Value	Order of Integration
GRWT	-3.799607	-1.961409	I(1)
CORP	-5.725787	-1.960171	I(1)
HUMN	-4.437428	-3.020686	I(0)
DOIV	-3.996456	-1.960171	I(1)
TOP	-4.851056	-1.960171	I(1)

Source: Author's Computation using E-Views.

As can be seen in Table 1, apart from HUMN all other variables in the model became stationary after first difference, making them I(1) variables, while HUMN is an I(0) variable. This mixture of I(0) and I(1) variables in the model makes the ARDL bound testing approach the best in this circumstance.

Since the variables are integrated of order not more than one, we estimate the unrestricted/conditional ECM in which the optimum lag length and structure of the variables and model respectively were guided by the Schwarz Criterion. After estimating several models, the ARDL (1, 0, 1, 0, 1) lag structure was obtained as the appropriate lag structure and the result is presented in Table 2.

Table 2: Conditional ECM

Dependent Variable: Δ*GRWT*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-10.97335	4.622816	-2.373736	0.0552
ΔGRWT(-1)	1.492250	0.374191	3.987938	0.0072
ΔCORP	3.829832	2.027981	1.888495	0.1079
ΔHUMN	-5.323085	1.616763	-3.292433	0.0166
ΔHUMN(-1)	1.909075	1.667905	1.144595	0.2960
ΔDOIV	0.357417	0.247039	1.446805	0.1981
ΔTOP	8.071823	4.326296	1.865759	0.1113
ΔTOP(-1)	-10.09254	3.632320	-2.778539	0.0321
GRWT(-1)	-2.247725	0.511793	-4.391865	0.0046
CORP(-1)	4.844452	1.320446	3.668801	0.0105
HUMN(-1)	-11.02584	3.657904	-3.014250	0.0236
DOIV(-1)	0.327316	0.188933	1.732444	0.1339
TOP(-1)	30.60432	7.089657	4.316756	0.0050
R^2 = 0.892612, Adj. R^2 = 0.677835, F-stat. = 4.155997, Prob.(F-stat.) = 0.045812, Durbin-Watson stat = 1.893882				

Source: Author's Computation using E-Views

The result of the conditional/unrestricted ECM as presented in Table 2 shows the estimation of both the short-run (ARDL) and long-run dynamics of the variables in the model. Employing the Breusch-Godfrey Serial Correlation LM Test, and Durbin-Watson statistics as well as Breusch-Pagan-Godfrey confirmed that the model is not faced with autocorrelation nor with heteroscedasticity. Wald test was used to formulate a null hypothesis to test the joint effect of the lagged levels long-run variables in the model which represents the unrestricted ECM in the conditional model. The f-statistics obtained from the joint test of the long-run one period lagged level of both the dependent and independent variables was then used to test against the Pesaran *et al.* (2001) critical bound values to either reject or not to reject the null hypothesis that there exist no long-run relationship among the variables.

The 6.68 value of the f-statistics obtained from the Wald test is greater than the upper critical bound value of I(1) excerpts from the Pesaran *et al.* (2001) Table CI(iii) presented in Table 3.

Table 3: Bound Test for Co integration

Critical Values PSS (2001)	I (0) – Lower Bound Value	I (1) – Upper Bound Value
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06
F-Statistics – Wald Test : 6.68		

Based on the result, the null hypothesis of no long-run relationship among the variables is rejected, thus, confirming the existence of long-run relationship among the variables.

From the conditional ECM result presented in Table 2, the long-run coefficient of the variables in the model can be obtained by dividing the coefficient of the lagged levels of the independent variables by the coefficient of the lagged level of the dependent variables multiplied by minus (-). Thus, the long-run coefficient of corruption, human capital, physical capital investment, and trade openness is 2.1553, -4.9054, 0.1412 and 13.6168 respectively. This long-run coefficient extracted from the conditional ECM is synonymous to the long-run level regression coefficients as presented in Table 4.

Table 4: Long-Run Estimates
Dependent Variable: GRWT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.333907	2.074727	-1.124922	0.2772
CORP	1.281997	0.472382	2.713899	0.0153
HUMN	-2.977028	1.384418	-2.150383	0.0472
DOIV	0.099720	0.116288	0.857531	0.4038
TOP	10.84902	4.216989	2.572693	0.0204
R^2 = 0.370025, Adj. R^2 = 0.212531, F-stat. = 2.349457, Prob.(F-stat.) = 0.098244, Durbin-Watson stat = 1.401937				

Source: Author's Computation using E-Views

The long-run estimates as presented in Table 4 shows that the model is of good fit as confirmed by the Breusch-Godfrey Serial Correlation LM Test, Durbin-Watson statistics as well as Breusch-Pagan-Godfrey test for heteroscedasticity. The f-statistics also shows that the explanatory variables in the model are jointly significant in explaining the growth of Nigerian economy.

From the long-run estimates obtained in Table 4 which is similar to the long-run coefficient extracted from the conditional ECM in Table 2, increase in corruption perception index (i.e. reduction in corruption) has a positive and significant effect on the growth of Nigerian economy. On average, when perception index of corruption for Nigeria increase by a unit, the Nigerian economy will grow by 1.3 percent. While human capital negatively influences the Nigerian economy, physical capital investment and the degree of openness of Nigerian economy positively influence the growth of Nigerian economy. On average when investment on human capital changes by a percent, Nigerian economy will decline by 2.97 percent, while increase in physical capital investment and the degree of openness of Nigeria economy will lead to growth of the Nigerian economy by 0.1 percent and 10.8 percent respectively. The corresponding short-run dynamic model of the long-run model is presented in Table 5.

Table 5: Short-Run ARDL-ECM Dynamic Estimates
Dependent Variable: ΔGRWT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	1.960562	0.824426	2.378094	0.0387
ΔGRWT(-1)	0.997216	0.294600	3.384983	0.0069
ΔCORP	1.952942	0.758043	2.576296	0.0276
HUMN	-5.309574	0.937506	-5.663506	0.0002
HUMN(-1)	1.594289	0.959284	1.661957	0.1275
ΔDOIV	0.257591	0.095269	2.703843	0.0222
ΔTOP	3.129735	1.917892	1.631862	0.1338
ΔTOP(-1)	-5.194056	2.542713	-2.042722	0.0683
$\mu(-1)$	-1.482077	0.245948	-6.025968	0.0001
R^2 = 0.736501, Adj. R^2 = 0.525702, F-stat. = 3.493855, Prob.(F-stat.) = 0.034045, Durbin-Watson stat = 1.151268				

Source: Author's Computation using E-Views

The R^2 values as well as the D-W statistics, Breusch-Godfrey Serial Correlation LM test, and the Breusch-Pagan-Godfrey test for heteroscedasticity confirmed goodness of fit of the model. About 74 percent of deviations in the Nigerian economic growth is explained by the determinants in the model. The coefficient of the error correction term $\mu(-1)$ as expected is negative and highly significant. About 1.48 disequilibrium in the variables in the short-run is corrected towards long-run equilibrium as shown by the coefficient of the error correction term.

From the short-run dynamic model, the one year past value of the growth of Nigerian economy positively influences the growth of Nigerian economy in the current value. On average, when there is a percent increase in the growth of Nigerian economy in past year, the Nigerian economy is expected to growth by 0.99 percent. The growth of Nigerian economy in past year is a positive indicator of growth in the current year.

An increase in the corruption perception index (i.e. reduction in corruption) for Nigeria has a positive influence on the growth of the economy. A unit increases in the corruption perception index, leads to 1.95 percent increase growth of Nigerian economy. This finding can be attributed to all the growth inhibiting factors of corruption identified in the literatures. The finding is consistence with the findings of Mauro (1995), Mo, (2001), and Pellegrini and Gerlagh (2004).

Investment in human capital both in the current and one year past negatively and positively influence the growth of Nigerian economy respectively. In the short-run, when investment in human capital in the current year changes by one percent, Nigerian economy will decline by 5.31 in the current year, while the investment in human capital in the past year will positively influence the growth of Nigerian economy in the current year. The conflicting influences of human capital investment in current and past year on the growth of Nigerian economy is likely due the inefficiency, underemployment and high unemployment level in Nigeria.

Increase in the current value of physical capital investment significantly influences the Nigerian economy positively. On average, when capital investment is increased by one percent in the economy, there will be a growth of about 0. 26 percent in the Nigerian economy.

Similarly, while the degree of openness of Nigerian economy in the current year influences the Nigerian economy positively; in the past year trade openness influences the Nigerian economy negatively. This is likely due to the depreciation of the naira against the dollar which restricted exportation and the decline in importation due to the change of government in the country in the past year. As a whole, the degree of openness of Nigerian economy both in the past year and current year significantly influence the economy of Nigeria.

5. Conclusion and recommendations

The purpose of this paper is to study the impact of corruption on economic growth in Nigeria, with the aim of estimating the level of the impact to aid in fine tuneing economic growth policies formation. Previous studies on corruption in Nigeria mostly examined and analyses its forms, causes, effects, and challenges in combating it, while, those that related corruption to economic growth focus only on the relationship between corruption and economic growth without finding the extent of the impact of corruption on economic growth. However, it is important for effective policy formulation for the extent of the impact to be known. Data from 1996 – 2016, and Autoregressive distributed lag (ARDL) bound test estimation technique were used for the investigation. Controlling for human capital, physical capital investment and trade openness**,** the result revealed that, corruption hampers economic growth in Nigeria. An improvement in its reduction by one unit, leads to 1.3 and 1.95 percent increase in economic growth in the short-run and long-run respectively.

Based on this finding, the paper recommended that there should be renewed efforts to combat corruption so as to make the economy grow. Nigeria government should make all the necessary efforts to scale up its fight

against corruption by strengthening the anti-corruption agencies to improve on their works, establish special courts to try corruption cases speedily, reform the economy to be more market driven, and pay living wage to workers. In addition, Nigerians should ultimately take ownership of the fight against corruption by voting in leaders with integrity, and continually demand good governance form them.

Reference

Acemoglu, D., and Verdier, T. (1998): "Property Rights, Corruption and the Allocation of Talent: A General Equilibrium Approach," *The Economic Journal, Vol.108*, No.450, pp. 1381–1403.

Achebe, C. (1983): The Trouble with Nigeria, Enugu: fourth Dimension Publishers Company.

Ade, O. Babatunde, H., and Awoniyi, M. (2011): "Corruption, Foreign Direct Investment and Economic Growth in Nigeria: An Empirical Investigation," *Journal of Research in International Business Management,* Vol. 1, No. 9, pp. 278-292.

Adefarasina V. D. (2009): Consequences of Corruption, Unethical Practice and African Quest for Development; in Democracy, Leadership and Accountability in Post-Africa: Challenges and Possibilities Edited by Edoh, T. and Wuam , T., Aboki Publishers, Markudi.

Adewale, S. B. (2011): "The crowding-out Effects of Corruption in Nigeria: An Empirical Study," Journal *of Business Management and Economics,* Vol.2, No. 2, pp. 059-068.

Aghion, P., and Howitt, P. (1998): *Endogenous Growth Theory.* The MIT Press, Cambridge, MA.

Aidt, T., Jayasari D., and Vania S. (2008): "Governance Regimes, Corruption and Growth: Theory and Evidence," *Journal of Comparative Economics*, Vol. 36, pp. 195 – 220.

Alatas, H. S. (1990): Corruption: Its Nature Causes and Functions. Kuala Lumpur: S. Abdul1Majeed and Co.

Aluko, Y. A. (2009): "Corruption in Nigeria: Concept and Demission in Anti Corruption Reforms in Nigeria since 1999: Issues, Challenges and the way Forward," *IFRA Special Resources Issues,* Vol. 3.

Andvig, J. (1991): "The Economics of Corruption: A Survey,"*Studi Economici*, Vol. 43, Pp. 57-94.

Andvig, J. C., and Fjeldstad, O. (2001): "Corruption*" A Review of Contemporary Research* (CMI Report R 2001:7). Bergen: Chr. Michelsen Institute. http://www.cmi.no/publications/file/?861=corruption-a-review-of-contemporary-research. Accessed 30 August 2007.

Attila, G. Chambas, G. and Combes, J. L; (2009): Corruption and Mobilization of Public Income: An Econometric Analysis. *Recherches Economiques De Louvain-Louvain Economic Review*. Vol.75, No.2.

Barley, D. (1996): "Effects of Corruption in Developing Countries," The Western Political Quarterly, Vol. 19.

Barro, R. (2001): "Human Capital and Growth", *American Economic Review, Vol. 91*, pp.12-17. http://dx.doi.org/10.1257/aer.91.2.12.

Becker, Gary S. (1962): "Investment in Human Capital: A Theoretical Analysis", *Journal of Political Economy, Vol. 70* (Supplement), pp. 9-49. http://dx.doi.org/10.1086/258724.

Black, J. (1997):"A Dictionary of Economics", Oxford University Press: New York.

Bryce, J. (1921): Modern Democracies; New York; University Press.

Chetwynd, E., Chetwynd, F. and Spector, B. (2003): Corruption and Poverty: A Review of Recent Literature, Washington, and Water street SW.

De Soto, H. (1989): The Other Path, New York: Harper and Row.

Dike, V. E. (2005): Corruption in Nigeria: A New Paradigm for Effective Control. *African Economic Analysis*. Retrieved from http\\www.AfricaEconomicAnalysis.org.

Engle, R .F. and Granger, C.W.J. (1987): "Co integration and Error Correction: Representation, Estimation and Testing," *Econometrica,* Vol. 55, No.2, pp. 251-276.

Folorunso, B. A, (2007): "Determinants and Effects of Corruption on Investment, General Price Level and Sustainable Economic Growth in Nigeria**,"** *African Economic and Business Review,* Vol. 5 No. 2, Pp. 10 – 25.

Friedman, M. (1960): A Programme for Monetary Stability. New York: Fordham University Press.

Friedrich, C. (1972): The Pathology of Politics, Violence, Betrayal, Corruption, Secrecy and Propaganda. New York: Harper and Row.

Ghura, D. (1998): "Tax Revenue in Sub-Saharan Africa; Effects of Economic Policies and Corruption," *IMF Working Paper WP/98/135.*

Granger, C. W. J., and Weiss, A. A. (1983): Time Series Analysis of Error Correction Models. MA, USA: Harvard University Press Cambridge.

Granger, C. W. J. (1981): "Some Properties of Time Series Data and Their Use in Econometric Model Specification," *Journal of Econometrics,* Vol. 16, No.1, pp. 121-130.

Gupta, S., Hamid D. and Alonso-Terme, R. (1998): "Does Corruption Affect Inequality and Poverty?", *IMF Working paper 98/76,* Washington.

Gyimah-Brempong, K. (2002): "Corruption, Economic Growth and Income Inequality in Africa," Economics *of Governance*, Vol. 3, pp.183–209.

Hodge, A., Shankar, S., Rao, P., and Duhs, A. (2011): Exploring the Links between Corruption and Growth," Review *of Development Economics, Vol. 15*, No. 3, pp. 474 - 490.

ICPC (2000): The Corruption Practices and Other Related Offences Act (2000), Abuja: Government Printers**.**

Jain, A. K. (2001): *The political Economy of Corruption.* London, NY: Routledge.

Johansen, S. Juselius, K. (1990): "Maximum Likelihood Estimation and Inference on Cointegration With Application to the Demand For Money," *Oxford Bulletin of Economics and Statistics.* Vol. 52, No.2, pp.162-210.

Johnston, M. (1989): Corruption, Inequality, and Change. in Ward, P. M. (ed.), *Corruption, Development, and Inequality: Soft Touch or Hard Graft* Routledge, London

Klitgaard, R. (1998): "International Cooperation against Corruption," *Journal of Finance and Economic Development*, Vol.35, pp. 3 – 6.

Kuznets, S. (1955): "Economic Growth and Income Inequality," *American Economic Review*, XLV, pp. 1-28.

Larsson, T. (2006): "Reform, Corruption, and Growth: Why Corruption is more Devastating in Russia and China", Communist and Post-Communist *Studies*, Vol. 39 pp.265-281.

Laurenceson, J. and Chai J. (2003): Financial Reform and Economic Development in China. Cheltenham, UK, Edward Elgar.

Levine, R. and Renelt, D. (1992): "A Sensitivity Analysis of Cross-Country Growth Regressions," *American Economic Reviews*, Vol. 82, No.4, pp. 942 - 663.

Li, H., Xu, L. C., and Zou, H. (2000): "Corruption, Income Distribution and Growth", *Journal of Economics and Politics, Vol.*12, No.2, pp.155–185.

Lotterman, E. (2002): Bad Rules Breed Corruption, London: Pioneer Press**.**

Lucas, R. (1988): "On the Mechanics of Economic Development", Journal *of Monetary Economics, Vol. 22*, pp.3 - 42. http://dx.doi.org/10.1016/0304-3932(88)90168-7.

Mankiw, N.G., Romer, D., and Weil, D.N. (1992): "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics, Vol. 107*, pp. 407-437. http://dx.doi.org/10.2307/2118477.

Mauro, P. (1995): "Corruption and Growth," *Quarterly Journal of Economics, Vol. 110, No.*3, pp. 681-712.

Mo, P. H. (2001): "Corruption and Economic Growth," *Journal of Comparative Economics*, Vol. 29, pp. 66 –79.

Murphy, K.M., Schleifer, A., and Vishny R.W. (1993): "Why Rent Seeking So Costly to Growth," *American Economic Review*, Vol. 83, pp. 409 - 414.

Myrdal, G. (1968), *Asian drama*. New York: Random House.

Nwanko, O. (2014): "Impact of Corruption on Economic Growth in Nigeria," *Journal of Social Science,Vol. 5*, No.6, pp. 41- 46.

Nwaobi, G. C. (2004): Corruption and Bribery in the Nigerian Economy: An Empirical Investigation. Public Economics 0404006, Econ WPA. Retrieved from: http://pap ers.ssrn.com/sol3/papers.cfm?.

Nye, J. S. (1967): "Corruption and Political Development," *American Political Science Review,* Vol.61, No.2, pp.417- 4270.

Obayelu, A. E. (2007): Effects of Corruption and Economic Reforms on Economic Growth and Development: Lessons from Nigeria, African Economic Conference 2007' Opportunities and Challenges of Development for Africa in the Global Arena" 15-17 November 2007, Addis Ababa, Ethiopia.

Ola, A.S.; Mohammed, A.; and Audi, M. S. (2014): Effects of Corruption on Economic Development in Nigeria," *Global Journal of Interdiceplinary Social Sciences*, Vol. 3, No. 3 pp.209 – 215.

Onwochei, P. (2004): Towards a Corrupt Free Public Service in Nigeria: A Christian Ethicist's Perceptive in Onwochei, P. and Lar, I., Perspectives on the Restoration of Ethical Values in Nigeria. Jos: Auntie Mary Literacy Project,

Pesaran, M. H., and Pesaran, B. (1997): *Working with Microsoft 4.0: Interactive Econometric Analysis*. London: Oxford University Press.

Pesaran, M. H., Shin, Y. and Smith, R. P. (2001): "Bounds Testing Approaches to the Analysis of Level Relationships," *Journal of Applied Econometrics*, Vol. 16, pp. 289-326.

Pellegrini, L. and Gerlagh R. (2004): "Corruption's Effect on Growth and its Transmission Channels," *Kyklos*, Vol. 57, No. 3, pp. 429 – 456.

Phillips, P. C. B. and Hansen, B. E. (1990): "Statistical Inference in Instrumental Variables Regression with I(1) processes," *Review of Economic Studies, Vol.* 57, pp. 99 - 125.

Rahman, A, Gregory, K. and Kapil, K. (1999): "The Effects of Corruption Implications for Bangladesh," *Policy Research working Papers*, WPS2479, World Bank, Washington D.C.

Romer, P. (1990): "Human Capital and Growth: Theory and Evidence," *NBER Working Paper* 3173.

Romer, P. (1986): Increasing Returns and Long-run Growth," *Journal of Political Economy*, Vol. 94, No.2, pp.1002-1037.

Rose-Ackerman, S. (1999): Corruption and Government: Causes, Consequences and Reforms, Cambridge: Cambridge University Press.

Rostow, W.W. (1960): *The Stages of Economic Growth*, Cambridge University Press, Cambridge, England.

Rotimi, E. M.; Obasaju, B.; Lawal, A.I; Ise, O..J. (2013): "Analysis of Corruption and Economic Growth in Nigeria," *Afro Asian Journal of Social Sciences*, Vol. 4, No.4.2, :Quarter ii.ISSN: .2229– 53131

Sachs, J. and Warner, A. (1997): "Fundamental Sources of Long-Run Growth," *American Economic Review,* Vol. 87, No. 2, pp.184–188.

Salisu, M. (2000): Corruption in Nigeria.Lancaster University Management School Working Paper 2000/006. The LUMS Working Papers Series.

Savona, M. and Mezzanotte, L. (1997): "Double Standard in Public Life: The Case of International Corruption," in B. Rider (Ed), Corruption the Enemy within, Kluwer Law International. The Hague; the Netherlands.

Schultz, T. W. (1961): "Investment in Human Capital," *The American Economic Review, Vol. 51*, pp. 1-17.

Sen, A. (1999): *Development as Freedom*, New York, Anchor Books.

Shleifer, A., and Vishny, R. W. (1993): "Corruption," *The Quarterly Journal of Economics, Vol.108, No.3, pp.* 599-617.

Solow, R. (1956): "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics,* Vol. 70, pp. 65-94.

Swan, T. (1956): "Economic Growth and Capital Accumulation," *Economic Record*, Vol. 32, pp.334-361.

Tanzi, V. (1998): "Corruption Around the World: Causes, Consequences, Scopes and Cures," *International Monetary Fund Staff Papers, Vol. 45*. No.4, pp.559-594.

Tanzi, V. and Hamid, R. D. (1997): "Corruption, Public Investment and Growth", *IMF Working Paper 97/139.*

Tanzi, V. and Hamid R. D. (2000): "Corruption, Growth and Public Finances*," IMF Working Paper* 00/182.

Treisman, D. (2007): "What Have We Learned About the Causes of Corruption From Ten Years of Cross-National Empirical Research?," *Annual Review of Political Science*, Vol.10, pp. 211–244.

Wei, S. J. (2000): "How Taxing is Corruption on International Investors," *The Review of Economics and Statistics*, Vol. 82, pp.1-11. http://dx.doi.org/10.1162/003465300558533

World Bank (1997): Helping Developing Countries Combat Corruption: The Role of the World Bank. New York, Oxford University Press Crimes in Nigeria," pp. 39-51

World Bank (2011), *Publications and Research: Corruption*, accessible at:http://web.worldbank.org/WBSITE/EXTERNAL/WBI/EXTWBIGOVANTCOR/0,,contentMDK:20725263~menuPK:1977002~pagePK:64168445~piPK:64168309~theSitePK:1740530,00.html